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The evolution of Australian towns

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The evolution of Australian towns

Report 136

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Foreword

This report examines long-term change in Australia's settlement structure by investigating the number, location and population size of towns over three Censuses (1911, 1961 and 2006).

The rationale for this approach was to look beyond the immediate issues facing regional communities and identify the broader context in which change occurs. Recognising long term trends and the processes that drive them is central to improving our understanding of the past, present and future of regional development.

As a result this report identifies strong trends in the evolving shape of the settlement pattern and the key processes that have brought about change. Key findings relate to the process of centralisation which has been pervasive across the nation and the rise of amenity as a driver of change. The report also covers changes in the relative influence of industry and households.

The mechanisms driving change are described in terms of technology and economics. An underlying theme is the role that transport has played in the early development of towns and its continuing role today. The economic concepts used are relatively simple and although more complex theories and mechanisms are examined, the analysis is firmly grounded in basic microeconomic theory. It is supported by earlier quantitative work by the Bureau relating to the spatial patterns of household living costs.

The study was undertaken by the Bureau's Regional Research team. The report was authored by Geoff Frost, Dr Karen Malam and Lucy Williams. The report is based entirely on original research work within BITRE, undertaken by the authors and Dr Adam Malarz who made a substantive contribution to the statistical regression analysis presented in Chapter 10.

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May 2014

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While BITRE is grateful for the assistance provided, the views expressed in this report are those of BITRE and should not be attributed to any other individual or organisation.

At a glance

- Over the twentieth century, the strong long-term settlement pattern trends in Australia were increasing centralisation of population and activity, a decline in rural inland towns and growth in coastal locations.
- There are six broad groups of factors that influenced settlement pattern change across Australia over the twentieth century—geography, history, industry, the provision of goods and services, amenity and investment—which interacted and generally reinforced one another creating very powerful forces for change.
- Changes in the settlement pattern can largely be explained by routine economic processes, with the key factors being competition, market size and turnover leading to economies of scale. These changes were triggered by, amongst other things, technological advances and increasing wealth.
- Better mobility forced retailers and service providers in small towns into competition with retailers in other towns, effectively establishing competitive regional markets. This has taken the form of 'town versus town' competition, as consumers choose between shopping centre options to satisfy their needs across a range of goods and services.
- Industry activities have favoured large regional centres as they accessed factors of production, sought profitable distribution points and developed centres of manufacture.
- The relationship between industry and towns weakened as industry sought inputs and markets further afield. Small rural towns now need industry much more than industry needs small rural towns.
- Towns and regions need to be competitive providers of goods and services. Having a local industry does not necessarily translate into substantial economic benefits for towns.
- Amenity was very important to the shifts in Australia's settlements patterns. This occurred as the household rather than industry gained importance as a key decision maker in shaping settlement patterns.
- There was a shift in emphasis away from employment and industry toward amenity factors as key shapers of settlement patterns in more recent years. This change was driven by increased personal mobility, wealth that longevity as well as a growing capacity to live away from places of work.
- Towns remain important economic and social units, but now operate as part of larger regional markets. Today, towns are interconnected, as people and businesses conduct their activities at a distance and across traditional regions.
- Pressures on settlement patterns are likely to continue in the form of centralising of activity, technological advancement, households seeking amenity and firms facing greater competition. This will provide both challenges and opportunities for towns and government into the future.

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Executive summary

Background

During the twentieth century towns were subject to large economic, social and technological changes, impacting on their key characteristics such as population, industry and human activity. Understanding the nature of settlement pattern change and the processes driving it can help both government and towns understand why this change occurs.

Objectives

This report examines how Australia's town settlement changed between 1911 and 2006, and the factors and processes which created this change. This study takes a very broad approach, in order to see whether there are observable, long-term patterns of change. This will aid understanding of the causes of change and provide a basis to consider future directions.

Method

The report uses Census counts of localities in 1911, 1961 and 2006 to examine population change in towns across Australia.

The interpretation of this change involves:

- consideration of existing theories
- examination of economic, technological and social changes over the century
- case studies of specific changes at a small area level
- an examination of the economic processes of change.

The report is divided into two parts. The first part (Chapters 1 to 7) examines data on the changing settlement pattern and relates it to large economic, technological and social changes. The second part (Chapters 8 to 11) of the report discusses the major contributors and processes of change through the prism of history and geography, industry and investment, provision of goods and services and amenity.

Settlement patterns in 1911

The patterns of development of Australia's towns were shaped by their function and history, resulting from the spread of mining and agriculture in response to exploration, topography and climate, the impact of the gold rushes, and the development of transport systems.

By 1911, most of today's towns were already established. There were many small agricultural towns reflecting limited personal transport options (horse and cart, walking), fewer mining-based 'boom' towns and a small number of larger centres. Regional Australia in 1911 was home to 60 per cent of the population, with 45 per cent of Australians living in towns of greater than 200 people, and 15 per cent in small localities and rural areas.

Changes to the spatial patterns of settlement to 2006

Changes to the settlement pattern throughout the twentieth century were consistent across Australia, strongly suggesting that these were caused by underlying widespread, fundamental influences rather than local factors.

There are several defining features of settlement pattern change between 1911 and 2006:

- **Decline in the number of small towns** is reflected in proportionately fewer people now living in regional towns of between 200 and 1000 persons. The loss of wheat-sheep belt towns is particularly noticeable, as rising productivity has led to a loss of employment and town function.
- **Growth of regional centres** means that they now represent a significant element of the settlement pattern. This has been in addition to the continued primacy of the capital cities.
- **Population movement to the coast** resulted in the development of some of the country's largest urban centres and the development of many new towns established after 1911.
- **New towns in the north and west** of the country are a reflection of the establishment of new mining operations and the timing of development across the nation. New towns also appeared in irrigation areas.
- **Geography and natural resources** have had an obvious impact on the position of towns and is clearly evident in 1911's pattern of settlement. It also continued to be an important consideration, especially through minerals, attractiveness of the environment and maintenance of access to markets.
- **History shapes the present.** Most towns and cities were established before 1911, with the overall pattern in 2006 very similar but with considerable variation in the size of towns.

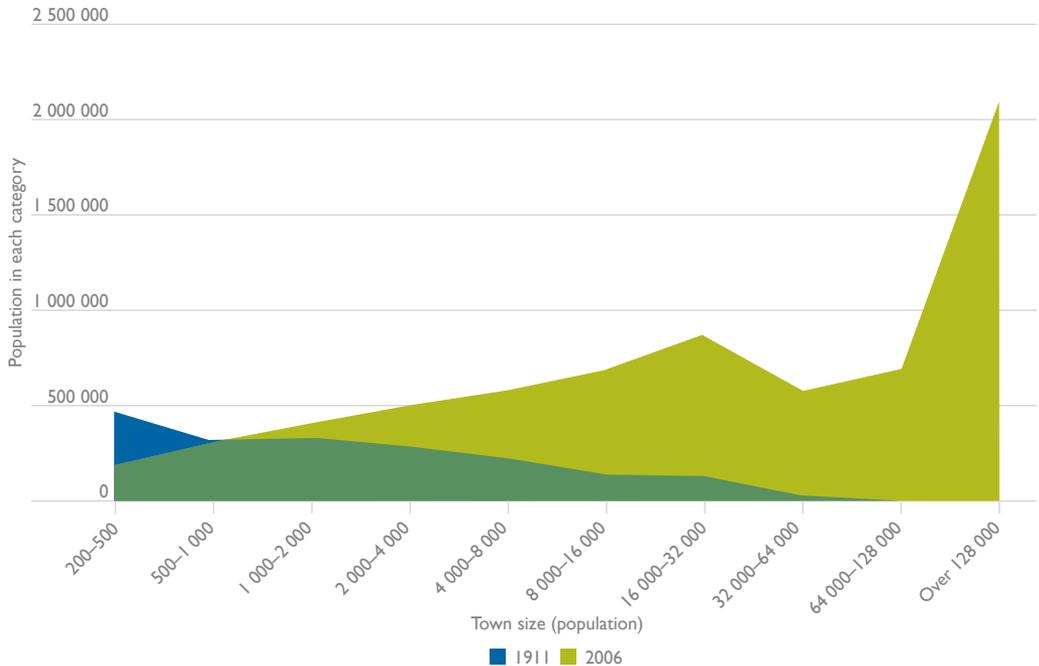
Figures ES.1 and ES.2 illustrate how the settlement pattern has changed over the century. In particular, these figures reveal that regional Australia is much more urbanised than it was a hundred years ago.

Figure ES.1 shows the population by town size in 1911 and 2006 (excluding the five largest capital cities, and rural dwellers). This shows that in 1911, the largest number of people lived in the category of towns with populations of 200 to 500, with very few people in large towns.

Conversely, in 2006, the 200 to 500 category held the fewest people, while large regional cities dominated. This shows how the composition of regional Australia has changed dramatically, being far more concentrated in regional centres than it once was.

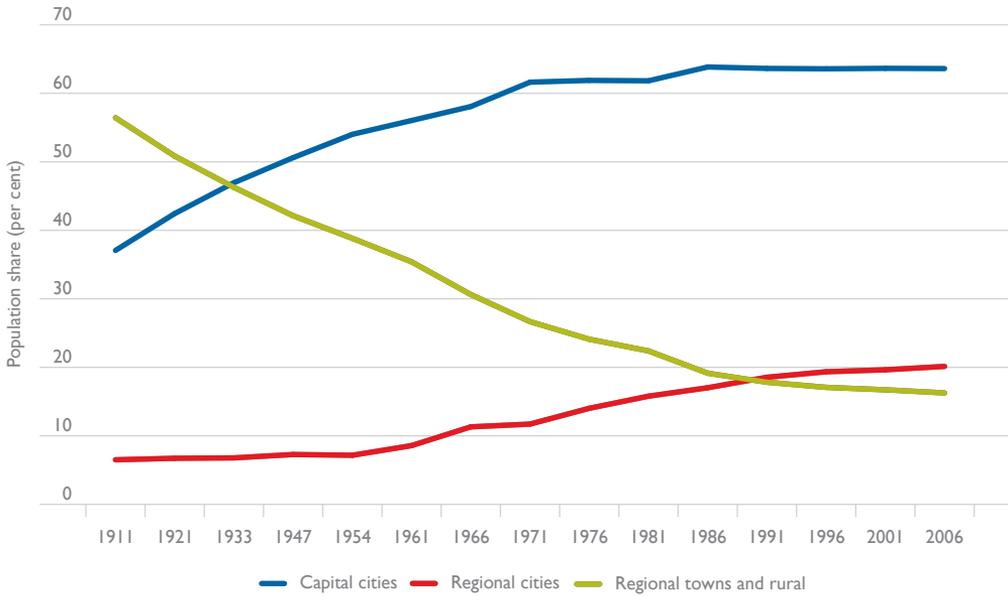
Figure ES.2 shows the timing of this rise of the regional centre. It presents three components of the settlement pattern in terms of their share of total population over the century: capital cities, regional cities and regional towns and rural areas. As the figure reveals, regional cities have largely increased their share of the total population since the 1950s.

Figure ES.1 Population by town size in 1911 and 2006



Note: Data does not include major capitals (Sydney, Melbourne, Brisbane, Adelaide and Perth).
 Source: BITRE analysis of ABS Census results.

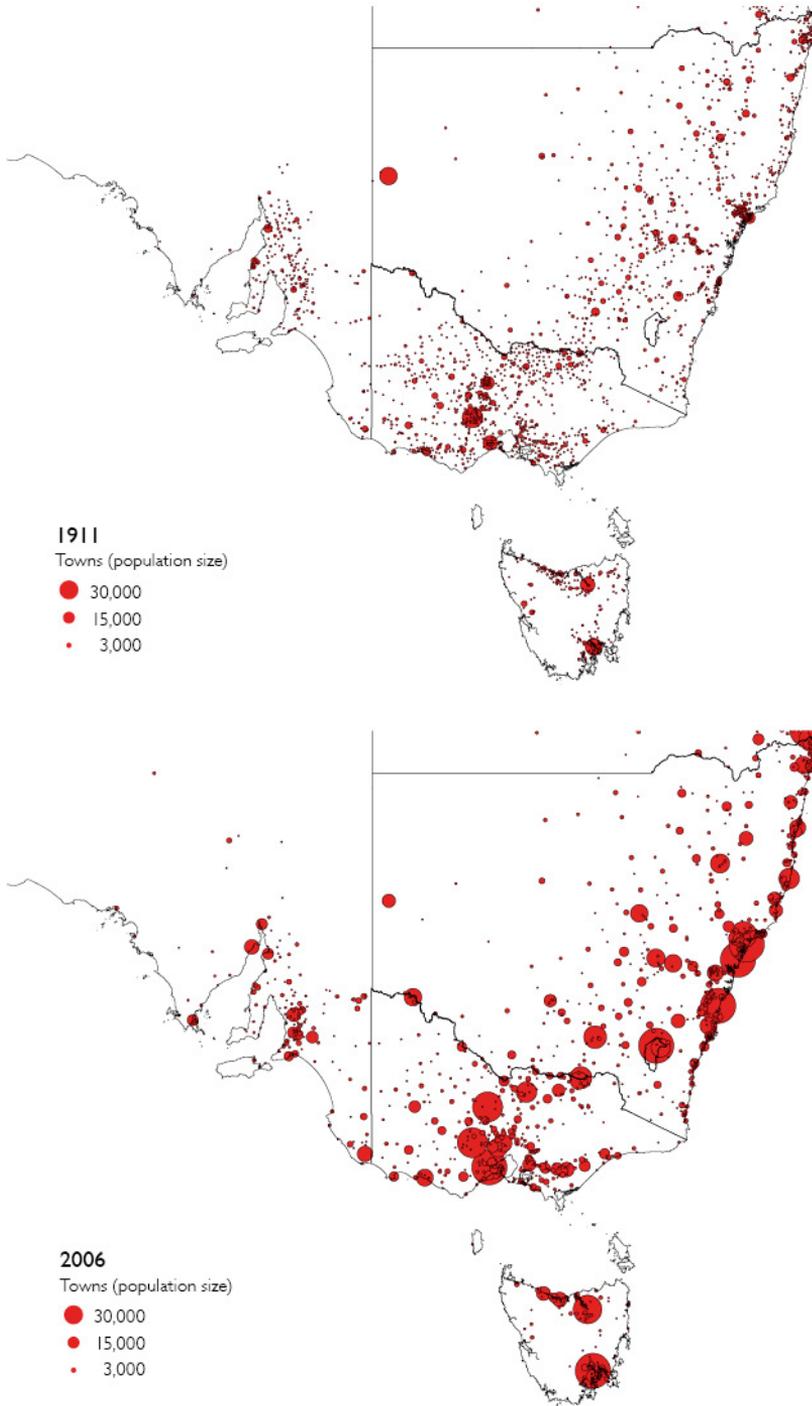
Figure ES.2 Population share by percentage for capital cities, regional cities and other regional, from 1911 to 2006



Source: ABS (2008a).

Map ES.1 illustrates the population change in towns for 1911 and 2006. The size of the dot reflects the size of the population. This shows the shift from many small towns to some very large regional centres with fewer small towns.

Map ES.1 Towns in South East Australia by population size over two Censuses; 1911 and 2006



Note: Sydney, Melbourne and Adelaide have been excluded, as the circles representing their population sizes would overwhelm the map.

Source: BITRE analysis of ABS/CBCS Censuses 1911, 1961 and 2006.

Factors behind settlement pattern change

Major economic, technological and social changes have driven settlement pattern change. Table ES.1 summarises these key factors.

Table ES.1 Key factors impacting on settlement pattern change

Factor	Impact on activity	Impact on settlement pattern
Increasing wealth	Capacity to embrace technology. Ability to choose lifestyle.	Amenity increasingly important
Increasing life expectancy	Enabled retirees to make location decisions independent of employment considerations.	Amenity increasingly important
Technological and productivity advancements	Change in industry mix, rise of services, reduced employment in traditional industries. Disconnect between industry and town.	Centralising of activity
Improved transport and communications	Personal mobility through the use of the car: Changed cost considerations in business location for inputs and transport to market. Separation of place of work and residence (cars, fly-in/fly-out and drive-in/drive-out).	Centralising of activity and amenity increasingly important
Population growth	Need for building, infrastructure to cater for population.	Centralising of activity
More women in the workforce	More complex household locational decision-making. Freedom of women to make a locational choice. Different occupational focus.	Centralising of activity
Income support system and superannuation	Reduces the links between residential location decision and employment.	Decentralising
History and existing infrastructure	Existing frameworks and assets frame current decision-making.	Favours retention of existing patterns

Source: BITRE analysis.

The processes of change

The process of change is considered through four lenses:

History and geography

Geographic requirements in industry and transport determined early settlement patterns. Primary industry was established in geographically appropriate areas, such as agriculture in areas with the appropriate soil and rainfall, and mining in areas with mineral resources. Geography also determined the location of key transport hubs such as sea and river ports. During the twentieth century, the influence of geography continued in terms of those factors, new mineral finds and amenity areas.

History shaped and limited change in the nation's settlement pattern, creating persistence of the pattern. Most of the towns which existed in 1911 were still present in 2006. History is an evolving context in which decisions are made. Each new decision slightly alters this context but is shaped by existing systems, which include the built environment, infrastructure and networks.

Industry and investment

The changing nature of industry in turn changed the settlement pattern. In the nineteenth century, towns were established to serve nearby industry and workers. This close geographical link created a mutually beneficial relationship. For example, the costs of moving people and goods were high, and so inputs (including workers) were sourced locally.

This link weakened during the twentieth century through technological advancements, productivity gains and structural changes. The effect was that small rural towns needed industry much more than industry needed small rural towns. This reflected the shift towards regional centres as a source of production, as distribution points and centres of manufacture. In conjunction, the decline of employment in agriculture led to a loss of people in these same small agricultural towns.

Towns also benefited from investment by industry and this was a key factor in the expansion of settlements. Investment is fundamental to a town's growth but it is a component of the economy which is volatile and difficult to attract, and subject to uncertainty especially in small towns. In general, larger towns have had a competitive advantage over smaller towns in attracting industry investment. This also applies to household investment as people are attracted to investments they consider less risky and which provide higher returns.

Provision of goods and services

One of the major processes driving centralisation was the changing way in which people access goods and services. This has occurred through the widespread adoption of the car, which enabled new choices by consumers about where they access goods. As consumers embraced the concept of pooling their purchases into 'one big shopping trip' this in turn created a competitive regional market and competition between towns themselves.

These new regional markets meant that the retailers and service providers in small towns were in direct competition with groups of retailers in other towns. In this situation larger towns have had the clear competitive advantage through economies of scale and positive feedback loops, which have led to the unequal growth of retailers in larger and strategically located towns at the expense of others.

Amenity

Improvements in personal transport and increases in wealth have given more people the ability to choose locations based on amenity rather than employment—that is, the desirable attributes of a location such as the physical features, services and social character.

Towns have been able to take advantage of the shift by transitioning their local economy towards the growing lifestyle and tourism industries. The implication for the development of towns is that amenity and not industry alone is now providing an economic base for many towns.

Understanding the process

One of the key findings of this study is that the explanation for changes in the settlement pattern can largely be found in basic economic theory. Rational decisions by people, given their capacity and preferences, form the basis of most of the change. Conventional economic forces such as taking advantage of economies of scale can explain the evolution of the settlement pattern in the broad sense, namely the observed changes of regional centre growth and small town decline.

The processes influencing towns have been fundamentally changing the functions and nature of towns themselves. Whilst towns remain the social centres for communities and their basic function is to serve its residents, they are no longer the only unit to support households and businesses. Towns are operating within a larger regional market. Nowadays, each town is best described by its relationship with the industry and towns of a wider region and typically compete in supplying households and/or businesses in that region.

The once-strong connection between industry and a local town has become weaker. Inputs are increasingly drawn from anywhere and the workforce requirements have been reduced as productivity and technological improvements have risen. Accordingly, a local industry does not necessarily translate into a substantial economic benefit for a town.

Also, households now have a greater say in where they choose to live and work. Previously, people lived where they worked but rising incomes and cheap, reliable, quality transport (including improved roads) have enabled people to live in one place and work in another. This has given rise to commuting towns closely connected to major centres, with a more acute example being fly-in/fly-out (or drive-in/drive-out) workers.

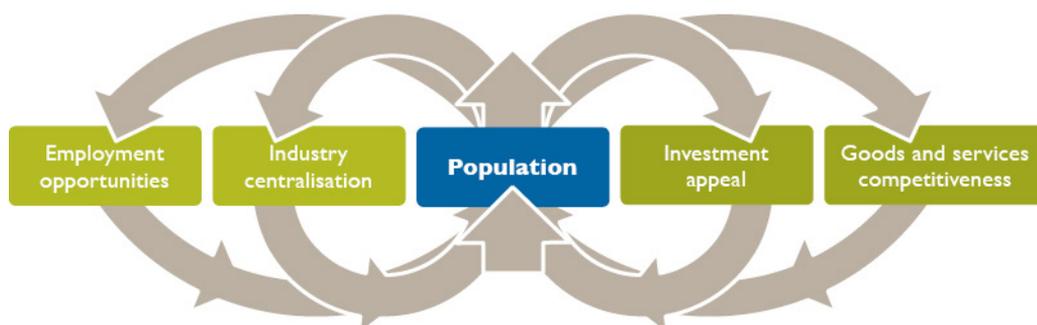
Transport has been a key component in this decoupling. It has also been the avenue to the centralising of activity. Regional cities have grown while a number of small towns have been lost, and many of those small towns that continue have fewer services than before. Several key processes have been contributors:

- Residents of small towns are travelling to larger centres to access a cheaper and wider range of goods and services, decreasing local demand.
- Some goods and services with *higher order* characteristics are positioned in major centres because of scale and expertise.
- Positioning higher order goods and services in regional centres in turn attracts households as they consider a location's amenity.
- Industry, driven by economies of scale and enabled by networks, transport and technological advancement have increasingly centralised the production (regional rather than local production) of goods and services.
- The centralising of activity makes investing in larger centres more attractive because of a perceived lower risk, while small towns have difficulty attracting investment.

These processes, covering investment, goods and services delivery, industrial centralisation and larger employment markets are not separate. In fact they are closely intertwined and at least partially explain the size and scale of change noted over the past century. They result in the reinforcement of positive feedback loops that favour large centres. Once started, there is momentum for change that is difficult to reverse as processes reinforce one another (see

Figure ES.3). The positive loop can also operate as a negative loop with a falling population (although typically less quickly). So rather than a virtuous circle, towns can also experience a vicious circle of decline. This explains the difficulties experienced by many towns seeking to reverse unwanted trends. History, a person's attachment to place, industry requirements, price signals, congestion, amenity preferences and infrastructure hangover may act as brakes to this process, but overall the process of change in the settlement pattern has been ubiquitous.

Figure ES.3 Interaction of positive feedback loops (population size)



Source: BITRE analysis.

Implications for towns

This report provides some insights into national trends and processes around the changing settlement patterns and how they impact on towns. Viewed from a national perspective, these are strong forces with local implications that cannot be ignored. However it would be a mistake to not pay attention to the specific local circumstances surrounding particular towns, since the fate of individual towns is dependent on their unique circumstances and relations with their neighbours.

A spatial awareness of activity is vital. Understanding where a town fits into its region both economically and socially is increasingly important. Today, towns are interconnected, as people and businesses conduct their activities at a distance and across traditional regions. A small regional town will usually find it difficult to compete directly with a regional centre in the provision of goods and services. However, local residents and firms are often well positioned to capture different types of opportunities while taking advantage of the greater range, lower prices, enhanced social and economic infrastructure and extended labour market available to local residents accessing the regional centre.

The nature of inter-town competition is also part of the competitive structure that has developed. People are unlikely to visit multiple towns for different goods: therefore the town centre that provides an appealing package of goods and services to locals and visitors is most likely to receive their custom. There is much to be gained from collaboration within a town. Various local councils and towns are already promoting their local town or region, to distinguish themselves from other areas. A town can sometimes benefit from being associated with a particular industry such as wine, cheese or surfing or more generally with lifestyle and tourism pursuits.

That said, the relative competitive advantages of towns have been changing. Towns reliant on declining industries are likely to struggle, especially if they aren't large enough to be a service centre for the area. However, changes in the relationship between base industries and towns means that having a buoyant base industry close by is no longer a guarantee of success. Towns must make themselves relevant and competitive if they are to capitalise on nearby industry. In 1911 industry had little option but to use local labour and suppliers; in 2014 there are many alternatives. It is therefore important for towns to understand their relationship with industry. The strength of town links with industry can vary in different ways, including the relationship of industry and local employment because of the increasing separation between place of work and residence.

Towns in attractive areas have the advantage of being able to attract people on the basis of amenity. The mobility of the labour force and the relatively large number of people outside the work force means that some towns and cities are able to attract people without a strong local industry base. In particular, towns with natural and built amenity or locations near larger centres which offer a wider range of goods and services have an enhanced ability to draw new residents. Even if they are not able to retain services in their own town, relatively close regional proximity can be enough.

Consequently, towns need to concentrate on their strengths, including their natural advantages. Considering the diversity of towns, these strengths vary considerably. It is also true that some towns that functioned in the early twentieth century for primary industry have since declined, and do not have an obvious natural advantage (such as coastal amenity or proximity to a large centre) which enables them to shift function easily.

Towns that wish to influence their future need to understand their individual circumstance as a starting point. They will benefit from making an objective assessment of their position within their larger region. Some of the key issues to consider include transport systems, relative amenity, the labour market, goods and services provision and housing investment. Specific issues to be considered could include where residents work, shop, socialise and undertake leisure activities (in town, or in another location).

These issues are affected by the proximity to other towns in the region, both larger and smaller, so it is important to consider the proximity, sizes and strengths of other towns (particularly with consideration of the connecting transport networks).

Regional development

By taking a geographically broad and century-long perspective, this report draws attention to the long-term causes and effects that are not always apparent to policy makers and development practitioners dealing with the very real needs of regions in the shorter term.

Much of this report illustrates that the big changes in development patterns have essentially resulted from slow and sometimes subtle changes in wealth and technology—particularly transport technology. The decision-makers involved include businesses and households seeking to improve their own circumstances. These fundamental drivers and decisions are largely out of the government's direct control.

This is not to say that governments are powerless, or should do nothing. Rather it suggests that governments need to be aware of the fundamental drivers of changes in the settlement pattern. Spatial impacts, both positive and negative, can sometimes be missed when considering the implementation of industry, transport, health, social security or defence policies. This report suggests that these impacts can sometimes be profound and so confirms the wisdom of maintaining processes that seek out regional impacts as an explicit part of the policy process.

Access to services is an important part of understanding this process, with government-provided services among some of the most critical. Government will therefore need to understand the continuing reshaping of the settlement pattern and consider alternate approaches to service delivery. This involves recognising that there are significant spatial impacts to service provision for both towns and individuals.

Inevitably difficulties associated with change are real for many residents. Some are obliged to travel or move, others find services declining around them or a need for new services. Adjustment affects people in many different ways—many of them adverse. This difficult adjustment process suggests an important focus for government in dealing with structural adjustment: policies and programs that focus on the needs of those individuals and households adversely affected by change. Such policies are usually based around providing good information and support for transition and include retraining and access to appropriate education, provision of financial information and advice, and social support services.

Conclusions

During the twentieth century, Australia has seen increasing centralisation of population and activity, a decline in rural inland towns and growth in coastal locations. Much of this change in settlement patterns was due to major economic and technological change, and is explainable using basic economic theory. The trends that have been identified are major, have developed over the long term and are likely to continue.

This report considers these changes through the prism of interacting factors that include geography, history, the provision of goods and services, industry, amenity and investment. It finds that towns are no longer the sole unit to support households and businesses but operate as part of larger regional markets. Today, towns are interconnected, as people and businesses conduct their activities at a distance and across traditional regions.

Increased consumer mobility changed the way goods and services were accessed. As a result of this mobility, small-town retailers and service providers were forced into competition with retailers in other towns, effectively establishing competitive regional markets and competition between the collective offerings of towns.

These wider markets are also a result of industry increasingly being able to access inputs and markets from further away. This has meant that having a local industry does not necessarily translate into a substantial economic benefit for local towns.

Amenity has been gaining in importance for towns and has contributed to shifts in Australia's settlements patterns, particularly as people increasingly had more mobility and wealth. Amenity includes services (favouring regional centres), natural amenity (favouring the coast) and personal lifestyle preferences.

The implications of all of these changes for regional development are not so clear cut. It presents both opportunities and challenges moving into the future.

Future considerations

The conclusions of this report raise a number of questions for government, regional development practitioners and those with an interest in the future of towns and for the people who live in them—with respect to future policy and actions. Is it, for example, sensible or even feasible to pursue policies that resist or seek to reverse the types of long-term trends identified in this report?

Traditionally, governments have focused assistance towards regions and industry, yet the interests of individuals, industry and regions is not always the same. This raises questions about the degree to which government policy should focus on people, regions or industry when considering regional development.

In any event, strategies need to be targeted and informed by an understanding of the underlying spatial adjustment processes. It cannot be assumed that assistance targeted at a region or industry will necessarily help the people within them. Government responses need to be tailored to the specific circumstances of a region. In some instances the best approach may involve pursuing measures to assist those who have become distinctly disadvantaged, for example through training, education or social support services. In others, it may involve pursuing measures which build on a location's competitive advantages, or which assist the region to become better engaged with local industry.

In the past, industry policy has been used in an attempt to meet regional development aims. However, while industry generates the country's wealth, the relationship between industry and towns is weakening. With industry operating in a nationally or internationally competitive environment, is it feasible for government to continue to use industry policy to fulfil regional development objectives? Moreover, given the weakening link between an industry and the fortunes of the town in which it is based, how effective is the introduction of a new industry likely to be for a town? In contrast, this report points to amenity (built, service and natural) as becoming an increasingly important point of difference for locations.

Regardless of whether governments elect to have specific regional development objectives, mainstream government activity has spatial consequences. A major theme of this report is that transport has had profound effects on settlement patterns; therefore government involvement in transport (and communications) will be central to the shape of future development. However, it is also obvious that other mainstream activities of government (such as delivery of health and education services) have spatial implications. From a government perspective it is important to consider the impacts, both positive and negative, which flow from decisions about where government services are placed.

CHAPTER I

Introduction

Key points

- Australian towns have changed and adapted to new circumstances over the course of the twentieth century.
- This study investigates the underlying processes that have transformed Australia's settlement pattern.
- The ABS/CBCS Census of Population and Housing from 1911, 1961 and 2006 is the primary information source used in the analysis.
- The report is divided into two parts covering a descriptive analysis followed by an analytical approach to consider underlying processes.

Introduction

The story of towns and regions in Australia is one of change and adaption to new technology, population growth and economic and social circumstances. Over the twentieth century the functions of towns have been evolving, transforming them from many relatively similar tiny rural towns in the early 1900s to the complex array of towns and cities today with diverse sizes and functions.

Often the perception is that shifts take place in response to shocks. Economic stress is often attributed to a seemingly-obvious local cause—a drought, a change in markets, the withdrawal of a key industry or the like. Yet even casual observation suggests that there might be wider forces at work. This report seeks to identify these forces. It examines how Australia's town settlement patterns have changed between 1911 and 2006, and the factors and processes which created this change.

The study takes a very broad approach and draws out the observable, long-term and across-the-board changes that have shaped settlement patterns. By understanding these long-term trends both government and towns can understand what has shaped Australia's current settlement. For example, a hundred years ago a large part of our transport system was dependent on people walking to work and moving freight by horse and cart or by rail. Today, cars and trucks have revolutionised the movement of people and goods, to profoundly impact on the shape of settlements.

This report covers issues such as history and geography, industry and investment, provision of goods and services and amenity, to examine the drivers and processes of changes occurring in the settlement pattern. We need to also recognise that economic and social change will continue; that technology will keep shifting the relationships between industry, labour and towns; and there will be new ways to access goods and services for households and industry. These will form part of the influence on the decision-making process of individuals. Consequently, we can expect patterns of settlement to keep evolving.

Purpose

The basic questions that form the foundation of BITRE's investigation are:

- How has Australia's town settlement pattern changed from the first national Census in 1911?
- What were the factors and processes creating the changes in the settlement pattern?
- What can the mechanisms of settlement pattern change tell us about likely future developments?

Approach

The report examines Australia's settlement pattern by investigating the number, location and population size of towns—the individual pieces in the settlement pattern—across three Censuses (1911, 1961 and 2006) based on the populations of localities.¹

These snapshots of Australia's settlement pattern provide a record of the structure at that time and enables comparison over time. Population estimates provide an important basis for quantitative analysis of settlement patterns. Descriptive and analytical records are used to augment our understanding of economic activity.

The study is designed to be accessible to the layperson, and takes a cross-disciplinary approach, by using economic theory in the context of history, geography and demography to make sense of the changing settlement patterns.

¹ This research was commenced before the 2011 Census results were available and so 2006 Census data was used. Given the long term nature of the processes involved, it is unlikely that 2011 data would make any material difference to the results or conclusions of this report. Subsequent inspection of 2011 Census data has confirmed this view.

Report structure

The report is divided into two parts. Chapters 2 to 7 present the data findings and context (theoretical and historical) to enable interpretation.

Existing theories of the distribution of economic activity are discussed (Chapter 2), with Chapter 3 describing the processes, drivers and trends that formed Australia's settlement patterns to 1911. Chapter 4 investigates town population data from the 1911, 1961 and 2006 Censuses to identify important national trends, while Chapter 5 looks more closely at particular towns and regions. Chapter 6 examines some of the wider context of economic, social and technological changes over the twentieth century. Chapter 7 summarises the findings, and discusses the results of the data analysis in light of the context and seeks to identify the key patterns and drivers of change.

The second part of the report tries to understand the underlying processes for the change in the settlement pattern: basically, how and why did the settlement pattern change. For example, the physical geography of a location has always played a critical role in the establishment of settlements and Chapter 8 investigates its role, along with the local history, to explain the current structure of settlement.

Industry has been a major contributor to the establishment of many towns but has also undergone a substantial amount of change over the past century. Chapter 9 considers the effect of this industrial change on the location of activity. This chapter also discusses the important role of investment from industry, along with households and government, in the growth prospects of a town.

How people access and how firms provide goods and services has changed markedly. Its impact on settlement patterns is explored in Chapter 10, with a particular emphasis on the shifts in the market structures.

Chapter 11 examines the role of amenity in the choice of location for households. Coastal locations have been the most noticeable aspect of this movement but this chapter also explores the underlying factors for the increasing importance of a location's amenity to the changes in the settlement pattern.

Chapter 12 discusses the report's conclusions and what this may mean for towns and government in the future.

CHAPTER 2

Theories of town location and economic activity

Key points

- No single theory explains the spatial development of human activity in Australia.
- The most obvious spatial variable influencing the location of activity is the physical geography and natural resource endowment of a location.
- Economic Base Theory provides a foundation to examine the influence of industry on a town's development. It implies that the distribution of towns follows base industry patterns.
- Economic theories (consistent with base theory) that describe the concentration and clustering of economic activity include agglomeration economics, Porter's competitive strategy theory and New Economic Geography.
- The theory of path dependence illustrates the influence of history on current outcomes.
- Migration theory shows that both economic opportunities and amenity considerations influence the decision to migrate.
- Central Place Theory provides a basis for understanding how towns and cities of different sizes are organised for the distribution of goods and services, and correspondingly, where higher order goods and services are available.
- The concepts embodied in retail theory may also be applicable to economic activity within towns.

Introduction

There are many theories of spatial development, but no one theory explains the total organisation of human activity in rural and urban areas. Theories have been developed in a range of disciplines such as economics, demography, geography, sociology and history to try to understand the underlying mechanisms. To date they only partially explain the observed patterns of spatial development, with the applicability of each theory seeming to vary in different situations. Each is valuable and together they serve as a foundation for this analysis, offering a guide to the range of determinants and conceptual thinking that might explain the changes in the fortunes of towns in Australia over the past century. This chapter presents broad summaries of some of the key theories, considering two types: those with a focus on

the producer (essentially industry location theory), and those with a focus on the locational aspects of consumer behaviour and retail economics.

These theories represent models of human behaviour in specific situations. Carr (1997) presents four basic sets of overarching factors that provide the real world context in which the decisions affecting spatial organisation play out.

History

History provides physical frameworks in terms of existing settlement patterns and networks, but can also shape the inherited attitudes of the population: for example the focus on self-reliance following the Second World War. A brief history of settlement to 1911 is addressed in Chapter 3, providing some explanation and context for what had occurred prior to the study period. The historical events between 1911 and 2006 are partly addressed in Chapter 4, but also discussed throughout the report when looking at national trends in industry, technology and the wider economy.

The location of resources and the wider environment

The location of resources and suitability of the wider environment are important as the initial impetus for the locations of towns (for example, where mines, ports or river crossings are established). Soils and climate (influencing the type of agriculture or suitability for tourism) and the discovery of mineral deposits play a determining role for industry location and in turn prompt the establishment of towns.

Technology

Changes in technology can make differences in many areas. Industrial technology can open up resources or change the competitiveness of regional industry. Advances in transport can generate social and economic opportunities for individuals and business, while other advances can create whole new industries and consumer products. Over the period 1911 to 2006 we have seen the development of the motor car, telecommunications and the computer. The level of consumer products available to ordinary citizens has expanded exponentially. It is unsurprising that radical changes in settlement patterns would arise from these developments.

The economic and social context

The economic and social context has evolved over the twentieth century. Australia has grown through mass migration and the British outpost of 1911 is now a multicultural society. Wealth and education have grown, women are now a substantial part of the workforce and life expectancy has increased. International trade and wealth have grown and our political and economic focus has shifted from Britain to the US and to Asia.

These factors provide the context in which producers and consumers make decisions. They also provide an ever-changing background to the observed changes in settlement patterns and our consideration of the theories that attempt to explain them.

Economics and location

Although not a 'theory', the most obvious spatial variable is the physical geography and natural resource endowment of a location. Topography, land quality, and climate are crucial to determining the potential sites of towns. A related factor is market access for both consumers and producers. Regions with natural harbours, river crossing points and strategic locations have been strong influences on locational choice of towns because they have enabled the movement of goods and services.

Industries also have requirements such as access to suitable land for agricultural activities. Similarly, ore deposits are a pre-requisite for mining and a good climate and access to lakes, rivers and oceans contribute to tourism. Similarly, a good water supply is essential for any settlement and some successful towns resulted from the development of irrigation.

Yet, spatial questions in economics have often been set aside from mainstream economics. For many years theories of international trade have been the backbone to analysing economic activity across space (McCann 2001). This includes theories such as Ricardian comparative advantage, based on two countries specialising in producing goods in which they have a relative advantage. The primary purpose of the model is to consider the effects of trade on a country moving from a position of no trade to free trade. This leads to each country specialising in its production and resulting in a win-win situation as the overall welfare of each country increases. That said, the model has a number of limitations such as assuming constant returns to scale, perfect competition and not accounting for market size.

Within nations, trade theory is less applicable because of common currencies and a high degree of labour and capital mobility. Therefore different theories were needed for understanding trade between regions within a single country.

The theoretical focus of the spatial distribution of economic activity is centred on the locational behaviour of firms and how they react to transport costs, local factor prices, market structure, substitution possibilities and natural resources. A common underlying assumption is that firms choose a particular location to maximise profit. There are also behavioural theories on firm location that incorporate decisions being made based on limited information, strategic positioning and costs of moving.

Interest in spatial economies has increased over recent years, with the writings of Paul Krugman and Michael Porter bringing the important connection between space and economic activity to wider audiences (McCann 2001). In this context, an understanding of economic factors affecting the spatial patterns of activity is important.

More generally, economic activity tends to concentrate spatially. This report uses the term 'centralisation' to describe this phenomenon of the increasing centralising trends in both industry and population and examines their underlying forces by drawing on the economic literature as discussed below.

Industry location and towns

The fundamental purpose of all towns is to supply goods and services to their residents. Towns have essentially the same function, regardless of their industry and are the key to understanding economic and regional development.

The relationship between industry and towns is complex and various theories have been proposed to understand it. A commonly held theory of town location that describes the relationship between town location and industry location is Economic Base Theory.

Economic base theory

Economic Base Theory provides a structure to understanding the effect investment spending and industry employment can have on a local economy, with the model focusing on 'regional export activity'² as the primary source of economic growth. It separates local industries into two components:

1. Basic industries that supply goods and services to other regions.
2. Non-basic industries that serve local consumption.

The theory proposes that local economic activity is a function of the export base (basic component) which then engenders local growth and investment through increased demand for locally produced goods and services. Often the explanation is associated with a 'multiplier effect'³. The theory proposes that funds flowing in from outside the region from selling basic industry products can directly expand the overall economic base locally. This expansion creates new employment and results in new local consumption, further generating economic activity for local industries and resulting in subsequent rounds of activity (and investment) which continues until the derived receipts leak out of the local economy (Stimson et al. 2002). Stimson et al. (2002, p.236) also highlight that it is often 'a small number of firms and businesses play[ing] a pivotal role in defining the economic structure, performance and development of a regional economy'.

Consequently, to promote growth, the focus for investment is on building the basic component of an economy to become a 'growth pole'⁴ for a location, with the non-basic sector then following the opportunity created. The theory has wide acceptance and is often the underlying strategy of much local and government regional development effort. The multiplier component of this theory can result in expectations of higher benefits than are actually achieved.

In Australia, agriculture, manufacturing and mining have been the traditional basic industries of local economies because of their focus on external demand—often their markets are international. Tourism is also a common basic industry, but is more difficult to identify as tourist spending is often not readily separable from local consumption. Similarly, higher education and aged care may be basic industries for some regions, but are not easily identifiable since institutions invariably have local clients as well as those from other areas. All of these industries,

² Regional export activity is regarded as the primary determinant to grow local economic activity by drawing funds from other regions into the local area.

³ The injection of new money into a local economy results in a circular flow of extra spending that raises local economic activity.

⁴ The Growth Pole model argues that a large firm or significant public or private investment will act as a focus for local growth.

however, invest directly in the local economy and are commonly used as the foundation to promote local economic growth.

Box 2.1 Promoting regional economic growth

Economic growth is broadly defined as an increase in an economy's ability to produce goods and services over time. The growth in output in turn raises a region's income enabling the consumption of more goods and services. This promotion of economic growth is the primary focus of many of the regional development initiatives undertaken by local stakeholders, businesses and government. It is also the de facto goal of many employment-based policies.

Over time, several strategies with different emphases have been used to promote the fortunes of towns and the vibrancy and resilience of communities. For example, Economic Base Theory focuses on the promotion of the basic sector to raise local income while 'growth poles' theory suggests that having a core industry will attract more investment into the local area.

A common theme to regional development approaches has been through promotion of local leadership. For instance, The McKinsey report (1994) into supporting regional development found that local and regional leadership was a key contributor. The dictum to this approach is that community action makes a significant change to the economic outcomes locally (Collits 2001).

Another approach has been to identify key characteristics of towns that have had positive (and negative) influences on local fortunes. Numerous studies⁵ have identified a range of factors such as:

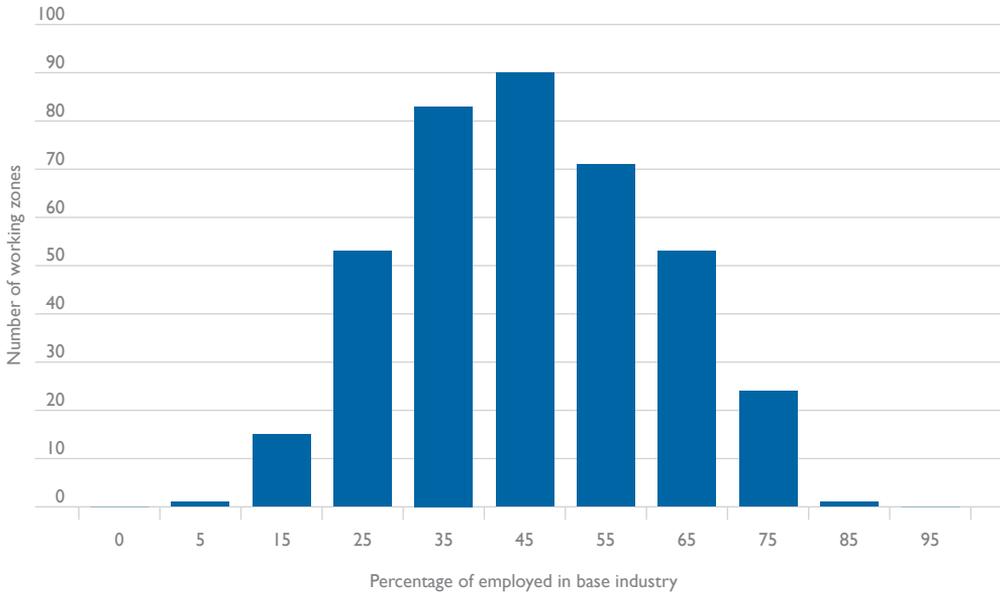
- the willingness to take risks
- networking
- positive attitudes to change
- enhancing local skills and capabilities
- strategic approaches to outcomes.

⁵ Kenyon and Black (2001) provide a summary of the literature on the common characteristics that result in vibrant communities.

All regions have a mix of basic and non-basic industry types and even some industries themselves have both basic and non-basic characteristics. For example, retailing to locals is non-basic, but retailing to tourists is basic. Similarly while agriculture itself is basic in character, the classification of services to agriculture is much less clear. It is therefore useful to think of the non-basic and basic more as descriptors of industry rather than rigid categories.

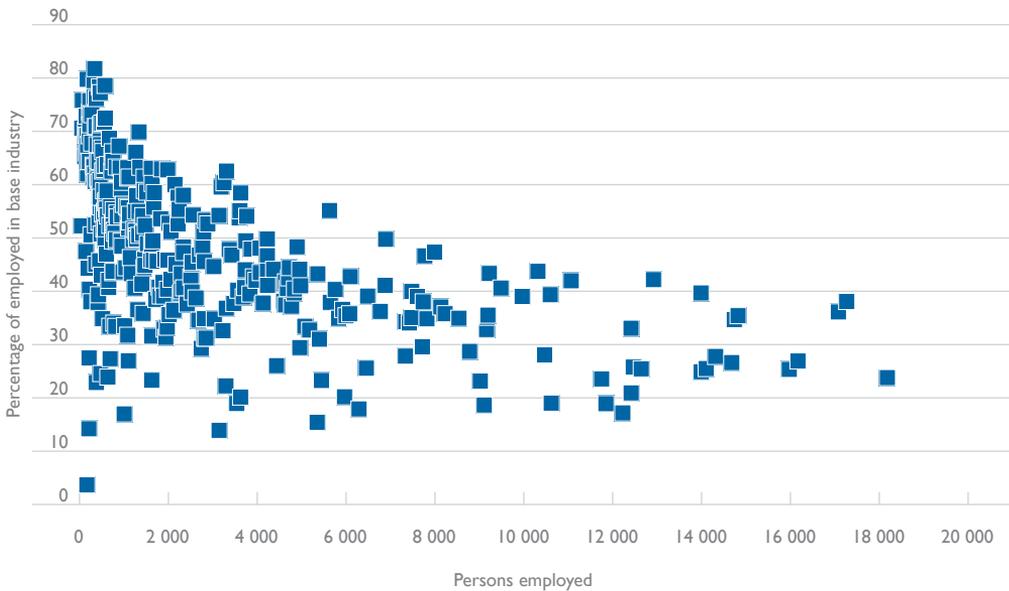
To illustrate the proportion of basic industries in local economies, Figure 2.1 presents the basic industry workers as a percentage of the total workforce, using BITRE's 2006 Working Zones (areas of functional economic activity). Although the estimation method is unsophisticated (basic industries are defined as agriculture, mining, manufacturing, wholesaling and government administration), the graph shows a significant diversity, with most regions having between 30 and 60 per cent of their population employed in basic industries.

Figure 2.1 Basic industries by people employed in BITRE Working Zones 2006



Source: BITRE (2009a).

However, Figure 2.1 does not take into account of the size of each Working Zone, which range from small, isolated areas (some have fewer than 100 employed persons) to the entire greater metropolitan areas of Sydney and Melbourne. Figure 2.2 addresses this by linking the basic industry to employment size. Again, the figure is distorted by the coarse definition of basic and non-basic, but the trend is clear—only regions with very small working populations have a high percentage of base industry employment. This is most logically explained by thinking in terms of the non-basic industries, which (by definition) tend to service larger populations and so do not exist in locations with small populations and low levels of demand for services. The fact that some small Working Zones appear to have very large non-basic components is therefore more remarkable. However, closer examination of these areas reveals that this reflects the imprecise identification of basic and non-basic industries. They have high levels of tourism (part of which is incorrectly identified as non-basic retailing), or are very isolated therefore have retained more of their non-basic functions.

Figure 2.2 Basic industries by people employed in BITRE Working Zones 2006

Note: For readability of the figure, only Working Zones with fewer than 20,000 employed persons have been included.
Source: BITRE (2009a).

The size of the basic component of the local economy can also determine the size of the labour force which then (at least traditionally) becomes the initial foundation for the town's population. Differing industries require different numbers and types of employees. For instance, modern agriculture and mining typically have few employees compared to earlier times, while tourism is still relatively labour intensive.

Non-basic industries such as service delivery are vital components of the overall economic functioning of towns, and were the primary rationale for the establishment of many towns. In fact they often provide the bulk of employment and production (see Figure 2.2).

The spatial distribution of the non-basic industries across regions is, in fact, as important for individual towns. Their importance is often overlooked in favour of basic industries, but they can provide a bulwark of stability when basic industries are experiencing challenges.

The basic/non-basic paradigm is widely held and a seemingly sound description of economic activity. In terms of town location it emphasises the location of basic industry as the key determinant. The following three theories focus on industry location, and, to the extent that Economic Base Theory holds, they can be seen as de facto town location theories also.

Agglomeration economies

'Agglomeration economies' is a term often used as a catch-all for a wide range of benefits, which include economies of scale and wider economic benefits that contribute to raising productivity by reason of location.

Economies of scale

'Internal economies of scale' describes a situation in which the cost of producing an additional product decreases as volume increases. In other words, a firm is able to lower the average cost per unit by increasing production and sharing costs over a larger number of goods. Firms are able to achieve economies of scale through technological innovation, administration and financial savings, risk bearing capacity and purchasing power. For example, large-scale businesses have the capacity to invest in specialist equipment, distribution networks and/or purchase inputs in bulk such as a major food retailer having purchasing power when obtaining produce from suppliers.

Whilst internal economies of scale can be based on the size of a firm, some firms achieve economies of scale by spatially concentrating both their capital investment and labour pool. This fits within the benefits of agglomeration as the economies of scale are location-specific. For example, car manufacturing achieves greater efficiency through scale because investment takes place in one location rather than across a number of areas.

The opposite may also be relevant—'diseconomies of scale'. This situation results from firms becoming less efficient because they have become too large. Communication and co-ordination problems are issues at the firm level, but it also applies to locations through congestion, increases in land and wage prices and consequent loss of productivity.

Wider economic benefits

Some industries tend to concentrate geographically. The obvious advantage gained by industry concentrating is reducing transport costs. Marshall (1920) emphasised three different types of transport costs—the cost of moving goods, people and knowledge transfer. Thus, industry agglomerates to reduce these costs by taking advantage of:

- Access to inputs—co-location of similar firms allows the development of highly specialised services/firms to develop and locate nearby in response to the greater local demand. It may also allow the development and provision of specialised infrastructure which benefits all firms.
- Access to a local skilled-labour pool—clusters of firms with similar operations means that there are a larger number of appropriately trained workers available to the individual firm.
- Information spill-overs—information is more easily disseminated between like firms, their suppliers and customers if they are co-located.

These three sources of agglomeration allow industry to experience production economies of scale that enable all members of the cluster to reduce costs.

Two further descriptions of locational agglomeration (Ohlin, 1933) are:

- Localisation economies occur for a firm by locating itself in close proximity to operators in the same industry and/or being close to their suppliers and customers. Thus, firms can obtain the above mentioned agglomeration benefits simply by operating in a location utilised by many related firms.
- Urbanisation economies result from the advantages of operating in an urban environment, which are available to all operators in the region. A large potential market, large basic facilities and access to personal services are examples of advantages to firms.

That said, just having firms co-located does not necessarily mean that location is driven by agglomeration benefits. It may simply be the best place to locate given the resources, infrastructure or market mix (for example, see Hotelling later in this chapter).

New economic geography – Krugman

In 1991, Paul Krugman published a 'core-periphery' model drawing on existing theories that led to a new wave of literature, which became known as the New Economic Geography. A crucial feature of this theory is that it emphasised the importance of consumers and transport costs as drivers of increasing returns to scale⁶ and the power of positive feedback to drive larger and larger clusters.

Krugman's model considers two sectors—agriculture and manufacturing—noting that the mix of the two may concentrate activity (for example, manufacturing) or disperse activity (agriculture). Agriculture is distributed across suitable land. Manufacturing, on the other hand, takes place in a small number of sites, close to a relatively large demand base in order to reduce transport costs under monopolistic competition. As demand for manufactures comes from both the agricultural sector and manufacturing, there is a strong potential for positive feedback. That is, small, individual transactions accumulate, providing an advantage through market share and as a centre grows, there is the possibility of lower prices—further increasing the size of the centre from 'centripetal' forces.

The conclusion of this model is that there will be an ever-increasing manufacturing centre as long as there are increasing returns and reduced transport costs from clustering. Working against these 'centripetal' forces are 'centrifugal' (dispersing) forces. These dispersal forces include the higher rents and house prices from the concentration of activity, as well as non-mobile factors remaining at the periphery that attract firms away from the centre. In essence, the spatial patterns of population and production result from the balancing of these 'centripetal' and 'centrifugal' forces (see Table 2.1).

Table 2.1 Forces affecting geographical concentration

Centripetal forces	Centrifugal forces
Market-size effects (linkages)	Immobile factors (land and infrastructure)
Thick labour markets	Land rents
Pure external economies	Pure external diseconomies

Source: Krugman (1998).

In addition, network infrastructure established for transport, communications and utilities set up increasing returns to scale for firms operating within the system, which are often built up over time through positive feedback.

⁶ Increasing returns to scale means that output grows by proportionately more than the increase in inputs. In addition, the average costs also declines as the market size increases.

Path dependence

Path dependence describes the phenomenon of decisions being led by existing development, for example in the creation and take-up of technology, or the choice by a firm about where to locate. It is a phenomenon associated with positive feedbacks, where success in the market gives an advantage in future sales.

Path dependence is often associated with the development of new technology and what drives a new technology type to dominate in the market over another. It has been adopted by a range of disciplines, including economic geography (Martin and Sunley 2006). Martin (2010, p.3) states that 'the combination of historical contingency and the emergence of self-reinforcing effects steers a technology, industry, or regional economy along one "path", rather than another'.

Another application of the concept of path dependence involves clusters and location. As Arthur (1994, p.65) highlights, settlement patterns can be path-dependent '...with geographical attractiveness bestowing "selectional advantage"'. Larger urban centres have capacity to generate new sources of demand, with industry benefiting from agglomeration effects. The choice of location is influenced and probably even constrained by the cumulative effects of previous decisions on a location's development. A location will grow on itself and, once established, a cluster will continue to grow in a single location as the result of returns to scale and other agglomeration factors—as described above. Positive returns to increasing cluster size means that the larger it is, the more competitive it is and so the more difficult it becomes for other regions to compete.

The relaxation of the assumption of diminishing returns to scale inherent in path dependence has important implications. However, in reality increasing returns to scale is a relatively common occurrence and Arthur (1994) notes that it is characterised by:

- Instability as the effects of small economic shifts are magnified over time
- There is the potential for many equilibrium points (rather than the single point implied by diminishing returns)
- Once a product gets ahead there is a tendency for the path to be 'locked in' so that even technically superior alternatives cannot be chosen.

Chapter 8 discusses path dependence in more detail, in a wider consideration of history's impact on the settlement pattern.

Household-based decisions

While history tells us that industry is a significant factor in town location, where people/households choose to live and the factors they consider when making that choice also have important implications on settlement patterns.

Two important contributing factors influencing that choice are increases in wealth and improvements in transport. The advent of the motor car, better roads and communications technology has changed an individual's range of options, when accessing employment opportunities and/or goods and services. The development of this technology has meant that people have more options when deciding where to live, especially people no longer connected with the labour force. Below are theories of settlement that emphasise the decisions of households.

Migration theory

The ability of people to migrate between towns and regions directly influences the development of towns. Generally, migration models can be separated into two groups—disequilibrium and equilibrium models.

Disequilibrium theory centres on the role of the labour market as the driver for migration, through income maximisation. The theory sees migration as a function of spatial differences in economic opportunities. These differences between regions encourage individuals to search new labour markets for higher wages, lower unemployment risks and greater employment security. These adjustment mechanisms, however, are sluggish and are slow to reach a new equilibrium.

The equilibrium model, on the other hand, regards migration as driven by much more than just economic opportunity (Graves 1980). It envisages a diminished role for the labour market and assumes that spatial differences in incomes and prices reflect wholly, or in large part, a compensating gap associated with corresponding spatial variation in amenity. Amenity refers to the properties of a location (physical, service and social characteristics), chiefly the attributes of the area that increase the attractiveness and utility for residents. In other words, it is an explanation of why an individual would migrate between two regions in which the destination region has lower wages or the individual receives no change in income (for example, retirees). Compensating differentials in wages and rents are the important concept as individuals are willing to forgo high incomes and/or pay higher rents for a region with attractive amenities; otherwise, individuals will demand wage compensation.

The literature has identified a number of significant contributors to the decision of an individual or household to migrate. A literature review on these determinants is beyond the scope of this paper. Nonetheless, some of the most commonly identifiable determinants of migration include:

- Demographic—age, education and family status of the individual are essential determinants of preferences and capacity
- Economic—employment and wages
- Amenity—coastal, medical services and proximity to family and friends.

In the Australian context, migration flows both domestically and internationally have been important influences on settlement patterns. These flows have been a subject of discussion for many regional towns.

Retail and service delivery

Access to goods and services is a major element of the location of towns and the economic activities within them. Many Australian towns were established as a support base for industry. These towns supplied industry and met the needs of workers and their families. Several theories consider the role of retail and service delivery in the spatial and functional character of towns.

Central place theory

The ability of people to access a range of goods and services is important in the size and locations of towns. The most developed theory of the spatial pattern of urban and commercial activities is Central Place Theory (Eppli and Benjamin 1994). In 1933, geographer Walter Christaller tried to discover whether there were laws which determined 'the number, sizes and distribution' of central places—in simple terms, towns and cities which service the surrounding region (Christaller 1933 trans. Baskin 1966). Central place theory gives us a basis for understanding how towns and cities of different sizes are spatially distributed, and correspondingly, where higher order⁷ goods and services are available.

Higher order goods require a higher level of demand before they become available for sale, and are therefore found in larger centres (Brown 1993). For instance, new cars are higher order goods, while groceries are lower order goods, and so while the former are found only in more populous centres, the latter are more widely spread.

The premise of Central Place Theory is that each good or service has a 'range': that is, the maximum distance consumers will travel to buy the item. People are willing to travel further to buy higher order goods, so these have greater ranges. However, the demand for a good within its range is not consistent: consumption lessens with increasing distance. Christaller reasoned that if a person has a certain budget for a good or service, then the more money they use to travel to the item, the less is left for the purchase, and the less frequently they can buy it. This concept of 'distance decay' has implications for service delivery, due to a reduction in use with increasing distance from the service (Pugh and Cheers 2010). In addition to having larger populations and higher order goods and services, larger central places also service larger surrounding areas.

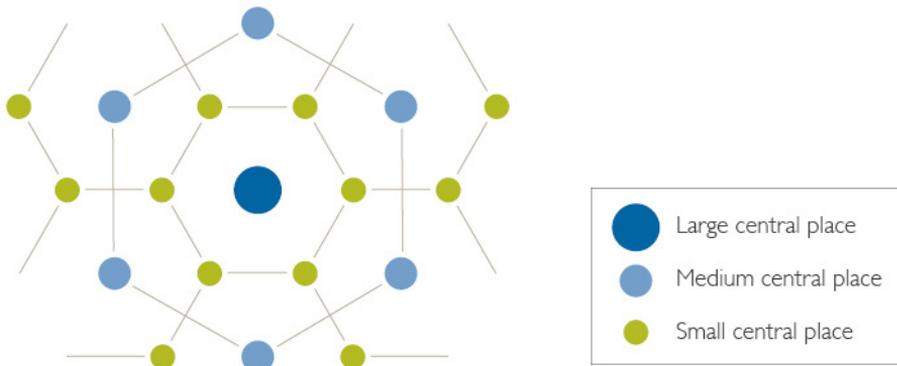
Christaller's model contains a number of significant assumptions and limitations. For example, it assumes that consumers buy only one item per trip, and shop at the nearest centre where that item is available (Brown 1993). However, real world consumer behaviour is more complex. Studies on the phenomenon of shopping outside one's area show that consumers do so for a number of different reasons. People may shop at a more distant location while visiting for work or social reasons. Additionally, lower-order goods may be purchased at a more distant location in combination with the purchase of higher-order goods. A further limitation is noted by Brakman et al. (2001, p.32) regarding the economic underpinnings of central place theory. These authors contend that the main problem with the approach is that the economic rationale behind consumers' and firms' decisions is unclear and that, for example, the demand curves are assumed. That said, analysis by BITRE into cost of living in regional areas found the distribution of activity based on Central Place Theory was close to the observed activity spatially in regional Australia.

Ultimately this theory highlights that the spatial distribution of towns and cities can exert a strong influence on the type and range of activity within a location—position matters. Christaller's deductive reasoning led him to devise multiple class-sizes of central places arranged in a systematic way. There are several variations of the model: a marketing principle (focused on goods and services access, where the central place serves two other lower-order places), a transportation model (minimising network length, where three lower-order places are served) and an administrative model (where six lower-order places are served) (Agarwal 2011). In his

⁷ Higher order goods and services is a term used by Christaller. In practice, these are goods and services that have less demand in the population or are large value purchases compared to their transaction costs.

marketing principle model, each central place has six, equally-spaced central places of the next-smallest class surrounding it (Figure 2.3).

Figure 2.3 Distribution of central places according to central place theory



Source: BITRE, adapted from Christaller (1933).

Porter's competitive strategy theory

A firm's competitive advantage refers to its position in the competitive landscape—in essence, a firm's advantage relative to other firms. A source of this competitive position can be through having a distinctive product, having a difficult to replicate product and/or economies of scale that reduce costs.

This concept of competitive advantage also applies to geographical areas⁸. The concentration of activity needs to be understood and analysis by Porter (1990, 1998) provides a rationale for the clustering of activity. Porter describes groups of competing and related companies that benefit from co-location. These groups are able to attract customers due to competitive pricing, but also work cooperatively with related firms, whilst benefiting from the larger specialised labour supply that supports firms forming around an industry cluster. The key feature of the Porter model is the mutual visibility of competing firms. This provides both a regional focus for customers and spurs competitiveness between the co-located firms in terms of price and production efficiency. The competitiveness of the whole cluster is thus improved.

The phenomenon is often illustrated by reference to retail. For example, the co-location of booksellers in London provides an incentive for book buyers to visit that location (where there are many sellers), thereby providing a large number of potential buyers. This is an incentive for more booksellers to locate there. However, it also means that the competition between the closely located sellers will result in lower prices and better service. This in turn makes it a more attractive location for buyers to visit. The result is an efficient, self-sustaining cluster.

While Porter's model shows how such an established cluster system may operate, the mechanism for the initial cluster establishment is not described, other than to note that chance is a factor. Other authors treat the origins of clusters similarly. For example, Fujita et al. (2000, p.1) describe the process of maintaining clusters and agglomeration of booksellers in

⁸ Michel Porter applied the concept to the 'Competitive Advantage of Nations'.

London, but do not describe the initiation of the cluster. They simply accept it as a product of history, and focus on the 'circular logic' sustaining the cluster.

The Hotelling model

Another well-known model that demonstrates businesses spatially concentrating is the 'Hotelling' model. The classic Hotelling model is of two ice-cream sellers on a beach, both of whom try to maximise turnover and profit by being closer than their competitor to as many customers (spread evenly along the beach) as possible (McCann 2001). The end result of competition in a Hotelling model is that the two competing firms will locate in the centre of a market (beach) because any movement away leads to a loss of market share.

The Hotelling result is unstable once more than three firms enter the market, as firms would keep changing positions. In addition, it does not hold in situations in which competition is based on price. These results in real life should be viewed with caution as there are many observations in which both price competition and spatial clustering are evident such as retailing.

Retailing and other services as an industry base

The relationship between towns and their commercial activities is often overlooked as a 'basic' industry as it exists to serve local needs rather than injecting new funds into the region. But it has been and remains the primary function of most Australian regional towns. In fact, the types of goods and service available in regional towns and their market size have underpinned many local economies.

Theories of industrial location contain important lessons for the delivery of goods and services in towns themselves. For instance, economies of scale and agglomeration are also applicable to the location of retail and service providers. These types of businesses commonly co-locate in shopping centres or along main streets of towns. Both homogenous and differential commercial clusters benefit from agglomeration by raising a location's attractiveness for consumers (Arentze et al. 2005). For instance, similar stores such as restaurants, furniture and motor vehicle dealerships often co-locate in an attempt to generate a larger market share than individually would be likely.

Moreover, a strong retail sector is often integral to the growth of other industries or industry clusters. Expanded retailing supports a larger labour market, additional support services and better infrastructure than single industries by themselves. By increasing the size of the population, retail services also increase the demand for health, education and other government services.

Retail theory

Recent literature relevant to understanding retail positioning relates to retail demand externalities. This occurs for large shopping centres, in which low-order goods retailers and smaller retailers receive additional customers by positioning next to a high-order anchor retailer. Basically, retail sales for smaller stores increase when an anchor store⁹ is co-located. A strong contributing factor as highlighted by Eppli and Benjamin (1994) is that the image of

⁹ An anchor store is a major commercial store that is usually large department or grocery stores part of prominent chain network.

an anchor tenant is important for customers' selection and can draw consumers from greater distances to a particular centre. Research by Nevin and Houston (1977) reveals that anchor department stores are very important and are possibly the primary reason for choosing a shopping area (cited in Eppli and Benjamin 1994, p.15).

While retail demand externalities are often presented in reference to shopping centres, they also applicable to shopping in towns that can attract and retain customers into their centres. For many regional towns, the centre of town is the shopping precinct. Its applicability to generating economic activity for regional towns is obvious as towns begin to compete with each other, similar to the competition between shopping centres. An approach advocated by Howell (2005) is that businesses such as retailers and service providers in small Australian towns should emulate some of the attributes present in shopping malls to reduce 'outshopping', and so retain a viable retail sector.

A key feature in understanding this clustering of spatial patterns over time is the importance of technology. A greater number of people 'in town' creates turnover and raises the overall market size for other local firms, further inducing income in a town's economy, reflecting the role of a 'basic' industry. Gibbons and Overman (2009) point out that this increase was made possible by the motor car. It enabled people to choose where and when they would shop. The lowering of transport costs raised competition, forced firms to lower mark-ups, led to a 'welfare benefit to consumers' and 'a real resource saving to society' (Gibbons and Overman 2009, p.37).

Retailers can function in conjunction with other offerings in a town such as cinemas, leisure complexes and business services. Together they draw even more customers from outside the town while limiting leakage of money into neighbouring centres.

While this is likely to benefit the town as a whole, an important aspect for town planners is that an anchor store (or shopping mall) positioned outside the town centre can quickly drain people away from the centre to the periphery, which may have detrimental effects for the original town centre.

Nevertheless the concept of an anchor 'store' for a town could also take on a wider definition, as post offices, pubs, government services, schools and banks form part of the important activities positioned in regional towns which will draw customers.

Government service provision

The theories presented so far look exclusively at private enterprise. However, government is also an important component of local economic activity in many towns. Governments provide public goods and services that provide positive externalities; have network characteristics (road network); and goods that are unable to exclude recipients. As with private suppliers, governments need to make decisions regarding the range, quantity and location of services it provides to the public at a reasonable cost. Judgements include the location of schools and hospitals, but similar spatial choices are required in relation to the provision of services such as social security and industry support.

Towns also benefit from local government services by:

- easy access to the government services
- a source of employment for local residents.

However, the delivery of government services is faced with balancing economic efficiency and distributive equity. Economic efficiency implies the supply of output at least-cost by allocating resources to their best effect, while equity objectives attempt to address the distribution of the service across the country. The real challenge for service delivery into regional areas is lower population densities. Larger distances have to be travelled and the small number of people in any location prohibits economies of scale. This makes the delivery of services in regional locations more expensive than those provided in dense urban environments.

To meet this challenge, governments have adopted different approaches over time. Tonts (2000) argues that Australian governments have had a long history of public sector intervention to encourage economic and social development in regional locations. This includes land reforms, grants and infrastructure provision of post offices and telecommunication networks across the country. States have also contributed greatly to the social infrastructure of regional areas through schools, hospitals and police stations. Before the Second World War, these services were provided on per capita bases to support rural prosperity (Grebles 1979 cited in Tonts 2000). The underlying premise was to promote economic development.

The emphasis changed during the post-war boom periods, by shifting government policy towards more concern for social equity, which was reflected in a substantial expansion of 'government outlays and revenues as a proportion of Gross Domestic Product (GDP)' (Gerritsen 2000, p.134). Policy was refocused to ensure that 'inequalities between urban and rural population were minimised' (Tonts 2000, pp.60–61). Approaches included increased spending on health and education targeting disadvantaged rural populations and pursuing equity goals through government monopolies by subsidising 'loss-making rural services from more profitable urban and metropolitan' locations (Tonts 2000, p.61).

Pressure on government to reform mounted through the 1980s, from several sources as outlined by Quiggin (2001). These included increasing financial constraints, inefficiencies in the public sector and the rising use of outsourcing or contracting out for services. This led to a more market-led allocation of service delivery. Tonts (2000, p.62) characterises three strategies taken by government:

- privatisation of public services and infrastructure
- withdrawal and rationalisation of public services
- devolution of responsibilities.

Whilst these strategies are not theories as such they provide a picture of the impact of changes to government service provision. The rationalisation and withdrawal of public services has resulted in a greater degree of concentration of activity into larger regional centres. This point is taken up in Chapter 10, which examines the concentration of activity specifically in reference to the centralisation of activity and their consequences for town development.

An important facet of these approaches is the lasting influence of mainstream decisions of government on a town's activities. Decisions in education, health and delivery of community services have high degrees of spatial impacts that can be overlooked or not well understood. The

position of a hospital or secondary school has a strong potential to influence the fundamental economies of towns through their size and potential to act as a basic industry. Town residents in regional locations often cite a loss of school or medical services as a strong indicator of the town's potential decline. But it can also prompt local residents into entrepreneurial actions that identify local problems and implement solutions.

Conclusion

These theories do not provide a complete explanation of all the spatial patterns of activity within Australia. But they identify the salient elements in certain types of patterns and some of the factors which might lie behind them (Carr 1997).

As suggested at the beginning of this chapter, there are a number of overarching factors that provide the context for these theories: the location of resources and the wider environment, history, technology and the economic and social context. Some of these factors change radically over time—for example, technology leading to increased mobility through the car, or the discovery of new resources such as iron ore deposits influencing mining activity. All of these factors alter the context in which producers and consumers make decisions, and also the types of decisions they make.

CHAPTER 3

Development to 1911

Key points

- The settlement pattern of Australia's towns to 1911 was shaped by their function and their history. Town location resulted from the spread of industry in response to exploration, topography and climate, the impact of the gold rushes and the subsequent development of transport systems.
- The nineteenth century left Australia with a plethora of small towns suited to life with relatively limited personal transport options (horse and cart, walking), a fewer number of mining-based 'boom' towns and a small number of more permanent centres.
- Railways, ports, rivers and mineral finds were often the key to locational success.
- The southern and eastern states had a large number of towns with the potential for further growth.

Establishment of Australian townships prior to 1911

To trace the fate of Australia's towns over the past century we need to establish and understand the processes, drivers and trends that led to the starting point. What were Australia and its towns like in 1911? This question will be answered by the economic and demographic data drawn from the Australian Bureau of Statistics (ABS) – then the Commonwealth Bureau of Census Statistics (CBCS) – 1911 Census presented in the next chapter.

The state of Australia's towns and cities in 1911 was the result of more than a century of growth. It is therefore useful to examine some of Australia's settlement history that led to the spread of townships described by the 1911 Census.

What follows is a brief description of some aspects of that history, with an emphasis on some of the key factors shaping Australia's human geography at the beginning of the twentieth century.

Early settlement

Australia has been inhabited for between 50 000 to 150 000 years, with estimates of the population ranging from 300 000 to one million just prior to European settlement (ATSIC 1999, p.8). Indigenous people created a pattern of localities covering the continent, based on a system of land tenure 'intimately bound up with spiritual attachment and notions of

custodianship' (ATSIC 1999, p.8). This changed, however, with the colonisation of the continent by the British beginning at Sydney Cove in 1788.

The first colony in Sydney grew relatively quickly but was constrained to the west until the route over the mountains was established. That crossing, in 1813, allowed settlement over the ranges to complement earlier coastal settlements in the Hunter and the Illawarra south to Batemans Bay (Roberts 1924). The establishment of further colonies at what are now Hobart (in 1804), Brisbane (1824), Perth (1829), Adelaide (1836) and Melbourne (1837) expanded the development focus from the original colony (Australian Government 2010). The histories of settlement of each of these colonies were varied and colourful (for example, see Roberts 1924 or Scott 1916) as each new colony established a central city and explored the hinterland.

Occupation spread from each new base at varying speeds with the underlying motive being ownership and development of new grazing and farming lands punctuated by frenzied 'rushes' for gold and other minerals. Settlement was a competitive business with the occupation of grazing land by 'squatters' closely following the initial explorers, and often preceding the establishment of effective government administration.

The towns that followed the spread of European population from the colonial bases reflected the needs of the basic industries that spawned further growth and development. Key shapers of the location of those industries were geography, climate and natural resources, land tenure arrangements that allowed agriculture to replace grazing, mining discoveries and better transport (especially rivers and railways).

Grazing and farming

Professor Ernest Scott in Roberts (1924) reports that the need (or desire) for grazing land was the driving force behind many of the expeditions from the earliest days of the Sydney colony, before and including the Blaxland, Wentworth and Lawson initial crossing of the Blue Mountains.

The quest for grazing and farming land dramatically and rapidly expanded the footprint of the colonies. Expansion outpaced government administration and during the early 1820s, the desire for more grazing land pushed pastoral settlement beyond the 'nineteen counties' official limit of settlement in New South Wales (NSW). Squatters took up land from the Murrumbidgee River in the south to the Macleay in the north. During the 1830s farming also spread beyond the official limits of settlement, while the pastoralists pushed further southwest.

The pastoralists were driven by world demand for merino wool, enabling the profitable expansion of this industry. Wool provided the basic industry on which other industry and settlement could build. The sheep and cattle stations themselves became the centres of local economic activity and often went on to become villages or townships, augmenting others established at key geographic points (river crossings etc), or to meet transport, social (shanties and churches) or government administrative needs. The towns provided much needed goods and services to workers, travellers and the stations themselves. The establishment of pastoral activities did have a flaw however, as the system left large holdings of land in the hands of a relatively small number of people. The ability of others to prosper was limited by a lack of access to arable land.

An increasing demand for land was fuelled by the increased population brought about by the gold rushes and the improved transport possibilities for agricultural products (such as wheat) as the rail system developed. These demographic and technological advances left the outdated land tenure arrangements as a barrier to further development.

Consequently, the land tenure system came under review because of mounting pressure to provide more opportunities for 'free settlers'. This pressure prompted governments to undertake various attempts to reform tenure arrangements from the 1850s onward, but by and large these were unsuccessful. Various schemes were tried across the colonies, but were often undermined by outright dishonesty and political pressure (Roberts 1924). By 1890, the land tenure system in all the colonies was in need of reform. Graziers still held large areas which precluded the development of smaller lots suitable for farming. The total area being cropped was too small and Australian farmers could not compete internationally, and in some cases even struggled on local markets. Cheap wheat was imported from the United States and elsewhere while intending settlers could not find suitable land. As a result, regional population growth stalled. As Roberts (1924) puts it, 'there was a demand for land and a need to put the people on the land, but the land itself was alienated and lying idle'. Areas of high quality land held in this way included the Hunter Valley, the Riverina, the western plains of Victoria, the downs of Queensland and the lands east of Perth.

The response from all colonial governments was the voluntary or compulsory acquisition of land for subdivision and resale. All states implemented variants of this policy along with taxation measures designed to encourage private sub-division. These measures had a chequered history, being associated with high prices, land booms, administrative difficulties and poor decision-making. Despite this, as Table 3.1 shows, the outcome of the various schemes was the creation of thousands of new farms (mostly) in the better farming lands.

These closer settlement schemes which first began in the 1860s were the forerunners of the better known soldier settlement and irrigation schemes of the twentieth century. However, in some respects, they were more significant in that they were the first challenge to the land development policies that had been in existence since early settlement. They broke up many of the large grazing holdings and allowed the emergence of new (farming) industries. This legacy remains today, even though the very small holdings created (see Table 3.1) have long ago disappeared as the result of subsequent amalgamations. These schemes were not universally beneficial. In fact, they often were associated with failure and hardship for the settlers involved.

The economic impact on the towns nearby was an increase in population, bolstering the demand for personal and industry-related goods and services, as farming was a more land, labour and capital-intensive industry than the replaced grazing enterprises.

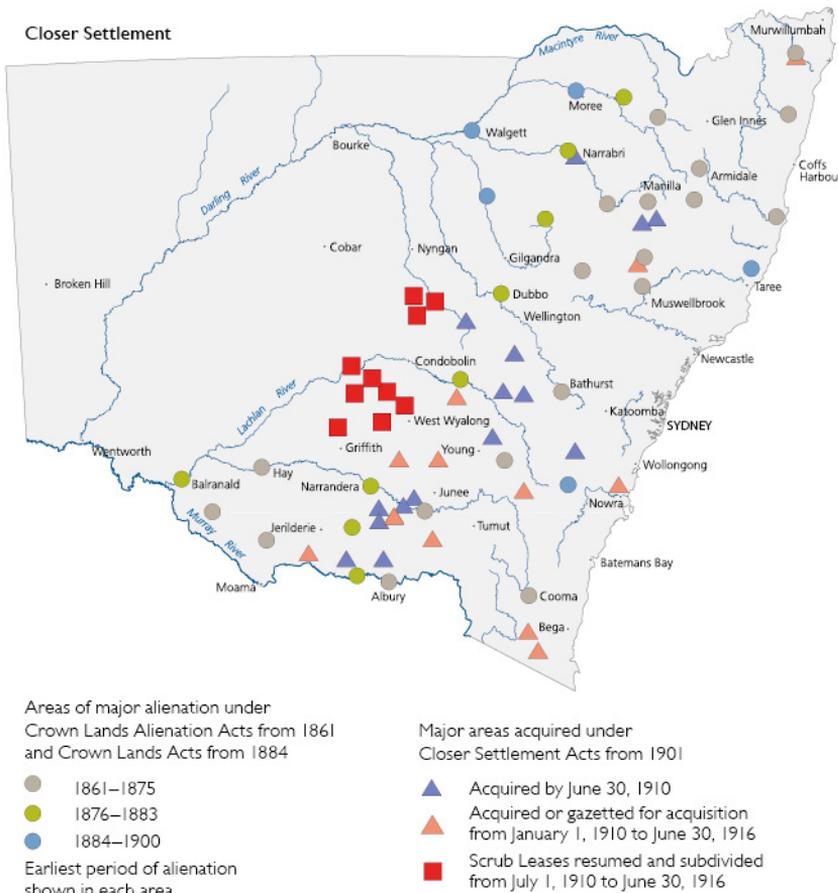
Table 3.1 Overview of closer settlement schemes 1890 to 1921

Closer settlement	NSW	Vic	Qld	SA	WA	Tas	Australia
Total area acquired (thousands of acres)	1 298	576	785	784	447	96	3 986
Farms allotted	2 985	3 619	2 915	2 789	739	300	13 347
Acres per settler	435	158	269	281	604	321	299
Cost per settler	£1 844	£1 887	£670	£907	£570	£1 128	£1 326

Source: Derived from Roberts (1924, p.342).

The closer settlement schemes were concentrated in the arable areas where agriculture was possible. Map 3.1 shows that in New South Wales, many of the schemes were located in what was to become the wheat belt in the twentieth century for New South Wales and Victoria. Areas further to the west remained grazing areas in what is still known as the Western Division. Interestingly, the predominant land tenure in the Western Division is leasehold (Western Land Leases), reflecting its grazing heritage.

Map 3.1 Closer Settlement in New South Wales



Source: Reproduced from Aplin (2011a).

Western Division settlements were relatively few, small and sparse. Only three Western Division towns (Bourke, Cobar and Broken Hill) had more than 1000 people in 1911. In contrast, the farming land to the east supported more numerous and prosperous towns well into the twentieth century. Hence, the type of agricultural industry is a key determinant of settlement patterns, along with mining development and transport opportunities.

Gold and minerals

Gold was occasionally found in small quantities from the early 1820s across the colonies (for example in Bathurst, Berrima, Fish River and Ballarat), but the government discouraged further prospecting, fearing the social turmoil widespread prospecting might bring (Scott 1916). This fear was largely realised after Edward Hargreaves conducted the first systematic search for gold at Bathurst in 1851. Its relatively moderate success sparked rushes that spread across a number of colonies, most notably in the Ballarat and Bendigo districts in Victoria. The influx of people from all parts of the world was massive and by 1855, there were as many people in Victoria alone as had been in all of Australia before the 'rush'. Gold was found in all the colonies over the next fifty years, most notably at Gympie (in 1867) and Mount Morgan (1882) in Queensland and Coolgardie (1892) and Kalgoorlie (1893) in Western Australia (1882 to 1900).

In addition to gold, other minerals led to the influx of people and the establishment of towns. Copper was found at Burra in South Australia in 1845, silver, lead and zinc at Broken Hill (1883) and tin, copper, silver and lead on the west coast of Tasmania and Queensland. Coal was mined in the Hunter Valley near Maitland from 1843, and by the early 1900s the region was Australia's pre-eminent coal producer (NSW Minerals Council 2012).

The lack of today's easy, car-based personal transport meant that major mines almost inevitably spawned a support town close by. The amount of wealth and economic activity generated invariably led to the establishment of some of Australia's substantial regional centres and administrative hubs. Beneficiaries of mining activities and wealth in 1911 included Ballarat, Bendigo, Castlemaine, Kalgoorlie-Boulder, Launceston, Newcastle, Maitland and Broken Hill. It is not hard to imagine that the initial population and commercial impetus imparted by mining gave these towns an advantage over their neighbours as they struggled for dominance as service centres in subsequent years.

In most mining towns, the initial boom faded with the passage of time and towns that survived did so as service centres for agriculture, transport, administration or communications.

Transport and other services

Modern transport in Australia bears no comparison to the difficulty of moving people and freight in the early nineteenth century (for example see Family History Group of Bathurst Inc 2012 which describes a harrowing two-day trip from Sydney to Bathurst). Transport was also expensive: it was claimed that it cost more to move a bale of wool by bullock train from Bathurst to Sydney than by clipper ship from Sydney to London (Aplin 2011a).

It is not surprising then that transport routes guided colonial development both in terms of the location and frequency of towns and villages. Early development was often on the basis of where ships could find harbor—even where distances were small.

Sea access allowed the development of the North Coast rivers as ports serviced by coastal traders (often trading in valuable cedar hewn from local forests) well before the regions were reached by land. Newcastle for instance was established as a convict colony serviced by sea in the very early 1800s and was only accessed by a rudimentary path until the completion of the Great Northern Road in 1836 (NSW Minerals Council 2012). Similarly, the new colonies at Hobart, Brisbane, Melbourne, Adelaide and Perth were all on, or very close to, the coast. Later

the inland rivers became transport routes that, despite the difficulties of seasonal flow, could compete with the rudimentary land transport options provided by the horse, bullock and foot.

These transport routes gave rise to towns that serviced the transport systems and larger centres that acted as hubs for regional produce. Bourke became a hub for wool exports where wool from as far north as Queensland found its way onto the Darling River steamers heading for South Australia and Victoria (Paddison 1955). Smaller towns often supported other transport systems such as the Cobb & Co. changing stations situated every 10 to 30 miles along the company's routes (Australian Government 2009). For many people, however, day to day travel was by foot, which encouraged closely-arranged small towns to support them.

Expanding rail systems

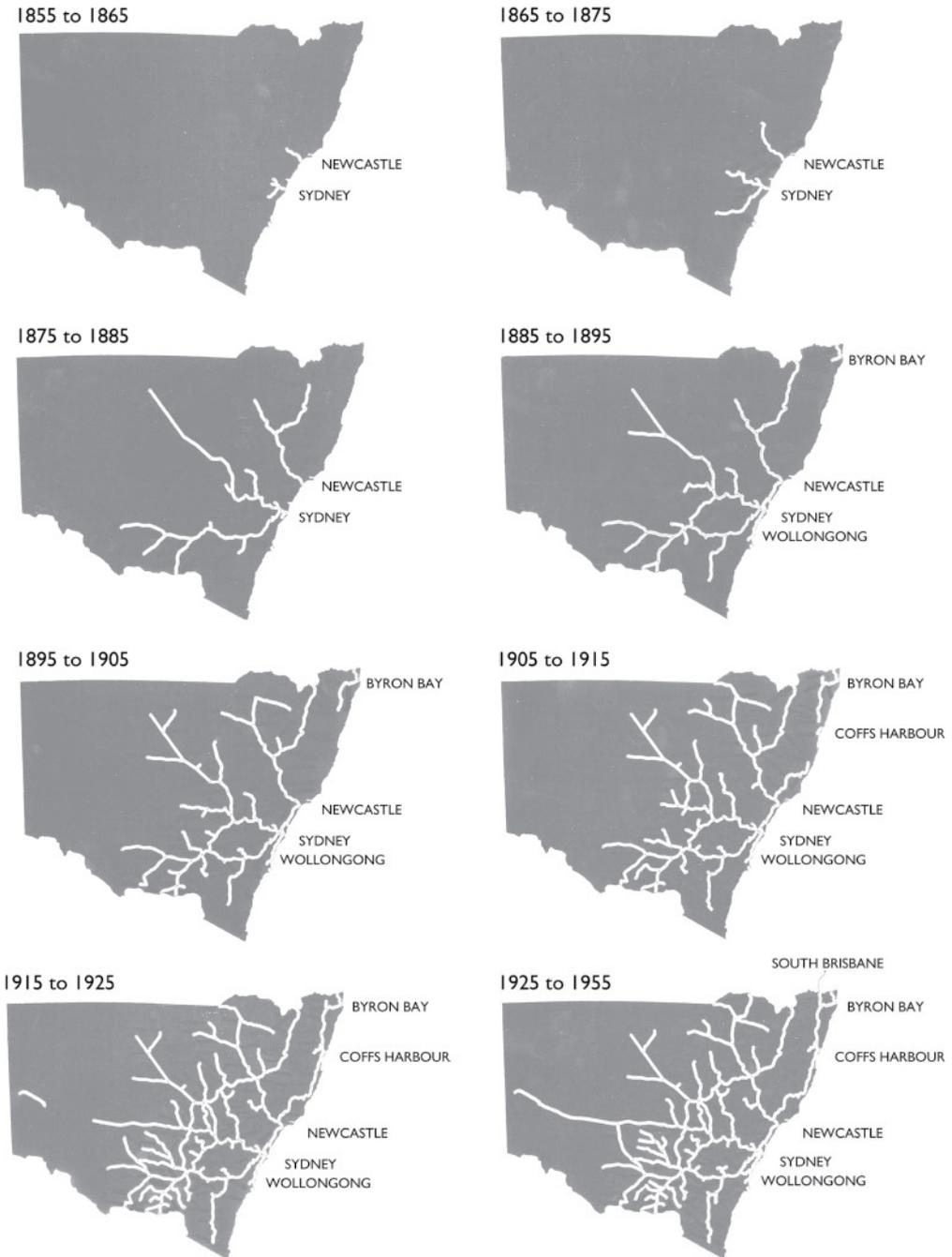
The coming of the railways from the mid-1800s dramatically changed the transport patterns in Australia. Paddison (1955) shows the pattern of rail development in New South Wales from 1855 from small, almost tentative beginnings to a network that covered much of the state (see Map 3.2). Of particular interest are the two separate starting points at Sydney and Newcastle which not only emphasises the difficult terrain between the two, but the relative ease of maritime transport between them. This remained a feature as railway development focused inland and, at best, delayed development along the coast, where coastal shipping reduced the urgency for rail links.

A second feature is the speed with which lines were established from Sydney to the northwest (specifically to Bourke) and the south west to Hay to access the Darling and Murrumbidgee river trade and eventually on to Jerilderie and Tocumwal on the Murray River. Paddison (1955) notes that these were deliberate attempts by the New South Wales Government to divert traffic and trade that otherwise would flow to Victoria and South Australia. While colonial rivalry had other motives as well as economics, it does illustrate that the development of transport links and hence towns has always had a competitive economic basis.

The shape of the Victorian and South Australian rail systems similarly had a strategic purpose: drawing produce from the inland to their respective capitals, in particular by accessing the river boat trade. The first rural lines from Melbourne were to Ballarat and through central Victoria to the Murray River port of Echuca (Waugh 2000). Similarly the first South Australian line was a horse-drawn tramway from the Murray port of Goolwa to Port Elliot in 1854 and subsequently extended to the better sea port of Victor Harbor in 1864 (National Railway Museum n.d.p.). Subsequently this trade was secured through a publicly-owned rail line from Adelaide to Morgan.

South Australia also built a line to the border to link Broken Hill's mines with the port and (later) smelting facilities in Port Pirie. However the New South Wales government refused to allow the line to cross the border and so the connection was made by the privately owned Silverton Tramway Company. The opening of the link to Broken Hill in 1888 allowed the development of Broken Hill's rich silver, lead and zinc deposits, and virtually created the town of Port Pirie, where the smelters for the new mines were located (Lee 2003).

Map 3.2 Growth of rail system in New South Wales, 1855 to 1955



Source: Reproduced from Paddison (1955).

Regional impact of rail

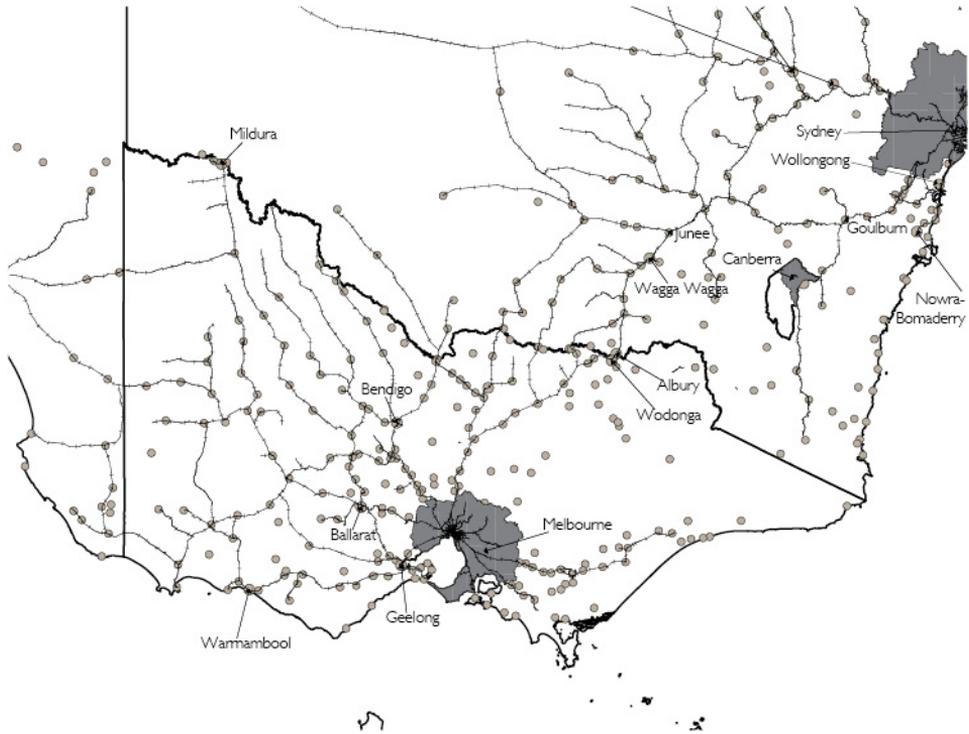
The coming of the railway was a transport revolution in the nineteenth century and created a transport network far superior to earlier Australian inland transport systems. Previously, transport was largely limited to horse or bullock-drawn wagons for heavy freight and horse-drawn buggies, Cobb & Co. coaches, or walking for people transport. Riverboats plied the larger inland rivers—the Murray, Darling and Murrumbidgee—and provided an alternative for a few areas, but were subject to delays as drought often made rivers impassable. Rail was immeasurably superior since it could generally be placed where the need was, while being relatively fast and reliable.

Railways had a profound effect on the economies of regional towns and regions. The coming of rail provided opportunities for the export of ores and rural produce, commerce and travel, which allowed industry to bloom in new areas and create new wealth. In particular, the railway allowed the development of new industries. Heavier (or at least lower value per ton) produce could now be economically transported. This enabled wheat, for example, to be grown where previously only wool was profitable. Scott (1941) notes that 'a ton of wheat in 1918 was worth £9, whilst a ton of wool was worth £144'. Before the railways, the widespread cropping at distance from ports was not feasible. In addition, the railways themselves were significant pieces of infrastructure requiring considerable investment that provided employment opportunities. For instance, once in place, steam engines required coal and water at regular intervals, maintenance of tracks and running machinery, which provided a continuing source of jobs for towns along the rail route. Consequently, railways were a significant source of employment for many small towns as well as being the major industry in rail service towns such as Goulburn, Junee and Werris Creek in New South Wales, Peterborough in South Australia and Shepparton, Seymour and Korong Vale in Victoria.

The association of some towns with the rail network is clear from Maps 3.3 and 3.4. These maps show the distribution of towns that have had populations of at least 500 persons at one or more of the 1911, 1961 and 2006 Censuses, in the south eastern and south western parts of Australia. While the association between railway lines and towns is obvious, it is difficult to show that the railway was necessarily central to the initiation of these towns since the rail line was most likely routed to service existing centres. Attributing cause and effect is therefore difficult, but it is clear that there is a strong association between a successful town and access to the transport system. Certainly, the relatively small number of substantive towns not on the railway or the coast (and so able to access sea transport) suggests that it was unlikely that towns would grow without a good transport link.

Overall a significant consequence of establishing the transport systems is that it set in place a strong element of path dependence in terms of the funnelling of economic activity to the competitive advantage of capital cities. It also would have a significant impact on the development of the transport networks into the future and in turn advantage those towns with effective connections. For example, many major highways were forming adjacent to these rail lines to become the emerging networks of road infrastructure.

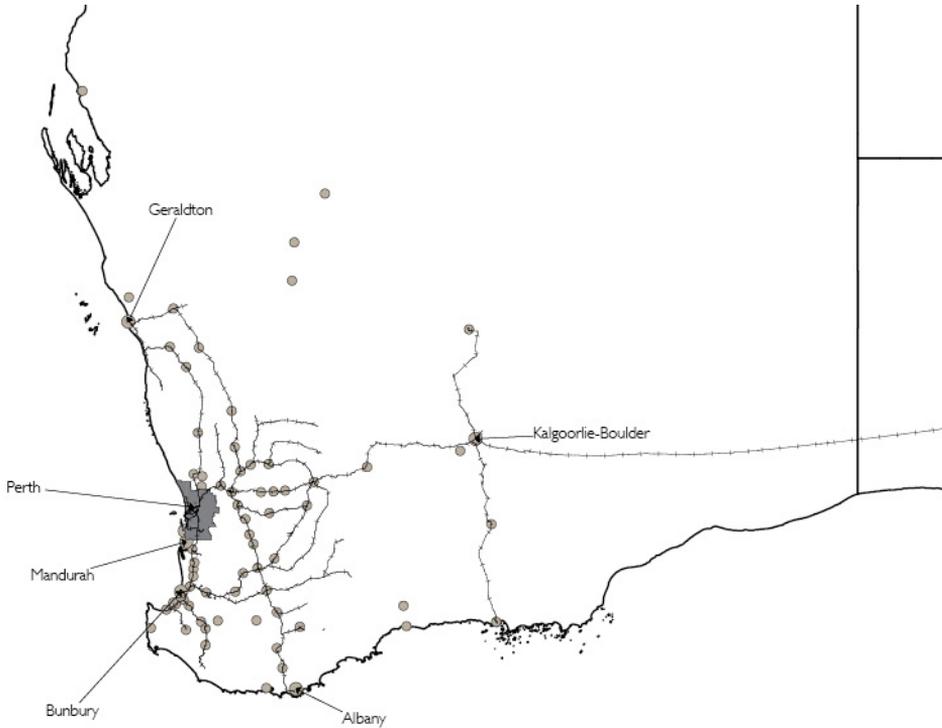
Map 3.3 Towns and rail lines in South Eastern Australia



Note: Rail lines are from MapInfo StreetPro (2007), and include both modern and disused lines.

Source: BITRE analysis of ABS/CBCS 1911 and 2006 Censuses.

Map 3.4 Towns and rail lines in South Western Australia



Note: Rail lines are from MapInfo StreetPro (2007), and include both modern and disused lines.
 Source: BITRE analysis of ABS/CBCS 1911, 1961 and 2006 Censuses.

Personal transport

While Maps 3.3 and 3.4 show the impact of resources and transport on the location and growth of larger centres, personal transport also played an important role in the proliferation and local distribution of smaller towns and villages. Towns and villages evolved to cater for a population that, unless lucky enough to be on a railway line, was dependent on travel by foot or by horse-drawn vehicles.

In the absence of good mobility, potential retail customers faced considerable cost in time and money if they travelled long distances to shop. Significant savings (particularly in time) could be made if goods and services could be accessed locally. Competition to local business was therefore constrained by the inability of consumers to cheaply travel to alternative centres. Consequently, a degree of monopoly power and associated price premiums were available to local businesses supplying essential goods within relatively small distances. Thus the model of a network of numerous small towns was best suited to satisfy the bulk of consumer needs.

The lack of personal mobility and mass communication also meant that both industrial management and staff were obliged to live close to their work. Often this involved living on rural properties or in townships next to mines, ports and railway stations. Mining operations were the antithesis of today's fly-in/fly-out arrangements and typically each substantial mining strike spawned a town to support the mine and house its workforce. This pattern was particularly evident in the coal mines of the Hunter region around Cessnock and the gold mines around Kalgoorlie where many small towns were created.

Growth patterns leading up to 1911

The history of Australian settlement is one of sporadic regional growth in response to land and mineral booms. This growth was as spectacular as it was patchy. It is therefore useful to consider the patterns of settlement and trends in population growth leading into 1911. A state analysis is shown in Table 3.2. What is clear is the high proportion of the total population in New South Wales and Victoria. These two states together had two thirds of the total Australian population (compared to 57.7 per cent in 2006), but this percentage had been falling rapidly from 71.6 per cent in 1881. Victoria in particular had declined in importance having been the most populous state in 1881 and 1891. Of the other states, only Queensland had more than 10 per cent of the population in 1911 to be the third most populated state, replacing South Australia with a share of 9.2 per cent.

Table 3.2 Population by state 1881 to 1911

State	1881	1891	1901	1911	1911 (per cent)
New South Wales	749 825	1 123 954	1 354 846	1 646 734	37.0
Victoria	861 566	1 139 840	1 201 070	1 315 551	29.5
Queensland	213 525	393 718	498 129	605 813	13.6
South Australia	276 414	315 533	358 346	408 558	9.2
Western Australia	29 708	49 782	184 124	282 114	6.3
Tasmania	115 705	146 667	172 475	191 211	4.3
Northern Territory	3 451	4 898	4 811	3 310	0.1
Federal Territory				1 714	0.0
Australia	2 250 194	3 174 392	3 773 801	4 455 005	100.0

Source: BITRE analysis of ABS/CBCS 1911 Census.

A feature of Table 3.2 is the very small size of the Northern Territory's population. This results partially from a statistical anomaly. Prior to 1967, Census data did not count many Indigenous Australians and most were effectively excluded from official population figures (ABS 1998). In the 1911 Census, demographic estimates for 'half-caste' Indigenous persons total just over 10 000, with nearly half enumerated in New South Wales. This number substantially underestimates the true population counts of Indigenous persons at the time. Augmented estimates suggest that from 1911 to 1966, the number of Indigenous persons that were intentionally excluded varied between 80 000 and 100 000 (Smith 1980 cited in ABS 1998). After the 1967 Referendum, the way in which Indigenous persons were counted was altered through changes to Section 51 of the Constitution which removed the exclusion of the 'aboriginal race' (ABS 1998). As a result, 'Censuses immediately following the referendum saw the start of a period of substantial increases in the number of enumerated Indigenous Australians' (ABS 1998).

Table 3.3 presents the absolute and percentage increases in population from 1881 to 1911 for Australia's states and the Northern Territory. Growth in the states in the years before 1911 was variable, with spectacular percentage growth occurring in Western Australia and to a lesser extent in Queensland. The Western Australian growth was in response to the discovery of gold in that state in the 1890s and reflects similar population spikes in other states earlier in Australia's development. However, the increase in the actual number of people in Western Australia during the 1890s gold rush was not as high as New South Wales without a gold

rush and comprised only 11.4 per cent of the total population increase from 1881. This is markedly different to the Victorian gold rush of the 1860s and suggests that the Australian economy had become more diverse and mature and the impact of mining discoveries had less overall impact. This is consistent with the relatively high levels of growth experienced across the nation despite the impact of widespread drought. With the exception of the Northern Territory, even the 'slow' growth states shown in Table 3.3 are comparable with the growth rates of today (Australia had a 1.4 per cent growth rate in 2012). However, leading into 1911, it was New South Wales, Queensland and Western Australia that were the growth stand-outs.

Table 3.3 Population increase by state 1881 to 1911

State	1881–91		1891–1901		1901–1911		1881–1911	
	Actual persons gained	Average growth pa (%)	Actual persons gained	Average growth pa (%)	Actual persons gained	Average growth pa (%)	Actual persons gained	Average growth pa (%)
New South Wales	374 129	4.1	230 892	1.9	291 888	2.0	896 909	2.7
Victoria	278 274	2.8	61 230	0.5	114 481	0.9	453 985	1.4
Queensland	180 193	6.3	104 411	2.4	107 684	2.0	392 288	3.5
South Australia	39 119	1.3	42 813	1.3	50 212	1.3	132 144	1.3
Western Australia	20 074	5.3	134 342	14.0	97 990	4.4	252 406	7.8
Tasmania	30 962	2.4	25 808	1.6	18 736	1.0	75 506	1.7
Northern Territory	1 447	3.6	–87	–0.2	–1 501	–3.7	–141	–0.1
Commonwealth	924 198	3.5	599 409	1.7	681 204	1.7	2 204 811	2.3

Source: BITRE analysis of ABS/CBCS 1911 Census.

Towns in 1911

The distribution of towns in 1911 is presented in Maps 3.5 to 3.10, state by state. The maps include towns of 200 people or more, and separately identify those with a population of over 500. The railway lines illustrate the important role of transport—particularly the rail system—in the development of settlement leading up to 1911. Each state capital city is presented based on the 2006 Statistical Division for reference.

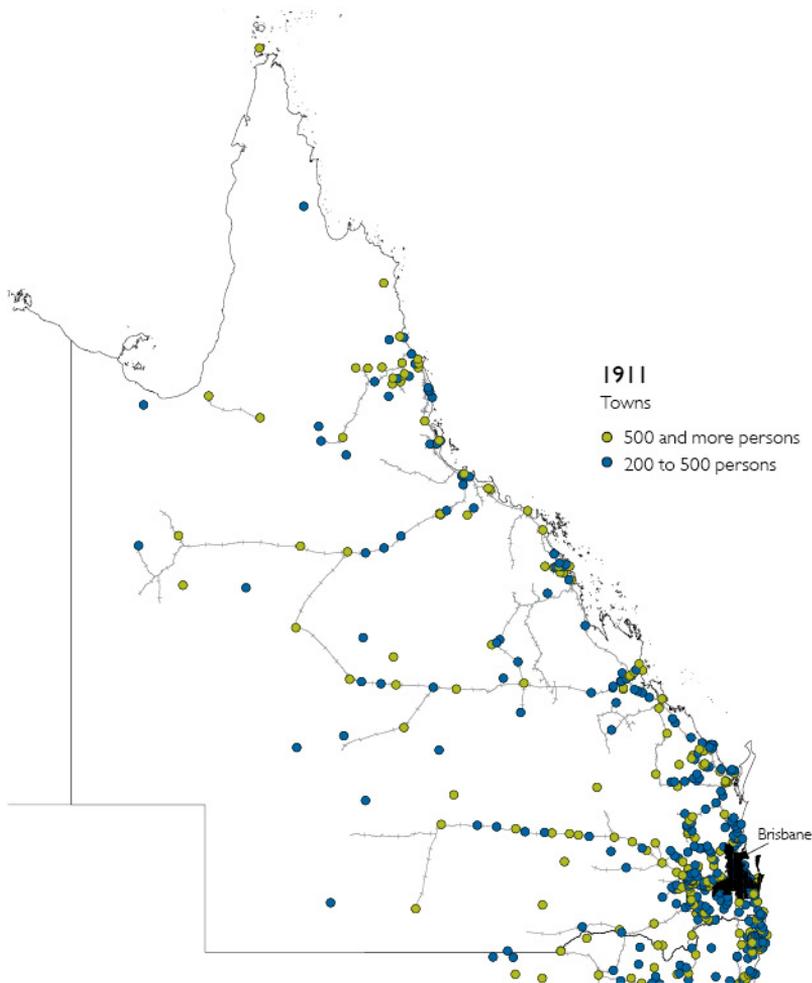
These maps provide a snapshot of the distribution of towns. A closer examination of these towns and their development to 2006 is considered in the following chapter.

Queensland

Key features of the distribution of towns in 1911 Queensland (see map 3.5) are:

- the clustering of towns on the coast—particularly in the south-eastern corner around Brisbane
- The cluster of small mining towns directly west of Cairns
- The very strong association of settlement and the east-west railway lines from Cairns, Townsville, Mackay, Rockhampton and Brisbane.

Map 3.5 Queensland towns in 1911



Note: Rail lines are from MapInfo StreetPro (2007), and include both modern and disused lines. Capital city shaded based on the 2006 Statistical Division.

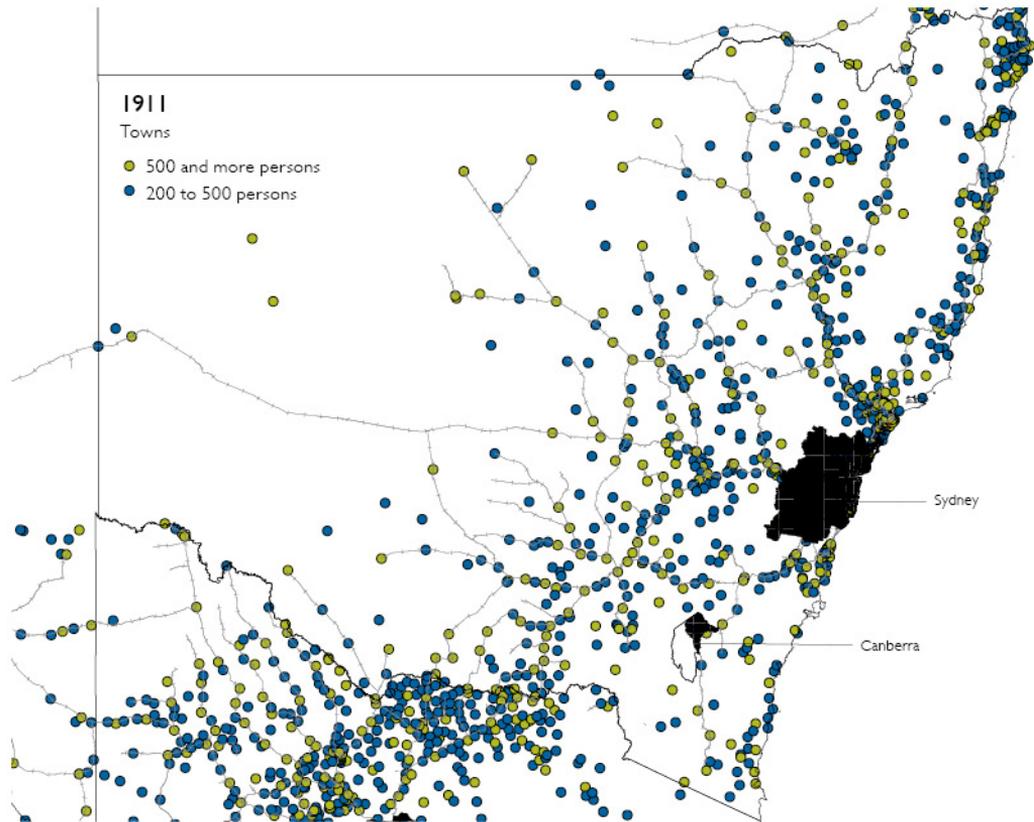
Source: BITRE analysis of ABS/CBCS 1911 Census and Geoscience Australia Gazetteer.

New South Wales

The pattern of development shown by Map 3.6 for New South Wales features:

- Intense settlement on the coast, particularly around Sydney, Newcastle and the Hunter Valley and the far North Coast (associated with cedar-getting and subtropical agriculture)
- The strong correlation of successful towns west of the Great Dividing Range with rail transport and with rivers
- A large number of agricultural towns in the wheat-belts areas of the state, while the Western Districts has only a few dispersed pastoral or mining towns.

Map 3.6 New South Wales towns in 1911



Note: Rail lines are from MapInfo StreetPro (2007), and include both modern and disused lines.

Capital city shaded based on the 2006 Statistical Division.

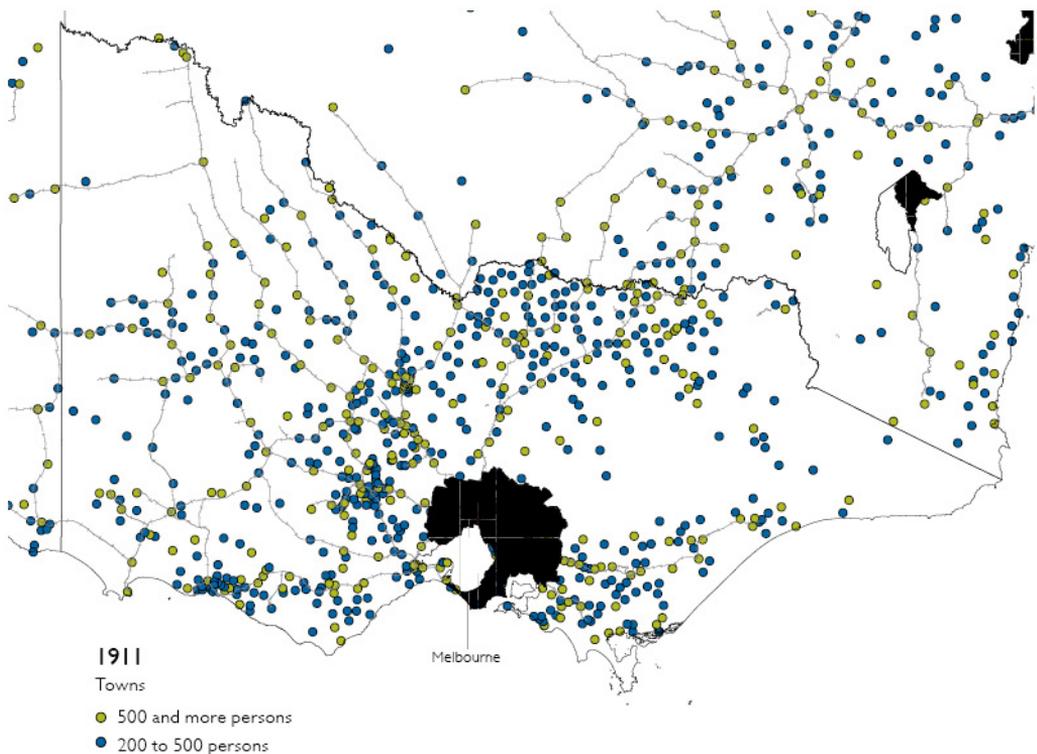
Source: BITRE analysis of ABS/CBCS 1911 Census and Geoscience Australia Gazetteer.

Victoria

Features of the 1911 Victorian settlement patterns shown in Map 3.7 are:

- Relatively intense settlement around Melbourne, the gold towns of Ballarat and Bendigo and the port of Warrnambool
- The association between a successful town and rail, with many of the towns with a population of over 500 connected to the network
- The relatively close settlements of the central north of the state and on the Murray River being closely associated with agriculture.

Map 3.7 Victorian towns in 1911



Note: Rail lines are from MapInfo StreetPro (2007), and include both modern and disused lines. Capital city shaded based on the 2006 Statistical Division.

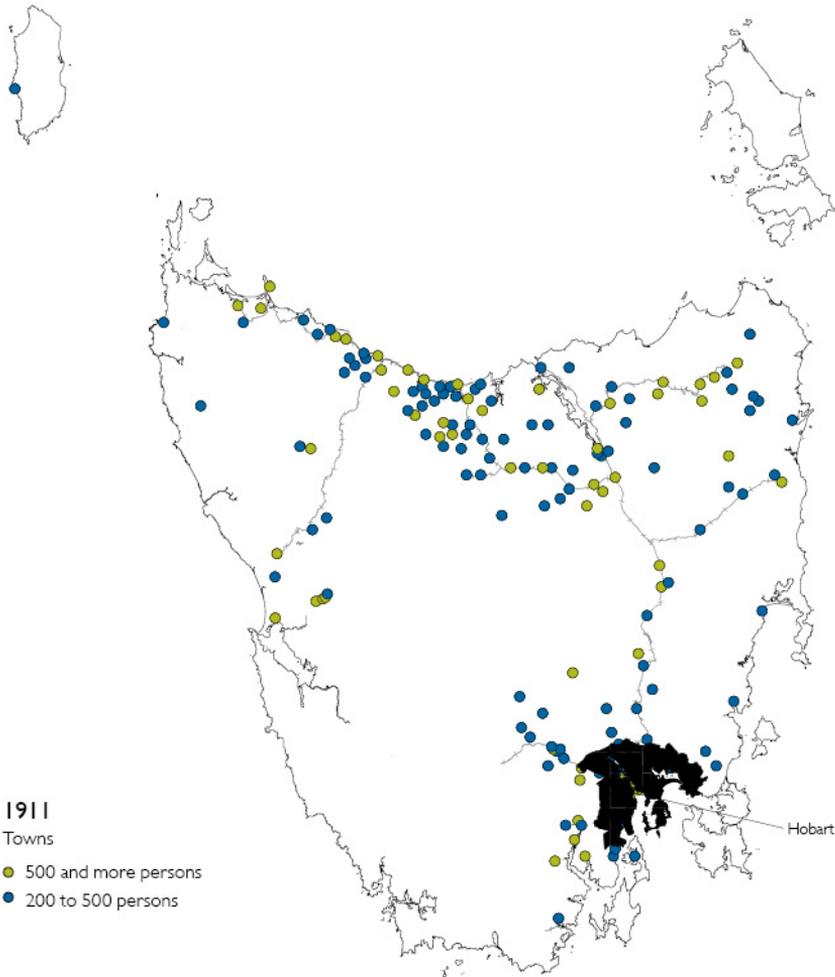
Source: BITRE analysis of ABS/CBCS 1911 Census and Geoscience Australia Gazetteer.

Tasmania

Key features of the distribution of towns in 1911 Tasmania (see map 3.8) are:

- Clusters of towns around the major cities of Hobart, Launceston and Burnie-Devonport
- A string of towns connecting the North and South regions of the state
- The growth of several mining towns in the western region of the state
- As in other states, the importance of rail transport.

Map 3.8 Tasmanian towns in 1911



Note: Rail lines are from MapInfo StreetPro (2007), and include both modern and disused lines.
Capital city shaded based on the 2006 Statistical Division.

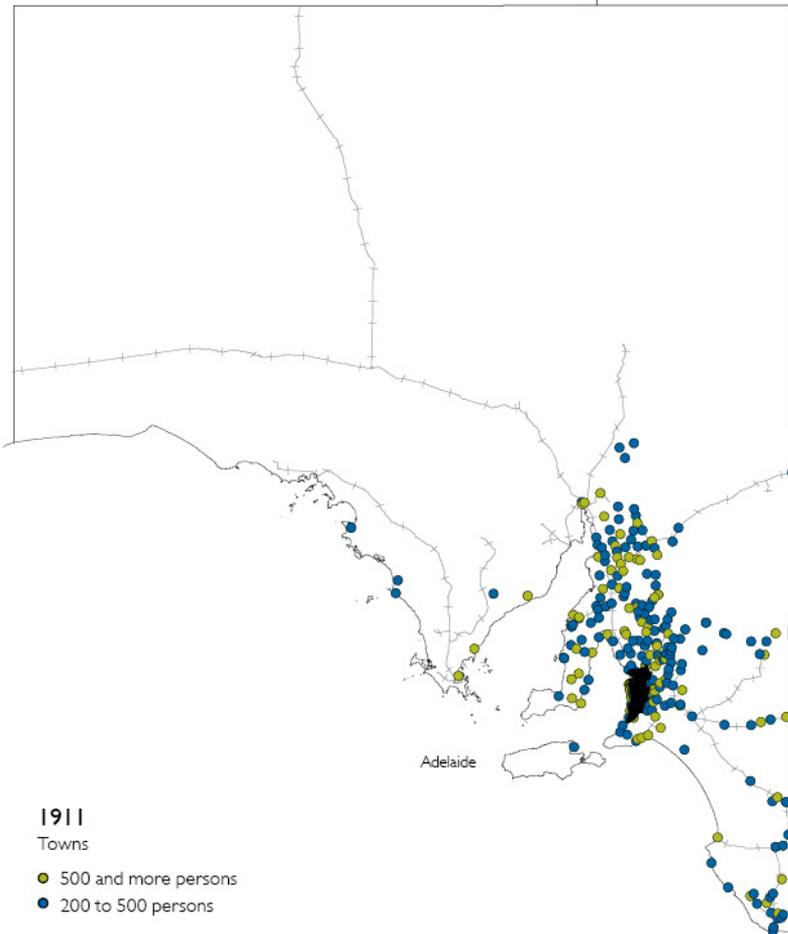
Source: BITRE analysis of ABS/CBCS 1911 Census and Geoscience Australia Gazetteer.

South Australia

Features of the 1911 South Australian settlement patterns shown in Map 3.9 are:

- The close settlement around Adelaide and the York Peninsula
- The lack of development in the west and far north of the state, which in part reflects the very poor counting of the Aboriginal population in the 1911 Census
- A cluster of towns close to the state border based on logging.

Map 3.9 South Australian towns in 1911



Note: Rail lines are from MapInfo StreetPro (2007), and include both modern and disused lines.
Capital city shaded based on the 2006 Statistical Division.

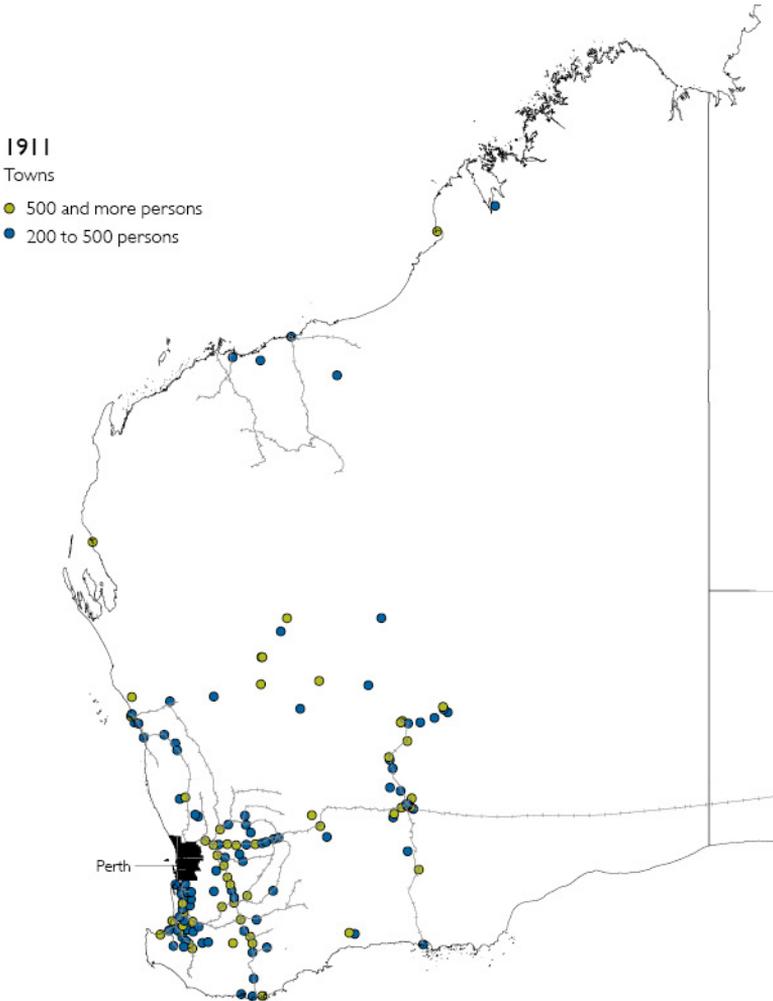
Source: BITRE analysis of ABS/CBCS 1911 Census and Geoscience Australia Gazetteer.

Western Australia

The pattern of development shown by Map 3.10 for Western Australia features:

- A strong collection of towns south of Perth
- The close association of towns and railways in the agricultural regions
- A cluster of towns around the goldfield city of Kalgoorlie.

Map 3.10 Western Australian towns in 1911



Note: Rail lines are from MapInfo StreetPro (2007), and include both modern and disused lines.

Capital city shaded based on the 2006 Statistical Division.

Source: BITRE analysis of ABS/CBCS 1911 Census and Geoscience Australia Gazetteer.

A century of change

This chapter shows that the situation in 1911 was a product of a settlement process based on colonies that became states and was shaped by the administrative, technological and social changes of the preceding century. The great social changes, some still underway in 1911, were land tenure reform and its impacts on agriculture, the gold rushes (and other minerals) which had seen an explosion in the Australian population and the coming of the railways which had revolutionised transport in the cities and across the regions. Settlement patterns were closely tied to industry location which itself was a response to natural factors of climate, soils, topography and mineral deposits. Transport networks had also begun to develop in response to the advancement of more sophisticated technologies, so that transport initially centred on the river systems and coastal ports became focused on the extension of the rail lines. These created nodes of activity and industry around station and river ports.

The twentieth century would see these factors remain important in shaping settlement patterns, but would also see new factors emerge alongside them.

CHAPTER 4

Australia from 1911 to 2006

Key points

- Substantial change in Australia's settlement patterns has occurred over the past century, particularly in the latter half.
- Regional Australia now has a much smaller proportion of the country's total population than in 1911, yet regional cities have grown.
- The long-term trend for Australia's population distribution is of increasing concentration. For instance, since 1954, people in capital cities have represented a larger proportion of the nation's population than people in regional areas.
- The number of small country towns has declined over the last century.
- Immigration has grown capital cities more quickly than regional cities and towns.

Introduction

The previous chapter discussed Australia's settlement patterns to 1911. This chapter outlines the spatial development of town settlement, from 1911 to 2006. To track the transition, population change is examined through three snapshot time periods (1911, 1961 and 2006), with data drawn from the Australian Bureau of Statistics (ABS) Censuses.

We acknowledge that the definitions and methodologies used to calculate the populations of Australia's localities have changed over time. While this may distort some of the analysis, the conclusions drawn remain robust. The approach taken to enable the analysis of towns is outlined in Appendix A.

Population change in States and Territories

The first National Census in 1911 recorded 4.46 million people¹⁰ living in Australia, approximately double the number from the combined colonial Censuses thirty years before. Two thirds were residing in New South Wales or Victoria, while Western Australia, Tasmania and the Northern Territory combined accounted for less than eleven per cent. By 2006, Australia's Census population had grown to 19.86 million persons, an increase of over 15 million persons in 95 years.

¹⁰ The 1911 Census did not include most Indigenous Australians.

Between 1911 and 2006, all states and territories experienced absolute increases in population levels, but growth in Queensland and Western Australia stand out, as their shares of Australia's population increased by 6.1 and 3.6 percentage points respectively (see Table 4.1). In contrast, New South Wales and Victoria increased by more people than other states, but their share of the national population declined by over 4 percentage points each. However, they remained the most populous states.

Table 4.1 also indicates that the biggest shift in population proportions occurred in the later period (1961 to 2006) for all states and territories—except Tasmania, where there was a decline across both periods.

Table 4.1 Population size and proportion by state 1911, 1961 and 2006

State	1911	1911 (per cent)	1961	1961 (per cent)	2006	2006 (per cent)
New South Wales	1 646 734	37.0	3 918 501	37.1	6 549 177	33.0
Victoria	1 315 551	29.5	2 930 366	27.8	4 932 422	24.8
Queensland	605 813	13.6	1 527 514	14.5	3 904 532	19.7
South Australia	408 558	9.2	971 487	9.2	1 514 337	7.6
Western Australia	282 114	6.3	746 750	7.1	1 959 088	9.9
Tasmania	191 211	4.3	350 340	3.3	476 481	2.4
Northern Territory	3 310	0.1	44 481	0.4	192 898	1.0
Australian Capital Territory	1 714	0.0	58 828	0.6	324 034	1.6
Australia	4 455 005	100.0	10 548 267	100.0	19 855 288	100.0

Note: Other territories have been omitted, and as such 2006 population estimates do not sum to the Australian total.

Source: ABS/CBCS Census of Population and Housing 1911, 1961 and 2006.

Table 4.2 shows that the fastest population growth rates between 1911 and 2006 were in the territories. The Australian Capital Territory's population had an average annual growth rate of 5.7 per cent, compared with 4.4 per cent for the Northern Territory and 1.6 per cent for Australia overall. The high population growth rate in the Australian Capital Territory was driven by the decision to establish the nation's capital there. In addition, the growth rates of both territories came off an extremely low base. Other states with a strong population growth rate in both periods were Queensland and Western Australia, while Tasmania grew at a substantially lower rate, particularly in the latter half of the century.

The table also reveals that the average annual growth rates tended to be higher in the 1911 to 1961 period compared with the 1961 to 2006 period, with the exception of Queensland and Western Australia.

Table 4.2 Population increase and average annual growth by state 1911, 1961 and 2006

State	1911–61 population increase	Average annual growth	1961–2006 population increase	Average annual growth	1911–2006 population increase	Average annual growth
New South Wales	2 271 767	1.7	2 630 676	1.1	4 902 443	1.5
Victoria	1 614 815	1.6	2 002 056	1.2	3 616 871	1.4
Queensland	921 701	1.9	2 377 018	2.1	3 298 719	2.0
South Australia	562 929	1.7	542 850	1.0	1 105 779	1.4
Western Australia	464 636	2.0	1 212 338	2.2	1 676 974	2.1
Tasmania	159 129	1.2	126 141	0.7	285 270	1.0
Northern Territory	41 171	5.3	148 417	3.3	189 588	4.4
Australian Capital Territory	57 114	7.3	265 206	3.9	322 320	5.7
Australia	6 093 262	1.7	9 307 021	1.4	15 400 283	1.6

Note: Other territories have been omitted, and as such 2006 population estimates do not sum to the Australian total.

Source: ABS (2008a).

In absolute terms, the largest growth in each period was in New South Wales, with an increase of around 5 million people between 1911 and 2006. Both Victoria and Queensland increased their populations by over 3 million, but a substantial portion of the increase for Victoria occurred in the first half of the century in contrast with Queensland's growth in the latter half. Western Australia's growth also occurred principally between 1961 and 2006 reflecting increasing economic activity, especially in mining, and changes in Census counting arrangements for Indigenous residents.

Regional and urban populations

In contrast to Australia today, the population in 1911 was predominantly located outside the major capitals. As shown in Table 4.3, regional Australia accounted for almost 2.66 million people or 60 per cent of the nation's population. This share fell to 40 per cent in 2006, with a shift towards the major capital cities. A feature of the table is the striking difference between 1911 and 2006 for small localities. This difference may result from both a real decline in small localities but also the changes in the methodology from the ABS counting process. As a result, an appropriate comparison may be to combine small localities and the rural population, which illustrates an absolute increase in population but a declining share of around 10 per cent of the nation's population (from 14.9 per cent to 4.3 per cent).

Table 4.3 Spatial distribution of the Australian population 1911 and 2006

Regional type	Population 1911	Percentage	Population 2006	Percentage
Major Capital Cities*	1 796 474	40.3	12 025 829	60.6
Regional Cities and Towns (>200 persons)	1 993 210	44.7	6 965 799	35.1
Small Localities (50 –200 persons)	450 896	10.1	6 522*	na
Rural	214 425	4.8	857 138**	4.3
Total Regional Australia	2 658 531	59.7	7 829 459	39.4
Total Australia	4 455 005	100.0	19 855 288	100.0

Note: 'Major Capital Cities' includes approximations of Sydney, Melbourne, Brisbane, Adelaide and Perth populations as they were in 1911. The modern day conurbations of Tweed–Gold Coast, Sunshine Coast and the Central Coast are enumerated as the separate regional entities that they were in 1911—not as the single urban entities commonly reported in the present day.

*The extremely low number is a consequence of the changes in the ABS methodology in calculating small localities, which has primarily shifted persons residing in location of less than 200 persons into the rural classification.

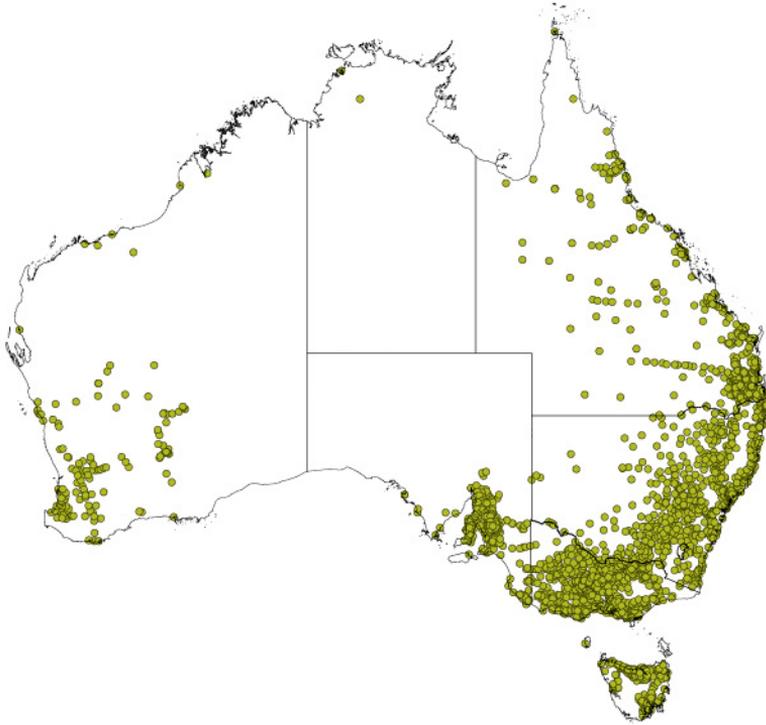
** Persons residing in locations of less than 200 persons have been classified as rural.

Source: BITRE analysis of ABS/CBCS 1911 Census.

Maps 4.1 and 4.2 illustrate the distribution of towns in 1911 and 2006. A striking feature of the maps is the number of new towns and cities across the centre of the country (see map 4.2) compared with the 1911 settlement patterns. The distribution of towns is also shifting towards the continent's north and west, and there has been an overall reduction in the number of towns, particularly in the states of Victoria and New South Wales. This expansion is partly due to the inclusion of Indigenous persons in the Census counts¹¹ and the opening up of mining operations, such as in the Pilbara.

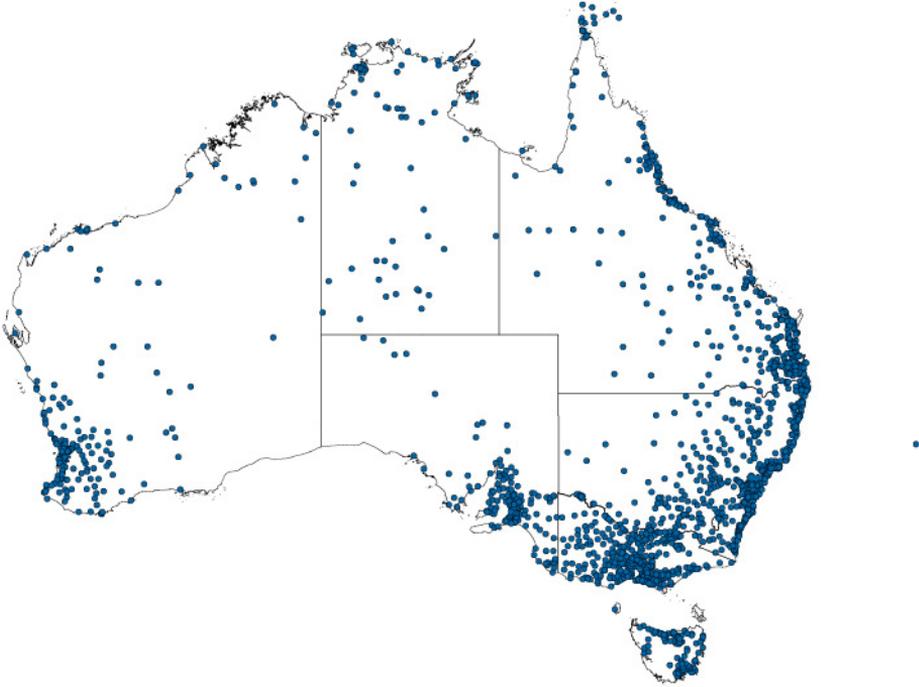
¹¹ As discussed in Chapter 3, prior to 1967, a question on a person's race was asked and those persons deemed to have 50 per cent Aboriginal 'blood' were excluded from official population figures (ABS 1998). After the 1967 Referendum, the way in which Indigenous persons were counted altered by changing s.51 of the Constitution by removing the exclusion of the 'aboriginal race' (ABS 1998). As a result, 'Censuses immediately following the referendum saw the start of a period of substantial increases in the number of enumerated Indigenous Australians' (ABS 1998).

Map 4.1 Australian towns of more than 200 persons in 1911



Source: BITRE analysis of ABS/CBCS 1911 Census and Geoscience Australia Gazetteer.

Map 4.2 Australian towns of more than 200 persons in 2006



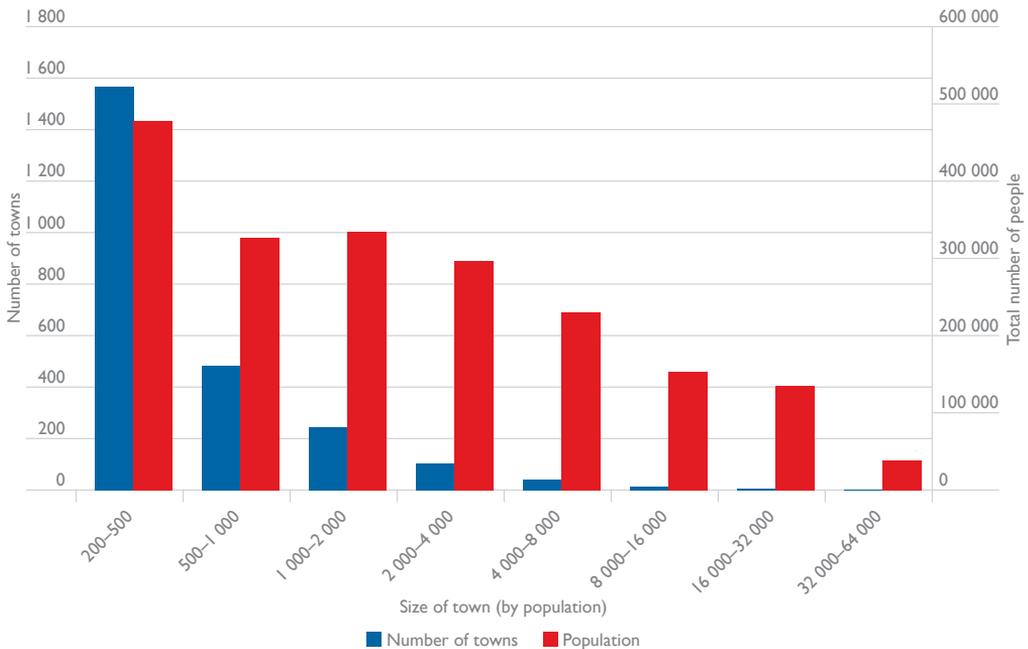
Source: ABS Geography 2006 Census of Population and Housing.

To investigate the broad changes in Australia's settlement patterns between 1911 and 2006, hierarchies of town sizes are considered.

The decline of country towns and villages

As noted in Table 4.3, 55 per cent of Australians were located in regional cities, towns and villages in 1911, outnumbering the forty per cent who lived in metropolitan areas or those who were rural dwellers (five per cent). Figure 4.1 illustrates these numbers, showing the number of regional towns by size (population) and the total number of regional Australians living in each size category of town.

Figure 4.1 Number of towns and total town population by population category in 1911



Source: BITRE analysis of ABS/CBCS 1911 Census.

In 1911, the total number of towns in regional Australia was greater than in the present day, with the 2460 towns servicing less than 2.6 million people compared to 1708 towns servicing almost 8 million people in 2006. This reflects the fact that a large proportion of the 1911 regional population lived in small towns. Population data for 1911 underlying Table 4.3 and Figure 4.1 reveals that more people (44.7 per cent) lived in towns of over 200 persons. Additionally, 40 per cent of these town dwellers (or 18.1 per cent of Australia's population) lived in towns of between 200 and 1000 people. If the range is expanded to towns of 50 to 1000 people, the figure is 28.1 per cent of Australia's population living in these towns at the time.

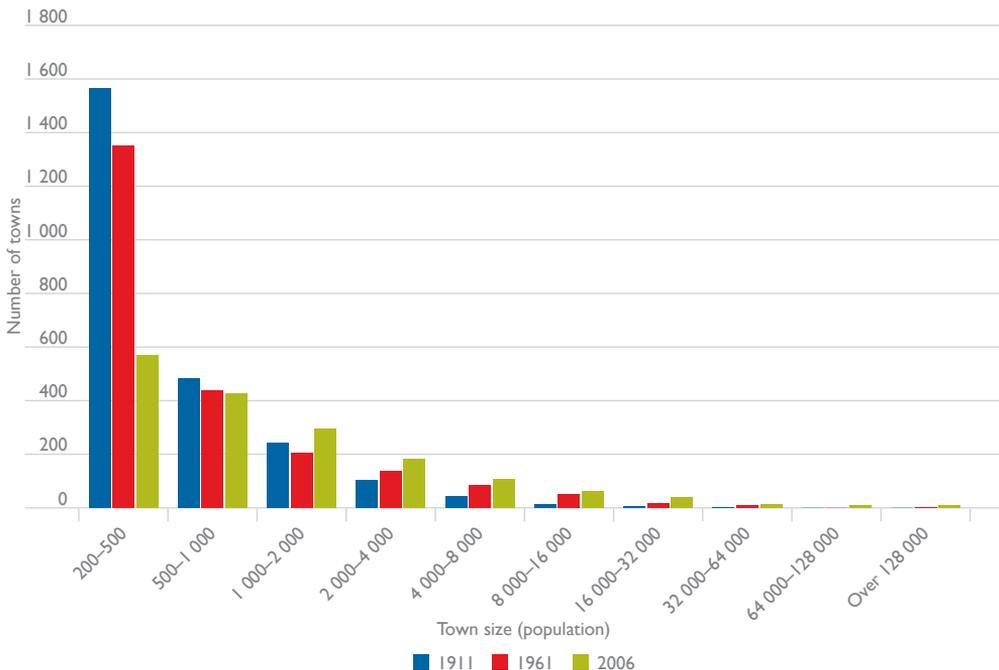
Another distinctive feature of Figure 4.1 is the large number of smaller towns compared to the relatively small number of what would now be called regional centres. Large regional towns were rare and there were few large urban areas outside of the main capitals. The largest town in 1911 was Ballarat with 38 686 people, a population only exceeded by the five mainland state capitals. Only 16 towns in 1911 had more than 10 000 people and in total, less than 300 000 people lived in these towns. Large modern-day centres notably absent from this list include Canberra (1911 population of 116¹²), Wollongong (4725), Darwin (944), Rockingham (161) and Mandurah (223). Similarly, there were no large towns on the Gold Coast and Sunshine Coasts or the Central Coast, although these regions supported a number of small towns.

¹² The Australian Capital Territory figure in 1911 was 1714 people.

The number of small towns has fallen throughout the twentieth century. Figure 4.2 and Table 4.4 show that between 1911 and 2006, the net number of towns in the 200 to 500 persons range has fallen by around 1000 towns. Three contributing factors are as follows.

- Declining populations have resulted in either towns disappearing or becoming too small for the ABS to consider them localities. For example, Wilmot¹³ in Tasmania is no longer classified as a locality by the ABS. Yet this town, 141 kilometres from Launceston, still remains home for a number of people.
- Small towns have been absorbed into larger cities, with the expansion of Australia's capital cities being the clearest example. For example, Melbourne has expanded to include places such as Pakenham and Cranbourne, which once stood apart but are today considered suburbs. Regional cities have also expanded, such as Wollongong growing to include towns such as Austinmer and Mount Kembla.
- Some towns have grown beyond 500 persons. Three of the largest cities in 2006 had populations below 500 persons in 1911: Mandurah (WA), Hervey Bay (QLD) and Ocean Grove-Barwon Heads (Vic.). These towns have also in turn expanded to absorb smaller towns and villages such as the Sunshine Coast incorporating a string of settlements along the coast.

Figure 4.2 Counts of Australian towns by town size in 1911, 1961 and 2006



Note: Data does not include the five major capitals.
 Source: BITRE analysis of ABS/CBCS Censuses 1911, 1961 and 2006.

¹³ Wilmot and its surrounding area are classified as a State Suburb that had a population of 569 in 2006.

Table 4.4 Counts of Australian towns by town size in 1911, 1961 and 2006

Town Population	1911		1961		2006	
	Number	Per cent	Number	Per cent	Number	Per cent
200–500	1 567	63.7	1 350	58.8	569	33.3
500–1 000	482	19.6	439	19.1	425	24.9
1 000–2 000	244	9.9	205	8.9	294	17.2
2 000–4 000	105	4.3	138	6.0	183	10.7
4 000–8 000	42	1.7	84	3.7	106	6.2
8 000–16 000	13	0.5	51	2.2	62	3.6
16 000–32 000	6	0.2	18	0.8	38	2.2
32 000–64 000	1	0.0	9	0.4	13	0.8
64 000–128 000	0	0.0	0	0.0	9	0.5
Over 128 000	0	0.0	1	0.0	9	0.5
Total	2 460	100	2 295	100	1 708	100

Note: Towns with a population under 200 have been removed for all three Censuses; as such the town counts are below those presented in Table B.2. In addition, the five largest capital cities are excluded from the three Census counts (Sydney, Melbourne, Brisbane, Perth and Adelaide).

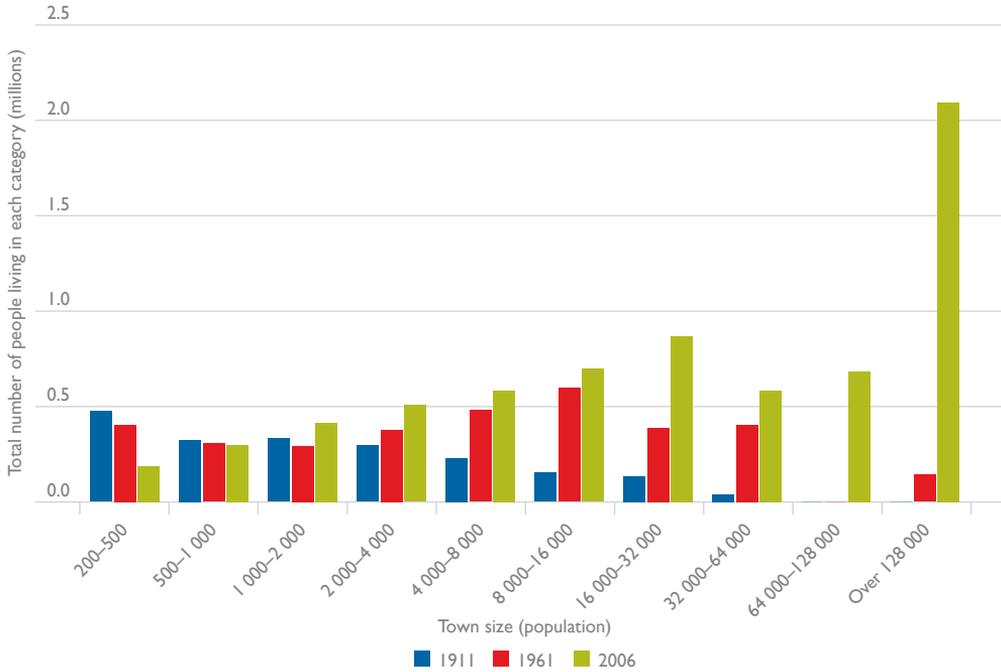
Source: BITRE analysis of ABS/CBCS Censuses 1911, 1961 and 2006.

The large change in numbers of smaller towns (200 to 500 people) occurred in the 1961 to 2006 period. In 1911, 1567 towns had populations of 200 to 500 persons. This fell to 1350 in 1961 but greater change occurred between 1961 and 2006: by 2006, there were only 569 towns with a population of between 200 and 500 persons.

In contrast, the number of towns with a population of more than 1000 grew from 1911 (411 towns) to 1961 (506) and to 2006 (714). While there was a fall in the 1000 to 2000 category in the 1911 to 1961 period (244 to 205), this was less than the rise in larger categories, and was more than made up for by 2006 (when there were 294 towns in this category). Overall, there was a systematic shift in settlement patterns away from smaller towns and towards larger centres.

This shift becomes more pronounced if we consider the populations involved, not just the number of towns. Hence Figure 4.3, which looks at the number of people in each category, shows the complete reversal of the 1911 situation. The emphasis on small towns has apparently been overcome by a strong preference for urban areas. By 2006, the town size category with the largest share of population was regional cities of over 128 000 persons, and the smallest town category now contained the fewest number of people. This shows a long-term trend for the increasing concentration of Australia's population, not just toward capital cities, but also to larger regional centres.

Figure 4.3 Populations of towns by town size in 1911, 1961 and 2006



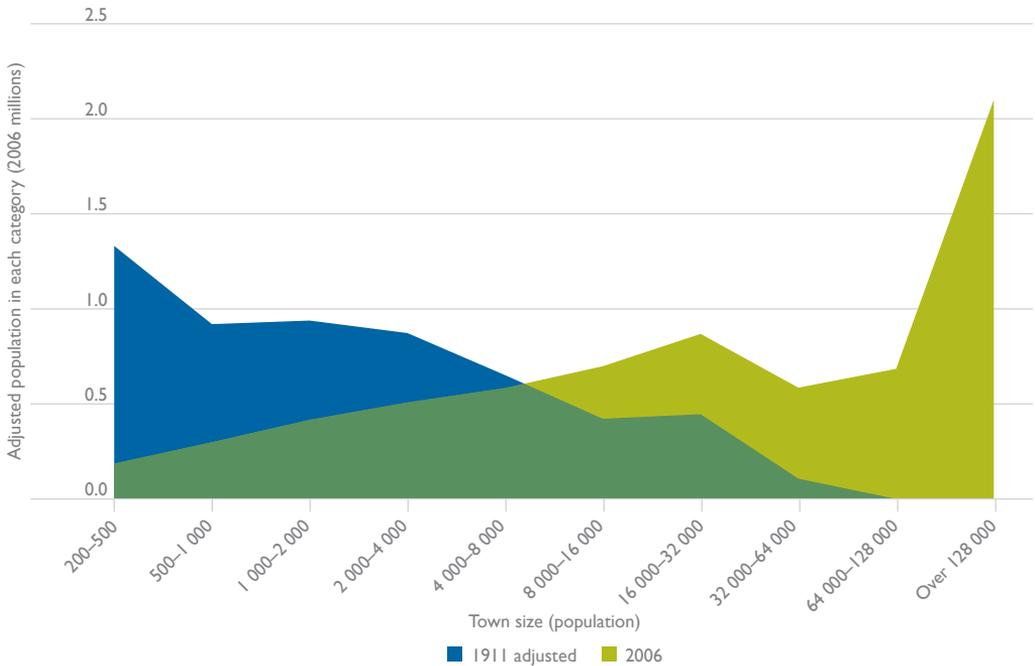
Note: Data does not include the five major capitals.

Source: BITRE analysis of ABS/CBCS Censuses 1911, 1961 and 2006.

This is also consistent with Hugo's (2001) analysis of the period between 1966 and 1996. He found that the number of towns with populations between 1000 and 100 000 persons increased from 450 to 728, and the share of the Australian population in these towns increased from 20.5 per cent in 1966 to 23.7 per cent in 1996. Including large regional centres with populations between 100 000 to 500 000 inhabitants increased the share still further from 25.9 in 1966 to 32.9 per cent in 1996. While these figures are also consistent with the 'drift to the cities' phenomenon, Hugo makes the salient point that 'it may come as a surprise to some that almost one-quarter of Australians live in country towns and regional centres'.

Figure 4.4 shows the same 2006 data as Figure 4.3, but the 1911 pattern has been adjusted to reflect the 2006 population¹⁴. It emphasises the fundamental change in the pattern of settlement in the regions over the twentieth century. The dominance of small towns and villages has been completely reversed and the larger regional centres now predominate.

¹⁴ That is, to illustrate distributional change, the 1911 distribution has been inflated to reflect the increased population of 2006.

Figure 4.4 Population by town size in 1911 and 2006

Note: Data does not include the five major capitals.

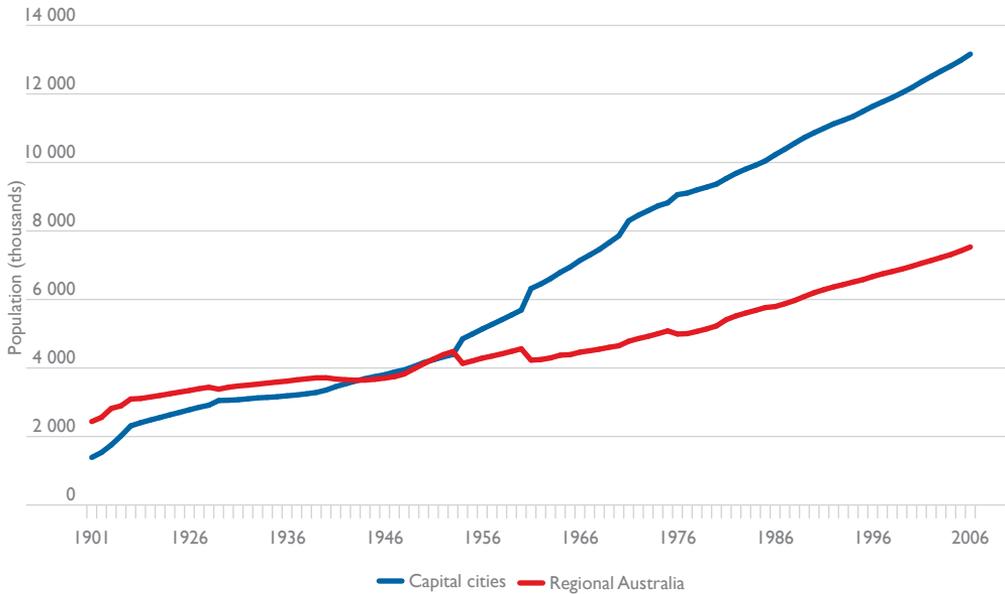
Source: BITRE analysis of ABS/CBCS Census 1911 and 2006.

The dominance of capital cities

Regional Australia had more people than all capital cities combined at the beginning of the twentieth century, with over 2.4 million persons compared with 1.4 million in capital cities¹⁵. However, capital cities grew at an average rate of 2.2 per cent annually from 1901 to 2006, so that their share of the population overtook regional Australia's share by 1954 (see Figure 4.5). By 2006, capital cities collectively reached a population of over 13 million persons, so that the country now had a metropolitan primacy structure. The major urban centres, Sydney and Melbourne, consistently had the largest numbers of people over the period, although their share was declining slowly, with Brisbane and Perth's populations rising substantially.

¹⁵ The population estimates for capital cities are based on the ABS Historical Population from 2008, to enable analysis as a time series.

Figure 4.5 Population by capital cities and regional Australia, from 1901 to 2006



Source: ABS (2008a).

Although conspicuous in Australia, this pattern of urbanisation is a worldwide phenomenon. The proportion of people living in urban areas globally has risen from 29 per cent in 1950 to 52 per cent in 2011, and is projected to grow to 67 per cent by 2050 (UN 2012). The transition to a highly urbanised structure has been a major demographic trend of the past 100 years in Australia. It has become widely recognised as a long-term and inevitable result of the move away from an agricultural-based economy to a service economy.

This phenomenon has seen regional Australia’s population share generally decline over the first 70 years of the twentieth century, although it has stabilised since the 1970s. A factor in regional Australia’s proportional decline has been that major cities have been attractive to migrants. Hugo (2001) found that between 1947 and 1996 the number of overseas-born persons residing in the country’s major urban (populations above 100 000 persons) increased by more than six times to have 80 per cent of Australia’s overseas-born persons living in those cities. As a result the impact of immigration has been to grow Australia’s major cities much more quickly than regional towns¹⁶.

The rise of regional cities

The consistent decline in the share of Australia’s regional population compared to the major cities occurred in parallel with increasing urbanisation within regional areas. Separating out regional cities¹⁷ from the rest of regional Australia reveals a more complex picture (see Figure 4.6). While the population share for towns and rural residents as a whole has been declining, albeit at a slower rate over the past several decades, regional cities have grown.

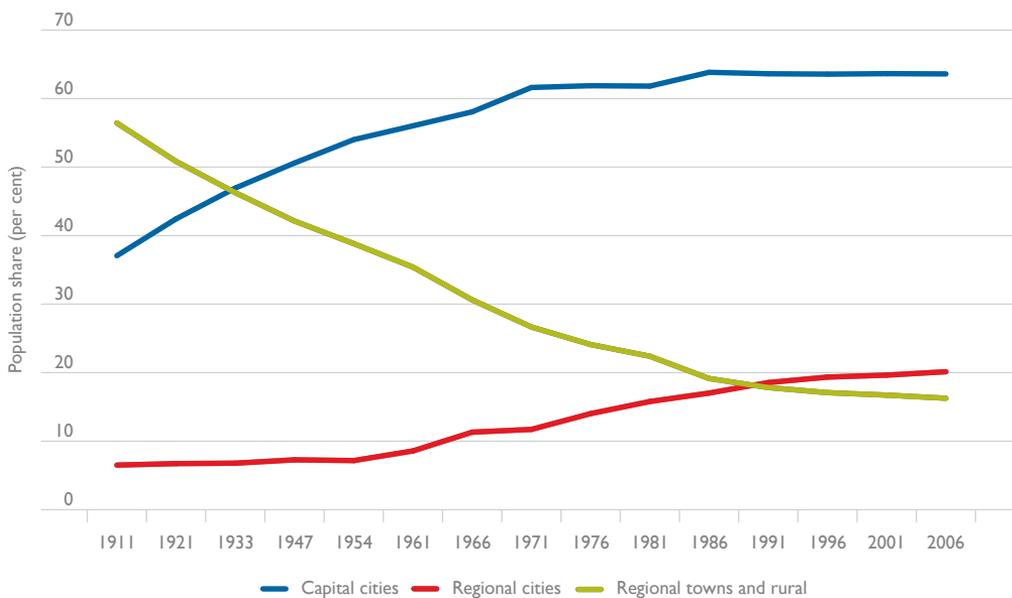
¹⁶ A more detailed description and analysis of recent immigration and internal migration in Australia can be found in BITRE (2011a).

¹⁷ Regional cities in this section are taken from the ABS listing of ‘Other major cities’ from the Australian historical population statistics 2008, to enable analysis as a time series. These cities have a minimum of 30 000 people in 2006.

Another key element of the change is the nature and timing of the urbanisation—whether towards capital cities or regional cities. As the graph reveals, the share of the Australian population in regional cities stayed virtually the same (around seven per cent) between 1911 and 1954. At the same time, the capital cities experienced the strongest growth in their share of the Australian population, from 37 per cent in 1911 to 54 per cent in 1954.

However, in more recent decades, the capital city share of population has stabilised, growing only two percentage points from 1971 (62 per cent) to 2006 (64 per cent). In contrast, the share of the population in regional cities has grown from 12 to 20 per cent over this same 35 year period.

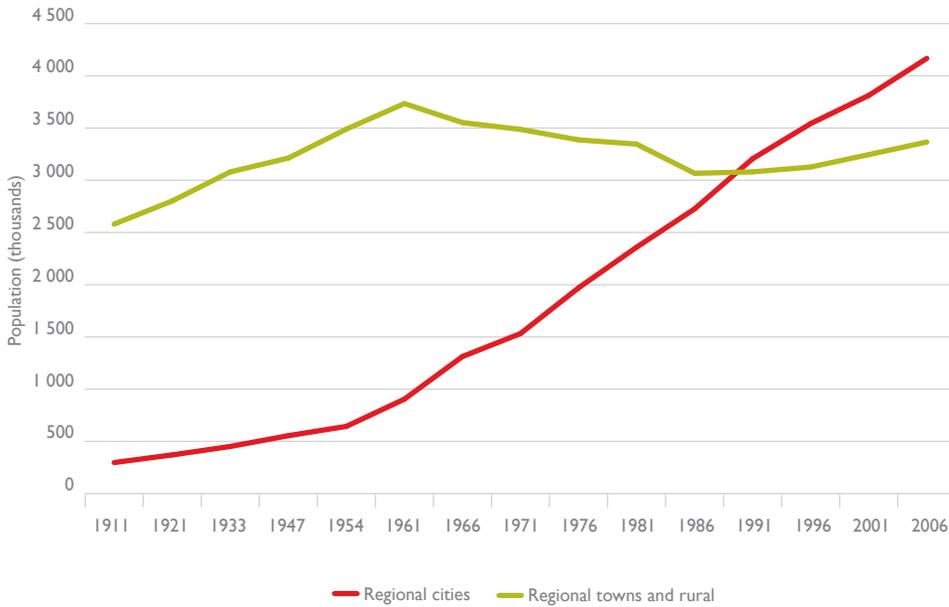
Figure 4.6 Population share by percentage for capital cities, regional cities and other regional, from 1911 to 2006



Source: ABS (2008a).

This increase in the proportion of persons living in regional cities appears, at least superficially, to come at the expense of rural areas and smaller towns. A closer study of the absolute population numbers (rather than shares) reveals another facet in the changing nature of regional Australia's population (Figure 4.7). The combined regional town and rural populations rose from 1911 until 1961 but this was followed by declining numbers over the next three decades. However, population then began to very slowly increase again in the twenty years to 2006. In contrast, population in regional cities has been growing consistently at an average annual rate of 2.8 per cent (0.7 percentage points higher than capital cities over the same period).

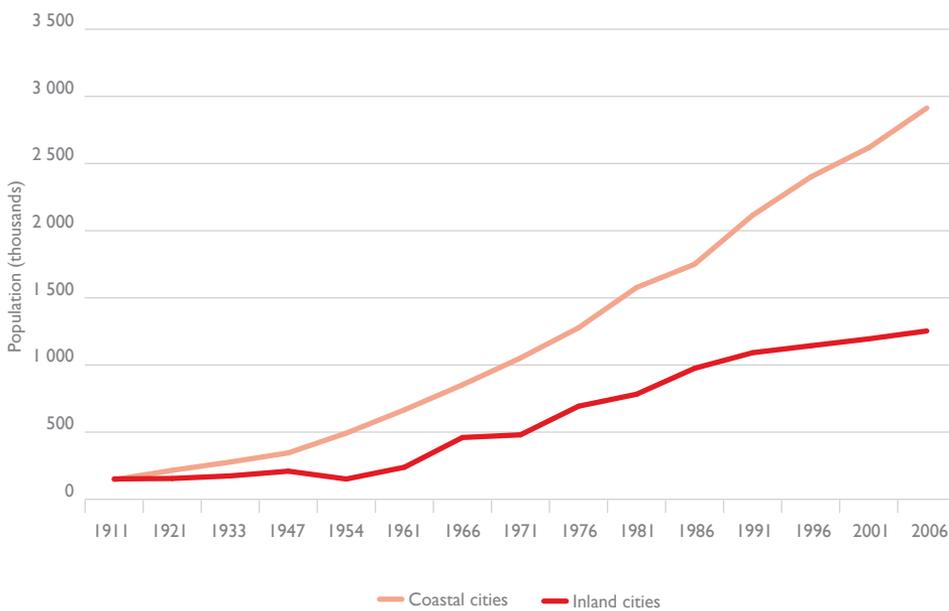
Figure 4.7 Populations of regional cities and other regional, from 1911 to 2006



Note: Not all time periods are available, especially in the earlier half of the century.
 Source: ABS (2008a).

An important difference between regional cities' population growth rates is evident when separating coastal and inland cities (see Figure 4.8). The number of people living in coastal cities has grown faster than inland cities, with both starting from a similar number of persons in 1911.

Figure 4.8 Population of inland and coastal regional cities, from 1911 to 2006



Note: Not all time periods are available, especially in the earlier half of the century.
 Source: ABS (2008a).

The shift towards coastal locations is evident when comparing the 10 largest regional cities in 1911, 1961 and 2006 (see Table 4.5) from the Censuses. Only two of the top ten largest regional cities in 2006 were not coastal locations, in contrast with the top three positions taken by inland mining towns in 1911.

A striking feature of the table is the strong population growth in South East Queensland, reflected in the inclusion of the Gold Coast, Sunshine Coast and Toowoomba in the top 10 by 2006. There are also a high number of larger cities positioned close to their capital. These include the cities identified above for Brisbane but also Newcastle, Central Coast and Wollongong (near Sydney) and Geelong and Ballarat (near Melbourne). An interesting facet to consider is the change in function of these large cities (see Table 4.5 and Figure 4.9).

- In 1911, several of the 10 largest cities started with a strong mining focus such as Ballarat, Broken Hill, Kalgoorlie-Boulder, Bendigo and Charters Towers. By 2006, only Ballarat remained in the top 10 as it was able to transition to become a service centre for a substantial portion of western Victoria.
- The largest growth in the second half of the century has been in the Gold Coast, through the increasing importance of service industries such as tourism and lifestyle locations for retirement. This points to a new base industry operating in regional locations, particularly along the coast.
- The port cities of Townsville and Cairns in the tropical regions of Queensland are illustrations of the changing functions. Both Townsville and Cairns began as seaports for agriculture and mining operations. Over time their economies have been diversified to include defence facilities and tourism.
- Newcastle's spectacular growth in the first half of the century benefitted from mining, as it became the port for Hunter Valley coal. But it was also an industrial economy close to the capital, similar to Geelong and Wollongong.

Table 4.5 Ten largest regional towns in 1911, 1961 and 2006

Town	1911 Population	Town	1961 Population	Town	2006 Population
Ballarat	38 686	Newcastle	142 574	Gold Coast	402 647
Broken Hill	30 953	Townsville	51 143	Newcastle	288 735
Kalgoorlie-Boulder	26 321	Toowoomba	50 134	Central Coast	282 727
Geelong	21 630	Rockhampton	44 128	Wollongong	234 481
Launceston	20 937	Ballarat	41 037	Sunshine Coast	184 663
Bendigo	17 883	Launceston	38 118	Geelong	137 223
Toowoomba	16 160	Geelong	35 700	Townsville- Thuringowa	128 807
Rockhampton	15 451	Wollongong	31 363	Cairns	98 346
Charters Towers	15 037	Broken Hill	31 267	Toowoomba	95 263
Townsville	13 678	Bendigo	30 195	Ballarat	78 223
Total	216 736	Total	495 659	Total	1 931 115

Note: Population estimates are based on Localities for 1911 and 1961 while Urban Centres and Localities (UCLs) are used for 2006.

Source: BITRE analysis of ABS/CBCS Censuses 1911, 1961 and 2006.

While Table 4.5 presents the population changes in the cities that form the top 10, Figure 4.9 provides a graphical illustration of the dramatic increase in the number of people that live in these regional cities. Although cities in 1961 are larger than those in 1911, only Newcastle had a substantially larger population in 1961 than other regional cities.

In contrast, the largest cities in 2006 had considerably larger populations than the top 10 in 1961. This population growth has resulted in the ten largest regional cities in 2006 containing nearly 10 per cent of Australia’s population, doubling their share from 1961. Indeed, only Newcastle’s 1961 population would make the top 10 listing in 2006.

Figure 4.9 Top ten cities by population size in 1911, 1961 and 2006



Source: BITRE analysis of ABS/CBCS Censuses 1911, 1961 and 2006.

Spatial changes in settlements – tracking individual towns

To consider change over time for individual locations, a customised dataset was developed. The dataset comprises cities, towns and localities from 1911, 1961 and 2006 that were recorded in all three Censuses and had a population of at least 500 persons in at least one of the Censuses. In other words, it excludes towns that were not recorded in one or more of the Censuses, or had a population of fewer than 500 people in all three Censuses. The towns were matched by name, state and local government areas to assemble a listing of 866 cities and towns, with population estimates for all three time periods. A discussion of the methodology is presented in Appendix A.

The rest of the report’s analysis includes towns with a population of 200 or more at any of the three Censuses, unless stated otherwise. This section uses the higher (500) threshold because of the difficulty in tracking individual smaller towns over time.

Map 4.3 presents the average annual rate of population growth for matched towns and cities over three different time periods, with consistent scale ranges for easier comparison. In addition, capital cities and major cities with populations above 25 000 in 2006 are identified with a larger circle and labelled separately.

The maps illustrate several changes in the settlement pattern.

- The loss of population in inland Australia, especially in the dryland farming areas of the wheat-sheep belt along western Victoria and extending through New South Wales and Queensland, Eyre Peninsula and Mid North South Australia, and over to the wheat-sheep areas of Western Australia.
- Consistent growth along coastal Australia, especially in New South Wales and Queensland, and towns positioned close to capital cities.
- Population growth in all capital cities and major centres between 1911 and 2006.
- Most of the population change occurring in the second half of the twentieth century, with many more inland country towns experiencing population declines while coastal, larger regional cities and commuting towns had high population growth rates.
- The strong connection between towns surviving from 1911 to 2006 with their position on a rail line.

Towns with the greatest average annual decline in population between 1911 and 2006 were often old mining locations, particularly remote mining towns which had difficulty making the transition from being a one-industry town to a major service centre. The population losses occurred mainly in the first half of the century with towns such as Ravenswood (QLD), Chillagow (QLD), Waratah (Tas), Emmaville (NSW) and Leonora (WA) experiencing the largest average annual decline, even though in 1911 they had populations of over 1 000 persons.

The single largest fall in population also occurred in a mining town, with the outback town of Broken Hill declining by over 10 000 persons between 1911 and 2006. Broken Hill was founded and grew around the mining of rich deposits of lead, zinc and silver. While mining continues today, some deposits have been depleted, so resources are not being extracted at the same rate and better technology has reduced the need for mine workers. It is a town that has been exposed to the volatile fortunes of mining, yet more recently has survived because of its size and distance advantages for service provision in the area.

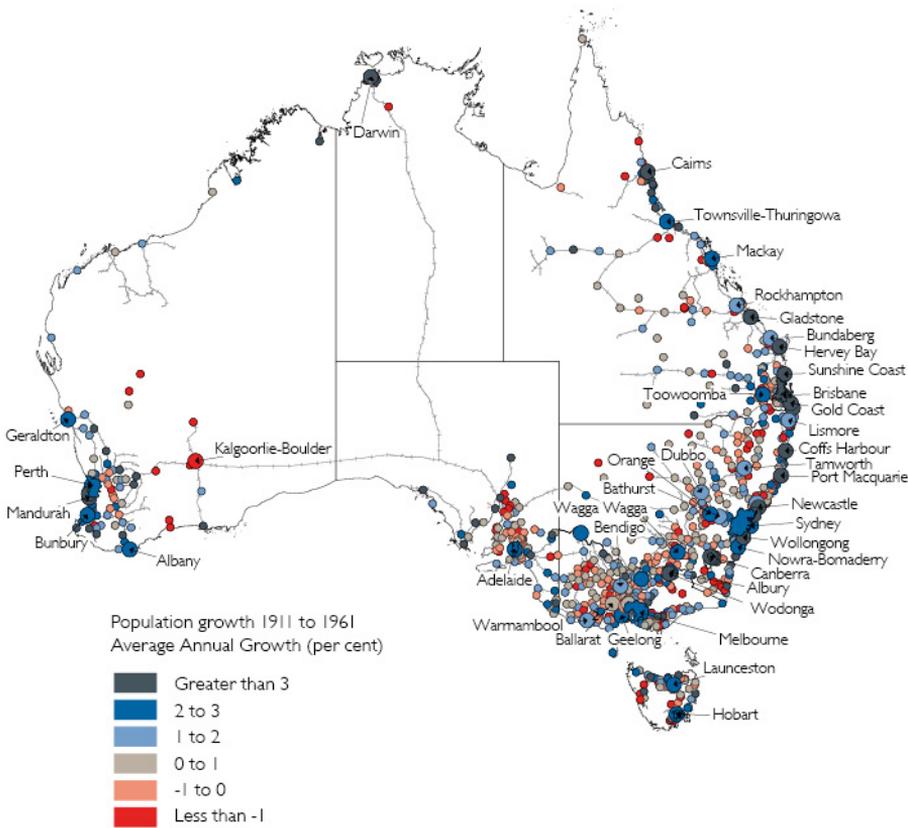
In contrast, towns existing in 1911 that have become major cities in 2006 are dominated by coastal locations, with Mandurah, the Sunshine Coast, the Gold Coast and Hervey Bay having the highest average annual growth rates between 1911 and 2006, particularly in the second half of the century. A feature of some of the growth has been the amalgamation of several towns to become one urban area over time. For example, the Sunshine Coast did not exist in 1911 but towns such as Buderim (251 persons), Caloundra (94 persons), Maroochy River (135 persons), Noosa (87 persons) and Tewantin (219 persons) were towns which became part of the Sunshine Coast.

Two other towns positioned in the top ten for population growth rates were Whyalla (SA) and Mittagong (NSW). These towns illustrate two causes of growth.

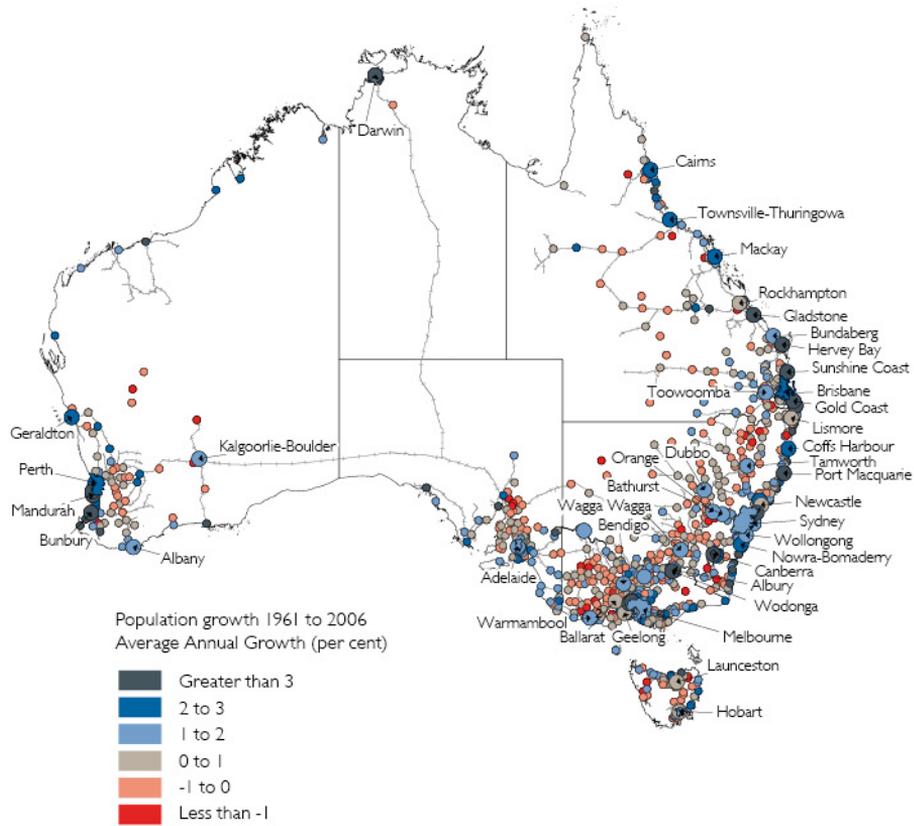
- Whyalla's growth stemmed from industrial expansion into resource processing, steel production and ship building. The city grew very quickly in the first half of the century but growth has slowed significantly in the latter half, reflecting the decline in manufacturing.
- Mittagong in New South Wales grew substantially in the latter half of the century, becoming an attractive peri-urban location positioned along the Hume Highway close to Sydney.

Map 4.3 Average annual percentage growth rate for three different time periods for identified Australian towns

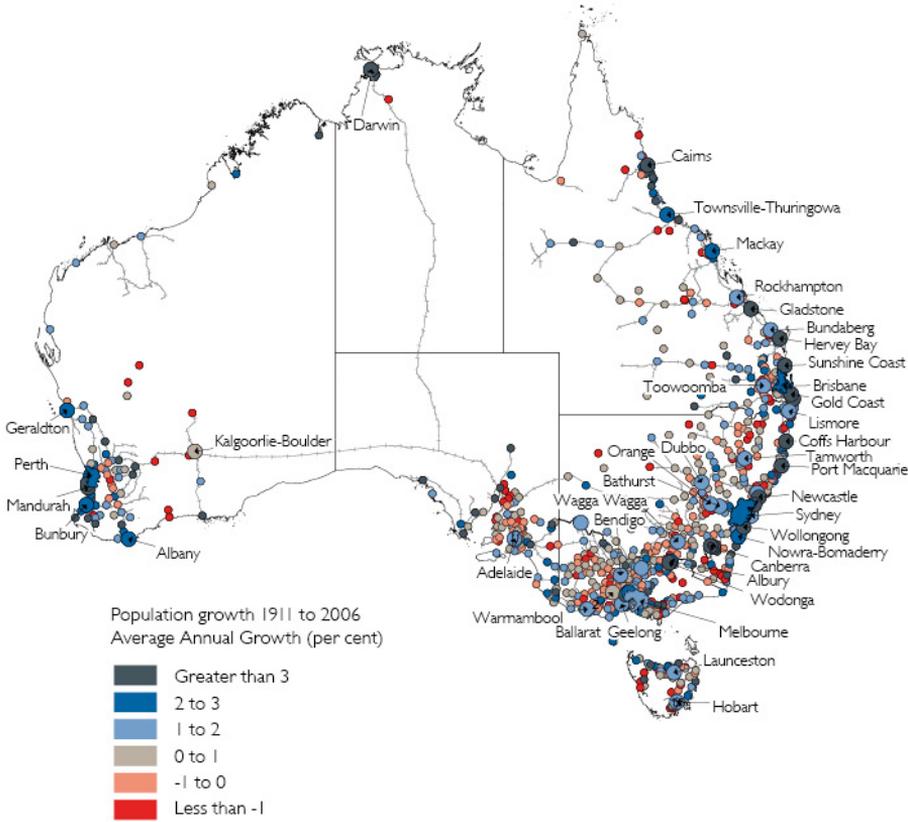
(a) Average annual growth 1911 to 1961



(b) Average annual growth 1961 to 2006



(c) Average annual growth 1911 to 2006



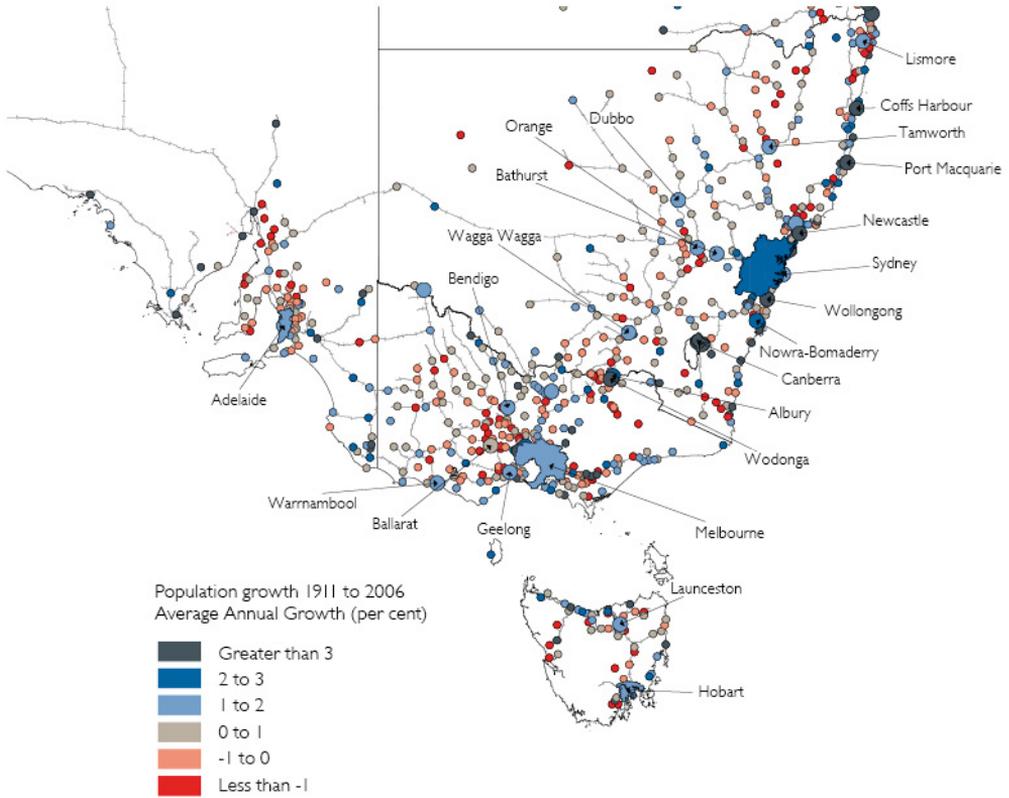
Note: Based on a customised dataset to track individual locations over time (see Appendix A). Rail lines are from MapInfo StreetPro (2007), and include both modern and disused lines.

Source: BITRE analysis of ABS/CBCS Censuses 1911, 1961 and 2006.

Maps 4.4 to 4.6 provide a closer look for sections of the country based on the average annual growth rates from 1911 to 2006. Three features present across all three maps are:

- The loss of population in inland areas.
- The substantial growth of some (now) larger centres, both inland and coastal.
- General population growth along the coast.

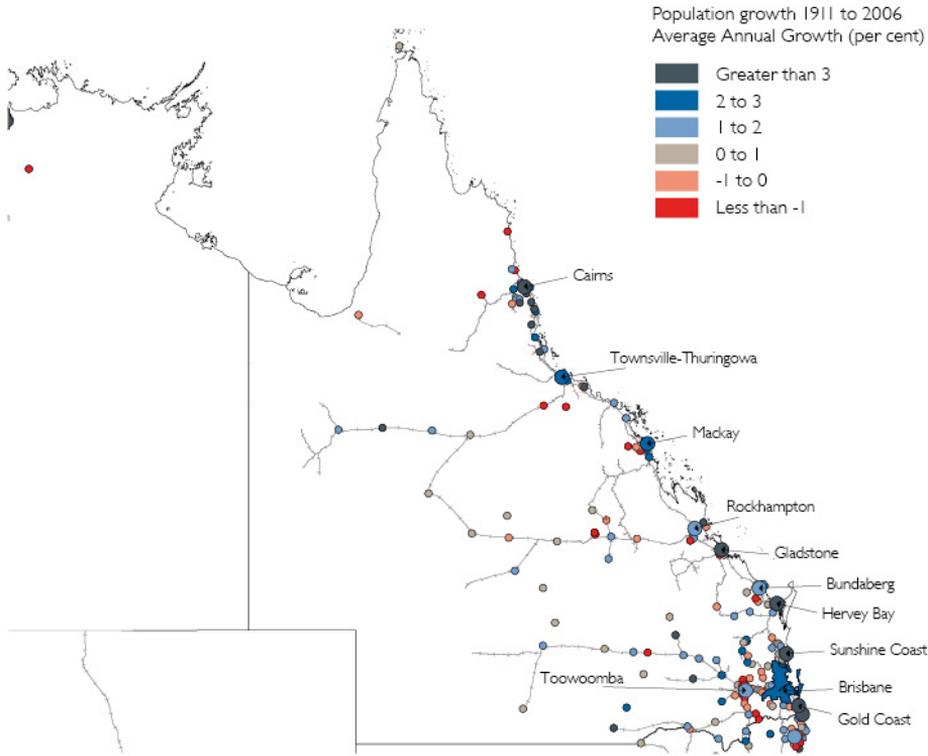
Map 4.4 Average annual percentage growth rate from 1911 to 2006 for identified towns in South East Australia



Note: Based on a customised dataset to track individual locations over time (see Appendix A). Rail lines are from MapInfo StreetPro (2007), and include both modern and disused lines.

Source: BITRE analysis of ABS/CBCS Censuses 1911, 1961 and 2006.

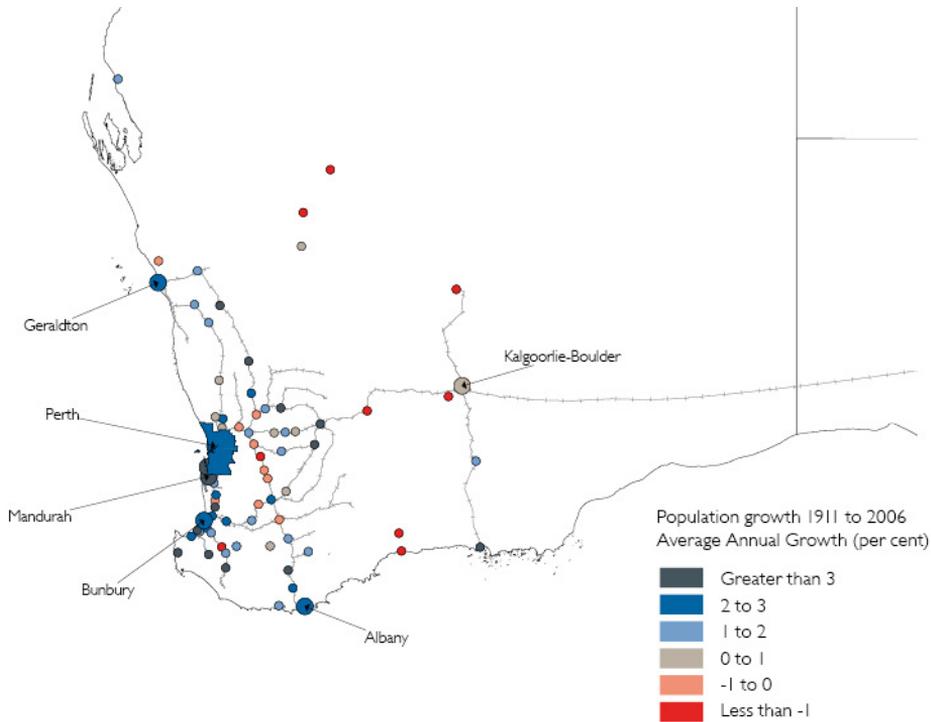
Map 4.5 Average annual percentage growth rate from 1911 to 2006 for identified towns in Queensland



Note: Based on a customised dataset to track individual locations over time (see Appendix A). Rail lines are from MapInfo StreetPro (2007), and include both modern and disused lines.

Source: BITRE analysis of ABS/CBCS Censuses 1911, 1961 and 2006.

Map 4.6 Average annual percentage growth rate from 1911 to 2006 for identified towns in South West Western Australia



Note: Based on a customised dataset to track individual locations over time (see Appendix A). Rail lines are from MapInfo StreetPro (2007), and include both modern and disused lines.

Source: BITRE analysis of ABS/CBCS Censuses 1911, 1961 and 2006.

Lost and new towns

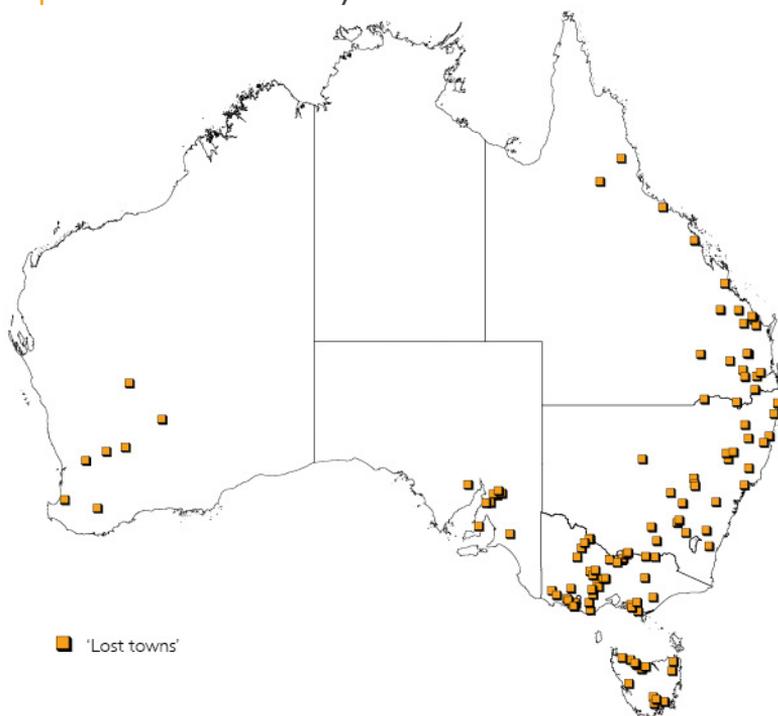
As the above maps have only presented towns recorded in all three Censuses, they do not illustrate locations that have been 'lost' by 2006 and 'new' towns appearing over the century. These towns represent points of significant change. For example, Alice Springs did not exist in 1911 (and so is not shown on Maps 4.3) but has since become an iconic and economically and socially significant symbol in the centre of Australia.

Most of Australia's towns were formed in the nineteenth century. The enormous expansion of settlements was illustrated by Freestone (2010) who noted that Victoria had a net increase of 117 towns between 1841 and 1891, while in Western Australia, after a slow start with only 26 town sites declared between 1829 and 1890, the state expanded with the discovery of gold by gazetting 212 towns within 14 years (Freestone 2010). The number of towns that emerged however was unsustainable—basically an oversupply of towns and villages (Freestone 2010). Indeed, this fact was recognised at the time. For instance, the New South Wales Parliament in 1881, passed the Design of Towns and Villages Correcting Act to respond 'to the "thousands" of townships sited in unsuitable locations' (Freestone 2010, p.110). However, the trend of generating and abandoning towns continued into the twentieth century.

To give an indication of the spread, towns with populations appearing in both the 1911 and 1961 Census and which had a population of 500 in either Census but were no longer classified as a town by 2006 are presented in Map 4.7. It is important to note that these 'lost' towns are not all ghost towns—many still exist, but with substantially smaller populations.

Mining and agriculture were the basic industries for many of these towns, matching the pattern of population decline as presented in Map 4.4. The wheat-sheep belt regions in Victoria and New South Wales are clearly identifiable, along with mining towns in Queensland and Western Australia. For example, the town of Irvinebank in Queensland, 80 kilometres south-west of Cairns, had a mining and tin smelting operation that grew to around 1300 persons by 1911 (Centre for the Government of Queensland 2013). At its peak the town laid claim to a primary school, a well fitted out hospital, a public hall and a hotel. However, during the twentieth century the town went into decline, symbolised by the closure of the tramline in 1936 (Centre for the Government of Queensland 2013) and a population fall to below 150 persons by 1961.

Map 4.7 'Lost' towns by 2006



Source: BITRE derived estimates from ABS/CBCS Censuses 1911, 1961 and 2006.

The loss of towns has been offset by 'new' towns being established. These new towns generally fall into two categories: coastal and remote.

Many Australians regard living by the coast as ideal and coastal towns have benefited from Australians wanting to enjoy a coastal lifestyle. Many factors have led to this long-standing trend, including earlier and longer retirement, rising incomes and wealth, attractive amenities, and tourism (see Chapter 11). Map 4.8 illustrates the coastal growth of 'new towns'¹⁸ in green, which are particularly prevalent on the east coast of New South Wales and Queensland. A

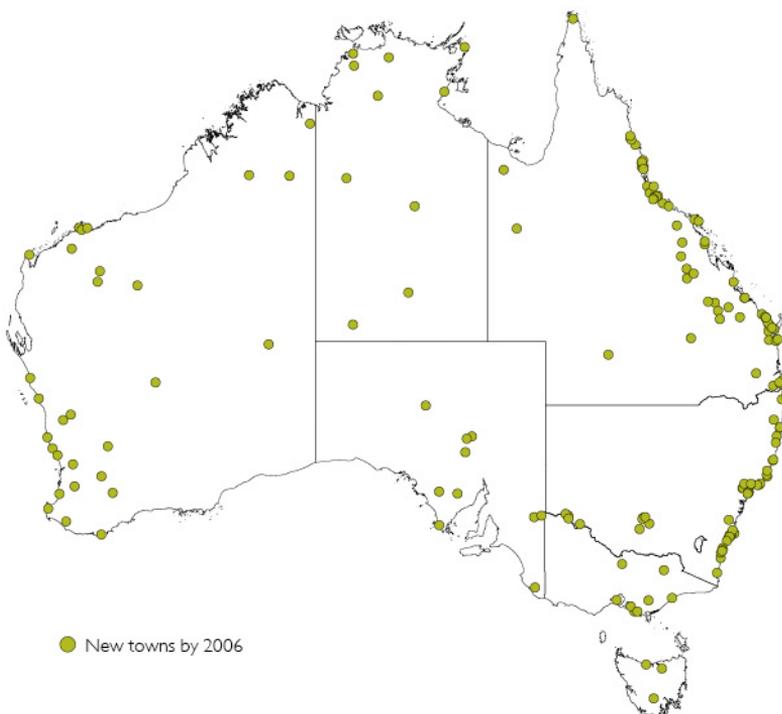
¹⁸ A 'new town' has been classified as being established after 1911 or 1961 based on localities from the 2006 Census.

feature of this growth has been the expansion of existing centres and the positioning of 'new towns' close to these centres to take advantage of existing infrastructure and services.

In addition to coastal locations, there has been the opening up of remote areas with mining operations. Many of these towns have grown on the back of growing demand for iron ore, energy and other commodities. These include Mount Isa (QLD), Roxby Downs (SA), Nhulunbuy (NT) and Leinster (WA). However, several mining towns have come and gone during the century—towns such as Radium Hill (SA), Rossarden (Tas.) and Mary Kathleen (QLD). Wittenoom, in the Pilbara region of Western Australia, is today a well-known virtual ghost town that grew on the back of mining the hazardous local blue asbestos in the 1950s but which closed by the 1960s.

A range of towns have also grown from several other factors such as the establishment of large infrastructure or industry networks such as the electricity power stations in the La Trobe Valley, the construction of the Snowy Mountain Scheme and irrigation schemes. For example, the Murrumbidgee Irrigation Area (MIA) was the stimulus for the establishment and growth of Griffith, a city of over 16 000 persons, and associated towns such as Coleambally and Leeton (see Chapter 5).

Map 4.8 'New' towns by 2006



Source: BITRE derived estimates from ABS/CBCS Censuses 1911, 1961 and 2006.

While most of these settlements can be regarded as being genuinely 'new', the apparent appearance of many inland and northern towns owes more to changes in the way Indigenous Australians were counted in the Census than real growth in population. Even today the Australian Bureau of Statistics needs to spend considerable resources to try to ensure a full as possible count in remote areas.

Extensive analysis by Memmott and Moran (2001)¹⁹ of Indigenous settlements describe their development as being in parallel to the colonial settlement pattern. Their analysis identified different types of settlement emerging from variable circumstances such as contact history, regional economic conditions, land tenure, and government policy. Also identified are other culturally distinctive attributes of Indigenous settlements such as lifestyles, extent of preference for remote and rural living and long-standing attachments to place.

Changing hierarchy of Australia's settlements

The following series of maps (Maps 4.9 to 4.12) captures the pattern of growth, decline, 'lost' towns and 'new' towns described above. The series of maps include Australia, the south east corner of Australia, Queensland and southern Western Australia, over the three Censuses (1911, 1961 and 2006). The size of each circle represents population size (for towns with a minimum of 200 persons). The capital cities of the five mainland states are excluded, as their size overpowers the configuration.

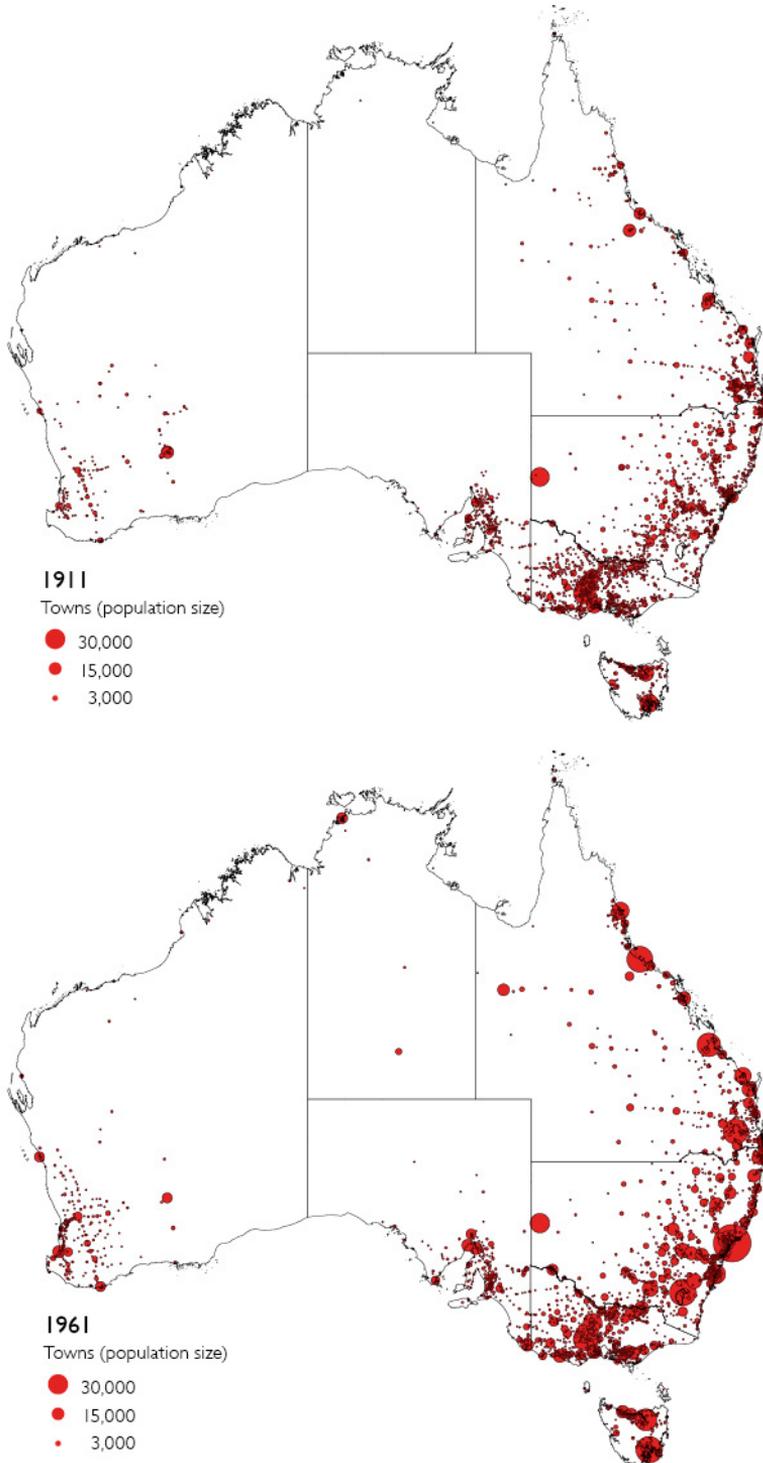
A pattern clearly evident over the three Censuses is the growth of regional centres combined with a reduction in the number of smaller towns. In 1911, only a few regional centres stand out and are usually associated with a specific function, such as Ballarat, Bendigo and Broken Hill with mining, Geelong being an important port and Goulburn's associated with rail. The prevailing pattern in 1911 is the numerous small towns, particularly positioned within the wheat-sheep areas. By 1961, the rise of regional centres had begun with cities such as Canberra, Newcastle and Wollongong increasing in size, but the numerous small towns appear to remain an important part of the structure.

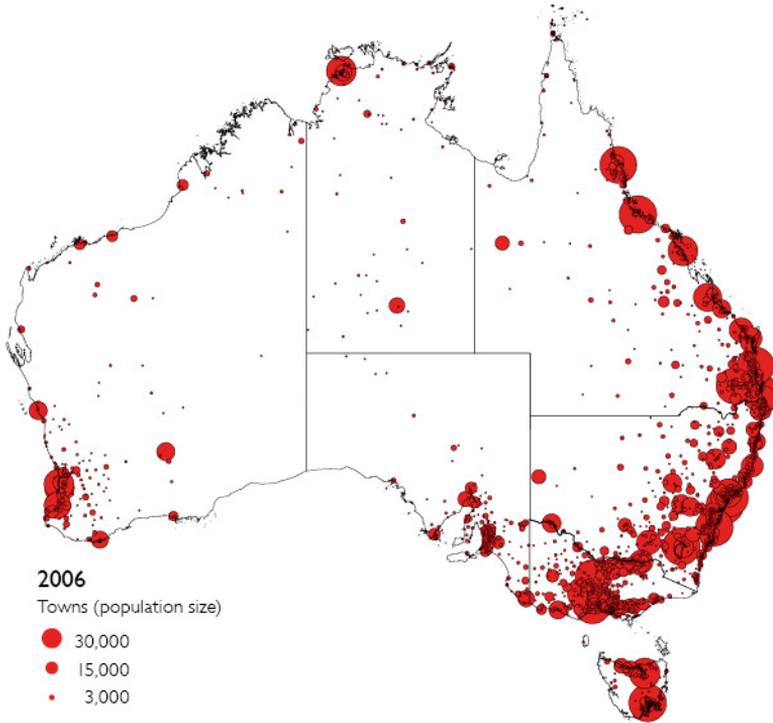
However, by 2006, large regional cities dwarfed the smaller settlements, with many of the smaller towns having 'disappeared' from the map (in other words, their population had fallen below 200 people). Both inland and coastal cities have risen to dominate their surrounding hinterlands.

¹⁹ An extensive analysis into Indigenous settlements is beyond the scope of this paper. However, Chapter 5 presents a case study of the region around Tennant Creek. Further readings on Indigenous settlements are available in Memmott and Moran (2001).

Map 4.9

Towns in Australia by population size over three Censuses; 1911, 1961 and 2006

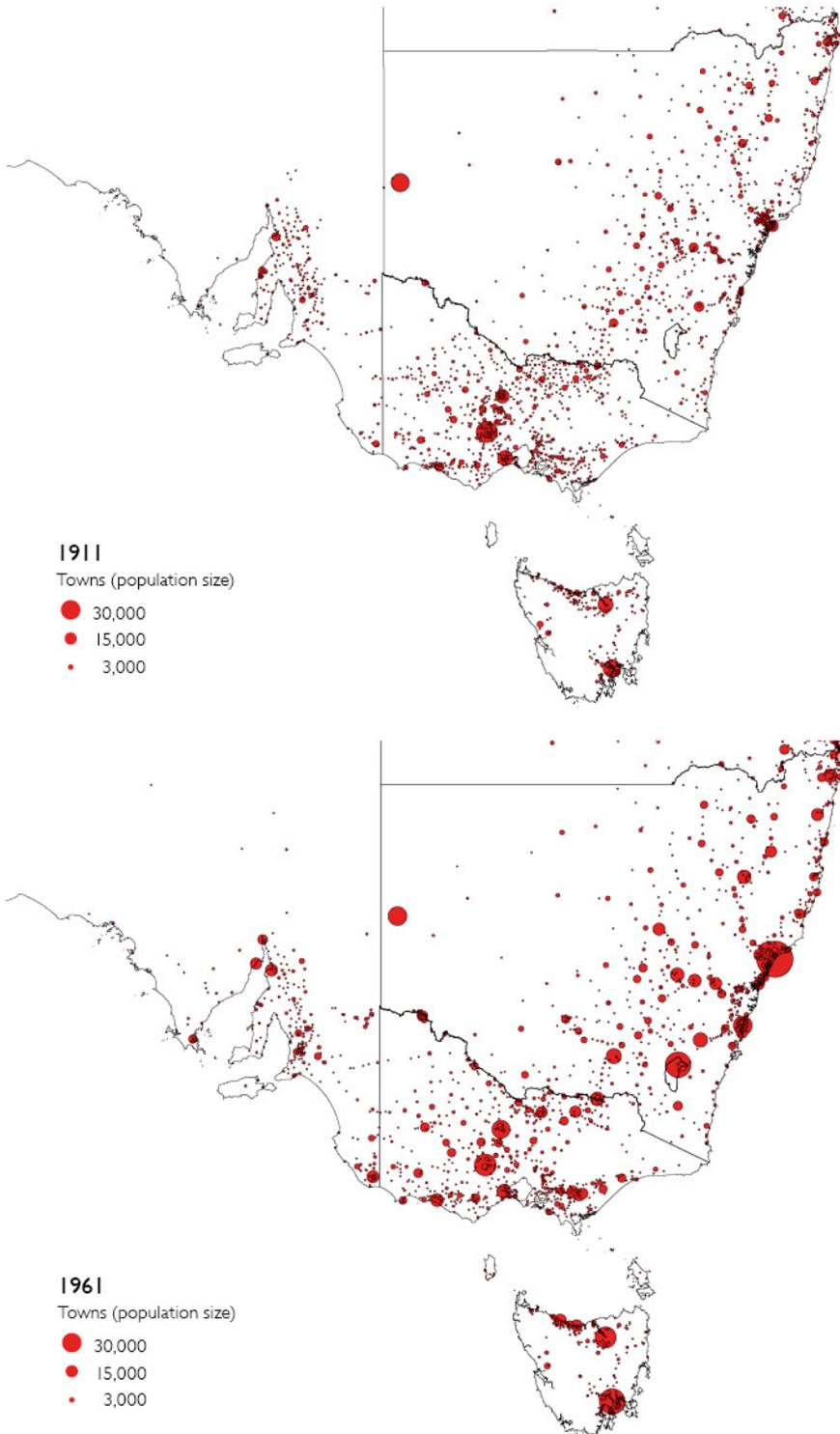


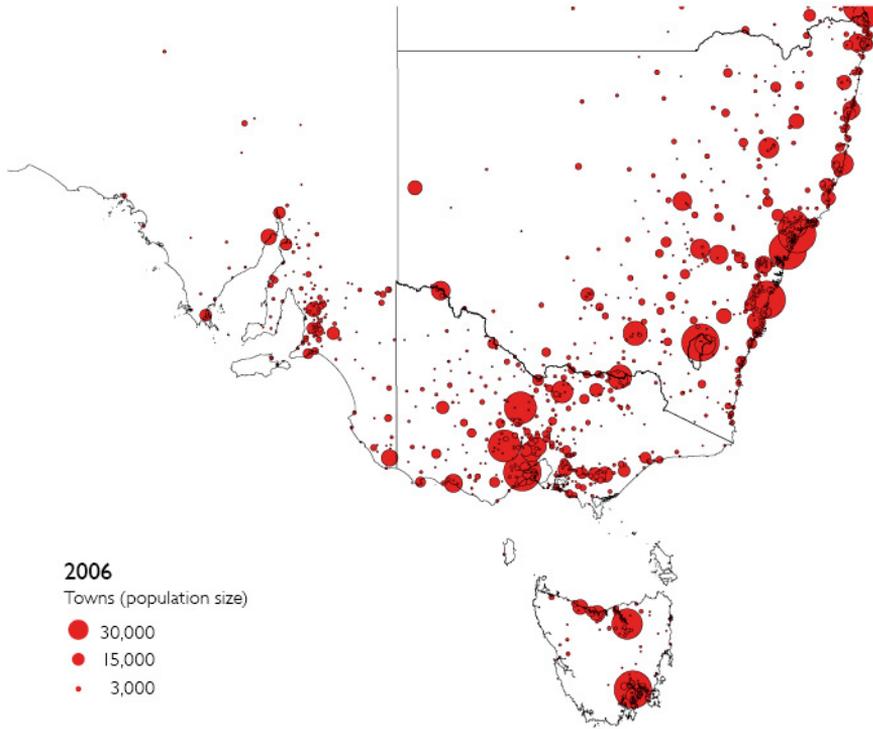


Note: The capital cities of the five mainland states are excluded.
Source: BITRE analysis of ABS/CBCS Censuses 1911, 1961 and 2006.

While the changes in the pattern can be seen at the national scale, Maps 4.10 to 4.12 have been included to provide a closer look for specific sections of the country.

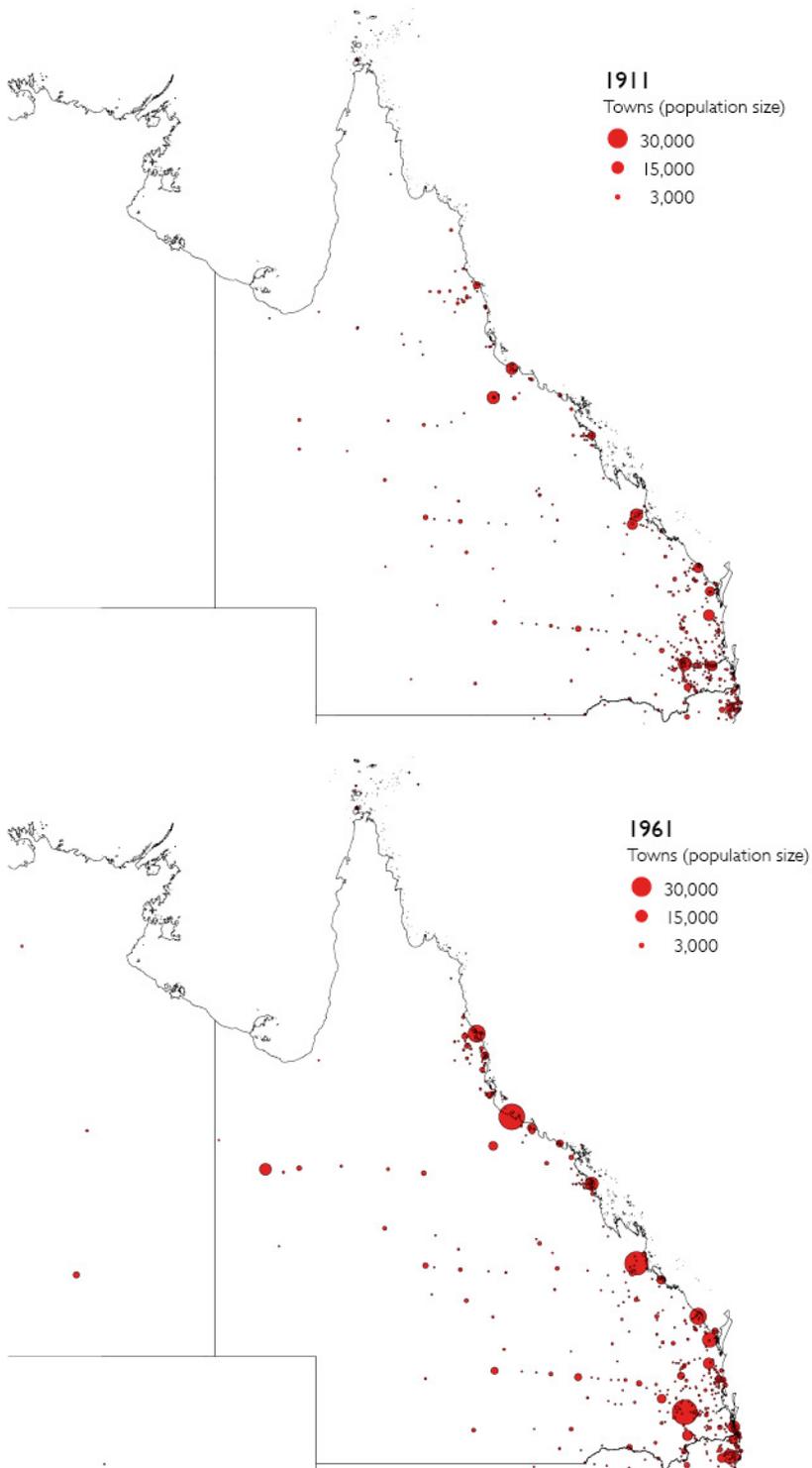
Map 4.10 Towns in South East Australia by population size over three Censuses; 1911, 1961 and 2006

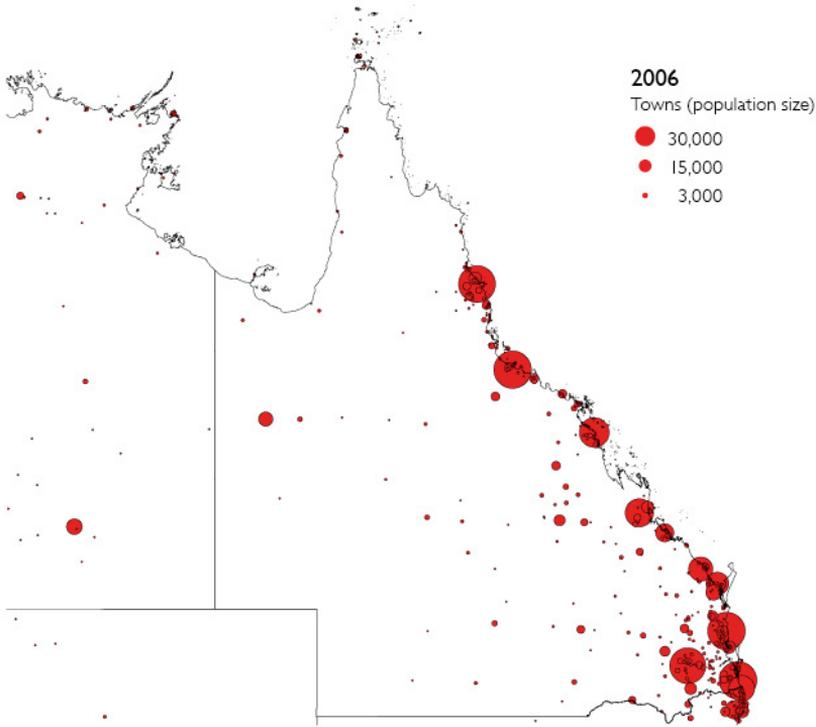




Note: The capital cities of the five mainland states are excluded.
Source: BITRE analysis of ABS/CBCS Censuses 1911, 1961 and 2006.

Map 4.11 Towns in Queensland by population size over three Censuses; 1911, 1961 and 2006

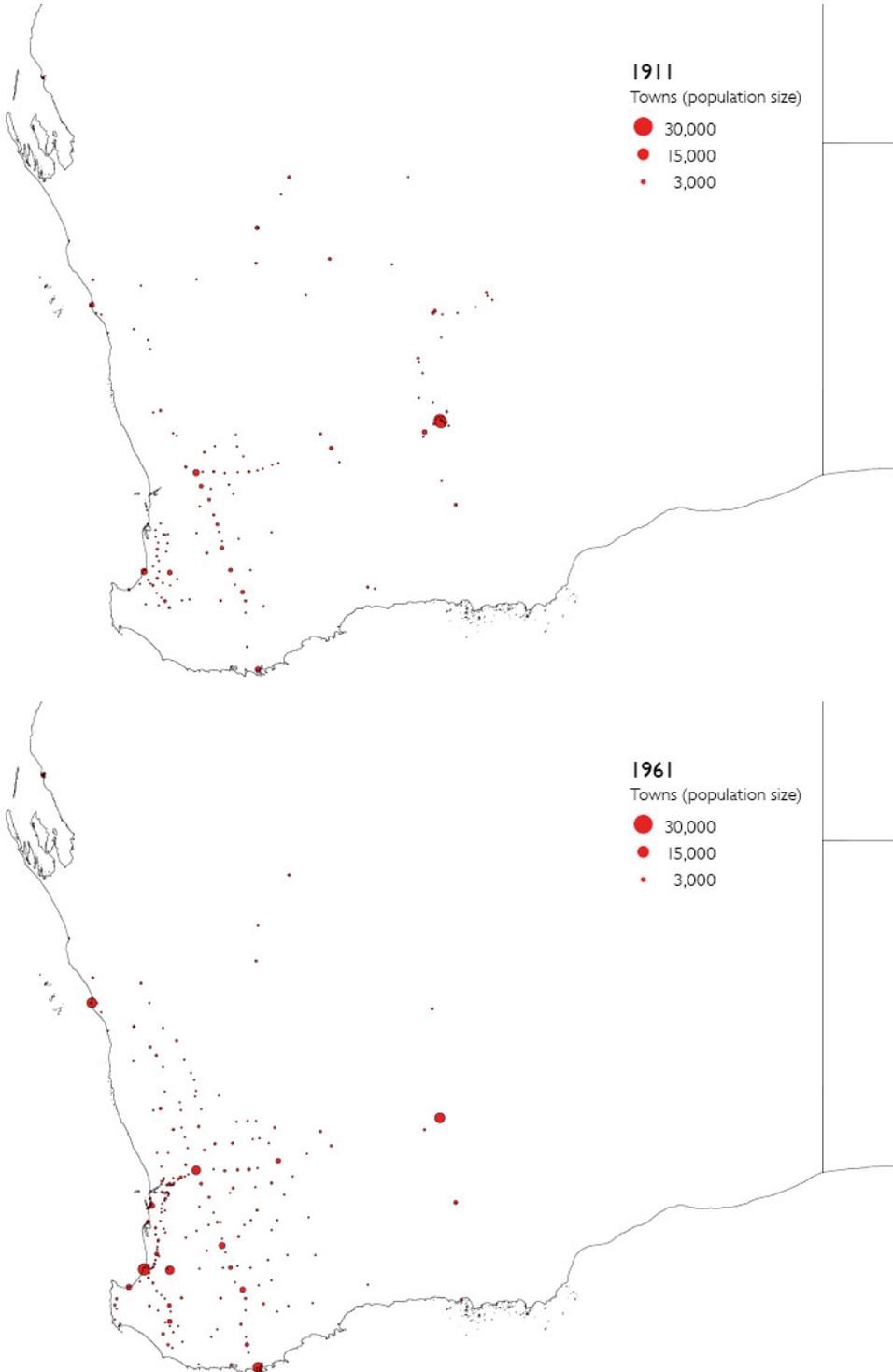


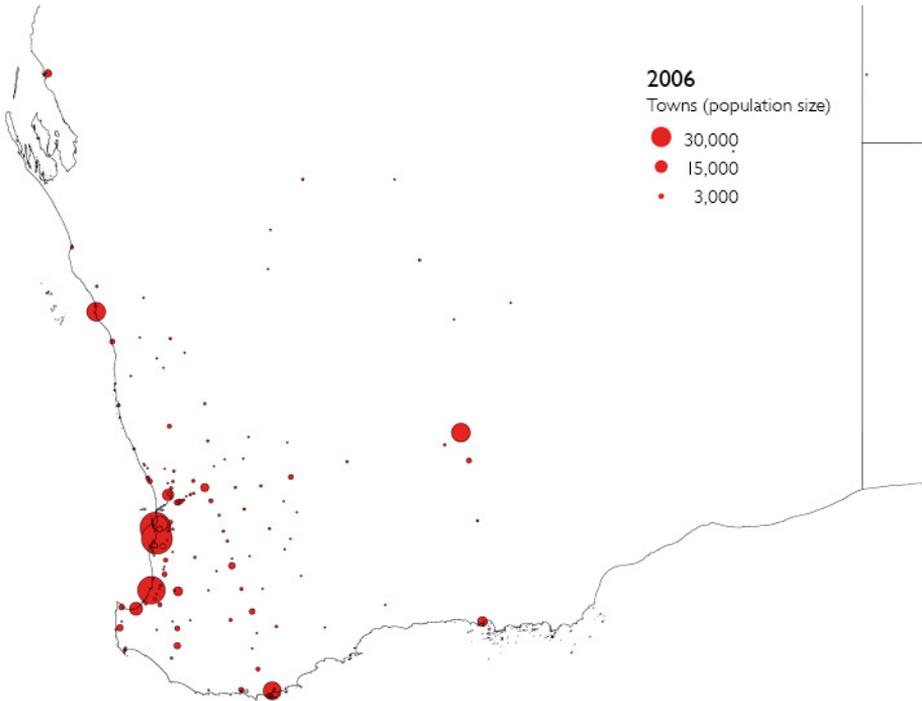


Note: The capital cities of the five mainland states are excluded.

Source: BITRE analysis of ABS/CBCS Censuses 1911, 1961 and 2006.

Map 4.12 Towns in South West Australia by population size over three Censuses, 1911, 1961 and 2006





Note: The capital cities of the five mainland states are excluded.

Source: BITRE analysis of ABS/CBCS Censuses 1911, 1961 and 2006.

Conclusion

Australia's settlement structure in 2006 is very different to the structure in 1911. Australia has become far more urbanised. The concentration of economic activity and people has driven the development of larger regional cities and has substantially grown the capital cities, creating a metropolitan primacy structure.

Several features are evident when investigating population change in Australian towns over a long timeframe. These include:

- Establishment, loss, growth and decline of towns being part of the urban process and evident in Australia's settlement over the past century.
- All regions transitioning from many small towns with fewer larger ones, to a mix of larger regional centres, substantial towns and small villages.
- Slow or declining population growth for many towns in inland areas, particularly those in dry land farming areas.
- Regional Australia having a much smaller proportion of the country's total population in 2006 than in 1911, yet regional cities have grown.
- All capital cities and regional cities of population greater than 25 000 experiencing positive population growth between 1911 and 2006.
- Stronger population growth in coastal regional cities compared with inland regional cities.

- The dominance of population centres along the east coast of Australia.
- A substantial increase in coastal town populations in the second half of the century.
- Most of the population change occurring in the second half of the twentieth century.
- Spatially identifiable patterns that suggest wider underlying forces impacting on local events.

The identified general patterns may provide a guide to some of the important factors shaping the fortunes of Australia's towns. Yet, as Freestone (2010, p. 100) states, '[m]any surveyed towns failed to ignite or their fortunes waxed and waned over time. The physical plan was rarely an issue: siting, accessibility, comparative advantage, and adaptability to new circumstances, such as technological change, were more critical factors'. These factors will be explored further in later chapters.

CHAPTER 5

A closer look at change in regions

Key points

- The early histories of many towns reflect the importance of basic industries to their growth and development.
- Transport has been a key contributor to the success or failure of many towns, with those not positioned along a rail or major highway particularly disadvantaged.
- Many towns have changed their functions over the period, as some transition towards more service and recreationally-based economies.
- Small agricultural towns that have been unable to develop new functions have struggled against the rise of the regional centre. However, some small towns close to a large labour market, usually a regional centre, have been able to partly shift towards a commuting function and retain an important social element.
- The effects of mining on settlement patterns vary—many small mining towns have been created, many have also disappeared with only a few transitioning towards large service centres.
- Coastal locations have been significant growth areas, with some coastal towns transitioning to significant regional service centres.
- Past government policies have had a strong influence on the location of Indigenous settlements.

Introduction

Investigating settlement change at the regional scale provides an opportunity to consider more localised drivers, while also highlighting more common factors across diverse regions.

With large population changes occurring throughout the twentieth century, growth and decline of individual towns varied over time. Some towns first flourished then declined, others started with a stable population and grew later, while others still never grew significantly at all. By investigating local histories, changes in the fortunes of towns provide more of a guide to the major factors determining Australia's current settlement patterns.

Several regions have been chosen to provide a diverse sample and to enable consideration of some of the changes occurring. The regions considered in order include:

1. Upper North and surrounds, South Australia
2. Western Australian Goldfields
3. Wimmera, Victoria
4. Toowoomba and surrounds, Queensland
5. Hervey Bay, Bundaberg and surrounds, Queensland
6. Griffith and surrounds, New South Wales
7. Central West, New South Wales
8. Tennant Creek and Ali Curung, Northern Territory.

Population change is presented in map²⁰ form for 1911 and 2006 at the regional scale, along with the position of rail and major roads networks.

1. Upper North and surrounds, South Australia

The history of the Upper North at the head of the Spencer Gulf in South Australia provides an illustration of many of the changes which occurred in Australia's settlement pattern. These include the formation of many agricultural settlements, the impact of rail, mining and manufacturing on local economies and later the 'loss' of smaller towns as their functions declined.

A discussion on several locations in this region will draw out the changes occurring and provide some insight into the contributing factors. The Upper North region is vast and encompasses some of South Australia's largest regional cities as of 2006, including Whyalla, Port Pirie, and Port Augusta (see Map 5.1). Yet, in 1911, of the three, only Port Pirie was a hub, with Port Augusta just another small town and Whyalla (then called Hummock Hill) not yet large enough to be classed as a town. Table 5.1 shows the population change for some of the key towns in this area from 1911 to 2006.

Outside the growth of the three major centres, Map 5.1 also shows the 'thinning out' of smaller towns. This is particularly noticeable in the area between Peterborough²¹ and Port Pirie, and also to the southeast of Clare. The towns that survived to 2006 tended to be amongst the largest in 1911. These include Moonta, Kadina and Wallaroo, near the coast, as well as Peterborough, Jamestown, Crystal Brook, Clare and Balaklava.

²⁰ In all the maps in this chapter, the size of the circle represents the population of the town. It should be remembered that these maps only represent two points in time. The maps are also not at a consistent scale for different regions. Different areas cannot be directly compared, since regardless of scale, the size of the population circles remains the same.

²¹ Like many other towns with names of German origin, Petersburg changed its name to Peterborough towards the end of the First World War.

Table 5.1 Population, the Upper North, South Australia, 1911, 1961 and 2006

Town	1911	1961	2006
Whyalla	119	13 711	21 123
Port Augusta	855	9 711	13 255
Port Pirie	7 988	15 609	13 205
Kadina	2 747	3 102	4 025
Moonta	3 772	1 151	3 352
Clare	1 221	1 622	3 061
Walleroo	5 282	2 237	3 049
Peterborough	2 530	3 430	1 690
Balaklava	1 551	1 301	1 628
Jamestown	630	1 304	1 408
Crystal Brook	1 351	1 144	1 188

Source: ABS/CBCS Census of Population and Housing 1911, 1961 and 2006.

The following section will explore the factors that have contributed to changes in the Upper North region more generally along with closer investigations of Whyalla and Port Pirie.

The Upper North region

The opening up of the Upper North region, about 200 kilometres north of Adelaide, came about through land reform legislation in the 1860s. This transformed the region from large pastoral properties into smaller agricultural land holdings. In fact, this transformation of the region's economic base occurred within a decade (Bell 1998), with wheat becoming the backbone of local industry.

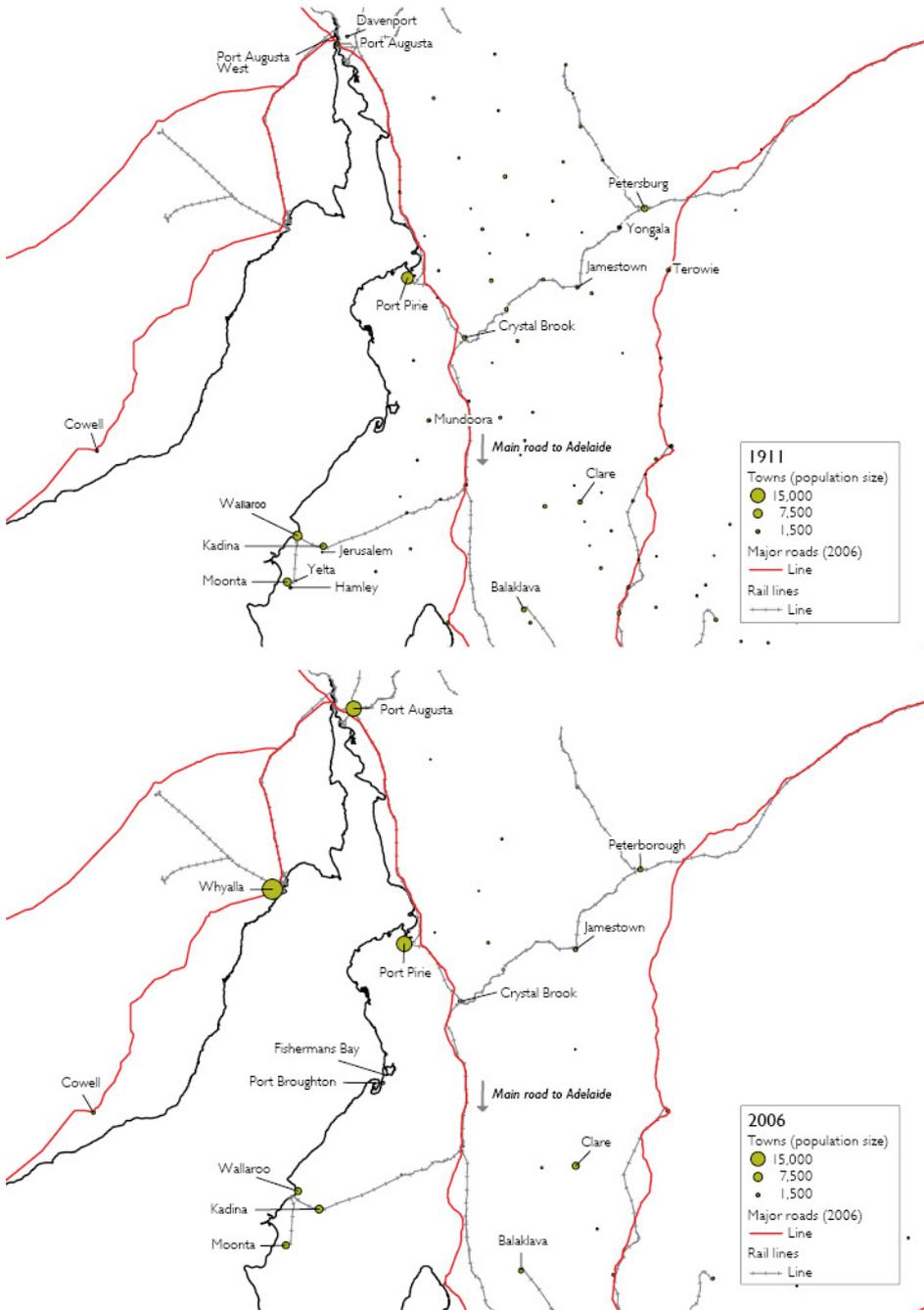
The separation of pastoral and cropping land was based on Surveyor-General George Goyder's map of the region, which quickly became known as 'Goyder's Line'. Goyder also set up a policy of establishing a town every 16 kilometres (Bell 1998), modelled on the English countryside with dense populations of closely spaced villages and towns.

The primary motivation for opening up the region was increasing population demanding access to farmland and a desire to exploit the wealth of the natural resources, particularly through wheat harvests. In the short term, it worked, with wheat farms booming in the 1870s (Bell 1998).

The boom was consolidated by the construction of railway lines, enabling farmers to have easy access to ports. For example, an independent rail line was built between Port Pirie and Peterborough by 1881. This line became the principal transport axis for the region and raised economic activity for those towns along its route such as Crystal Brook, Gladstone and Jamestown (see Map 5.1). It was built principally to transport grain, and as a result, a cheaper narrow gauge line was used (National Railway Museum n.d.p.).

In contrast, the northbound rail link was established between the copper mining town of Burra and Terowie, and then extended towards Peterborough—establishing a rail connection between Port Pirie and Adelaide. This rail line was broad gauge because these tracks were able to carry faster and more comfortable trains for passenger transport (National Railway Museum n.d.p.).

Map 5.1 Upper North South Australia, 1911 and 2006



Note: Rail lines are from MapInfo StreetPro (2007), and include both modern and disused lines.
 Source: BITRE derived estimates from ABS/CBCS Censuses 1911 and 2006.

The true importance of the rail line for the region became apparent with the opening of the Trans-Australian Railway in 1917, running from Port Augusta to Kalgoorlie. This made Peterborough an important railway hub for the continent for long distance passenger and

freight movements. In time, the town became 'the busiest railway junction in South Australia' with large maintenance workshops, holding sheds, and a large workforce (Bell 1998). A primary reason Peterborough became the rail hub was the independent development of three different types of gauges and Peterborough's rail yards accommodating all three. In addition, at a smaller scale, Port Pirie, Terowie and Gladstone also had break-of-gauge stops, requiring the construction of sheds and passenger facilities, resulting in rail becoming an important industry for these towns.

The rail industry declined over the later part of the twentieth century, resulting in a rationalisation of the system. The result was a loss of function for several towns. For example, Terowie, Yongala and Mundoorra had populations of around 1000 persons in 1911, based on rail, but the loss of this economic foundation resulted in their decline.

- Terowie evolved with the establishment of the rail industry and in its prime in the 1940s and 1950s reached a population of over 2000 people (Regional Council of Goyder n.d.p., Terowie n.d.p.). The railway yards were 'immense' as they extended for almost three kilometres to swap trains from broad gauge to narrow gauge (Regional Council of Goyder n.d.p.). Terowie was chosen as the break-of-gauge site on the basis that wool was transported via broad gauge for processing and marketing facilities to Port Adelaide, while grain was transported to Port Pirie on narrow gauge (National Railway Museum n.d.p.). However, in 1969 the broad gauge line was extended from Terowie to Peterborough resulting in the town becoming a 'whistle-stop' (Regional Council of Goyder n.d.p.). The loss of the major industry and the bypass of the Barrier Highway resulted in the town's decline.
- Yongala 'developed because people felt that the railway would come through the town but the swift development of Peterborough as an important railway junction' meant that expectations of Yongala developing into a major centre were not met (Peterborough Tourism Inc 2012).
- Mundoorra was connected to Port Broughton but was effectively stranded with the closure of the short rail link in 1942 (Bell 1998). Combined with not being positioned along a major highway, the decline of the town was almost inevitable; with a loss of population from 878 persons in 1911 to only 177 by 1961 (no estimates are provided for 2006).

Another feature of the changes in the Upper North settlement patterns has been the loss of many towns based on servicing the local agricultural industry. Productivity gains, declines in labour requirements, amalgamation of farms to achieve economies of scale and increasing global competition has resulted in a substantial decline in population numbers, resulting in the loss of many small towns²². Bell (1998, p.33) starkly describes the visible effect on the landscape 'where unoccupied houses surrounded by wheatfields are a common sight'. Bell (1998, p.34) goes on to estimate, by citing the work by Michael Williams, that between the 1930s and the 1970s, an average of three houses were abandoned each month.

²² This is examined further in Chapter 9.

Port Pirie

Port Pirie is located on the eastern shore of the Spencer Gulf in South Australia, some 230 kilometres from Adelaide. In 2006, the city had a population of just over 13 000 persons, the eighth largest urban centre in the state. It is an important industrial base for South Australia, with a strong focus on metal product manufacturing (10 per cent of employed residents in Port Pirie worked in basic non-ferrous metal manufacturing in 2006 (ABS 2006a).

Port Pirie's economy has undergone several changes, with each building on the city's fortunes. Bell (1998) describes the city as having 'five roles' over its history: a wool port for local pastoralists, then a grain port for the agricultural industry, then a regional rail hub with the construction of the rail link, followed by being a major port for Australia's base metal mines and finally a smelter location for mineral concentrate.

Rail has been an important driver for the type and scope of economic activity that has developed in the city. Of particular importance were the extension of the Port Pirie rail line to Cockburn near the New South Wales border and its location only 56 kilometres from the major mining town of Broken Hill. The rail line was extended privately over the final 56 kilometres by the Silverton Tramway Company (STC) as the New South Wales government would not allow the South Australian government to build over the border.

The result was a dramatic increase in activity for Port Pirie and surrounding locations. This rail line was the supply support for mining operations for Broken Hill and was the export link to the outside markets, raising both shipping and rail activity. This in turn prompted the Broken Hill Proprietary Co Ltd (BHP) to build a smelter in Port Pirie, and later a lead refinery plant.

A substantial stimulus for this type of economic activity for the town was the First World War. Germany was a large importer of Australia's concentrate for smelting but with the outbreak of war this stopped. In addition, shipping was disrupted and stockpiles of concentrate accumulated. The effect was the formation of the Broken Hill Associated Smelters (BHAS), a joint venture that by 1918 resulted in the largest smelters in the world (Blainey 1968 cited in Bell 1998).

Whyalla

Whyalla's growth over the period is striking, with the initial impetus being iron ore mining (City of Whyalla n.d.p.). At the beginning of the twentieth century, the town (then called Hummock Hill) was minimal. It grew from the construction workforce for a tramway to Iron Knob, where deposits were located, and a jetty to load them (City of Whyalla n.d.p.). At this stage, there was only basic accommodation (such as tents), unsealed roads, and no telephone. It was renamed Whyalla in 1914, and in the subsequent years gained services such as police, a bank and sporting associations (City of Whyalla n.d.p.).

Another boon for the town's growth was the start of construction of a blast furnace and harbour at the end of the 1930s. The population grew again as the Second World War created demand for the town to build patrol ships for the Australian Navy, stimulating the creation of more town facilities. A water pipeline from Morgan in 1944 'enabled industry and the population to grow at an ever increasing rate', and the next year, Whyalla transitioned from being a BHP company town to having a local government (City of Whyalla n.d.p.).

After the war, the city shifted from building navy ships to commercial ones, and the population increase was aided by the arrival of post-war refugees. Over the next few decades, industrial operations continued to expand, including the construction of an integrated steelworks. However, when the shipyards closed in the 1970s, the population began to decline from its peak of 33 000 in 1976 to 21 100 by 2006 (City of Whyalla n.d.p.; ABS 2006a). However, Whyalla remains a major centre in South Australia and retains a strong industrial base, with 18 per cent of employed residents working in basic ferrous metal manufacturing in 2006 (ABS 2006a).

The Upper North: key themes

The Upper North region demonstrates the importance of industry and transport in shaping settlement patterns. All three major regional centres in the area (Whyalla, Port Pirie and Port Augusta) were established as industry transport nodes (pastoral, agricultural and mining ports). The coming of rail created opportunities both in terms of transport and employment in the rail industry itself. The growth of Whyalla (and Port Augusta) demonstrated the conditions under which these towns became large centres. They evolved with newer emphasis on secondary industry using materials from their primary industries. The Upper North also followed a wider pattern of thinning out of small, agriculturally-based or railway support towns.

2. Western Australian Goldfields

Western Australia's development occurred later than the eastern colonies and it is possible that this has contributed to a different settlement pattern than those observed on the east coast. For instance, the loss of small towns based on servicing agriculture has not been as marked. One important factor in the development of the state has been mining activities. The Goldfields region, positioned several hundred kilometres to the east of Perth, provides an illustration of this evolution (see Map 5.2).

Like Victoria, a considerable part of Western Australia's development was due to gold rushes (in the 1890s), but in a much tougher environment. Mining operations at this time meant setting up a town to meet the needs of miners and their families. Mines were points of wealth attracting activity, and to open a mine was to open a town.

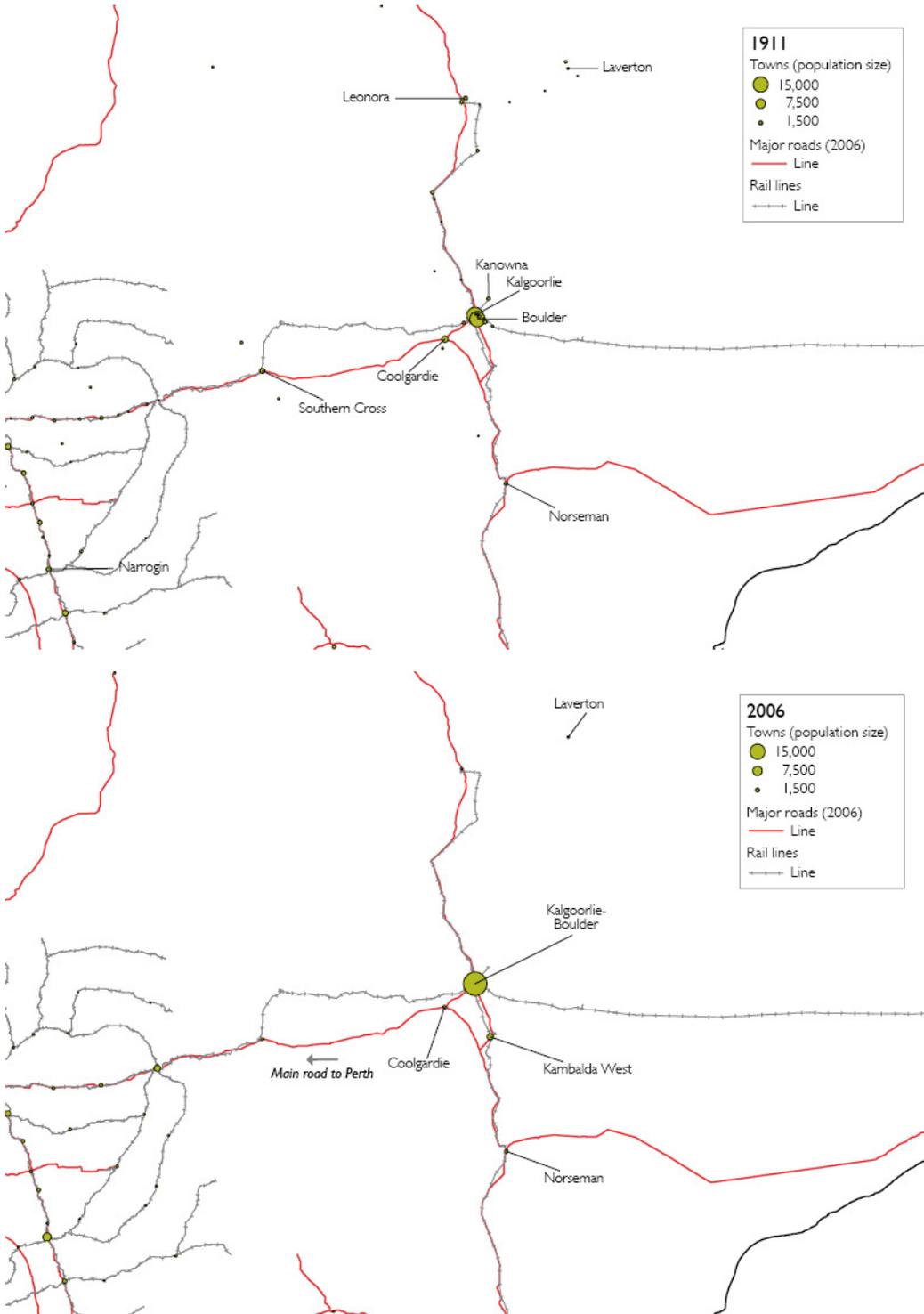
Map 5.2 illustrates the 1911 and 2006 populations around the goldfields region, illustrating the contrasting fortunes of many goldfields towns, while Table 5.2 presents the populations of several of these towns over the period.

Table 5.2 Population, Kalgoorlie and surrounds, Western Australia, 1911, 1961 and 2006

Town	1911	1961	2006
Kalgoorlie-Boulder	26 321	15 469	28 241
Norseman	1 057	2 104	860
Coolgardie	2 533	625	801
Kambalda West	-	-	2 703
Laverton	296	57	313
Kanowna	1 029	-	-

Source: ABS/CBCS Census of Population and Housing 1911, 1961 and 2006.

Map 5.2 Western Australian Goldfields, 1911 and 2006



Note: Rail lines are from MapInfo StreetPro (2007), and include both modern and disused lines.

Source: BITRE derived estimates from ABS/CBCS Censuses 1911 and 2006.

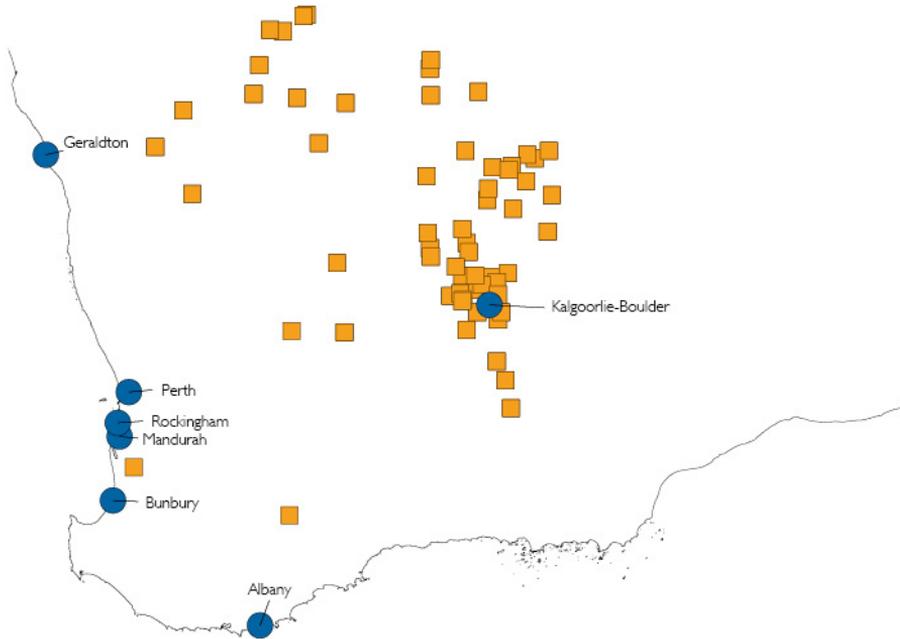
As the maps show, Kalgoorlie-Boulder has been the dominant population centre in the area throughout the twentieth century. Kalgoorlie was established in 1893 with the onset of the gold rushes—attracting thousands of people that saw the development of 93 hotels and 8 breweries in only a short space of time (Kalgoorlie Boulder Pure Gold n.d.p.). By 1905, Kalgoorlie was described by the Australian Handbook as a ‘thriving municipality’ which had six bank branches, five hospitals, was the junction of four railway lines, all in support of about 15 000 miners. The conditions, however, were very difficult, with water sometimes more valuable than gold. This led to the development of the Golden Pipeline, constructed between 1894 and 1903, that pumped fresh water uphill some 500 kilometres from Perth to Kalgoorlie. This significant piece of infrastructure reinforced the dominance of Kalgoorlie as the major centre in the goldfields (Pipeliner 2007). In fact, it is still in use today, providing water to over 100 000 people in Kalgoorlie and various towns along the way (Australian Geographic 2012).

In contrast with the fortunes of Kalgoorlie, the population of Coolgardie, the ‘birthplace of the great gold rush’, has declined significantly over the century (Goldfields Esperance Development Commission n.d.p.). As the surface gold began to run out, people moved away.

The decline in Coolgardie’s fortunes was not unusual, as many surrounding towns became ghost towns. The 1911 Census does not reveal the complete picture of the number of disappearing towns. Map 5.3 presents over 60 gold mining ‘ghost towns’ (appearing as boxes) that were established during the gold rush period in the 1890s. Many were gone by the 1911 Census. The factors that led to their demise included the depletion of the resource, the increasing concentration of activity towards Kalgoorlie, the rough environment (lack of water and heat) and price slumps.

The ghost town of Kanowna, established in 1893 just 20 kilometres north of Kalgoorlie, is an example. At its peak, it was a city of around 12 000 people, yet little remains of it today. The town was also the scene of controversy in 1898 as Father Long, following the decline of population numbers, alluded to a vague location of a 100 pound gold nugget in the vicinity of Kanowna (SMH 2004). This created a stampede of gold prospectors into the town (The West Australian 1898). Unfortunately, this temporary growth in population quickly dissolved as the discovery was later believed to be a hoax (SMH 2004). For the past few decades, however, there has been a goldmine next to the former town site (Kanowna Belle), but today there is no longer a town.

Map 5.3 Abandoned gold mining towns in Western Australia



Source: Landgate (n.d.p.).

In contrast, an interesting former ghost town is Kambalda (made up of Kambalda East and Kambalda West), just to the south of Kaigoorlie-Boulder. Like many other mining towns, Kambalda’s history included some striking changes. Eklund (2012, p.205) called it ‘a town with two histories’. It was established during the Western Australian gold rush in 1897 when gold was discovered in the area, but the town effectively closed by 1907. Then, in the 1960s, it was revived by the Western Mining Corporation, when nickel was discovered in the area. First Kambalda East and then Kambalda West were built to serve the mine (it is also near a large gold mining operation at St Ives) and by 2006 the town grew to a population of 2700 (ABS 2006a), with 56 per cent of employed residents working in mining (ABS 2006a).

The development of the new town also illustrates a contrast to mining towns developed at the beginning of the twentieth century in terms of amenity and comfort. In describing the new mining town, the Australian Women’s Weekly (1973) reported that:

‘Kambalda is much younger [than Kaigoorlie]...and much smaller...But Kambalda is new, with all mod cons, such as air-conditioning, smart new houses, up-to-date working conditions with the latest machinery for working the mines. It appeals to young couples. The company which runs Kambalda—Western Mining—has poured 100 million dollars into the town. It is well-planned with parks and trees, has a thriving shopping centre, schools, and community centres.’

Western Australian goldfields: key themes

The economic value of the gold finds in the goldfields region created activity. The economic wealth in the area is reflected in the size of the towns established. These towns served the gold mines, and the size of the towns reflected the economic potential of the mines. While the exact siting of the towns could be due to chance, historical factors or particular geographic conditions, the size of potential economic wealth in the area determined the presence of towns and the amount of activity within them.

The Western Australian goldfields differ to gold-related settlement in New South Wales and Victoria. The Western Australian goldfields region is a much harsher and dryer environment, which impacts both on the productivity of the land and amenity appeal. These tough conditions contributed to the loss of many small mining towns, even prior to the 1911 Census. Their survival depended on their function as service centres for miners, and had no reason to continue when the mine disappeared. In contrast, the largest towns in 1911 (Kalgoorlie-Boulder and Coolgardie) survived, aided by investment in water and town infrastructure developed at their peak.

The goldfields are also much further away from other settlements. Kalgoorlie is almost 600 km from Perth, whereas (for example) Ballarat is 113 km from Melbourne, and Bathurst 200 km from the centre of Sydney (albeit on a more difficult path), but these towns are also near other settlement.

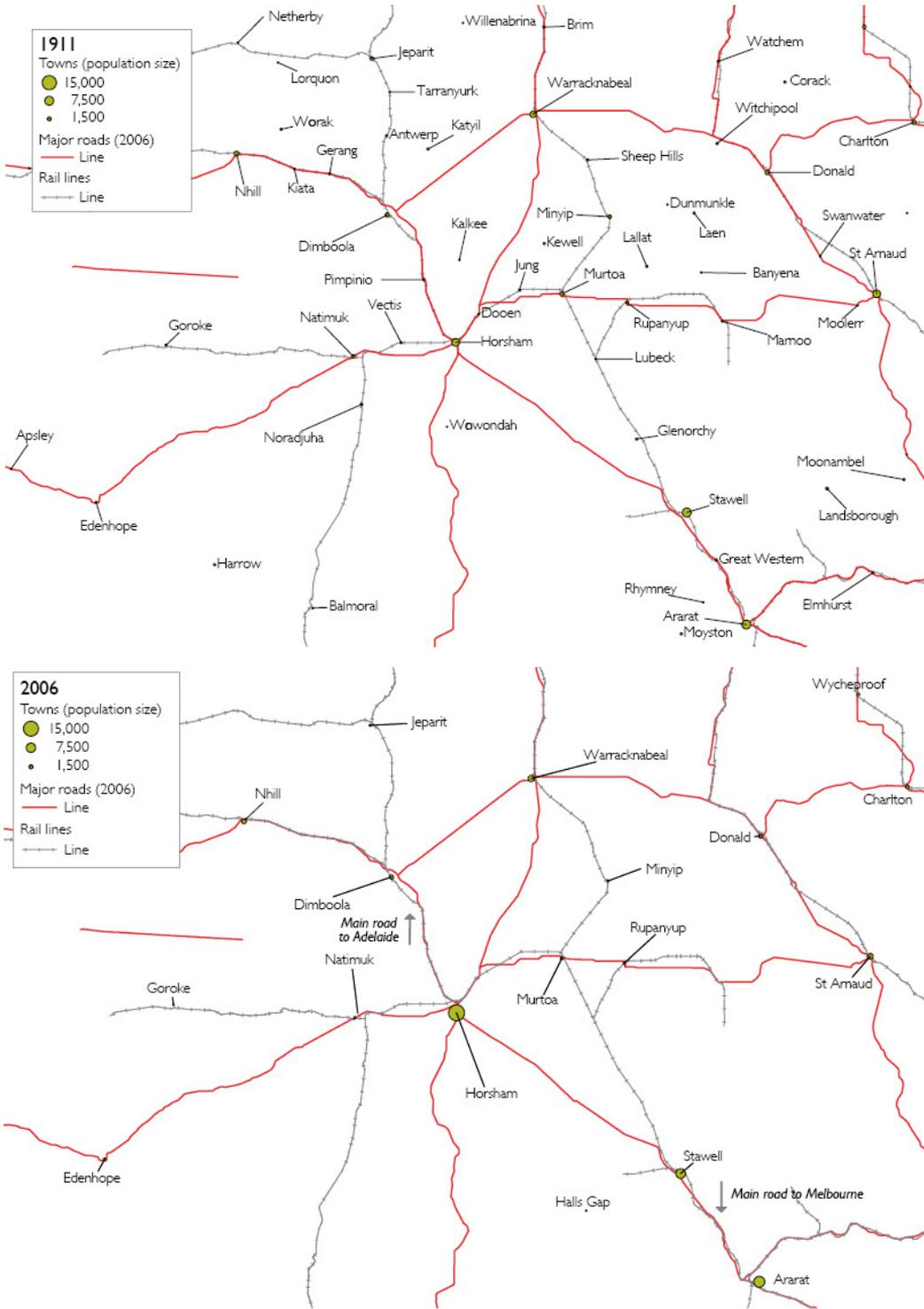
The difference between Western Australian and Victorian goldfield towns was that the Western Australian towns struggled to find other non-mining opportunities that enabled towns in Victoria to continue. This was due to the basic fertility of the land in Victoria, enabling agriculture that led to the development of a more closely-settled environment.

3. Wimmera, Victoria

The Wimmera is a wheat and wool growing district in western Victoria. Pastoral pursuits were the main economic activity in its beginnings. However, from the 1870s, these pastoral properties were being divided up through the closer settlement schemes, as a means to promote cropping activities and population growth. This has made the Wimmera one of the most important cropping districts in the country.

While this economic base formed the backbone of the district's growth it also presented major challenges. As highlighted by Museum Victoria (n.d.p.), 'the history of cropping in this area is one of coping with much adversity brought about by variable rainfall and drought, economic downturns, depressions and unstable prices, plant disease, declining soil fertility and soil structure, and the effect of two world wars'. The visible effect of this change on the settlement pattern is provided in Map 5.4, with the population of key towns over the period provided in Table 5.3.

Map 5.4 Wimmera Victoria, 1911 and 2006



Note: Rail lines are from MapInfo StreetPro (2007), and include both modern and disused lines.

Source: BITRE derived estimates from ABS/CBCS Censuses 1911 and 2006.

Table 5.3 Population of towns, the Wimmera, Victoria, 1911, 1961 and 2006

Town	1911	1961	2006
Horsham	3 554	9 240	14 120
Ararat	5 402	7 934	7 172
Stawell	4 843	5 506	5 878
Warracknabeal	2 484	3 061	2 491
St Arnaud	4 096	3 150	2 275
Nhill	1 528	2 233	1 917
Dimboola	1 435	1 923	1 492
Murtoa	1 147	1 135	790
Natimuk	933	490	444
Rupanyup	539	576	398

Source: ABS/CBCS Census of Population and Housing 1911, 1961 and 2006.

Table 5.3 shows that Horsham grew to become the important service centre for the region, with a population of around 14 000 people in 2006 compared with 3500 in 1911. The reason that Horsham has dominated as a centre even though Stawell, Ararat and Warracknabeal were comparable sizes in 1911 is likely to be related to transport and its position relative to other centres. Horsham is a hub both for road and rail, including being on the route between Adelaide and Melbourne, and is the closest regional centre for many towns to the west. Horsham is also further from the large centre of Ballarat than Stawell and Ararat: perhaps far enough to avoid severe competition.

The growth of Horsham is in contrast to the 'loss' of small settlements. While many of the settlements still exist, some are small, and no longer classified as urban centres or localities by the ABS. For example, Jung, a small village close to Horsham, had a population of close to 500 persons in 1911, but today Jung's population is estimated to be only 100 on the Jung community website (Jung Township 2010).

Jung also provides an illustration of the loss of function for many small towns positioned near a major centre. In 1905, it had many more services than today: money-order, savings bank and telegraph office, one hotel, two stores, several tradesmen's shops, mechanics institute and library, a school and several places of worship (Australian Handbook 1905). It was also a hub for industry as 'in its early days Jung relied on the production and transportation of wheat, and trucks could be seen lined up as far as the eye could see, waiting their turn at the Wheat Board Office prior to unloading at the silos' (Jung Township 2010).

Today, a lot of these services are accessed from Horsham. As the Jung community website acknowledges, the decline of business (and sporting communities) from the 1970s was related to improvements in roads and cars. In fact, the church, school and post office all closed within seven years of each other, from the late 1980s and early 1990s (Jung Township 2010).

This town provides an illustration of the experience of many towns. There are several forces leading to businesses and families slowly moving away. One is the economic decline of the local industry. The other is proximity (and improvements in access) to a large centre, resulting in local shops not surviving.

A defining feature of this type of population decline is the long timeframe for these changes to occur. These towns still retain an important social function. The strong community ties that are not easily measured are a key factor in their resilience.

Being close to large centres has also resulted in some towns actively shifting their functions, such as adopting the role of commuting towns. For example, the DPCD (2007) investigation into Murtoa (east of Horsham) found a part of this town's new direction has been the development of its commuting function, as Murtoa offers a small-town lifestyle (this is examined further in Chapter 11).

The changing economic functions of towns is also apparent in localities such as Halls Gap, which did not appear in 1911 (as it had a population of 50 persons) but had grown to 281 persons by 2006 and increased further to 305 persons in 2011 (ABS 2006a; 2011). A clear point of difference for this town is its function. Halls Gap is a gateway to the Grampians National Park, a popular tourist destination. This function is reflected in the employment structure. In 2006, 27 per cent of employed residents worked in accommodation, followed by 10 per cent in cafes, restaurants and takeaway food services, 5 per cent in school education and 4 per cent in both parks and gardens operations and in travel agency and tour arrangement services.

Another feature is that the biggest towns in 1911 which are now on the major road network (such as Stawell, Warracknabeal, St Arnaud, Nhill, Ararat and Dimboola) have fared much better than those smaller towns off the major highways. These larger towns, with the exception of St Arnaud, have had fairly stable populations over roughly a hundred years, possibly because they had a sufficient population to maintain a threshold of activity and were able to draw people from the surrounding areas, particularly those towns not positioned on a main highway.

The Wimmera: key themes

The Wimmera area is an example of centralisation, and the importance of transport hubs in favouring one town's growth over others. This is typical of the patterns in the Australian wheat-sheep belt. Despite Horsham being one of many similar-sized towns in 1911—and in fact, smaller than several others in the region—it had become the dominant centre in 2006. Changes in the Wimmera's settlement pattern also highlight the loss of small towns, and the changing functions, particularly towards commuting and social activities.

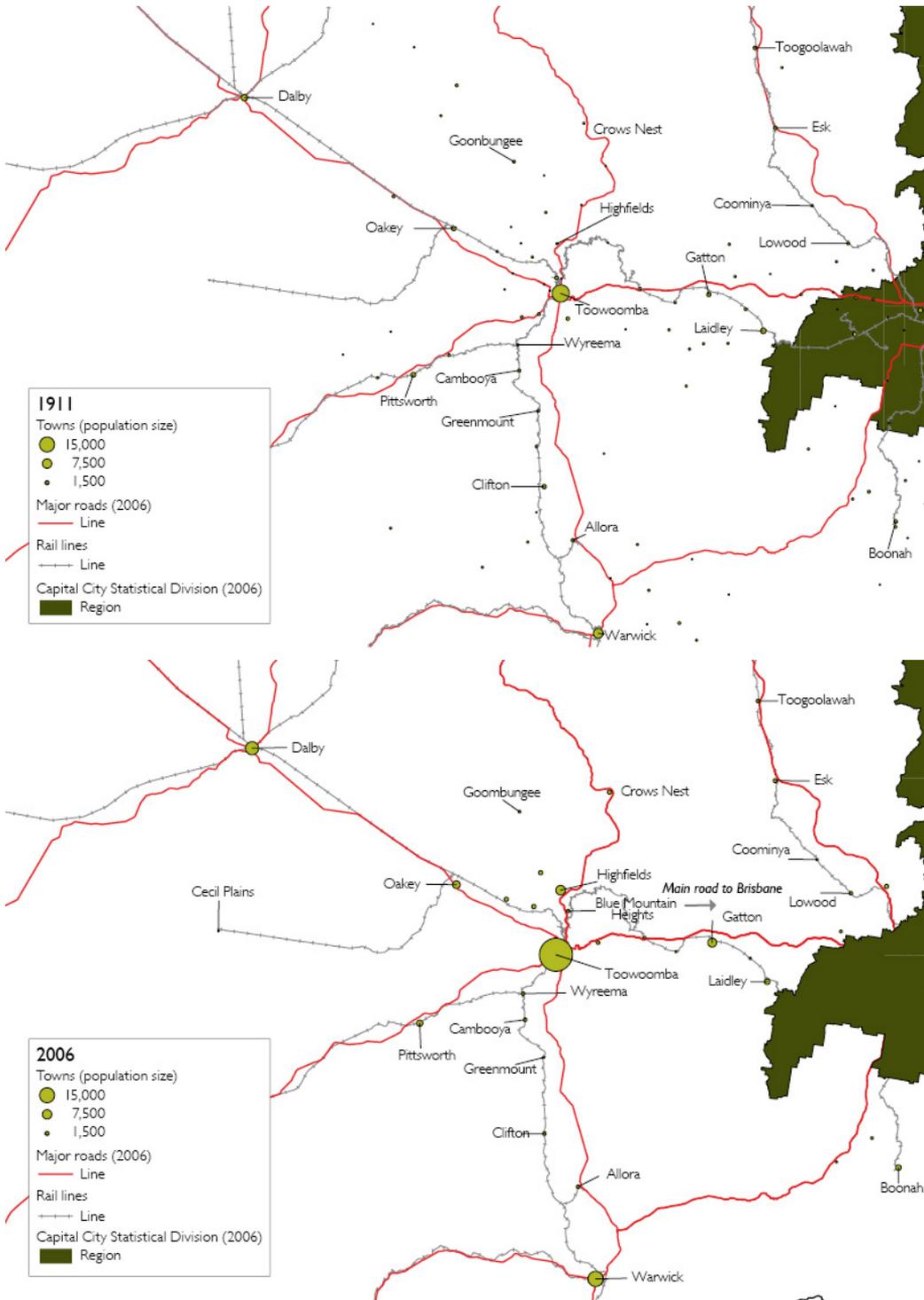
4. Toowoomba and surrounds, Queensland

Drayton was the first inland town established in Queensland beyond the Great Dividing Range, but today it is a suburb of the expanding major regional city of Toowoomba in the Darling Downs region. Ivan McDonald Architects (2001, p.10) reported that the town of Drayton was 'doomed almost from the start since the motivation for its siting was its intermediate position between three stations (Eton Vale, Westbrook and Gowrie) rather than any strategic consideration of the natural resources or topographical advantage required of a growing township'. The result was the establishment of nearby Toowoomba, with a better geographic location due to permanent water supply, even ground and 'an immediate descent over the range' as the focal point for activity (Ivan McDonald Architects 2001, p.10) (see Map 5.5).

Toowoomba grew into the major economic, administrative and education centre, initially from pastoral activities dominating the region in the early 1840s, followed by closer-settlements schemes in the 1870s to the 1890s attracting people into the region. Later, there was an influx of soldiers during the Second World War.

The fertility of the region underpinned the economic potential of industry, and in turn, the potential growth of the Darling Downs, and Toowoomba as its centre. The land was suitable for grazing, cereal growing and dairying, while timber growing in the area could be used for the mills. This fertility supported early secondary industry, including agricultural equipment and flour milling (Centre for the Government of Queensland 2013). The Toowoomba City Centre Heritage Study also lists a range of influences such as Toowoomba's strategic location being 'a gateway to the west', its role as a cultural and social hub as well as diversification of industry, trade and commerce (Ivan McDonald Architects 2001). Toowoomba is also an example of a major regional city existing in close proximity to a capital. That proximity on the one hand is constrained by Toowoomba's position to the west of the Great Dividing Range escarpment, but enhanced by improved roads and the expansion of Brisbane.

Map 5.5 Toowoomba and surrounds, Queensland, 1911 and 2006



Note: Rail lines are from MapInfo StreetPro (2007), and include both modern and disused lines.

Source: BITRE derived estimates from ABS/CBCS Censuses 1911 and 2006.

Table 5.4 lists the population of Toowoomba and some key surrounding towns and centres from 1911 to 2006. While Toowoomba illustrates the rise of a major regional centre, there are a number of other towns in close proximity whose populations have also increased. These include Gatton to the east, Oakey to the west and Highfields to the north. The growth of the main regional centre has been complemented by growth in the surrounding towns. However, consistent with other areas, a number of smaller towns have declined or disappeared, particularly those further away or not positioned along a major road.

Table 5.4 Population, Toowoomba and surrounds, Queensland, 1911, 1961 and 2006

Town	1911	1961	2006
Toowoomba	16 160	50 134	95 263
Warwick	5 562	9 843	12 564
Dalby	2 454	7 400	9 778
Highfields	378	184	5 909
Gatton	1 307	2 623	5 295
Oakey	1 332	1 871	3 653
Pittsworth	1 684	1 513	2 564
Laidley	2 086	1 543	2 386
Crows Nest	1 034	810	1 445
Goombungee	774	311	717

Source: ABS/CBCS Census of Population and Housing 1911, 1961 and 2006.

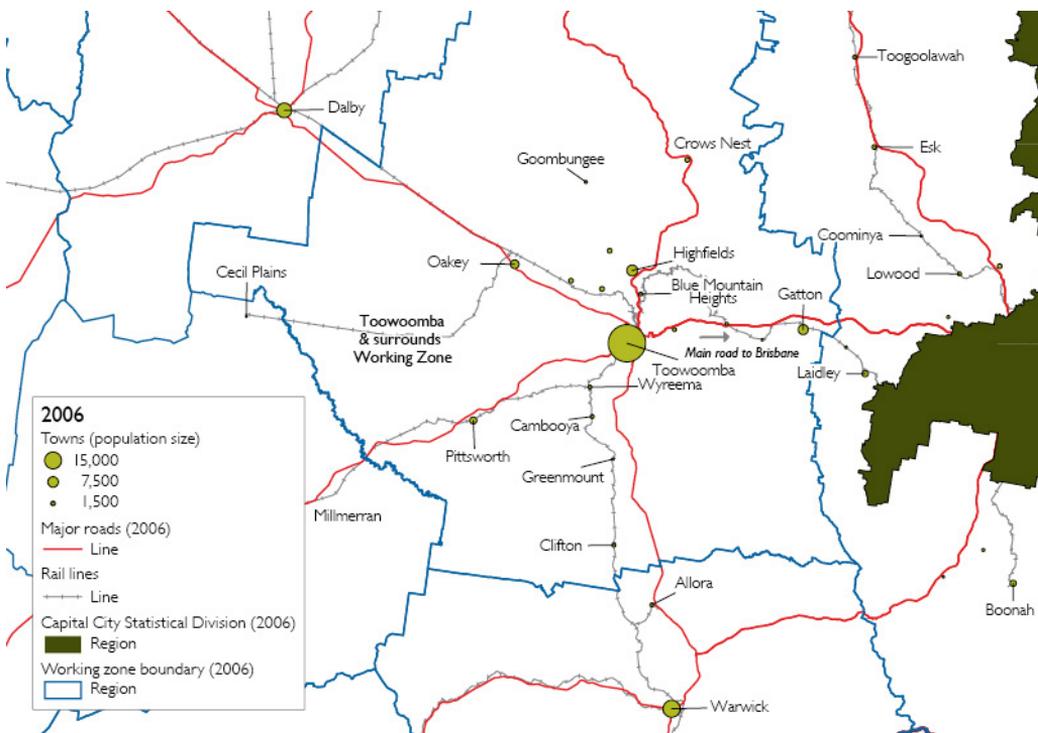
A number of towns in Table 5.4 had declining populations between 1911 and 1961, and then grew between 1961 and 2006. This includes Highfields, Pittsworth, Laidley, Crows Nest and Goombungee. This suggests that there were separate circumstances under which the towns declined in the first half of the century and grew in the second. The decline in the first half is likely to relate to centralisation of population and industry. However, the growth in the second half is likely to be due to improved personal transport coupled with an overall growth in the regional population. This enabled these towns to be revitalised by attracting residents who could still access Toowoomba for its employment opportunities and services but preferred a smaller-town lifestyle. At the same time, the expansion of the Toowoomba region, perhaps related to its strategic position close to Brisbane, created extra population demand in Toowoomba itself as well as the nearby towns.

Goombungee, for example, is about 35 kilometres to the north of Toowoomba, and has survived despite being small and off a major highway. Its 2006 population was very similar to its 1911 population (over 700 people), but it experienced a decline in the interim years. Despite the similar population numbers, its functions and town infrastructure has vastly changed. At the beginning of the century, there were dairy and fodder crop farms, dairy factories, a railway line, churches, hotels, a hospital and shops (Centre for the Government of Queensland 2013). The town declined in the 1960s, with the closure of the rail line and butter factory (the latter in a broader context of amalgamation).

However, the resurgence of Goombungee came about from the 1970s as it offered rural-residential living (Centre for the Government of Queensland 2013). The Goombungee website (2013) describes the town’s current businesses and facilities as ‘a local shopping centre consisting of a local shop, doctor, chemist, real estate agent, hair dresser, Toowoomba Regional Council Office and Depot, Library, Art Gallery and antique store, post office... Goombungee-Haden showgrounds, primary school, golf club, Guides Australia, public hall, four churches, kindergarten, historical society, hotel, police station, fire station and SES’ as well as several other businesses (dealing in sheds, cars and so on). This indicates that services with a social character have been retained in town, despite this area’s proximity to Toowoomba.

The growth of towns closer to Toowoomba is also part of the influence of its labour market. BITRE has previously considered the commuting patterns from the 2006 journey-to-work Census data and found that large regional cities were increasing their sphere of influence on local labour markets. Map 5.6 presents the population size of towns around Toowoomba from Map 5.5, with the inclusion of the commuting working zone in blue (based on Statistical Local Areas (SLAs)).

Map 5.6 Toowoomba and surrounds working zone, Queensland, 2006



Note: Rail lines are from MapInfo StreetPro (2007), and include both modern and disused lines.
 Source: BITRE derived estimates from ABS/CBCS Censuses 1911 and 2006.

The working zone region provides an indication of the geographical influence of Toowoomba for the surrounding towns and regions, as illustrated by the large commuting flows:

- Cambooya and its surrounding hinterland retain only 12 per cent of its workforce, whereas roughly 65 per cent commute to Toowoomba for employment.
- Within Crows Nest 22 per cent of commuters remain within the SLA, while nearly 60 per cent commute to Toowoomba for employment.
- Gatton is much more self-contained with around 55 per cent working within the same SLA; however, Toowoomba continues to draw people from Gatton. That said, the role of Brisbane would be expected to increase over time with Gatton's focus potentially shifting more towards the state capital.

As a result, an easy commuting distance provides towns with an alternative or additional component to their function. In contrast, Dalby is much more self-contained. It retains 90 per cent of its workforce, with only 1 per cent working in Toowoomba. Located about 85 kilometres northwest of Toowoomba on the Warrego Highway, it was able to grow because of its distance from the major centre. Unlike some of the towns surrounding Toowoomba, Dalby is a centre in its own right. This role was established early, with agricultural shows and grain and livestock selling by the 1870s (Centre for the Government of Queensland 2013).

Dalby was connected to Toowoomba via rail in 1868. Later, like Oakey, it benefited from being a rail hub, with three branches commencing operation between 1906 and 1914 (Centre for the Government of Queensland 2013). Pugh (1911) described it as 'the centre of a large agricultural and dairying district', with a butter factory opening in 1906. Its services included multiple agricultural machinery depots and machinery agents and importers (Pugh 1911). Population growth was also assisted by pastoral runs being turned into smaller blocks.

In the decades up to the 1930s, more town infrastructure was established, such as a central school, council chambers, swimming pool and a picture theatre (Centre for the Government of Queensland 2013).

Dalby's service centre role continued with the establishment of more institutions and infrastructure—for example, it now has the Dalby Agricultural College, a large livestock market, the biggest grain receival depot in Queensland and a bio-refinery making ethanol fuel from sorghum (Centre for the Government of Queensland 2013, Dalby.INFO n.d.p., United 2013). From the 1980s, cotton growing increased, and Dalby now has two cotton gins (Centre for the Government of Queensland 2013).

In 2006, Dalby's population was 9778, and its main industries (by resident employment) were school education, specialised machinery and equipment manufacturing, cafes, restaurants and takeaway food services, local government administration and supermarkets and grocery stores (ABS 2006a).

Toowoomba and surrounds: key themes

The growth of Toowoomba has reflected the economic potential of the Darling Downs lands, manifested in its industry activity, and the city's role as the main urban centre in this wider region.

Toowoomba provides an example of the influence that a large centre has on its surrounds. Many small towns around Toowoomba have disappeared since 1911, but at the same time, towns such as Highfields, Gatton and Oakey have grown in the second half of the twentieth century. However, proximity to Toowoomba means that some towns are not as service-centre oriented as they would otherwise be in more isolated circumstances. In contrast, a town like Dalby, further away from Toowoomba, is more self-contained and is a service centre in its own right.

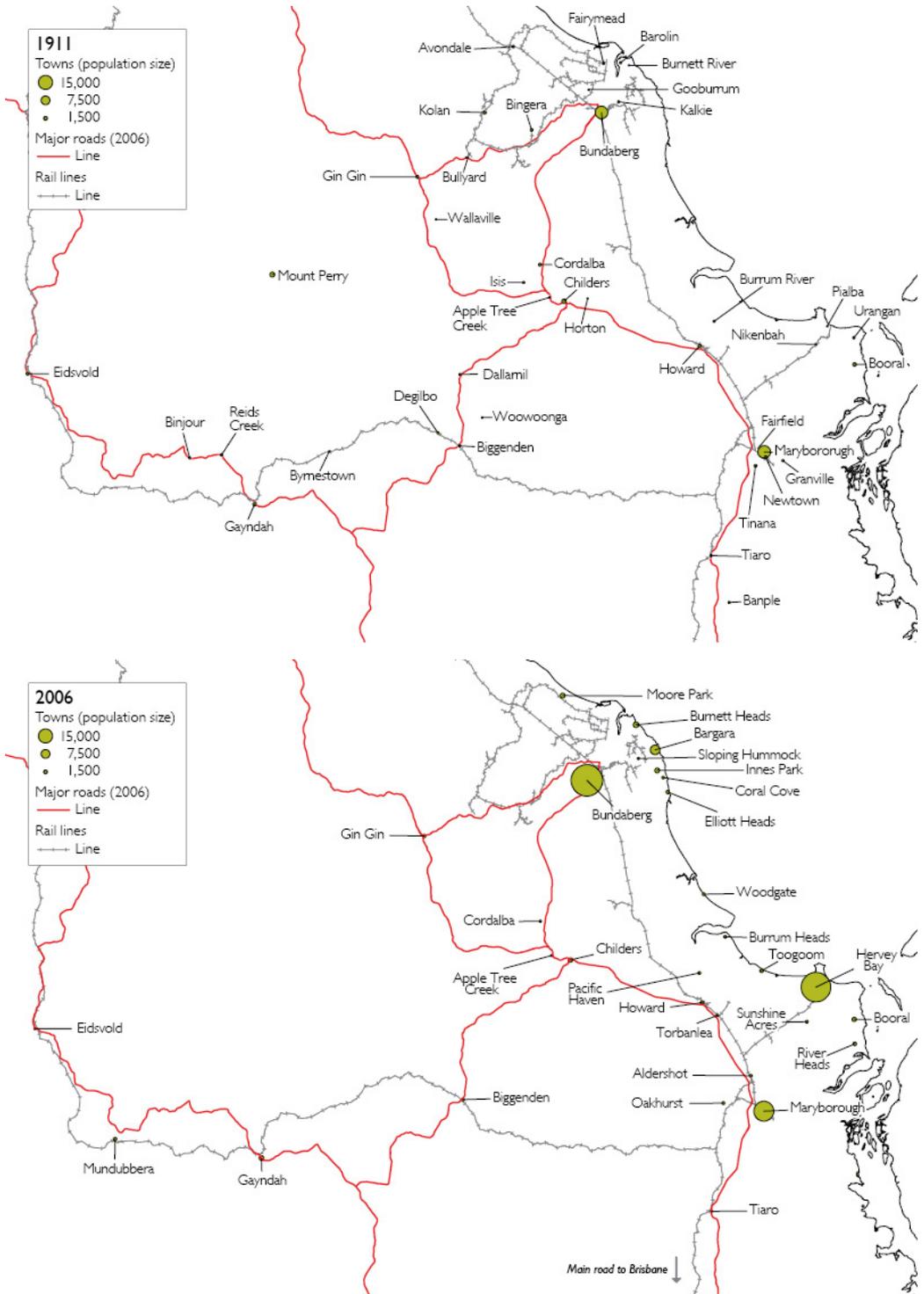
5. Hervey Bay, Bundaberg and surrounds, Queensland

Coastal Queensland has experienced a substantial amount of population growth, with people attracted to the beaches and sunshine. This case study provides an illustration of this growth and its influence on the surrounding regions.

Map 5.7 shows the area of Queensland covering Bundaberg, Hervey Bay and surrounds. The map illustrates the loss of many small inland towns and the growth of coastal ones.

In 1911, the two biggest towns in this area were Bundaberg and Maryborough. By 2006, both had grown, but coastal Hervey Bay—in 1911, existing as just a few discrete settlements—had overtaken Maryborough to become the second largest city in the area. Table 5.5 (following) lists the population for these three centres in 1911, 1961 and 2006.

Map 5.7 Bundaberg, Hervey Bay and surrounds, Queensland, 1911 and 2006



Note: Rail lines are from MapInfo StreetPro (2007), and include both modern and disused lines.

Source: BITRE derived estimates from ABS/CBCS Censuses 1911 and 2006.

Table 5.5 Population, Bundaberg, Hervey Bay and Maryborough, Queensland, 1911, 1961 and 2006

Town	1911	1961	2006
Bundaberg	8 727	22 799	46 962
Hervey Bay	-	4 191	41 226
Maryborough	9 410	19 126	21 498

Source: ABS/CBCS Census of Population and Housing 1911, 1961 and 2006.

Hervey Bay

The growth of Hervey Bay is linked to the increasing importance of amenity, and the preference for coastal locations. In particular, this city illustrates the ability of people—particularly those with a loose connection to the labour force, like retirees—to choose attractive locations in which to live. This is reflected in the high proportion of persons older than 65 years (22 per cent) compared to 13 per cent nationally in 2006 (ABS 2006a).

Hervey Bay began as a group of small localities based on the sugar industry—growing and processing sugar cane. The area was not recorded in the Census as ‘Hervey Bay’ until 1954, although the bay had been named that by Captain Cook (Centre for the Government of Queensland 2013). In 1896, Pialba (one of the localities, as seen on the map) was connected with Maryborough via a rail line, which meant that sugar growers could access the Maryborough sugar mill and people from Maryborough could access the coast for leisure (Centre for the Government of Queensland 2013).

While this shows that the area has long been recognised for its amenity, a greater modern emphasis on tourism and amenity living means that Hervey Bay has been in a better position to capitalise on this. One striking example of the tourism industry capitalising on natural amenity relates to whale watching. The first commercial whale watching operation started in 1987, and in the early 2000s, Hervey Bay was receiving about 65 000 visitors each year (Stoeckl et al. 2005).

Hervey Bay’s growth did not take place over the whole of the century, but was concentrated in later decades. Holmes et al. (2005, p.23) found that a ‘major shift in population relativities’ experienced between Hervey Bay and Maryborough occurred between 1971 and 2001, when Hervey Bay grew from about 6000 to 36 000 people, while Maryborough only increased from about 20 000 to 21 000. Holmes et al. (2005, p.23) also observed the close proximity of ‘prime tourism/retirement/lifestyle destinations alongside declining sugar towns’, suggesting a transition of town functions in this area. One of the triggers for this growth was the abolition of death duties on estates in the 1970s in Queensland, attracting many older residents to the state (Grossman 1989).

Hervey Bay, with a 2006 population of 41 226, is now a service and tourism area (ABS 2006a). The main industries by resident employment are school education, cafes, restaurants and takeaway food services, accommodation, residential building construction and supermarket and grocery stores, with the building construction being reflective of its population growth.

Bundaberg

Bundaberg grew around the sugar industry in the late 1800s, after brief trials of other industries (timber and corn production) (Bundaberg Regional Council n.d.p.). By 1883, the Bundaberg district was producing 20 per cent of Queensland's sugar, from producing only 3 per cent in 1881 (Centre for the Government of Queensland 2013).

By 1905, sugar, golden syrup and sawn timber were Bundaberg's 'great staple exports' (Australian Handbook 1905, p.534), and Bundaberg was the manufacturing centre for the primary produce of its hinterland: 'The town is connected by rail to the Isis scrub, and large quantities of cane and juice are brought hither to be manufactured into sugar at Millaquin Refinery and other factories' (Australian Handbook 1905, p.534).

Millaquin Refinery, established in 1882 (Nolan 1977), stimulated growth in the number of plantations in the area, and it also had the effect of raising land prices (Nolan 1977). The refinery was connected with nearby crushing mills on plantations via under-road pipes for mills up to seven or eight miles away, and other mills conveyed their juice to the refinery by river (Nolan 1977, Australian Handbook 1905). As Nolan (1977, p.160) reported, '[g]iven the lack of transport facilities, this method was an important factor in making potential sugar-growers' aspirations a reality'. In 1905, 32 mills were in operation, with about half of them selling to factories, and the other half making sugar themselves (Australian Handbook 1905).

This industry meant that Bundaberg became a major centre. The 1905 Australian Handbook reports that Bundaberg at the turn of the century had distilleries, district and circuit court sittings, a lands office, an immigration depot, schools, churches, library, general stores, hotels, butchers, brickyards, a foundry, a steam joinery, gas works, banks, a hospital, and other institutions.

Bundaberg's secondary industry evolved in connection with its sugar growing—for example, with the manufacturing of rum, soft drinks and sugarcane harvesters. The harvester technology evolved locally throughout the century, and Bundaberg became a major manufacturer and exporter of these machines in the 1960s, while the local sugar cane industry naturally benefited from this technological progress (The Institution of Engineers, Australia 1984). While rum is still being produced, the last sugar cane harvester manufacturer in Australia closed its factory in Bundaberg in 2004. This was due to lower sugar cane prices and the size of the sugar industry in Brazil (where the business was relocating) (AM 2004).

By 2006, Bundaberg had grown to be a major regional centre with a population of nearly 47 000. Its role as a service centre is evident by the industry structure. The most common industries of resident employment were school education (5.9 per cent), cafes, restaurants and takeaway food services (4.1 per cent), hospitals (3.6 per cent), supermarket and grocery stores (3.5 per cent) and residential care services (2.8 per cent) (ABS 2006a).

Maryborough

Maryborough was a 'hinterland railway town' in the nineteenth century, and a river port for wool (Centre for the Government of Queensland 2013). In the 1860s, Maryborough also had a growing sugar industry and a large timber mill. By the close of the nineteenth century, timber and mining were important industries, while 'closer-settlement and improvements in dairy technology' resulted in a number of butter factories being established in Wide Bay at the start of the twentieth century (Centre for the Government of Queensland 2013).

In 1905, Maryborough was described as 'the port of shipment for the greater portion of the produce of the Wide Bay and Burnett Nanango and Gayndah districts, and Burrum coal-fields, and is also the principal town in the district' (Australian Handbook 1905). In the early decades of the twentieth century, the rail line heading west was extended through Eidsvold, linking more farm areas to Maryborough. Eventually this line was extended north to Gladstone, allowing Gladstone to compete for export business with Maryborough (Centre for the Government of Queensland 2013).

A transition for Maryborough, similar to Whyalla, was the development of the shipbuilding industry during the Second World War (Centre for the Government of Queensland 2013). This transition prompted the Australian Blue Book to report that Maryborough was 'the most highly industrialised city in Queensland', and while it used to be the main port for produce from the surrounding area, this had changed with increasing emphasis on road and rail freight rather than shipping (the Australian Blue Book 1949 cited by the Centre for the Government of Queensland 2013).

However, from being an industrialised city, following the war the national trend in moving away from manufacturing towards service employment is also well-illustrated here. Manufacturing and dairying declined in Maryborough, and between 1971 and 1981, manufacturing employment went from 28 per cent to 22 per cent of employment in the district (Centre for the Government of Queensland 2013). In 2006, log sawmilling and timber dressing was the third largest industry by employment of residents, but the other industries among the five most prominent were all services: school education, hospitals, cafes, restaurants and takeaway food services and supermarket and grocery stores (ABS 2006a).

Hervey Bay, Bundaberg and surrounds: key themes

The changing settlement pattern in the area encompassing Bundaberg, Maryborough and Hervey Bay shows how these cities have changed relative importance with the shifting emphasis of different industries, transport methods and amenity. Like other traditional port towns, Maryborough was able to grow when its port was a key transport hub, before the new modes of rail and road made this less important. Both Maryborough and Bundaberg demonstrate the shifting emphasis of industry types: primary to secondary through to tertiary (services) based. As in the Upper North of South Australia, the secondary industry is connected with the primary industry. This area also captures the shift towards amenity areas. Not only has Hervey Bay grown into a city on the back of amenity, but smaller towns inland have declined as coastal towns have grown.

6. Griffith and surrounds, New South Wales

Just after 1911, a major government intervention impacted on settlement patterns in southern New South Wales, changing the productivity of the land and stimulating the creation of towns. This was the New South Wales Government's creation of the Murrumbidgee Irrigation Area (MIA), whose primary purpose was to stimulate industry (Freestone 2010).

A large infrastructure project, the MIA was established to 'control and divert the flow of local river and creek systems for the purpose of food production' (House of Representatives 2013). The MIA was given water from 1912, 'progressively turning extensive tracts of semi-arid Mallee country into a patchwork of highly productive farms' (Freestone 2010, p.123). Pastoral land was resumed to create smaller farms, but many were granted to inexperienced ex-servicemen as part of the soldier settlement schemes, and some were too small to be economically viable (Singh et al. 2005).

Initially, the MIA was managed by a Trust of the Ministers for Lands, Works and Agriculture (SMH 1912). A Commissioner for Water Conservation and Irrigation, Leslie Wade, was then appointed in 1913. Wade's job, beyond the MIA and farm infrastructure itself, was also to manage the construction of infrastructure and several towns: '[Wade] was looking to new railways to service the area, new business enterprises to handle and market the produce, processing facilities, power generation, and domestic water supplies and commercial service centres to support the expected population. The crowning glory would be new cities and towns...' (Walter Burley Griffin Society n.d.p.).

During the construction of the irrigation canals, a temporary town called Bagtown arose for the workers, so called because the accommodation was constructed from the cement bags (Griffith City Council n.d.p.(a)). This also had some key town services: a post office, stores, offices and basic sanitation.

The New South Wales government then established Griffith and Leeton as permanent service centres for the irrigation area, designed by Walter Burley Griffin. Griffith is less than 10 kilometres from the Bagtown site (Griffith City Council n.d.p.(a)).

Residential and business sites were sold to the public in both towns. In Leeton, 140 sites were sold in April 1913, while 129 sites in Griffith were auctioned in September 1916 (Walter Burley Griffin Society n.d.p.; Irrigation Record 1916). Griffith was planned as a city for 30,000 people, but its population currently stands at 16,000 (Walter Burley Griffin Society n.d.p.).

The hands-on approach to the population centres of the MIA by government continued after the establishment of Griffith and Leeton. Until 1928, the Water Conservation and Irrigation Commission (WC&IC) was responsible for local government services, at which point a newly formed shire council took on these duties (Griffith City Council n.d.p.(b)). At the same time, farms moved from leasehold to freehold and the WC&IC also handed other control to banks and farmer co-operatives (Murrumbidgee Irrigation Ltd 2012).

By 2006, the two irrigation towns of Leeton and Griffith were the largest in the area (see Table 5.6), with Griffith having city status for almost 20 years.

Table 5.6 Population, Griffith and surrounds, New South Wales, 1911, 1961 and 2006

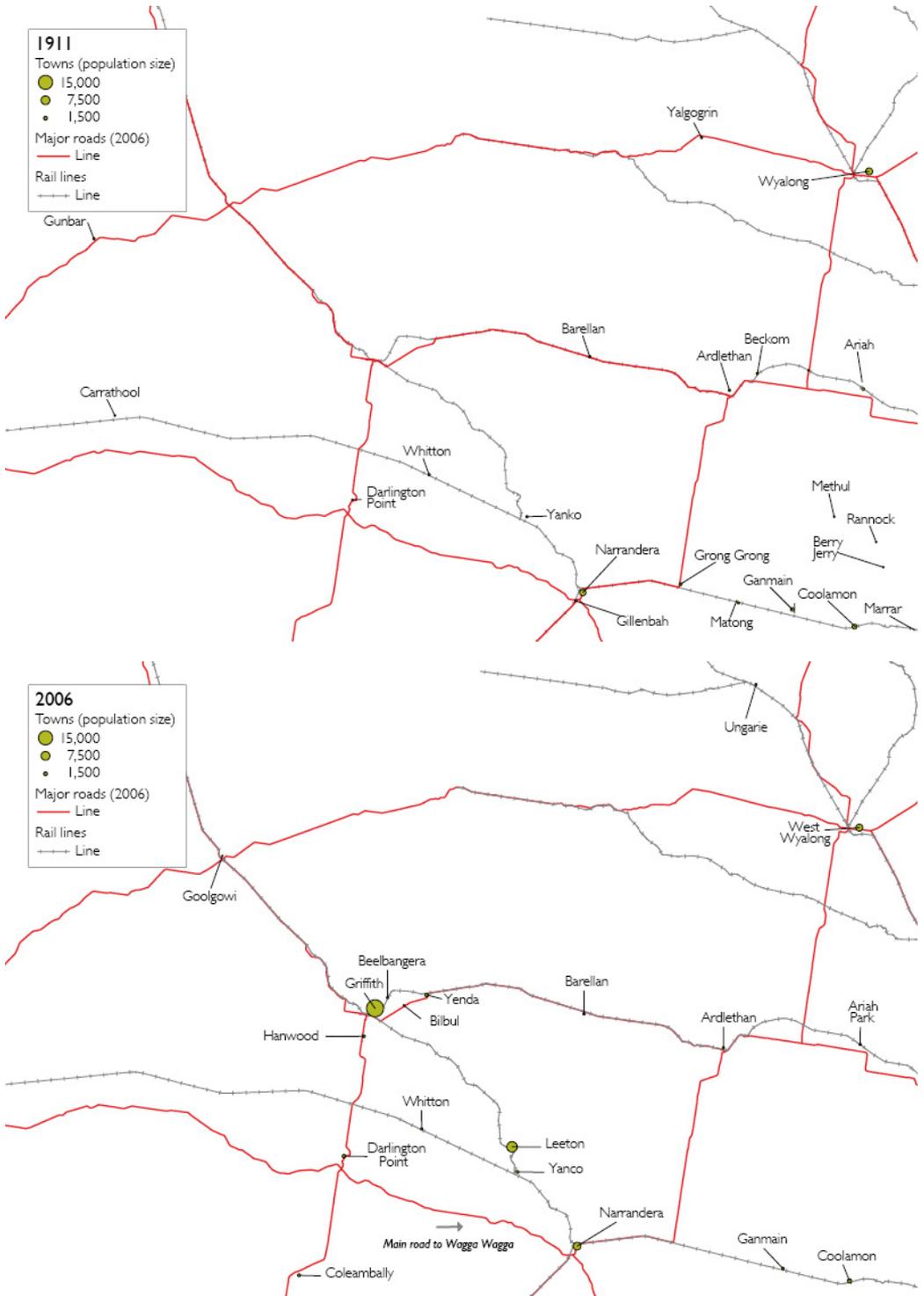
Town	1911	1961	2006
Griffith	-	7 696	16 185
Leeton	-	5 354	6 827
Narrandera	2 888	4 718	3 961
Wyalong/ West Wyalong	3 301	2 977	3 189
Ardlethan	465	504	379

Source: ABS/CBCS Census of Population and Housing 1911, 1961 and 2006.

In the 1960s, a similar irrigation project—the Coleambally Irrigation Area (CIA)—was developed south of Griffith, to take advantage of diverted water from the Snowy Mountains Hydro-Electric Scheme (Freestone 2010). As part of this, the town of Coleambally was established in 1968.

Map 5.8 shows the area of southern New South Wales surrounding what is now Griffith. The impact of irrigation has been profound, representing a fundamental shift in economic circumstances that was powerful enough to establish new towns and cities. This is an example of how new technology, infrastructure and government intervention affected settlement patterns. Towns such as Aria Park, Coolamon, Ganmain and Ardlethan are outside the MIA, and have been under pressure during the latter half of the twentieth century.

Map 5.8 Griffith and surrounds, New South Wales, 1911 and 2006



Note: Rail lines are from MapInfo StreetPro (2007), and include both modern and disused lines.

Source: BITRE derived estimates from ABS/CBCS Censuses 1911 and 2006.

The smaller farms around Griffith are horticultural (fruit), with larger farms having rice, cereals, sheep and beef (Griffith City Council 2006). The growth of primary industry has promoted the establishment of downstream industries. Griffith's main industry by employed residents in 2006 was beverage manufacturing (7.3 per cent), a reflection of its wine and juice industries, followed by meat and meat product manufacturing (4.7 per cent). These indicate the importance of processing industries to the local economy. Griffith's other main industries for resident employment were school education, hospitals and supermarket and grocery stores (ABS 2006a), reflecting the city's role as a service centre.

Wyalong and West Wyalong, mining and agricultural service towns in close proximity, were already established in the area prior to the irrigation schemes ²³. After a gold discovery brought miners to the area, Wyalong was established in 1894 to house them. However, they were already camped in the place that would become West Wyalong, and so this area was established as a town itself, a year later. While gold was mined, the towns diversified into agriculture as closer settlement was pursued (pastoral areas becoming smaller wheat farms). Therefore when the gold mining declined by 1910 and stopped a decade later due to lower yields, the town was able to survive, becoming 'the largest cereal-growing centre in New South Wales' (SMH 2008a). There was some resumption of activity in the 1930s enabled by new mining technology (cyanide processing) (SMH 2008a).

Today, West Wyalong is the administrative centre of its shire, and since it is on a hub of two major highways, the town has more accommodation and shopping than would be expected given its population (Business West Wyalong n.d.p.). However, key employment for its residents includes metal ore mining and farming, as well as the service-based industries. It has an almost static population.

The density and growth of the settlement pattern reflects the underlying industry. Similar to the Wimmera, these towns are based on dryland agriculture, and the requirements of the industry are reflected in the size of the town.

²³ The ABS UCL definition of 'West Wyalong' in 2006 included Wyalong.

Griffith and surrounds: key themes

Griffith, Leeton and surrounds show the effect of a major government infrastructure program on settlement. This was a program that included not just the industry infrastructure of a dam and canals system, but also several towns. This represented a fundamental change to the nature of the land and enabled industry to flourish. Because of this intervention, the town settlement pattern has drastically changed in this area. This demonstrates the importance of a strong economic engine to drive change, as it generates investment and wealth, and so decision makers such as households and firms respond.

7. Central West, New South Wales

The Central West of New South Wales is a long-established area, with the key centres pre-dating the railways. Map 5.9 shows the settlement in this area, including the regional centres (Bathurst and Orange, and the smaller Lithgow and Cowra) and their proximity to the 2006 Statistical Division boundary of Sydney, to the east. The maps reveal how over time, the regional centres (Orange and Bathurst in particular) have grown, while the surrounding small towns have thinned out.

Prior to 1911, the area had experienced some significant events impacting on its developing settlement pattern. Less than 30 kilometres north of Orange is Ophir; the site of the first payable gold discovery in Australia, and consequently the site of the first Australian gold rush in April 1851. However, while there were some buildings (hotels, blacksmiths) and plans for a town at the site, the rush did not last long, even though some mining has continued over the years (SMH 2008b).

However, the discovery of gold did have a more permanent effect on the surrounding area and increased Australia's population as a whole. In particular, many small towns were established in the area to support miners, and the nearby centre of Bathurst doubled its population in a decade (to 4000) as diggers arrived (SMH 2009). However, the downside was that people working in the town also wanted to find gold: 'Bathurst was practically abandoned by able workers during the Ophir rush' (Aplin 2011b).

The town of Lucknow, on the road between Orange and Bathurst, was established on the second site where payable gold was discovered in May 1851, although the settlement wasn't named Lucknow until 1863 (SMH 2008c). Lucknow appears on the map in 1911 with a population of 459 but its mining operations were made viable through newer technology at this time. Orange City Council (n.d.p.) reported that the Wentworth Mine's main income came from extracting gold and ore from the 'old tailings dump' using a cyanide extraction process that was unknown during the rushes. It indicated that '[t]he cyanide vats were crucial to the settlement's viability in the early 1900s' (Orange City Council n.d.p., p.2)²⁴.

However, like other mining towns, the town's fortunes shifted as mining enterprises opened and closed. The last mine closed in the late 1930s (SMH 2008c), and by 1961 the population was only 191 persons. The Wentworth Mine site has recently been opened as a historical tourism site (Orange City Council 2013).

²⁴ Aplin (2011b) more generally reports that '[n]ew techniques such as dredging brought renewed life to old mines, as at Araluen'. Even today, Aplin reports, a revived mining era in the Central West 'is most likely to involve open-cut mining and possibly re-working of past deposits and waste dumps. Some historic centres are involved, such as Hillgrove, Hill End and Peak Hill.'

Map 5.9 Central West, New South Wales, 1911 and 2006



Note: Rail lines are from MapInfo StreetPro (2007), and include both modern and disused lines.

Source: BITRE derived estimates from ABS/CBCS Censuses 1911 and 2006.

Some other small towns seen on the 1911 map but not on the 2006 map include Lewis Ponds (a silver mining town), Forest Reefs (a gold mining town which in 1905 was already described as having 'faded glories' (Australian Handbook 1905, p.377)), Newbridge (with an iron mine and gold diggings), Sofala, Hill End, Stuart Town (all gold mining) and Rockley (farms, sheep stations, and gold). Georges Plains, on the other hand, was described as a post and telegraph station on the Great Western Line, suggesting that its primary function was a connecting one (Australian Handbook 1905). This wider context suggests that not all towns were expected to last forever; but only started because they had a specific use at the time which became irrelevant later. Some towns were able to change to be relevant to new circumstances, while others declined and disappeared.

Another significant event in the growth of settlement in the area was the construction of the railway in the 1870s, to convey rural produce to Sydney and Newcastle. McKillop (2009, p.53) discusses the impact of railways on town settlement, reporting that '[g]enerally, only larger towns, such as Goulburn, Bathurst, Dubbo and Tamworth, received a sustainable boost from the arrival of the railway'. However, McKillop (2009, p.53) also emphasised the differential impact for towns—whether they would benefit from the link or be passed by and suffer a comparative disadvantage: 'for inland settlements prosperity and growth depended on whether the railway linked them with the wider world or bypassed them; while for established coastal centres, the railway boosted their role as an entrepot of trade and ultimately facilitated their growth into metropolises'.

This was similar to the impact of the gold rushes, where towns without gold were subject to the effects of other areas thriving and taking their professionals and population. Even if a town was not the recipient of these new circumstances, they were impacted as part of the larger settlement system as their competitive position diminished.

An example of this was Carcoar, which prior to the railway's construction in 1876 was the administrative and commercial centre for the area to the west. However, it was superseded by Blayney and Orange when the rail line was built through these towns (McKillop 2009). Carcoar got a station on a branch line to Cowra from Blayney 12 years later; but this was not enough and the town was already in decline. By the beginning of the twentieth century, Blayney was the 'junction station' connecting the west and the south (Australian Handbook 1905), while Carcoar became 'the town that time forgot' (Carcoar Village Association 2011).

In today's terms, Carcoar and Blayney are close: 15 kilometres apart, and linked by the Mid-Western Highway. In 2006, Carcoar had a population of 218, while Blayney had a population of 2747 (ABS 2006a). Carcoar's continued decline has more recently been attributed in part to the closure of the railway station and the highway bypassing the town centre (Carcoar Village Association 2011). Orange and Bathurst are the dominant centres, both with populations of about 30 000 (see Table 5.7).

Table 5.7 Population, Bathurst/Orange and surrounds, New South Wales, 1911, 1961 and 2006

Town	1911	1961	2006
Orange	5 263	18 977	31 545
Bathurst	9 219	16 938	28 991
Lithgow	6 991	14 229	11 296
Blayney	1 729	1 852	2 747
Carcoar	737	364	218

Source: ABS/CBCS Census of Population and Housing 1911, 1961 and 2006.

Bathurst

One of the Central West's large regional centres, Bathurst is Australia's oldest inland settlement (Bathurst Regional Council 2005). It was 'considered the third town of the colony' in 1905 (with a 1911 population of nearly 10 000) and 'the principal city in the western district' of New South Wales (Australian Handbook 1905, p.362). At the time, industry in and around Bathurst included agriculture and gold and copper mining. Manufacturing was also present—'... tanneries, coach factories, Government railway workshops, breweries...four flour mills... soap, candles, glue, boots and shoes, and furniture are also manufactured extensively in the town' (Australian Handbook 1905, p.362). By 2006, Bathurst's population was very similar to Orange's, at almost 29 000. In 1961, their populations were also on par—Bathurst's population was 17 000 and Orange's was 19 000, demonstrating that these proximate towns had grown in tandem (ABS 2006a).

Bathurst Regional Council (n.d.p.) cites several key developments for the city in the twentieth century: the growth of secondary and tertiary industry including manufacturing (such as the Edgell brand), the moving of some state government departmental staff to Bathurst, the development of education facilities and the creation of a Migrant Reception and Training Camp (formerly an army camp) for refugees and displaced persons following the Second World War (Bathurst Regional Council n.d.p.).

Following the Second World War, Bathurst grew for a short period due to a shift towards manufacturing, as well as people settling locally after being in the migrant camp. This was followed by a few decades of stagnation, then stronger growth in the 1970s and 1980s (Bathurst Regional Council 2005 citing Bowie 1989). During this time, there was net migration to Bathurst from Sydney 'and the movement of often affluent families on to hobby farms and rural residences within the expanded commuting zone of Bathurst', despite rural employment falling over many decades (Bathurst Regional Council 2005 citing Bowie 1989, p.9). The urban employment growth reflected 'dramatic growth in commerce, community services and government employment as well as in manufacturing and tourist related employment', as well as the work of the Bathurst-Orange Development Corporation (BODC), which existed for almost twenty years from 1974 (Bathurst Regional Council 2005 citing Bowie 1989, p.9).

The BODC was a statutory body established to develop Bathurst and Orange economically. It was created as part of the New South Wales Government's decentralisation policy, when Bathurst and Orange were chosen as pilot growth centres (The State Records Authority

of NSW n.d.p.). The BODC had powers for acquiring land, property construction, financial management and promotion and marketing of the district (The State Records Authority of NSW n.d.p.).

In 1961, more than a quarter of residents in the Bathurst district worked in primary industry and over half in tertiary. For residents of the Municipality of Bathurst, almost three quarters (72.5 per cent) worked in tertiary, and only 5.5 per cent worked in primary industry (Bathurst Regional Council 2005). The largest components of the tertiary industry in 1961 in the city were 'public authority and professional' and 'commerce'. In the same year, the teachers' college dominated educational employment. Bathurst Regional Council (2005, p.8) argued that this institution 'gave Bathurst City a cultural advantage over many other cities of the same size by virtue of the fact that there is a concentration of academically trained professional people'. This all reveals an emphasis on services in the city.

The relocation of 301 staff of the Central Mapping Authority (CMA) and their families in 1976 to Bathurst increased the population by 609. The CMA became part of the Department of Lands, and over the next three decades, the department recruited 1100 staff in Bathurst (Kelly 2006).

Some of these developments are still reflected in the dominant industries (by employed residents) in town.²⁵ School education and tertiary education together accounted for over 10 per cent of employed residents in 2006, with the other three highest industries being cafes, restaurants and takeaway food services (4.4 per cent), hospitals (3.6 per cent) and state government administration (3.4 per cent), the latter reflected in the location of a number of state regional offices in the city.

Lithgow

Map 5.9 also demonstrates how the larger towns do not always remain the dominant ones over time—at least, they don't necessarily keep the same ranking. The smaller centre (in 2006) of Lithgow, in the Blue Mountains, was actually the second largest in the area in 1911. With a population of 7000, it was larger than Orange but smaller than Bathurst at the time.

Lithgow grew from the railway established in 1869, supplying coal for trains, leading to industrial development. This encouraged population growth, but housing was inadequate. Lithgow was 'a worktown and a man's town' (Cremin 1989, p.35), and amenities came later as the population increased in the late 1800s. In the 1880s, '...Lithgow was acquiring, for the first time, a set of townfolk, whose livelihood came from the town, not from its surrounding industries. These were the publicans, professional people and government employees' (Cremin 1989, p.38). However, industry still dominated geographically (coal, iron-making, copper-smelting, brick making), with housing 'confined to marginal areas' until 1908, when land from a major pastoral estate (acquired by forced sale) was used to extend the town (Cremin 1989).

²⁵ For its 2009 Statistical Profile, Bathurst Regional Council surveyed local businesses in 2008, and found the main employers to be 'Charles Sturt University (1059 employees), Greater Western Area Health Service (802 employees), Country Energy (503 employees), Simplot (429 employees), Bathurst Regional Council (425 employees), Land and Property Information (282 employees), Devro (248 employees), Mars Petcare (222 employees), and Bathurst Correctional Centre (214 employees)' (Bathurst Regional Council 2009).

The maps of 1911 and 2006 do not reveal the rise and decline of Lithgow's population which occurred in the intervening years. In 1905, Lithgow had a population of just over 5000. There were six collieries, an ironworks, and copper refining activity. Other manufacturing included brick making, a major pottery, terracotta works, steam sawmills and a tweed factory (Australian Handbook 1905). In 1911, Lithgow's population was 6991, and in 2006, it had grown by almost exactly 4000 people (11 296). However, in between these two periods, Lithgow was even larger: Its population actually peaked in 1929, when it reached 18 000 people and was then the fourth largest town in New South Wales, including Sydney (Cremin 1989). By 1961, it had declined to 14 000.

The housing problems at Lithgow continued throughout the first half of the twentieth century, and Cremin reveals that it wasn't until the 1950s that housing could be considered adequate. But at the same time, 'major changes in coalmining methods created many redundancies', and five collieries closed within 6 years (Cremin 1989, p.40).

More recently, Cremin describes the state of Lithgow in the 1980s as being headed towards gentrification with acknowledgement of industrial heritage. Industry had changed focus to light manufacturing, and the town was 'now being absorbed into the western fringes of the Sydney megalopolis' (Cremin 1989, p.40).

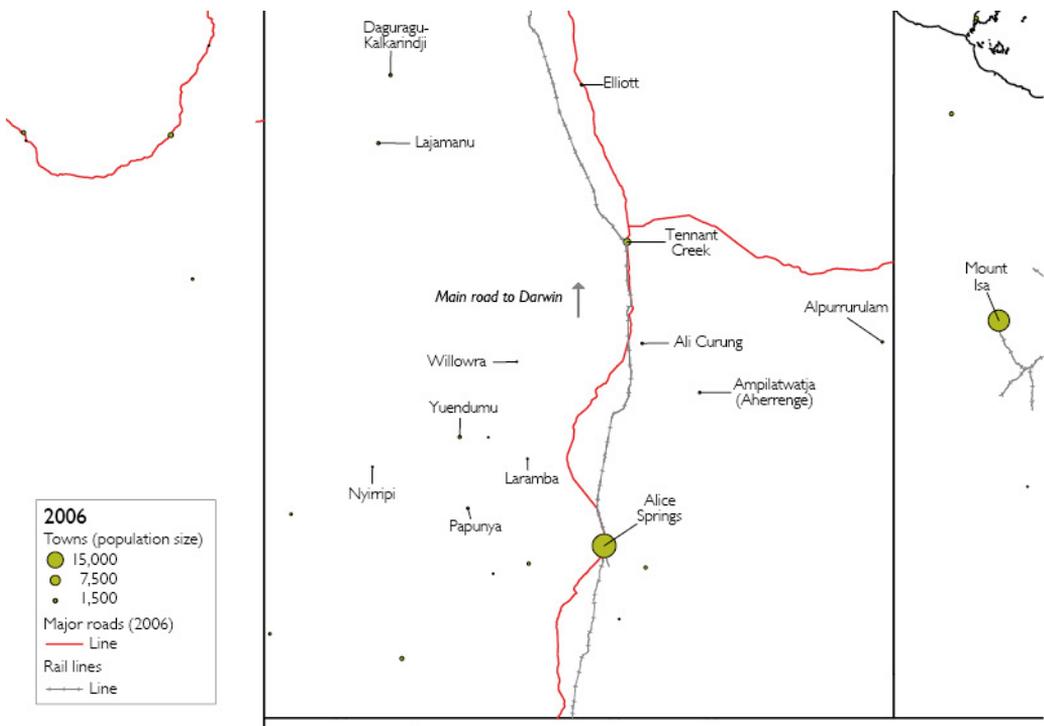
Central West: key themes

This section showed the thinning out of small towns around Bathurst and Orange, including those based around mining. It also revealed that these two centres grew together to be dominant in the area. They have moved from agricultural centres to adopt more secondary industry (manufacturing) and services (such as higher education and health services). Lithgow is an example of a once-dominant mining (and related manufacturing) area that has changed with technology reducing employment requirements, and a shift in industry.

8. Tennant Creek and Ali Curung, Northern Territory

This section focuses on Tennant Creek and the discrete Indigenous community of Ali Curung. The Census population data in 1911 and 1961 is incomplete for Aboriginal people, as until 1971, Census counts excluded those considered 'full blooded' Aboriginal. Therefore, rather than using the dot maps to illustrate the change between the two periods, this section uses other sources to discuss this change over time. Map 5.10 shows the settlement pattern of Tennant Creek and surrounds in 2006.

Map 5.10 Tennant Creek and surrounds, 2006



Note: Rail lines are from MapInfo StreetPro (2007), and include both modern and disused lines.

Source: BITRE derived estimates from ABS/CBCS Censuses 1911 and 2006.

For decades, Tennant Creek was a telegraph station on the overland telegraph established between Port Augusta and Darwin in 1872, with the local Aboriginal people being the Warumungu. By 1900, ration depots existed at each of these telegraph stations along the route, and Aboriginal people were employed in various capacities (including tracking and herd minding) (Bell 2002). This contributed to pastoral development using Aboriginal labour, and led to pastoral settlements for workers' families (Memmott and Moran 2001). A gazetted Aboriginal reserve had also been established in 1892 (Aboriginal Land Commissioner 1981).

Many decades later, in the 1930s, the town of Tennant Creek was established due to the discovery of gold. The Aboriginal reserve established in 1892 was revoked at the same time for mining on the land, and the Warumungu were moved (CLC 1994). During this time, the basic services of a police station, hospital, school and post office were established, but the town's water supply remained 'precarious' (Lea 1989, p. 10).

Before the war, mining was the main industry of Tennant Creek. After Darwin was bombed in the Second World War, Tennant Creek was occupied by the military and mining declined (Lea 1989). The Stuart Highway, passing through Tennant Creek, was also the subject of reconstruction and sealing works (from a basic, dry weather road) because it was a key wartime supply route (Alice Springs to Larrimah railhead) (ABS 1974). After the war, gold and copper mining became more company-based, rather than the work of individuals. However, employees could live outside town by the mines. In the 1960s, one of the mines introduced specific policies to assist town growth by providing travelling allowances so that employees

could live in town and commute, and a policy to increase its married workforce from a third to one half (Lea 1989).

In the 1940s, Aboriginal employment in the town was restricted, and those visiting were 'moved on' (Lea 1989, p.17), although a few worked at the smaller mines. It was not until 1952 that even one Aboriginal person considered 'full blooded' was allowed employment in town, to assist the sanitary contractor—and this was due to the difficulty of finding a white person for the job (Lea 1989). Aboriginals not considered 'full blooded' were treated differently. They are recorded, for example, as being among the schoolchildren in town in 1938 (Lea 1989).

The reduction of Aboriginal employment in the pastoral industry was in part related to the achievement of Award Wages, implemented in 1968. May (1994) and Lea (1989) also cite changing technology as a reason for the reduction of Aboriginal employment in the cattle industry. Factors like motor vehicle and helicopter use in mustering reduced the need for traditional skills in the 1960s and 1970s and demand for labour was reduced as a result of greater mechanisation. Locally this led to a decline in employment in the pastoral industry and a shift of Aboriginal population into Tennant Creek from the pastoral areas (Memmott and Moran 2001, Lea 1989).

Later, Tennant Creek diversified into more service and tourism-based industries as mining employment fell in the 1980s. In 1985, one of the major mines (Nobles Knob) closed (Lea 1989). The Adelaide-Darwin railway (carrying both freight and passengers) has also passed through Tennant Creek since 2004 (ABS 2005). Lea (1989, p.105) considers Tennant Creek's survival 'until diversification' to be due to 'a combination of resilience in base metals mining in the district, considerable government support and human tenacity'.

Settlement patterns

In 1943, a ration depot was set up for evacuees from Darwin, 'thus swelling the population' of Tennant Creek (Bell 2002, p.70). By 1945, most Aboriginal people in the area were moved from the existing ration area to a settlement 43 kilometres from Tennant Creek called Manga-Manda (at Phillip Creek). About a decade later, they were moved to another settlement called Warrabri—later known as Ali Curung—170 kilometres from the town (Lea 1989). Different groups were moved into this settlement, including Warumungu, Kaytetye, Alyawarra and Walpiri people, which created 'tension and discontent' (Aboriginal Land Commissioner 1982).

In the 1950s, a town camp called the 'Village' was established at Tennant Creek, occupied by Aboriginals in government employment (Lea 1989). By 1964, the Village had 84 residents, about half of whom were children, and the following year, 15 males were working in the town at award rates (Lea 1989).

By the 1960s, Aboriginal people in the area tended to live in one of three settlement types: those in Housing Commission dwellings with comparatively higher income, those in the town camps, and those in the small bush camps (Lea 1989). The small bush camps were valued by their residents as they gave them more freedom to move between areas and live in their own cultural groups (Lea 1989).

These settlement types were in addition to the discrete settlement at Warrabri/ Ali Curung. After the Aboriginal Land Rights (Northern Territory) Act (1976), traditional owners were able to reclaim land, including Ali Curung (Memmott and Moran 2001).

In 2006, Ali Curung was recorded as having about 350 usual residents from four main tribal groups, each with their own language (ABS 2006a). This is a legacy of the way it was established. Some of the services included a small supermarket, a school, a police station, health centre, and art centre and gallery (Barkly Shire Council n.d.p.).

Memmott and Moran (2001) described the modern pattern of aboriginal settlement in and around Tennant Creek as fitting into five categories:

- a large Aboriginal settlement (Ali Curung)
- eight town camps
- 38 outstations on former reserve land
- 14 outstations on pastoral properties
- dispersed housing within Tennant Creek itself.

Lea (1989, p.68) argued that '[i]t is now possible to see the Aboriginal urban settlement of Tennant Creek over the past 50 years as a dynamic process with its origins in the dispossession of tribal lands, leading to displacement via ration stations, mission and welfare settlements, army labour camps and cattle stations, to the growing opportunities for personal involvement in the cash economy of the town'. By 2006, the Tennant Creek population was about 50 per cent Indigenous (ABS 2006a).

Tennant Creek and Ali Curung: key themes

Indigenous settlement patterns in the last 100 years have been shaped by interaction with non-Indigenous people, and in particular, government policies determining Indigenous people's locations. Around Tennant Creek, the settlement of Ali Curung has remained as a legacy of the government policy of establishing compounds and resettling local Aboriginal groups. The historic element to this is reflected in the different language groups still living there together today. The town camps emerged from increasing involvement with the town economy—particularly employment—as non-Indigenous attitudes and government policies changed, with the next stage of this being the dispersed town housing. Some Indigenous people have also chosen to live on outstations, with the location being determined by existing connections to the land, and partly enabled by land rights legislation.

Conclusion

Investigating settlement change at the regional scale provides an opportunity to consider more localised drivers, while also highlighting more common factors across diverse regions. The amount of potential economic wealth or activity in a region has shaped the settlement pattern. The wealth potential in fertile areas, whether in terms of agriculture or other natural resources, has been the economic engine shaping industry activity and population.

Three important features are the increasing concentration of activity into larger regional centres, the role of industry development and change over an extensive period, and the rise of amenity in the expansion of and shift towards coastal areas.

CHAPTER 6

The big picture: Australia 1911–2006

Key points

- Australia has experienced large upheavals over the past century, including two world wars and the Great Depression.
- Industry sectors have experienced substantial structural changes from the long-term decline in the importance of agricultural employment; the boom and bust cycles of mining; the rise, then fall of manufacturing employment share; and the spectacular post-war increase in the proportion of service industry employment.
- Technological change has impacted on almost all areas of life, including industry, communications, consumer goods and transport.
- Transport and communications have revolutionised how people access markets.
- The social profile of Australians has significantly changed.
- A feature of the twentieth century has been the increasing wealth of Australians overall, especially through the housing market.
- Government policies have played an important role in many of the changes occurring through the century.

Introduction

The twentieth century saw some of the most rapid development of technology and lifestyle in human history. It also saw some of the most momentous events—global wars, and economic depressions and booms. It would seem inevitable that these would all impact heavily on settlement patterns. This chapter considers how.

Chapters 4 and 5 examined the changes in settlement patterns from 1911 to 2006. Over this time, Australia has undergone some fundamental changes relating to technological advancement, social change, world wars, government policies and a more competitive and globalised economy.

The purpose of this chapter is to discuss some of these factors which may have affected town development and settlement patterns. The approach is broad and overarching, in order to highlight some of the substantial changes that have occurred in the twentieth century with a focus on their spatial impacts. The chapter divides into eight sections to capture some of the potential influences on the settlement pattern, which include:

1. International events
2. Australia's economic performance
3. Industry structural change
4. Technological change
5. Transport
6. Infrastructure and networks
7. Social changes
8. Government policies

1. International events

Some of the most dramatic events for the country's history occurred in the first half of the twentieth century, changing the demographics, the economy and social outlooks of Australians. Firstly, and most importantly, in 1901, the colonies were joined in Federation to form a new nation.

In this first decade the new nation experienced a relative prosperous and stable period. This changed with the outbreak of the First World War in 1914. The war had a huge impact on the fledgling nation and its people. For instance, 417 000 men enlisted, representing almost 40 per cent of 18 to 40 year old males. Of those, 60 000 were killed (1.4 per cent of the population), and a further 156 000 were wounded (AWM n.d.p.(a)). In fact, the losses of men as a percentage of the population were comparable with those of the major European combatants. At home, the war saw major interventions in the economy with government acquisition of the entire wool clip and the formation of wheat pools (see Scott 1941).

The next major international impact was the Great Depression beginning in 1929. It was a time of extreme hardship with very high levels of unemployment (up to 32 per cent at times in 1932) that extended from the late 1920s until the Second World War. The extreme levels of unemployment in the early 1930s are evident even in the annual estimates shown in Figure 6.1. This period of history was a time of extreme social dislocation and desperation for many Australian families. A common impression of the period was of the itinerant worker forced 'onto the track' in search of work.

In 1939, Australia entered the Second World War, with almost a million people joining the armed services (AWM n.d.p.(b)). It was the first time that Australia itself was threatened and directly attacked. As well as the direct impact of the war on the economy, it produced a lingering sense of vulnerability that greatly influenced post-war policy, directly contributing to a migration boom.

As Chapter 4 revealed, settlement change in the period between 1911 and 1961 was modest compared with the greater change occurring between 1961 and 2006. The wars and the depression do not appear to have been engines of change of settlement patterns in themselves, but rather may have constrained that change. The increased production during the Second World War was directed towards the war efforts, not towards the domestic economy. The lack of growth during the depression, and the government response, meant that there was little capacity for building (physical and economic). Population growth rates were also comparatively more modest during these times (see Table 6.1).

The wars had some indirect effects on other things such as stimulating manufacturing in particular areas and changing immigration policy, which will be discussed later in this chapter. However, in terms of change to overall settlement patterns, there was very little change within the first half of the century when these significant events were going on. Change was small relative to the later change which occurred in more prosperous times.

2. Australia's economic performance

Australia has experienced many boom and bust cycles over its history, but Australians have had a substantial increase in their standard of living (see Table 6.1 reproduced from McLean 2004). Mining booms, World Wars and a Great Depression have been some of the influences to the population and the National Gross Domestic Product (GDP) growth rates and their association.

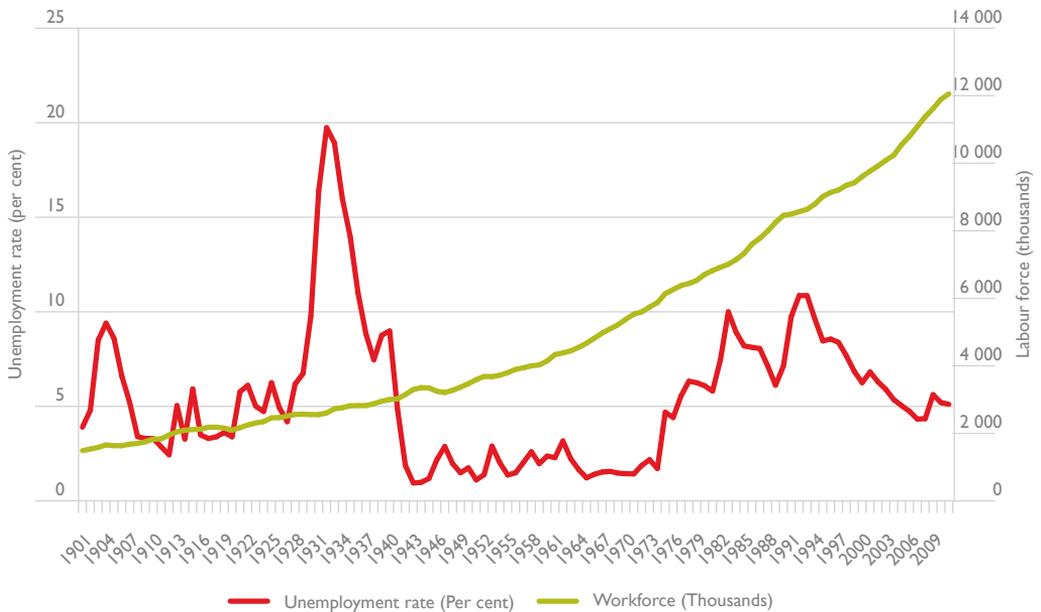
Table 6.1 shows an association between low population and low (or negative) real GDP growth with the First World War and the Great Depression of the 1930s, in contrast with the rising real GDP during the Second World War. When considering the difference, it should be noted that the First World War followed ten years of high growth whereas the Second World War followed a long period of low growth through the Depression. Unemployment going into the First World War was low (3.3 per cent in 1914), whereas in 1939 it was 8.8 per cent. Therefore the capacity for growth in the First World War was constrained by full employment and then the workforce was further reduced by the large number of recruits. These changes in the overall size of the workforce and unemployment rates can be seen in Figure 6.1, from 1901 to 2011.

At least initially, the increasing labour demands for the war effort during the Second World War could be met from the unemployment pool, although this was quickly absorbed. The increasingly tight labour conditions in both world wars led to widespread recruitment of women into the workforce and accelerated their acceptance in the labour market.

Table 6.1 Australian economic growth 1828–2000 (average annual percentage growth rates between end years)

Years	Real GDP (per cent)	Population (per cent)	Real GDP per capita (per cent)
1828–1840	13.2	10.4	2.6
1840–1850	8.7	7.8	0.8
1850–1860	12.8	10.9	1.8
1861–1889	4.8	3.5	1.3
1889–1905	0.8	1.7	–0.8
1905–1914	5.2	2.3	2.9
1914–1920	–1.6	1.3	–2.6
1920–1930	3.2	1.9	1.1
1930–1939	1.6	0.8	0.6
1939–1946	3.4	1.0	2.4
1946–1974	4.8	2.2	2.5
1974–2000	3.2	1.3	1.9
2000–2012	3.2	1.6	1.6

Source: McLean (2004) and RBA (2012).

Figure 6.1 Australian labour force and unemployment rate from 1901 to 2011

Source: BITRE based on data from Withers, Endres and Perry (1985); ABS (1979 and 2012a).

The period following the Second World War until 1974 has been described as 'the long boom'. It was a period of high growth in both population and GDP, extremely low unemployment and a rapidly expanding labour force. It was a time of reconstruction and growth and included the wheat and wool price booms of the early 1950s and extended through until the oil price shocks and the rise of 'stagflation' in the early 1970s. Government policy through this time included population growth through high immigration, encouraging manufacturing through tariff protection and direct support for rural industry. It was a period of building and change.

Then in a single year, 1974, there was a fundamental change of fortune. Unemployment rose from around 2 per cent to almost 5 per cent at year's end. Prices rose 16 per cent but were outstripped by wages that rose by 28 per cent (The Age 2005). The current account slid into deficit, profits collapsed, industrial disputes escalated and the housing boom turned to bust (The Age 2005). GDP and GDP per capita fell through the year (ABS 2012a). The long period of low inflation and low unemployment growth was at an end.

The result was a period of 'economic malaise', lasting for the next two decades (Productivity Commission 2005a). It was a period categorised by slow output growth compared with the immediate post-war period, continuing inflation, rising unemployment and relatively slow productivity gains (Productivity Commission 2005a).

These conditions were the spur for a process of reform to open the Australian economy and promote the country's global competitiveness. Reforms ranged from financial and trade liberalisation such as floating the exchange rate and reducing tariffs, restructuring the labour market to link wages to productivity and enhanced flexibility, and reforming the taxation system. To achieve this, governments embarked on a program of micro-economic reform across the economy. The result was a sustained period of strong economic growth. The OECD (2006) describes the performance as:

'...(Australia) "has also made its own luck" through a series of structural reforms and the introduction of a robust macroeconomic framework which have bolstered resilience. This is illustrated by its macroeconomic stability in the face of a string of recent shocks, in stark contrast to the macroeconomic chaos which followed the commodities boom of the early 1970s.'

Between 1974 and 2000, real GDP growth averaged 3.2 per cent per annum. This was channelled into increased wealth that allowed change. This is reflected in the fact that most change in the settlement pattern occurred in the second half of the century (see Chapter 4).

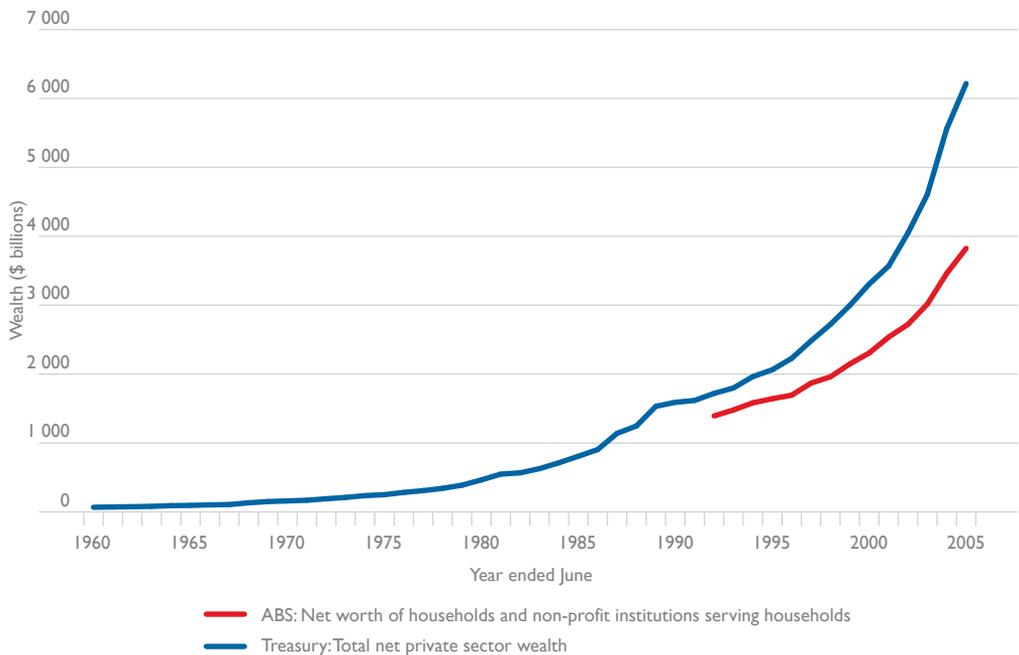
This overall pattern is confirmed by Coombs and Roberts (2007), who reported on total fixed capital investment as a proportion of GDP from Federation to 2006. They indicated that '[i]n the years from Federation to World War II, public investment in infrastructure increased to complement industrial development, the spread of the use of the motor vehicle and utility networks for sewerage and electricity', but fell in both World Wars 'as resources were switched to the war efforts'. For three decades after the Second World War, public sector investment was strong. Immediately after the war, it rose in response to the 'backlog' of public works projects on hold from the recession and wartime. At the same time as Australia was experiencing strong population growth, this investment 'underpinned the rapid industrial expansion and urban development' after the war (Coombs and Roberts 2007).

The period from 2000 to 2006 saw overall growth but with an increasing shift towards the resource sector based on demand from emerging Asian economies. It also saw the development of the 'two speed' or 'patchwork' economy as growth levels have varied sharply between regions.

Changes in wealth

The increase in the standard of living of Australians is also reflected by their increase in wealth. Figure 6.2 presents the two main Australian sources of time-series data on wealth from the Australian Bureau of Statistics (ABS) and the Department of Treasury—both of which extend beyond the household sector and are in nominal terms. Growth in nominal wealth has been quite rapid, averaging 10.6 per cent per annum between June 1960 and June 2005²⁶.

²⁶ As a point of comparison, Australia's GDP in nominal prices grew at an average annual rate of 9.3 per cent over the same period (ABS 2012a).

Figure 6.2 Time series measures of wealth, Australia, 1960–2005

Source: BITRE (2009b), citing The Treasury (2006) and ABS Cat. 5204.0 (2004–05).

Wealth contributes to economic well-being by generating increased consumption opportunities, income flows and economic security. It provides a pool of savings available to capitalise new and existing businesses and raise economic activity. As a result, people have more options, flexibility and confidence to make personal and economic choices. Household wealth can also provide a buffer against falls in income, both for individuals and local economies, underpin investor confidence as well as being a source of capital for businesses (BITRE 2009b).

This has meant that individuals' capacity to make changes to their lifestyle has improved. This has come at the same time as other improvements: for example, bigger and better housing and the rise of motor transport. Not only did cars become available, but because people had the means to buy them, the use of personal transport became almost universal.

The increasing wealth of households has substantially occurred through the property market, essentially the family home. In fact, for most Australian households, the family home is their main source of wealth, with net owner-occupied property assets contributing 45 per cent of net household wealth (BITRE 2009b). Moreover, the family home is a major source of raising household wealth because of increasing property capital values over the past decades. This is further compounded by indirect housing assistance for owner-occupiers through capital gains tax exemptions, which places even more emphasis on the family home as a source of wealth.

This relationship between functional and financial benefits of housing has meant that housing plays an increasingly important financial role (Tually et al. 2010). A major store of wealth in bricks and mortar and from raising the capital value of the asset has made the decision to invest critical for many households. Many factors contribute to the home location decision such as access to services, access to quality education institutions, community connections, environmental amenities, employment opportunities and lifestyle pursuits.

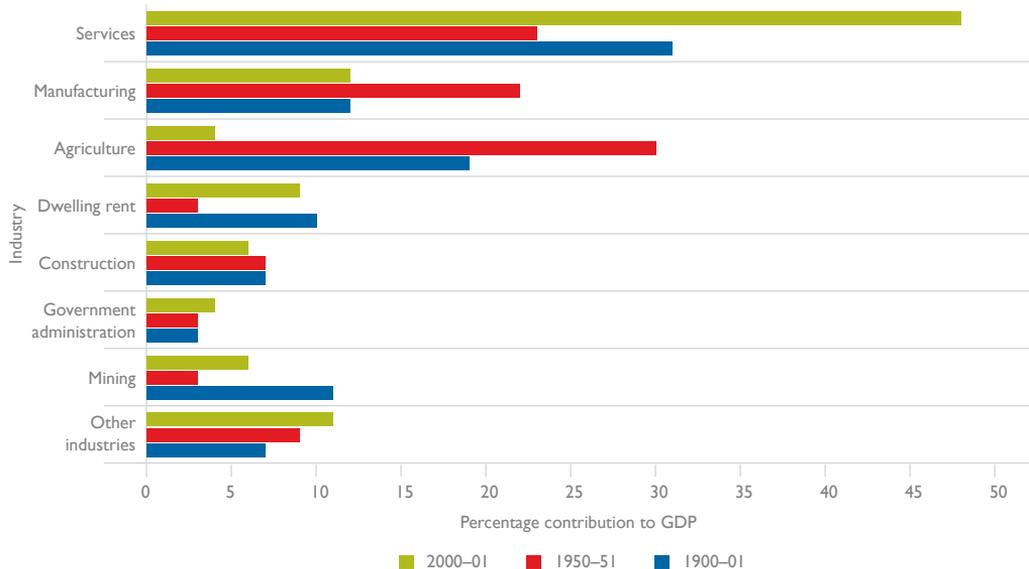
As a result it is increasingly important to consider the expected growth potential of a location when considering investing in or living in a regional town. This is significant because there is a capacity for families to become ‘entrapped’ in low value housing in small towns (Tually et al. 2010). The Rural Centres Housing study (Econsult 1989) noted that ‘households in declining small country towns may find themselves tied to homes they own that have little or no value within the market’ (cited in Tually et al. 2010, p.34).

3. Industry structural change

Australia has followed the broad development pattern of all industrialised countries, shifting emphasis from agriculture to manufacturing and then to services. This transition was highlighted by the Productivity Commission (1999), which found that while output in agriculture, mining and manufacturing grew in absolute terms since the 1970s, ‘their shares of gross domestic product have declined, while that of the services sector has risen’ (Productivity Commission 1999, p.xliii).

In 2005, the ABS’s annual Year Book included a feature article on 100 years of change in Australian industry. Included was Figure 6.3 presenting the GDP share of various industries over three snapshot periods (1900–01, 1950–51 and 2000–01). This figure reflects some of the major trends that have occurred in the Australian economy over the past century. Of particular note is the high proportions coming from agriculture and manufacturing in 1950–51, the dominance of services in 1900–01 and 2000–01 and the relatively consistent contributions of the construction and government administration sectors. Agriculture’s high share in 1950–51 of just over 30 per cent was inflated in the short term by the boom times and high prices due to the Korean War (ABS 2005).

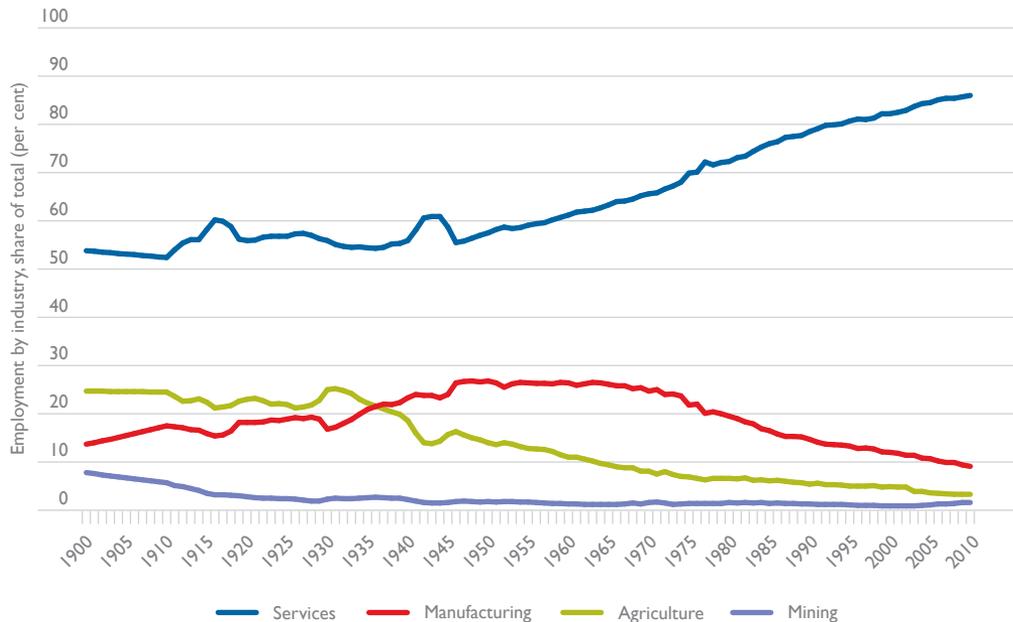
Figure 6.3 Share of GDP by industry, 1900–01, 1950–51 and 2000–01



Source: ABS (2005).

As important as GDP share is as an economic indicator, the number of people employed is most likely to be important to settlement patterns. Figure 6.4 provides a broad assessment of industry type by employment numbers from 1900 to 2010.

Figure 6.4 Employment by industry, share of total, 1900 to 2010



Note: Data interpolated between 1900 and 1910.

Source: Reproduced from Connolly and Lewis (2010), citing ABS, RBA and Withers, Endres and Perry (1985).

The key issues flowing from this graph are: the long-term decline in the importance of agricultural employment; the rise and fall of manufacturing's employment share; the spectacular post-war increase in service industries; and the decline in the (already small) share of mining employment in the early part of the century to a relatively unchanging share in the second half, despite the boom and bust cycles of mining.

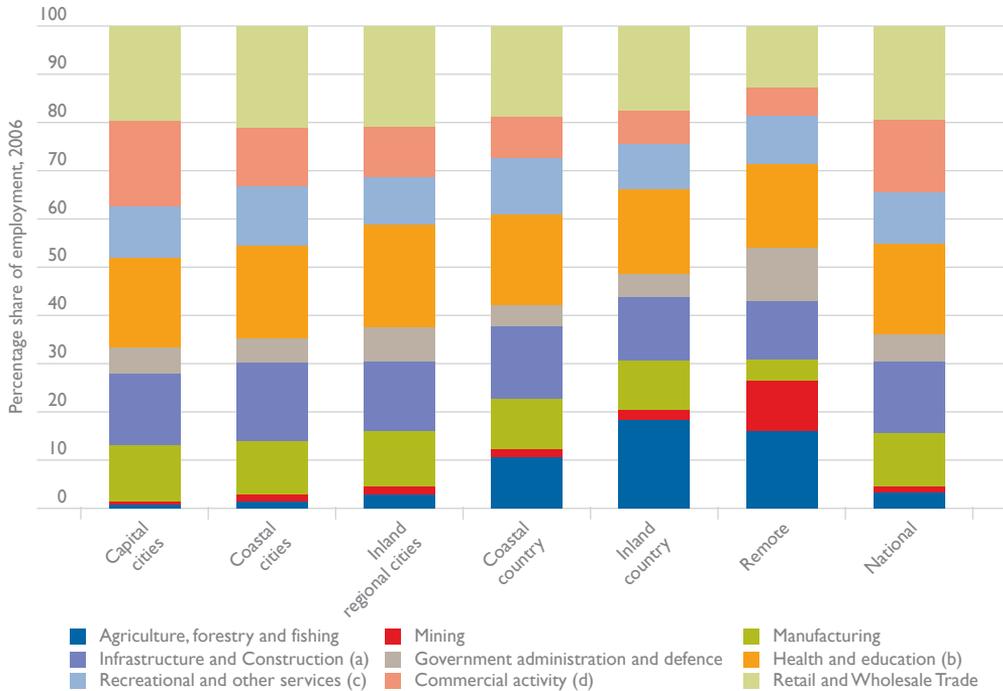
These changes also have spatial consequences. Growing industries bring economic well-being for residents by providing economic opportunities, while simultaneously attracting new migrants and investors. Industries in decline, however, hinder development, even leading to the loss of the town itself.

To illustrate the inherent geographical differences, Figure 6.5 presents the proportion of sector employment by regional type in 2006. Industry is shown to be more diverse in major cities, while regional areas (which include towns) have an industry structure more closely tied to their remoteness. For example:

- Agriculture is an important industry for remote, inland and coastal country areas. Inland country has the highest share at over 18 per cent. By contrast, capital cities have less than 1 per cent.
- The proportion of mining workers in remote locations is significantly higher than other regional classifications.

- The government administration & defence share of employment is similar for all regional classifications except for a high share in remote areas²⁷.
- Capital cities have a large commercial activity sector, representing an 18 per cent employment share, in contrast with its declining share by increasing remoteness.

Figure 6.5 Industry mix at regional classification scale, 2006



Notes: (a) Infrastructure and Construction includes Electricity, gas & water supply, Communication services, Transport & storage and Construction.
 (b) Health & education include Health & community services and Education.
 (c) Recreational & other services include Accommodation, cafes & restaurants, Cultural & recreation services, and Personal & other services.
 (d) Commercial activity includes Finance & Insurance and Property & business services.

Source: BITRE (2009a).

Towns best able to handle change or shocks to local industries are those with a high degree of diversification. These tend to be major cities which on average, have more stable economic outcomes (BITRE 2003a). Examining structural change spatially²⁸, between 1981 and 1996, the Productivity Commission (1998) also found that service-based regions were expanding their employment base, while agriculturally-dependent regions tended to have declining employment. This outcome is also reflected in the fact that more structural change occurred in non-metropolitan regions (Productivity Commission 1998).

A feature of industry development however, has been the increasing degree of specialisation at the regional city scale. Beer and Clower's (2009) analysis of centres of over 10 000 persons

²⁷ A contributor to this category's high share in remote areas is due to people participating in the Community Development Employment Programme (CDEP) being classified as Government administration. CDEP was a program primarily for Indigenous persons to pool unemployment benefits into wages for choosing to participate in various community development programs.

²⁸ The Productivity Commission (1998) investigated 113 metropolitan and non-metropolitan regions across Australia.

found that regional cities have become more specialised on average. In fact, this increasing degree of specialisation has been associated with greater success in their population and labour force growth. An important aspect to consider in developing a specialised industry structure is the direction taken. As Beer and Clower (2009) found a town transitioning towards greater specialisation in a declining industry is liable to experience poorer economic growth or further decline. Their cluster analysis highlights that cities with strong economic growth had industry structures based on specialist tourism or recreation services or provided general services to their region in a service centre role (Beer and Clower 2009). Conversely, declines occurred in manufacturing and specialised mining cities²⁹. They go on to state that 'this outcome should remind us that economic development is a process and that drivers with the global economy are likely to guide regional cities into more specialised roles' (Beer and Clower 2009, p.385).

The decline of agricultural employment

As Figure 6.3 illustrated, in 1900–01, agriculture represented almost 20 per cent of Australia's GDP. By 2000, agriculture's contribution to GDP declined to only 4 per cent, equal lowest with government administration. This fall reflects an industry under continuous pressure to restructure. This is also indicated in Figure 6.4, as this suggests that the post-war decline in agricultural employment has been persistent rather than in response to specific events.

The real impact for small towns has been total agricultural employment falling from 474 000 in 1911 to 293 000 by 2006, even with significant overall population and employment growth. Farmers were continuously implored to 'get big or get out' (ABARE 2002, p.1). Droughts and commodity prices often provided the obvious stimulus for change, but the ongoing mechanisation and other technological improvements allowed savings in labour costs to raise productivity, and ultimately allowed the industry to remain competitive.

This decline in agricultural labour has been disproportionately borne by regional towns. To illustrate, in 2006, agriculture accounted for just 3 per cent of the nation's employment compared to 24.1 per cent in 1911. Yet spatially, agriculture in 2006 was the single largest industry employer in 38 per cent of Australia's Local Government Areas (LGAs), especially in rural and regional Australia. This proportion is nearly 50 per cent if we include regions where agriculture is the 2nd or 3rd largest source of employment for LGAs. Unfortunately, agriculture was also the major contributor to employment losses for 60 per cent of these regions (BITRE 2009a).

There is however a degree of variation in agriculture's impact on local towns and their growth prospects. For instance, while wheat-sheep belt towns were in decline, other towns positioned along the coast transferred their economic focus into other activities such as tourism, or becoming lifestyle locations. To capture some of this complexity, Map 6.1 provides a spatial illustration of some of the dynamics occurring. The variables presented include:

- Average annual population growth by Urban Centres and Localities (UCL) from 1961 to 2006, with higher growth areas in green.
- The proportion of persons that work in agriculture in 2006 by Statistical Local Areas (SLA). Higher proportions are represented by darker shades of blue.

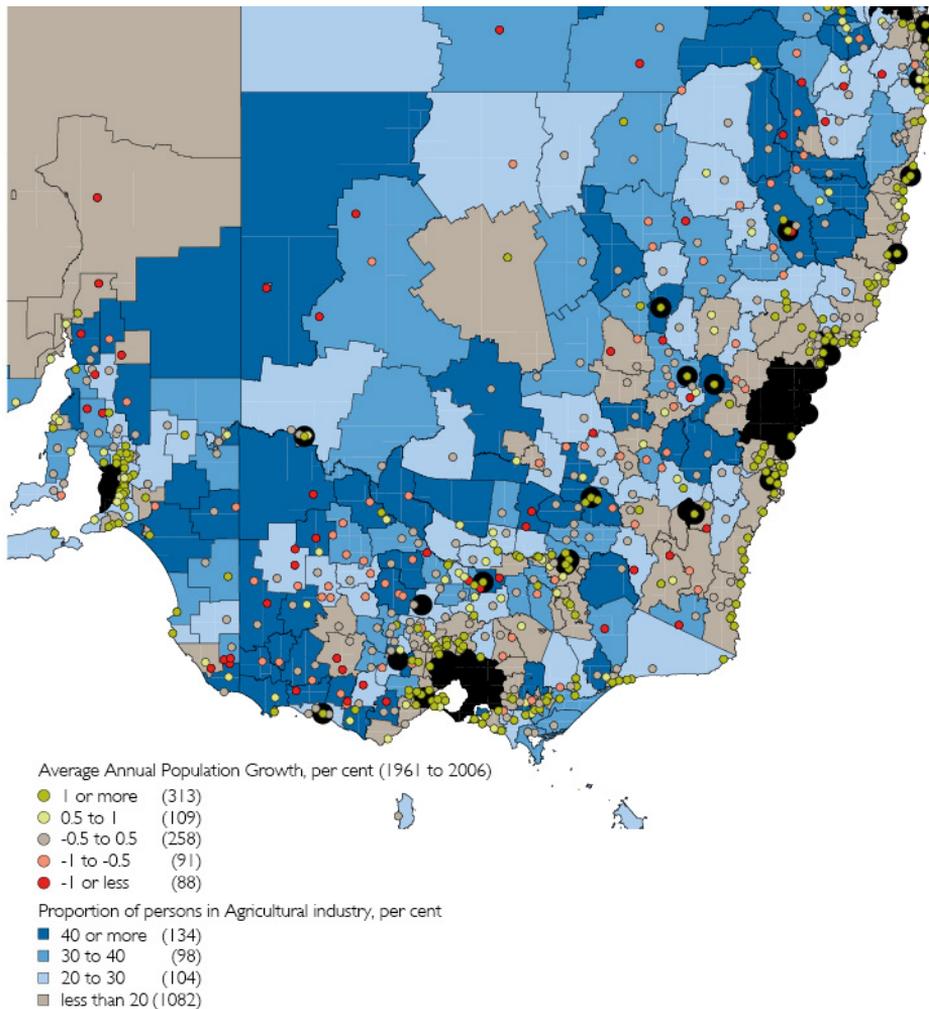
²⁹ It is important to note that this study excludes the substantial economic growth in the mining sector in Australia after 2004.

- Regional cities with greater than 25 000 persons and capital cities are shaded by large black circles and the shape of the Statistical Division (SD) for capital cities.

Map 6.1 shows a number of key features:

- The connection between population declines and high local agricultural employment.
- Strong population growth in coastal locations with limited agricultural employment.
- Large regional cities are associated with growth in surrounding towns regardless of whether there is a high proportion of agricultural employment.

Map 6.1 Agricultural share of employment (2006) with UCL population average annual growth from 1961 to 2006



Source: BITRE (2009a) and BITRE analysis of Censuses 1961 and 2006.

Areas with strong population growth and agricultural activities have tended to be attractive 'amenity landscape(s)' (Barr 2002, p.41). As Budge (2005) points out, there are some rural locations that surround cities which have experienced high levels of growth in recent years, commonly referred to as peri-urban areas. In Victoria, for example, these areas typically have

very high natural and built amenity, and are associated with having significant agricultural activity. For example, the Port Phillip region close to Melbourne 'is the second highest producer of agricultural products in Victoria, and its agricultural output per hectare is four times the state average' (Land & Water Australia 2008, p.3).

Hence, increasingly, agricultural activities—particularly in the wine industry—which are located in 'amenity landscapes' on the periphery of metropolitan and regional cities are sources of growth rather than decline. Thus a location's attractiveness and proximity to a city combined with the agricultural activities are generating growth for these locations. This point is examined further in Chapter 11.

Sporadic impact of mining booms

In Chapter 3, we discussed the impact of gold rushes in the 1850s as an important contributor to the distribution and size of settlements, particularly in Victoria. However, since then, Australia has experienced a series of mining booms, each changing the landscape of economic activity radically in the short term and leaving a long-term legacy. Battellino (2010) identifies several major booms after the 1850s gold rushes. These include:

- the late nineteenth century mineral boom—the discovery of new gold and metal mines, particularly in Western Australia, Queensland and western New South Wales.
- the 1960s/early 1970s mineral energy boom—broadly based and capital intensive with increases in demand for coal and iron ore and development of oil and bauxite.
- the late 1970s/early 1980s energy boom—driven by the energy sector; this boom was short lived.
- the 2000s boom, which was both a mineral and energy boom—broadly based with expansion in coal, ore and gas industries, particularly driven by demand in emerging economies such as China.

These mining booms have been powerful forces shaping the Australian economy and its settlement patterns. What is notable about many mining towns is that they came into existence solely because of the discovery of natural resources. These towns were not created on the basis of other factors such as networks, proximity to other towns, fertility of land for growing or amenity. Rather, mining locations that provided these other factors were to become major centres for regional Australia, such as Bendigo, Ballarat, Newcastle, Maitland and Cairns.

For example, a study by Maxwell (2004, p.22) found that for Western Australia, the mining booms provided the foundation for a more broadly-based economy, as well as 'establishing a viable sub-state regional and rural community' that underpins Perth. As a consequence, large discoveries that have provided time to establish more permanent settlements with substantial infrastructure investment have been able to foster greater industry diversity, once the resources base declines or disappears. As Freestone (2010, p.119) reports, '[t]he discovery of gold in New South Wales, Victoria and Western Australia profoundly impacted on the spread of settlement and the formation of towns in regional Australia'.

In more recent times, Freestone (2010, p.130) considered the establishment of new mining towns in the 1950s to the 1970s to be the 'principal offsetting force' against the growing dominance of the major cities (save for the growth of Canberra). The ABS estimates that mining

has contributed to building 25 new towns since 1967 (ABS 2001), such as Dysart, Glenden, Teri and Moranbah in Queensland, Roxby Downs in South Australia, and Pannawonica, Newman and Leinster in Western Australia.

In contrast, the development of mining towns towards regional centres in more remote locations has been less successful. Maxwell (2004) also found that for Western Australian mining towns, the long-term impact can be terminal, with only 40 of the 172 mining towns established in the preceding 110 years still existing in 1996. Of these, only three had a population of more than 10 000 people. In fact, Maxwell suggested that many of the remaining small towns will also disappear—signalling the high degree of risk associated with mining, as the town's economic base waxes and wanes.

A recent example of this type of instability has occurred in the Queensland town of Dysart. Established to provide accommodation for workers for nearby mines, along with servicing the surrounding cattle and grain properties (CQU 2003), its economic base was eroded with the closure of the Norwich Park mine in 2012. This severely impacted on the Dysart community, with The Rockhampton Morning Bulletin (2012) article pointing out that from 'a Dysart source...about 20 families a week were leaving town'.

The rise of fly-in/fly-out and drive-in/drive-out

Substantial improvements in mining productivity have reduced the demand for labour, similar to the situation in agriculture. A KPMG (1998) study found that significant population loss was strongly associated with changes in mining practices, illustrated by a 44 per cent decline in population in western Tasmania (cited in Kenyon and Black 2001).

The reduced demand for labour is also contributing to changes in labour market access. The increasing use of fly-in/fly-out and drive-in/drive-out by workers is having important flow on effects for towns, further contributing to population losses. This arrangement entails workers living elsewhere and then travelling to the mine site by plane or car, to stay in pre-fabricated single person quarters while they are on shift. Workers might alternate between 2 or 3 weeks on shift at the mine, and 1 or 2 weeks off.

Fly-in/fly-out (and drive-in/drive-out) has been driven by a number of factors. As highlighted earlier, one factor is the volatility of the resources sector, along with reasons such as:

- the cost of building and maintaining remote towns
- the cost and difficulty of closing towns once the resources have been depleted
- technological advancements that have shortened a mine life because minerals are extracted more rapidly, making it more costly and impractical to build infrastructure for communities (Haslam McKenzie 2008).

To consider the use of fly-in/fly-out (and drive-in/drive-out) the ABS (2008b) found that in Perth only 4 per cent of workers were directly employed in the mining industry, but of these employees 72 per cent worked outside of Perth. This is supported by a recent BITRE (2010a) study on Perth's working zone³⁰ residents, which found that the five largest commuting destinations for Perth residents outside the Perth working zone were all mining regions operating on a fly-in/fly-out or drive-in/drive-out basis such as Laverton, Leonora & Menzies

³⁰ Working zones are based on commuting patterns of workers to estimate the functional area of a city or town.

(2257 commuters), East Pilbara (1756 commuters), Ashburton (1525 commuters), Roebourne (1036 commuters) and Wiluna (918 commuters) (BITRE 2010a).

To understand the difference between non-resident workers and residents in mining locations, Queensland Treasury and Trade (2012) produces full-time equivalent (FTE) population estimates for key localities (see Table 6.2). To illustrate, the town of Middlemount has been estimated to have a greater number of non-residents workers (2110 workers) than residents (1960 persons). This population difference impacts on towns in various ways such as the ability of local governments to generate rates revenues and provide services.

Table 6.2 FTE population of selected mining communities, June 2012

Town	Estimated resident population	Number of non-resident workers	FTE population estimate	Non-resident workers as per cent of FTE
Dysart	3 280	2 365	5 645	42
Glenden	1 340	535	1 875	29
Middlemount	1 960	2 110	4 070	52
Moranbah	8 990	4 585	13 575	34
Tieri	1 520	735	2 255	33

Source: Adapted from Queensland Treasury and Trade (2012).

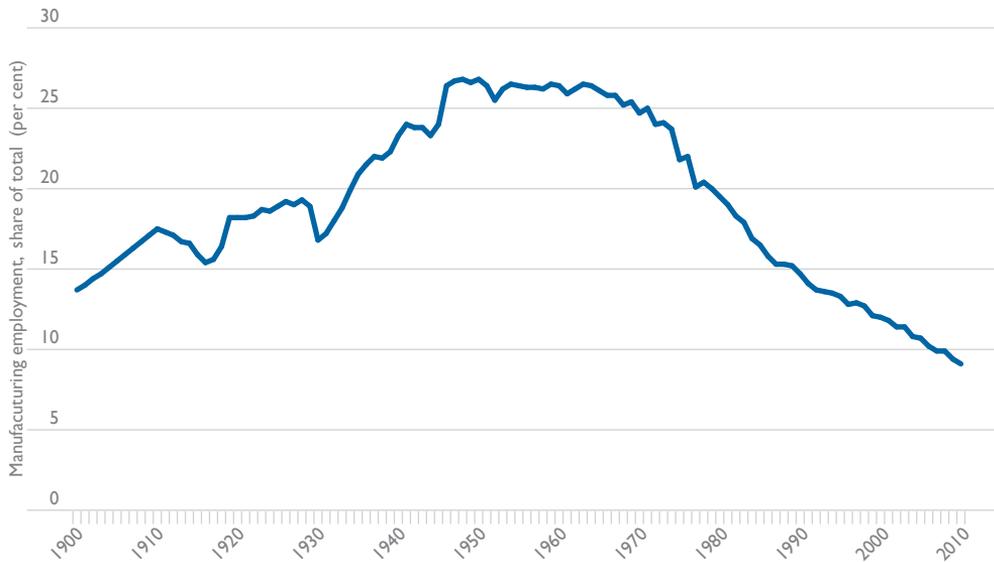
The rise of fly-in/fly-out (and drive-in/drive-out) has meant that mine workers and their families no longer necessarily live where they work, and so the earlier trend of opening towns alongside mines has declined. It also adds to the complexity of household decision-making, as families of miners can live in larger centres.

While fly-in/fly-out (and drive-in/drive-out) is an extreme example of the geographical separation between a person's place of work and their place of residence, the rise of private transport and improvements in communication technologies means people have a greater capacity to 'choose' their preferred location. This choice is based on a range of factors such as proximity to their extended family, access to services (especially education and health), locating in attractive areas and individual assessment of the risk of investing in towns heavily reliant on a volatile industry. This influences both the town where the workplace is located, and the town where the worker's family resides.

Rise and fall of manufacturing

The fall in agriculture's GDP share, employment numbers and capital formation was counterbalanced by a rise in manufacturing's share of output and employment in the first half of the century (Frost and O'Hanlon 2009 citing Merrett and Ville 2007) (see Figure 6.6). Manufacturing employment increased from 190 000 in 1903 to 440 000 by 1929, a rise of 132 per cent (ABS 1988). Manufacturing grew in the earlier part of the twentieth century within an 'expansionary fiscal policy' framework to raise Australia's self-sufficiency by broadening the industrial base (ABS 1988).

Figure 6.6 Manufacturing employment share, 1900 to 2010



Note: Data interpolated between 1900 and 1910.

Source: Reproduced from Connolly and Lewis (2010), citing ABS, RBA and Withers, Endres and Perry (1985).

Manufacturing was also a beneficiary of protectionist economic policies throughout the twentieth century, due to the belief that it would stimulate the beginnings of the manufacturing industry (and so economic growth) and increase labour demand. For example, in the decades following Federation, tariffs were raised multiple times (Anderson 1987, p. 176) as a government response to a range of factors such as declining in international shipping costs and in response to the Great Depression in the 1930s.

With the outbreak of the Second World War, Australia’s manufacturing sector and industrialisation progressed at pace. It was more advanced and in a better position than in the First World War to take advantage of the increased manufacturing requirements of a wartime economy. By 1940–41 for the first time manufacturing’s share of employment rose above rural industries (ABS 1988).

After the Second World War, a prolonged period of growth and expansion occurred for the industry, greatly stimulated by increases in population. Combined with tariff protection and import controls, new factory jobs clustered in built up areas emerged. This in turn attracted greater migration and raised demand for manufactured goods, further contributing to manufacturing growth.

The rise of manufacturing’s share of GDP was followed by its decline in the second half of the century (see ABS 2005). Manufacturing employment fell by 80 000 jobs, between 1973 and 1980. The 1970s saw a downward shift in the world’s economy, particularly with the oil shocks beginning in 1973. Several factors contributed to the fall in manufacturing’s share of employment and GDP in the 1970s: the mining boom, increasing competition from industrialising economies and in 1973, tariffs were reduced by 25 per cent, with more cuts following later in the decade (Anderson 1987). However, the textile, clothing and footwear and motor vehicles and parts industries were increasingly protected by quotas (Anderson 1987).

The decline in the importance of manufacturing to the economy also 'stems primarily from the fact that most new jobs have been created in the services sector, rather than as a symptom of massive net labour shedding in manufacturing' and increases in labour productivity reducing labour demand while increasing output (Productivity Commission 2003, p.28). Spatially, 'the evidence suggests less reliance on manufacturing as a source of regional activity and employment. For example, in 1981, there were eight areas in which manufacturing accounted for 24 per cent or more of area employment. By 1996, there was just one such area (Whyalla)' (Productivity Commission 2003, p.75).

This pattern of manufacturing decline is consistent with most other OECD countries. The emergence of low cost developing countries has resulted in a shift in global manufacturing, particularly to south-east Asia and China.

As in agriculture, individual manufacturing sectors have fared differently over time. The Productivity Commission (2003) found that natural endowment-based manufactures and products with higher skills and R&D requirements in 2000–01 contributed a higher share to manufacturing value added than they did in 1968–69. In contrast, manufactures which are less complex have more competition from imports, explaining the reduction in the importance of textile, clothing and footwear and other sectors (Productivity Commission 2003).

Distribution of manufacturing

The largest site for manufacturers to locate was in capital cities, leading to a strong concentration of activity. However in the pre-Second World War years, small rural manufacturers survived due to the 'location' protection afforded by relative isolation.

This degree of 'location' protection was eroded because of the falling costs of transport. The formation of large-scale, single factories resulted in the transport of goods across large areas, such as the butter factory example provided in Box 6.1. The effect was a dismantling of small-scale manufacturers in regional towns as they found it more difficult to compete. Improvements in transport enabled a regionally-based system of production, with fewer firms located in a regional centre.

Box 6.1 Butter factories in Victoria

Butter factories in Victoria provide an example of how secondary industry initially stimulated many small towns, but changes to technology and economies of scale led to larger scale operations in fewer centres.

For most of the 1800s, butter was made on individual farms, but by 1905 there were almost 200 butter factories in Victoria. In addition, each butter factory had several geographically dispersed creameries, where farmers took their milk to be separated. Townships grew on the back of these creameries (Keneley 2005).

Keneley (2005) reports that this system for manufacturing butter 'created new urban industries' and these butter factories and creameries 'became an important feature of many small towns'.

However, in the 1920s, individual milk separators for farmers were eventually adopted to save transport costs to the creameries. This made creameries obsolete and left many small townships without a secondary industry (Keneley 2005).

Transport also changed the spatial pattern of butter factories. Motorised transport in the 1920s and 1930s enabled wider milk collection, causing milk factories to expand and amalgamate, with the consequence of employment loss (Keneley 2005, Department of State Development, Business and Innovation 2010). The potential catchment for milk collection further expanded with refrigerated tankers in the 1950s (Farrer 2005).

Additionally, economies of scale resulted from 'more capital-intensive technologies' (Farrer 2005, p.172). Due to these transport and industry technologies and other innovations, between 1946 and 1970, the number of dairy factories in Australia halved (Farrer 1988). In Victoria, most local butter factories had closed by the 1960s or had been 'swallowed by large dairy conglomerates' (Department of State Development, Business and Innovation 2010).

In a few locations manufacturing became a substantial basic sector for regional cities such as Newcastle, Gladstone, Geelong, George Town and Whyalla (see Box 6.2). It provided them with a strong growth mechanism over and above those generated through developing services in the mid-twentieth century. For example, Geelong was a major port but became an important manufacturing hub with major companies entering. As The Geelong Manufacturing Council (n.d.p.) reported, the 'Ford Motor Company (1925), Pilkington Glass (1937), Shell Refinery (1954), and Alcoa Australia (1963) were followed by a range of other national and multi-national companies' that formed the backbone of the city's basic industry³¹.

Governments have made attempts to decentralise more manufacturing jobs to alleviate congestion in capital cities and promote regional development. In fact it did partly fuel urban growth in regional areas. Following the Second World War 'it was agreed that State governments should promote decentralisation by offering incentives to certain industries, while the Commonwealth further assisted decentralisation through its allocation of defence activities and by encouraging migrants and overseas firms to establish themselves in provincial areas' (ABS 1988, p.674). For example, Victoria's state governments encouraged manufacturing to be more decentralised by subsidising rail and power generation for regions outside of Melbourne (Frost et al. 2002). Dingle (1985) notes that between 1950 and 1953, the number of manufacturing jobs outside Melbourne doubled with the expansion of, for example, towns in Gippsland developing electric power facilities, paper manufacturing and oil deposits (Frost et al. 2002). Within the Melbourne sphere of influence, new suburbs were also built—Broadmeadows and Dandenong were designed especially for the car industry.

Yet Self (1995, p.258) argues that government initiatives to promote growth in regional areas were undertaken with little consideration for a region's real economic potential and describes these policies as 'scattergun' in nature. So while some areas profited from the shift to manufacturing, other areas were unable to attract new firms and lost economic ground.

³¹ More recently, Geelong has been and continues to experience structural changes to its local economy.

Box 6.2 Whyalla, South Australia

A city that grew from a manufacturing base is Whyalla on the Spencer Gulf, in South Australia (discussed in Chapter 5). It had an average annual population growth rate of 6 per cent from 1911 to 2006, but most of this growth occurred in the middle of the century through expansion into industrial manufacturing. This town grew from the discovery of iron ore, but expanded considerably with the BHP Indenture Act with the construction of a blast furnace and harbour at the beginning of the Second World War (City of Whyalla n.d.p.). This was combined with opening of ship building operations next to the furnace for the construction of the navy's patrol boats and the opening of BHP's steelworks to enable ore to be processed in South Australia. These new jobs required workers, which led to the rapid expansion of the town. In fact, the South Australian Department of Lands made preliminary plans for a city of 100 000 persons in the 1970s (Houghton 2011).

Yet, the city, as with other industrial cities, had its traditional employment base adversely impacted by the increasing competition from other industrialising nations, along with changes to tariff structures and productivity gains. In the case of Whyalla, the city's population peaked at 33 000 in 1976 (City of Whyalla n.d.p.), and by 2006 had just over 21 000 persons. BITRE's (2011a) study into population change found a similar pattern for other industrial coastal cities. These cities, such as Newcastle, Wollongong, Geelong and Burnie-Devonport, are associated with the restructuring in manufacturing.

In the latter part of the century, the distribution of manufacturing on a spatial level was also becoming much more complex. While some key regional manufacturing hubs experienced considerable contraction in employment, many areas experienced employment growth, though the Productivity Commission (2003) states that this is partly attributable to overall population and employment growth. These geographic differences are a testament to the fact that while manufacturing employment and shares have declined overall, this does not mean that all types of manufacturing have (Productivity Commission 2003). For example, food, beverage and tobacco manufacturing has grown strongly in some regions, while declining in others (BTRE 2003a). Regions specialising in food, beverage and tobacco manufacturing are strongly clustered in south-east Australia and in coastal southwest Western Australia (BTRE 2003a).

Expansion of service industries

A dominant feature of the Australian economy has been the consistent growth of service industries since the Second World War, as shown in Figures 6.3 and 6.4. The service sector has consistently been a large contributor to GDP and by 2000–01 it had almost doubled its share post-war³².

The proportion of the Australian workforce engaged in service industries has grown substantially over the past 50 years, rising from around 60 per cent in the 1960s to over 80 per cent at the beginning of this century (Connolly and Lewis 2010) (see Figure 6.4). In the 1950s, the service sector was closely linked to manufacturing. But with the decline in the relative importance of

³² In Figures 6.3 and 6.4 the 'services' category incorporates a wide collection of services such as retail trade, accommodation and cafes, health and community services, communication services and business services.

manufacturing the growth has been in social services and in finance sectors such as property & business services and finance & insurance.

Connolly and Lewis (2010) argue that the rise in the services sector largely reflects both rising consumer demand and real incomes. Spending on health, education, recreational and financial services has coincided with rising labour force participation, particularly by women. For example, services previously provided within a household such as childcare are being demanded to meet the changing needs of families.

The rise in services also reflects the relatively high Australian wage rates compared to other nations. This has meant that tradeable goods are being sourced offshore while non-tradeable goods (and the majority of services) have to be sourced locally due to the need for a local physical presence. The rise of offshore call centres shows that some services too can be effectively imported.

The service sector's increasing importance is shifting the role that non-basic industries have to a local economy's performance. Of particular importance is the location of service providers. Traditionally, towns and regions have been based on primary or secondary industries that produce 'things' for export outside the region (see Chapter 2). A traditional exception has been tourism, as services provided to tourists are effectively exports, creating a flow of income from outside.

In the early part of the century, the shift towards services was to the advantage of larger regional centres that provided the economies of scale and urbanisation advantages resulting in increasing degrees of centralisation. As McLachlan et al. (2002, p.XIX) observed, 'service jobs are concentrated in the capital cities', but at the same time, they still account for the majority of employment in non-metropolitan regions. In fact, in almost all non-metropolitan regions, the share of service sector employment increased between 1981 and 1996.

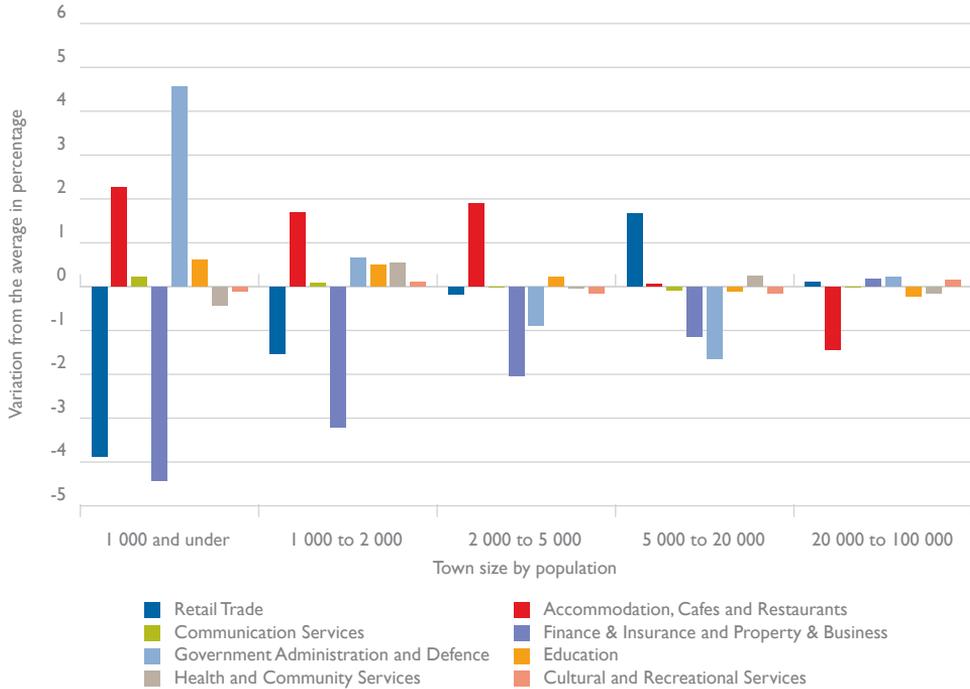
While the share of employment in services has risen for non-metropolitan locations, there are differences in both the type of employment and the size of towns. Figure 6.7 presents the industry mix of towns based on their variation from the average industry mix for towns with up to 100 000 persons, in 2006. Several features are evident:

- The proportion of retail trade in smaller towns is low in comparison to the average, and is particularly low in towns of fewer than 1000 persons. In contrast, retail trade forms an important component in the industry mix of towns over 5000 persons.
- The accommodation, cafes & restaurants industry has a high personal contact requirement and is found to be more important for smaller towns.
- There is a high proportion of government administration & defence employment in small towns.
- Finance & insurance and property & business services employment is proportionally higher in larger centres, while very low for small towns.

The differences in the industry mix for various town sizes illustrates that higher order services are positioned in larger towns and cities, such as finance & insurance and property & business services. For example, there have been substantial changes in how people access banking, which has resulted in the closure of bank branches for many small towns. A closer look at the impact of branch closures is presented in Box 6.3.

In addition, services that require personal contact or goods consumed immediately have either a higher or similar proportion in small towns when compared to large towns.

Figure 6.7 Service industry employment by town size (variation from a city of 100 000 persons), 2006



Note: Cities above 100 000 are excluded.

Source: ABS Census of Population and Housing 2006.

Contributing to the difference in the mix of services, many small towns are within easy commute to a larger centre. Improvements in transport provided consumers with the capacity to access goods and services in regional centres that would out-compete small towns on price, quantity and variety in many instances. There was an expansion in competition spatially that was shifting economic activity increasingly to the benefit of larger regional hubs. This point is examined further in Chapter 10.

However, sometimes towns in close proximity to a regional city can use this proximity to become attractive small communities socially and environmentally, while drawing their economic power and access to services from the larger centre. Their traditional function of providing services to their residents and the surrounding hinterland has declined, but they can transform their function to become attractive residential locations for the larger regional centre's labour force. Towns in this situation can develop a symbiotic relationship with the larger centre. For example, Forth (2001, p.75) points out that there are many regional towns of less than 4000 people that have successfully reinvented themselves into 'tourism, aged retirement or commuter centres and whose future viability is assured'. Essentially, they have adopted a new economic base. Nevertheless, there are numerous cases in which small towns have been overwhelmed economically by the larger centre, resulting in their long-term decline. As Beer and Clower (2009, p.385–6) acknowledge, modifying peripheral economies to meet this challenge is very difficult.

Box 6.3 Restructuring in the banking industry

Banking was previously regarded as a guide to a town's economic prosperity, because banks would open and close based on the size of the market they served (Ralston and Beal 2000). However, the changing nature of the banking sector through technological advancements, globalisation and deregulation has allowed banks to reform their service delivery networks, particularly through ATMs and the internet. This effectively changes the role of banks and the way in which services are provided.

A consequence has been bank branch closures, which were particularly prominent during the 1990s with the closure of 21 per cent of bank branches, between June 1993 and June 1998 (CAFI 1998). This represented a fall of over 1400 branches (CAFI 1998). The closure of these bank branches provided an empirical illustration of how the removal of a service from a town flows through the local economy and shows how people adapt to that change. CAFI (1998, p.7) investigated the initial impact on communities and found three main outcomes:

- 'financial drain from the community;
- loss of financial investment; and
- a loss of confidence in the community'.

The loss of confidence in the community was expressed in terms of population decline, loss of businesses and services, decreased property prices and lower employment opportunities (CAFI 1998).

However, analysis of these same towns after several years revealed major changes through greater access to self-service delivery and the entry of credit unions. After the initial significant impact, local residents made active choices with regards to their financial arrangements (CAFI 1998). CAFI (1998, p.29) concluded that even though towns are still losing retail spending, in towns that 'more strongly recognise[d] the need to support local commercial activity, residents [would] travel to bank and shop much less frequently' and surmised that '[i]t is evident that the awareness and behaviour of residents is vitally important for the future of rural communities'.

4. Technological change

Technological change has impacted on almost all areas of life, including industry, communications, consumer goods and transport. In fact, in the second half of the twentieth century, internationally there was a 'radical speeding up' of technological advances (Soubbotina 2004, p.65–66).

Technological advancements in industry have increased efficiency. As technology changed, the requirements and practices of industry changed. For example, Keneley (2005) examined urban development in western Victoria between 1890 and 1930, and found that the connection between technology and settlement was not straightforward over time. After settlement, there was not much of a connection between town and workers in the country, because the nature of farming at the time required a lot of land to be profitable, so people were spread out. Keneley (2005) noted that in western Victoria prior to 1890, the wool industry did not create demand for the services found in country towns, as pastoral estates were quite self-contained.

Yet from 1890, farming could be carried out on smaller lots due to technological changes which increased the productivity of the land. This transitioned local economies towards small wheat

farms that required towns to provide services (Keneley 2005). Workers were positioned closer together and towns could grow. Then in the 1930s more technological changes (including in transport) made fewer, larger farms viable, and so towns with economies based on farm services declined (Keneley 2005). The resultant productivity increases led to a decrease in the number of workers required.

Due to the reduction in labour requirements, technological change is not always embraced by workers. However, Banks (2000) pointed out that while technology such as mechanisation in farming reduces the amount of labour required, it also enables the industry to grow (and survive) because of increased productivity.

Nossal and Gooday (2009, p.4) reported that 'increased production in Australian agriculture has been almost entirely a result of productivity improvements', while the Productivity Commission (2005b, p.XL) considered the use of new knowledge or technologies to be 'a key source of productivity growth in agriculture'. Types of new technologies include farm machinery/equipment, chemicals which increase yields (such as fertilisers), better farming systems and genetic modification. Other sources of productivity growth include better management practices due to competitive pressures internationally, ICT, and structural changes (Productivity Commission 2005b). Agriculture also benefited from improved transport.

Technological change also led to the emergence of large-scale production (for example, farms, manufacturing plants), resulting from high capital requirements to achieve economies of scale. This in turn makes it more difficult for smaller operations to compete because of the need to invest in capital items. Also, the reach of individual firms has improved because innovations in, for example, transport, refrigeration and packaging meant that larger scale production became possible (Farrer 2005). An illustration of the change has been discussed previously in Box 6.1, which examined the change in butter factories in Victoria.

Large-scale farming is accompanied by rationalisation of farming activities. One example of the decrease in farm numbers was in the dairy industry. The Industry Commission (1991) found that between 1971 and 1990, the number of dairy farms in Australia fell from 43 000 to 15 000. Essentially, operations were fewer and larger, with an increase in productivity per cow. This pattern of dairy farm decline and the rise in average herd size occurred across all states, although the falls vary in severity across the states. Table 6.3 shows the declining number of registered dairy farms between 1971 and 1990.

Table 6.3 Registered dairy farms by state, 1971 to 1990

State	1971	1981	1990	1971–1990 (per cent)
New South Wales	7 735	3 256	2 218	–71
Western Australia	1 491	615	496	–67
South Australia	3 836	1 722	969	–75
Tasmania	3 117	1 384	880	–72

Note: Excludes Victoria and Queensland as data is not comparable across the time period for these states.

Source: Industry Commission (1991), Table B1 (p.168).

Technology also affected the location of dairy farms. Dairy farms used to be close to major population centres because of the perishable nature of milk. The combination of 'refrigeration, improved transport, and pressure on land use from urbanisation' allowed dairy farming regions to move further away from major centres (Industry Commission 1991, pp.5–6).

Advancements also occurred in the production of food. Innovation and technology have changed the ways in which food can be produced, packaged, preserved, transported and stored. These innovations affect how food manufacturing and retail function, which in turn affects the functions of individual towns. From the manufacturing perspective, these innovations contributed to centralisation of operations. Preservation techniques which extend the shelf lives of different types of food and the availability of household refrigeration have also decreased the required frequency of food shopping visits.

Consumer preference also changed during the twentieth century because of influences such as other cultures, rising incomes, new inventions and the changing role of women. This stimulated industry to change, grow and innovate to meet new consumer demands.

More women in the workforce following the Second World War led to rising demand for convenience food (Farrer 2005). Technological innovations (such as in freezing and packaging) enabled convenience food to be produced to meet this demand. Another example is the presence of American troops during the Second World War exposing Australians to the American fondness for orange juice, creating a local industry (Farrer 2005).

The example of orange juice also illustrates the way in which larger industries substantially changed their composition, and within them, individual sectors grew or declined. For example, the Productivity Commission (1999) noted that while agriculture production was increasing, its makeup changed from an emphasis on beef and wool towards cotton, wine grapes and other horticulture associated with irrigation. This changing structure had an impact on which towns grew and which declined.

Uptake of innovations can expand the productive area of a natural resource-related industry by making previously unprofitable undertakings worthwhile. In the past 100 years, new innovations in exploration, extraction and processing changed the geographic spread of mining (and the location of support towns), decreased the need for labour, and increased the productivity—and hence the viability—of mines. For example, improvements in mining and transport technology since 1911 meant that 'previously uneconomic' deposits could be mined (although the world economy also determined which mines were viable) (ABS 2001, p.672).

Manufacturing is another industry that has radically changed with mechanisation, computers, improved production processes and economies of scale, making the industry more productive and reducing labour needs. Innovations in materials have also changed the industry: the Productivity Commission (2003, p.181) calls the advances in lighter, stronger and cheaper materials (such as plastics, high tensile steel and aluminium) the 'quiet revolution' in manufacturing.

Communications

Communications technology has evolved radically in the last 100 years. At the beginning of the twentieth century, communication was comparatively basic, expensive and time consuming, but today it is ubiquitous, affordable and fast—in some cases, instantaneous. The timing of access

to these communications technologies differed spatially, with major centres tending to benefit first, and the most remote areas much later or sometimes not at all.

Two key widespread communication services at the beginning of the twentieth century were the postal service and the telegraph. At Federation, the Commonwealth was responsible for postal, telegraphic, telephonic and similar services. While telephones were not yet a standard form of communication for the wider population by 1901—each state had its own telephone network, but each was unconnected to the others, with only an average of one telephone service per 1000 people (Lee 2003). In terms of mass media, newspapers dominated—radio services did not commence until 1923, and the first television broadcast was fifty years away (ABS 2001).

In the regions, by 1905 many towns had postal services, telegraph and money-order services, in one or more offices, indicating how essential communication services were (Australian Handbook 1905). In fact, from 1851, 'a remarkable increase in the number of post offices in Australia' occurred (ABS/CBCS 1913, p.746). By the beginning of the twentieth century, even very small towns contained a post office and 'were focal centres of social interaction' (Lee 2003). Post offices also contributed to employment for these small towns, with 5664 post offices open in Australia in 1911 or 8054 post and receiving offices, equal to an office for every 567 people (ABS/CBCS 1913).

This substantial distribution of post offices meant later post office closures affected employment and services in many towns. In 1962, there were 8001 (official and non-official) post offices, equivalent to 1338 inhabitants per office (ABS/CBCS 1963). By 1990, there were 4401 post offices and agencies (ABS 1992), and by the end of the century (1999–2000) this had fallen to 3887 corporate outlets and licensed post offices (ABS 2002). This shows the decline in the number of post offices across Australia, despite the growing population. These closures reflect a focus on efficiencies, but also the wider effect of declining towns and technological shifts towards other communications, such as the telephone. More recently, since 2000, mail volumes first stabilised and then declined with the rise of email, but parcel volumes increased with online shopping (Fahour 2013).

The telegram was a major form of long-distance communication in the early twentieth century, and led to the establishment of some towns. For example, the Overland Telegraph between Port Augusta and Darwin, established in 1872, connected Australia to an overseas network. It required repeater stations along the route, and this 'gave birth to a string of iconic Australian towns, such as Alice Springs... Tennant Creek and Daly Waters' (Australia Post n.d.p.). Millions of telegrams were sent each year for most of the twentieth century. For the first half of the century, the number of telegrams sent increased with the population, and as the cost fell. The frequency of use peaked after the Second World War at 35 million telegrams, falling to 18 million in 1975 as telephone services improved (Lee 2003).

Telegrams declined with the development and wide spread use of the telephone. The development of telephone networks occurred in the late 1800s in cities and towns, long distance lines being slower to eventuate (Lee 2003). Over the first few decades of the twentieth century, the states were connected. Take up was slow before the end of the Second World War, with telephone subscribers expected to pay for the line to their property (Arnold 2005, Curtis and Pearcey 1988).

An interesting aspect was the establishment of telephone exchanges. These manual telephone exchanges created employment in almost every country town before eventually being replaced by automation. However, the process was a long one, with the change happening sooner in capital cities and later in country towns. In 1910, there were 58 telephone exchanges in regional Queensland (Kleinhöder and Mate 2010). Sydney city's last manual telephone exchange closed in the 1920s, but most smaller country towns still had manual exchanges in the 1960s, with the last closing in the early 1990s (Lee 2003). The closure of these exchanges meant the loss of telephonist jobs, but also a decline in social connection with people ringing in to spread word or to hear about new babies, sickness, bushfires and so on (Milliken 1991 reproduced in Ison 2000).

The most recent communications technologies, mobile phones and the internet, have quickly grown to be commonplace. The proportion of households with a mobile phone grew from 24 per cent in 1996 to 72 per cent in 2002 (ABS 2007), revealing the speed with which this technology was adopted.

Communications technology has enabled greater connection between people, decreasing distance much as transport has done. The change has meant that people are able to communicate across long distances for business and personal reasons. Like transport, this contributed to the spatial distribution of firms and the longer distances that can now exist between the home and the workplace.

5. Transport

Technological advances in transport have had such a profound impact on the movement of goods and people that it will be examined separately from other forms of technological progress.

Chapter 3 discussed transport in Australia up to 1911. Australia's railways were first built independently by each colony with different gauges. Their primary function was to connect a hinterland's agricultural and mineral production with seaports, usually the capital.

While early rail was less flexible than modern road transport, it was a vast improvement on the transport which existed at the time. Farmers benefited from lower transport costs with rail enabling produce to be moved to market more quickly and cheaply. The wheat industry and the railways were fundamentally linked. Being on the railway meant that towns became transport nodes as agricultural products were brought to railway sidings for transport to market. Rail became an important industry, as discussed in Chapter 5.

Rail remains a major transport option for some bulk goods, with mining and agriculture major users. The privately-operated Pilbara railways move vast quantities of iron ore to coastal ports. The recent expansion of the Fortescue Metals Group's Christmas Creek mine involved the construction of a 50 kilometre railroad to connect it with the Port Hedland line (Kable 2014). The Productivity Commission (1999, p.XXXV) reported that 'coal is the single largest commodity transported by rail' and 'export coal is transported almost exclusively by rail'.

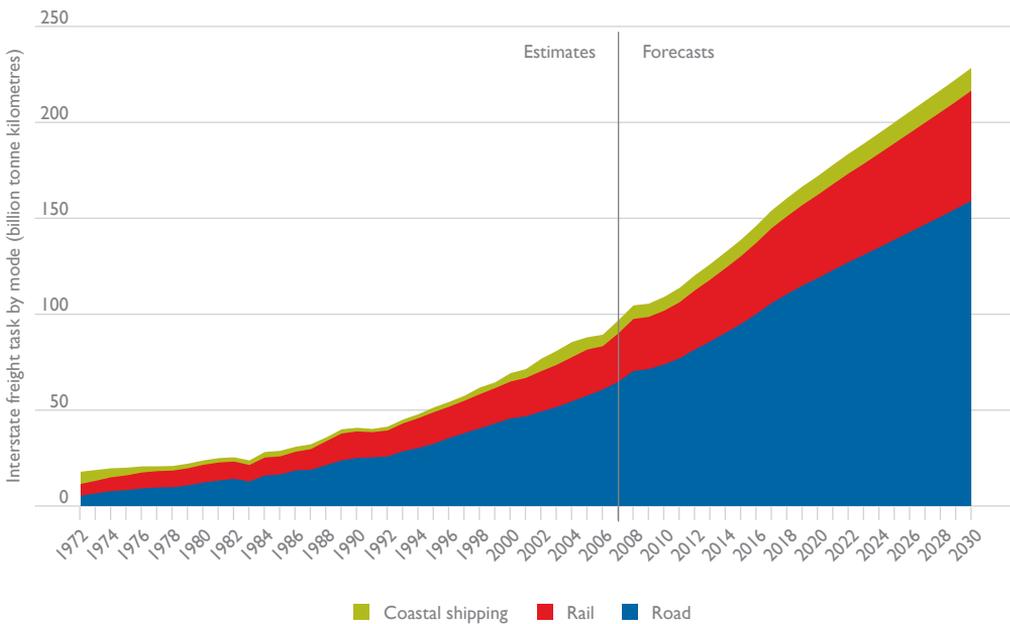
Today, wheat for export is still mostly transported by rail, with rail carrying an estimated three quarters of the total volume (Productivity Commission 2010). Rail rather than road is used when grain is transported from more distant areas. However there has been a recent shift

towards road transport. This has been accompanied by a consolidation and rationalisation of rail branch lines, particularly those with low volumes of wheat transport, as well as a reduction in rail grain wagons in favour of trucks (Productivity Commission 2010).

Despite the shift towards road, rail is still fundamental for some industries and in some circumstances. Nevertheless, the influence of rail on the spatial activities of people and businesses in regional areas has diminished over the past century.

For transporting interstate freight, road has dominated for decades, progressively gaining a larger share of the freight task (see Figure 6.8).

Figure 6.8 Interstate freight estimates and forecasts, coastal shipping, rail and road, 1972–2030



Note: 1972 to 2007 figures are estimates; 2008 to 2030 figures are forecasts.

Source: BITRE (2010b), BITRE estimates.

Today, road freight is displacing rail as the first choice for transporting many goods. Freight movements highlight this shift. In 1972, along the North-South corridor³³, road and rail moved 4.7 and 3.5 billion tonne kilometres respectively, but by 2007 road increased to 56.2 billion tonne kilometres compared to only 8.0 billion tonne kilometres by rail (BITRE 2010b). The mode share of freight by road increased substantially with the sealing and duplication of highways and vast improvements in truck productivity (for example, 6 axle articulated trucks and B-doubles) (BITRE 2010b).

Over the century, a more extensive road network was developed, with better roads enabling faster, safer travel. This was facilitated by technological improvements (for example, in surfacing). Cars put new pressures on roads and changed the 'state of balance in which the road network had existed with the other modes of travel and the land use patterns' (ABS 1974). Before

³³ The North-South corridor refers to freight movements with three distinct interstate general freight markets (Melbourne–Brisbane, Melbourne–Sydney and Sydney–Brisbane) as well as portions of more peripheral origin-destination routes.

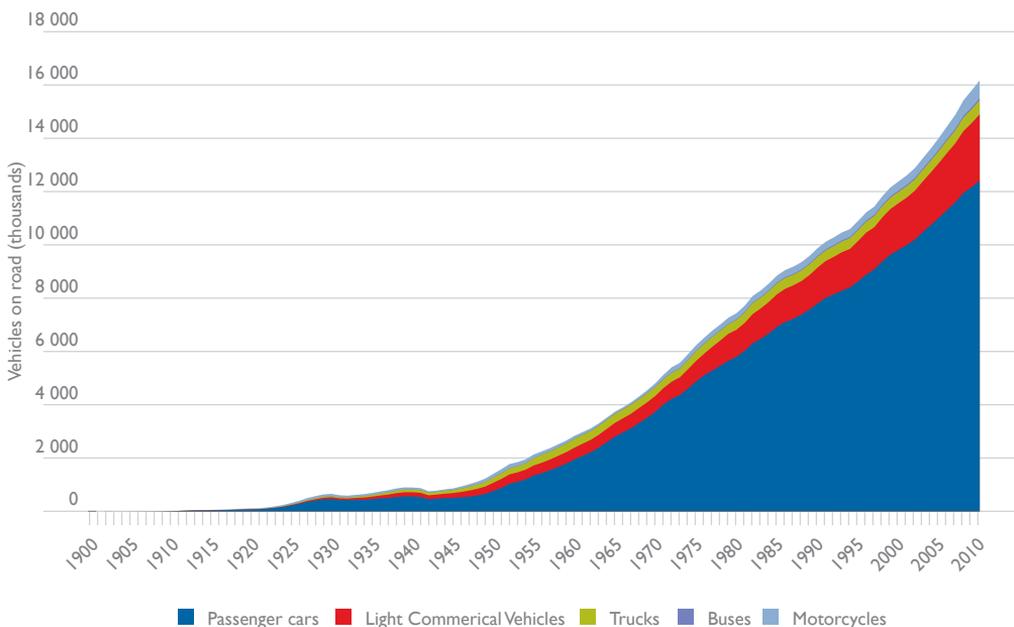
the car; the focus on rural roads was getting produce to a railway station or port (Lee 2003). Similarly, quality arterial roads had been unnecessary when rail was the main transport mode (ABS 1974).

The development of the national highway network was part of this improvement, connecting the nation's capital cities and putting in place important links that channel traffic along these corridors. Towns positioned along these routes have benefited from traffic, such as those along the Hume Highway between Melbourne and Sydney. Over very long distances, rail is still an important mode of transport, as pick-up and delivery costs are a smaller proportion of costs (BITRE 2010b). Compared to rail, road transport is extremely flexible.

Road transport is now the dominant mode of transport in Australia. The country went from 11 000 registered passenger cars in 1911 to over 11 million in 2006 (see Figure 6.9). Yet, as Lee (2003) reported it was not until the 1950s that car ownership rose sharply. It was 'very much an elite affair' with poor road quality contributing to the continued dominance of rail in the early decades of the twentieth century (Lee 2003). This is illustrated in Figure 6.9 with little growth in the number of cars on the road in the 1930s and 1940s.

The important turning point towards widespread car use was the 'long economic boom' after the Second World War (see Figure 6.10). This was a period of growing wealth, enabling people to purchase cars for personal transport. Motor companies shifted manufacturing from military to civilian cars, with the first all-Australian manufactured car produced in 1948 by Holden—'the FX'. The FX was priced at £733 and 'was an immediate success... Holden could not satisfy demand quickly enough. Eighteen thousand people had signed up and paid their deposit without even having seen the vehicle' (Australian Government 2007). With the increase in the number of cars, there was growth in motor vehicle retailing and service stations, which increased fourfold from 7500 in 1947–48 to over 32 000 locations in 1991–92 (ABS 2001).

Figure 6.9 On-road vehicle stock, 1900 to 2010



Source: BITRE (2012).

Spatial impacts of transport systems – customer mobility

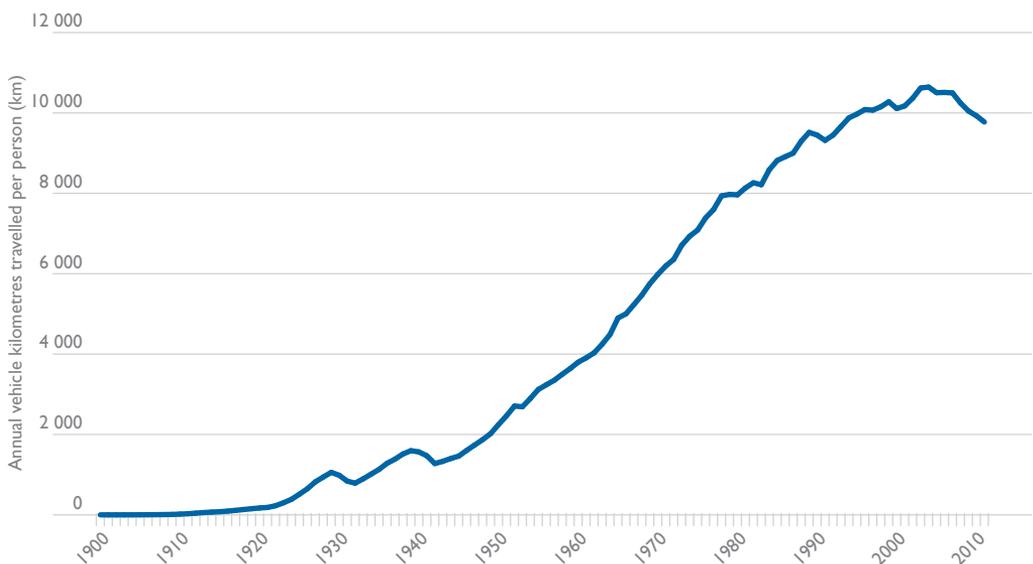
The rise of the motor vehicle fundamentally changed the spatial connection between towns and activities within them. It transformed how people accessed their place of work, shopped, conducted recreational activities and organised their lives. Today many people, particularly in regional Australia, would be unable to ‘function’ without access to a car.

The motor vehicle fundamentally changed personal mobility because it provided:

- flexibility of destination—people are able to move from origin to destination by one transport mode
- flexibility of time—people can leave at their own discretion without following a set timetable
- the ability to carry a reasonable load of goods and passengers
- increased range/ distance—people are able to travel further, substantially increasing the average distance a person travelled (see Figure 6.10).

Smailes (2000) provides a dramatic illustration of this change from South Australia through the use of postal surveys about travel patterns in 1968–69 and 1992–93. The responses show a ‘substantial reduction in mean travelling times’. Peripheral locations had roughly three hours cut from travel times, with the greatest falls being along major highways (Smailes 2000, p.161). This brought a substantial proportion of the upper south-east into easy contact with Adelaide (Smailes 2000).

Figure 6.10 Australian trend in vehicle kilometres travelled per person, 1900 to 2010



Source: BITRE (2012).

The ability to travel further allowed people to expand their horizons, particularly their ability to access larger markets and social networks, which were generally located in metropolitan and regional centres. It provided people access to a wider range of products at relatively cheaper prices, and potentially greater employment opportunities. The link between the car

and changes in retailing was quickly recognised. Smailes (2000, p.164) found that in South Australia the 'burgeoning growth of large suburban shopping complexes has provided a new element of competition for retailers in country locations' with regional consumers drawn in.

Transport also influenced the movement of people within a location. Towns were originally compact with walking the most common form of movement. People had to be able to access all they needed in a limited space. People lived and worked in the same location. As Cosgrove (2011) points out, urban transport needs were minimal in the middle of the nineteenth century.

This changed dramatically around the 1900s, with the development of public transport (Cosgrove 2011). Electrified tramways were carrying around half a billion passengers a year by the First World War (Cosgrove 2011), enabling people to move to the suburbs, further from their place of work.

This type of transport system, however, principally changed the behaviour of people in the large capital cities. The introduction of rail in Melbourne is a clear example and substantially influenced the city's urban development. Rail lines fanned out into open countryside allowing the establishment of new suburbs, particularly in the 1880s 'land boom' (Mees 1994). This resulted in a strong connection between rail and low-density housing. It set in place the city's basic shape as a network of 'fingers' from the centre, especially towards the south and east of the CBD. The rail system laid down an element of path dependence for the city as its structure is still influencing current outcomes. In other words, the self-reinforcement locks a rational economic agent into one activity, but not necessarily the one with the best long-run potential (Arthur 1994, p.116). Once transport networks are in place, it can be difficult or cost prohibitive to transfer the activity to new locations or disperse activities. This will be discussed further in Chapter 8.

Subsequently, the widespread adoption of the car resulted in the 'filling in' of the spaces between railway lines in Melbourne (Mees 1994), while increasing the complexity and interconnections of transport flows both within the city and surrounding regions (BITRE 2011b). This pattern of growth is evident in other Australian cities, transforming them from a more tightly knit core-and-spoke configuration, to sprawling suburban low-density configurations (BITRE 2007).

6. Infrastructure

Infrastructure has influenced and reinforced settlement patterns. It is an investment in the physical systems and structures in a location and often a base on which towns grow. Timing is important in the establishment of infrastructure, as the technology of the day determines what infrastructure is constructed. An example is the electricity generation stations in the Latrobe Valley, in Victoria.

The Latrobe valley is made up of several cities—Warragul, Moe, Morwell and Traralgon—and a number of smaller towns and villages. Originally, the region developed with former miners being encouraged into agriculture. This was responsible for the development of many of the towns, with grazing and dairying becoming a prominent industry. However, the region's rich resource of brown coal became the driver in turning the region's basic industry from agriculture to electric power generation. For example, Yallourn 'A' station was opened in 1928 by the State Electricity Commission (SEC) to supply electricity for the state. This was followed by several

more plants over time. The town of Yallourn itself was a purpose-built site for Victoria's primary power generation workers and their families.

People were attracted to the region because of employment opportunities in this new industry. Existing towns benefited by providing residential accommodation for the expanding labour force. Moe had a population of 792 persons in 1911 and grew to over 15 000 persons by 1961.

Some towns in the Latrobe Valley were purpose-built developments. For example, the SEC built the town of Yallourn, which grew to a population of just over 5000 people. Houses in the town were not privately owned, but controlled and maintained by the SEC. A consequence of this was that Yallourn was dismantled after some 50 years, to access extensive coal deposits underneath, with the houses sold cheaply and relocated.

Another purpose-built town in the area was Churchill. It serviced the Hazelwood Power Station with construction commencing in 1965. Unlike Yallourn, houses in Churchill were privately-owned. Today the town has a population of around 5000 people and has a regional Monash University campus.

More recently, the privatisation of the electricity generators in the 1990s resulted in a substantial reduction in labour. This led to an extended period of population decline for local towns and cities. However, after the initial shock, the region began to grow steadily again.

Other examples of industry infrastructure include Tasmanian dams and hydropower stations and irrigation areas such as the Ord River Irrigation Scheme. Smaller types of industry infrastructure in towns can also provide a central point for primary producers to meet. Butter factories, saleyards, sugar mills, and the like have always provided a focus for agricultural producers.

Water pipelines are another example of infrastructure that reinforces the wider settlement pattern. These are established based on the strength of the existing settlement pattern, but also have the effect of reassuring its growth. For example, the Western Australian goldfields' water pipeline was constructed at the beginning of the twentieth century, delivering water from Perth to towns including Kalgoorlie. Similarly, the five water pipelines delivering Murray River water across South Australia, constructed between the 1940s and the 1970s, were created to meet demand and have helped retain the existing settlement pattern.

Town infrastructure

Another type of infrastructure influencing settlement patterns is the town itself. This includes physical infrastructure such as the buildings, housing, utilities, schools, hospitals, but also the businesses, networks, shared history, organisations, social structures and so forth.

The building of infrastructure alone does not necessarily translate into greater economic activity for a location. For instance, while rail covered an extensive area of the country, only a few locations were able to become major hubs. The large construction phase of utilities which only need a few individuals to operate once completed, may not influence the base industry of the location. As Daley and Lancy (2011, p.38) have pointed out, better infrastructure cannot supersede the major drivers of long-term economic development: without changing the

economic fundamentals, simply placing infrastructure into towns piecemeal will not change their fortunes.

Quality infrastructure for a town or region provides a less tangible component in its development. Quality infrastructure can provide confidence because of the strong connection between the 'existence of quality infrastructure and the economic and social vibrancy of a community' (Amanor-Boadu and Burns 2008, p.4). Quality infrastructure gives people assurance about the future, regardless of current economic difficulties. Cities such as Bendigo and Ballarat and surrounding towns experienced a difficult economic outlook in the early 1990s, but residents did not believe the towns would disappear. Their well-developed infrastructure made residents confident that the towns would continue.

Infrastructure plays a powerful role in retaining a population. While other factors contribute to town decline, town infrastructure can have a moderating effect. As discussed with regard to wealth, people do not always have the option to move.

The existence of infrastructure reinforces the present settlement pattern. Local assets have a value, based on either retaining its existing use or shifting to a new use, depending on its relative value. The variety of new uses for local infrastructure is vast, for example factory warehouses renovated to accommodate flats or a weekend market. However, it is the presence of the infrastructure that retains activity within the location.

7. Social changes

The social profile of Australia has changed significantly since 1911, together with social attitudes and changes in activities.

One important social change has been the recognition of Indigenous people. Indigenous people have been greatly affected by prevailing social attitudes and government policy over time. Many government policies concerning Indigenous people in the early to mid-twentieth century restricted or determined movement or location. These policies were governed by broad ideological shifts in Indigenous policy over time. The first third of the century was characterised by 'protection' policies, which controlled the movement of Aborigines, regulated their employment, and included taking children. Assimilation policy dominated in the middle of the century, with an emphasis on Aborigines adopting mainstream Australian culture and beliefs, and gaining 'the same rights and privileges' (Law Reform Commission 1986, p.19). Later, policy moved towards integration rather than assimilation, acknowledging Aboriginal culture while aiming for improvements in health, education and employment. In the 1970s, government policy shifted again to self-management or self-determination (Law Reform Commission 1986). There have also been key changes, such as the 1967 referendum that removed two references in the Australian Constitution which discriminated against Indigenous people.

Australia is now more culturally diverse. In 1901, the vast majority of Australians were either born in Australia or the United Kingdom or Ireland (ABS 2000). More recently there has been a shift towards immigration from Asia and other countries (ABS 2012b).

After the Second World War, immigration policy changed to reflect the idea that there was a defensive advantage in having a large population, and assisted passage schemes were established to encourage migrants (Smith 1979). The Department of Immigration was established in 1945,

and a few years later immigration was booming (Department of Immigration and Citizenship 2009). The economic advantages of migration were also recognised and became increasingly important in immigration policy (Smith 1979). Economic advantages included the supply of labour for large projects such as the Snowy Mountains Hydro-Electric Scheme. Construction took place between 1949 and 1974, with migrants comprising 70 per cent of the workforce (Australian Government 2008).

Later, the emphasis of immigration policy shifted from assisting entry of large numbers to selectively focusing on skills (Jupp 2007). However, the White Australia Policy, established at the turn of the century, continued for several more decades after the war and was only relaxed in the 1960s. Not until 1972 did the government explicitly indicate that immigration decisions would not be based on race, colour or creed (Jupp 2007).

In 2011, 26 per cent of the Australian population was born overseas and another 20 per cent had at least one parent born overseas (ABS 2012b). Hugo and Harris (2011) argued that immigration has been important not just to the total population (which would be under 13 million without it), but also in the distribution of settlement, since immigrants do not settle in the same pattern as the existing population.

People born overseas are more likely to live in capital cities (82 per cent, compared with 66 per cent of the whole population). Overseas-born people who arrived in Australia in the last 20 years (since 1992) are even more likely (85 per cent) (ABS 2012b). While second-generation Australians were less likely than those born overseas to live in a capital city, third-generation Australians were even less likely than second-generation Australians (ABS 2012b). This tendency for recent immigrants to live in capital cities has become stronger over time. Hugo and Harris (2011) found that the percentage of new arrivals who settled in capital cities increased with each Census after the Second World War—except for 2006.

Demographic shifts have also occurred in the age profile of the nation. The ABS (2000) reported that on average, Australians are now older than they were at the start of the twentieth century. At the beginning of the twentieth century, 29 per cent of Australians were 35 years or older, compared with 50 per cent at the end of the century (ABS 2000). In 1901, over a third (35 per cent) of people were aged 14 or under, compared with about one fifth (21 per cent) at the end of the century (ABS 2000). A contributor to this change has been the increasing life expectancy of Australians. For example, 'compared with their counterparts in 1901–1910, boys born in 2010–2012 can expect to live around 25 years longer and girls live an extra 26 years' (AIHW 2013).

Age and wealth are also strongly connected, with older people (particularly in the 55 to 64 age group) having the most wealth. BITRE (2009b) found that differences in age structure across regions could explain about a quarter of the variation between regions in household wealth.

Another change has been the growth of a welfare system. Age or invalid pensions were introduced by a few states from 1900 to 1908, but the Commonwealth age and invalid pension did not come into effect until 1909 and 1910 (ABS 1988). At the time, a much smaller proportion of the population would live into old age, so in practice, these pensions were not as widely utilised as today. Another major development was unemployment benefits. While Queensland introduced unemployment insurance in 1923, it wasn't until 1945 that the Commonwealth brought in unemployment and sickness benefits (ABS 1988).

Australians have also become better educated. Throughout the twentieth century, the level of education in Australia has increased steeply, driven in part by economic growth (Evans and Kelley 2002). In 1911, only 31 per cent of 14–15 year olds still attended school, compared with 97 per cent in 1996 (ABS 2000). Only 0.2 per cent of people aged 20 and over participated in education in 1911, compared with 12.4 per cent in 1996 (ABS 2000).

While Evans and Kelley (2002) could not account for most of the increase in education levels, they hypothesised that perceived job opportunities would be important. They also argued for a relationship between technology, industry and education: '[t]he advance of science and technology in the course of the twentieth century created the knowledge necessary for an advanced industrial economy, while growth of education created a labour force able to take advantage of these new possibilities' (Evans and Kelley 2002, p.35). De Laine et al. (2000) found that skilled workers as a percentage of total employment has increased significantly since 1978. This has meant that the workforce is capable of more sophisticated and productive jobs.

Education and employment opportunities have also been an important pull factor in young people leaving regional locations and migrating to cities. This has been a long-standing trend, together with the rise of female participation in the labour force. Women were much more likely to have or be seeking employment in 1999 than in 1911, with the change particularly pronounced for women of childbearing/ rearing age (20 to 54 years) (ABS 2000). The effect of increased female workforce participation is that women are often financially independent with their own educational and professional ties in urban areas. This changes the decision-making process for family units about where they want to live, as now there are often two careers to be considered, at least one of which is likely to be based in a city. Family units are also able to generate wealth more quickly than before.

Another attitudinal change over the twentieth century was the shift from a focus on development to the environment (Koshin 2011). For more than half of the century, the emphasis was strongly on development. In about the 1960s, the environment began to play a greater role in Australians' values, and environmentalism 'appear[ed] as an increasingly popular ideology in the later twentieth century' (Koshin 2011, p.12). This also had the effect of creating new types of jobs and industries, including environmentally-focused tourism.

Tourism was beginning to become a major industry. The number of international tourists to Australia has been growing in the long term. The total number of visitors grew from 125 000 in 1963 to 3.0 million in 1993, and then doubled to 6 million in 2011–12 (ABS 1995, TRA 2012). With this tourism has become a more important part of town economies. Baum et al. (2005) discuss regional towns and cities which have strong population growth and also strong tourist industries—for example, Broome, Katherine and Cairns, the last of which they call 'a city driven by tourism'. This growth reflects the nature of tourism as an emerging industry. Tourism is a relatively recent function for Cairns, which grew for other reasons—industry and transport connections to the inland—in its early years. Towns which do not have a primary tourism focus can also benefit from through-traffic, and in this way, have greater markets for their retail sector and other businesses such as eateries and accommodation.

8. Government policies

BTRE (2003b, p.17) outlined three distinct periods of broader government policies and macro-economic influences: colonial policies (1788–1900); pre-trade liberalisation policies (1920–1970s); and post-trade liberalisation policies (from mid–1980s).

Colonial policies promoted primary export industries through the provision of infrastructure (for example, transport) and land releases and protected local industry, particularly manufacturing. However, these policies differed between the colonies. One of the most important events that changed the structure of Australia's economy was federalism. This saw a transition to a uniform trade regulation framework between the states and the move to a nationally consistent system of international protection measures. The consistent tariff regime was more effective than that of the disjointed colonial one and tended to aid the emerging manufacturing base which was located in larger cities (Sinclair 1976) rather than agricultural commodities and regions.

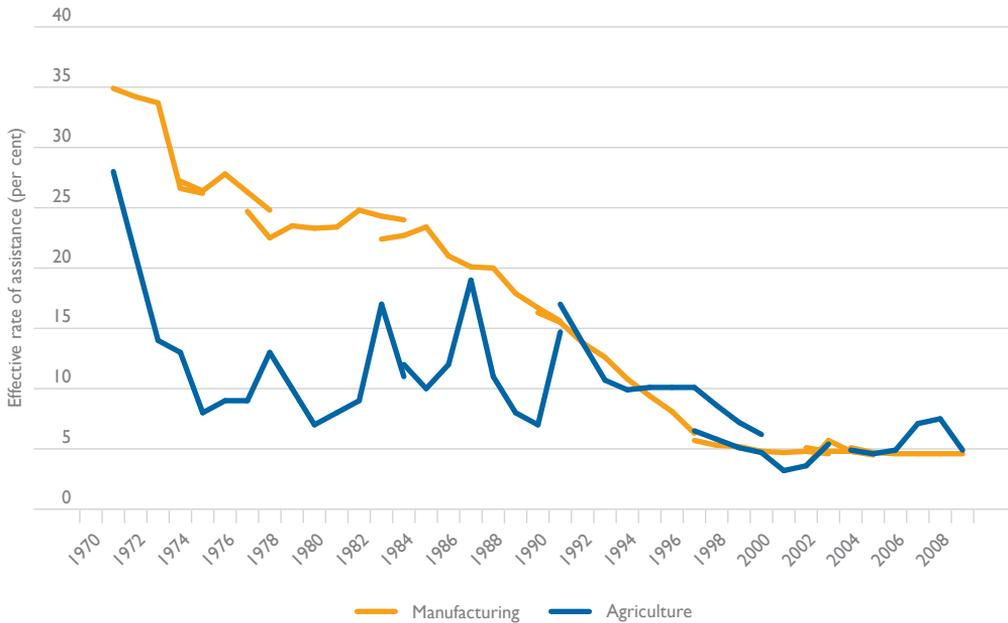
In the pre-trade liberalisation period from the 1920s to the 1970s, macro-economic and industry wide (protectionist) policies dominated the Commonwealth's approach. BTRE (2003b) argued that federally, policies were directed towards secondary and tertiary industries to support the diversification of industry but were not explicitly based on spatial objectives or were sporadic in nature.

The post-war emergence of Keynesian economic theory made governments more comfortable with an interventionist approach. It provided the theoretical underpinning for governments wishing to undertake big infrastructure projects (such as the Snowy Mountain Scheme).

The apparent failure of Keynesian economics in the late 1960s saw Australia's economy struggle in the 1970s and 1980s with slow output growth, inflation, rising unemployment and slow productivity gains (Productivity Commission 2005a, p.XIII). Governments tackled these issues with a widespread program of economic reforms which ranged from financial and trade liberalisation, a focus on raising productivity and the introduction of greater labour market flexibility.

Of particular note were the international trade reforms and floating of the Australian dollar which raised Australia's international competitiveness. As highlighted earlier the Federal Government introduced policies to improve efficiency and promote greater competition through tariff reductions. The Productivity Commission estimated the effective rate of assistance for the manufacturing and agricultural sectors (see Figure 6.11). Manufacturing industry's effective rate of assistance was estimated to have declined by around 30 percentage points from the 1970s to 2009. Agricultural assistance has also declined over the period but the sector has received sporadic assistance through tax concessions and subsidies in periods of drought or low commodity prices (Connolly and Lewis 2010). However while overall support has declined, the Productivity Commission states that it 'remains significant' (Productivity Commission 2007, p.VIII).

Figure 6.11 Effective rates of assistance, 1970 to 2009



Note: Financial years.

Source: Reproduced from Connolly and Lewis (2010) citing the Productivity Commission.

An important policy initiative over the past decades was the National Competition Policy (NCP) introduced in 1995 (National Competition Council n.d.p.). The policy was designed to be far-reaching because of the perceived 'deteriorating performance' of the Australian economy (Productivity Commission 2005a, p.XIII). NCP covered both general and sector-specific reforms including reform of public monopolies and the requiring competitive neutrality for other government businesses (Productivity Commission 2005a). Consequently governmental services were rationalised and their operations 'mirrored those caused by the restructuring of the private sector' (Gerritsen 2000, p.124). This contributed to a major transformation in the way goods and services were provided³⁴.

Overall, government policies moved from a more protectionist stance to stressing the importance of global competitiveness and market-oriented solutions to generate national and regional economic growth.

Government regional development policies and interventions

Australian governments have a long history of public sector intervention to encourage economic and social development in regional locations (Tonts 2000), with state governments a key provider of social infrastructure (schools, hospitals and police stations). An important spatial approach adopted in the 1930s was the establishment of the Commonwealth Grants Commission to advise on the principle of 'fiscal equalisation', to equalise the capacity of each state to provide public services (Wilkinson 2003).

³⁴ Refer to Chapter 9 for more analysis into the privatisation and commercialisation of public enterprises and the effect on the provision of goods and services in regional areas.

The most obvious way governments have influenced the fortunes of towns and their local economies is through locational decisions. Defence is an example of this. The opening of defence facilities can provide development opportunities and provide a large part of the local industry base. Townsville is one such city, which during the Second World War became an important Pacific defence location for the air force and army. It 'is now home to Australia's largest contingent of defence personnel' (BTRE 2003b, p.79). From this foundation, combined with its traditional mineral processing base, Townsville quickly became an important service centre and port hub for northern Queensland.

The decision about where to produce defence materials (such as ship building, munitions factories) is another way in which government affects the development of towns and regional cities. Whyalla's population grew with its naval ship building role in the Second World War (as discussed in Chapter 5) (City of Whyalla n.d.p.). In Queensland, the provision of war supplies stimulated industrial development. Prior to the Second World War, the state's industries were focused on primary and related secondary production (Queensland Government 2012). The war stimulated food, timber and metal industries. Munitions were produced at Ipswich's rail workshops, Cairns manufactured landing craft and timber products, and meatworks were established at Mount Isa and Cape River, near Charters Towers to supply the military (Queensland Government 2012).

Another way in which government policy has affected settlement patterns over the last one hundred years has been the impact of laws relating to Indigenous Australians, particularly in the first half of the twentieth century. These early laws controlled movement—in some cases limiting it, and in others, forcing relocation. This has had a lasting impact, with some Indigenous settlements today having historical roots in old missions and government-established settlements. A discussion of the area around Tennant Creek is in Chapter 5.

Governments attempted to directly intervene in the development of cities, with Canberra the clearest example. The national capital was established by legislation. In the beginning the city developed slowly through the Great Depression and two World Wars. It was not until the 1950s that 'an active and political interest in the development of a planned Federal Capital re-emerged' (National Capital Authority 2010). To give impetus to this initiative 'a program of transferring public servants to Canberra, mainly from Melbourne' was introduced (National Capital Authority 2010)—a form of employment decentralisation. This transferred the function of federal governance to Canberra, to form the major component of the city's basic industry (representing nearly 30 per cent of the territory's workforce³⁵). Another example was the establishment of irrigation areas which opened up previously unviable farming land, resulting in towns being established as service centres—notably Griffith, as discussed in Chapter 5.

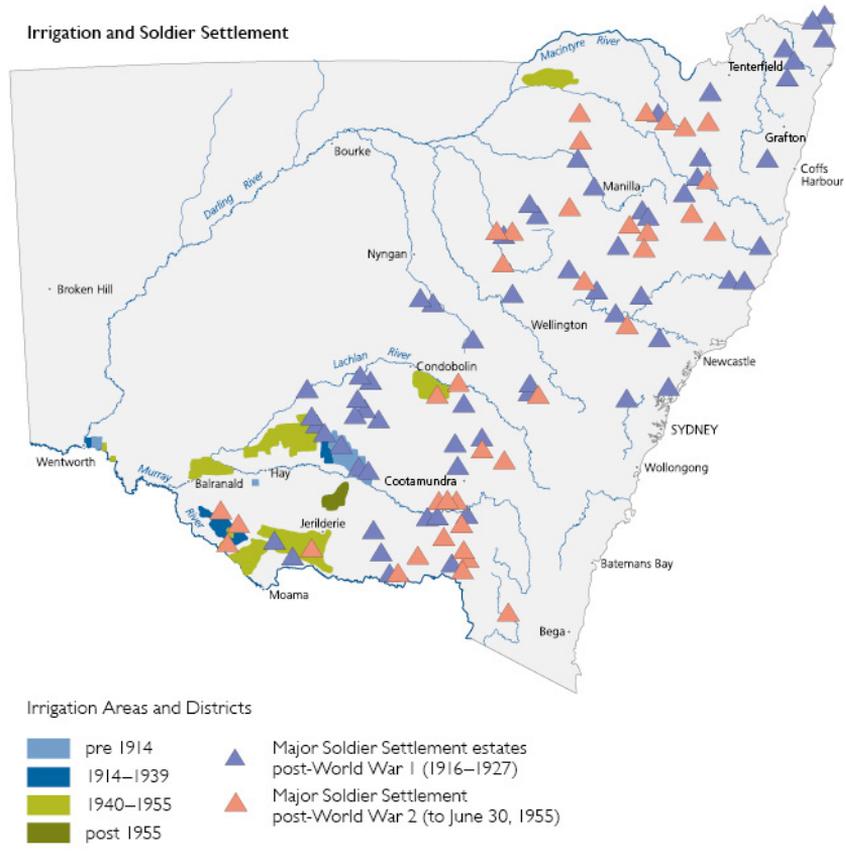
Other types of decentralisation of population or employment have been used by governments to actively influence Australia's settlement pattern and the industries within them. Initiatives include the Closer Settlement Acts (discussed in Chapter 3) and twentieth century programs such as the Soldier Settlement Schemes and the British Migrant Schemes (see Map 6.2). Analysis of the later Soldier Settlement Schemes and the British Migrant Schemes by Frost (1998) found they simply did not work. He provides five reasons for their failure: some of the soldiers returning from war were physically incapable of doing the labour; migrants from Britain did not have enough knowledge of Australian conditions to make a success of farming;

³⁵ The local government makes up 10 per cent of the persons working in government administration.

a drought occurred in the late 1920s; the prices of primary products crashed on the world market; and finally, many settlers did not have the capital backing needed to set up a new farm.

Many people were forced to walk away from the land and migrate to cities. While these schemes initially enabled towns to grow because of a greater concentration of people on the land, the subsequent loss of people from farms impacted on the towns' potential customer base.

Map 6.2 Irrigation and soldier settlement program



Source: Reproduced from Aplin (2011a).

One of the most cited cases of more recent decentralisation occurred during the Whitlam Government's term of office. The Department of Urban and Regional Development implemented a policy of population decentralisation by promoting a number of designated growth centres, as well as urban renewal projects in metropolitan cities.

Albury-Wodonga was one of these locations and provides an illustrative example of some of the difficulties of achieving economic and population growth through public sector intervention. The initial population target of 300 000 people by 2000 from a base of 37 931 residents in 1971 was unrealistic (BTRE 2003b). This target was incrementally revised downward over time to be 150 000 people and then 106 000 by the turn of the century, but at June 2011 the

combined Albury-Wodonga Local Government Areas population was 85 476 persons—still outside the targets (ABS 2013a).³⁶

While some increase in population occurred, it was offset by wider exogenous changes in the economy. Falling employment in manufacturing during the 1970s made it difficult for regional areas to attract such business, especially when Australia's major cities were themselves struggling to retain these jobs.

These decentralisation initiatives are often regarded as failures, perhaps in part because of ambitious targets. However, it should be noted that some centres subject to these policies (such as Orange and Bathurst) did benefit from specific initiatives (for example, the relocation of government agencies), but the degree to which this has determined their overall growth and success as regional centres is unknown.

Government initiatives that tended to be more successful were those that fundamentally changed the economic characteristics of a region and worked with the underlying economic forces. In general, government was not able to significantly influence the overall settlement pattern, largely due to the fundamental nature of the forces effecting change.

Overall impact

This chapter has discussed some major events and economic, social and technological changes throughout the twentieth century and considered how these may have impacted on settlement patterns.

Among the changes, those that contributed to prosperity and mobility are more likely to have contributed to settlement change. While large events—the wars and depression—might be expected to create change, there was not as much change in difficult times compared to prosperous ones. During the Great Depression, for example, the take-up of cars was limited by a lack of personal resources.

The Second World War led to some changes indirectly, such as better roads in some areas, stimulating manufacturing and bringing about a new immigration policy. Immigration is likely to have affected settlement patterns for three reasons: immigrants tend to prefer urban areas compared with people born in Australia, they contributed to population increase, and they provided a workforce for large infrastructure projects.

Industry has impacted on the spatial pattern through structural changes and technological advancements. These changes have reshaped how firms operate and in turn affected the location of activity, such as through productivity improvements and the increasing concentration of activity.

While technological change has affected every part of life, the widespread adoption of the car was a major contributor to reshaping settlement. Together with increasing wealth, motor vehicle ownership became ubiquitous and changed the nature of goods and services provision. Wealth also gave people more choices and opportunities, and provided a safety net; people have a greater ability to move if they are inclined. Pensions and superannuation have had a

³⁶ A superseded definition of Albury-Wodonga based on the ABS Statistical District has a population of 103 139 persons as of June 2011 (ABS 2013a).

similar effect. Related to this, the increase in the proportion of older Australians has made (often coastal, amenity-based) retirement areas more viable.

Government intervention, including large projects such as irrigation areas, the development of Canberra and of defence bases drove significant changes in particular areas. Overall government was not able to much influence the wider settlement pattern because of the fundamental nature of the forces creating change, although (particularly in the first half of the century), government policy greatly affected the settlement pattern of Indigenous Australians.

Many factors, some working together and some against one another, have shaped settlement patterns and the development of country towns. Given this, it is remarkable that there are such clear and consistent patterns of growth. Chapters 7 to 10 will examine these and try to explain the processes that caused them.

CHAPTER 7

Summary of observations

Introduction

This chapter summarises the broad changes and trends that occurred between 1911 and 2006 and considers some of the factors that might have driven them.

Key spatial changes at the national level

Earlier chapters have made observations about changes (or lack thereof) at national, regional and even local levels. This chapter steps back from this detail and summarises the key national movements and some of the underlying reasons for them. Nine key observations describe the origins and movement towards the current (2006) distribution of population.

Geography and natural resources

The underlying geography and the location of natural resources had an obvious impact on settlement patterns. Most often this impact had already played out in earlier times and was evident in the settlement patterns of 1911. The climate, soils and distance were key factors in the early development of Australia. However, geography continued to be important in shaping subsequent development. It determined, for instance, the location of irrigation areas and presented transport challenges such as mountain ranges, wet seasons and islands.

Natural resources have always been important and have initiated the development of many of Australia's industries and towns. Over time, improvements in the knowledge of resource location and advances in technology for their exploitation and transport changed the effective environment for town development. While in the past this knowledge led to the creation of new towns, expectations of depletion of natural resources is also an issue which in recent years has led to the development of alternatives such as fly-in/fly-out workers.

The impact of history

Many of Australia's towns today were established before 1911 and the settlement pattern in 2006 broadly reflects the pattern of 1911, although population relativities are very different. The existence of a substantial town in 1911 with its existing infrastructure would seem to be a strong factor in the presence of a substantial town in 2006. The overall pattern of development is basically the same and, although there have been considerable variations in the sizes of towns; the pattern has been commonly built on the historical structure. This suggests that history has played an important part in determining current settlement patterns.

Metropolitan primacy

Australia's settlement pattern has developed a metropolitan primacy structure. The capital cities of Australia's states are very much bigger than the next largest city within the structure. At the beginning of the twentieth century, regional Australia had more people than all capital cities combined. This situation was overturned in 1954 (see Figure 4.5) and by 2006 there were around 13 million people living in capital cities and 7.5 million in regional Australia.

Decline of inland towns

The maps of towns in 1911 (Maps 4.9 and 4.10) show the large numbers of relatively evenly-spaced towns across the agriculturally-important south east and south west areas of the continent. The equivalent maps for 2006 show a decline in the number of these towns. There has been roughly a halving of the number of small towns and a net overall loss of towns of between 200 and 1000 people. Some of the existing towns were absorbed into nearby centres and others grew larger; and there was a decline in the number of towns despite the development of new towns. These figures support the anecdotal evidence of the loss of small towns from rural Australia, particularly from the inland.

Reductions are particularly evident in the wheat-sheep zones, and also in the pastoral areas of western Queensland. The fall in the number of wheat-sheep towns corresponded with the general decline of agricultural employment throughout the century as a result of productivity gains, emphasising the historical link between the fortunes of towns and the industries that supported them.

The rise of regional centres

There has been a big increase in the number of large regional centres. In 1911, there were only two towns (Ballarat and Broken Hill) of more than 30 000 people and only nine with more than 15 000. By 2006, there were nine towns of more than 90 000 and the largest (Gold Coast) had over 400 000. Large centres are especially common on the coasts, but there are many examples of large inland regional centres.

These two observations—the fall in the number of small towns and the rise of regional centres—are interlinked. The interaction between small and larger centres is part of the process that has been re-shaping of the settlement pattern. Within the Australian context, this phenomenon has been referred to as 'sponge cities', a term coined by Bernard Salt (Salt 2001).

New towns associated with irrigation

Employment in dry-land agriculture declined from 1911 to 2006, despite this being a period of government investment in dams for irrigation. Regions and towns that were created or which noticeably expanded because of the more intensive agriculture included the Murrumbidgee Irrigation Area (Griffith, Leeton), the Coleambally Irrigation Area, the Murray Valley (Robinvale, Mildura, Berri, Loxton, Renmark) and the Eastern Kimberley (Kununurra). These towns, and those hosting defence facilities, are notable examples of direct government action leading to the establishment and/or growth of settlements.

The mixed fortunes of mining towns

Some of Australia's most significant towns and cities were built on mining. Ballarat, Bendigo, Kalgoorlie and Broken Hill are iconic mining towns that have prospered, sometimes outlasting the mines on which they were founded. On the other hand, as noted in Chapter 5, mining provided the basis for the establishment and subsequent demise of many towns, particularly in remote regions. The phenomenon of towns opening and closing depending on the fortunes of a nearby mine was common until the 1980s. The close connection between mine and town declined towards the end of the twentieth century with the advent and popularity of fly-in/fly-out and drive-in/drive-out mining arrangements.

The drift to the coasts

A key feature of Map 4.9 was the emergence of large settlements on the coasts of mainland Australia by 2006, in locations where in 1911 there was no more than the small settlements associated with agriculture and commercial fishing. This change was characterised by an increase in the size of settlements as the population of coastal Australia grew much faster than the inland. However it is also associated with the growth of these centres as tourism destinations and more recently with the migration of older people in their retirement years.

New towns in the north and west

New towns have emerged in the north and west of Australia that were not evident in 1911. While the lack of accurate counting of Indigenous residents no doubt led to a substantial underestimation of the number of settlements in more remote regions in 1911, there has been a significant growth in the number of towns in the north and west of the continent by 2006. This growth was often associated with new towns developed to support mining operations and/or transport and communications infrastructure (see Map 4.8).

The timing and pace of change

The changes between 1911 and 2006 were not evenly spread across time. Most of the population change occurred in the second half of the century. In particular, the dramatic shift of regional populations to the coast and the reduction in the number of very small towns (with populations of between 200 and 500) mostly happened in the later part of the century (see Figure 4.2), with comparatively smaller changes in the fifty years between 1911 and 1961.

The context of change

Spatial re-organisation was only one change among many. There were a number of other fundamental economic, social and technological changes moulding regional Australia over the period.

Big move to urbanisation

The growth of Australia's major cities reflects a more general movement towards urbanisation. The transition to a highly urbanised structure has been a major demographic trend of the past 100 years in Australia. It has been widely recognised as a long-term and inevitable result of the move away from an agricultural-based economy to a service-based one. Although conspicuous in Australia, this pattern of urbanisation is a worldwide phenomenon.

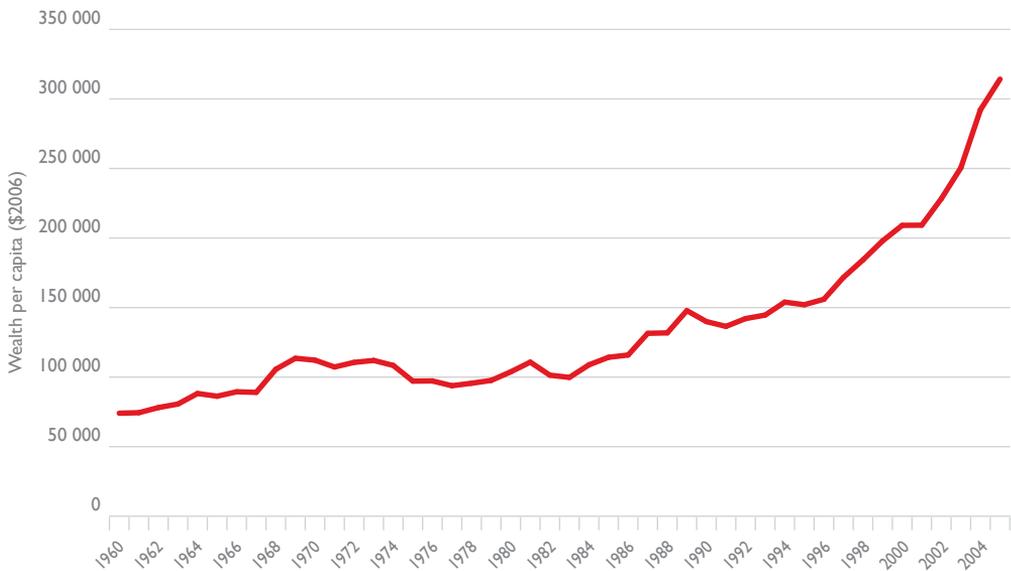
Social changes

A number of important social changes characterised the twentieth century. These changed both the profile and attitudes of the population. As outlined in Chapter 6, the population became older (we lived over 20 years longer), more wealthy, more educated, developed a sophisticated welfare system, we expanded the population through immigration from many countries and women and Indigenous Australians increasingly became directly involved in the workforce, commerce and government. Many of these changes impacted on settlement patterns.

Wealth

A feature of the twentieth century has been the spectacular increase in the wealth of Australians overall. Department of Treasury figures show the growth in nominal wealth has been rapid, averaging 10.6 per cent per annum, between June 1960 and June 2005³⁷. Even when wealth is discounted for inflation and population change is taken into account, the second part of the twentieth century shows substantial growth. As Figure 7.1 shows, real wealth per capita more than doubled between 1960 and 1996, although this growth is overshadowed by a further doubling by 2005.

³⁷ As a point of comparison, Australia's GDP in nominal prices grew at an average annual rate of 9.3 per cent over the same period (ABS 2011a).

Figure 7.1 Wealth per capita, Australia 1960–2005

Source: The Treasury (2006).

Cars and transport

The 95 years from 1911 saw advancement literally from the horse and buggy. Car ownership rose from virtually zero to over 11 million by 2006. The size and quality of the road network was improved enabling faster, safer travel. The numbers and size of trucks and articulated vehicles also grew dramatically and freight moved from the rail system to roads.

Industry, technology and markets

Industry changed significantly as technological changes and shifting markets created different employment patterns and ways of working (for example, transport and machines enabling economies of scale and increased productivity). There was a shift away from agricultural employment towards manufacturing in the first half of the century, as well as a continuing rise in the employment share for services. There was a reduced demand for a dispersed agricultural workforce. Manufacturing industry became more concentrated, and services were increasingly important for town economies. Government has a mainstream role in delivering key services such as health and education, benefits access, social services and the regulation of network-type services such as communications (telephone, internet) and universal postal services. However many of these are now delivered through larger centres, whereas in earlier times courts, schools, hospitals and telephone exchanges were typically located in both small and large centres. Similarly there has been a consistent trend to amalgamation of local government towards larger regions.

World events

Two world wars and the Great Depression marked the 1911 to 1950 period. This contrasted with the period of relative stability and growth in economic activity and trade that followed. In the light of the relative amounts of change in the two periods it is reasonable to suggest that adverse events are not the great direct drivers of change (at least in terms of settlement patterns in Australia) that might have been expected. While they no doubt influenced subsequent events (such as higher post-war immigration), the key to long-term change seems to be associated more with changes to underlying circumstance. The development of irrigation capacity, increases in overall wealth and improved technology seem to be more important than the impacts of war or depression.

Government policy

Explicit decentralisation interventions have been undertaken in some regions, but like the closer settlement interventions of earlier eras, they sometimes were viewed as failures. This may be because of overly ambitious expectations and/or an underestimation of the costs of real change through direct intervention. Regional impacts of mainstream policies (especially industry and defence) have been considerable, and because they had wider objectives did not suffer from the same level of expectations. Perhaps for the same reason, they were viewed as having more fundamental and lasting impacts on the local economy. The infrastructure associated with the delivery of services (particularly health and education) also had significant spatial effects, although these often seem to mimic existing patterns with facilities placed in the larger centres.

Functions of towns

A key function of towns was, and to a large extent remains, the provision of goods and services to locals. Therefore, any changes in the way consumers access goods and service affect towns. Since 1911 there has been a growing diversity in town size with the gradual emergence of large regional centres and a decline in the services offered in smaller towns. This latter group is now less of a retail service centre and more focussed on providing social services such as pubs, clubs, food services and sporting facilities. The regional centres, on the other hand, have developed large, sometimes specialised, stores (often linked to national chains) that provide a wide range of goods in a competitive environment. These towns provide goods and services beyond the local area to a regional market.

Possible explanations of growth patterns

Until now, this chapter has looked exclusively at changes in settlement patterns and some economic and social changes and events that could be linked to them. How or why these might be linked has not been fully explored.

This section now considers theories of location discussed in Chapter 2 and their relevance in the Australian context, in the light of the empirical evidence of change in Chapters 4 and 5.

Theories of location

Although history, geography, natural resources and path dependence are important contributors to the location of activity, economic literature tends to focus on the location of industrial activity.

New Economic Geography, agglomeration economics and Porter's clusters are among the theories that attempt to consider the concentration of industrial activity (see Chapter 2). However, in an empirical study of industrial agglomeration, Ellison and Glaeser (1999) found that at least half of the concentration of industry was due to natural advantages.

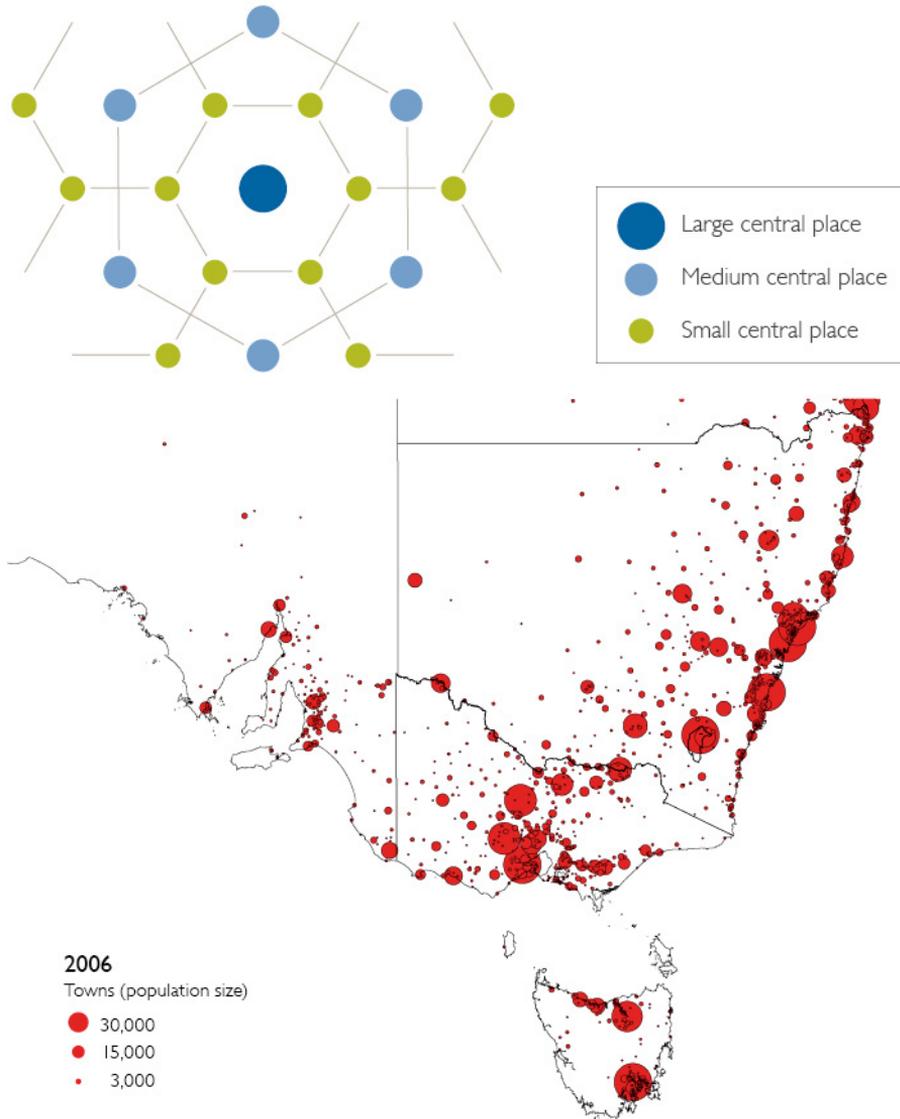
In growing a town, Economic Base Theory emphasises the export base (basic component) of a town to promote local economic activity. This activity enables local growth and investment because of demand for locally-produced goods and services (the non-basic component). The theory provides a foundation for the growth and establishment of many towns to 1911, as basic industries such as agriculture, mining and manufacturing were the source of funds to promote town development. However, with the increasing role of services the concept of what makes a basic industry for a town has evolved. This is examined further in Chapter 9.

Central Place Theory, developed in the 1930s by Walter Christaller, is based directly on understanding urban systems. It focuses on the provision of goods and services as a basis for understanding the structure of regional towns and cities. It suggests an orderly distribution of towns and cities of different sizes providing a range of goods and services, based on observations of Southern Germany.

As observed in Chapter 3, many Australian towns were established to provide goods and services for their hinterland. The structural shift towards service industries over time means the provision of goods and services, and hence the proximity of towns to customers, remains important. While the concept of proximity may have changed dramatically over time with improved personal transport, this change is consistent with Central Place Theory. Figure 7.2 brings together the classic Central Place Theory expectations (the marketing principle) from Figure 2.3 and the 2006 snapshot of south eastern Australia from Map 4.10. The similarities are notable even if the real world does not reflect the mathematical regularity of the theory. This would be expected given the geographical and historical unevenness underpinning the real world regional economies. As noted in Chapter 5, centralisation processes are subject to the natural geography (particularly physical features and ore deposits) and history (such as the position of transport hubs) that underlie particular regions.

The similarities of the patterns in Figure 7.2 do not 'prove' that Central Place Theory is the explanation for the empirical pattern. The most that can be said is that the patterns are similar to those that would be expected under the theory and that the underlying rationale would seem plausible. As Central Place Theory rests heavily on the delivery of goods and services, it is consistent with the underlying function of towns in 1911 and 2006.

Figure 7.2 Comparison of expected Central Place Theory patterns and 2006 distribution for South Eastern Australia



Note: The capital cities of the five mainland states are excluded.
 Source: BITRE, adapted from Christaller (1933) and BITRE analysis of the ABS 2006 Census.

Of the theories discussed in Chapter 2, the ones that seem to provide the most reasonable explanation and best fit of the empirical structures in 1911 (see Map 4.9 and 4.10) are the basic industry theories. These emphasise the importance of basic industry for providing economic activity in a given location. However, by 2006, a plausible explanation and fit is provided by Christaller's Central Place Theory. This suggests that the perhaps the most appropriate theories can vary over time, and that each offers a good explanation for the formation of settlement patterns at a particular juncture. That seemingly competing theories could provide plausible explanations at different times is quite feasible, but implies there has been a fundamental

change in the underlying circumstance. In this case, the difference would seem to be a shift in the power dynamics away from industrial location as the main driver of town position, towards decision-making by the household. As noted above, this is what has happened over the twentieth century as households became wealthier and transport became faster, more reliable and affordable.

It has been more and more possible for people to live away from the centres of production. The ability of households to choose to live further from their place of work has increased substantially. In addition, people live longer and consequently have many more years of retirement during which they can choose to live where they wish. As a consequence it is logical that Central Place Theory, which is based on the provision of services is now more prominent and that the industry-driven models that were central in 1911 are potentially less important.

It is also clear that people have the time and money to enjoy more holidays and a more comfortable and desirable retirement. Areas of high amenity (particularly on the coast) have become more popular, while improved technology and productivity reduced the number of people employed in rural pursuits.

While the idea of separate theories can be attractive, the reality is that no theory provides a satisfactory, comprehensive explanation of modern settlement patterns in regional Australia. On the other hand, all of the theories outlined in Chapter 2 seem to have some application. Each theory is based on particular perceptions and assumptions regarding how the economic system works, or more correctly which processes are the more important in the particular circumstances of regional Australia in the twentieth century.

Characteristics of the drivers and mechanisms of change

The far-reaching changes in settlement patterns described in Chapters 4 and 5 were costly and difficult for residents, consumers, workers, business and government. The extent of change involved suggests that many regional Australians lost money on investments and that the changes fundamentally altered the way many people lived. Even over a long period we would expect considerable inertia and resistance to change on this scale. That this has been somewhat overcome indicates powerful and persistent drivers of change.

The mechanisms for change on this scale must motivate business, investment, consumers and workers. If the benefits of change were not spread across these sectors, then we would expect evidence of significant transfers to compensate those who were disadvantaged. For example, the implementation of fly-in/fly-out and drive-in/drive-out work practices has been characterised by significant transfers through wages to mining workers to compensate them for disrupted living arrangements. Similarly, we can see that attempts at decentralisation and rural reconstruction in Australia have typically involved considerable transfers from government—often with less than hoped-for impact. That no such transfers are obvious in the process of regional urbanisation suggests that the mechanisms of change inherently provide enough incentives across the economy and society to ensure at least the tacit support of all sectors. That is not to say there are no losers in the process—clearly there have been—but rather that the process provides sufficient incentives across the key participants for change to continue despite the losses.

Therefore, when trying to identify the mechanism(s) we should look for a powerful and persistent driver and a broad distribution of benefits. In addition we need to look for mechanisms that explain the centralisation process across the broad range of geographic and economic landscapes where we have observed it. To understand these powerful drivers we first need to consider the functions of towns.

The functions of towns

Towns have a number of functions—locations for particular industries, residential areas, commercial and social centres, transport hubs etc. Most will serve many purposes. Since we are looking for broadly based phenomena, it may be useful to consider what the generic characteristics of towns were in 1911 and in 2006 and how they have changed.

1911

Towns provided a range of manufacturing activities to service local needs. Even small towns had their own butcher, baker, dairy, blacksmith/mechanic, saddlers/harness repairers and abattoir and commonly had brickworks and sawmills, as well. In some towns, especially larger centres, these were supplemented with flour mills, breweries and other industries supplying a local and regional market. The overall focus of these businesses was on producing goods for the local market which effectively was the town itself and all those for whom the town was the closest centre. Describing life in the Western District of Victoria in the years up to 1921, Keneley (2005) says: 'The expansion in the number of settlements was not necessarily associated with a sophistication of their economic function. No urban settlement of less than five hundred inhabitants had any secondary industry of significance, aside from a creamery. Most small townships continued to primarily be service centres for the surrounding rural area. These services were limited to those connected with transport, communications and banking. Within the next level of the hierarchy—townships with populations between 500 and 1000—there was a limited degree of manufacturing. However this was largely restricted to simple food processing, building and construction.'

The towns also typically supported a range of service industries beyond small-scale manufacture. These included food, hardware, furniture, clothing and general stores, churches, local government services, legal services, hotels (which often also served as the labour exchange), Post Offices, banks, schools (often only to primary level), transport terminals (railways or horse drawn), telecommunications, stock and station services, newspapers, dentists, doctors and hospitals.

The focus of these towns was to provide inputs to industry in the area (usually agriculture or mining) and goods and services to residents. The goods sold and the level of service were basic. Small towns supported primary schools but often not high schools—tertiary education was focussed in the state capitals. Higher level education was often undertaken by correspondence or through boarding schools in larger centres. Medicine in towns was delivered by GPs and local community supported hospitals. Specialist services in medicine, the law or other fields were generally only found in the cities. Similarly, more sophisticated manufacturing was city and/or overseas based.

Towns were also the focus for social activity. Churches, hotels, community halls and schools were the centres for the day to day social and sporting activity of the town and surrounding

districts. As Keneley (2005) describes, 'Although the majority were small, they were thriving centres of community and social activity. The breadth of activity is evident both in notices in local newspapers and in almanacs and directories. In particular, sporting associations provided a cohesive focus for community interaction. The existence of many other societies and associations is indicative of the diversity and sophistication of these small centres'.

These small towns both nurtured and limited the businesses that resided in them. The generally poor transport services to the outside world (car travel was in its infancy) meant that the local population was a captive market. However, the same poor transport ensured that it was difficult for businesses to expand beyond the local market.

2006

By 2006, towns of different sizes had different functions. The smaller ones had lost many of the functions they had in 1911, while larger centres had expanded theirs. Much of the manufacturing was now done on a regional basis, or faced regional competition. For example, much of the bread consumed in regional Australia is typically supplied to supermarkets from large regional suppliers who have taken much of the market from local bakers. Meat is often supplied to small town stores and supermarkets from out of town butchers. Similarly, supplies of dairy products are imported to most towns. Abattoirs are invariably regionally based as are livestock saleyards. Small towns support fewer mechanics and garages than in earlier times and manufacturing to support base rural and mining industries is more often undertaken in larger regional centres or in major cities.

Likewise, retailing of goods and services has become concentrated in the larger centres. Supermarkets are dominated by larger chains which take advantage of the cost savings gained from their own large, national supply networks. The large chains (Coles, Woolworths and Aldi) are common in medium and larger towns but rare in the smaller settlements. Retailing chains including those dedicated to the sale of hardware, electrical, haberdashery, and furniture are typically confined to larger centres. A greater variety of fast food outlets, entertainment and personal services are also concentrated in the larger centres as are government services: Local Government Areas are typically larger and courts, hospitals and educational facilities (particularly secondary schools and tertiary campuses) much more concentrated in the larger centres.

The numerous small towns servicing local communities in 1911 have been replaced by larger centres in 2006 that service wider regions. The remaining small towns have a much diminished role, generally providing basic services to local areas on a small scale. Typically this includes small supermarkets, personal services, cafes and hotels/clubs acting as local social centres.

Key changes

In both 1911 and 2006, towns provided the local population with goods and services. The key difference is the emergence of regional rather than local distribution points for most of these goods and services. Small towns still exist and house many people, but have declined in importance as distribution points for most goods and services. However, they still remain important social centres in many communities.

A big difference in the lives of small town residents is their need for personal transport. The car, almost non-existent in 1911, has become an essential feature of daily life to the extent that older residents often leave their communities when faced with the prospect of losing their ability to drive. Contact with a larger regional centre is now essential. The car has allowed physical contact with a large town for goods and services, and better communications (telephones and television in particular) facilitated social contact independent of the local small town. This in turn has reduced the demand for local goods and services.

The influence of and interaction between large centres with their hinterland however, is not well understood, perhaps because each pairing or group of towns is inherently different. A model developed by Barkley et al. (1996) illustrates this complexity by considering the effect a large regional centre may have on the growth patterns of small peripheral towns. The model is based on interregional flows of people, firms, investment patterns and knowledge transfer (see Table 7.1), with large regional centres having both positive and negative effects on the development of hinterland towns. The challenge is to understand which influences are having the greatest pull at any given time in any place. For instance, a peripheral town may benefit from having access to a large market by selling produce that raises local income. But this increase in income may be outweighed by spending being transferred to the larger centre.

Table 7.1 Interregional flows stimulated by growth of a town

Type of flows	Positive effect on small towns	Negative effect on small towns
Spending on goods and services	Growing cities provide expanding markets for the hinterland.	Spending in small towns declines due to increased competition from city producers.
People	Labour commutes to cities for jobs. Urban families relocate to the hinterland because of cheaper housing and quality of life.	Small town residents migrate to the city for better access to jobs and urban lifestyles.
Firms and/or employment	Firms locate to the hinterland to take advantage of low wages and land costs.	Firms relocate in the city to benefit from larger markets and agglomeration economies.
Investment funds	City funds are invested in the hinterland to take advantage of relatively low labour and land costs.	Hinterland funds are invested in cities to take advantage of relatively rapidly growing goods and services markets.
Knowledge and technology	City centres are the generators and diffusers of information and innovation for the surrounding hinterland.	Regional to city migration is selective of better educated and skilled residents.

Source: Adapted from Barkley, Henry and Bao (1996) cited in SAC, The Arkleton Institute and University of Gloucestershire (2005).

The interaction between larger centres and small peripheral towns is important to understanding shifts in the settlement pattern. While existing theories have provided some insight, they do not give us an explanation of the factors driving change and how they operate.

The mechanisms of change

To understand the underlying processes that have brought about Australia's current urban structure, a closer look at six key influences, along with the drivers and mechanisms underlying them, is explored in the next four chapters.

The four influences are:

- the effect of geography and history (Chapter 8);
- the role of industry and investment—particularly basic industries (Chapter 9);
- the provision of goods and services within regions (Chapter 10); and
- the role of amenity (Chapter 11).

CHAPTER 8

The context of change—history, geography and infrastructure hangover

Key points

- The basic shape of the settlement pattern of Australia has persisted over time. Most towns in 2006 already existed in 1911, with new towns in the minority.
- Physical geography has been important for determining the location of industry, transport hubs and amenity areas (coastal environments in particular).
- Historical decisions concerning infrastructure and service placement influence settlement patterns. The mechanisms behind history's role in settlement pattern change relate to:
 - » Incremental change, created from many independent decisions made by a range of people involved in business, government and the community
 - » Path dependence, in which an initial chance occurrence is reinforced, creating an entrenched pattern of development
 - » The impact of infrastructure, networks and other elements of the built environment as the physical manifestations of history
 - » The role of other existing, inherited factors which act in a similar way to infrastructure (e.g., personal networks, customs, expertise, existing services).

Introduction

'Though an age may have some new towns, the community cannot on any large scale afford to sacrifice the old towns and start afresh elsewhere in conformity with current geographic values or social standards...the past weighs heavily on the present' (Smailes 1966, p.52).

Towns are built and maintained through the many decisions of many people over time. While this report is concerned with understanding change in the pattern, part of the story is the persistence of its shape, and how history and geography guide the change.

The history of many towns shows that the initial reasons for establishment have become obsolete, with advancing economic and social circumstances. However, as settlement patterns

cannot change at the same rate as human activity, the pattern is in a process of constrained flux. Geography and history provide context for this change, and typically slow the rate of change.

Persistence in the settlement pattern

As observed in Chapter 4, the basic shape of the settlement pattern has been maintained over time. While towns may have changed in size, most towns in 2006 already existed in 1911, with the creation of new towns being relatively uncommon.

Once towns are created they tend to persist, and the usual way for the settlement pattern to change is through towns changing their relative population sizes, rather than the wholesale creation of new towns and desertion of others. When changes in circumstances have been pronounced, towns have responded by changing functions.

Even declining towns have a degree of persistence—which can be observed in the typically long process of decline. This tenacity is due to geography and history, and how the current decision makers react to them.

The role of physical geography in the settlement pattern

The importance of geography in industry and transport determined early settlement patterns, while mineral finds and amenity (especially in coastal environments) were important for towns established in the twentieth century.

Land that could produce more was taken up by farming, with pastoral activities taking up more marginal land and bigger areas. Value was given to transport hubs and ports central to the transport system of the time. Activity was also influenced by access (for example, in relation to natural barriers such as the Great Dividing Range, rivers and the ocean, islands and areas cut off in the wet season).

Most of the large inland cities such as Broken Hill, Bendigo, Ballarat, Mount Isa and Kalgoorlie-Boulder were established for the purposes of mining and for some, mining is still a major factor in their existence. At the time of establishment, these inland cities were distinctly disadvantaged in terms of overland transport, but this was overcome because of the wealth generated from the mines.

More recently, attractive areas (beaches, rainforests, snowfields and so on) have capitalised on natural assets, either for tourism or amenity-seeking permanent residents. Some towns have long benefitted from their amenity, being older tourist areas (like Woodend and Marysville in Victoria), while some have experienced a resurgent interest (for example, Kangaroo Valley), emphasising amenity features when previously they had a different focus such as agriculture or fishing.

Polèse (2013) makes the point that Australia has a lot of natural amenity areas, and so the actual locations of amenity towns are not determined by a few key regions—as there are many appealing spots along the coast. His argument is that location (specifically, proximity to large

centres) is key because the 'abundance' of other 'sea and tree' options means that the amenity itself is not the key factor in the growth of particular amenity areas. Amenity is a factor that determines growth on the coast; other factors determine where on the coast that growth occurs.

Smailes (1966, p.48) makes a similar point, focusing on Britain, where '[c]onsiderable stretches of coast show little differentiation in site conditions, so that the advantages of one spot over another are not significant as compared with the overriding influence of other factors that affect the incidence of urban development. As with... flat terrains in rugged country, it is where site advantages are localised, exceptional features, and not of widespread occurrence, that they become a decisive influence'.

People's relationships with geography, effective land use, and the values they place on different natural features develop over time. The ability to change the land and work it more productively influence which areas can be settled.

The use of the land has been affected by:

- the knowledge and understanding of geography
- the ability to use land effectively or change it (driven by innovations and technological advancements)
- the changes made (clearance of Mallee land, for an early example, or irrigation schemes, the built environment, networks)
- specific discoveries (most notably mineral and gas discoveries).

There are also many cases of the original function becoming obsolete or an aspect of geography losing its advantage (such as a river port) and yet towns have mostly persisted. Once geography is altered—through the establishment of a town, or a transport network—then the context of future decision-making has changed.

The role of history in the settlement pattern

Polèse (2013, p.13) discusses how the city which dominates early on is likely to keep its primacy 'unless dislodged by remarkable circumstances'. Size advantage is 'the outcome of decades, sometimes centuries, of accumulated investments in infrastructures and institutions'. He also points out that this infrastructure and size advantage has a reinforcing effect, such as in the case of transport networks centred on major cities, and smaller cities around a larger one increasing the larger city's potential market size.

The degree to which change is possible is also a product of history, with early flexibility of where to place towns (often determined by geographic or chance factors) soon firming. Fujita and Thisse (1996, p.372) argue that '... we seem to have a putty-clay geography: there is a priori a great deal of flexibility in the choice of locations but a strong rigidity of the urban structure once the process of urbanisation has started.'

In Australia, this is most obvious in the capital cities. Statham (1989, p.13) reports that three months after Sydney was established, an arguably better location was found with the discovery of Rose Hill, but the decision was made not to move. Similarly in Tasmania, Governor Arthur's

desire to move the capital early on was thwarted because of the cost of new government buildings.

Statham (p.15) also argued that ‘some of the features that founders thought advantageous became liabilities over time’, but that ‘in each case a momentum appears to have set in which precluded locational change’. Therefore it seems that Fujita and Thisse’s (1996) ‘putty-clay geography’ firmed quite quickly.

History shapes and limits change in the settlement pattern. One way to think about history’s role is that it creates a limiting, evolving context by which future decisions are made. This is a continuous process, because each new decision slightly alters this context.

The effect of gradual change is to create a set of circumstances facing each decision-maker that differ quite markedly from those that would occur if the decision was to be taken on a new site. Some results of this include:

- Towns which are still close together because they needed to be in the past—but would not be settled like that today (for example, towns established along railways to provide regular water for steam trains).
- The original historical context for the establishment of a town may no longer be applicable but activity still persists in the location.
- The presence of services in a town which have been there historically, but would not be initiated in a town that size today.

Incremental change

Settlement patterns arise and continuously change because of many decisions by many unrelated parties over time, each pursuing their own priorities. Very few actually focus on the effect they have on the shape of settlement. For individuals and households, these decisions revolve around where to live, shop, work, and access services. For business and governments, the decisions concern where to invest, or where to provide services and infrastructure. For all of these, there is also a question of how long to stay with an earlier decision or make a new one. Most of the time, people are not making active decisions, but continue to operate as they are—essentially a tacit decision to maintain the status quo.

The small impacts of many decisions lead to changes that are necessarily marginal and incremental. People make decisions based on the existing system, and their decisions then slightly alter the system: for example, if a person from a small town gets a job in a nearby regional centre, it makes shopping and dropping off kids to school there more convenient, but also slowly shifts activity away from the smaller town.

Vergne and Durand (2010, p.738) argue that ‘[i]nstitutions tend to evolve incrementally rather than radically, so yesterday’s rules of the game are often very similar to today’s rules’. This can gradually create bigger change, but it will be shaped by existing context and will not create a pattern that looks the same as starting from scratch.

Faster and larger change (such as shocks, for example, the closure of a mine or a natural disaster, or large government projects) can interrupt the existing pattern. For example, irrigation projects and transport networks have changed the nature of the landscape—but this

type of change is atypical. Decisions about large projects are often made based on the existing context. Following damaging shocks such as weather events, there is typically an expectation—successful or not—of a return to the status quo.

Path dependence

Path dependence is one of a number of processes that describe how history shapes and limits outcomes. Although only a partial explanation, it is a very powerful force and is a useful concept when considering the development of settlement patterns.

Definition

The concept of path dependence describes a process where early decisions, advantages or chance occurrences become increasingly locked in, until the resultant outcome or pattern is difficult to escape. Page (2006) defines path dependence as having the following characteristics:

- *Increasing returns*: 'the more a choice is made or an action is taken, the greater its benefits'
- *Self-reinforcement*: 'making a choice or taking an action puts in place a set of forces or complementary institutions that encourage that choice to be sustained'
- *Positive feedbacks*: 'an action or choice creates positive externalities when that same choice is made by other people'
- *Lock-in*: 'one choice or action becomes better than any other one because a sufficient number of people have already made that choice' (Page 2006, p.88).

The example often quoted is the emerging videocassette recording industry in the late 1970s. This market started with two competing, basically similar, but incompatible formats: VHS and Beta. The industry had positive returns for each of the manufacturers. That is, a larger numbers of recorders of a particular format in homes encouraged more video outlets (both sales and rentals) to stock more pre-recorded tapes in the same format. This in turn led to the format being more attractive to potential machine buyers, thereby increasing the number of machines—and so on. In the event, the VHS format obtained a small edge in the market at an early stage which transformed into an advantage that allowed it to virtually take over the entire VCR market.

A spatially-focused example concerns the Australian colonies' development of their own rail networks with different gauges (rail width), creating a legacy of incompatibility across the states (Puffert 2001). Early on, the gauge chosen by each colony varied with local preference. Over time, the rail network became focused more on national connectivity, meaning that the incompatibility created problems. However, the path dependence created within each of the state networks effectively discouraged standardisation. This path dependence was due to positive feedbacks which sustained the different networks.

As Puffert (2001) argues, these feedbacks were related to network effects. Each new piece of a regional network needed to be the same gauge as the existing network, because the trains which ran on each network were suited only to the relevant gauge. Therefore, as each region's network expanded, the new section used the same gauge as the existing parts of the network. The separate networks continued to grow, as it never made sense for one regional network to

be scrapped to align it with another. None could justify changing their whole system. Therefore, the investment in each of the various separate networks continued to grow.

Path dependence has also been used to consider how history may shape regional economies. Decisions such as the placement of infrastructure, more broadly the built environment, towns and networks, as well as the location of non-physical attributes, such as services and expertise, are some of the legacies of history that can shape a path.

Town size

Many of today's large regional centres are those which had critical functions early on, whether or not these original functions still exist. Large towns often continue to be more competitive unless some other factor intervenes to give a smaller town the advantage. This was the experience of Carcoar which floundered after it missed the first round of rail connections (Chapter 5). Examples of towns that have continued to grow based on an early size advantage include mining towns such as Bendigo and Ballarat, and pastoral or rail towns such as Goulburn.

Path dependence and the large town advantage

The features of path dependence discussed above—increasing returns, self-reinforcement, positive feedbacks and lock-in—ensure that early market share is a critical feature of path dependence.

Very often path dependence relies on circumstances at a single, critical point early in development. This critical point could be the establishment of a town and result from a small event or advantage³⁸.

Growth is encouraged not just by industry function, but also by other characteristics of path dependence. Each new resident or business creates extra demand for services, which in turn benefits existing residents, and encourages new residents due to a larger range of goods and services. This creates positive feedback.

Bendigo and Ballarat had gold, and they quickly gained population. With population came service industries, housing, and town construction: council offices, banks, churches, and other private and public buildings (and the services they housed). Similar growth occurred with other towns serving critical functions, such as coastal ports. Early network decisions were then made based on connecting these key hubs and the basic settlement pattern became locked in and continued even after the gold rush ended.

³⁸ This could range from where people regularly stopped overnight, a decision about where to put an inn, a stop on a coach route, or even the location of a telegraph repeater station. Significantly for path dependence, many of these reasons are totally obsolete for the current function of the town, and based on restrictions no longer applicable today. For example, towns have been established based on the distance between water stops for steam trains, river ports, the hubs of stock routes and the locations of gold discoveries.

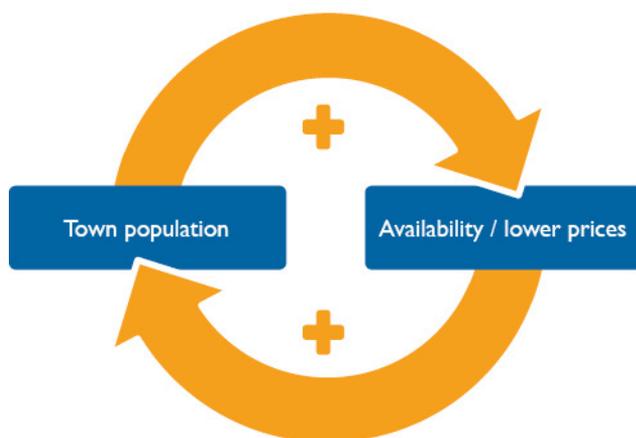
Positive feedback benefits for large towns

Positive feedback loops relating to household decision-making benefit large towns in at least two ways: one relating to housing investment, the other to goods and services.

People are attracted to larger centres in part because of the lower prices and greater range of goods and services on offer. As each new person enters a town they increase the demand for goods and services. This in turn makes it more viable for suppliers to increase the range and reduce the price of the goods and services available. This then attracts more people to the town, as illustrated in Figure 8.1.

The mechanics of this pattern will be discussed in more detail in Chapter 10, but the effect is that the overall goods and services offered (and hence the location) become more appealing. Note that these goods and services include both privately provided (retail goods and services) as well as publicly-provided goods such as parks, libraries, health and education as well as social and cultural activities.

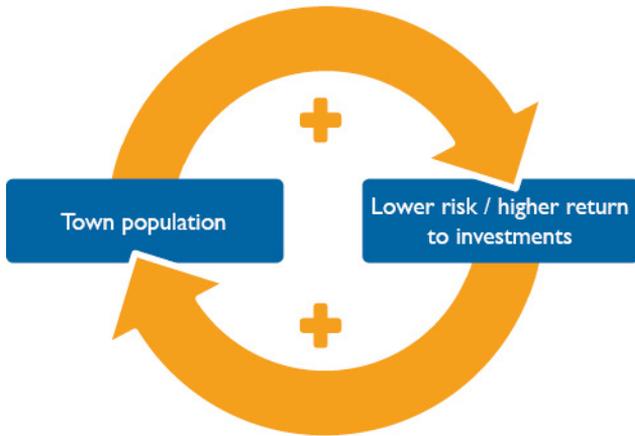
Figure 8.1 Reinforcing loop: goods and service availability and population size



Source: BITRE analysis.

Another feedback loop for large towns is created by household decisions about where to invest in housing (Figure 8.2). People are attracted to areas in which housing represents a more certain (lower risk) investment and potentially higher returns, namely capital cities and larger regional centres with good services and diversified economies, rather than smaller towns—particularly those in decline or single-industry towns vulnerable to shocks. Increased investment increases the amount, diversity and turnover of housing, all of which would reduce the risks for future investors. This is often described in terms of increased confidence of investors who prefer larger investment markets with strong levels of both demand and supply and relatively frequent sales. Large and growing towns have a potential for higher returns as future demand for housing in these locations will be greater. Therefore future prices will be assessed as being higher, contributing to higher anticipated returns. This loop is similar to the previous feedback loop, as in both cases increased population is the result of the decision and makes the decision to move in more likely for the next potential entrant.

Figure 8.2 Reinforcing loop: housing investment certainty and population size



Source: BITRE analysis.

In addition to these loops, larger population centres attract people for employment reasons—both diversity and at least perceptions of higher wages and better prospects. This results in a similar feedback effect.

Importantly for future growth, these mechanisms also operate in towns that receive a boost to population at any point and then benefit from continued growth due to these mechanisms. We observed this in the case studies in Chapter 5, where (for example) amenity towns were able to outgrow some older-industry based centres. Hervey Bay, for example, has grown into a large coastal centre. While the initial attraction was mainly natural amenity, each new resident enabled more businesses and services, which created extra appeal for future residents and some very rapid growth.

Infrastructure

Infrastructure is a base for economic growth and social progress. It is an investment in the physical systems and structures in a location, and more broadly it can also incorporate more intangible aspects such as social capital.

An important characteristic of infrastructure is its immovability. As infrastructure cannot provide services anywhere but locally, the optimal location is important and ‘the combination of immobility with long life duration means that infrastructure investments will shape the economic geography, or regional policy, of a country for decades’ (Prud’homme 2004, p.5).

Infrastructure choices are based on the motivations of the investment decision makers in businesses, households and government. Infrastructure investment decisions made by business and households are typically different to those made regarding community infrastructure. A household’s infrastructure can include an investment into housing, while the private business sector invests in (for instance) factories, fixed machinery, sheds, produce handling plant, and so on. Decisions are made to maximise private utility and profit respectively.

Community infrastructure is an important contributor to the well-being of residents, as all communities require some basic infrastructure to maintain a quality of life, such as roads,

electricity, water and sewage, telephone, schools, health services and recreational facilities. Government is a major source of community infrastructure and makes decisions based on a range of objectives such as economic development, perceived community priorities and equity and efficiency issues.

Infrastructure investment decisions shape the future pattern of development and are made within the context of the accumulation of past decisions. Infrastructure investment in long-term assets leads to development down one path rather than another (David 2007). Man-made infrastructure can act in the same way as the geographic and natural resource endowments of a location, since once established they often form a base for future development. This is particularly true where large and expensive infrastructure is in the form of networks, whether they be road, rail, communications or electricity distribution.

Some characteristics of infrastructure help to explain why it is so important in driving the shape of future decisions. Prud'homme (2004) discusses characteristics of infrastructure including transport, communications and utility networks but excludes other infrastructure such as schools and hospitals. The latter have less longevity and the services are more labour-focused (Prud'homme 2004). The key characteristics of infrastructure include:

- Its key function in providing services (for example, the distribution networks of dams and canals to provide the service of irrigation)
- Its lumpy nature (i.e., it needs to be complete to be useful), in which adjustment to gradual demand is difficult
- Long timeframes, both in construction and lifespan
- Its place-specific nature (immobility), as discussed above
- That the services public infrastructure provides are related to market failure (public goods, externalities, natural monopolies, merit goods)
- That it is used by households and enterprises (Prud'homme 2004).

Infrastructure can outlive its original function, and be abandoned or repurposed. 'Infrastructure hangover'—the continued existence of infrastructure whether it is well-used or not—provides towns with resilience in terms of retaining or attracting population. People can 'rediscover' or repurpose a town later at a lower cost, because the infrastructure still exists.

Some towns in decline later found a new function as arts-focused, amenity or lifestyle towns, tourist towns or commuter towns. They were able to recover from decline due to changing circumstances such as an increasing focus on amenity. In some cases this was partly based on infrastructure such as attractive historic buildings, or was due to being positioned in an area with inherent advantages such as natural amenity. Daylesford in Victoria was rediscovered as a spa town in the 1960s after a period of decline, and was able to capitalise on its physical assets, natural amenity and history. Mount Beauty, also in Victoria, was established to accommodate workers on a hydro-electricity scheme, and then moved to tourism due to its natural beauty. Both were able to do so more easily because of the infrastructure from earlier times.

Some infrastructure is more adaptable than others. Housing is a particularly 'generic' and flexible form of infrastructure, in that it can be used by people in a range of circumstances (for example, it can house workers for any type of industry, retirees, and so on). Other infrastructure is more specific, particularly when limited to a particular function or industry. The more that specialised infrastructure is already in place, the more closely tied the industry is to that area, since a move

to a different location will likely entail significant additional cost to establish new infrastructure while the existing infrastructure is likely to have little value to an alternative industry.

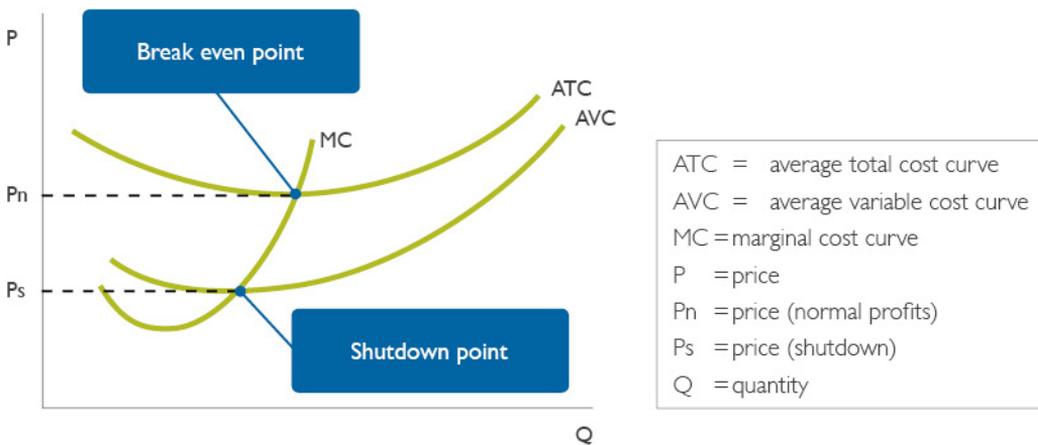
Sunk costs

A strong influence on decision-making are the sunk costs associated with infrastructure. Sunk costs are costs which have already been incurred, cannot be changed by current decisions, and so cannot be recovered (Arnold 2013, p.202). Their importance can be seen through both business transactions and community development.

For an operating business, many of their fixed costs are 'sunk' and while they are able to at least cover variable costs they will continue to operate.

Consider a local business. Figure 8.3 shows the short-run supply curve for a firm, and its break even and shutdown points. Theoretically, for a firm to enter a market, it should be able to make normal profits. The firm makes a profit at or above the break-even point, where the marginal cost equals the average total cost (P_n) (as total cost includes normal profits). However, in the short term, an existing firm will continue to produce even when the price is below total cost, as long as it is above the variable cost (P_s).

Figure 8.3 Short-run supply curve of a firm with break-even point and shutdown point



Source: King (2012).

In towns experiencing regional competition, it is likely that the price of goods will fall (see Chapter 10 for more discussion). However, in the short run, businesses will continue to operate at a loss if they can still price above the variable cost curve. While in the long run, the business may disappear, it is likely to continue in the short or medium terms. Very often the business will continue until the retirement of the current owner.

This aids persistence for declining towns, firstly because it explains one reason why people hold on to their existing (unprofitable) business. However, it also discourages new entrants because the firm is making a loss. As a consequence, as existing facilities wear out and are not replaced, a town experiences a loss of services over time rather than a sudden drop. For example, a town's local doctor may continue to practice in the town rather than move to

another location but a new doctor will not enter into the market because the market size is too small to cover his or her entry costs.

Even in locations where a firm makes a profit, a new business considering entry can be deterred because of the costs of new infrastructure are included in his investment decision, where they judge that the incumbent firm would discount them in a competitive environment.

Overall, the effect of sunk costs is the retention of the status quo (or the appearance of it) in the face of change, but it can conceal some underlying difficulties.

Industry and related activity

Persistence of a particular industry is not just about infrastructure but also the expertise of the local labour force and the presence of other supporting firms around it. This can make it difficult for a town to change.

The investment of local production in one location affects decision-making for upstream or downstream firms in the same production process, and can further develop local activity and infrastructure. Examples include the location of timber mills near wood plantations, fish canneries near ports, stock and station agents where there are major sale yards, car component manufacturers close to assembly plants and so on.

This creates a potential for entrenching activity in a particular region. The existence of infrastructure and related industries to support local production encourages it to continue in the same place. In addition, the local production also encourages the related activity to continue, creating a mutually supportive network in a particular location.

Agglomeration and clusters

Investigations of industrial agglomeration in the case of Australia have found it to be low and generally found in metropolitan locations. For example, a study by Leahy et al. (2010) into geographical agglomeration in manufacturing for Australia found it to be less common than in other industrialised nations. Another industry found by Beer et al (2003) to have agglomeration was the producer service industries located in Sydney and Melbourne. Hence, 'as Sydney and Melbourne have the largest number of specialist producer service firms, and the only critical mass in the country in some of them, this naturally attracts others' to take advantage from the economies of scales available (Beer et al. 2003, p.123).

Similarly, the large clusters described in the literature are less evident in Australia. As Beer et al. (2003) state the only internationally-recognised Australian clusters are in the wine industry such as the Barossa Valley and the Hunter Valley. In fact, much of the work to investigate clusters has been based on case studies of successful locations with 'the same fairly limited set of places recurring in the literature' such as Silicon Valley, Boston's Route 128 and Cambridge (Boddy 2000, p.316). These locations are unique and are 'atypical as case studies' so it is not surprising that the presence of clusters is on a very small scale within regional Australia (Boddy 2000, p.316).

Several hypotheses have been suggested for the low presence of industrial agglomeration and cluster formation. These include the small size of the overall economy, a large degree of foreign

ownership, dominance of resource-based exports, limited industrial specialisation and a lack of critical mass, especially at the regional scale (Beer et al. 2003; Boddy 2000 and Leahy et al. 2010).

Networks

Historically, networks have reinforced the settlement pattern in some cases, and changed the competitive relationship in others. Networks are all about connectivity, and so a town within a network is part of a larger system, and its place in the network determines its advantage. Major network infrastructure includes linkage infrastructure (transport and communications) and distributive infrastructure (water, electricity, gas). Due to the interconnected nature of networks, their persistence is likely to be stronger than for other, standalone infrastructure.

As transport networks evolved, they created different opportunities and costs for towns. A key part of the discussion in Chapter 3 was the development of rail hubs that then became major centres of activity. This advantage was sometimes maintained after the road network became more important.

Networks have a role in services offered and the way that goods and services are accessed, and can reinforce the existing settlement pattern. Lee (2003) observes that during the railway boom of the 1870s and 1880s, in New South Wales and Victoria 'there was a clear overall plan...to build railway systems centred on the capital cities', which maintained their dominance. Statham (1989) points out that while the rail systems 'did have a striking impact' on the cities, the capitals already had primacy before this and so the rail systems can be considered a reinforcing element.

However, Queensland railways are more decentralised, with lots of separate, smaller railways, which reflected the influence of widely distributed pastoralists and, to a lesser extent, miners and farmers, whose goods went to many ports (Lee 2003). This can be seen in the shape of the Queensland settlement pattern today, and the large regional centres along the coast with links inland. Lee (2003) also reports that Tasmanian railway development was focused both on Launceston and Hobart.

For towns, one aspect of networks is how fundamental the section of the network relating to them is. The more vital a network component, the less moveable (or removable) it is. One example is transport networks. If a town is part of the rail system, and the system declines, then the 'removable parts' are likely to be those on the fringe, branch lines whose removal (i.e., shutting down a service) will not affect the larger system. Even when the station patronage itself might be marginal, if it is on a vital part of the network (for example, on the main line between Sydney and Melbourne) then it is more likely to continue. These same key areas of the network, due to their greater connectivity, are also likely to experience greater patronage. This is similar to towns that act as key hubs on the road network (for example, linking several highways).

Unlike other infrastructure discussed, the decision makers for networks, such as governments and utility-owners, are generally in control of (and considering) the larger system in their choices. The objectives for the system are often not just regional but subject to larger state or national interest.

Networks are typically subject to path dependence, both technologically and spatially. Because networks are systems, the nature of piecemeal change restrains large changes, as component parts must all fit together.

Networks often have hubs and nodes whose geographic location is difficult to move unless the whole network is replaced. An example is the location of a new power station to replace an existing outdated one. The design of the power network will almost certainly suggest that the new plant be located near the old one.

Road networks create nodes where particular industries (often transport related) may prosper, as can the intersection of different networks—for example the gas and power networks at Uranquinty, in New South Wales, facilitates a gas-fired power station. Once industries establish at the node, the network is strengthened to meet their needs in that location.

Once in place, it can become difficult or cost prohibitive to transfer networks to new locations or disperse activities. Path dependence is created on the location of future activity. They can be added to, but radical change becomes difficult. When a road network is established, incremental change builds on that network, rather than reinventing the existing system. Transport systems also interact with town growth. Troy (2004, p.9) highlights that '[t]he original and subsequent subdivision patterns developed around transport and access routes [have]...reinforced the structural centralisation exhibited by Australian cities'.

Public infrastructure

There is far more to public infrastructure than networks. While networks in the settlement pattern are often large pieces of state or national infrastructure, there is a range of other public infrastructure provided on a regional or local basis. This includes everything from national parks, schools and hospitals to courthouses, local roads, libraries and bridges. Like other infrastructure, once in place it tends to be long-lasting and influences the location of activity.

Public infrastructure is often related to the provision of the public services that it supports, such as education, health services and policing. These services now have some characteristics of networks, as they are larger systems controlled by central decision-makers for state or national objectives.

The availability of this infrastructure and related services locally is partly a product of history. Infrastructure decisions have been made in a variety of specific historical contexts.

The presence and quality of existing infrastructure for services (for example, the school or hospital buildings) can influence service placement or retention. This is important as the existence of such infrastructure is an enabler for the service to continue. In an otherwise comparable town which lacks this infrastructure, there is a more difficult case for commencing a service. Another key factor is that the infrastructure and the services it supports may have been established when the spatial distribution of services was different.

Key pieces of public infrastructure can also influence decisions by firms and households. The choice of location for public infrastructure has enabled activity in these areas, including private development. Importantly, though, the presence of infrastructure cannot itself create a demand for activity.

Housing as infrastructure

Most of the analysis and examples above have been based on industry. From a town perspective, a very large part of private infrastructure is houses. This has essentially the same characteristics as industrial infrastructure, being durable, lumpy and place-specific. In contrast to the variability in population, infrastructure investment tends to be long-lasting. This means that potential mismatches and price changes are common.

The same effects discussed above for industrial infrastructure should also be considered in the context of housing. Housing investment will be considered in more detail in Chapter 9.

Housing legacies

As a town declines and becomes less appealing to prospective house purchasers (because it has less to offer them—whether in terms of amenity, employment, access—and represents a poor investment), the price of housing falls.

Consequently, the town and its infrastructure—particularly the low-cost houses—become attractive to people seeking a low cost of living. Some people are able to trade opportunity and job options for this lower cost. Typically, these newcomers are not reliant on location for their income: retirees, teleworkers, the unemployed, social security recipients, and so on. This can result in regions with levels of high socio-economic disadvantage.

This phenomenon known as ‘welfare led migration’ has been described by a number of authors (for example in Murphy et al. (2002, p.11)). It results from the disparity in housing prices that is evident, particularly in towns in declining agricultural areas. The houses originally accommodating working families no longer serve that function and prices fall. People on low incomes, particularly those outside the labour market, are attracted to these areas by the relatively low cost of rent or ownership of existing housing. For example, a study by AHURI found that the most significant factor in whether welfare recipients would move from a metropolitan to non-metropolitan location was housing affordability (see Box 8.1).

Box 8.1 Welfare-led migration

A difference exists between types of benefits in welfare-led migration. Morrow’s (2000) analysis into the migration patterns of those on assistance found that Disability Support Pension (DSP) and Single Parent Pension (SPP) clients have a stronger tendency to move to areas of greater social disadvantage with overall lower incomes and government transfers making up a much higher proportion of the regional income. In addition, SPP and DSP clients tend to move towards areas with lower degrees of accessibility, although not necessarily to remote or very remote areas.

However, savings from lower house prices may be somewhat offset by increased retail costs (see Chapter 10). While welfare led migration may have a positive effect by increasing demand for retail goods in the small town, it is also likely to increase the number of people subject to the higher local prices, along with less availability and variety.

Administrative and social entrenchment and service legacy

Services, social and organisational structures and other town features can operate in a similar way to infrastructure as discussed above: as context and legacies of history, shaping future decisions³⁹. These structures and services represent the 'status quo', and while able to be changed, the process can be slow and met with resistance.

The status quo bias and the endowment effect

In decision-making, people have a bias towards the status quo over other options (Samuelson and Zeckhauser 1988). The continuance of an existing state has a 'psychological advantage' over change, and consequently, ideology and related systems (for example, social systems) are slower to change than, for example, technology (Eidelman and Crandall 2009).

This 'status quo bias' encourages stability by introducing inertia (or friction) 'into otherwise frictionless economic models of resource allocation' and can contribute to the difficulty of changing government policy (Samuelson and Zeckhauser 1988, p.44). People are not always at a decision-point, but only consider making change at particular junctures. For towns, this gives favour to existing structures and processes, or 'the way things are done'. The emphasis on the status quo encourages persistence of population in its current distribution—a countering effect to mobility and change—but also the systems underpinning it, and the services provided.

A related concept to the status quo bias is the endowment effect, in which people value losses more than gains. Both are concerned with loss aversion, and both are anomalies in rational economic decision-making (Kahneman, Knetsch and Thaler 1991). The significance of the endowment effect is a stronger value placed on what exists—or the services that have been historically available.

Existing service delivery mechanisms

Services have some similar characteristics to infrastructure networks, and they require infrastructure to exist, as discussed earlier. Services can be provided by private industry or government. Health, education and mail services, for example, are determined by central decision-makers, but have historical legacies in the way they are provided.

Like private suppliers, governments need to make decisions regarding the range, quantity and location of services provided to the public. Obvious judgements include the location of schools and hospitals, but similarly, spatial choices are required in relation to the provision of services such as social security and industry support. The objective of universal service provision favours retention of services in smaller towns. However the financial advantages to government of centralising services into larger centres creates a strong opposing incentive and results in difficult choices for government.

As voters, residents are able to exert political pressure for public services to be maintained, and therefore, these services can be politically very difficult to remove or change.

³⁹ Similar, but separate, inherited properties are the characteristics of the town, such as the main industries, income range or level of education of residents. These are also part of stability and persistence, and the limits on a town's ability to change. For example, we can see persistence in areas of entrenched disadvantage (and advantage).

The status quo bias can impact on service provision in two ways: one is the policy-makers themselves would tend to favour the status quo of services historically available, and the other is that those receiving the service would favour its retention more strongly than those without a service wishing to gain one.

Historical availability of a particular service creates the potential for otherwise similar towns to differ in service levels. Towns which have historically had a particular service, such as a primary school or doctor, may be able to maintain the service, whereas a similar-sized town without this history may find it difficult to acquire.

The status quo also shapes wider expectations, which provide part of the context for which decisions are made. Broadly, the status quo is that governments provide a certain level of key services to citizens. The 'normal' level of services in a town of a particular size can create pressure on decision makers to maintain this level, but the expectation of what is acceptable can change over time. Therefore service levels are partly a reflection of demand, which has changed with a more mobile population, but is also a reflection of ideas about acceptable universal service levels balanced with concerns over efficiency.

Once lost, services can be very difficult to get back—particularly when alternative arrangements are made. It also has reinforcing effects, such as population decline from staff leaving after the closure of a school and people reshaping their activity to reinforce further the shifts in activity.

However, while the above indicates that there are historical influences affecting service delivery levels, there have still been rationalisation in some areas. For example, after corporatisation Australia Post reduced its outlets by 25.6 per cent between 1991 and 1997 (Gerritsen 2000) and transferred a large number of the operations to agency outlets in newsagencies or general stores. While this may have increased overall efficiency, it can have adverse consequence of loss of economic activity from small regional communities (Gerritsen 2000). The rationalisation and withdrawal of public services resulted in a greater degree of concentration of activity into larger regional centres. The resistance that this is met with demonstrates the understanding in towns of the larger effects that this can have on them in the long run.

Social networks

Social networks serve to keep people connected to a town. A shared history, connection to family and friends, to home and more generally, to place—separate to any financial investments—keep people local and give them a desire for the town to maintain its services and do well. In addition to personal connections, social networks include more formal social structures including community groups (sporting clubs, charities, volunteer groups). Social networks can also maintain demand for existing services that have a particular social focus, such as the local pub. These networks also can create amenity, to be discussed further in Chapter 11.

Attachment to place varies with personal circumstances. Some residents are transient, while others have a strong connection to a town. This can be linked to industry—for example, some mining or construction workers may be living in a place temporarily but have stronger ties elsewhere (see Chapter 11). Likewise, even when attachment is strong, there may be other factors that still make a person leave (such as a young person relocating for university).

Strong attachment to place and status quo bias can lead business owners continuing operation and providing services longer than economic reasons would dictate. Small business owners are also residents, and understand the effect that removing their service can have on the population. This can generate social pressure for them to continue, including older service-providers, who may delay retirement when there is nobody to replace them.

While social networks are generally viewed in a positive light, the effect may not always be constructive. For example, the established power structures in some towns may make it hard for newcomers to get involved.

Governance structures

Town governance structures and regulations likewise influence settlement pattern change because they determine the range of possible change—for example, whether there are zoning limits on activity. They can also shape how services are delivered. For example, a decentralised or a centralised governance structure may provide a different spatial pattern of service.

A feature of the shifts in the governance structure at the local level has been the expanding role of local government in service provision (see Chapter 6). However, the expanding role of local councils in communities has resulted in a greater degree of variation in the standard of services, particularly when comparing services provided by a small council and larger councils (SCEFFPA 2003).

Approaches to raising local government capacity to meet these increasing demands have included the implementation of ‘best practice’ and structural reforms such as amalgamations. Generally amalgamations take the form of two or more local authorities combining to make a single entity—often based on having a larger regional centre surrounded by small rural shires (Dollery 2009).

Dollery (2009) provides a summary of the number of local councils from 1910 to 2007–08 (see Table 8.1) to illustrate the scale of amalgamations that has occurred. In 1910, the number of local councils for a population of fewer than 4.5 million was 1067, substantially larger than the 550 local councils servicing over 20 million persons by 2008.

Table 8.1 Local council numbers in Australia 1910–2007

State	1910	1967	1982	1990	1995	2007–08
New South Wales	324	224	175	176	177	152
Victoria	206	210	211	210	184	78
Queensland	164	131	134	134	125	73
South Australia	175	142	127	n/a	119	68
Western Australia	147	144	138	138	144	142
Tasmania	51	49	49	46	29	29
Northern Territory	0	1	6	22	63	8*
Total	1 067	901	840	726	841	550

Note: *Amalgamation pending at time of publication (February 2009).

Source: Dollery (2009).

The main argument for amalgamation is that it enables councils to take advantage of agglomeration processes such as economies of scale and greater access to expertise. Employing a wider range of professionals can potentially improve efficiencies and deliver a more specialist range of services. It is argued that larger councils would be in a stronger financial and human capital position to undertake these increasing roles.

While limited systematic attempt has been made to evaluate the outcomes of amalgamation, it has impacted on the spatial activities of regions through loss of employment and reductions in administration roles for some towns, leading towards a greater degree of concentration (Dollery 2009). Consequently, while local government officials may want to support local communities, a degree of disengagement can result, as they are often unable to reach all small towns because of the size of the local government area (DPCD 2007).

Conclusion

This chapter has discussed the mechanisms by which geography and history shape the settlement pattern and influence change. Factors such as infrastructure, specific industry expertise and personal attachments limit the ability of the settlement pattern to change. This creates a brake on and provides context for the change mechanisms that will be discussed in the following chapters.

CHAPTER 9

Relationship between industry and towns

Key points

- The close ties between industry and towns weakened over the twentieth century.
- Industry and small towns shifted their focus towards large regional centres for support.
- Periodic shocks were often the catalyst for change because they exacerbated the existing adjustment pressures.
- Industry was centralising into large regional centres in terms of accessing factors of production, as distribution points and as centres of manufacture.
- Investment decisions are fundamental to a town's growth but investment is a component of the economy which is volatile and difficult to attract, especially at the small scale.
- Confidence in the town's future is vital for local investment.
- Firms are operating in very competitive environments and will adapt and shift their operations to remain viable. This means that towns and regions need to be competitive and better engaged with their local industries.

Introduction

Many Australian towns were established in the nineteenth century, principally to serve nearby industry and its employees. This close geographical link closely tied the town to the fortunes of industry. Over time, technological advancements, productivity gains and structural changes directly challenged this relationship, leading to its weakening.

The loosening of this relationship was a major contributor to changing Australia's settlement patterns. This chapter examines the nature of the relationship between industry and towns and seeks to identify the underlying processes that led to its diminishing role. The chapter firstly presents a stylised model of a town's economy to enable an analysis of the different components, followed by an investigation of the processes that shifted the relationship between towns and industry and the investment decisions involved. Finally, an overview brings together some of the key features of the shift in relationship between industry and towns.

As many Australian regional towns were established based on the agricultural sector, it will often be used as an illustrative example. Agriculture was an important basic industry for many of Australia's towns in 1911, but the underlying factors are also applicable to other industries.

Modelling the relationship

In 1911, industry was closely linked with its local supporting town. Agriculture, forestry, fishing and mining motivated the establishment and underpinned the continued existence of most towns. Co-location benefitted both industry and towns as transport was relatively primitive and the costs of moving people and goods high.

This relationship is consistent with Base Economic Theory (see Chapter 2). The basic industries were the primary source of town growth, with the non-basic industries serving local populations quickly following. This theory provides a useful structure to consider a small town's economy—identifying the various components and markets and the changes occurring in a town's economy.

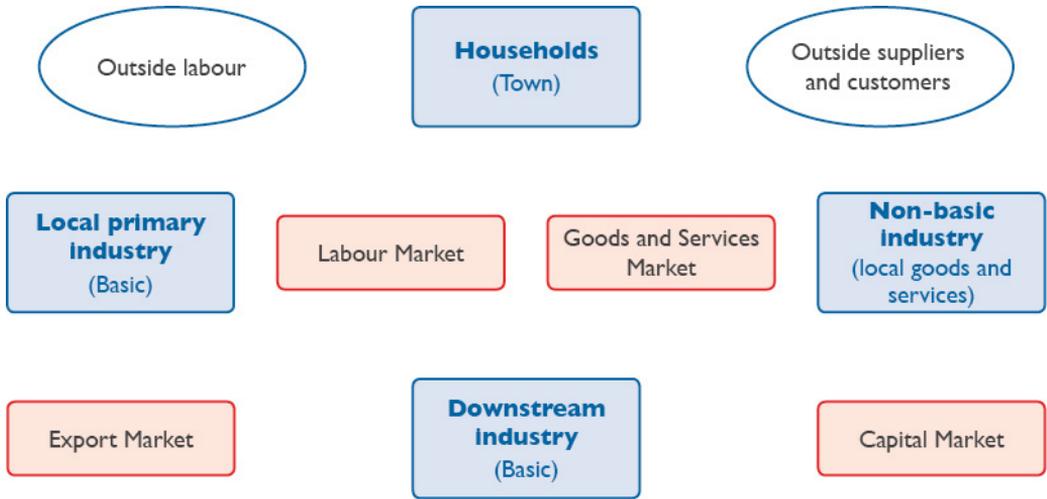
A stylised description of this model is presented in Figure 9.1, which shows the major components of a town's economy in blue.

- **Households** are where the population of the town resides. They supply labour and are consumers of goods and services. Generally, it is the welfare of this group that is the key consideration in the success of a town.
- **Basic industries** produce goods that are sold outside the town. Typically they are primary, but can include downstream manufacturing and some services such as tourism. In this model, basic industries are split up to recognise downstream processors of primary product as local processing was common in 1911, and remains a significant sector in many regions.
- **Non-basic industries** produce and supply goods and services to be sold to local households or industries. These include, but are not limited to, the retail sector and businesses providing input services to basic industries.
- **Locations outside the town** are included to illustrate that towns do not operate in isolation, with labour, customers and suppliers from outside able to operate within the town, and vice versa.

The relationship between the town and the various industry sectors is defined through the workings and outcomes of a series of markets: the export market; the goods and services market; the labour market; and the capital market. The workings of these markets are described below, with a brief observation of the changes that occurred over time.

In the following section this model provides a foundation to consider the various components of a town's economy and examine the process of change.

Figure 9.1 The relationship between towns and industries



Note: This figure could apply to a town or region or even a larger entity. The resident population of the town is shown at the top as a consumer of goods and services and supplier of labour. There are two types of basic industry sector (primary and downstream) that produce output which earns income from outside the town or region. Typically the downstream industry uses the primary product as input (dairy to produce cheese, for example). The non-basic industry sector produces goods to service the local market. The key markets are the export market, labour market, the goods and services market and the capital market. Outside areas interact with the town through the labour market, capital market and the goods and services market.

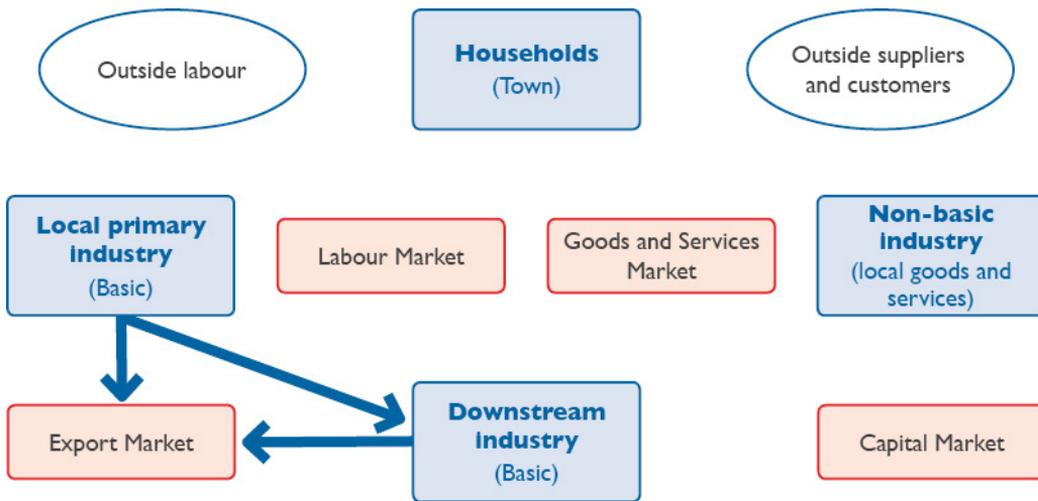
Source: BITRE interpretation of relationship.

The export market

The primary production sector was all-important for many town economies in 1911. Sometimes this was linked to a downstream industry that added value such as dairy factories, abattoirs, flour mills, wool scours and wineries.

These basic industries sold their products in the export market (see Figure 9.2). The arrows shown in the diagram refer to goods that are ‘exported’ from the town and very often sold into national or international markets (wool, wheat, beef and minerals, for example). Through this mechanism towns generated ‘income’ and it was a key component in determining the overall size and prosperity of the town itself.

Figure 9.2 The export market



Source: BITRE interpretation of relationship.

The close relationship between the industry and town meant that fluctuations in these markets had a strong flow-on effect. Industry typically has very little market power and is effectively a price taker. Once established, the conduct and profitability of industry is driven largely by powerful external factors: overseas markets, exchange rates, technological change, state or national wage settings and the like. From the town’s perspective, these factors are largely out of its control and most fluctuations in the changed opportunities provided by the industry have simply had to be borne by the community. Shocks in these markets are transferred to the town’s basic industry sector and hence to the town through the labour and goods and services markets. Prices received reflect international demand and supply. Typically they change slowly over the long term with changes in tastes, technology and competing products, but domestic and overseas events can create dramatic short-term fluctuations.

Outside markets effectively force basic industries to remain nationally and internationally competitive. Typically in Australia, the returns are also governed by the transport costs in getting the goods to the national market or port. The efficiency of the transport chain (land and maritime) from the town to the market is very important to long-term profitability. As noted in Chapter 3, rail transport effectively allowed the creation of the wheat industry in inland Australia where the earlier cost and inefficiency of transport had discouraged one. Australia’s position far from the ultimate consumer destination traditionally created an inbuilt

transport disadvantage compared to European or North American producers, although the growing importance of Asia as a consumer reduces this effect. With goods for Australian consumption, the issue for towns is the cost of transport relative to other towns/regions to the major cities. With free trade policies there is also a need to compete with imported produce.

One of the drivers of the establishment of local downstream processing is the ability of secondary manufacturing to create a less bulky, easier to transport product. On top of the inherent value adding by downstream industry in converting milk to cheese or grapes to wine locally, there is the reduced cost of transporting the product to the final market. The perishability of raw products can also be a factor in the decision to manufacture locally, although in more recent times modern transport systems have overcome this issue so that milk, for example, can be drawn from a much wider geographical area to a regional factory, reducing the need for a larger number of smaller, local factories across the producing region.

1911 and 2006—shifting relationship

A strong local basic industry provided the towns of 1911 with the foundations of local infrastructure beyond the needs of industry. For example, agriculture was able to generate substantial income and wealth supporting towns, and some towns also had mining activity. Between the 1890s and the First World War, agriculture benefited from high raw material prices and escalating demand, resulting in probably its most prosperous era in Australia's history (Frost 1998).

Sales yards, silos, ports and rail connections formed part of a town's built infrastructure to accommodate agricultural activities. The most important was often rail, which gave a significant advantage to towns that were connected, particularly in the wheat regions. Towns not connected were at a disadvantage as the movement of produce to market was more expensive. Small downstream industry was common even in relatively small towns as farm to factory transport relied on horses.

By 2006 transport had changed markedly. Rail was replaced in many locations by road transport for freight and people. Moving primary products to other locations became relatively easy. Improved transport was accompanied by advances in refrigeration that allowed longer trips without spoilage (particularly for milk and meat). It was possible for downstream factories to access product from much larger regions (and for regional factories to sell to a wider consumer market). This allowed them to grow their operations, take advantage of economies of scale and introduce more efficient processes. It meant that smaller mills came under competitive pressure and many inevitably closed, leaving their associated towns with one less downstream industry to employ its citizens. There was a converse boost to the town lucky (or smart) enough to become the site of the regional factory. The result was that better transport led directly to the centralisation of industry and a loss of downstream industry jobs in many towns.

Goods and services market

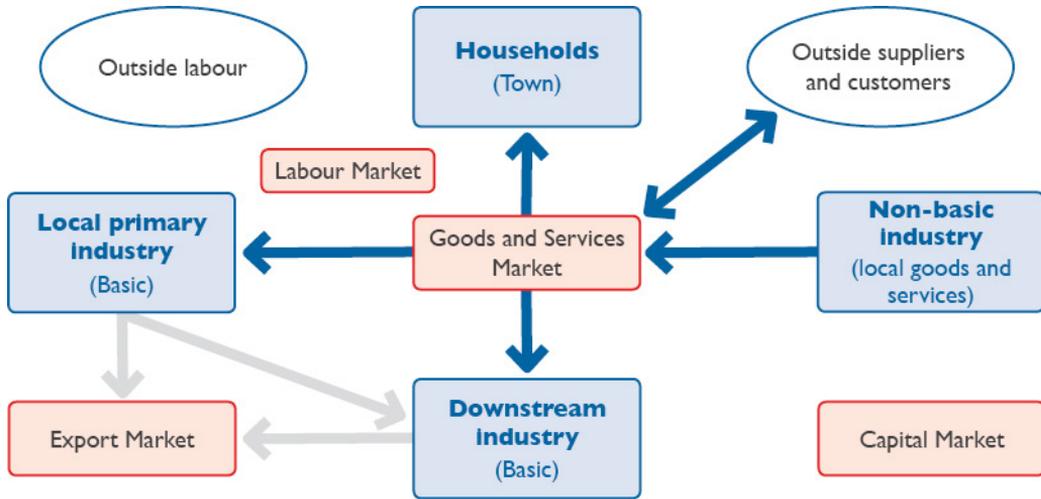
Figure 9.3 emphasises the movement of goods and services from the non-basic industries and outside suppliers to households, outside customers, primary industries and downstream industries. Arrows reflect the flow of goods and services.

This flow of goods and services to households includes the manufacture and retailing of food and groceries, personal and professional services used by families, along with those provided by government (education, health, local government and other services).

In addition it includes support goods and services to basic and downstream industries including specific inputs used only in production (such as drenches, veterinary services, chemicals etc) or more general goods and services (office supplies and services, vehicles and fuel, tradesmen's services etc).

The non-basic industry sector includes suppliers in the town and outside suppliers—including suppliers from the next town or further afield. The services sector notionally has a broad customer base of the town population and other industry but with enhanced transport the town was increasingly subject to outside competition. Key features for long-term success in this sector's business environment were the size of the market (town) and outside competition, although competition with like businesses within the town drew more attention in the short term.

Figure 9.3 The goods and services market



Source: BITRE interpretation of relationship.

1911 and 2006—shifting relationship

Local non-basic industries were the big contributors to the goods and services market in 1911. Outside suppliers were difficult to access and local producers manufactured or processed many products for sale to the local population and industry. Many towns operated as a closed market because of poor and expensive transport that restricted competition from outside and the prospects for local businesses to service outside customers.

Over time, better transport meant that these closed markets became more exposed to each other and the outside world. The retail market, in particular, became much more competitive, resulting in some business closures while others thrived. The effect of these changes on the service sector and the towns themselves was complex and was a major driver of the reorganisation of urban structures and the emergence of larger regional centres. The upshot for most towns was a decline in the local non-basic sector and a rise in the number of outside suppliers for goods and services.

On the demand side the loss of downstream and, in some cases, the basic industry from towns undermined the customer base of the non-basic sector in direct sales or through the loss of employment in the town population. This impact was exacerbated by improvements in productivity which often reduced the number of local employees in basic industries and other sections of the non-basic sector.

Within the non-basic sector, goods and services generally became more complex, requiring more sophisticated skills which were difficult to retain locally. The trend away from repair to more disposable goods (due to relatively high Australian wage rates as well as planned obsolescence) also reduced the need for repair services. This led consumers to place a lower value on local suppliers who could better provide 'after sales service'. Parts of the services sector were transformed. For example, business services such as banking, accounting and legal services evolved as local firms became bigger and financial arrangements more complex.

While this complexity was in part a response to more government regulation, it also was a reaction to better technology, the rise of national and international business models and increased specialisation of support services. Inevitably these models were more centralised than those that they replaced, with increased activity in regional centres or major cities at the expense of smaller towns. Similarly in health services, both expertise and equipment have become more specialised and so a greater proportion is located only in regional centres or major cities. Primary education is less affected but secondary and tertiary studies have become more centralised, and there has been an increase in the number of people pursuing further education.

The impact of these changes has been to push more and more smaller town, non-basic customers toward outside suppliers. While this is an obvious negative for local business, the positive aspect of development was the potential to access business in a wider region and other towns.

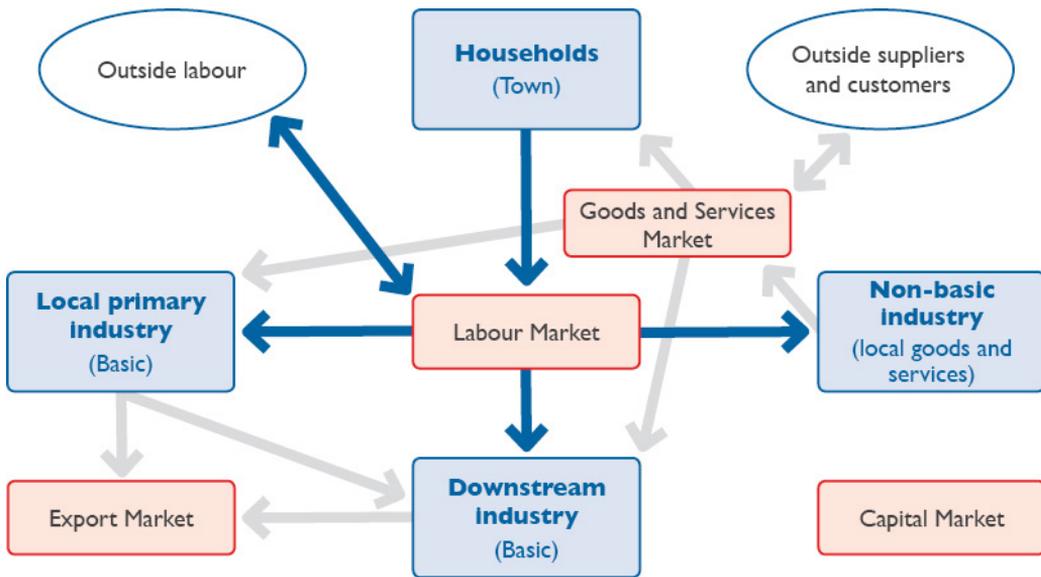
The overall balance of the impact of change in the goods and services sector varied from town to town. Some towns lost, others gained, however for the smaller towns the negative factors seemed to dominate and were largely beyond local control. The stiffer competition from outside suppliers created a difficult competitive environment, with pressures for change and adaptation becoming very strong. The processes and spatial effects within this market are more closely examined in Chapter 10.

The labour market

Figure 9.4 emphasises the dynamics of the town’s labour market. The labour supply is classified by where people live—either from the town population or from the ‘outside’ labour pool. The latter grouping consists of labour coming from anywhere else, whether workers driving from an adjacent town or a fly-in/fly-out worker from the other side of the continent. The model also canvasses the possibility of workers from the town working in other locations (towns). Traditionally workers lived in the town that they worked in, but with advances in personal transport (particularly cars and planes) this became less necessary.

The demand for labour is fourfold: potential employers are drawn from basic and downstream industry and the non-basic (local goods and services) sector and employers outside the town. With all these sectors fully active, there is the potential for residents in even a medium-sized town to access a wide range of job opportunities requiring a range of professionals, both skilled and unskilled. This diversity of opportunity is a positive for towns.

Figure 9.4 The labour market



Source: BITRE interpretation of relationship.

1911 and 2006—shifting relationship

In 1911 many towns had fully fledged local industry sectors which were relatively labour intensive. Outside labour was not commonly used because of transport constraints, and most towns operated in a relatively isolated labour market. Competition for jobs could come from outsiders, but if they took the job they would then have to move into town. This was typical for the professions, with teachers and bank staff typically being ‘outsiders’ who were recruited from other regions. While there was competition between individuals for employment, no matter who got the job the employee ended up residing in the town (at least while they were employed) and contributed to the overall demand for the town’s non-basic industry sector. There were some exceptions to ‘local employment’: for example, the use of outside labour in

rural seasonal work (shearing for example) was relatively routine on the larger sheep stations. 'Swaggies' seeking work on the track were a feature of the Depression.

With the coming of the motor car, labour became more mobile and the potential for people to work away from where they lived increased. This opened up options for a town's population to find outside work but still live in town, but also increased the potential for others to access local jobs, but live elsewhere. There was therefore more competition for 'local' jobs. From the town perspective the key difference was that income earned by 'outsiders' was spent in other towns and did not build the local non-basic industry sector. The previously tight relationship between industry employment and local income started to break down.

Improvements in productivity, particularly in the basic and downstream industry sectors and the growth of regional arrangements for downstream processing commonly had the effect of reducing the overall demand for labour. This was especially true of smaller towns, while regional centres that had expanded services sectors or could attract regional industry not only survived, but prospered.

The capital market

The capital market represents investment in a town by different groups—households, basic and non-basic industries and those positioned outside of the town. It represents the decisions of people to invest in a town, whether to open a business or build a house.

The investment priorities of these groups can be quite different, as they have different objectives. Investment by basic industries is primarily dependent on the state of their output market. Their focus is on market signals—an increase in price is a signal to invest in the market, while declining price means lowering costs or possibly withdrawing from the market. These prices are generally driven by national and world events.

In contrast, non-basic industries serve a local population and the basic sector of the economy. The potential customer base is an important consideration on whether a firm will decide to invest. Their economic environment is the state of the town's economy and its surrounding region. Those already in a particular investment situation (for example, a small business owner in a town) will have different considerations to those who have no assets there but are considering whether to acquire some.

Like non-basic industries, households are concerned with a town's potential. Households attempt to raise their well-being, with a key decision being whether to invest in housing. Households also have broader priorities than financial. Personal and social interests including attachment to place, connection to family and friends, networks, 'roots' and personal history are considered in the investment decision.

For towns, investment is fundamental. Agricultural activity requires investment in sales yards, silos, and rail connections. These types of activities do not occur without someone making the decision to invest in a town. Financial institutions and governments are other types of investors that can shape the location of activity.

1911 and 2006—shifting relationship

The connection between a town and its local basic industry has been shifting. Basic industries have become less dependent on local towns. Consequently, a booming industry may have very little impact or benefit for a town, as industry's operations and investment are directed towards remaining competitive in a market.

In addition, capital has become increasingly mobile. 'Footloose' firms are able to take advantage of short-term changes in locational inducements and then move on. The benefit for a town can be limited.

Some towns struggle to attract investment, compounding a difficult situation for declining towns. This becomes an important issue for individuals tied to a particular town. Their financial commitments, such as in housing and businesses, make it difficult to move because of lack of resale value.

In contrast, as discussed in Chapter 8, a positive reinforcing loop of investment in a town can enable it to grow and attract other investors. This puts larger towns at a competitive advantage as people feel more secure investing in locations where other people have decided to invest.

As investment decision making is complex and subject to different priorities and capacities of the investor, it is examined later in the chapter by considering the role of returns and risks.

Industries and towns: a shared history

The model provided a conceptual framework to consider the major components operating in a town. This section explores the processes changing the relationship between towns and industries.

Rural industries and their supporting towns initially formed mutually dependent structures for producing and sharing income. Towns derived income and employment from industrial activities by providing inputs for production, while the rural sector profited by accessing inputs and labour nearby, because of primitive and expensive transport.

This made small towns attractive nurseries for new businesses able to exploit the economies of location because of high transport costs for competitors. It was cheaper to mill grain, brew beer, make butter and manufacture simple products to be sold locally than to transport large or perishable materials over long distances (Frost 1998).

In the case of agricultural towns, they were to be impacted by three fundamental factors revolutionising their functions—technology, declining terms of trade and transport. These changes, in part, provide a critical explanation of why many of Australia's current small rural towns struggle to survive.

The introduction of rail and later the motor vehicle removed transport barriers by substantially reducing costs. Farmers and miners benefited from lower transport costs as it enabled them to conduct business quickly and over longer distances. For towns however, this meant an erosion of locational advantages that previously promoted local manufacturers, retailers and industry support services. It made it difficult for small town firms to compete with firms in larger towns with economies of scale advantages. Activities gradually shifted towards built up areas. It

followed that jobs would also transfer, which in turn attracted greater levels of investment and migration to the expanding regional centre.

Simultaneously, small towns lost agricultural jobs, principally from substantial productivity gains through technological advancement. While this often raised production for farmers and made them more competitive, it also led to significant labour reductions. For example, in 1911 a third of Australia's workers were employed in agriculture, but this fell to just 3 per cent by 2006.

The need to raise productivity was partly driven by declining terms of trade. Industry had to adapt or go bust. As part of this adaptation, farm amalgamations to obtain economies of scale, reduce costs and raise output, became a feature of the process. Farm numbers declined by almost 46 000 or one-quarter over the 20 years to 2002–03 (Productivity Commission 2005b). Using a conservative average household size of 3 persons, this equates to roughly 140 000 people moving away from agriculture and their rural communities. As discussed in Chapter 5, the visible effect on the landscape was highlighted by Bell (1998, p.33) for the northern areas of South Australia, with many unoccupied houses among the wheatfields.

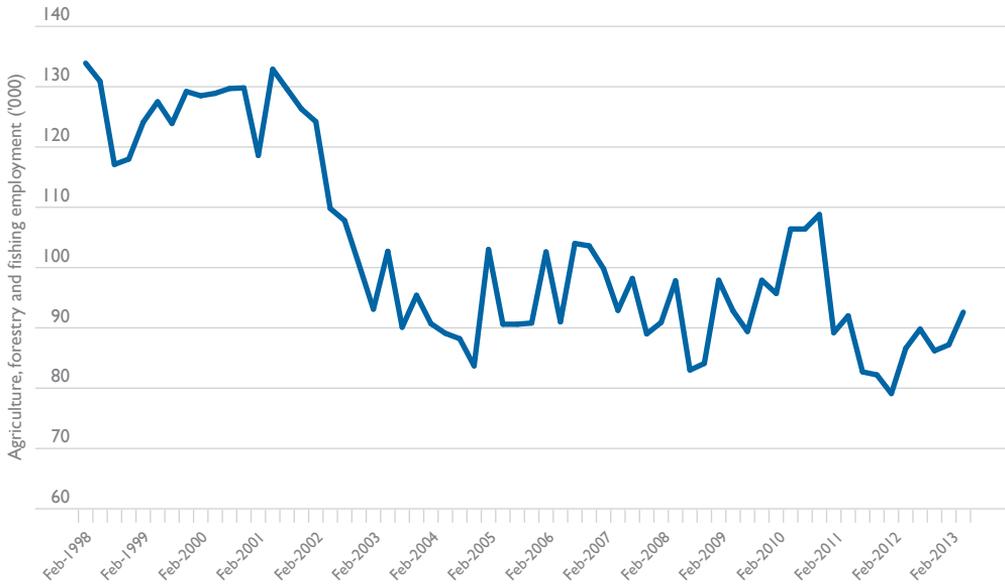
When much of the local town's economy serviced agricultural industry, a decline in the number of people and businesses in agriculture had a negative impact on a local economy. The 'loss' of regional towns did not result in entrenched poverty, as people were able to shift to unskilled and labour-intensive manufacturing jobs in urban areas (Frost et al. 2002) and later to the expanding service industries in regional centres and cities.

Shocks

Change from transport and technology appeared to be more gradual, whereas periodic shocks have often been the catalyst for adjustment. Periodic droughts are part of the environment and a risk that farmers must contend with. Some are short, while others have lasted for years with striking consequences. Eastern Australia's drought in the 2000s is an illustration of a substantial shock, with a drop of around 30 000 jobs very quickly (see Figure 9.5). The fall appears to have become entrenched, with agriculture, forestry and fishing employment typically ranging between 80 000 to 100 000 in New South Wales thereafter.

While long-term adjustments, such as declining terms of trade and technological advances have been the major source of change for agriculture, it has often been shocks that have sharply shifted the industry to a new structure. The shock has exacerbated the existing adjustment pressures.

Figure 9.5 Employment in agriculture, forestry and fishing in New South Wales from 1998 to 2013



Source: ABS (2013b).

These shocks directly affect towns. There is a tension between incremental and sudden impacts on settlement patterns with industry outcomes playing a crucial role in this process. The degree to which an industrial shock impacts on a town depends on a town's ability to mitigate negative outcomes, with its severity varying depending on a town's degree of dependence on the industry. For example, towns with greater economic diversity have sometimes been able to insulate themselves.

ABARE's investigation into income expenditure activity of broad acre farmers illustrates the varying degree of dependence of towns on agriculture. Farmers' expenditure within towns was broken down into three components: household, farm inputs and capital items (ABARE 2000). In aggregate, most farm expenditure in 1998–99 occurred in larger towns. Centres with more than 20 000 persons attracted over half of the expenditure. In contrast, towns with fewer than 1 000 persons and those with between 1 000 and 2 000 people each attracted less than 10 per cent of total expenditure (ABARE 2000). While broad acre farmers concentrated activity in larger centres, the economies of small towns were highly dependent, providing an indication of the lack of resilience of these small towns to shocks in farming activity (ABARE 2000). The report also highlighted the high reliance was correlated with a 'clear pattern...whereby the greater the reliance of a town's economy on expenditure of farmers, the lower the population growth' (ABARE 2000, p.5).

This illustrates that adverse shocks are felt well beyond the farm gate. Declining agricultural activity directly impacts on dependent businesses such as farm machinery manufacturers and harvester operators. Falling agricultural output flows to downstream processors, resulting in falling production. Falling production and incomes result in reduced working hours or loss of jobs. This flows through to falls in demand for goods and services in the towns—a negative feedback loop.

The overall impact on a town depends on the extent to which the expenditure of the displaced worker is directed toward locally produced goods and services. If, as was likely the case in 1911, most was directed this way, the loss of the job/income to the town would be keenly felt.

The decisions made by the people who lose jobs can greatly influence the ability of a small town to absorb the shock. Analysis by the DPCD (2007) of Murtoa, which lost about 100 jobs (from a population of 878 in 1991) from the scaling down of six government departments during the 1990s, found three decision types. About 50 per cent of the workers decided to move away, while the remaining 50 per cent was split between people taking packages and staying in the area, and people staying to commute to their re-located jobs in Horsham (DPCD 2007). The decisions taken provide an indication of the complexity in forecasting the effect of shifting economic activity between locations and how people would respond to these changes. The proximity of a major centre provided the option to commute, while more remote regions would not have this option and would potentially have a higher out-migration component.

Those moving away are likely to represent a greater loss to the local economy than those that stayed. The shift of employment also impacts on how and where people will spend their income. For small town residents whose employment has shifted to a regional centre, often a proportion of their economic activity also shifts to the regional centre, regardless of whether the person has decided to remain living in the small town. A daily commute may incorporate dropping the kids off at the regional centre's school and a shopping excursion on the way home. This reduces demand in the small town and affects the viability of local goods and service providers. The larger regional centre is usually the primary beneficiary.

This cycle of decline is reinforced by the potential loss of employment in local service industries. This cycle of 'Dying Town Syndrome' is difficult to break (Forth 2001) as industry and individuals become reluctant to invest.

Many towns faced with declines in agricultural activity were transitioning to different functions and industry mixes forming part of an expanding economic structure. While wheat-sheep belt towns were struggling, other towns positioned along the coast transferred their economic focus to other activities such as tourism, or to becoming lifestyle locations. Yet another group of towns had an extra economic component, such as a mining operation, or were strategically positioned to be a hub for the surrounding region.

Centralisation of basic industry

The key trends in rural and mining industries over the twentieth century have been the move towards enhanced industry efficiency with reduced labour; a reduction in downstream processing and increasing use of outside labour. With some exceptions, industries have restructured so that they are more productive, usually through economies of scale, and to be internationally profitable. Unfortunately, this has been at the expense of their ability to support their nearby small towns. There are fewer opportunities for local employment and less demand for locally supplied goods and services.

While agriculture is naturally dispersed it has contributed to the centralising of industry activities by transferring its focus to the large regional centres. Small local towns have been by-passed as farm managers seek cheaper and more sophisticated farm inputs from the high-turnover businesses in regional centres. Often these regional centres were also the site of a key

transport link or marketing infrastructure—livestock selling centres, abattoirs, fish, vegetable or other produce markets where farmers would be making business trips anyway. These centres were well placed to service farm inputs. They often were, or became, transport hubs for a wider region. They were also well placed to be the natural location for manufacturing—resulting in greater levels of concentration of manufacturing activities.

Before Federation, manufacturing was mostly ‘goods for local use’, such as food, bricks and furniture, as well as machinery repair and basic treatment of primary goods (ABS/CBCS 1963, p.179). So a structure of scattered small scale manufactures met local demand.

Larger factories, initially located on the waterfront, expanded into ‘fringe suburbs’ (making boilers, bricks, working with iron) (ABS 2001). Large factories concentrated ‘in places offering the greatest facilities for the production of particular commodities. In Australia...the tendency throughout has been to concentrate the manufacturing establishments in each metropolis. This has accentuated the growth of the capital cities to an extent which, when compared with that of the rest of the country, appears somewhat abnormal’ (ABS/CBCS 1929, p.906). Large-scale industrial manufacture also expanded into several regional cities (see Chapter 6).

The rail network, which was set up to funnel rural produce through major ports in capital cities, contributed to this ‘abnormal’ distribution. This meant that the focus of activity was directed towards the capitals. It followed that manufacturers would locate in major cities to obtain inputs, have the ability to transport goods and have customers access them at one central location. Manufacturers also took advantage of economies of scale and new technologies (Frost et al. 2002) that provided them with a competitive advantage over small firms in rural areas.

The largest impact on small firms in rural areas has been the reduction in the cost of transport. This gave producers the opportunity to access other towns, effectively creating larger regional markets in place of the smaller town-based monopolies of the past. The effect was the closure of smaller manufacturers who found it difficult to compete. Improvements in transport enabled a regionally-based system of production with fewer firms which could develop economies of scale.

The dairy industry in northern Victoria illustrates the amalgamation process. In 1950 the Murray Goulburn Co-operative factory was established in Cobram. From this beginning, mergers followed with smaller factories in the towns of Nathalia, Kyabram, Berrigan, Swan Hill, Rochester, Gunbower, Pyramid Hill, Cohuna, Kerang and Koondrook—illustrating one industry’s shift to regional manufacturing. Milk for the factory, moved by refrigerated trucks, is now sourced ‘from suppliers extending south of Shepparton and north and west to Jerilderie and Deniliquin and east to Corowa’ (Murray Goulburn Co-operative n.d.p.). From this central location milk is now distributed widely, including internationally.

Centralisation did not happen in isolation, however. History and geography were also strong influences on the location of the large downstream regional factories that strengthened local economies and transformed towns into regional centres. For example, Mount Gambier developed on the back of ‘Australia’s largest concentration of saw-mill and paper pulp’ manufacture, as it is positioned near ‘80 per cent of South Australia’s forest plantations’ (Forestry SA 2013; Griffin and McCaskill 1986).

Centralisation of non-basic industry

Structural reform pressures have also changed the service industry. Traditionally, towns and regions were based on primary or secondary industries exporting outside the region. Services, in contrast, were for local consumption. Service providers have been transitioning to form an important source of 'export' funds for towns. This has generally been to the advantage of larger regional centres. Consequently, service employment forms a major part of larger centres' industry mix.

The impact of changing goods and services access is examined further in Chapter 10, but the structural shifts in this industry are considered here, as concentration of services has had a profound impact on the development of many towns.

Service industry employment increased dramatically over the past hundred years—both in terms of the number and share of jobs (see Chapter 6). Growth in service employment generally benefitted urban centres rather than the surrounding hinterland, as service jobs have different locational requirements than traditional industrial jobs (Tonts 2000). This produces an uneven spatial spread of service based industries, with rationalisation and centralisation common (Collits 2001). A clear example is the emergence of supermarkets to replace many corner stores. In 1947–48 there were over 18 000 grocers and mixed businesses locations. By 1990–91, the number had halved to around 9000 supermarkets and grocery store locations (ABS 2001), illustrating a greater degree of concentration in economic activity.

Ultimately, the private sector operates in locations that are profitable. 'This means that there has to be enough demand by consumers to cover the cost of providing the service. In rural areas the private sector is less able to provide services that are readily available in urban setting' (OECD 2010, p.18). Asthana et al. (2003) identifies several characteristics that impact on the cost of providing services in regional locations:

- Lack of economies of scale
- Additional travel costs
- High level of unproductive time (more time spent travelling)
- Additional communication costs
- Poorer access to training, consultancy and other support services (cited in OECD 2010, p.26).

These costs are part of the reason for a greater degree of concentration of activities. The concentration is occurring for a wide range of goods and services with activity increasingly shifting into regional centres, which in turn is increasing their degree of diversity as highlighted by Bowie and Smailes (1988).

Centralisation of government services

The provision of government services has also been centralising in regional centres, with a similar impact on towns to the concentration of the private sector. The provision of government services in towns provides stable employment for local residents and the surrounding region, injecting money back into local economies; and draws people into the town to access services

(CentreLink, administration offices, schools, hospitals and police etc), which are part of the town's economic base.

Governments continuously review their own performance in providing public goods and services. Like private suppliers, governments need to make decisions on the range, quantity and locations in which they provide services to the public. Obvious judgments include the location of schools and hospitals, but similar spatial choices are required in relation to the provision of services such as social security and industry support.

Although not subject to the same competitive pressures as the private sector, governments face many of the same issues. Delivering government services involves balancing between economic efficiency and distributive equity criteria. Governments face the challenge of delivering cost effective services into regions with lower populations and have the same difficulties with small turnovers and high overheads as the private sector (see Chapter 10). Consequently, as Gerritsen (2000, p.124) states, the spatial effects of the centralisation of government services 'have mirrored those caused by the restructuring of the private sector'.

Chapter 8 illustrates this with the amalgamation of local governments. More generally, centralisation is especially apparent as services become more sophisticated—for example, modern healthcare and the growth in secondary and tertiary levels of education—and more expensive.

Services in regional locations are usually more expensive (and less sophisticated) than those provided in dense urban environments. As a result fewer services are available at the local scale and/or people are required to travel further to access services. Often this means traveling to the capital city. The inequality of service delivery to residents of non-urban regions is recognised by most service providers.

Understanding regional investment in Australia

Investment decisions are fundamental to a town's growth. Chapter 8 highlighted the role of history and geography on the growth of towns and the incremental nature of the investment in building a legacy of infrastructure, which continues to influence the actions of investors in the future. This decision-making process is examined further here because of investment's critical role in growing a town.

The volatility of investment is a challenge for towns and is sometimes difficult to measure or predict. Volatility comes from the degree of confidence in an economy, risks and uncertainty with the investment, the ability to source funds, and technological advancements creating both positive and negative prospects.

There are also several different types of investors: households, industry, institutions and governments. Each has a different set of priorities and different values to measure the best option for their investment dollar. Even within each investor type a great deal of variation can exist, including different attitudes of locals and non-locals, and different knowledge of local opportunities.

Choices reflect the different priorities and attributes of different investors to access rates of returns and associated risks, given their risk preferences, values, knowledge base, resources and expected returns.

Returns and risk

All investors regard rates of return as a major consideration. Returns relate to the amount of revenue an investment generates from increases in income and changes in the value of the asset. While it is important for all investors, evaluating rates of return can vary for the different investor types. Assets also have different rates of return depending on risk. Riskier assets attract higher returns because of volatility. The key is the expected likely returns to the asset holder. The rates of return on financial assets providing a monetary flow are sometimes easier to measure, while returns of sole business operators or family businesses are more difficult to measure because they are based on more than monetary flows and include the satisfaction or utility given to the owner.

The measurement of risk is an important consideration and how people respond to risk differs. Robison and Barry (1987) define risk as those uncertain events whose outcomes alter the decision maker's well-being (cited in OECD 2009). When outcomes significantly impact on the decision maker's material or social well-being, they will tend to move towards less risky options. Risk is the probability of suffering damage or loss after evaluating factors such as sovereign risk, inflation risk, income risk, economic risk, interest rate risk, market risk, mortgage risk and so on.

In the following section, investor attributes are examined further:

Households

A household attempts to maximise its well-being given its budget constraint and personal preferences. Household well-being includes more than economic well-being, as it also incorporates wider concepts such as satisfaction. It is often proxied by measuring a household's income and wealth.

For most Australian households, the family home is their main source of wealth (see Chapter 6). The family home has been a major source of increased household wealth because of increased property capital values over past decades. Household decisions on property are important, with a significant part of that decision based on location (Location! Location! Location!).

The locational factors influencing the decision include access to schools, community connections, environmental amenities, employment opportunities, likely length of stay and affordability, and the potential for capital returns. The household's expectations on a town's prosperity and future sale price are also pertinent factors. Falling property values have the capacity to 'entrap' households, as people find themselves tied to homes that have little market value (Econsult 1989 cited in Tually et al. 2010, p.34). Potential loss of capital and return significantly alter a household's economic position and encourage strong risk-averse behaviour. People investing in housing are reluctant to consider a (perceived) risky option that could jeopardise this asset. Households weigh up their exposure to risk and uncertainty carefully.

Perceived risk means that small towns are in competition with peri-urban, coastal and high amenity locations for in-migrants—and are often fighting a losing battle. This is especially so for small rural towns already struggling with population loss and/or economic re-structuring. As discussed in Chapter 8, however, low house prices can attract people, albeit people with limited resources, to declining towns.

Evaluation by households can also vary. A local may be willing to forgo higher direct rates of return for indirect returns. For example, local residents may forego higher capital returns in order to gain satisfaction from being close to family or for the lifestyle benefits of the area and to remain part of the community. This concept of amenity will be discussed in Chapter 11.

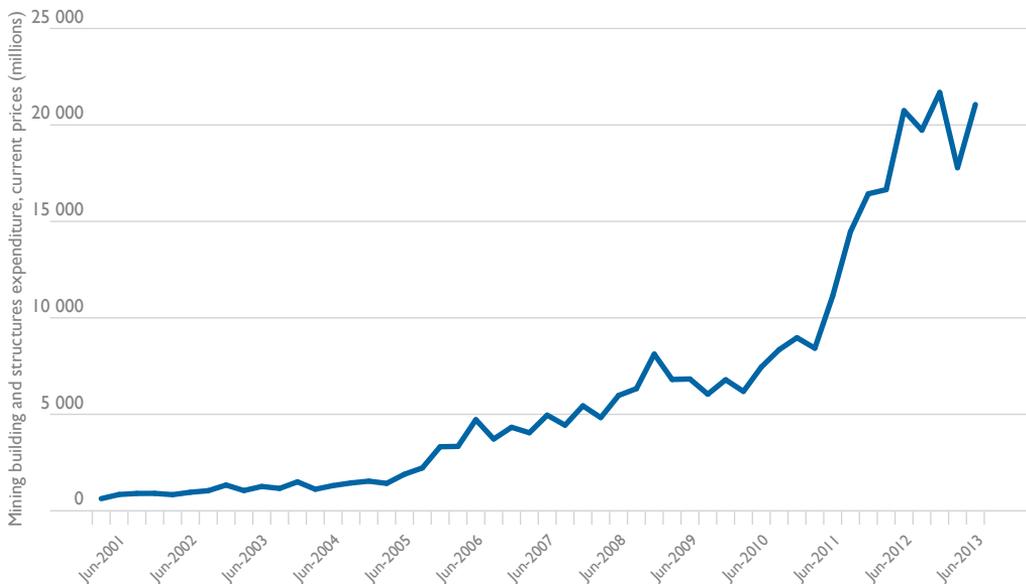
Households are also private enterprise investors. BITRE's (2009b) study into household wealth found net business assets have grown strongly but are owned by only a small proportion of households. Business assets tended to be much more important in regional areas, especially for rural households. Rural households had high rates of farm business ownership, raising average net worth of rural households to \$591 600 in 2003–04, substantially higher than national net worth of \$467 600 (BITRE 2009b). While rural households had high levels of wealth, regional urban centres of between 1000 and 100 000 persons had low average wealth (\$337 600), because of relatively low property values and business assets (BITRE 2009b). Consequently lower average net wealth can result in fewer resources to raise consumption, generate income flows and increase business start-ups for these towns.

Flows of household capital out of regional locations also occurred with the introduction of superannuation. From 1992 it became compulsory for employers to make tax-deductible superannuation contributions on behalf of their employees (APRA 2007). The scheme is a form of retirement savings which resulted in a substantial and growing source of capital funds over the past twenty years in the hands of fund managers. While this has greatly benefited many people in retirement, it has also meant that a substantial source of 'local' funds have shifted away from potentially local and regional investments toward those considered by the formal capital markets. A consequence of this shift in the capital towards institutions is explored further later in this section.

Industry

Like households, businesses are essential to a functioning economy through producing, consuming and investing in the local market. They attempt to maximise profits but often have other objectives and constraints associated with other business strategies such as being the first mover in a market.

Individual firms evaluate an investment depending on the type of business. Basic industries focus on the wider economic environment in which they operate. For example, mining companies react to price fluctuations in the ore market or shifts in demand for commodities. An increase in demand for mineral commodities prompts companies to invest in mining projects encompassing exploration, construction and production. In recent years, mining investment has increased substantially (see Figure 9.6), to meet increasing demand, particularly from China.

Figure 9.6 Mining building and structures expenditure

Source: ABS (2013c).

Mining and agriculture operate in global markets. The state of the industry is often the driving factor for businesses to invest in projects. The rate of return and risk are focused on the broader environment rather than an individual town. The state of the local town's economic conditions may not play a significant role in industry investment decisions. As Banks (2002) has highlighted, a large majority of firms consider commercial or market-related factors to be the key for their choice of investment.

Non-basic industries have similar considerations but focus on serving a population. They assess investment options based on a potential customer base locally and regionally. An important investment consideration is the viability of the town which they are considering and the degree of likely competition. These types of investments are town-focused and, like households, businesses are concerned with the locational factors that could include the growth prospects of the town, whether it is a transport hub, if the firm can become a part of a wider network and so on.

An important aspect but more difficult to quantify, is the level of business confidence and expectations for future economic growth of both the business and the town. The level of business confidence of a local economy (and if they operate in a base industry, their export prospects) directly influences investment. Access Economics (2005, p.107) describes business investment as the simplest indicator of corporate confidence. The situation of a town with a declining population, lowering consumer demand, will impact on business activity and reduce confidence in the economy making businesses unwilling to invest further and/or employ workers in the town.

As with households, a distinction can be made between businesses operating in the local market and those outside that wish to invest. Existing local businesses have an advantage in understanding their local market and interpreting signals in this environment. They are at

least partially tied to local economic fortunes through sunk costs and as members of the community. While maximising profits is a primary objective of businesses, owner operators, local family-run firms or local enterprises will also place value on maximising their well-being, which could include social benefits for the town in which they live.

While social benefits will also be considered by non-local firms, businesses outside the local area are likely to place a higher priority on maximising profits. These firms could also have greater access to resources to make investments but in contrast to local businesses will have to organise access to accurate and timely information to make informed decisions. They may also be investigating several locations. Towns perceived as being in decline will often be overlooked or ignored, reinforcing their decline.

Institutions

Institutional investors organise large sums of money from various sources to invest in securities, property and other assets. They endeavour to maximise returns for their investors while considering risk. Institutional investors include banks, insurance companies, hedge funds, superannuation investors and venture capital investors.

Institutional investors act as financial intermediaries and provide investment opportunities for others at varying levels of risk. They provide funds for local infrastructure projects, local businesses and household property purchases and a wide range of financial assets. These investors are unlikely to capture any indirect returns and are mainly concerned with direct financial returns.

To assess risk appropriately, information is required—at a cost. Better information makes for better decisions. For locals, the cost of gathering information could be minimal, as well as having access to important tacit information that is only available from continuous local interaction. For institutional investors gathering information can be difficult and costly, which affects their perceptions of risk and potential returns. This 'cost' of regional investment information can deter some investment, for instance by superannuation funds.

Differences in perceptions of risk can deter banks from lending to some population categories. Some lenders restrict how much they will lend based on geographical systems such as postcodes. Houses in metropolitan locations are considered generally low risk, while medium sized regional cities can be rated as low to medium risk. However, small towns and remote locations can be classed as high or very high risk. In practice this means financial institutions may lend a maximum of 70 per cent of the rural property value, while houses in well developed areas may be more easily financed with up to 95 per cent. Part of the difference is the assessed risk based on the available information or for many small towns the lack thereof. For instance, a low turnover of properties results in banks having little information to guide them on the appropriate risk factors for particular locations; as a result they raise the risk assessment and put a premium on finance.

This risk premium is a challenge for regional businesses. The Australian Council for Infrastructure Development (AusCID) (1997) identified several challenges for regional firms in obtaining funds—lack of critical mass, a prevalence of 'public interest' and politicisation of development which makes private investors wary to contribute, and the small scale of projects (those below \$20m) (cited in Braund 2000). Small-scale investments can make the administrative costs prohibitive. Institutional investors generally have expertise in the national and international

markets in which they operate giving a different focus to their investment choices. Approaches to overcome these barriers include regional approaches to funding local government infrastructure requirements or the growth of local community banks with a stake in the local economy and awareness of local conditions.

Government

Governments invest in towns and regions for broad objectives such as promoting economic growth, raising societal well-being, responding to equity concerns, offering public goods, reducing negative externalities, addressing market failures and providing economic management. Governments perform these important roles through regulation, direct intervention and monetary contributions.

National, state and local governments invest in towns at different scales. The Commonwealth Government initiates reforms at a national scale to create an economic environment that promotes economic growth and well-being. A major component of state government investment is provision of services to raise the well-being of residents—such as education and health.

At the town level, local governments provide many of the place-based investments, and have been expanding investment in social functions (SCEFFPA 2003)—beyond roads, rates and rubbish. This increasing role has been driven by devolution, 'raising the bar'⁴⁰, cost shifting, increased community expectations and policy choices (SCEFFPA 2003, p.11). A parliamentary inquiry found that the functions and services provided by local government 'cover a wide range of services that often include engineering, recreation, health, welfare, security, building, planning and development, administration, culture and education' (SCEFFPA 2003, p.6). A submission to the inquiry highlights the scale at which councils are investing locally. Ilfracombe Shire Council, in remote Queensland, 'runs the post office, the railway station, a general store and a café' (SCEFFPA 2003, p.7). The Aramac Shire Council provides a rent-free surgery office for the local doctor, accommodation for nurses, and runs the bakery (SCEFFPA 2003). These examples provide a clear illustration of the degree to which local governments actively invest in their local towns.

The challenge for governments (and community leaders) is how to allocate community resources among alternative services and infrastructures to achieve the highest quality of life for communities (Amanor-Boadu and Burns 2008, p.6). The investment by governments is generally geared to advancing the quality of life in the community, but it is subjective, multidimensional and dynamic. (A discussion into government policies and service provision challenges is also provided in Chapters 6, 8 and 10).

Government plays a significant role in addressing uncertainty in decision-making. All investors are discouraged by uncertainty because they are unable to assess future outcomes and the potential for substantial losses could be enormous. Uncertainties in these calculations create difficulties and demand higher returns in compensation.

Governments attempt to address this by setting the economic environment in which people operate. All levels of governments have an interest in raising confidence and reducing uncertainty on investment transactions. Policies that have tended to be more successful fundamentally

⁴⁰ Raising the bar refers to the situation in which another sphere of government raises the complexity or standard of a local government service resulting in an increase in costs.

changed the economic characteristics of a region and worked with the underlying economic forces. A study by BTRE (2003c, p.xxvi) into the investment trends in the Lower Murray Darling Basin found that governments shaped investment patterns through policies such as water administration. These policies created an environment that influenced the spatial pattern of investment over the long term that still influences current activity (BTRE 2003c).

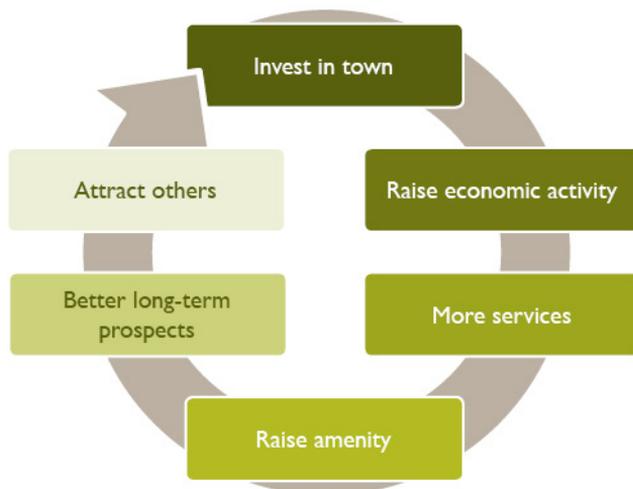
Investment over time (impacts on towns)

Rates of return and risk minimisation are motivators for investors, but what does this mean for towns? As highlighted previously, investment in a town provides a growth mechanism (see Chapter 8). Figure 9.7 presents a stylised representation of the positive feedback loops that can be generated from investment.

Once a decision has been made to invest, this can generate a number of positive effects for a town:

- The money from the investment raises local economic activity by injecting funds into the economy, providing employment and having a new business or household in the town.
- This can stimulate the delivery of more services into the market—raising the availability, range and quality of products and services for local residents and businesses.
- The increase in services raises the overall amenity of a location.
- As the attractiveness of a town improves, it increases the long-term prospects of the town because people are more confident in its future.
- A confident town is able to attract businesses and households, which in turn encourages them to invest, to continue the positive cycle.

Figure 9.7 Positive investment feedback loop



Source: BITRE stylised representation.

Generally, larger towns have had a clear competitive advantage over smaller towns in attracting investment. They have been regarded as more attractive places to invest and attract further investment—the perception of success creating success. This is evident with the general observation that the largest towns in 1911 were often also the largest town in the region in 2006. Households and businesses have had more confidence to invest in locations that other people have also been confident to invest in. Underscoring this, a large majority of firms consider commercial and market-related factors to be the key for their choice of location (Banks 2002). Businesses operating in tough environments make decisions based on their needs. This includes the ability to access thick labour markets and position in locations regarded as good growth prospects. This generally results in the promotion of growth for the regional centre through a virtuous circle of activity as described in Figure 9.7.

The initial stimulus to invest, however, is driven by numerous factors such as a change in government policy, new local competition and technological change. In some cases a change in conditions can promote new investment, such the bypassing of Berrima along the Hume Highway. BTCE (1994, p.7) found that the bypass enhanced Berrima's tourist appeal as reducing heavy traffic made the town an attractive destination. The result was a substantial increase in investment: 'approximately half of the 45 retail and tourist businesses surveyed in Berrima had opened after the bypass, and many of these new businesses occupied premises which had been built after the bypass', expanding the local economy. This flowed into property values for local residents, making Berrima attractive for further investment and internal migration.

In contrast, towns in economic distress struggle to attract investment. An adverse perception of a location can influence investors' assessments. It is difficult to quantify but plays an important role for a town's expectations of future growth. This is relevant to the assessments by institutions and businesses.

In behavioural economics, this 'framing' of information can exacerbate a difficult situation. It influences regional investment decisions through a constant negative discourse suggesting rural towns are in continuous crisis. It discourages potential investors. While the lack of confidence by non-locals is important, confidence in a town's future by locals is vital. Once local households and businesses are reluctant to invest locally, the town is in considerable economic trouble. As the McKinsey report (1994) highlighted, with up to 70 per cent of new regional investment coming from existing local enterprises, if locals are unwilling to invest, the results for towns can be terminal. Even though local governments continue to encourage investment in the town and attempt to support local residents, it will be from a position of lower financial capacity and an increasing reliance on the longevity of existing infrastructure.

This section has discussed how investment is the basis for town growth. Ironically, it can also have negative consequences. As highlighted previously, investment and productivity gains in the agriculture industry have adversely affected once tightly connected small towns. Productivity has raised farm output, but at a cost for towns in employment opportunities. This has led to a sequence of reinforcing factors—a loss of employment, income, people, demand and services. This bleak outcome was not universal, as many towns have prospered and undergone structural shifts that have promoted growth. But it has been a real consequence of investment to improve agricultural productivity in order to remain competitive and survive.

An overview – the relationship of industry and towns over time

This chapter has provided a description of the shifting relationship between towns and industry. This section brings together these processes to provide a general overview and bring out some of the key features.

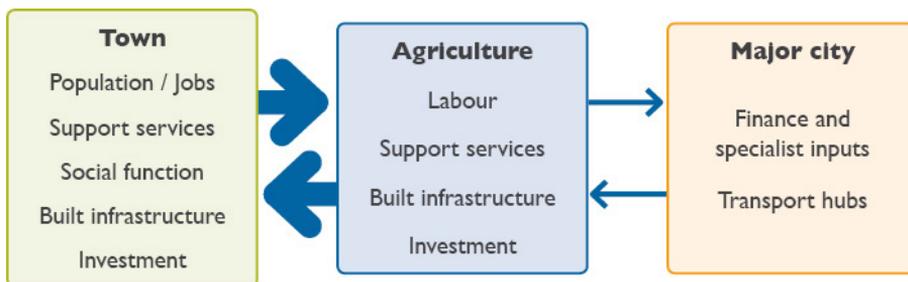
The complex relationship between industry and towns has changed over the century. Previously, the close geographical link between industry and a town provided the impetus to grow. These close linkages were best described by Base Economic Theory. A town's basic industry provided a multiplier effect for economic growth by injecting external funds to promote a town's economic expansion, with only minimal leakage to major cities for specialist inputs or haulage of produce: it provided the basis for the growth of many of Australia's towns.

To examine this relationship the agricultural sector is used as an illustrative example in Figure 9.8, which is a stylised representation of this relationship with the size of the arrows reflecting the degree of engagement between the three components of an economy—town, agriculture and major city.

The figure illustrates the mutual relationship that developed to the benefit of both industry and the town. The connections between the components include:

- Agriculture benefited through labour, support services, investment and a built environment that facilitated production.
- Towns grew on the back of industry through jobs, investment in downstream and supporting industries and built infrastructure, all of which attracted further investment and people to raise local economic activity. Towns were also the social hub for the area to create a close community that would support families in difficult times.
- The connection to a major city was weak for both industry and towns. These locations provided specialist input such as legal expertise or were the transport hubs to export produce—as rail funnelled produce into the ports of capital cities or large coastal towns such as Cairns.

Figure 9.8 Mutual support for agricultural activity and supporting town, 1911



Source: BITRE interpretation of relationship.

Towns that grew had an important basic industry that provided the stimulus for their growth and the overall town size.

Weakened connections

The weakening of this previously close relationship between town and industry has been a driver of change in Australia's settlement pattern. It produced two effects. First, some towns benefited and transitioned to become regional centres, while other towns lost ground economically. The processes are well known. The closure of a firm or service from a town's basic sector directly results in a loss of employment and income for town residents. From this there are flow-on effects in the non-basic sector as the lost income reduces expenditure on local goods and services, which leads to further pressure on the income and employment of those businesses. If this leads to further job or income losses, it creates even more pressure.

There were several significant factors contributing to changing the relationship over the twentieth century. These include productivity gains, declining transport costs, improvements in communications, technological advancement, shifting economic conditions, international competition and periodic shocks such as droughts. As a result agriculture slowly shifted its focus to larger regional centres and cities.

Subtly, the relationship between town and industry was redefined over the century. The balance shifted: small rural towns now needed industry much more than industry needed small rural towns.

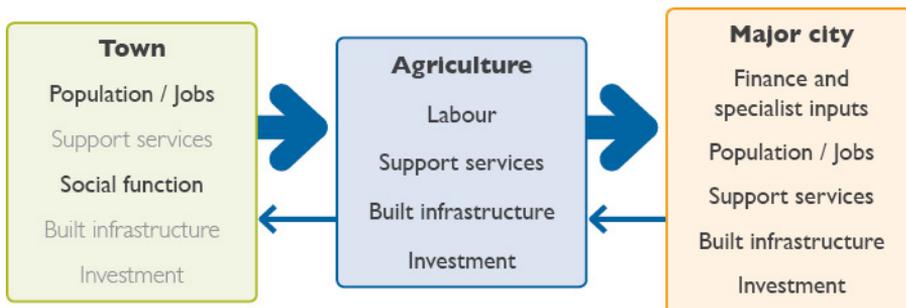
Paul Collits describes the shift:

'The nature of the services provided to farms by the communities has changed and their level diminished, and the formerly close relationship between farms and rural communities has declined' (Collits 2001, p.10).

Agricultural activities were transferred to regional centres (see Figure 9.9), diminishing the connection with local towns. In contrast, small rural towns remained heavily reliant on the activities of agriculture.

However, two important shifts also occurred in regional towns. Firstly, towns were redirecting their focus towards regional centres for employment in the growing service and manufacturing industries and for the purchase of goods and services. This is examined further in Chapter 10 (on goods and service provision). Second, many towns were shifted to amenity, providing them with a mechanism for growth and reshaping a location's competitive advantages. This is examined in Chapter 11.

Figure 9.9 Refocusing agricultural activities towards the regional centre, 2006



Source: BITRE interpretation of relationship.

The change resulted in three distinguishing and interrelated underlying features:

- Industry's dependence on local support declined.
- Stimulus for economic growth from industry for small towns declined.
- Industry and small towns shifted their focus to large regional centres and cities for support.

This relationship shift occurred over a long time. The major challenge for towns is that while industry faced an increasingly competitive environment, both towns and regions needed to be competitive in providing inputs to industry, because having a local industry does not necessarily translate into economic benefits if the town is not effectively engaged.

Conclusions

The close geographical links between industry and towns were created for their mutual benefit as transport was expensive. Towns grew on the back of the expanding local industries by supporting both the local firms and households. However, this link was weakened through technological advancements, productivity gains and structural changes.

The effect was that small rural towns needed industry much more than industry needed small rural towns and the stimulus previously generated by industry for small towns declined. This was due mainly to the shift to regional centres for support, access to factors of production and as distribution points and centres of manufacture.

The transition continues in regional locations but has not been smooth. Often shocks to the economy have had the largest apparent impacts on towns, with some more vulnerable than others. However, key underlying changes to industry are often more important.

The challenge for towns is to remain relevant to industry. Firms are operating in a competitive environment and will adapt and shift their operations to remain viable. This means that towns and regions need to be competitive in providing inputs into industry. A local basic industry no longer guarantees a town will grow.

CHAPTER 10

The provision of goods and services

Key points

- One significant process driving centralisation in regional Australia stems from the safe and affordable transport for consumers with the widespread adoption of the motor car.
- Better consumer mobility forced retailers and service providers in small towns into competition with retailers in other towns, effectively establishing competitive regional markets.
- Economies of scale and positive feedback loops led to the unequal growth of retailers in larger and strategically-located towns at the expense of others.
- As consumers embraced the concept of pooling their purchases into 'one big shopping trip', competition between similar retailers was replaced by competition between towns.
- The development of chain stores and flow-on effects confirmed the rise of regional centres at the expense of smaller towns.
- BITRE research into regional retailing provides support for the processes outlined, with patterns of availability and price incentives consistent with the theory and an empirical model which confirms the key parameters.

Introduction

Previous chapters discussed the overall decline in the number of towns, and the rise of major regional service centres. These are interlinked and the result has been the formation of large regional centres that dominate economic activity amongst smaller towns and villages in the surrounding hinterland. The pattern has occurred across all landscapes: in inland, coastal and remote areas.

One key component of this is the provision of goods and services. This chapter looks at the mechanisms at work in the delivery of goods and services between 1911 and 2006 and how they shape local and spatial economies. In particular, the chapter will examine the motivations and the consequences of action by particular economic groups, including consumers, private service provider businesses, workers and governments.

This will be supported by an empirical analysis of retail prices in regional Australia, examining the spatial differences in prices, availability and structure of delivery for many of the goods purchased by Australians every day.

Goods and services and the process of centralisation

The key issue for this chapter is the role of goods and services delivery processes involved in this very large (and inherently costly) change of spatial form. As noted in Chapter 7, the small town/larger regional centre dichotomy was well established by 2006. The structure in 1911 was very different. Hence, let's start with a theoretical appreciation of the retailer and service provider markets of 1911 and work through what may have happened in the face of changing circumstance.

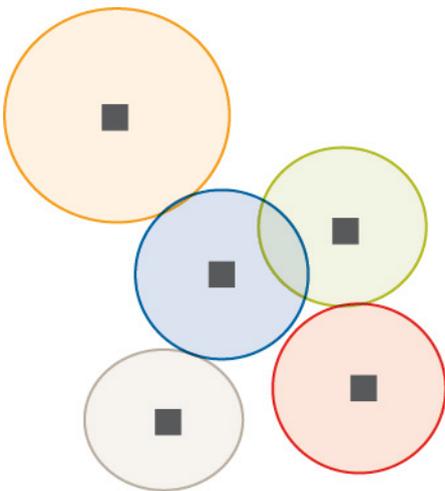
A collection of isolated markets

In 1911, many small towns with similar functions serviced local residents and businesses. Towns typically sustained small scale local manufacturers, along with retailers and service providers.

The focus was the provision of goods and services to the local market, which effectively was the town and all those for whom the town was the closest centre. This often included a strong agricultural workforce who complemented the town's own residents. Not surprisingly, local stores tended to be operated by local interests, usually an owner-operator.

This structure of scattered small towns with an occasional larger centre reflected the difficulty of personal transport for potential customers in a landscape where the dominant basic industry (agriculture) dictated a dispersed workforce/population (See Figure 10.1). Transport for individuals was horses or by foot, with rail for longer journeys. This meant local populations were a captive market. However, the same limited transport also ensured that it was difficult for retailers and service providers to expand beyond the local market, and so their turnover was limited.

Figure 10.1 Towns' customer base areas with high transport costs



Note: Towns denoted by squares, with the market size represented by the surrounding circles.

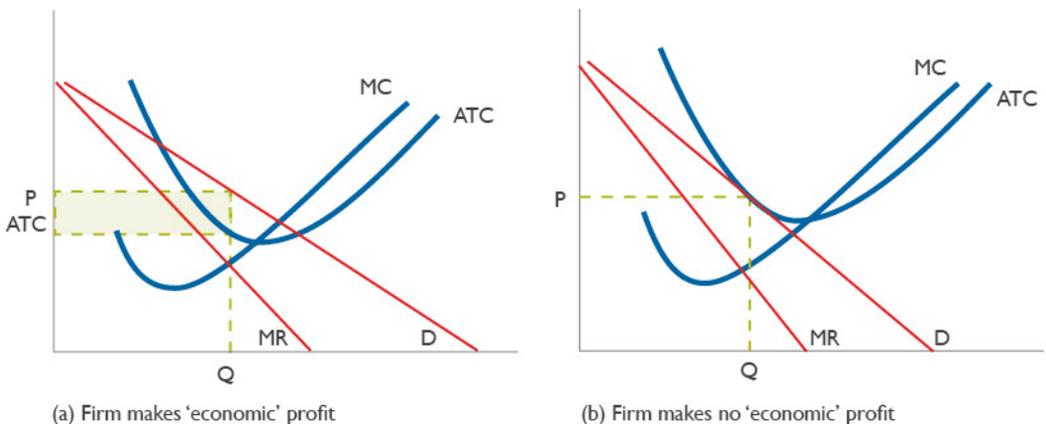
Source: BITRE's abstract representation of town customer base areas.

With limited access between towns, retailers and service providers had some monopoly power in local markets. Diagram (a) in Figure 10.2 shows the likely situation facing many small town retailers. However, it is unlikely that firms would have been able to charge pure monopolist prices, especially in larger towns, because of existing competitors, the threat of new entrants and the relatively common use of mail-order catalogues. Other broader factors restricting the potential for very high prices were the relatively low levels of wealth (compared to today), a possible commitment to providing affordable prices for customers who were also friends and neighbours, and a limited population size. In these situations a limited demand against relatively high cost structure may have resulted in low or even zero profits above normal returns (see Figure 10.2b). The situation for many retailers in small towns in 1911 will likely have been an unstable monopoly (due to the threat of entry) making small above normal profits. Larger towns will have been able to sustain multiple sellers of products, allowing some competition within the town. In these cases we would expect lower prices locally.

The multiple monopoly structure shown in Figure 10.2 was only sustained while transport costs for the consumer to access alternative markets remained high. However, over the ensuing century the cost of moving goods and people decreased substantially, particularly for personal transport. The introduction of the car led to a viable alternative to horse-based transport: an option that was taken up enthusiastically.

The steady and persistent increase in the number and use of cars in Australia was documented in Chapter 6. The shift in transport mode continued to influence travel patterns even in the latter part of the twentieth century. It reduced the costs of travel, cut the journey time and raised the number of trips a person could take. Smailes (2000) illustrates this change in South Australia, drawing on travel pattern survey data from 1968–69 and 1992–93. A 'substantial reduction in mean travelling times', cut roughly three hours from travel times for peripheral locations to Adelaide, with the greatest falls being along major highways (Smailes 2000, p. 161). This brought a substantial proportion of the Upper South-east into easy contact with Adelaide, which fundamentally changed shopping patterns towards suburban shopping centres (Smailes 2000).

Figure 10.2 Small town monopolies of 1911



Note: D – Demand curve; P – Price in the market; MR – Marginal revenue; MC – Marginal cost; Q – Quantity in the market; and ATC – Average Total Costs.

Source: BITRE's representation of monopolistic competition.

Changes in consumer shopping patterns

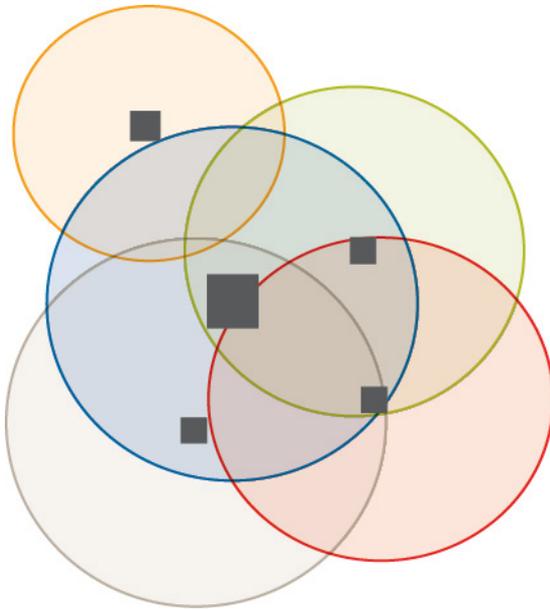
The 1911 consumer had a limited shopping choice. Where home-grown or crafted supplies did not meet family needs supplies were purchased locally at the nearest town (for rural dwellers). Consumers faced higher prices and a lack of variety in both the range of goods and the number of competing stores.

Over time, however, several changes enabled consumers to explore other options.

- Personal transport improved as walking or horses were replaced by motor vehicles and the roads were upgraded. Both continued to improve and accessing more distant stores became an option for increasing numbers of consumers.
- Technological progress and the spread of electricity and refrigeration meant new goods (such as refrigerators and freezers) became available for households and businesses. This allowed perishables to be stored at home, reducing the need for frequent trips for supplies.
- Other technological innovations, particularly in communications, facilitated more day to day contact outside immediate localities, so that consumers became better informed about new goods, techniques and trends.
- Improved transport allowed local rural economies to focus more on supplying goods for sale outside the region instead of for local or at home consumption. This provided income and facilitated the distribution of new products and regional economies became more specialised and trade more important.

The most telling of these changes for small towns and rural residents was the increased mobility due to the automobile. While other factors contributed to shopping in other locations, the motor car made it possible. A long-standing barrier was removed and goods not available locally were now accessible. The impact was described by Gibbons and Overman (2009, p.37): 'lowering transport costs can increase competition forcing firms to lower mark-ups. This leads to a welfare benefit to consumers and can also lead to a real resource saving to society'. Even when goods were available locally, the car allowed consumers to explore other options. They could compare quality and price in other centres.

The geographical impact was to shift from a collection of isolated, scattered towns (see Figure 10.1) to an economic landscape where consumers sometimes had a number of centres within their effective transport range. Figure 10.3 provides a stylised spatial representation of the new situation. Consumers now had choices, while sellers faced increased competition from other towns.

Figure 10.3 The effect of better customer transport

Note: Towns denoted by squares, with the market size represented by the surrounding circles.

Source: BITRE's abstract representation of town customer base areas.

The change in customer base areas described in Figures 10.1 and 10.3 had implications for suppliers also. The fundamental impact was the increase in a firm's market size, but there were differing ongoing implications for retailers, depending on the size of their existing customer base and the ease with which they could access new customers.

Like all businesses, retailers and service providers have a mix of fixed and variable costs. A large proportion of the variable costs are the wholesale price of their goods and their freight costs. Fixed costs include rent, wages, advertising, phone, electricity etc. To be profitable in the long term, the supplier must charge (on average) a margin above the wholesale cost of goods sufficient to cover the fixed costs of operation. If the turnover is relatively high, this margin can be relatively small. However if turnover is low, the amount that the retailer needs to add to each item to meet the fixed cost has to increase. Prices must be higher in order for the business to break even. For small businesses with a single operator there is often a minimum cost structure. Most retail businesses in Australian small towns of 1911 operated as a single operator, but the relatively high costs this involved would, in the absence of competition, have been passed on to customers. Businesses in larger towns are likely to have operated on a larger scale consistent with a larger customer base and/or having already been subject to competition from other businesses in the town. In either case they would have had the capacity for, or have already been, offering lower prices than their small town counterparts.

As consumer transport options increased through the twentieth century, competition increased—not because there were more retailers overall, but because consumers had access to retailers in more than one town. The level of market power of each retailer in their own town was reduced but the size of their potential market increased if they could attract customers from other towns. Over time they became part of a larger regional marketplace

with competitors that, like them, had established customer bases in their own town—a form of imperfect competition. Each retailer's customer base was influenced by loyalty, convenience and home town preference. The cost of travel to other locations gave an advantage to local shops. Customers between towns would weigh the relative costs of travel to alternate centres. The situation slowly changed from one of monopoly constrained by potential entrants to one of increasing, but still imperfect, competition.

The simple fixed and variable cost model of retail business shows the basis for different prices in regions supporting towns of different sizes. Larger towns with larger numbers of customers tended to have retailers with (at least the need for) lower margins than those in small towns. This was a product of their location near a larger number of established customers which enhanced their ability to achieve economies of scale. They had the capacity to offer lower prices (and/or make a larger profit) and had a clear competitive edge over small town rivals. This competitive advantage allowed them to attract more consumers, raising the firm's turnover and generating further economies of scale that lowered costs. In contrast, a firm in a small town found their customer based deteriorated but fixed costs remained the same.

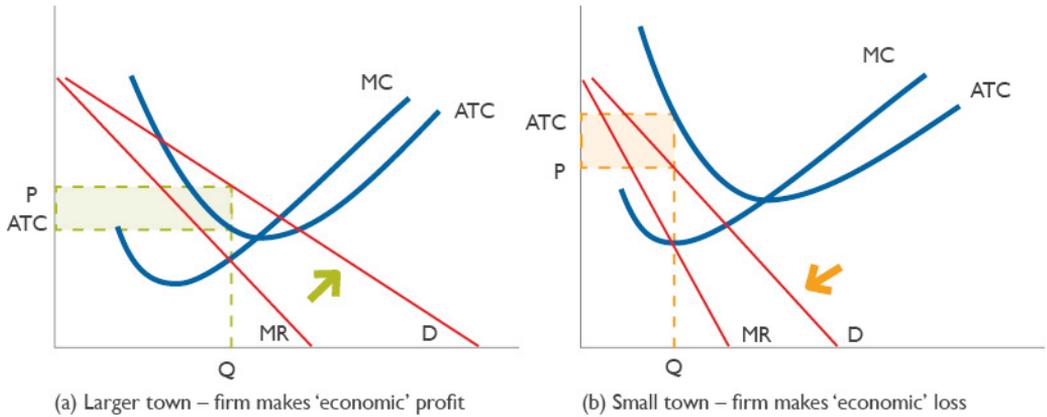
Figure 10.4 provides a graphical illustration of the initial change brought about by the new ability of consumers to move across what were formerly separate markets. A firm positioned in a larger town (market) experiences an increase in demand (the demand and marginal revenue curves move to the right⁴¹) because people have been able to access their products more easily. This leads to an increase in sales and the level of extra-ordinary profit.

In contrast, the small town firm is experiencing a loss of demand (demand and marginal revenue shift to the left) because their customers are able to access the larger centre (with cheaper and a greater variety of goods). The shift in demand will reduce the extra-ordinary profit and may result in a loss to the firm.

Ultimately firms can continue to trade only if there is sufficient demand to cover costs. In the short run, sunk assets and the ability to defer maintenance and capital replacement costs may complicate the issue. However in the long run there must be enough demand to cover the cost of providing the service. Many small town firms were in this position.

⁴¹ The graphs show a shift of the demand and marginal revenue curves. This is consistent with an even distribution of customer preferences across all locations. While in reality the assumption is unlikely to be universally held, it is probably the most likely outcome. In any case the validity of the assumption makes no material difference to the outcome of analysis.

Figure 10.4 Demand swings as markets are combined



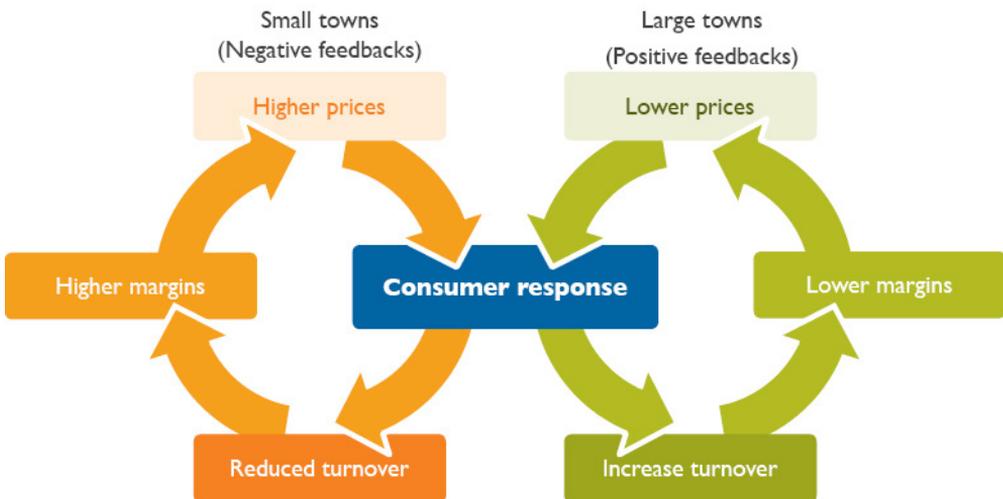
Note: D – Demand curve; P – Price in the market; MR – Marginal revenue; MC – Marginal cost; Q – Quantity in the market; and ATC – Average Total Costs.

Source: BITRE’s representation of monopolistic competition.

The longer-term impact is pressure for the exit of firms in smaller towns and growth in the size and number of firms in larger centres where established firms are generating above normal profits. This is likely to lead to competition between like sellers in larger towns and even more competitive prices at that location. This will continue until the non-normal profits have dissipated with the entry of new firms. However the new, lower price situation is also likely to reduce the number of small town businesses and increase the number and/or scale of businesses in larger towns.

Essentially, a cumulative causation process is generated from the initial stimulus, as increasing competition reinforces positive and negative feedbacks (see Figure 10.5). Other factors being equal, the result is a virtuous circle in the larger town and a corresponding vicious circle in the smaller one.

Figure 10.5 Negative and positive feedback loops for businesses located in adjacent small and large towns



Source: BITRE’s abstract representation of market activity.

For the small town business, the best feasible survival strategy is to increase mark-ups (and so prices) on its remaining sales in the hope that sufficient loyal customers will remain to maintain the business. This generates a negative loop for the small town producer—resulting in a vicious circle of higher margins, higher prices, reduced turnover and further reductions in market size and competitive advantage. The alternative—trying to maintain (or increase) turnover by reducing prices—may increase the number of customers and sales, but it will further reduce profitability, as the firm moves from the profit maximising/loss minimising position in Figure 10.4b. Unless there is a change in overall demand, this is unlikely to be successful. However, small town stores may be able to survive if there remains sufficient demand even at higher prices so that at least a normal profit can be made.

While small town businesses had a poor prognosis as regional competition increased, those in the larger centres did not necessarily reap large rewards in the long term. In reality, relatively small and distant competitors in the small towns were often replaced by competitors in the larger centres—and in many instances over time, the new higher customer base in the larger centres attracted large chain stores. Having won the battle for customers with the small towns, many independent retailers lost the war in the larger regional centres.

This analysis only looks at competition between like firms in small and large towns and only examines the impacts of scale and market size on a firm to firm basis. In practice there were many instances of small firms that were intrinsically more efficient and competitive than their larger-town rivals. Theoretically, these firms could have out-competed their opposition and over time gained the benefits of positive feedback in the market. However, as we see in the next section, in reality these firms had the odds stacked heavily against them.

Competition between towns

The theory presented above has treated each firm as a single competitor in its own industry. Bakers would compete with bakers in neighbouring towns, butchers with butchers and so on. However, common sense and the success of large integrated shopping malls tell us that consumers do not base their decisions on where to shop on the basis of a single item. This is especially true if travel costs remain an important consideration. There is an economic incentive for consumers to keep travel to a minimum by doing as much shopping as possible in a single trip. This propensity for consumers to aggregate their shopping into a small number of trips complicated the issue for sellers in small and large towns.

The ‘one big shop’ approach

While better personal transport with the motor car reduced the costs of travel significantly, it did not remove them altogether and the cost of accessing day to day goods and services remained (and remains) a significant factor in consumer behaviour. A study undertaken by BITRE in 2006 into regional retail pricing involved speaking with shopkeepers and consumers in 131 towns and cities across Australia (BITRE 2008 unpublished). The BITRE officers involved collected price data on a wide range of consumer items and spoke to many consumers and shopkeepers. They identified a number of consumer strategies aimed at accessing the lower prices and wider choices offered in larger centres. These revolved around reducing the number of trips and combining them with other activities. As can be seen in Box 10.1, these strategies have their metropolitan equivalents and presumably many of them pre-dated the motor car.

Box 10.1 Consumers coping with distance and travel costs—the ‘one big shop’ approach

The ‘one big shop’ approach seeks to spread travel costs over as many items as possible by maximising the benefits of shopping in each trip. The Australian Competition and Consumer Commission’s consumer grocery study (ACCC 2008) found that of people that travelled less than 1 km to their regular supermarket, 35 per cent undertook several small shops per week. Conversely, of those that lived 10 km or more from their regular supermarket only 10 per cent undertook small shops, while 54 per cent only shopped once a week. The ‘one big shop’ strategy is even more prevalent in remote areas where rural households are geared to storing groceries at home for extended periods (using cool pantries, freezers etc). The effect of this strategy is to distribute the travel and time costs over a larger number of items thereby reducing the overall costs.

A related strategy is for consumers to link everyday shopping trips with trips undertaken for other purposes. For rural people this may mean combining shopping with trips to the doctor or to a livestock sale, social events or a trip for paid work. This practice over time encouraged the centralisation of industry services hand in hand with that of consumer services. Similarly today, rural or peri-urban people commuting to larger centres naturally use these centres to access goods and services.

The ‘one big shop’ approach shows that consumers are aware of the full cost of purchases and consider travel costs and time as well as the purchase price.

While the ‘one big shop’ type strategies are widely used by consumers as they lower the cost of transport, they also affect the way consumers go about choosing where to shop. In particular, the consumer no longer thinks in terms of choosing between individual stores for particular items, but rather in terms of the most attractive group of stores that could meet their needs. This means that effectively consumers are choosing between the whole retail centres of competing towns rather than just between individual stores. In making the decision where to shop, the time and cost of travel are still important, as are the combined prices of the package of goods to be bought. However other factors also become important—the range of goods available, overall convenience, other consumer friendly services (for example air conditioning and coffee shops), even entertainment and the existence of social opportunities contribute to the ‘whole shopping experience’. The cumulative impact of these factors on the consumer provides positive and negative incentives, which culminate in a single decision regarding which location (town) best meets a consumer’s needs for their ‘one big shop’.

The new business environment

The effect of this strategy on the behaviour of retailers has been profound. When towns were relatively isolated, they could be largely commercially indifferent to the activities of neighbouring shops in their own town. If they considered them at all in a business sense it is likely that they regarded them as real or potential competitors. However with the regionalisation of the retail market, retailing neighbours became potential partners who could assist (or not) in attracting customers to their town. Increasingly the important consideration in competition became town against town rather than firm against firm.

This had important implications for relationships between businesses. Within any town, the relationships had always been relatively complex. Some businesses were similar and were direct or partial competitors—for example two bakers in the same town or a baker and supermarket. Retailers of non-competing products did not compete for customers, but did compete for staff and for premises.

With the regionalisation of the market, these aspects of the relationships remained, but competing businesses now had a common interest in attracting customers to their town. This common interest existed even between direct competitors since the initial decision of a consumer is not to choose between them, but to choose the location in which to shop. There was a common interest in getting the consumer to choose the group of businesses in your town over the groups of businesses in nearby towns.

This led to a range of arrangements and strategies from businesses and towns, often through their local government, that were cooperative in nature rather than competitive. Such things as to:

- Undertake joint (town based) advertising and promotion as a place to live and a place to shop
- Design and implement tourism and regional development strategies based on their town
- Actively seek new regional businesses and industries in town to increase the attractiveness of the town and to increase employment and the local population
- Support and sponsor local organisations (sporting, social and charitable clubs)
- Jointly support infrastructure and events to attract customers from outside (saleyards, parks, halls, sporting fields and social facilities, festivals etc).

This lent a renewed common focus and incentive for town-based organisations such as local Chambers of Commerce and industry. They were (and are), however, often unstable as the need for common external purpose could be undermined by the need for local competition. While these activities had common benefit to businesses in town, they shared attributes of public goods in that the benefits were non-excludable. Therefore there was a temptation for businesses to 'free ride' on the efforts of their neighbours.

The impact on firm to firm competition

The increased competition between like businesses that occurred with the emergence of regional markets has already been outlined. Theoretically, businesses in larger towns would have had a price advantage over those in small towns and could out-compete them. In practice, it is unlikely that it ever happened that way. The price differentials involved and the quantities required by individual consumers would, for most items, never justify separate trips. It would simply be too costly in petrol and time for consumers to travel to the best value baker, the lowest priced butcher or their preferred supermarket if these were located in separate towns.

So what was the real effect of competition between like businesses in different towns? It was their contribution to consumer decisions about which town consumers choose to do their shopping. In price terms, we can imagine each business within a town making a relatively small contribution to the cost of one part of the basket of goods and services that the consumer wants. However, all other things being equal, the consumer is more interested in the total

cost of the package and availability. So, if there is no competition from like sellers within a town, there is an incentive for each of the single providers of goods to push their prices up to maximise their profits. This is unlikely to reduce their turnover very much if their fellow retailers in town continue to make the town an attractive place for consumers. That is, there is a capacity for firms to 'free ride' on their fellow storekeepers.

An effective antidote to this behaviour is competition within towns—which is more likely in larger towns than smaller ones. The successful towns will be those that are large enough to have competition between sellers across a range of common goods.

Implications of competition between towns

The regional market is obviously a form of competition, albeit a different one to that described in classical theory and the firm to firm model described above. Its key element is the single consumer decision to choose a centre to shop in, prior to making the trip to the shops. Given this complication, there are economic questions:

- What does this mean for the location decisions of consumers and businesses?
- Does it lead to an economically efficient outcome?
- What are the equity implications?

To answer the first of these questions, Tables 10.1 and 10.2 set out some of the issues that a prospective consumer and business might take into account when assessing a new location. These include some factors that may impact on the consumer choice of centre (Table 10.1) as well as those that impact on the businesses costs and returns (Table 10.2).

Table 10.1 Issues relating to shopping location choice for consumers

Issue	Large or small town favoured
Lower consumer travel costs	Large town (for largest group of consumers)
Large number of regionally competitive shops (anchor stores)	Large town
Greater diversity of goods and services offered by bigger and more shops	Large town
Local competition between businesses	Large town
Attractive facilities to draw customers	Large town (likely)
Attractive specialty shop	Unknown
Overcrowding/parking issues	Small town

Source: BITRE analysis.

Table 10.1 suggests that consumers are likely to choose the larger towns over the smaller ones. Larger towns mean more potential consumers will have low travel costs in terms of both time and dollars. They are more likely to have large shops to attract customers with wider ranges and lower prices. This will be supplemented by more small shop services, such as coffee shops, entertainment and the like. Some shops are likely to face competition from other like traders in their town, leading to lower prices and an added attractiveness to consumers of the town as a whole. Larger towns are likely to have other facilities (libraries, parks, government offices and services etc) that are attractive to customers. Attractive specialty shops may be located

in large or small towns. Small towns are, however, more likely to be parking friendly. This is not prescriptive, but rather suggests that on the balance of probabilities, consumers are more likely to be drawn to larger towns.

Table 10.2 looks at the options facing a prospective retailer or other service provider seeking a profitable location. As a key criterion is the prospect of a large number of potential customers, many of the issues reflect those of Table 10.1. The first three points are of this type and suggest further positive feedback as more consumers encourage more businesses and so on. In contrast, the prospective firm may be swayed by the likely lower costs and less direct competition in smaller towns and sometimes the more attractive parking and congestion environment. However on balance again it would be likely that in most cases businesses would opt for a larger town.

Table 10.2 Issues relating to location choice for business

Issue	Large or small town favoured
Larger number of potential consumers close to business	Large town
Local competition for consumers between non-rival businesses	Large town
Regionally competitive neighbouring shops	Large town
Local competition from rival businesses	Small town
Rent and labour costs	Small town
Overcrowding/parking issues	Small town
Cooperative behaviour between businesses	Unknown

Source: BITRE analysis.

The factors considered by the prospective retailer or service provider do not guarantee that large towns will be favoured, but in all likelihood, they will. The situation is more complex when businesses are already established in small towns. The ultimate winners over time will be the result of the competition for customers. It would seem that the large towns have the odds in their favour, in accordance with Figure 10.5, although as Box 10.2 shows, other factors also play their role.

Box 10.2 **New industries and transport hubs**

The relevant differences in this analysis are between small and large towns. This is a core distinction since it reflects the difference in the size of the customer base and therefore the capacity of retailers and towns to compete. However, it is not the only factor. Other locational factors such as the development of another industry or a location at regional road junctions have the capacity to overcome initial town size in determining the final outcome.

The emergence of a new or expanded industry in a town has the capacity to increase the number of potential customers and therefore change significantly the operating environment for retailers in that town. Therefore what may have been described as a small town quickly adopts the characteristics of a larger one.

The impact of location with respect to transport networks is more subtle. The effect of being located at a key junction or junctions of major roads is to effectively increase the potential number of regional customers that can be accessed at a reasonable cost. At such points, even what was initially a relatively small town had the capacity to access a greater number of customers than its neighbours as people gained access to cars. Such towns could also benefit from passing trade—especially those on major highways. A good example of the growth of a strategically placed centre compared to its neighbours is the emergence of Horsham as described in Chapter 5.

Figure 10.6 presents the cumulative process of people choosing where to shop by considering prices and variety and finding better options in larger centres. This raises the market base of the larger centre, providing a competitive advantage for all the firms by allowing lower prices and promoting increased variety. Conversely, small towns face lower turnover that raises prices and lowers variety for all stores. Over time this leads to a further concentration of activity in fewer, larger centres. The remaining small towns have a much diminished role, generally providing basic services to local areas on a small scale. Typically this includes small supermarkets, personal services, cafes and hotels/clubs acting as local social centres.

Figure 10.6 A consumer's decision of where to shop – town responses



Source: BITRE's abstract representation of market activity.

While in theory a more efficient firm in a small town could draw customers to it on its own terms, the expanded model in Figure 10.5 suggests that this is more difficult and unlikely. When customers decide where to shop based on their preferences across a number of goods, it is much more difficult for a single firm to influence the customer's choice of shopping centre.

Over time, this will ensure that firms will also base their decision-making on where the customers are, and so they too will tend to locate in larger towns. This suggests that the locational decisions of the store owners are likely to drive toward an economically efficient outcome based on larger centres.

Chain stores

To this point we have looked at the decisions of firms as if they were all single site operations with local owners. While this may have been the dominant firm type in 1911, in modern Australia this model has been replaced with chain stores with branches in multiple towns and big city shopping centres. These usually have multiple outlets but common supply chains, operational models and advertising and (often) prices (BITRE 2008 unpublished). These stores are considered further in the next section, but even a casual observation reveals that they are powerful competitors and their presence in a town is often an indicator of a successful retailing centre.

The rise of the chain store had a number of effects on the spatial organisation of towns. The size of operations in chain stores is larger and they are not constrained by existing infrastructure. Therefore we would expect a more dispassionate approach to location decisions and a more informed analysis of the overall commercial situation, including the factors covered above. They also have good access to the latest professional expertise—some have international as well as national experience to draw on. This suggests that they are more likely to favour larger centres or those with better growth prospects—as they have. The end result has been to confirm the dominance of larger centres over small ones as key retailing hubs.

Further flow-on effects

The analysis above suggests that retail and service provision can drive the growth of business differentially in towns, with larger towns benefiting. One of the longer-term impacts is that this business growth increases employment in the town which in the normal course of events leads to an increase in the number of people living in the town. That is, there is a 'multiplier-like' effect. This applies even if employees choose not to live in the town itself, since travel to the town for their jobs means they have easy (cheap) access to competitive shops. So, even if new employees choose to live in a small town close by, the effects will be to grow business in the larger centre. The same sort of effect will occur where a larger centre is able to attract people to the town for other purposes. In this context having educational facilities or key industrial infrastructure (livestock saleyards or machinery maintenance yards) provides a distinct advantage to a town's retailers.

Evidence for this model

The 'model' of the processes above illustrates that relatively simple and well-understood theories of firm behaviour provide a persuasive mechanism for the concentration of retail

activity in Australian towns. This, in turn, provides a rationale for the continued expansion of larger towns into regional centres and cities. However, the theoretical narrative has to be examined critically in the context of history before it is accepted. Unfortunately, to date there has been limited empirical data with which to test the narrative and in particular to allow comparisons with the descriptions implicit or explicitly associated with the spatially-based theories outlined in Chapter 2. The processes outlined in this chapter accord well with the historical record and are consistent with the basic rationale for towns (to provide goods and services for local communities).

While historically there has been limited empirical evidence, a recent BITRE survey and analysis of the spatial distribution of the retail sector in regional Australia provides insight into some of these changes that have been occurring at a local level. The following section sets out the implications of this work for our understanding of the processes at work in the development of towns in regional Australia. In particular, it shows how prices and availability of basic retail items are influenced by town size and the effective level of competition from other centres. Appendix B provides a detailed description of the survey and the technical issues surrounding the analysis.

BITRE's study of regional retailing

In 2005 and 2006, BITRE staff collected price data from 131 Australian towns and cities for over 500 goods and services representing typical household expenditure, including (in part) groceries, fuel, other retail and housing. These locations are shown in Map 10.1.

Map 10.1 Towns sampled in the cost of living study



Source: BITRE.

The study measured the differences in prices across Australia to identify the underlying drivers of price difference and to observe and understand the consumer and producer behavioural responses.

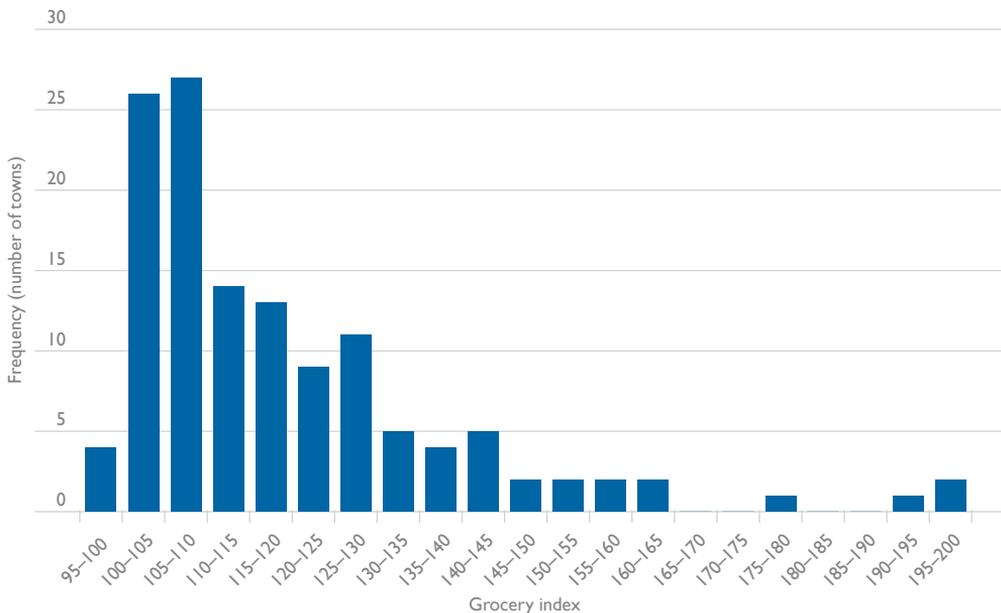
From the data, BITRE developed town-based and individual store-based indices for grocery prices. Indices were created for other retail groupings (for instance, electrical and hardware) on a town basis. All data was brought to June 2006 prices using the Consumer Price Index (CPI).

Based on earlier studies and economic theory, BITRE hypothesised that the factors which would have the biggest effect on variation in retail prices (and grocery prices in particular) would be market size (population), income, distance and competition. It quickly became apparent that chain stores provided consistently lower prices and that the presence of a major grocery chain store affected the pattern of spatial pricing.

Grocery results

The base (100) for grocery items included in the index was created by a simple average of the cheapest observation for each item in each capital city. The grocery indices for the 131 towns and cities surveyed range from 95.4 to 198.0, with an average of 119.4. Almost two thirds of the towns have prices within 20 per cent of the capital city average. Figure 10.7 illustrates this distribution.

Figure 10.7 Frequency distribution of town grocery indices



Note: The base (100) is the unweighted average of the cheapest price observation in each capital city for each item.

Source: BITRE spatial price database.

The analysis found that prices in the two major chains (Coles and Woolworths/Safeway) are relatively similar, and likewise within each chain they show only modest variation, except in a

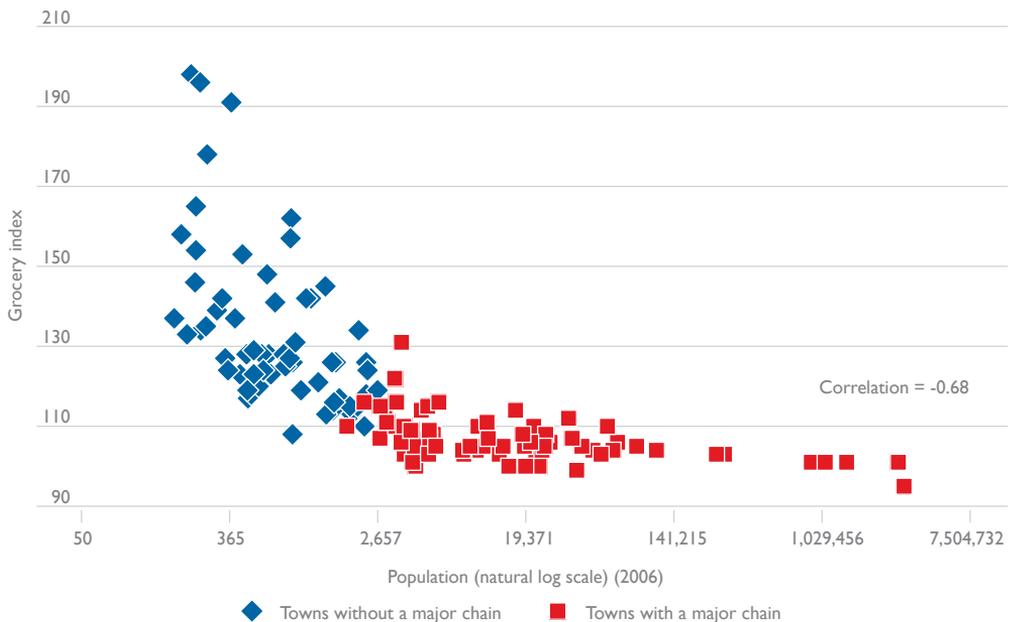
few very remote stores. Towns with no major chains tend to have more expensive groceries. There is also more variability in the independent store pricing than the chain store pricing.

The community stores in the seven Indigenous communities visited all had high prices and low availability.

Drivers of spatial price variation

Population is closely linked to the price of groceries, but the relationship is not a simple, linear one (Figure 10.8). Price tends to decrease as population rises to a point. However regardless of whether a town has a population of 10 000 or 100 000, prices tend to be very similar. Whether this flattening out of the relationship is due to population or the presence of chain stores is not clearly apparent, since chain stores are typically present in towns with populations greater than 3000 to 4000. However there is a strong suggestion that the presence of a chain store puts a base under the price of groceries.

Figure 10.8 Town grocery index and population (log scale)



Note: The base (100) is the unweighted average of the cheapest price observation in each capital city for each item.

The log of population axis has been altered to reflect population size to enable a reader the ability to gauge the size of a town relative to the grocery index.

Source: BITRE spatial price database, ABS 2006 Census of Population and Housing (urban centres and localities population).

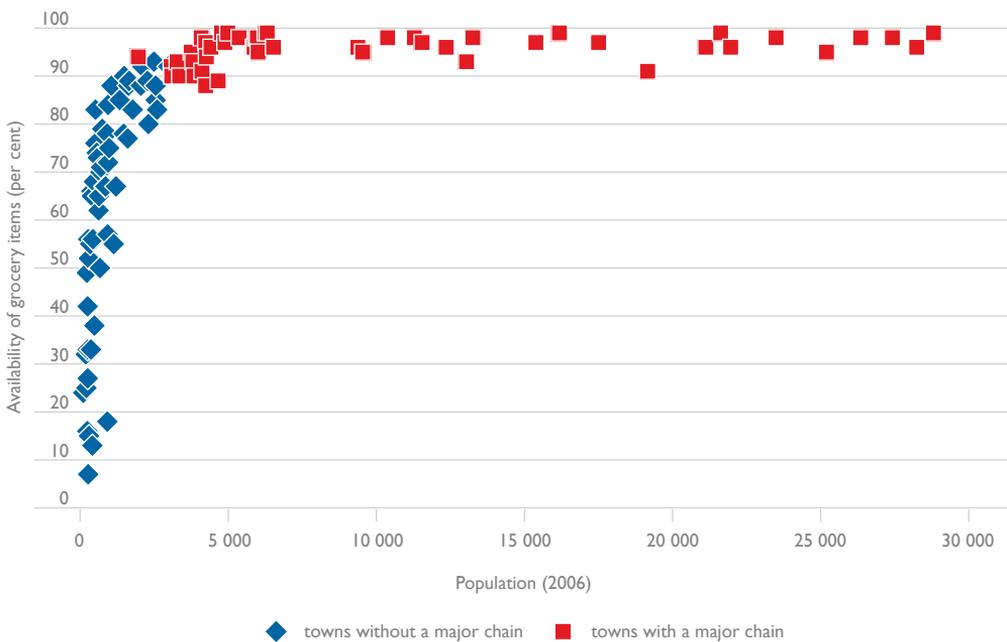
Other factors were also considered. Various distance measurements were correlated with the grocery index. Price tended to increase with distance from the capital city, distance from towns of over 20 000 people, distance from towns of over 5000 people, and distance from towns with a major chain store. Price also increased with remoteness as measured using GISCA's Accessibility/Remoteness Index of Australia (ARIA+) remoteness indicator. This is calculated using both distance and population elements, using distance by road to various sizes of service centres (GISCA 2004).

Income was not found to have a significant relationship with prices, either in terms of the total income of all people in an area or their average income. Population was a much better indicator of market size, suggesting that turnover was a key parameter and that the quantity of groceries consumed did not vary much with income (although the quality might).

Availability of grocery items was inversely related to price, with low-price areas having a high availability of grocery items, and vice versa. It was to be expected that towns with lower populations also have lower availability of goods since they had smaller stores and, with lower turnover, were more subject to problems with ‘use by’ dating. In practice, the survey team noted that this generally meant that there were fewer choice options in smaller towns (a limited number of cheese choices for example).

Figure 10.9 plots population against the availability of groceries in towns. If the log scale were applied to Figure 10.9, it would be a reflection of Figure 10.8, except that instead of prices rising when population falls below 5000 people, availability falls. There is a particular drop in the availability of groceries in towns below around 1000 people.

Figure 10.9 Availability of grocery items and population



Source: BITRE spatial price database, ABS 2006 Census of Population and Housing (UCL population).

The correlation of higher prices with lower populations is absolutely consistent with the processes spelt out earlier in this chapter. The order of difference in prices (from Figure 10.8, 20 to 25 per cent would seem common) suggests a powerful motivator for shoppers to access a larger centre for their groceries. The ability to access a wider range of goods is a welcome bonus for those that wish to make the change.

Spatial modelling of grocery prices

Using the data from the survey, BITRE created reduced form regression models based on the statistically significant factors influencing spatial price differences. These provided a high degree of explanatory power while using a small number of variables.

Two models are shown in Table 10.3—an explanatory model (R-squared 0.80) and a predictive model (0.77). The latter was produced to allow prediction given that one of the significant explanatory variables in the full model (the presence of local competition within a town) was known in surveyed towns but is unknown for most other towns. These robust regression models were computed using SAS. A discussion of robust standard errors is presented in Appendix C.

Table 10.3 Grocery price index regression results

Variables	Model 1 (explanatory)	Model 2 (predictive)
Intercept	127.55*** (2.85)	132.46*** (3.04)
Log of population	-2.12*** (0.29)	-2.59*** (0.32)
Distance to nearest Woolworth or Coles store		0.07*** (0.006)
Community store	66.14*** (3.72)	31.18*** (3.45)
Local competition	7.97*** (3.52)	–
Number of observations	129	129
Method	LTS	LTS
Number of squares minimised	98	98
R – Squared	0.80	0.77

Note: Statistical significance at the 10, 5, and 1 per cent levels is denoted by *, **, and *** respectively. Standard errors are in parentheses and are robust. Two observations (towns) were excluded due to insufficient data.

Source: BITRE spatial price database, BITRE derived data.

The model shows that the important factors in grocery price variation are population, the distance from a major chain grocery store (Woolworths or Coles), whether or not the location had a local competitor and if the town was serviced by an Indigenous community store (i.e., was a discrete Indigenous community). These four factors explain 80 per cent of the variation in grocery prices across Australia. All factors are significant at the 1 per cent level⁴². The predictive model, which does not consider local competition, still explains 77 per cent of the variation.

Figure 10.10 provides a visual representation of how the models work. For towns with major grocery chains (Woolworths or Coles), the estimated index decreases with log of population. For towns with no major grocery chains, the estimated index decreases with log of population and increases with distance from the nearest town with a Woolworths or Coles. It also increases

⁴² The estimates of the models can be written as:

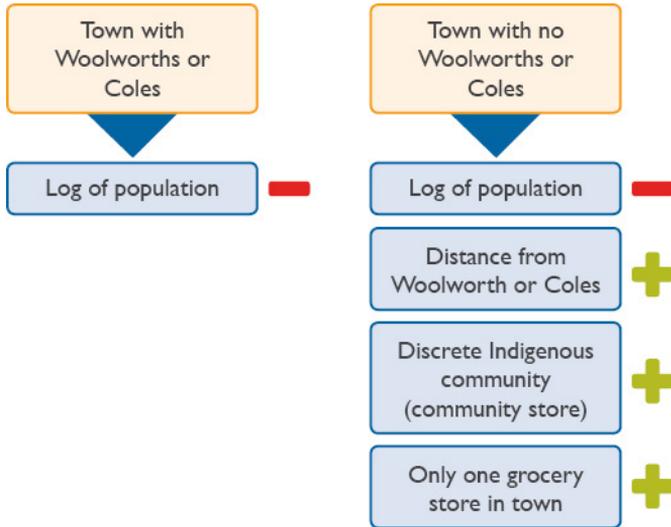
$$\text{Explanatory grocery index} = 127.55 - 2.12 (\text{log of population}) + 0.04 (\text{distance to nearest Woolworths or Coles store}) + 66.14 (\text{community store dummy}) + 7.97 (\text{no local competition dummy})$$

$$\text{Predictive grocery index} = 132.46 - 2.59 (\text{log of population}) + 0.07 (\text{distance to nearest Woolworths or Coles store}) + 31.18 (\text{community store dummy})$$

For instance, a town with a logged population of 7 (approximately 1100 people), 100km from a Coles or Woolworths, with a community store would have a synthetic index of 152.5.

if there is only one grocery store in town and even more if the town is a discrete Indigenous community, which is likely due to factors associated with extreme remoteness.

Figure 10.10 How the model works



Source: BITRE analysis.

In the explanatory model, increasing the log of population decreases the estimated index. The economic rationale for population reducing the cost of groceries is that higher population allows higher turnover. This reduces the per-unit mark-up required to cover fixed costs. Higher population also increases the potential for other stores to enter the market, resulting in increased competition and less opportunity for monopoly profits. Additionally, population above approximately 3000 people means that a chain store is likely to be present. As noted earlier, chain store pricing tends to be relatively low and fairly uniform across stores. This data directly supports our earlier contention of the relative advantages of stores in larger towns compared to their smaller town rivals.

A greater distance from a major chain store increases the price index. The fact that a distance variable is significant reflects the importance of consumer access to competition. It also confirms that consumers consider the total cost of shopping—including travel and transaction costs. Hence, if the total cost is higher for the regional alternative, people are willing to pay higher prices locally but potentially a lower total cost. Again this supports the model outlined earlier in the chapter regarding competition between towns.

It is entirely expected that the absence of a competitor in a town increases the price level significantly. This is anticipated in the competition model and provides evidence of the presence of market power in smaller towns.

Being an Indigenous community with a community store increases prices. The community store variable is an indicator of extreme remoteness. The Indigenous communities in the model were distant from other towns, often accessed by dirt roads, and generally almost no threat of entry by other stores. It should also be noted that many in these communities have limited access to transport (some areas are often cut off completely in 'the wet'). Again this emphasises the

price impact of the lack of competition in small communities, even where stores are not run with a strictly profit-maximising objective.

Overall, the model tends to emphasise factors linked to the demand for groceries and consumer reactions. This downplays the importance of supply factors (such as transport) in pricing. While these factors are no doubt reflected in long-term profitability and viability, the models suggest that the price levels of those stores that do exist reflect competition and market power impacts. This is highly consistent with our view of the increased regional competition model of Australia's small towns in the face of improved consumer transport.

Because Coles and Woolworths tend to price fairly uniformly across stores, the towns where a major chain is present likewise tend to have uniformly lower prices, regardless of remoteness. The synthetic estimates (Map 10.2) based on the predictive model reflect this with relatively low prices in remote but well-populated centres like Broken Hill (NSW), Mount Isa (QLD) and Broome (WA). This means that people in small, remote towns that use these places as service centres benefit from lower prices.

Prices also tend to be cheaper in coastal areas, reflecting the more populous nature of these areas, while the sparse, less populated inland have higher prices, with the notable exception of the larger service centres discussed above.

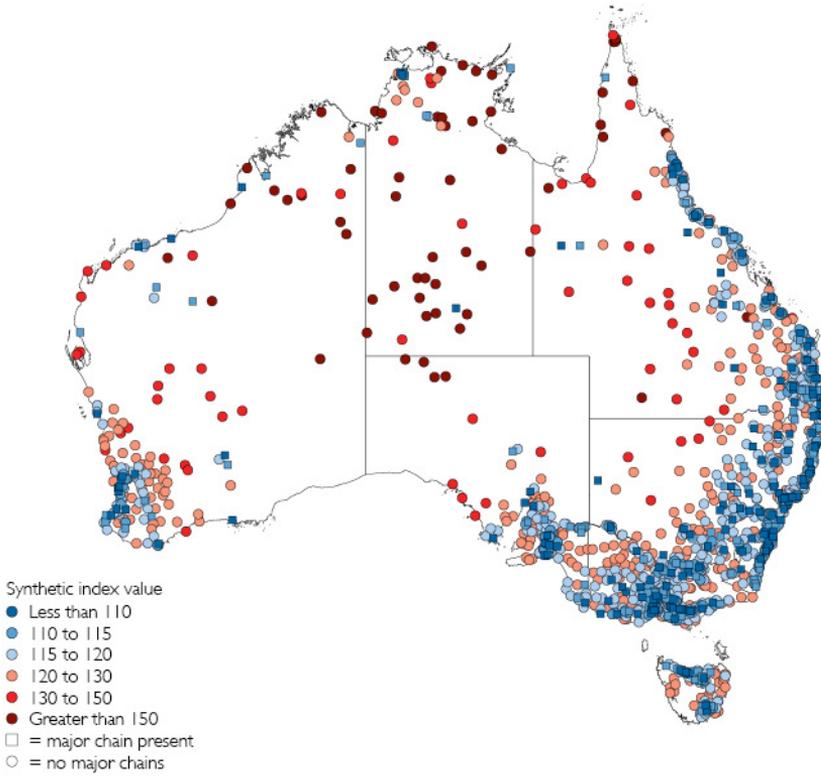
Population and price linkages

A comparison of Map 10.2 with Map 10.3 (a reproduction of Map 4.9) visually confirms the very strong links between population and lower prices. It is quite sensible of course to argue that it is the nature of this link that is the key and that correlation does not equate to causation. This suggests there are competing explanations for the link. Likely explanations could be:

1. Population causes lower prices—a higher population allows retailers to lower costs through economies of scale and higher turnovers while being subject to local competition; alternatively
2. Lower prices and greater availability attract greater population—people choose where to live based on the price differentials shown on Map 10.2 which leads to increased population in low price regions.

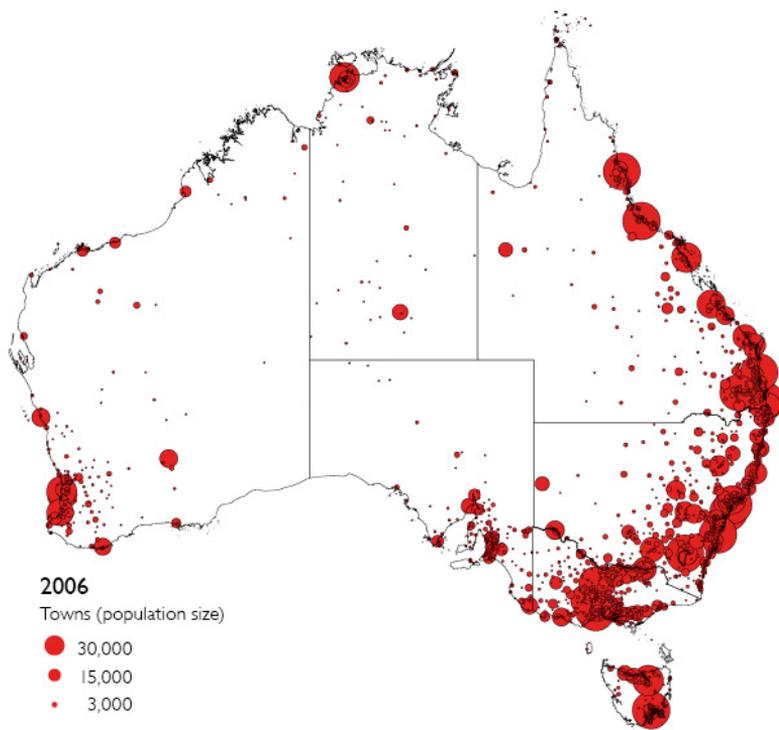
In practice, both these scenarios are true and work together. While we are talking about where people live rather than where they shop, the arguments set out in the first part of this chapter and summarised in Figure 10.6 encapsulate many of the incentives and processes involved. These arguments incorporate the incentives and actions of both producers and consumers as they play out over time. They provide a persuasive explanation of the powerful forces needed to drive the transition from the 'flat' 1911 spatial pattern to the ubiquitous centralisation of 2006. They also explain the inextricable linking of population and price.

Map 10.2 Synthetic estimates of grocery prices 2006, Australia



Note: The base (100) is the unweighted average of the cheapest price observation in each capital city for each item.
Source: BITRE projections based on modelling of spatial price database data.

Map 10.3 Australian town populations at the 2006 Census



Note: The five major capital cities have been excluded.

Source: BITRE analysis of the ABS 2006 Census.

Variations in grocery sub-categories

From the BITRE survey, indices were also calculated for sub-categories of groceries in stores. These included staple items of bread and milk, fresh groceries, dry packaged food, frozen food and non-food groceries. Table 10.4 sets out summary statistics for these indices. Histograms are provided in Appendix D. Fresh groceries showed a high degree of variation, while dry packaged food showed more price variation in some categories (notably sugar and flour), and less in others. Frozen food was comparable to the grocery index as a whole. Non-food groceries tended to have less variation than average.

Table 10.4 Store-based summary statistics for grocery sub-categories

Category	Mean	Minimum	Maximum	Range	Standard deviation
Grocery index	122.2	104.6	198.0	93.5	15.7
Bread	135.4	77.3	262.3	185.0	33.2
Fresh milk	114.2	77.2	246.5	169.3	25.1
Fresh cream	126.1	84.5	236.0	151.5	29.0
Fresh fruit	129.7	38.3	210.4	172.1	26.4
Fresh vegetables	138.9	52.9	449.2	396.3	31.6
Poultry	124.6	79.4	226.3	146.9	22.5
Fresh eggs	118.6	50.7	196.1	145.4	22.9
Cereals and pasta	117.4	97.4	247.2	149.7	19.5
Tea and coffee	118.5	95.1	183.5	88.4	14.6
Sugar	123.6	79.4	265.3	185.9	30.6
Flour	124.6	82.2	266.6	184.3	26.9
Frozen vegetables	116.6	93.2	195.3	102.0	17.8
Cigarettes	108.7	79.1	129.1	50.0	6.3
Toiletries and cosmetics	117.3	87.8	191.3	103.5	15.2
Cleaners, paper products and food wraps	116.0	92.9	187.6	94.7	15.9

Source: BITRE spatial price database.

This increased spatial variation in prices for fresh groceries is consistent with the notion that higher prices may be charged for these goods in isolated areas given the reduced opportunities for consumers to access timely alternate supplies from other sources in larger centres. Retailers in smaller towns increase their margins where they can (in fresh food) while keeping prices low for items where consumers can store items if they purchase them in larger towns.

Other goods and services

The prices of other (non-grocery) retail goods which did not have a strong local service component were grouped into the categories of household items, hardware, electrical, and takeaway alcohol on a town by town basis. The indices for these groups were closely correlated to the grocery index, although some of these categories have wider price variation than groceries. This means that the pattern of spatial price variation for groceries also tends

to hold for a number of other retail categories. The parameters in the grocery model explain between 45 and 55 per cent of variation within these categories.

On the other hand, local services (such as sporting fees and cinema tickets) and those goods which have a high local service component (such as bar and restaurant and cafe food prices) are not correlated with the grocery index. Table 10.5 summarises some statistics for all of the categories.

There are two points here. Firstly the correlation of household items, hardware, electrical and takeaway alcohol suggest that the spatial price patterns for groceries are by and large repeated for these items thereby reinforcing the grocery impact. Graphs plotting prices of these items against population are included in Appendix D.

The second issue is the complete lack of correlation with prices for local services and bar prices, suggesting that goods with a high local labour component do not follow the normal patterns with respect to population, distance and remoteness (again, see Appendix D). This could reflect a number of things:

- the inability of consumers to store or access these items in a larger centre without making a personal trip (thereby incurring the full trip cost for a single item, negating the 'one big shop' benefits in a similar way to the fresh food argument above),
- the preference for people to engage in social activities close to where they live, and
- the lower rents (and sometimes labour costs) typically found in small towns.

Table 10.5 Town based summary statistics for other goods and services

Index	Mean	Min	Max	Range	Std Dev	Correlation (groceries)	Correlation (ARIA+)
Groceries	119.4	95.4	198.0	102.6	19.7	–	0.76
Household items	160.3	86.6	353.9	267.3	56.7	0.72	0.66
Hardware	129.4	93.2	233.6	140.4	22.0	0.71	0.63
Electrical	153.5	90.8	351.4	260.6	55.9	0.75	0.59
Takeaway alcohol	114.1	91.2	179.0	87.8	15.2	0.75	0.62
Bar prices	89.8	61.9	122.0	60.1	13.0	–0.10	0.07
Local services	99.4	66.4	151.9	85.5	12.1	0.04	0.10

Note: The base (100) is the unweighted average of the cheapest price observation in each capital city for each item.

Source: BITRE spatial price database, GISCA's ARIA+.

This pattern is consistent with the logic of stores in larger centres being able to out-compete those in smaller centres. Better consumer mobility and capacity to condense shopping into a single 'big shop' has allowed producers to increase turnover and pass on reduced prices to consumers. It would seem that where the nature of the goods does not allow for the 'big shop' option because of short spoilage times or a need for personal service, small towns remain competitive, and even preferred suppliers.

Conclusions

This chapter sets out theory and evidence for changes to the way that consumers access goods and services as a driver of the change away from small towns and toward regional centres. The core of this argument is the development of regional markets in the delivery of goods and services as a result of the more widespread use of the motor car by consumers. In the light of the extent of change from 1911 to 2006 shown in Chapters 4 and 5, it is unsurprising that a significant mechanism of change revolves around retailing which is a core function of towns. The delivery of goods and services has always been the fundamental economic role of most towns and it therefore is logical that significant and persistent changes to these delivery mechanisms have resulted in similarly significant changes to towns themselves.

What has been described is a powerful mechanism or process of change brought about by changes in transport—particularly advances in personal mobility and access to markets brought on by the widespread acquisition of cars and road improvements. This was facilitated by advances in technology and the increased wealth of the mid to late twentieth century.

The process most often amplifies an initial advantage that one town may have had over its neighbours—population size in 1911 often reflecting that advantage. This commonly resulted from some other geographical or historical factor such as its location next to an ore deposit, harbour or other geographic feature that provided some industrial advantage. Some towns were advantaged by a history that placed them at junctions of railways, roads or in proximity to great amenity or close to a major city. Whatever the cause, a seemingly small initial advantage can be amplified to create large regional centres, while neighbouring towns struggle. While size was often the key to this difference, Chapter 5 shows that a town such as Horsham was able to take advantage of its central location on a road hub and its distance from other regional centres; Hervey Bay has been able to establish a large customer base because of its coastal location; and Whyalla established a customer base on the back of heavy industry. These are not exceptions—all have become centralised locations under the same process—but rather variations that show that while size is often the important consideration, the real competitive advantage goes to centres that are able to successfully attract enough customers in the long term.

A key finding of this chapter is that centralisation, at least in part, was the product of increased competition as consumers became more mobile. A less intuitive characteristic is that a significant component of the competition is between towns rather than between firms. The concept of cooperative behaviour between similar firms is usually regarded with some concern. However, in this case it may be that cooperation between firms in the same town leads to a positive outcome for consumers.

The strong trend to centralisation is almost universal in Australian regions and this chapter describes some of the processes. The significant impacts of industry and investment have already been considered in Chapter 9. When considering the totality of centralisation, the arguments in these chapters augment the discussion of history, geography, and amenity presented in Chapters 8 and 11 which further consider the drivers and constraints of settlement pattern change.

CHAPTER 11

Amenity

Key points

- Amenity describes the desirable attributes of a location such as the physical features, services and social character.
- People value amenity differently based on their personal preferences.
- Amenity migration is the movement of people to locations perceived to have desirable attributes, usually based on non-economic considerations.
- By 2006, the range of effective choices available to individuals when choosing their location of residence had increased enormously. The implication for the development of towns is that amenity and not industry alone provide an economic base for many towns.
- Improvements in personal transport and increases in wealth have given many people the ability to choose locations based on amenity rather than employment.
- Some towns have been able to change their function to meet the shift in demand.
- Amenity, including services (favouring regional centres), natural amenity (favouring the coast) and personal lifestyle preferences, has been very important in the shift in Australia's settlements patterns.

Introduction

The previous chapters illustrated how history, geography, industry and the provision of goods and services played important roles in creating and changing Australia's settlement structure.

Agriculture, mining and manufacturing activities were key components in the establishment and growth of numerous small towns, as discussed in Chapters 3 and 9. This influence, however, is waning. In part, this is because of the restructuring occurring in industry, but also because of the increasing ability of people to make decisions on where and how they want to live.

People have always been motivated by more than employment in their choice of location. However, more accessible transport has meant that Australia's households have an increasing capacity to consider a range of options in their choice of location. This has had a strong influence on the location of activity and the development of towns. For towns this has shifted their functions and competitive advantages, with a location's amenity progressively becoming an important factor in its development.

Amenity types

Amenity refers to the desirable attributes of a location including physical features (natural landscape and climatic), the services available (housing, health, education and retailing) and the social character (demographic, cultural and entertainment facilities). The multi-faceted nature of amenity means that there are a range of different types of amenity available to reflect different preferences.

As the ABS (2009) survey of migration movements illustrates, people identify important locational considerations beyond employment, such as housing costs and characteristics, neighbourhood attractiveness, proximity to family and friends, lifestyle and access to services (e.g. schools), as important attributes to their choice of location. All of these contribute to a location's amenity.

Alongside locational attributes are the personal characteristics of the decision maker. Age, education, family and labour force status influence a person's evaluation of amenities. People require different things at different times. A young person wanting to attend university will look to cities that provide their field of study. Retirees no longer connected to the labour market are free to travel and pursue a lifestyle choice, while older retirees are likely to want particular health services. The result is that people evaluate their capacity to obtain a range of amenities to their benefit.

Location decisions

In 1911, generally industry owners and managers were the effective decision makers in determining the location of activity and hence towns. The motivator was to maximise profits in light of the parameters of their business. Businesses needed to consider a range of factors to determine their location: natural resources, geography, infrastructure, suppliers, transport, competitors, labour and customers. These were fundamental to the choice of a location by a firm and thereby the location of many towns (see Table 11.1).

Table 11.1 The balance of locational decision in 1911 and 2006

Location decisions Key Decision Makers	1911 Industry owners & managers	2006 Individuals and households
Motivator	Business profit	Personal & family well-being
Factors of influence	Commodity markets, freight transport, supplier locations, land, labour, capital, competitors, history, geography etc.	Overall amenity: town services, environment, climate, employment options, public transport, roads, investment opportunities, housing market, social services, education & health facilities, history, social and cultural attributes etc.

Source: BITRE analysis.

Locational requirements of firms also depend on the type of activity undertaken. Agriculture requires good soil, sufficient water and an attractive climate to conduct business. Manufacturing generally requires an urban environment, a local labour pool and proximity to raw material supplies. Retailers locate in urban locations to better serve customers, while mining operations are only possible in locations with mineral deposits.

These fundamental locational attributes guided the location of many towns to meet the needs of businesses. The dispersed nature of agricultural activity, requiring labour and inputs, prompted the establishment of closely connected networks of towns. In contrast, pastoral activity is more self-contained, with fewer labour and input requirements, resulting in a sparser network of towns.

The success of a town was based on the success of the businesses operating from those towns. Industry success provided infrastructure, income and was a draw for more people and firms to contribute to the town. Successful towns meet the needs of industry, such as being a transport hub (river or rail) or providing specialised inputs that put the town at a competitive advantage.

Households, on the other hand, were obliged to position themselves close to industry. Relatively few individuals had the time and the resources to choose a location that emphasised other facets of their personal or family well-being over the need for employment. Their decisions were dominated by the need to be close to work, including for owner-operated businesses. Personal transport was expensive, so people generally walked to work. The welfare system was new and limited, and so people tended to work most of their lives, and in retirement lived with family (who again had to live near their work) (ABS 1988).

By 2006, the range of effective choices available to individuals for their location of residence had increased enormously. People were more able to engage their own preferences when deciding where to live and to maximise their well-being as an individual and household (see Table 11.1). Consequently the accumulative decision making process is directing the location of activities.

While the location of industry remained important, the capacity of people to 'choose' a location removed from their workplace came about because of increases in wealth, improvements in transport and a greater proportion of the population not tied to the labour market. Rising life expectancy and the ability to access an age pension or superannuation funds, allowed retirees to live in locations that suit their personal preferences.

As a result households are important decision makers on the establishment and expansion of Australia's towns. Map 11.1 identifies 'new towns'⁴³ over two time periods (towns established between 1911 and 1961 and towns established after 1961). Industry towns are relevant with a number of mining and irrigation towns, particularly in the Pilbara (WA), Bowen Basin (QLD), central South Australia and in the lower Murray-Darling Basin, while some of the new towns across northern Australia reflect the inclusion of Indigenous persons in Census counts.

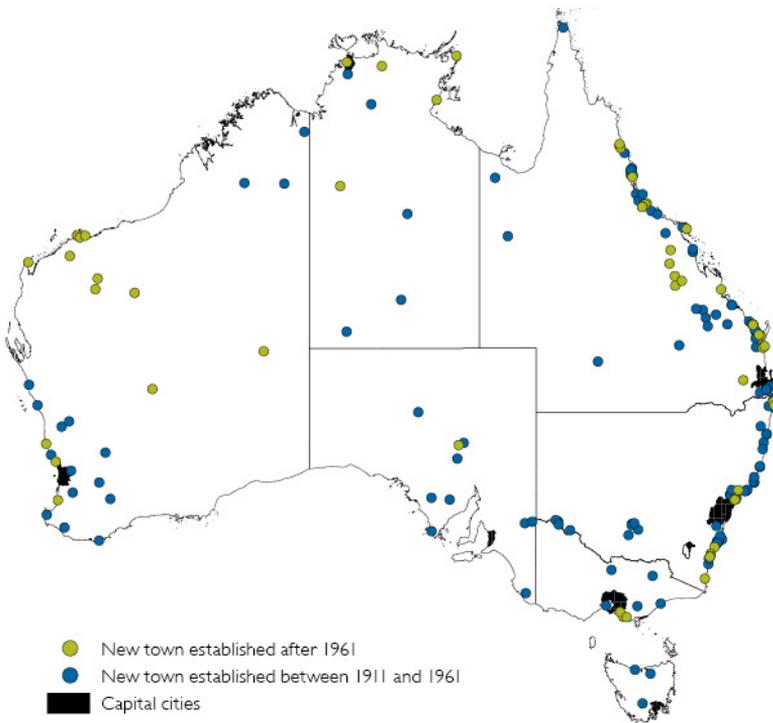
The majority of new towns, however, are coastal, with the number of towns in New South Wales and Queensland increasing significantly, creating a string of settlements along the coast near the Princes, Pacific and Bruce Highways. For example, settlements have sprung up on one of the peninsulas around Lake Macquarie such as Bonnells Bay, Mirrabooka and Brightwaters, which were all very small in 1961. Others towns such as Lennox Head have transitioned from a village established in 1922 for holidays to a population of only 201 persons in 1961, to a city of 6618 people by 2006 (ABS 2006a). Of particular note to the pattern of coastal expansion was that 'new towns' were positioned close to existing centres to 'build on' a skeleton structure (infrastructure such as water and electricity), while maintaining good access to labour and services markets. The result is a string of sea-side coastal towns developed over time. For

⁴³ A 'new town' has been classified as being established after 1911 or 1961 based on localities from the 2006 Census.

example the Sunshine Coast, which includes towns such as Caloundra, Maroochydore and Noosa, is spread along the coast for approximately 100 kilometres.

This expansion has come as many Australians choose to live by the coast as their ideal. The ability of households to choose a location that takes account of environment, climate, local services (health and education in particular), social attributes, housing and flexible work arrangements meant that these factors became more important determinants of settlement patterns. People made locational choices with less emphasis on their place of work, even if when still in the labour force.

Map 11.1 'New towns' that appear in the Census after 1911 and 1961



Source: BITRE derived analysis of ABS/CBCS Census 1911, 1961 and 2006.

A challenge for towns is that while people look to improve their well-being through a location's amenity, some locations are unattractive for some people. Very remote areas, very hot or cold climates, high levels of congestion, a lack of services and opportunities are features that dissuade some people from moving to a city, town or region.

Of course preferences vary, but the accumulative impact of individual decisions shape the fortunes of towns. An important part of the process, as highlighted in Chapters 9 and 10 is that people are unwilling to invest in locations that are unattractive. People are unwilling to build a home in a town they consider to be dying—and this lack of investment continues the decline. While amenity attributes of a location are the focus of this chapter, employment considerations remain important. The ability of people to obtain employment in a location is vital for many, regardless of whether the location meets other preferences.

The following sections explore the process by considering who is making decisions on location, what the contributing factors are and how this has impacted on towns.

Tourists

Tourism has formed an important part of the growing importance of amenity, as people with the time and money to take holidays in attractive environments or pursue recreational activities have influenced the development of towns. Tourists deciding to permanently settle or make return trips, especially to coastal locations have contributed to the growth of many towns.

The city of Mandurah, roughly 70 kilometres south of Perth is an example. The settlement, established by Thomas Peel, who brought out settlers and equipment (City of Mandurah 2010), initially grew slowly with the development of traditional industries of fishing and horticulture, together with fish canning and a timber mill. Over time, due to transport improvements Mandurah emerged as an attractive tourist destination. The seaside location attracted goldfield and later wheat-belt holiday makers (City of Mandurah 2010). This transformed the economy, making tourism its main enterprise and making Mandurah one of the top tourist destinations in Western Australia (City of Mandurah 2010).

Today, Mandurah is undergoing another transformation with residential and employment growth increasingly linked to Perth, as urban expansion moves along the west coast of Australia. As the Mandurah rail line was completed in 2007, it is expected to have even stronger links with Perth in the future.

Mandurah also illustrates how tourism has become part of a basic industry for some towns. Another example is the development of a tourist resort on Hamilton Island (in Queensland) in the early 1980s. It was driven by people wanting to holiday in a beautiful location. Previously, the island's industry was sheep grazing and cropping, with limited attempts to establish holiday cottages. In 1978 a major tourist resort was planned. It was completed in stages between 1982 and 1984, with the resort stimulating local activity resulting in 1350 permanent residents by 2006—and the opening of a primary school in 1986 (Centre for the Government of Queensland 2013).

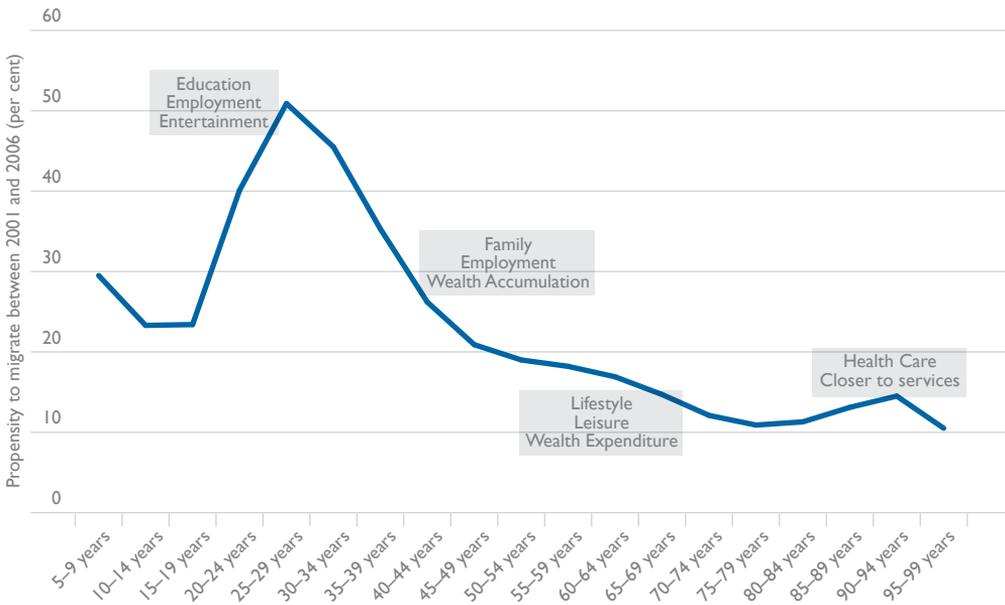
Age profiles

Age changes a person's propensity to migrate and a person's life-stage influences where they choose to live. Figure 11.1 presents the migration propensities through the life cycle and some of the major drivers for age-specific drivers of migration. Young people have a higher propensity to migrate to obtain education, enter the labour market or adjust to changes in family status. It has been an enduring trend for young people in regional locations to migrate to major centres.

The propensity to migrate falls with age, as people transition to starting a family, focusing on a career and accumulating wealth. However, migration rates are still relatively high as people move to meet specific needs. For example, regional households may move to access higher order services such as secondary education for their children. Later in life, older people also want to access higher services such as health and aged care.

Another feature of Figure 11.1 is the high propensity of Australians to migrate overall, with just over one in four changing their place of residence between 2001 and 2006. 'Australians move house more than any other national population', and have one of the highest levels of internal mobility in the world (Hugo 2010, p.47). This means a huge amount of churn in the population, which is often overlooked when concentrating on the aggregate number of people in a location.

Figure 11.1 Internal migration propensity and considerations by age



Note: The 'propensity to migrate' refers to the proportion of people in that age category who had moved residence between 2001 and 2006.

Source: BITRE analysis of ABS Census 2006.

The differences in propensities to migrate provide a basis to consider the decision-making process and the contributing factors of age impacting on settlement patterns—retirees, downshiffters and young adults.

Retirees (and downshiffters)

Older people are choosing to move to regional locations (ABS 2009). Among persons aged between 15 and 24 a greater proportion move from a non-metropolitan location to a capital city. However, in all other age brackets there was a net migration out of capital cities between 2001 and 2006 (see Table 11.2).

Table 11.2 Internal migration flows from and to capital cities and non-metropolitan areas by age bracket, from 2001 to 2006

Age bracket	Non-metropolitan areas to capital city	Capital city to non-metropolitan areas
0 to 14 years	52 694	79 248
15 to 24 years	122 932	60 765
25 to 34 years	86 273	107 794
35 to 44 years	57 525	94 770
44 to 54 years	41 915	65 214
55 to 64 years	28 812	68 847
Over 65 years	30 400	47 652

Source: BITRE (2011a).

At the regional level, migration flows are shifting the demographics of towns and cities. Figure 11.2 presents the age profile of people who moved to Hervey Bay (QLD) and Mandurah (WA), between 2001 and 2006. There is a clear difference in the profile of arrivals compared with the national profile, with the new arrivals to these cities being significantly older.

Figure 11.2 Age distribution of arrivals to Hervey Bay and Mandurah, 2006

Source: ABS (2006a).

The decisions by older Australians to move to regional areas are complex but lifestyle considerations are an important factor. Lifestyle preferences could include coastal or mountain views, the ability to have horses or live in an idyllic small rural town. People are factoring amenity considerations as well as monetary concerns into their decisions.

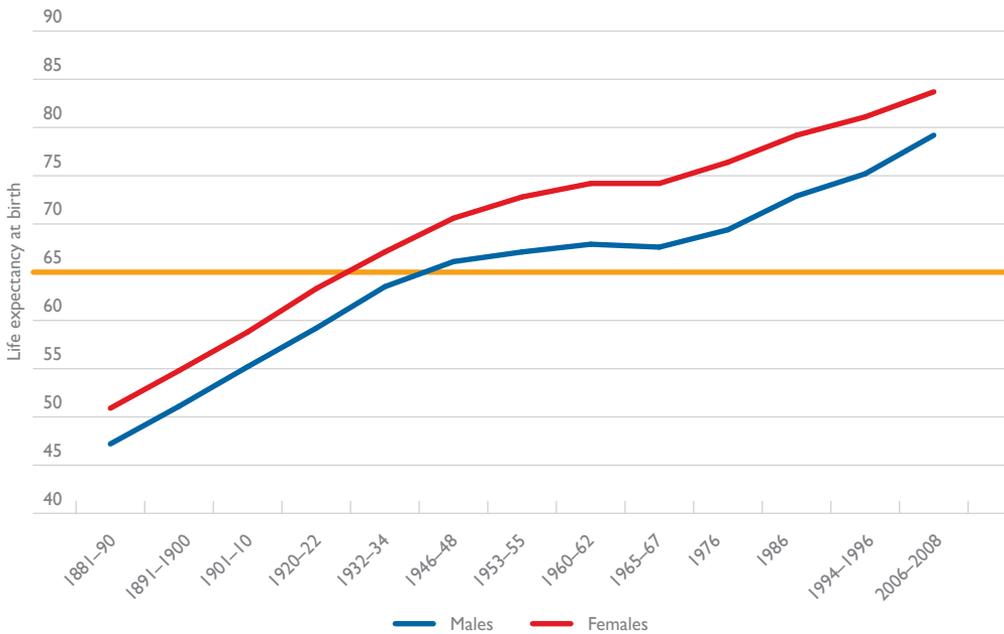
One of the most significant influences has been the increase in life expectancy (see Figure 11.3). At the beginning of the twentieth century, life expectancy was approximately 55 years for

males and 59 years for females. At the end of the century, life expectancy was 76 years for males and 82 years for females.

As a result, people are living longer and are now living a substantial proportion of their life out of the workforce. This is reflected by the number of people eligible for the age pension increasing significantly. The eligibility age for men to access the age pension was set at 65 years in 1910⁴⁴ (women received the pension at 60 years but as of July 2013 it was lifted to 65 years). Consequently, as the life expectancy was lower than the eligibility age in 1910 few people accessed the pension.

In contrast, current generations will spend nearly half their lives out of the labour force, with most of this in retirement (Productivity Commission 2013). A male aged 15 years between 1901 and 1925, would expect to spend only 13 years of his remaining lifetime out of the labour force, while a male aged 15 years between 1986 and 2005, is expected to have 31 years out of the labour force (Productivity Commission 2013).

Figure 11.3 Life expectancy at birth by sex



Note: Orange line denotes retirement age.

Source: ABS (2008a).

Significant increases in wealth has influenced where people are able to live (see Chapter 6). Accumulation of wealth from property and superannuation has provided households with the capital to choose a location that is attractive to them. An example is a recently retired household selling the family home in a major city to raise capital and equity to purchase a house by the coast. This also applies to 'downshifter'⁴⁵ looking for a rural lifestyle. Murphy and Burley (1996) describe these people as ex-urbanites, who are generally more affluent and for

⁴⁴ The pension age is scheduled to gradually increase to 67 years by 2023 for both men and women.

⁴⁵ A downshifter is a person or household that remains in the workforce but chooses to shift focus towards lifestyle considerations.

whom amenity considerations are more prominent than housing costs. Gurran (2008) notes that younger lifestyle aspirants are forced to move if their employment aspirations are not met.

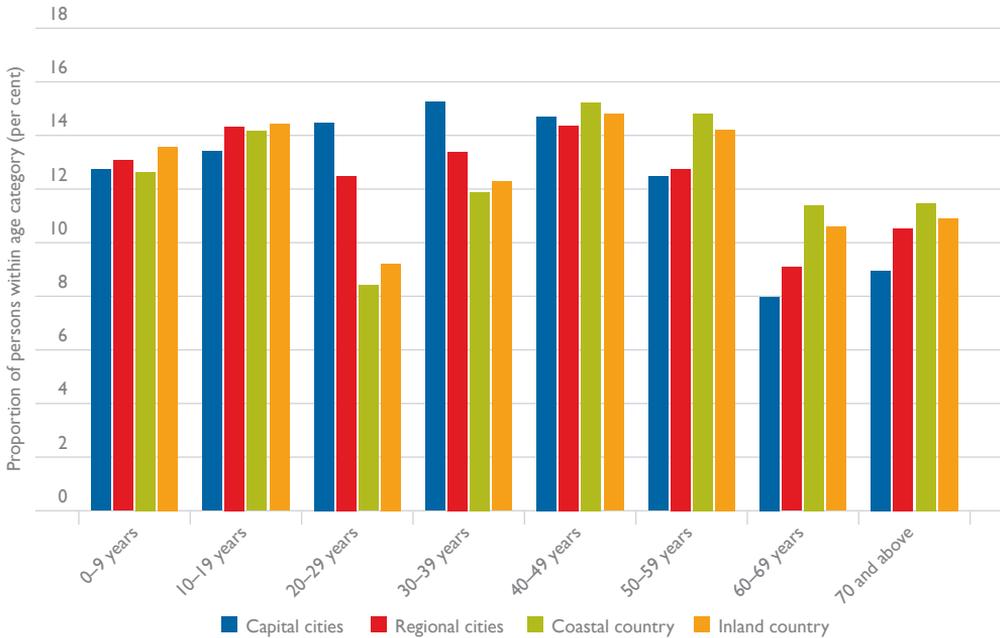
Another factor in whether people want to stay in a location is its social and cultural attributes, particularly for older people. Neyland and Kendig's (1996) survey of Point Lonsdale senior residents in coastal Victoria identified a range of amenities beyond the physical that were influencing the attractiveness of locations, such as 'the size of the community, its warmth and friendliness, easy access to services, social activities, a low incidence of crime and the comparative ease with which they could drive and park' (Neyland and Kendig 1996, p.368). The development of personal connection with a location is a factor in how towns are considered and compared.

Young adults – students and job seekers

The exodus of the young people from regional areas towards capital cities is a longstanding trend. Barr (2002) points out that part of the youth exodus is related to the perceived limits in career opportunities, as illustrated by the changes in industry employment in Chapter 6. Barr (2002) argues that lifestyle and cultural influences are also important pull factors in young people's decisions. 'Many rural young aspire to the urban cosmopolitan life. It's where the jobs, concerts, friends and fun will be' (Barr 2002, p.40). Another important consideration for young people to move is to further their education which is likely to be in capital or large regional cities. In an increasingly competitive and technological environment, education has provided an avenue for people to increase their human capital and well-being.

This shift has significantly changed the age structure of rural and regional Australia in recent decades (ABS 2003). The ABS states that in 'areas with smaller populations, young people are less likely to remain in the area as they pass from childhood to adulthood'. Figure 11.4 provides an illustration of the lower proportion of young adults in coastal and inland country areas compared with the proportions in capital and regional cities.

Figure 11.4 Proportion by age category and settlement type, 2006



Note: 'Regional cities' is based on Statistical Divisions with populations of over 25 000 persons. Coastal and inland country incorporates both rural populations and towns with less than 25 000 persons but which have also not been classified as remote through the ABS Remoteness Classification.

Source: BITRE analysis of 2006 ABS Census.

In contrast, some regions have a young age profile reflecting employment and income opportunities such as mining. This is clearly evident in Roxby Downs in South Australia. Three indicators illustrate the point:

- The median age of 29 (in 2011) in Roxby Downs was substantially lower than the national median age of 37.
- The labour force participation rate in 2011 was 78 per cent, while the national rate was 65 per cent.
- Personal median weekly income in Roxby Downs was nearly three times higher (\$1464) than the national median income of \$534 (ABS 2011b).

The connection people have to a location based on employment does not necessarily translate to them remaining in the town. Australian Geographic reported in 2011 that 'Roxby Downs cemetery has nobody in it...[and] according to Roxby's family and youth officer Tom Beever, the real reason tells you much more about this artificial outback town of 4200, which was surgically implanted in the heat and dust of South Australia's interior to service the massive Olympic Dam mine. "It's not because nobody dies here, it's because no-one comes from here," Tom says. "When someone dies they go back to their own town".'

Commuters

An improvement in transport has enabled commuting over long distances. The rise of fly-in/fly-out (and drive-in/drive-out) discussed in Chapter 9, is an extreme example of people traveling very long distances to access high income jobs but living in a higher amenity location.

The rise of personal transport also created opportunities for people to move to small towns around major centres. These towns are known as dormitory towns, satellite towns, commuter towns, exurbs or bedroom communities. Similarly, peri-urban areas around major centres are also strongly associated with this phenomenon. People locate in areas along highways, transport hubs and public transport systems to retain easy access to labour markets and services which are generally not available locally.

BITRE's investigation of commuting patterns found that capital cities and regional cities have increased their influence on workers' commuting patterns (BITRE 2009a). People are attracted to employment in major centres over those in the immediate vicinity or the surrounding region and people move to these locations while retaining access to jobs and services. This finding is supported by Budge (2005) and Barr (2002) who found that some rural locations just beyond capital cities are experiencing high population growth rates. Budge (2005) found that in Victoria, these areas typically have high natural and built amenity, and are associated with a well-performing regional centre or with horticultural investment. Population and dwelling growth for the peri-urban areas in the Melbourne Working Zone, between 2001 and 2006, was in existing regional towns (generally towns between 1000 to 5000 persons), rather than in rural areas (BITRE 2011b).

An illustration of this type of growth is the town of Bungendore in New South Wales, close to the Canberra/Queanbeyan conurbation. In 1911, the town had a population of 584 persons and developed in part because of its position as a crossroad link to Goulburn, Braidwood and Queanbeyan. It was a staging post for the Cobb & Co. transport route. By 1981 the town's population was still only 683 persons. By the 1986 Census, Bungendore's population grew to 1028 persons and to 2754 by 2011. During this period people moving to Bungendore were connected with Canberra's labour market. They had easy access to urban employment but were able to live in a rural setting.

The expansion of these types of towns would not be possible without cheap and convenient transport which was previously unobtainable. Similarly, improvements in communications have reduced the need for face-to-face contact as many people are able to access information more easily. More recently the internet has reshaped how people access markets. For example, ICT-based employment or non-conventional work arrangements are enabling people to work from home. This potentially could further increase the separation between the location of work and residence, and give people more freedom to choose residential location based on amenity.

Service seekers

The concentration of activity into regional centres is part of the increased diversity of those centres. Bowie and Smailes (1988, p.254) commented on their increasing functional roles as a form of 'deconcentration' related to 'some high order tertiary and quaternary functions, which is gradually giving these places metropolitan suburban characteristics that set them apart from the bulk of country towns'. This is enabling people to access a wider range of services in a regional location.

Increased service availability is also partly contributing to the movement of people from rural to regional centres (and capital cities) because of the importance of particular services people value, such as education and health services. Haslam McKenzie (2000, p.80) found that residents of wheat-belt communities in Western Australia, were willing 'to change their lifestyle, live separately, leave their community and commute long distances for their children to get the education they deem suitable'. Parents were assessing and comparing locations based on appropriate educational facilities that may consider factors such as subject availability.

The need for senior citizens to access health services is another important factor in movement to higher-service areas. People living uncomfortably at home who are unable to access health services locally consider areas with nursing homes, home care and respite accommodation, which are more likely to be available in larger regional centres. These moves may be planned but can also be a reaction to changed circumstance such as the loss of a spouse, loss of drivers licence or ill health. In the future, the ageing of the population will make these decisions even more common.

Home owners

A key factor in the purchase of a family home is affordability, with the lower cost of housing contributing to the growth of many regional locations. Gurran's (2008) analysis found this occurring in coastal gateway and commuter communities because of a shortage of affordable housing in capital cities.

The demand in peri-urban and outer suburbs of capital cities reflects the demand for affordable housing, with access to labour markets. In contrast, those not connected to the labour market are considering different regional locations to enter housing markets. As Budge (2005) highlights, some welfare recipients are forced to look to towns that are in decline or are 'left behind' because they are too distant from metropolitan areas to attract tree and sea changers. The local housing stock is an infrastructure legacy allowing a town to continue to operate after its economic function has declined (see Chapter 8). Meanwhile, some of the people who already live in these declining townships find themselves unable to move on from their own houses and businesses because the resale value is insufficient (Econsult 1989 cited in Tually et al. 2010, p.34).

The perceived risk of being trapped in a declining small town further exacerbates an already difficult situation. A vicious circle of population loss and/or economic re-structuring results in further population loss and loss of services and businesses. This process creates a stock of low value housing and run down infrastructure that may attract low income or welfare dependent households without access to economic opportunities, resulting in 'more problems than solutions' (Forth 2001, p.80).

More sought-after areas face housing challenges because internal movement is pushing up housing prices, in some cases beyond the reach of long-term locals. In Victoria, approximately 80 per cent of coastal towns had higher increases in housing prices than the Victorian average between 1990 and 2006. In the coastal region of Bass Coast Shire, an increase in second home ownership helped generate a fivefold increase in the house price during the decade prior to 2006 (DPCD 2008). Costello (2009) argued it is not only in coastal areas that these effects are being felt. Rural 'tree change' migration of relatively wealthy early retirees to high amenity rural areas, along with new pressures created by an influx of urban commuters, is beginning to have the same effect on housing and rental prices in rural areas.

An associated challenge for towns and regions with strong population growth is the development of infrastructure for the expanding housing estates - 'growing pains'. Some towns have been unable to keep pace, with local government struggling to maintain adequate services. Western Australia's Local Government Association highlighted this issue in a submission to the Productivity Commission's (2008) investigation of the revenue raising capacity of local government. They argued that many growing councils faced difficulty in funding infrastructure maintenance and investment. Development of new housing estates requires councils to provide infrastructure in advance of new residents arriving, with 'the need to fund up-front, the capital expenditure on infrastructure' (Productivity Commission 2008, p.XXVII)—placing some of the imposition onto current ratepayers.

The changing functions of (some) towns

The shift towards 'amenity' is reflected in investments in a location and lifestyle choices. People are comparing towns and regions on factors other than employment and industry.

This has offered towns another functional niche in the modern Australian settlement, based on the location's amenity for residents. This functional niche has produced rapid growth and a reduced reliance on traditional basic industries and the transition towards 'non-basic' industries to support towns. Stayner and Reeve (1990) found this for rural economies in New South Wales as those along the coast were transferring their economic focus into other activities such as tourism.

While tourism has long been recognised as a source for economic growth, it is only one of a number of ways that services generate a flow of funds from outside. Catering for retirees does this as government payments are made to older residents and as individuals' superannuation and savings pay for living costs. Their spending on health, recreational and financial services inject funds for further local economic activity.

The extra activity is re-shaping towns to meet these preferences. Gurran (2008) identified several types of towns such as getaway towns, coastal cities and little hamlets (see Table 11.3), which are developing based on their shifting profiles.

Table 11.3 Gurrans typology of coastal amenity settlements

Type	Description	Examples
Coastal commuters	On the periphery of capital cities. Community in transition from rural to city.	Gosford/Wyong (NSW), Wanneroo (WA) and Rockingham (WA)
Coastal getaways	Smaller towns and villages within 3 hours of city. Second home tourism by affluent city-siders, downshiffters and entrepreneurs.	Capel (WA), Alexandrina (SA), Glamorgan Spring Bay (TAS), and Caloundra (QLD)
Coastal cities	Significant urban conurbations beyond the State capitals.	Gold Coast (QLD), Cairns (QLD), Wollongong (NSW), Newcastle (NSW), and Geelong (VIC)
Coastal lifestyle destinations	More than three hours from capital cities, significant leisure and landscape values attracting downshiffters, and amenity migrants.	Hervey Bay (QLD), Port Macquarie (NSW), and Batemans Bay (NSW)
Coastal hamlets	As above but with small populations (fewer than 15 000 people). Often surrounded by significant nature reserves.	Byron Bay (NSW), Bermagui (NSW), and Streaky Bay (SA)

Source: Gurrans (2008).

This specialisation and adaption is similar to the Shoalhaven City Council's (2012) analysis of their collection of local settlements, with different functions for different types of residents such as young families and retirees. These differences translate into differences in the types of services available. AIHW (2007, p.7 citing Smith and Doherty 2006) highlights that 'the spending patterns of retirees moving to the coast, combined with tourism spending, determine many of the jobs and business opportunities that attract workforce age migration'.

While many towns traditionally were homes to a travelling workforce such as shearers, modern transport allows employees to work in other towns on a regular basis. The town where the worker and his family live generates income for the town by providing services to support the employee who is generating income elsewhere. DPCD's (2007) investigation of Murtoa found the town was a reflection of this shift. With many other small regional towns, the loss of jobs meant a new role and direction was needed (DPCD 2007). Part of this new direction has been the development of the town's commuting function which 'progressively occurred during the 1990s' with the community coming to accept and 'then embrace the idea that living in Murtoa provided a clear alternative to Horsham. As people from Horsham "discovered" that Murtoa could offer a small town lifestyle not found in the regional centre, this distinctive feature increasingly became part of Murtoa's role' (DPCD 2007, p.141).

The disadvantage, however, is that it may not translate into the expansion of local activity, particularly for those near a major service centre. It can limit development as the economic focus is on the larger centre. Hoath and Haslam McKenzie's (2013, p.ix) analysis of the impact of long distance commutes on the source communities⁴⁶ in Western Australia found that 'superannuation, large mortgage commitments and holidays spent elsewhere account for considerable income leakage. A reasonable proportion of disposable income circulates locally, but particularly in Busselton, lack of choice, critical consumer mass and the current regionalised service provision model centred in Bunbury, challenge local capacity to maximise benefits'.

⁴⁶ A source community is where long distance commuters have their usual place of residence (Hoath and Haslam McKenzie 2013).

At a local level a common example is that of parents placing their children in the school in the nearby city rather than the local school, because that is where the parent travels each day for work. In the town of Stanhope (in Victoria), the local primary school and kindergarten combined as a result of the kindergarten's possible closure, creating an opportunity for the school to have children continue their formative education in one location (keeping kinder friends together). This resulted in parents from the nearby towns enrolling their children in the Stanhope primary school, extending the local school's catchment area (DPCD 2007). However, as happens so often, changing the services provided in one location can place pressure on surrounding areas (DPCD 2007).

Centralisation can hinder infrastructure development and create a collection of 'hollowed-out' dependent residential regions, with a reduced sense of community in the town. A survey of farm enterprises in Western Australia's wheatbelt found the centralising of health and education services was of particular concern, because as Haslam McKenzie (2000, p.80–81) highlights:

The location of a child's school would often influence where the family shops, socialises and does business, so the closure of a school has a significant impact upon a community...the local school means more to a small community than simply a place to educate children; it is a meeting place and central focus for the energy of the community. When a school closes, quite often the rest of the town dies with it.'

This illustrates the importance of social and cultural functions of towns. The town is the focal point for people to gather. People identify with the town and a large part of their social network and activities are associated with it. These connections are reflected in small communities having substantially higher volunteering rates⁴⁷, and higher participation in local activities such as sporting clubs. These activities offer a 'forum for social interaction and engagement', reinforcing and providing a basis for the creation of social capital (Tonts 2005, p.147).

The study by Tonts (2005, p.147) highlights that '[o]ne of the obvious challenges...is that economic restructuring and depopulation are undermining both social capital and the viability of sporting clubs and organisations. In the longer run, this has the potential to impact on institutions and cultural practices that are important elements of rural life'. Another challenge, particularly for policy makers, is the difficulty of measuring the social and cultural aspects of towns, resulting in these aspects being under or over-valued.

Amenity matters

Amenity is important for the future development of towns. Industry alone does not provide an economic basis for a town as people are willing and have the means to commute from a location they prefer. As Keller (2000) argues, 'firms and industries built around the exploitation of amenities show exceptionally strong growth'. Florida (2003) suggests both economic considerations and lifestyle matter. Although his discussion was in particular reference to the 'creative class', it has some applicability to the attractiveness of towns. This is particularly the case for towns able to attract and retain professional and skilled workers, which are then potentially better able to compete and adapt to challenges.

⁴⁷ For example, 27 per cent of persons in areas of less than 1000 people volunteer; compared with 17 per cent of those that live in cities of over one million (ABS 2012c).

A program in New South Wales promoting regional living, 'Evocities', encourages people to relocate to one of seven regional cities⁴⁸. Lifestyle is promoted: 'a move to an Evocity is a move to a city with less traffic, a great lifestyle, a welcoming and safe community, numerous fantastic cafes and restaurants and a beautiful, bigger home with a smaller mortgage to raise your family' (Evocities n.d.p.).

Coastal towns have tended to have a competitive advantage in promoting lifestyle over inland towns, but many inland towns have successfully undertaken strategies to improve local amenity. These strategies include branding the region through place-based marketing, becoming a focus for a particular service such as a university or medical services, promoting local attractions to encourage tourism, establishing festivals and the specialisation of a particular product or activity such as wine, health spas and eco-tourism.

A strategy of many regional towns has been the rejuvenation of a town's main street, to make the main street inviting and attractive for not only visitors but also locals. This type of strategy was implemented in Coolah in New South Wales with an eight step plan for community development, beginning in 1996. The primary focus in steps 2 to 5 was on creating an attractive town.

Step 2 – 'Clean up Coolah's act'—a major spring clean event.

Step 3 – 'You don't get a second chance at a first impression'—employed landscape architects to prepare plans to beautify the main street.

Step 4 – 'Raise money for the streetscaping'—an open garden weekend was organised involving eight local gardens and raised \$22 000.

Step 5 – 'Create attractive town entrances'—entrance statements and signs were prepared and installed (Kenyon and Black 2001, p.43–44).

Creating an inviting area for people encourages them to socialise and shop in town to reduce 'leakage', in conjunction with attracting new people into town to generate new income. These beautification programs are often based around shopping precincts as highlighted in Chapter 10. The town of Dorrigo in New South Wales provides an example of this type of initiative through their 'Be Local, Buy Local' campaign. As part of the objective to promote local economic activity, it also incorporates the concept to 'Keep Dorrigo Unique': one-of-a-kind businesses add a distinctive character to Dorrigo that also contributes to tourism (Dorrigo Chamber of Commerce 2012).

Tourism has often been a mechanism to inject new funds. It is an industry commonly associated with towns and cities along the coast and has been associated with rapid population growth. The Gold Coast, Sunshine Coast and Cairns are common examples and are regions that generate the majority of tourism expenditure in Australia (TRA 2012). However, a significantly larger number of regions and towns rely on tourism as part of their economic base, which illustrates tourism's economic importance (TRA 2012). Tourism provides employment opportunities and economic diversification that injects much-needed funds into the region, potentially improving local facilities.

One approach is through festivals. An ARC study of festivals in Tasmania, Victoria and New South Wales found 2856 festivals operating in 2007–08, with sporting, agriculture and music

⁴⁸ The seven cities include Albury, Armidale, Bathurst, Dubbo, Orange, Tamworth and Wagga Wagga.

festivals making up the majority (at 75 per cent) (Gibson and Stewart 2009). Most were small scale not for profit operations that provided job creation and helped build the community by enlarging social networks.

The recent proliferation of festivals is a sign of a growing sector, but there is a limit to the number that can be accommodated. Gibson and Stewart (2009, p.32) found the growth of music festivals was not matched by audience numbers or quality acts, so that competition becomes 'fiercer and the risks of failure increase'. Similarly, the economic impact of festivals, similar to shopping precincts, is subject to a high degree of leakage. Janeczko, Mules and Ritchie's (2002) analysis of the impact on Gross Regional Product of several festivals in the Snowy region of Victoria, found a high degree of economic leakage from the small regional economy with only 39.8 per cent of expenditure by visitors contributing to the local economy. 'This is because many of the goods and services used by visitors are not produced in the region' (Janeczko, Mules and Ritchie 2002 p.ii).

The success of a tourism strategy has to be based on the region's competitive advantages such as Hayden's Wave Rock or the mineral springs in Victoria's spa country. Tourism is a volatile and competitive industry reliant on disposable income and favourable economic conditions. As Knowd (2001, p.18) states, '[i]n contrast to the frequently touted claims of benefits from tourism, the returns to communities are sometimes the opposite of what was promised, and in most instances, marginal at best'. 'Indeed, a strong case can be mounted that the inherent boosterism of most government-sponsored programs which promote tourism, is quite irresponsible given the fragile nature of rural economies' (Knowd 2001, p.18). It is not a panacea for an ailing local economy as it is a 'piggyback' industry on basic activities. But it can provide an alternative income source in the face of seasonal fluctuations or drought.

These programs in small towns focused on amenity considerations have been successful to varying degrees. Therefore, a strategy that puts amenity at its centre should consider the economic and competitive environment in which the town operates. Proposals should make a realistic assessment of the town's prospects based on sound financial and market analysis.

Conclusion

Amenity has become a feature shaping Australia's settlement structure, as people have a greater capacity to consider household well-being in addition to economic considerations. The desirable attributes of a location are based on characteristics that people want, such as a pleasant climate, coastal views, hobby farms, health facilities and education institutions.

While it is easy to assume that people have always preferred to live in desirable locations, personal transport and better communications technology, longer life expectancy and growing wealth have enabled amenity migration. A consequence has been the shifting functions within towns as they have weakened their connections with industry, particularly agriculture and mining and transitioned to an economy based on tourism, lifestyle and service provision. This has also prompted towns to introduce strategies to enhance their amenity as an avenue to promote economic growth.

CHAPTER 12

Mechanisms of change

Key points

- There are distinctive, identifiable patterns in the development of regional Australia in the twentieth century.
- Six broad groups of factors influence settlement pattern change—geography, history, industry, the provision of goods and services, amenity and investment. These interact, often reinforcing one another, creating a very powerful force for change.
- Explanations for changes in the settlement pattern can largely be found in relatively simple economic theory, in particular the expansion of labour, goods and services, industry and investment markets. The key factors are competition, market size and economies of scale.
- Towns are no longer the only unit to support households and businesses but operate as part of larger regional markets. Today, towns are interconnected, as people and businesses conduct their activities at a distance and across traditional regions.
- The relative advantages of towns have changed over the century. Successful towns concentrate on their strengths, which vary considerably.
- Towns and regions need to be competitive providers of goods and services. Having a local industry does not necessarily translate into substantial economic benefits for the town.
- The centralisation of activity, technological advancement, households seeking amenity and firms facing greater competition are likely to continue, providing challenges and opportunities for towns and government into the future.

Introduction

This report has investigated Australia's settlement pattern over a long timeframe. Earlier chapters identified six broad groups of change factors: geography, history, industry, the provision of goods and services, amenity and investment.

This chapter considers these mechanisms and processes together, to illustrate the interactions and the high degree of reinforcement that has occurred. These processes and their interactions will continue to have implications for both towns and government into the future.

The big picture

Taking a step back from examining particular towns and regions over a long period provides an opportunity to take a broader view of change. An important finding is that what to residents of towns may seem to be random or locally-driven changes in economic circumstance or population change are often the local manifestations of change factors operating on a much broader scale.

Drought, a fall in commodity prices or a government decision to regionalise health or education services may trigger change, but often it is driven by more longstanding underlying pressures for adjustment. Understanding this big picture can inform local and regional actions that aim to relieve pressure on a specific town or provide a future for a struggling region.

Changes in the settlement pattern can largely be found in relatively simple economic theory, in particular the expansion of labour, goods and services, industry and investment markets. The local circumstances of towns are the result of rational decisions by people driving and responding to these expansions, given their capacity and preferences. The key factors are competition, market size and economies of scale.

History, geography and chance events have also contributed to the settlement patterns and have established and grown particular towns. Path dependence explains some of the specifics of settlement pattern shape—why some towns and industries persist in particular locations—but conventional economic forces explain the evolution of the settlement pattern in a broader sense, namely the observed changes of regional centre growth, small town decline and coastal growth.

Three general facets of the change that have contributed to the process are highlighted in the following sections, along with various key observations underlying the transition.

Regional markets

Where towns used to be the fundamental economic unit, today they operate in regional markets. Town businesses have, and must continue, to adapt to this new circumstance.

Towns as social and economic units

While much has changed since 1911, and the functions and nature of some towns have changed dramatically, towns themselves remain a sensible way of looking at settlement patterns. This reflects their continuing importance to identity and social activity and their usefulness as a way of understanding the common circumstances of significant groups of people. The fact that modern towns are more diverse in size and function than in earlier times does not diminish their usefulness as an analytical unit in understanding settlement patterns. However, in both economic and social terms better access to transport since 1911 has reduced the extent to which the local town is the sole focus of activity for the majority of the population.

Towns as part of wider regions

The basic function of a town is to serve its residents, but where once towns met almost all the needs of residents, some have lost many of these functions. In the nineteenth century, residents were the workforce for local industry and required the town to provide most goods and services. In the twentieth century, people's activity footprints greatly expanded. Enabled by improvements in personal transport, people now access goods and services, entertainment and employment across a wider area.

As a result, towns are no longer the only unit supporting households and businesses, but are part of larger regional markets for labour, goods and services. Each town is best described by its relationship with the industry and towns of a wider region and typically are competitive in supplying households and/or businesses in that region.

Bigger markets and consumer power

Competition in the provision of goods and services and access to amenity areas are key drivers determining the fate of towns. Both are consumer focused and impacted by consumer mobility and wealth.

Car use by consumers seeking to maximise their own resources changed the shape of markets. The spatial expansion of competition gave towns with an existing size advantage a subsequent competitive advantage to remain the dominant population centre in the area. This occurred through economies of scale, turnover capacity and access networks (Chapter 10).

Towns remain as social centres

While the level of economic activity in towns varies more than in the past and small town businesses are especially vulnerable to regional competition, many small towns remain important as the social centres for communities. Households may shop or work in a nearby larger centre, but much of their social focus remains in the local town. For this reason hospitality-based businesses (hotels, clubs, cafes etc) are more resilient than others.

Separation of residence and employment

While most workers still live near their place of employment, the twentieth century has seen increasing separation between a household's place of residence and place of employment. Once, people lived close to where they worked. However, rising incomes and cheap, reliable, quality transport (including improved roads) have enabled people to live in one place and work in another.

This is significant in small towns in regular commuting distance of larger centres, and less common for those living in larger centres or remote locations. However, some remote locations are extreme examples of this separation between a place of residence and a place of work, with a fly-in/fly-out (and drive-in/drive-out) workforce.

Hence, people are able to live, earn and spend money across regions. The onus is on towns to compete for the business of these people.

Decision makers

Rational economic decisions made every day by local people and businesses based on the circumstances and technology of the day is a key feature of the change process. The key decisions are made by locals deciding where to live, work shop and invest. There has been a shift from industry to households as the effective decision makers since 1911.

Key decisions concern where to live, work and access goods and services (households), invest (households and firms) and provide services and infrastructure (government and firms). These decisions are subject to changing circumstances and influenced by forces outside of their control.

Household and industry decision-making

Local households, firms and governments make the majority of decisions which contribute to the evolution of towns. They generally don't consider the effect on settlement patterns. The changes they create are incidental rather than the focus of their decisions.

Motives for decisions include households maximising their utility based on their own values and resources, firms seeking profit and governments seeking the most efficient and equitable allocation of resources.

For households, the major contextual changes underlying decision-making have been related to personal transport, wealth, access to income outside employment, and norms relating to employment, lifestyle, mobility, consumption and education.

Basic industries, concerned with exporting from the town and region, have a different framework to non-basic industries for making decisions. Non-basic industries are concerned with the size of their market and local economic conditions. Basic industries must consider these, but have other concerns such as the overall state of their industry, competition from other regions, where to access inputs and the cost of transport to markets.

Industry and households have changed in terms of relative prominence over the period, with a shift from industry towards the preferences of households. Households now have more say in determining their location, which has raised the importance of amenity in the decision making process.

Tyranny of small decisions

The sum effect of small individual transactions can produce results that the decision makers might reject if given a chance to choose the result explicitly. This is called the 'tyranny of small decisions' (Kahn 1966). Typically, consumers' desire to retain a service for the future can be in conflict with their decisions not to use the service on a day to day basis (Kahn 1966). The tyranny of small decisions is observable where residents shop outside town and do not use local services, despite a desire for and interest in their retention.

Change is constrained by the past

Decisions, once made, can be long-lasting. Decision-making is both enabled and constrained by previous decisions. No town is a clean slate, and decisions are made within the context of its industry specialties, infrastructure capacity, population and other characteristics that are a product of its history or geography.

Chapter 8 discussed how status quo bias and the endowment effect influence people's views in favour of what already exists and what they currently possess (such as particular services). It also discussed how people's business decision-making can be influenced by other elements of maximising their utility, which includes social considerations.

Centralisation

The key nationally observable change in the settlement pattern from 1911 to 2006 has been the shift from small towns to larger ones, or the process of centralisation. Regional cities have grown while a number of small towns have been lost, and many of those small towns that do continue have fewer services than before.

The key processes contributing to centralisation have been:

- **Changes in the way goods and services are accessed.** Residents of small towns often travel to larger centres to access a cheaper and wider range of goods and services, decreasing the demand locally (Chapter 10).
- **Households emphasising amenity in location decisions.** Large centres have much to offer including higher level services (for example, education) and entertainment (Chapter 11).
- **Centralisation of industry.** There is now more regional rather than local production of goods and services, driven by economies of scale and enabled by transport and technological advancement.
- **Investment decisions.** Investing in larger centres is perceived to be less risky, while small towns have difficulty attracting investment (Chapter 9).
- **Networks reinforcing regional centre dominance.** Networks connect the key nodes in a system, which tend to be the larger towns. The presence of networks then encourages the further growth of these towns.
- **The characteristics of some emerging goods and services.** For example, advances in modern health care mean that expensive technical equipment becomes centralised and 'higher order' treatments are in larger centres.
- **Positive feedback loops favour large towns, while negative feedback loops contribute to small town decline.** Feedback loops exacerbate the above processes. Positive feedback loops aid a large town's advantage over a small town, so that the large town continues to grow (see Chapter 8). Negative feedback loops in small towns aid loss of services and population.

Restraints on centralisation

There are other factors which run counter to centralisation. These include:

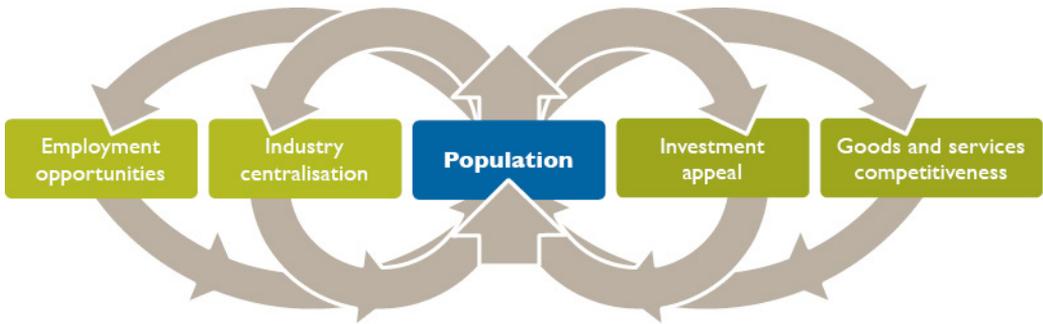
- **Infrastructure hangover.** The existence of infrastructure encourages residents and businesses to continue and for new people to enter to make use of it.
- **Community attachment.** People have attachments to their town and to the people in it.
- **Amenity preferences.** While large centres often benefit from people seeking access to services, due to different tastes, some people prefer the ambience offered by small towns.
- **Goods and services access.** While the car has enabled the growth of large centres, some small towns have been able to benefit from proximity to larger centres. They function as an extended part of the larger town's market, so while they still lose services to the larger centre, they can attract residents who want a small-town lifestyle while still being able to access employment and services from the large centre. This benefits those towns which are relatively close to a larger centre, and might therefore be considered part of the centralisation process, but it enables a small town to maintain or grow its population.
- **Industry requirements.** There is still a requirement for some industries to be located outside the larger centres, particularly primary industries.
- **Prices.** The cost of land and housing tends to rise with population. Businesses can benefit from locating outside major centres. Households can benefit from lower-priced housing.
- **Congestion.** Centralisation can lead to congestion that hinders and discourages further activity as a range of negative externalities such as pollution, loss of time and increases in cost prompt people to consider alternative locations.
- **Historical persistence of small towns and industry.** This encompasses factors such as path dependence, people who want to remain in place, emphasis on the status quo, people who are not able to leave town due to limited resources and sunk costs of infrastructure.

Interaction of processes and positive feedback loops

In earlier chapters, we treated processes of investment, goods and services delivery, industrial centralisation and larger employment markets as if they were separate processes. In fact they are closely intertwined.

The processes that encourage population growth in a town work together. As described in Chapter 10, a decision for a household to locate in a town because of goods and services offered increases the town's overall population, and hence the demand for goods and services, which in turn encourages subsequent households to enter. This can be a powerful feedback loop in its own right.

However, an increase in population will also increase the attractiveness of the town as an investment destination, as a site for a centralised industry and government service delivery and as a good place to gain employment, education and other services. Each one of these factors will in turn contribute to even further population growth and as a result the initial increase will be magnified through the linked positive feedback loops shown in Figure 12.1. The positive loops shown in Figure 12.1 can operate as negative loops with a falling population (although typically less quickly).

Figure 12.1 Interaction of positive feedback loops (population size)

Source: BITRE analysis.

The integrated operation of these different forces promoting or inhibiting growth in a town explains the extraordinary size and scale of change noted in Chapter 4. Trends, once started, grow in strength making competitive towns larger. Success breeds success, but for towns struggling to compete, the downward momentum is difficult to stop.

Key factors of change

What we build and how we access goods, services, employment and recreation reflects our financial and technological capacity at that time. For example, households and businesses have increasingly been able to access easy, affordable and reliable transport. This can be enabled or constrained by the legacy of past decisions, most notably in physical infrastructure.

Table 12.1 summarises some of the key factors impacting settlement pattern change.

Table 12.1 Key factors impacting on settlement pattern change

Factor	Impact on activity	Impact on settlement pattern
Increasing wealth	Capacity to embrace technology. Ability to choose a lifestyle.	Amenity increasingly important
Increasing life expectancy	Enabled retirees to make location decisions independent of employment considerations.	Amenity increasingly important
Technological and productivity advancements	Change in industry mix, rise of services, reduced employment in traditional industries.	Centralising of activity
Improved transport and communications	Personal mobility through the use of the car. Changed cost considerations in business location for inputs and transport to market. Separation of place of work and residence (cars, fly-in/fly-out and drive-in/drive-out).	Centralising of activity and amenity increasingly important
Population growth	Need for building, infrastructure to cater for population.	Centralising of activity
More women in the workforce	More complex household locational decision-making. Freedom of women to make a locational choice. Different occupational focus.	Centralising of activity
Income support system and superannuation	Reduces the links between residential location decision and employment.	Decentralising
History and existing infrastructure	Existing frameworks and assets frame current decision-making.	Favours retention of existing patterns

Source: BITRE analysis.

The factors described above are likely to continue, with more centralisation to occur; a greater emphasis on amenity and a further loosening of the link between place of work and place of residence. This will have implications for towns because managing these changes and identifying opportunities into the future will necessarily form part of their regional development strategies.

Implications for towns

This report provides some insights into the national trends and processes around the changing settlement patterns and how they impact on towns. From a national perspective, these are strong forces with local implications that cannot be ignored. However it would be a mistake to not pay attention to the specific local circumstances surrounding particular towns and their position in relation to other towns. The strong centralisation trend ensures that long-term trends in regions resulting from industry fluctuations or other changes are uneven in their impact. Some towns seem to flourish even in adversity. Similarly, town growth is uneven in growing regions with local conditions being central to the success or otherwise of particular towns.

The findings of this report provide a better understanding of where towns fit in settlement pattern change over the long term, what causes this change and how it occurs. The report provides a wider view of national changes but needs to be supplemented by a good understanding of the history and changes of individual towns by those who know them. Similarly, local knowledge will benefit from understanding the drivers and related processes of change: geography, history, industry, goods and services provision, amenity and investment.

Some of the broader issues arising from this report that should be considered by towns are set out below.

Traditional industry bases and amenity appeal

The changes in the fortunes and structures of particular industries and the rise of amenity locations mean that towns in particular locations have an enhanced or diminished capacity for growth into the future.

This has meant that towns' relative advantages have changed. It is not news that towns that are reliant on declining industries are likely to struggle, especially if they aren't large or isolated enough to be a service centre for the area. However, as noted in Chapter 9, changes in the relationship between base industries and towns means that having a buoyant base industry close by is also no longer a guarantee of success. Towns must make themselves relevant and competitive if they are to capitalise on nearby industry. In 1911 industry had little option but to use local labour and suppliers. In 2014 there are many alternatives. Many towns are now familiar with the reality that industry must choose the most competitive business options regardless of their location. The use of contractors and imported labour is common and farm and mining inputs are regularly sourced from larger businesses in regional centres and capital cities.

Towns also should recognise that the health of industry does not necessarily translate to the health of a town. It is therefore important for towns to understand their relationship with industry. The strength of town links with industry can vary. Often, the most critical is the

relationship of industry to local employment. The absolute number of employees required for a given industry has fallen relative to output over the century. Because of the increasing separation between place of work and residence, there can be stark difference to the degree to which workers in the town are residents, and, conversely, the degree to which residents are employed locally. Other issues include the amount of money the industry spends in town on other inputs and whether there are associated industries positioned locally.

Towns in attractive areas have the advantage of being able to draw people on the basis of amenity. The mobility of the labour force and the relatively large number of people outside the workforce means that some towns and cities are able to attract people without having their own strong local industry base. In particular, towns with natural and built amenity or locations near larger centres which offer a wider range of goods and services have an enhanced ability to draw new residents. Even if they are not able to retain services in their own town, relatively close regional proximity can be enough.

Local industry restructuring (or decline) has resulted in towns transitioning (and sometimes struggling) to new functional forms. Many coastal and attractive inland locations have been able to embrace other activities, becoming tourism and lifestyle destinations where their location or history has provided a distinct competitive advantage. Major centres have also benefited as they have grown to a scale where they have taken on many of the metropolitan attributes that allow them to serve a spatially expanding hinterland.

In this way, towns can concentrate on their strengths, or their natural advantages. These strengths vary considerably. For example, some towns focus on being 'lifestyle' destinations. They may eschew large chain stores in order to retain their heritage, environmental or village 'feel'. At first sight, to favour the amenity value of an attractive main street over the expansion of mainstream retailing seems a little unconventional. However it may be sensible planning to build on the town's inherent advantages while understanding and building a more stable, if different place in the wider retail network.

However, other towns do not have advantages that suit today's activity. This is true of some towns that functioned in the early twentieth century servicing primary industry but have now lost this base, and do not have an obvious natural advantage that would enable a shift of function. For many of these towns it is difficult to foresee a viable long-term future. The positive benefits that much of spatial adjustment brings to individuals and the economy as a whole make it difficult (and inappropriate) to stop or even reduce the change. Instead, towns have to consider how to adjust to fit in with the new settlement system and in some cases there may not be a place.

Interconnected towns and inter-town competition

Today, towns are interconnected, as people and businesses conduct their activities at a distance and across traditional regions. This can be seen in the growing separation of place of work and residence, and how people now access goods, services and recreation.

A town no longer has to be all things to its residents, as was the case in 1911. Today there are many more opportunities for towns to specialise. Those with an interest in towns should be aware of strengths and weaknesses, and just as importantly, how a town does (or could) interact economically and socially with its neighbouring towns. A spatial awareness of activity

at the regional scale and the nature of the relationship of its residents with the regional centre is vital knowledge. A small town will usually find it difficult to compete directly with a regional centre in goods and services provision, but local residents and firms can be well positioned to capture different types of (often niche) opportunities while taking advantage of the greater range, lower prices, enhanced social and economic infrastructure and extended labour market available to local residents accessing the regional centre.

Towns should also consider the nature of inter-town competition described in Chapter 10 and consider the competitiveness of the whole package of (particularly economic) goods and services that they offer. Since people are unlikely to visit multiple towns for different goods, the town centre that provides the most appealing package of goods and services to locals and visitors will receive more custom. Consequently, there is much to be gained from working in collaboration within a town. Businesses can benefit by making alliances with other local businesses to raise the profile of a town through 'place based marketing'⁴⁹, thus increasing the market catchment to the benefit of all local businesses. Various local councils have used place based marketing to promote their local town or region, and distinguish themselves from other areas. A town can benefit from being associated with a particular industry such as wine, cheese or surfing or more generally with lifestyle and tourism pursuits.

Towns and people

Change is not always apparent from population size. Towns can maintain population while the characteristics and activities of that population change. This report generally considers town change in terms of population, but there are other ways in which towns can change. As noted in Chapter 8, infrastructure hangover and welfare-led migration may change the economic and social character of towns while the population number remains relatively stable. However change is not always detrimental and some towns with positive amenity have experienced social benefit from the influx of retirees and so-called 'sea-changers'.

In declining towns there will be concerns for people left behind when others move away as this often signals an overall decline in service levels particularly for people without easy access to a car or other transport. This can create serious issues for access to some goods and services, exacerbated by the influx of new residents seeking affordable housing because of their own limited resources. Typically, new residents with low incomes also have difficulty accessing the labour market and suitable training. The relative isolation of a country town can exacerbate these problems, particularly where there are differences in fundamental philosophical outlook to the existing residents.

Appraising towns

In practical terms, towns that wish to influence their destiny going forward need to understand their individual circumstance as a starting point. They will benefit from making an objective assessment of where they fit in larger regions. Some of the key issues to consider include transport systems, relative amenity, the labour market, goods and services provision and housing investment. Specific issues to be considered include:

⁴⁹ 'Place-based marketing has been defined as, '...the conscious use of...marketing to communicate selective images of specific geographical localities or areas to a target audience' (Ashworth and Voogd 1994, p.39 cited in Howell and Shaw 2002, p.3251).

- Where residents work, shop, socialise and undertake leisure activities (in town, or in another location).
- Whether people come from outside to the town for these purposes.
- The town's transport systems (internal and external) and other networks (communication links, governance and public service provision structures).
- Why residents choose to live in the town.
- What keeps people in the town (residents, visitors).
- Why people leave.
- The nature of industry and the town's links to it.
- The role of amenity—what the town offers (or could offer), and what appeals to locals and visitors.
- The town's characteristics in terms of employment, demographics and goods and services offerings.
- Where the town fits in different types of systems (for example, if it has schools, how does this relate to schools in nearby towns? Do students come in or go out to access education?).
- Understanding how these things have changed over time and how they may be likely to change in the future.

All of this is affected by the proximity to other towns in the region, both larger and smaller, so it is also important to consider the proximity and sizes of other towns (particularly with consideration of the connecting transport networks).

As has already been noted, competition between towns for residents, workers and visitors is complex. The relative value of one place over another for households (which towns to live in, visit or patronise) is not decided on one factor. While certain town features may be more important in a particular household's decision, the collective offering of a town is important for its overall appeal. This suggests that businesses which may compete with each other locally must nonetheless collaborate in the sense of making sure that the town is presenting the strongest offering.

Some of these issues offer both challenges and opportunities. For example there are both benefits and costs of being close to a regional centre (or larger town). The costs include the ease with which regional centres can be accessed by residents for goods and services, as discussed in Chapter 10. This same ease of access can increase the ability to attract residents looking for a small town lifestyle but only if they can retain the access to adequate services.

Implications for regional development

This report tries to address some of the fundamental causes of settlement pattern change. It considers the mechanisms involved in the growth and decline of towns and regions, and so has implications for government policies in regional development. This section looks at some of those implications.

The limits of centralisation

By taking a geographically broad and century-long perspective the report draws attention to the long-term causes and effects that are not always apparent to policy makers and development practitioners dealing with the very real needs of regions in the short term.

A long view also sets a desire to work towards broad and long-term objectives. In the past Australia has only occasionally set overall spatial objectives on a national scale. However if current trends continue, growth in the Sydney, Melbourne and Brisbane conurbations is likely to lead to the creation of very large cities with attendant congestion and basic service supply issues. This prospect may provide some incentive for development of some alternate state and national objectives. Key to this issue is a better understanding of the limits to the benefits of centralisation—or more precisely an understanding of when the benefits of expansion are overtaken by the increased costs of congestion and increasing marginal costs of supplying public utilities. This is a difficult issue, not least because the pricing arrangements for public and private transport and public utilities have objectives other than spatial efficiency or equity. It is complicated by governance arrangements that place state government as both the central decision maker and supplier of services to their respective capital cities. It is difficult to even understand the spatial cross subsidies to and from these cities and their impact on the price signals given to the rest of the economy.

That there are economic limits to the centralisation phenomena, so prominent in this paper, is almost certain. These limits are well beyond the regional scope addressed in this report but may be an issue in Australia's major cities. However, the paucity of explicit work in this area means that it is not clear whether strategies to moderate the growth of our largest cities are timely or practical. Given the long-term importance of the issue, it is a question that warrants explicit investigation.

Regional impact of progress

Much of this report shows that the big changes in development patterns have resulted from slow and sometimes subtle changes in wealth and technology—particularly transport technology. The decision makers involved have been small and large businesses and households seeking to improve their own circumstances. These fundamental drivers and decisions are largely out of the government's direct control. Even government decisions are routinely made with goals in mind other than regional development. It is unlikely that this situation will change much and the big shapers of development are likely to remain outside the direct sphere of government.

This is not to say that governments are powerless, or should do nothing. Rather it suggests that governments need to be aware of the drivers and directions of change and the likely impact on settlement patterns. Improved transport and wealth means a greater emphasis on amenity destinations, more commuting in all its forms and a reduced likelihood of settlement consistently following industry.

Paradoxically, the drivers of change in settlement patterns are almost universally regarded as beneficial, while the changes themselves are looked on with concern. Most people and governments agree that greater wealth and improved technology are to be encouraged. However, as this report suggests, changes in the settlement pattern are a direct result of

technological and economic progress. Further, the changes occur as a direct result of the way in which the general population reacts to technology and wealth. It is hard not to conclude that evolving settlement patterns and pressure on existing towns is a price of an enhanced lifestyle for the majority of residents.

Inevitable it may be, but the difficulties associated with change are real for many residents. Some are obliged to travel or move, others find services declining around them or a need for new services. Adjustment affects people in many different ways—many of them adversely. The difficult adjustment process suggests an important focus for government in dealing with structural adjustment: policies and programs that focus on the needs of those individuals and households adversely affected by change. Such policies are usually based around providing good information and support for transition and include retraining and access to appropriate education, provision of financial information and advice, social support services and the like.

A commonly used but more interventionist approach attempts to replace lost industries with others in order to preserve or create new jobs and utilise existing skills within the current workforce. This approach, although conceptually satisfying, runs the risk of actively preventing the necessary change. More importantly it begs the question: if the proposed new industry is best located in this town or region, why hasn't it already established there? Experience in agricultural adjustment suggests that in the long term, measures that attempt to extend the life of failing industries or find new ones which have limited regional advantages, often do little more than delay change and in the end are detrimental to the interests of all concerned.

Regional development policy

The presence of long-term spatial change as a direct result of a growing economy invites government to consider settlement patterns as part of its management of the economy as a whole.

Traditionally, national and to a lesser extent state governments focus on industry and the population as a whole when framing policy and programs. Spatial impacts, both positive and negative, are sometimes not taken into account when considering policies relating to industry, immigration, transport, health, social security or defence. This report suggests that these spatial impacts can sometimes be profound and so should continue to be explicitly considered as part of the policy development process.

Economic growth has always been a key goal of regional development policy but regional and national growth benefits have often been regarded as almost the same thing. Similarly, national equity goals and programs have generally been based on nationally important non-spatial parameters and have largely been simply assumed to be appropriate across regions. However, this report emphasises that the pursuit of national economic objectives can lead to the reorganisation of spatial patterns. Despite the improvement in national, and for the most part regional, economic performance that this brings, it can bring some locally unwelcome spatial adjustment and alter the economic and social status within regions.

The consequences of development suggest the need for regional policy objectives beyond the pursuit of economic growth in the national economy. In particular it raises the prospect of policy objectives aimed at easing and streamlining the adjustment process and suggests potential benefits in specific education, health and welfare policy to deal with the spatial impacts

of change. Government policy in almost every portfolio can have spatial consequences, which should be considered.

Recognising a role for regional policy does not automatically ensure effective action can be undertaken. The ability of government to influence the economy is often assumed, but not assured. The reality is that government represents only one part of an Australian economy operating in a global setting and spatial policy is only one of many objectives it must pursue. However, there may be scope for successful policy interventions in some areas.

Interventions to address clearly identified problems or opportunities will likely be more successful. Government policy can be an enabler for regional areas based on a clear rationale and working with the underlying competitiveness of a region. That said, the challenges faced by regions and government will still be formidable.

Spatial economic efficiency and equity

Government has an influential role in assuring economic efficiency and equity objectives. Government reforms, policy development and service delivery all have implications for spatial equity and efficiency and an awareness of possible spatial impacts is important. A more explicit management of the spatial aspects of the economy by government may be effective in understanding issues relating to regional cross-subsidisation and the long-term distortion of growth patterns that result. This is particularly relevant to the transport sector given its importance in shaping settlement patterns.

Infrastructure and service delivery

Outside specific regional development aims, government at all levels has a role in settlement pattern change through what are often routine decisions by mainstream government in its role as a service and infrastructure provider.

Access to services is an important part of amenity and has a critical role in the development of towns and cities. The government-provided services are among those that are most critical and government will benefit from a greater understanding of the spatial consequences of alternate approaches to service delivery. This involves recognising that there are significant spatial impacts of changes to service provision for both towns and individuals. A loss of locally provided services directly affects residents of a town. Typically, consumers must either bear the cost of any travel or miss out on the service.

Modern government services, particularly the health and education systems, are both complex and expensive to deliver and very often lend themselves to centralised delivery systems. The upshot is that personal transport to centralised service points is necessary. While for most customers this can be accommodated by private car, those without this option (usually the young and the old) are forced to expensive alternatives, reliance on friends and family or to move out of their communities to a more accessible location.

The long-term impact of transport infrastructure on development patterns is well known and is confirmed by the observations in this report. A new road for example will cause significant economic and social change, but this change is not always in the positive way that some locals

in smaller centres expect. Importantly, transport planning's strong influence on settlement patterns places it in a strategic position as an instrument of urban development.

The implications for the provision of transport services are not always well understood. If long-term spatial impacts are not given sufficient weight, government can inadvertently alter settlement patterns by providing subsidised service in a particular area but not others. While this applies to pricing and provision of many types of government services, it has particular application to the subsidisation of public transport. As with transport infrastructure planning, subsidies of this kind affect decisions by households about where to live and so have unusually long-term consequences. They are accordingly very difficult to roll back.

The application of an underlying spatially-based user pays philosophy for both private and public transport systems is a commendable ideal when dealing with these issues. However it is difficult to address, particularly in light of the complexity of public infrastructure financing and jurisdictional boundaries.

Intervention and adjustment

Understanding that changes are part of a national pattern rather than stemming from isolated local events invites a more considered response from government. Understanding the issues underlying a perceived shock also allows for a more constructive approach that caters for the whole community rather than just the portion of it in most obvious distress.

The decline of rural towns once dependent on a more substantive agricultural industry has similarities to the predicament of capital city based communities facing a decline in local manufacturing. However, there are also significant differences. City based communities tend to have the impacts buffered by the amount of unaffected activity surrounding them. There are other base industries, service industries may be only slightly affected and workforces are spread across a substantial metropolis.

The rural town is likely to be also caught up in the slow centralisation process as their economy becomes more regionalised and the changes in both agriculture and mining tend to be slower and the underlying causes not so obvious at the local level. Rather than a disruptive event at one site warranting the obvious attention of policy makers, the rural process can almost look like a natural and orderly progression as workers at different work sites are put off or retire in their ones and twos.

Government intervention into the impact of shocks is best considered in terms of managed transition, recognising that the changes in fortunes for particular towns are due to larger forces that reshape the economy. These are long-term pressures caused by the transition of Australia from an agricultural economy to a developed, service-based economy. Many other advanced economies have been subject to similar pressures. There is little government can do to stop these changes, nor is there a conceptually compelling reason to try to do so. Nonetheless, the effects of these changes cause real pain for individuals and towns, and there is a role for government in mitigation of effects and aiding people caught in the transition to adjust.

One direction may be to focus regional development networks to assist in restructuring and adjustment for towns and individuals. One advantage of this approach is that by streamlining the adjustment process it very clearly would make a positive contribution to the national

economy. The benefits of such an approach are not confined to ailing towns and regions. It can also be applied to regions of growth to assist them in adapting to new circumstances.

Future considerations for government

The discussions in this chapter have alluded to many issues that raise basic questions for government about future policy and actions. Similarly, regional development practitioners and those with an interest in the future of towns and the people who live in them seek an understanding of the potential for, and wisdom of, government action. While it is not the purpose of this report to engage in a full discussion of these options, it may be useful to crystallise some of the issues through a series of questions.

Is it sensible or even feasible to pursue policies that resist or seek to reverse the types of long-term trends identified in this report? While trying to resist change completely will be an obvious waste of effort and resources, there will always be a temptation to moderate or delay change. Observation of such strategies in the rural adjustment area suggests that they too are of little value, and can even be detrimental. However, in practice, the individual circumstances of particular towns and regions need to be considered and weighed against the costs and benefits to the whole community.

To what extent should governments focus on people rather than industries, towns or regions? Traditionally, governments have focused regional development policy and assistance towards regions and industry, yet this report demonstrates that the interests of individuals, industry and regions are not always the same. Government should be careful to define its objectives and avoid some common misleading assumptions such as that a strong industry necessarily results in a strong regional community or that assisting the current population will necessarily assist the long-term population.

Similarly, it cannot be assumed that assistance targeted at a region or industry will necessarily help all the people within it. In the past, industry policy has often been used in an attempt to meet regional development aims. However, with the relationship between industry and towns weakening, and industry operating in a nationally or internationally competitive environment, it is unlikely that government can use this approach without putting industry competitiveness at risk. Moreover, given the weakening link between an industry and the fortunes of the town in which it is based, there must be questions over the effectiveness of introducing a new industry to replace an existing one.

What measures are available to government? Strategies need to be targeted and informed by an understanding of the underlying spatial adjustment processes and tailored to the specific circumstances of a region. In some instances the best approach may involve pursuing measures to assist those people that have become distinctly disadvantaged, through training, education or social support services. In others, it may involve pursuing measures which build on a location's competitive advantages, or which assist the region to become better engaged with local industry. This report points to amenity (built, service and natural) as an increasingly important point of difference for locations. This may provide some towns with an advantage that can be leveraged. This suggests a wide range of potential positive actions, many of which enhance the amenity of towns and have elements of public goods.

What is the importance of mainstream government action? Regardless of whether governments decide to have specific regional development objectives, mainstream government activity has spatial consequences. It is important for governments to consider not only what they tax and spend, but also where they do it. A major theme of this report is that transport has had profound effects on settlement patterns; therefore government involvement in transport (and communications) will be central to the shape of future development.

Are there implications for government service delivery? The delivery of core government services (such as health and education) has spatial implications. It is important to consider the impacts, both positive and negative, which flow from decisions about where government services are placed. For towns, local delivery is doubly beneficial: local services are generally more easily accessible and their provision offers a source of skilled employment. While government agencies in service provision are usually less concerned about the latter, the ability to provide accessible services often becomes a function of the client group's ability to access affordable and timely transport. This becomes a complicated issue and inevitably raises questions regarding appropriate levels of service in less accessible locations. Very often solutions revolve around transport and communications, making a whole of government approach beneficial.

Conclusions

This report has examined settlement pattern change over the last century. The fundamental parameters in settlement change have been wealth, technology (including industry, transport and communications technologies), increased life expectancy, population growth and sources of income that are not place-specific (for example, income support).

Changes to these parameters have empowered the many individual decision makers to behave differently and in doing so they have created different patterns of activity. This process is expected to continue into the future building on today's investment, existing infrastructure, available housing and expanding networks. The settlement pattern in 2100 will be different to today's pattern, but today's pattern will influence the shape of Australia in 2100.

Australia's population is forecast to increase by 15 million people from 2012 to 2060, and for the proportion of Australians over the age of 65 to increase from the current one in seven to one in four over the period (Productivity Commission 2013). The increase in the proportion of older people is significant, because of lifecycle differences in residential location decisions. Older people with enhanced independent incomes from superannuation or the pension will make location decisions based on amenity, including access to key services such as health care.

The centralising of activity is likely to continue. Technological advancement, including in transport, firms seeking economies of scale advantages, households and positive feedback loops will remain powerful factors and continue the process of centralisation so prevalent in this study.

There is likely to be more capacity for people to live in one place and work in another, and who can therefore choose their residence without considering the employment options locally. As transport technology increases, it is likely that the number of towns which can capitalise on this will increase. An implication for the future development of towns is that amenity is significant. Industry alone does not provide an economic basis for a town as people are willing and have the means to commute to a job from a location they prefer.

We can expect a future of more centralisation, a greater emphasis on amenity and a further loosening of the link between place of work and place of residency, and there is much to be gained by studying the processes that drive them. The change in our towns from 1911 until the present has been profound. It has been associated with a substantial growth in wealth, technology and living standards. It has also been the cause of much hardship for many individuals who either didn't understand the change or had difficulty adapting to it. The future may also involve great change. A better understanding of the processes will allow it to come a little easier.

APPENDIX A

Data Description

Population estimates are drawn from the Census, which for the commonwealth commenced in 1911—previous Censuses were conducted within states⁵⁰. A Census provides both a snapshot and contributes to a time series of population change in settlements, revealing whether communities are growing or declining. It also provides an indication of long-term trends in population movements influencing the spatial nature of Australian rural and urban locations.

However, as would be expected, the definitions and methods of collection have changed over time. Of particular note for this study are the changes in the population counts for Indigenous persons and changes in the definition of urban settlements.

First, both the 1911 and 1961 Censuses separate population counts for Indigenous persons from the localities' population estimates. Indigenous persons were counted but on a very limited basis⁵¹. This results in an undercount in both the population estimates and the distribution of settlements. The most obvious impact was in the Northern Territory, and northern Western Australia and Queensland population estimates and its distribution of settlements. For example, numerous localities in the Northern Territory were not included in the Census listing.

Second is the changing definition of a locality impacting on population estimates. The population estimates in 1911 were based on self-identification of residents as such no clear administrative boundary for localities were established. In 1961, population and dwellings of localities were based on twenty or more dwelling or fifty or more persons. However, as in 1911, clearly defined boundaries of towns and localities were generally unavailable. As such, dwellings stated to be within the generally accepted limits of a town or locality (which may cover a wide area) are included in the count. Locations beyond the limits of a town with no other recognised name were recorded separately as being 'near' the appropriate town.

In contrast, the 2006 Census of Population and Housing has a classification called Urban Centres and Localities (UCLs), which have clearly defined boundaries. Population clusters of over 1000 persons are classed as urban and localities are locations with populations between 200 and 999 persons. UCLs are subject to review at each Census with an element of subjective considerations into defining the location's boundary. For example, some rural areas can be included to ensure that the boundary encompasses all urban areas. The stricter definition applied by the Australian Bureau of Statistics in 2006 is reflected in the number of observations listed between the 1911, 1961 and 2006 Censuses (see Table A.1).

⁵⁰ The first Census was in New South Wales in the year 1828 with a population of 36 598 (ABS/CBCS 1911).

⁵¹ The 1911 Census stated that for Indigenous population counts are based on 'full-blooded Australian Aboriginals' and have been included if they 'were in the employ of whites at the date of the Census, or were living in a civilised or semi-civilised condition in the vicinity of settlements of whites at that date. An enumeration of Aboriginals living in a purely wild state was not undertaken' (ABS/CBCS 1911, p.2054).

Table A.1 Counts of Australian towns by population category in 1911, 1961 and 2006

Town Population	1911		1961		2006	
	Number	%	Number	%	Number	%
200–500	1567	63.7	1 350	58.8	569	33.3
500–1 000	482	19.6	439	19.1	425	24.9
1 000–2 000	244	9.9	205	8.9	294	17.2
2 000–4 000	105	4.3	138	6.0	183	10.7
4 000–8 000	42	1.7	84	3.7	106	6.2
8 000–16 000	13	0.5	51	2.2	62	3.6
16 000–32 000	6	0.2	18	0.8	38	2.2
32 000–64 000	1	0.0	9	0.4	13	0.8
64 000–128 000	0	0.0	0	0.0	9	0.5
Over 128 000	0	0.0	1	0.0	9	0.5
Total	2 460	100	2 295	100	1 708	100

Note: Towns with a population under 200 have been removed for all three Censuses; as such the town counts are below those presented in Table B.2. In addition, the five largest capital cities are excluded from the three Census counts (Sydney, Melbourne, Brisbane, Perth and Adelaide).

Source: BITRE adaptation of ABS/CBCS Censuses 1911, 1961 and 2006.

To consider settlement change in Australia, two separate datasets were constructed for analysis.

- The population estimates for towns of over 200 were used from the three Census periods (1911, 1961 and 2006). For example, urban centres with population estimates of over 25 000 persons in 2006 are sourced from the Census counts for the locality for that year. These estimates can vary from the Australian Historical Population Statistics (2008) for other major centres publications. Two notable differences are for the cities of Bendigo and Newcastle.
 - » Bendigo's population estimate for 1911 was 17 833, while the Australian Historical Population Statistics (ABS 2008a) estimates the population at 36 127.
 - » Newcastle's population estimate for 1911 was 12 816, while the Australian Historical Population Statistics (ABS 2008a) estimates the population at 51 942.
- To analyse individual locations over time, a customised dataset was developed based on the following definitions:
 - » Localities with over 500 persons in any of the 1911, 1961 and 2006 Censuses were matched by name and local government area. This includes those with name changes such as Germanton changing its name to Holbrook during the First World War.
 - » Urban centres that have been created by merging two locations or a collection of towns have been estimated by combining these locations based on their Census years estimates for locations with over 500 persons. To illustrate:
 - » The towns of Kalgoorlie and Boulder in 1911 have been combined to form a population estimate to match the 2006 UCL Kalgoorlie-Boulder.

- » Central Coast was not classified in 1911. As such, towns located within the 2006 UCL area boundaries were used as population proxies for the UCL in 1911. For example, the towns of Gosford and Wyong form part of the 1911 Central Coast population estimate.
- » Population estimates for urban centres with population estimates of over 25 000 persons (Statistical Districts) in 2006 and capital cities are based on the Australian Historical Population Statistics (ABS 2008a).

To map 1911 localities, two methods were applied. First, both the 1961 and 2006 Censuses published locational coordinates for all locations as such 1911 matched locations were assigned the same coordinates. In addition, unmatched locations were assigned coordinates from the Geoscience historical metadata locational coordinates.

APPENDIX B

Survey methodology

Introduction

BITRE previously undertook a spatially-based survey of prices and costs aimed at gaining insight into how costs vary across Australia as a whole, from capital cities to the very remote areas, and attempted to assess the reasons behind this variation.

The study took the consumer's perspective, with a focus on the cost of buying goods and services at a location, rather than the cost of supplying them. The concept of 'cost' is a multi-faceted one. In terms of spatial differences, cost encompasses price, quality and choice/availability. The primary emphasis was on price differences between areas. The link between the observed price set and the overall cost to the consumer is bridged by applying weighting derived from the ABS's Household Expenditure Survey (HES) (ABS 2006b).

For the purpose of addressing non-price costs (quality, choice) associated with remoteness, a qualitative element was included in the survey. This involved discussions with retailers, education providers (predominantly principals and deputy/vice principals) and health providers. Where this data informs our understanding of retail demand, supply and pricing; for example with issues such as travel to larger centres for goods not available locally or specific costs associated with remote supply chains, the results are used to guide our thinking regarding interpretation of the quantitative data. They are not factored directly into the creation of the indices.

Selection of survey sites

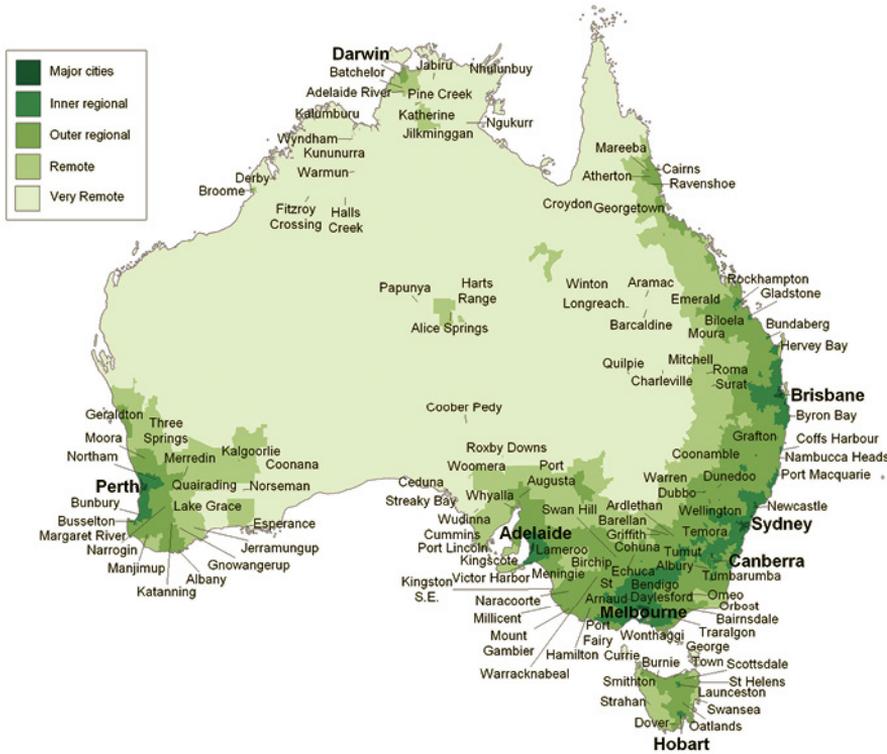
The survey looked at specific areas. Since the objective was to understand the causes of spatial variation in price, a list of possible drivers of variation was created before the fieldwork began. These include: distance, population, competition, income, local produce, state, transport costs, age structure, industry structure, tourism, cultural factors and store type. More possible drivers of geographic price variation were noted and considered as the fieldwork progressed and the researchers talked to retailers in the field about their perceptions. In this process, wealth, the levels of income support and disadvantage were considered as potential drivers, but in the event were not found to be significant in their own right, and were closely related to drivers identified in the original list (wealth with age, income support and disadvantage with income).

The main aim of the fieldwork was to collect price data for enough locations in Australia that the patterns and drivers of spatial price variation could be understood. Budget constraints meant that only a limited number of sites could be surveyed. It was therefore important that

the sites selected reflect the nation as a whole. To the extent that they were known, the original list of drivers was used to help determine the locations to be surveyed. Some, such as state, population and distance from capitals were recognised explicitly. Others such as competition, income and industry structure were considered by ensuring that specific region types were included—coastal areas, wheat belt towns, remote pastoral regions, mining towns and so on. The final locations were determined using this list tempered by the practical constraints of efficient use of staff resources in trip planning.

A map of the locations is presented in Map B.1 and the locations by state are listed in Table B.1. The coverage is reasonably comprehensive. Some regions are not fully covered, but are considered by similar regions in other parts of the country. A notable omission is the Pilbara region, but it was considered that the characteristics were picked up in other remote mining regions and that inclusion of the Pilbara and the Kimberley would have biased the study even more toward Western Australia.

Map B.1 Towns sampled in the cost of living study



Source: BITRE.

Table B.1 Towns sampled in the cost of remoteness study by State and Territory

Queensland	South Australia	New South Wales	Victoria	Western Australia	Tasmania	Northern Territory	Australian Capital Territory
Brisbane	Adelaide	Sydney	Melbourne	Perth	Hobart	Darwin	Belconnen
Atherton	Ceduna	Temora	Port Fairy	Merridin	Currie (King Is)	Harts Range	
Croydon	Kingston SE	Ardlethan	Hamilton	Margaret River	St Helens	Adelaide River	
Georgetown	Meningie	Barellan	Warracknabeal	Coonana	Scottsdale	Papunya	
Mareeba	Streaky Bay	Griffith	St Arnaud	Kalgoorlie	Smithton	Pine Creek	
Ravenshoe	Naracoorte	Albury	Birchip	Manjimup	George Town	Alice Springs	
Cairns	Wudinna	Tumbarumba	Bendigo	Bunbury	Launceston	Katherine	
Biloela	Cummins	Turnut	Echuca	Norseman	Strahan	Jilkminggan	
Hervey Bay	Millicent	Byron Bay	Daylesford	Esperance	Burnie	Ngukurr	
Bundaberg	Mt Gambier	Grafton	Orbost	Busseton	Swansea	Jabiru	
Moura	Port Lincoln	Coffs Harbour	Omeo	Geraldton	Oatlands	Batchelor	
Emerald	Cooper Pedy	Nambucca Heads	Bairnsdale	Three Springs	Dover	Nhulunbuy	
Gladstone	Roxby Downs	Port Macquarie	Traralgon	Moora		Coolalinga*	
Rockhampton	Woomera	Wellington	Wonthaggi	Broome			
Quilpie	Port Augusta	Dunedoo	Swan Hill	Derby			
Winton	Whyalla	Coonamble	Cohuna	Fitzroy Crossing			
Charleville	Kingscote	Warren		Narrogin			
Longreach	Victor Harbour	Dubbo		Katanning			
Barcaldine	Lameroo	Newcastle		Gnowangerup			
Mitchell	Elizabeth*			Halls Creek			
Aramac				Warmun			
Surat				Albany			
Roma				Jerramungup			
				Wyndham			
				Lake Grace			
				Kalumburu			
				Kununurra			
				Quairading			
				Northam			

* Note: Elizabeth and Coolalinga are part of Adelaide and the wider Darwin area respectively.

Table B.2 Australian town populations and proportions sampled

Town size (2006 population)	Number of towns in Australia (a)	Number of towns surveyed in this study	Towns surveyed as percentage of size category
Less than 500	611	20	3
500 to 999	425	21	5
1,000 to 2,499	354	18	5
2,500 to 4,999	164	21	13
5,000 to 9,999	86	12	14
10,000 to 19,999	55	10	18
20,000 to 49,999	33	15	45
50,000 to 99,999	13	6	46
100,000 to 499,999	9	3	33
More than 500,000	5	5	100
Total	1755	131	7

Note: (a) 'towns' classed as defined in ABS 2006a Urban Centres and Localities. As this includes towns with populations under 200, the total is slightly higher than in table A.1, which excludes those towns.

Source: BITRE analysis.

Table B.3 Sample towns by state and territory

State	Number of locations surveyed
New South Wales	19
Victoria	14
Queensland	23
South Australia	20 (a)
Western Australia	29
Tasmania	12
Northern Territory	13
Australian Capital Territory	1
Total	131

Note: (a) In addition to the standard approach of surveying one mid-range area to represent each capital city (in the case of Adelaide, Marion), Elizabeth in Adelaide was also surveyed and treated as a separate location.

Source: BITRE analysis.

Cursory inspection of Map B.1 could suggest that the sample is biased toward regional and remote locations. However, closer analysis of the populations of the sample and total Australian towns in Table B.2 indicates that, on the contrary, small regional settlements are significantly underrepresented and towns and cities above 2500 people are overrepresented. The real picture is made more complex by a lack of information regarding the number of small towns that actually have a significant retail presence—especially where they are near a larger centre. It is reasonable to expect that many of the 611 towns with a population of less than 500 people would have only minimal shopping facilities.

Table B.3 shows the location by state and territory. Western Australia has the largest number of towns surveyed, and New South Wales and Victoria are underrepresented, at least on a

population basis. However a significant number of centres were surveyed in each state and we are confident the survey is truly national.

The list of items to be priced

A standard list of items was created to use in the price collection fieldwork. In constructing the list, there were two main issues: what items to include, and the relative importance of each.

Comparisons of the cost of goods and services between regions are often made using the 'basket' method. A group of items are priced in two or more regions, and then the total cost of the 'basket' of goods is used to gauge the price difference between these areas. The difficulty with this approach is that what items are included is open to dispute. The list of items may reflect one person's tastes but be completely irrelevant to others. Further by simply adding up the overall cost of the basket, the price of some items (the ones with the biggest nominal price) are given more prominence than others. Simply adding the basket in effect weights the items in the basket on the basis of their price of the item, which itself is partially a function of the amount purchased: consider the relative importance of cereals if the basket list specifies a jumbo pack rather than a small pack.

Clearly using the total cost of an arbitrary basket is a simplistic approach that is too influenced by the product composition. The approach can be modified to give wider validity by including items purchased by the average consumer in the proportions that they are purchased by the population as whole. Obviously a strict application of this method would require us to price every type of good in every size available. However a compromise can be made by grouping like goods together, comparing the prices of typical members of the group and weighting the group as a whole on the basis of their contribution to the whole household budget. This approach effectively defines the value of the groups of goods in the 'basket' on the basis of the average consumption of the community.

To be accurate, the price differences of the sampled goods from each group must be representative of the differences in the prices of the whole group. In spatial applications it has the added advantage of allowing comparisons between groups of items even if some items are not available. For example the price of cheese as a group can be compared between two places on the basis of the available brands and packages, as long as some identical lines can be priced.

It is also worth noting here that what the average consumer buys differs from location to location and that therefore there are questions regarding the appropriate spending pattern to use. For example, if we were to compare two regions, should the basket of goods represent the spending patterns in region A, or region B? Or should it be an average of what people buy in both regions? The approach can make a difference to the outcome of the index, and hence our perception of how the cost of living compares between these places. However, the question of which spending pattern to use is not easy to resolve and depends largely on the perspective of the data user and/or the region they are in: obviously the relative importance in the basket of thongs and gum boots differs between coastal and alpine regions.

Given indices are for general use across regions and to give them the most relevance to the greatest number of people, the same, average, weights were used across all regions. The typical

Australian household pattern of spending was used to weight the price groups, as determined by the Household Expenditure Survey (HES).

The Household Expenditure Survey and the BITRE baskets

The HES is conducted by the ABS every 5 years, and collects information about the spending habits of Australian households. BITRE used the 2003–04 HES, which was the latest at the time of the BITRE survey. The output includes tables by state on the average weekly household expenditure within categories of spending. The main focus of the survey is goods and services, on which the average Australian household spends \$892.83 per week.

The categories used are relatively small. An excerpt from the HES at Table B.4 shows the definition of some subgroups in the food category. These were used as the base groupings for weighting BITRE indices (some of these subgroups were amalgamated). The relative values in the final two columns showing the dollar expenditure and percentage of total household expenditure were used for weighting.

Table B.4 HES estimated expenditure on food categories

HES No.	Product Group	\$	Per cent
030101	Bread	5.91	0.66
030102	Flour	0.2	0.02
030103	Cakes, biscuits, puddings and related products	6.42	0.72
030104	Cereals and pasta	3.53	0.40
030200	Meat (excluding fish and seafood) nfd	1.37	0.15
030201	Processed meat (including ham, bacon and sausages)	7.07	0.79
030202	Beef and veal	4.13	0.46
030203	Mutton and lamb	2.1	0.24
030204	Pork (excluding bacon and ham)	1.11	0.12
030205	Poultry	3.95	0.44
030206	Game	0.01	0.00
030207	Offal	0.21	0.02
030299	Other meat (excluding fish and seafood)	0.07	0.01
030300	Fish and seafood nfd	0.06	0.01
030301	Fish and seafood	3.79	0.42
30401	Eggs and egg products	1.06	0.12
30501	Dairy products	11.27	1.26
30601	Edible oils and fats	1.39	0.16
30700	Fruit and nuts nfd	0.05	0.01
30701	Fresh fruit	7.55	0.85
30702	Canned, frozen and bottled fruit	0.75	0.08
30703	Dried fruit and nuts	1.42	0.16

(continued)

HES No.	Product Group	\$	Per cent
30800	Vegetables nfd	0.04	0.00
30801	Fresh vegetables	8.34	0.93
30802	Frozen vegetables	0.98	0.11
30899	Other vegetables	1.25	0.14
30901	Sugar	0.33	0.04
30902	Syrups, honey, jams, jellies and desserts	0.95	0.11
30903	Confectionery	9.7	1.09
30904	Spices, herbs, sauces, spreads, and other food add	3.43	0.38
30905	Canned spaghetti and baked beans	0.32	0.04
30906	Packaged prepared meals	3.53	0.40
31000	Non-alcoholic beverages nfd	0.73	0.08
31001	Soft drinks and packaged waters	5.05	0.57
31002	Fruit and vegetable juice	2.57	0.29
31003	Tea and coffee	1.97	0.22
31004	Food drinks	1.54	0.17
31005	Cordials and unpackaged milk based beverages	0.67	0.08
31101	Meals out and fast foods	42.1	4.72
39901	Other food and non-alcoholic beverages	0.22	0.02

Source: ABS Household Expenditure Survey 2003–04, Cat. 6530.0.

In order to determine the relative prices for each of the categories, prices were collected for items from within the above categories.

Items on the pricing list

Conceptually, there are two options for determining what sort of items should be priced: to try to estimate the 'typical' cost, or to find the cheapest item to fulfil basic specifications. The first will emphasise the most popular brands, the second the cheapest items, probably house brands. The former reflects Australia-wide spending preferences. The latter is also valid because it provides a comparison of the minimum cost required to live in different towns. This project opted for the 'typical items' approach on the basis that it reflects more accurately the reality of what is actually purchased.

The list of items was developed with the aim of capturing price differences for as many HES categories as possible, which could eventually be summed up (using the appropriate weights) into indices for each town. These indices may focus on groceries, hardware, electrical goods or other categories which may be able to be used to create an overall cost of living index.

For the grocery list, items were chosen on the basis of brands with the highest market share, as listed in Retail World's Australasian Grocery Guide (Retail World 2005). The items on the grocery list were therefore very specific, and referred to an exact product (for example 'Kellogg's cornflakes 525g'), except for fresh produce ('carrots loose per kg') and house brand goods ('house brand cream 600ml').

The non-grocery parts of the list contained some generic items (such as hamburgers, drinks at a pub and fuel) and some branded items (Dunlop tyres, Barbie dolls, Dulux paint).

Theory suggests that when conducting spatial price comparisons, all aspects of the product should be identical, so the price only captures location-based differences, and not any additional differences due to variations in quality (Halstead 1989). However, some of the towns to be compared had a very limited range of goods. For instance, say a town only has a particular type of fridge available for purchase. In these cases we constructed the price comparison by comparing the price of the fridge with an identical model in a capital city. This creates some conceptual issues regarding the costs to the consumer of a lack of choice, but is the only practical way of creating a price comparison⁵². However for some goods—especially where the brand loyalty was judged to be low, a 'cheapest available' item was included. Generally these categories were populated by generic or house brands, but in some instances the absence of these lines led to them being filled by regular brand lines. This more flexible specification was also a practical consideration. Products with an exact specification are much harder to find in smaller towns, allowing no price comparison at all.

Initially, the list included 274 grocery items (including non-food grocery items such as tobacco and cleaning products), and another 142 items to cover other common goods and services, ranging from clothing and electrical goods to petrol and housing. This list was expanded and refined as the appropriateness of the items was tested in the fieldwork.

Prior to the fieldwork proper, the list was tested at several towns within a few hours of Canberra, and another five locations in Victoria, including Melbourne. Preliminary indices were constructed on the basis of the results. This established the rigour of the process before the Australia-wide fieldwork commenced.

Fieldwork

The fieldwork was conducted between July 2005 and December 2006, an 18 month period which followed some trial use of techniques and equipment. Fieldwork was undertaken on a state by state basis. While ideally prices would have been collected across Australia simultaneously, this was not possible due to resourcing limitations.

Where possible, all the towns within a state were priced within a month of each other. Each location was allotted one day of price collection time, except for the capital cities, which were allotted two days, due to their size and the need to collect data items that matched all other centres. The price collection was carried out by pairs of researchers, typically covering four to five locations per trip. All researchers were BITRE staff, which meant that they could be trained in detail. This ensured a more consistent level of data collection.

Although legally, prices are regarded as public property and can be collected without issue, in this survey price collectors approached the store owner or senior staff and asked permission to collect data. This included a written assurance that the data was being collected for research and would not be used in way that could identify individual stores. For this reason, the raw data will continue to be held by the Bureau and is not available for release to other researchers. The

⁵² The consumer where choice is limited is disadvantaged since they do not have the option of choosing an item that better suits their needs and budget. It is not possible to estimate the extent of this cost to the consumer; let alone incorporate it into the price index. We have therefore compared prices of what is available, but built an availability index to capture costs associated with relative lack of choices.

advantage of approaching the stores was that this often facilitated conversations between the store principals and the researchers. This often provided researchers with an insight into the perceived commercial realities faced by individual stores. This is reflected in the discussion and interpretation of results in this paper which are consistent with these discussions.

The data collectors aimed to record prices in three supermarkets per town, where they were present. Due to time limitations, sometimes only one or two supermarkets were surveyed where three or more were present.

The time limit placed on the data collection did have some effect on the proportion of items sampled. For example, an entire small town could be covered in the allotted time: every store with items on the list could be surveyed. In the larger towns, however, only a sample of the total population of stores could be surveyed.

Distortions in the price data were minimised by the data collectors using their judgement and common sense in seeking out the lowest prices. Larger stores and chain stores were often targeted first as experience showed that these stores most often had the lowest prices. Less time was spent in smaller, boutique establishments, especially if an initial check revealed a generally higher price level. However time constraints inevitably lead to some anomalies. For example, if two towns each had a Kmart and a Big W, experience suggests us to expect very similar (but not identical) prices. However, if in the first town only the Kmart was surveyed and in the second town only the Big W was surveyed, there would be some minor differences attributable to the methodology.

This issue has to some extent been overcome due to the number of items on the survey list and the number of towns surveyed. The nature of the output also mediates this, since the focus of the project is on broad trends that can be extrapolated to other towns across Australia, rather than focusing on price differences recorded between different towns within the sample.

Initially, BITRE researchers tried to record the size of each supermarket. As information was not available on turnover or floor space for each store, the number of checkouts was recorded. However, this data was not used in the analysis, as it was not believed to be an accurate measurement of size. Moreover, store type (whether a major chain or an independent) and the size of the local population were considered to be more relevant factors in pricing than store size, which also appeared dependent on these factors.

Due to the difficulty in finding items on the list in smaller localities, replacement items were occasionally priced and subsequently collected in at least one capital city to enable a price comparison. This substitution technique was applied in a way that kept the substitute item as similar as possible to the original item. The rationale for this was so that the price differential of the substitute item would be similar to the price differential of the list item. For instance, if the listed item was not available, an alternative size of the same brand was priced in preference to pricing the same size item of a different brand. In this way substitute items were chosen that as closely as possible mimicked the price behaviour of the one on the list.

While most of the data was collected through the fieldwork, some information was collected afterwards, such as electricity and insurance prices. The cost of hardware items was collected as part of the fieldwork, but the Rawlinson's construction cost guide was used to supplement this information and create price differentials of building costs in different areas (Rawlinsons 2007).

Due to the 18 month period over which data was collected, the CPI was used to adjust all prices to a June 2006 level. Appropriate CPI categories were used for each category of collected data, for instance, quarterly changes in the 'food' CPI index was used to adjust the grocery prices.

Alterations to the HES for the BITRE list for the cost of living index

Although the study focused on only part of the whole cost of living package, it is useful to note that the BITRE cost of living index differs from the HES in a number of ways. This reflects the facts that the HES was not designed to compare the cost of living across regions, but merely records how people are spending their money week to week. Therefore it was necessary to make some alterations to the contents and weightings of the HES list so that it could be used in the study.

Deleted Categories

Holidays – The expenditure takes place in an undefined location, and therefore the cost cannot be measured spatially with reference to a usual location.

Education – The cost of education as it pertains to remoteness is based much more on quality, choice and availability than on price, so the inclusion of price differentials relating to education would be misleading.

Parking fees – While we typically expect parking in larger population centres (particularly capital cities) to be expensive in the central business district and shopping centres, the cost will vary considerably within a location, which means that finding a representative price for a city is problematic. There is also the added impossibility of creating a price ratio when one of the prices is zero.

Road tolls – Road tolls are limited to particular metropolitan areas, therefore price differences for them in a study which examines costs Australia-wide would not be very useful.

Public transport fares – To measure public transport fares requires a standard item to be compared. Public transport within a location could potentially be compared between the larger centres, if a standard 'trip' could be established. However, the more relevant cost of public transport for remote areas (particularly for very small towns) is travel to other locations. In these cases, there is no way to measure the cost of a 'standard' trip.

Other fare and freight charges – This includes taxi fares, non-holiday airfares and removal charges. These items (particularly the first two) suffer from the same problem as public transport fares—that is, the difficulty of establishing a standard item to price. Initially, BITRE attempted to measure taxi fares using the flagfall and per-kilometre rate. However, as with the public transport fares the differences in use by location made it conceptually difficult to compare.

Housing

Although only used in a cursory fashion, the cost of living fieldwork included an assessment of house prices. It was necessary to make some alterations to the housing component of the HES list in order for housing expenditure to be applicable to the cost of living. It is not necessary to spell out the details of these adjustments here other than to note that they attempt to draw an accurate value from the list of rental, principal and interest payments and opportunity costs made explicitly or implicitly by households in relation to housing. Once this is done the cost of housing is a much more significant portion of the cost of living.

Prices with no spatial variation

Some items within the HES have no spatial variation—that is, their prices do not change with location. Therefore, within the BITRE basket, these were given the value of 1 in all locations, so that the price ratio for these items between any two given towns was 1:1.

These items were necessary inclusions, because if only items with differences in price were included, the differences in price overall between towns would be overstated. They comprised about 17 per cent of the BITRE basket. This approach of including 'flat' prices has also been done in other studies (Halstead 1989).

The main categories with no spatial component were interest on loans, postal charges, telephone charges, prescription medicine, motor vehicle purchases, driving lessons, gambling, some recreation items such as day trips and pay TV charges, fees, fines and cash gifts.

While motor vehicles could be priced in different locations, new motor vehicles tended to have standard prices (before dealer negotiation). Additionally, the expense of a new vehicle means that consumers are willing to travel further to buy it, since the cost of travel is a tiny fraction of the price, and the purchase infrequent.

Constructing the indices

After the data was assembled and cleaned of obvious errors, indices were constructed for stores and for towns.

Store indices

Each price was converted to an index on the basis of its relative size compared to the capital city average baseline. The base (100) is the unweighted average of the cheapest price observation in each capital city for each item. Indices for each price in each store were calculated based on the degree of variation from this reference point. The index value for each of the subgroups was then calculated as a simple average of all the items belonging to that sub-group. Subgroups were then combined by weighting them on the basis of their relative contribution to the BITRE list (effectively HES). Indices for groceries or other groups were constructed by combining the appropriate sub-groups.

Town-based indices

The construction of these indices raised some awkward conceptual issues. Within a town there were typically a number of recorded prices for the same item. The difficult issue is how these should best be combined. Two options were considered—using the lowest price observation, or averaging all of the observations.

Averaging the observations was initially considered conceptually appealing, but its application raised some obvious practical difficulties. The most difficult to resolve is how the competing prices should be combined – for example, common sense suggests that a price collected at a large supermarket servicing thousands of customers should be given more weight than a price for the same item at a small corner store in the same town. Unfortunately there was no apparent basis for weighting these different prices in the absence of accurate sales data. It soon became clear therefore that there was no satisfactory way of resolving this problem; especially in larger towns where time constraints on collectors meant that prices in some stores were not collected at all.

A relatively simple alternative is to simply use the lowest price recorded in town for any particular item. This is simple to calculate, and can be used with some confidence, since it represents a real offer price for an item in that town. There are two obvious drawbacks: the lowest price may be in a store that has been missed where a complete Census was not possible; and secondly, it assumes that there are no transaction costs.

In practice, the 'missed price' issue is not as large a problem as might be imagined, particularly when dealing with groceries. Preliminary analysis confirmed that the two chains (Woolworths and Coles) tended to be larger and significantly cheaper than independent grocery stores in the majority of towns. They also invariably had similar prices across the full range of goods. Therefore it is reasonable to assume that if one of these stores were included in the sample, the sample would contain the cheapest price in town or at least a price very close to it. The sample in each town was structured to ensure that if either Coles or Woolworths were present in a town, then at least one of them would be included in the sample. Here it is worth noting that the 'lowest price' option is less likely to provide sampling variation than an averaging method: consider the average of a Woolworths and an independent compared to a Woolworths and a Coles, in cases where all three stores are available but only two were sampled.

The 'lowest price' strategy ignores the transaction costs that would be involved in visiting all stores to get the prices nominated for the town. This is likely to mean that the real cost to a consumer in a town with more than one store will be slightly higher than the index might indicate compared to a town where there is a single store. It is not thought that this difference is likely to be significant.

Variable definitions

The analysis is based on a cross-sectional dataset with the data points set at June 2006. The analysis is a snapshot of the distribution of grocery price indices at one point in time.

The dependent variable for the model is the grocery index. The number of observations used is 129. Two of the 131 locations (Coonana and King Island) were not used in the regression due to an inability to access distance data for these towns.

Independent variables are selected on the basis of broad relevance to economic theory, best fit (highest R-squared), significance of contribution, robustness of the resulting model and absence of mathematical problems. The most significant (driving) variables found are: population, distance to the nearest Woolworths or Coles store, whether there is one or more stores in town and the presence or absence of a community store in the locality.

Dependent drivers

Population

Population is based on the year 2006. Most regions populations are identified using the Australian Bureau of Statistics (ABS) Urban Centres and Localities (UCL). A number of regions are available from the State Suburb Code (SSC) from the Quickstats 2006 Census. Other regions with alternate population estimates are:

- Caloundra – Local Government Area
- Yunderup – UCL North and South
- Croydon – Statistical Local Area (SLA).

Distance to the nearest major chain store in kilometres

The greater the distance from larger markets the higher the cost to customers to access those markets. For localities with Woolworth or Coles stores present this variable equals zero. Distance has been derived from BITRE analysis of Geoscience Australian Road Map based on kilometres to the centre of the town.

Local competition

A dummy variable was formulated and used in the model in order to test for the impact of another store in the local market on the level of grocery prices. If there is another grocery store in a locality the local competition dummy variable equalled 'zero', otherwise the dummy variable equalled 'one'. This variable represented the impact of local competition on the grocery price level.

Community store

Places visited during the collection of data include seven small and remote discrete Indigenous communities with operating grocery retailers. The measured grocery index in those localities was noticeably higher than in larger and less remote localities, which usually also offer greater diversity of supply.

A variable is included in the model for these localities, with a value of 'one' for localities with community store operating and 'zero' otherwise.

Scope of the grocery index

The grocery index was constructed by limiting the BITRE basket to only those items predominantly found in grocery stores. This includes all food (except for the takeaway/restaurant food), tobacco, and a range of other non-food groceries, including cleaning products, over-the-counter medicines (such as paracetamol), personal care items and so on. Excluded from the grocery list were items which can often be found in a grocery store but were not 'typical' groceries in the sense that they are often bought in other locations. These items are small consumer goods such as stationery, toys, socks and garden products. These were still priced in grocery stores where they were available, but they were not considered to form part of the typical grocery trolley, and hence were left out of the grocery index.

Alcohol was priced in grocery stores where it was available. This was also excluded from the grocery index as not all states allow it to be sold in supermarkets.

APPENDIX C

Robust regressions

In linear regressions basic fundamental assumptions include:

1. The relationship is linear so that the errors all have an expected value of zero
2. Errors all have the same variance
3. Errors are independent of each other
4. Errors are all normally distributed

However, if the data has outliers present it can cause change in the slope line of the regression. In the Ordinary Least Squares (OLS) approach coefficient values are related to the mean, which is sensitive to outliers. A mean may not be the best measure. One option is to remove the outliers but simply removing the outliers can underestimate variances and the dependent variable values in this case are viewed as real values that reflect the spatial differences in prices. An alternative estimation technique is to down-weight the extreme observations rather than rejecting them.

Robust regressions provide an alternative to OLS when the data violates the fundamental assumptions. This procedure reduces the influence of outliers to estimate a better fit for the majority of the observations. It uses iterative methods to assign different weights to residuals until the regression converges.

In the analysis used in this paper a Huber-type M estimator was used. The basic algorithm for calculating M estimates is iteratively reweighted least squares. 'For each iteration, a set of weights for the observations is used in the least squares fit' (SAS 2009).

Akaike's Information Criterion (AIC) is a measure of the goodness of fit of the estimated model. It is not used for hypothesis testing but model selection. Competing models are compared through AIC with the lowest AIC representing the best fit. AIC also places a penalty on over-specification and attempts to represent the model that best explains the data. An alternative measure, but closely related to AIC, is the Bayesian Information Criterion (BIC). This again is a measure of goodness of fit but places a higher penalty for over-specification than AIC. In regards to the model presented the AICR and BICR are for robust regressions but the principle remains the same.

For a complete discussion on SAS robust regression refer to user manual SAS/STAT 9.2 User guide.

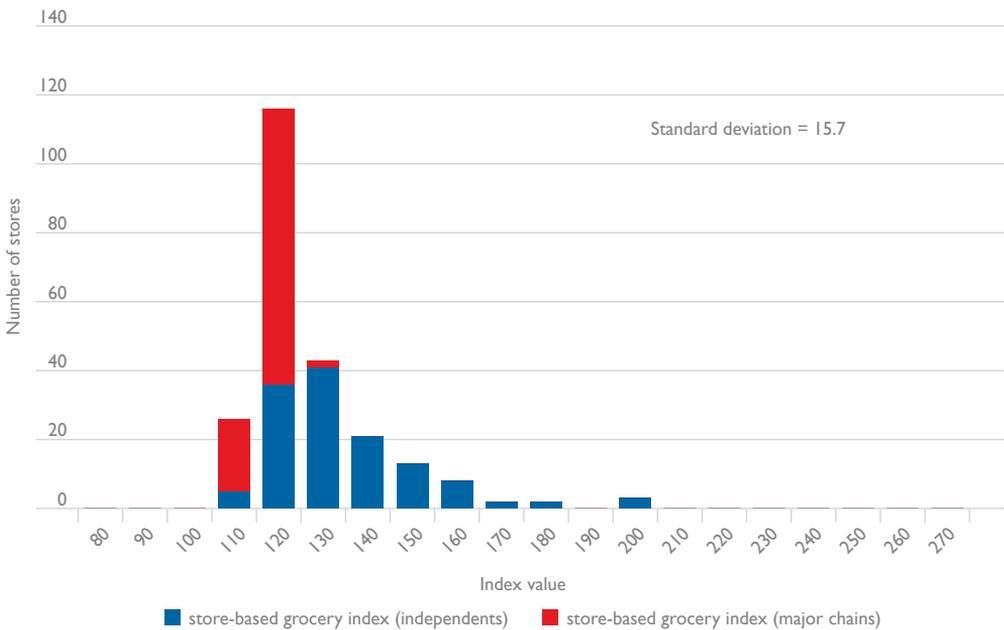
APPENDIX D

Grocery subcategories

Fresh foods

Figure D.1 illustrates the distribution of the overall grocery index by store. Figures D.2 to D.8 show the distribution of a range of fresh food categories.

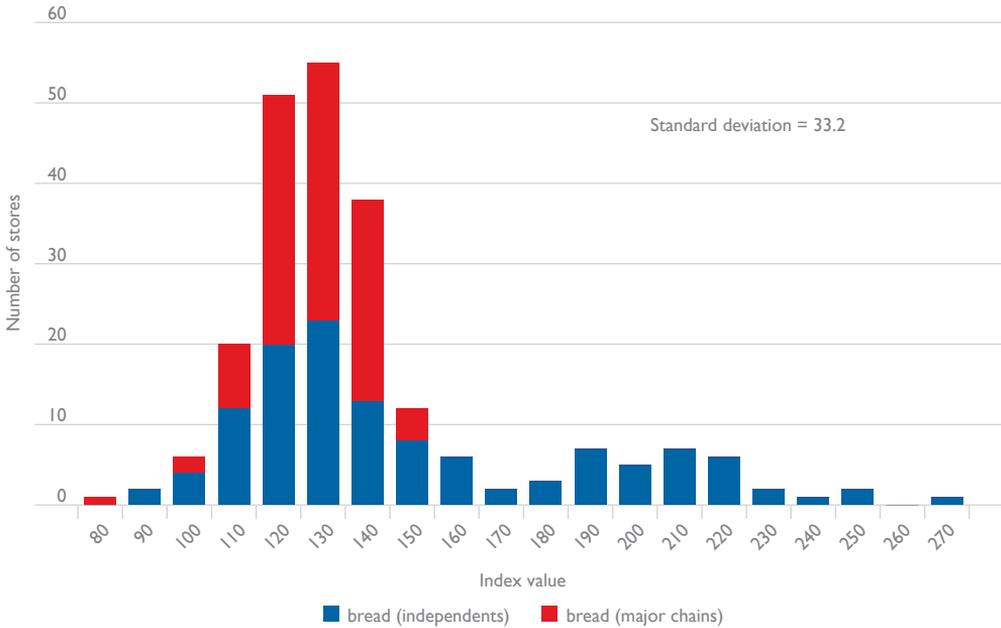
Figure D.1 Variation of indices in grocery index by store



Source: BITRE spatial price database.

Bread

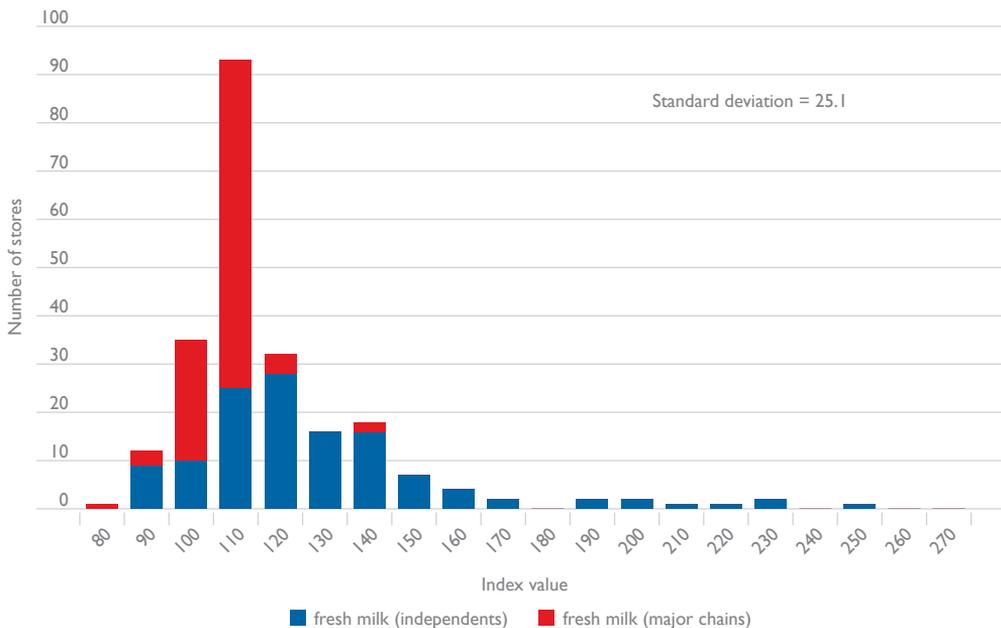
Figure D.2 Variation of indices in bread category



Source: BITRE spatial price database.

Milk

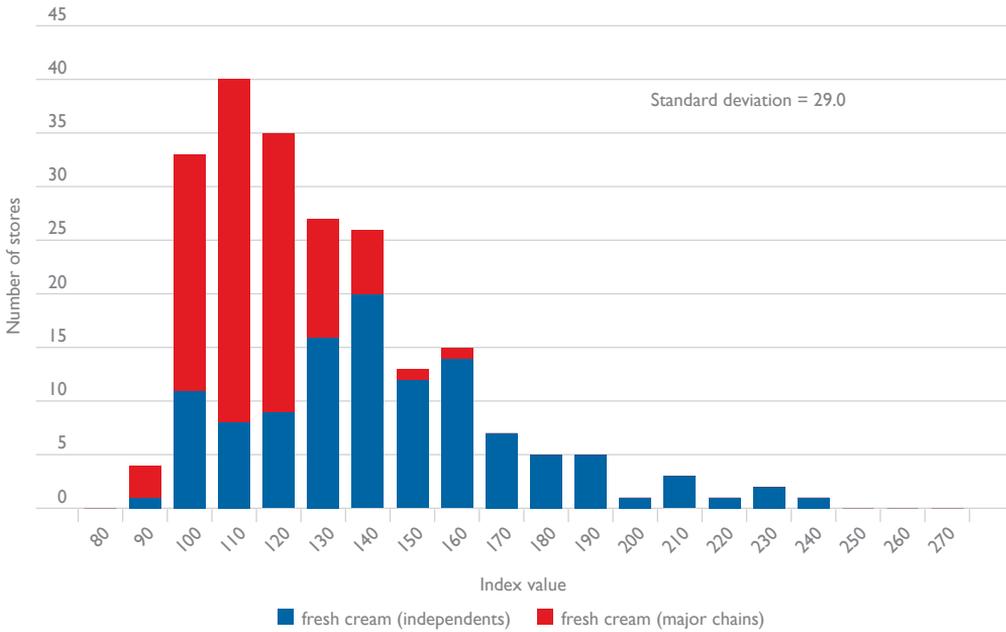
Figure D.3 Variation of indices in fresh milk category



Source: BITRE spatial price database.

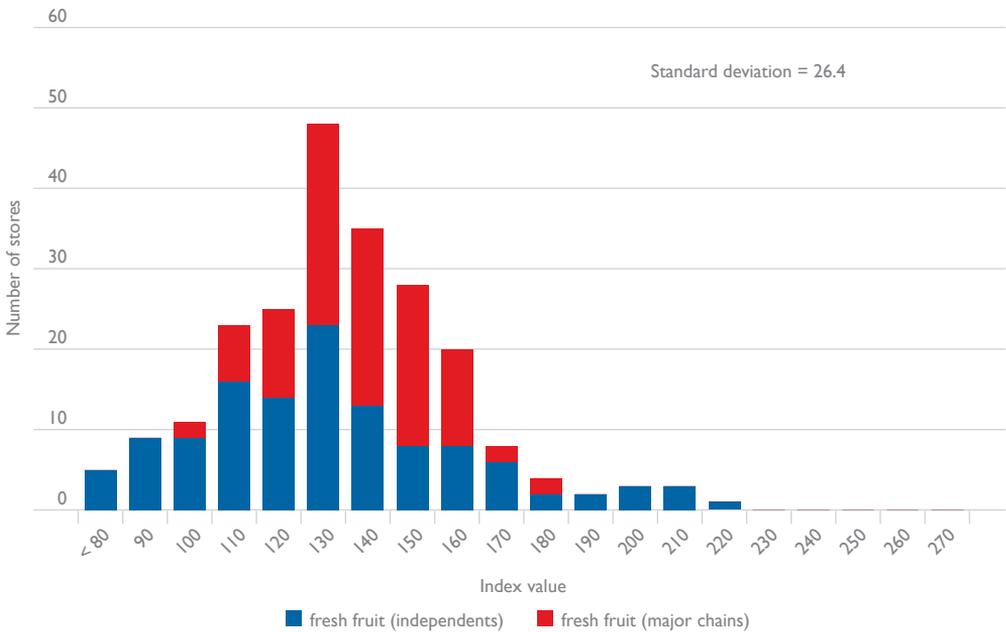
Fresh groceries

Figure D.4 Variation of indices in fresh cream category



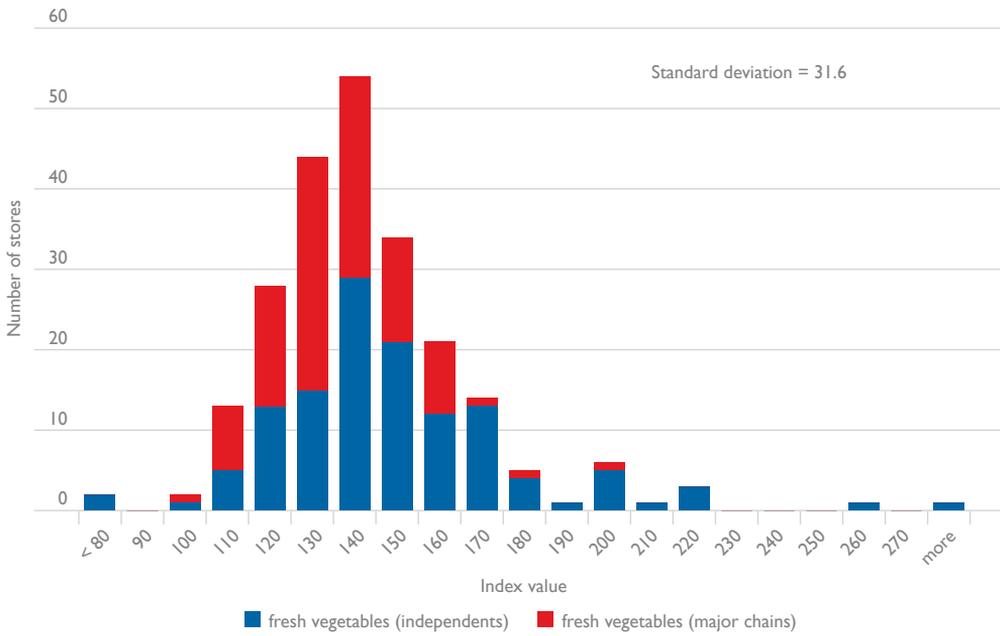
Source: BITRE spatial price database.

Figure D.5 Variation of indices in fresh fruit category



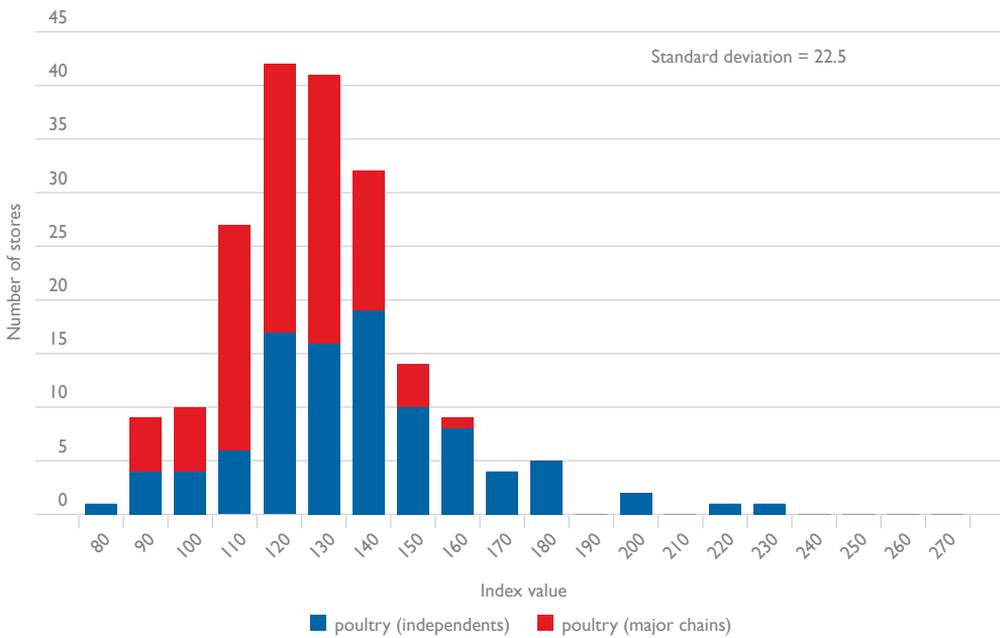
Source: BITRE spatial price database.

Figure D.6 Variation of indices in fresh vegetables category



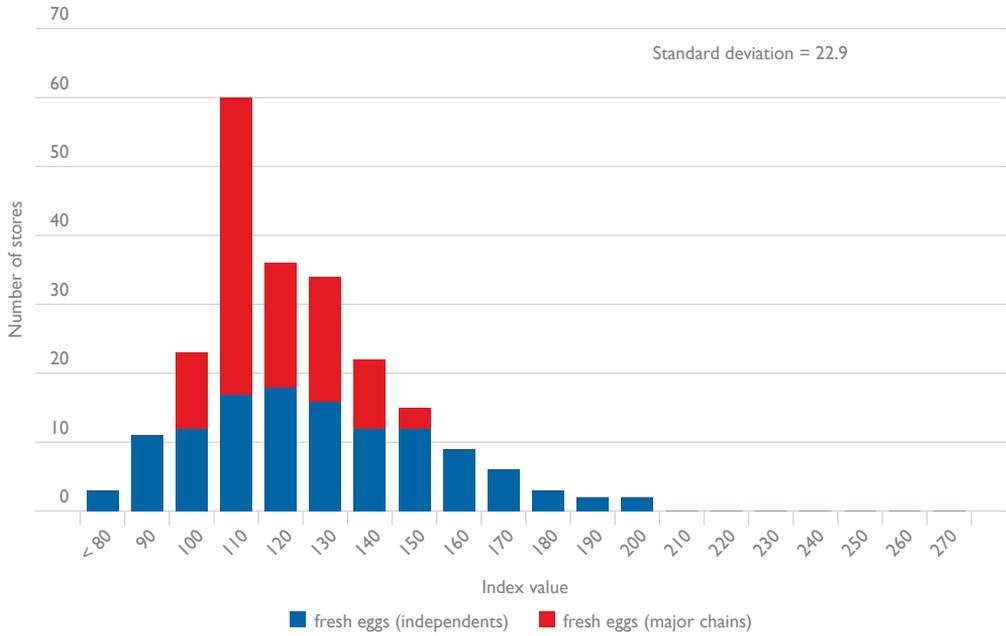
Source: BITRE spatial price database.

Figure D.7 Variation of indices in poultry category



Source: BITRE spatial price database.

Figure D.8 Variation of indices in fresh eggs category



Source: BITRE spatial price database.

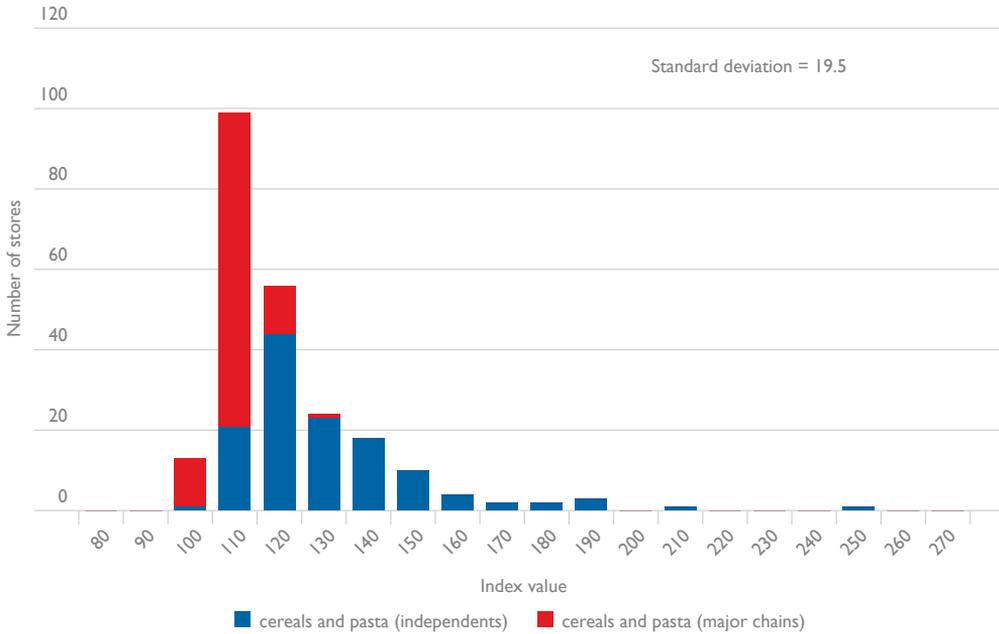
All the fresh produce categories examined above show more variation than the grocery index does as a whole. The fresh milk category is more uniform for major chains, while fresh cream shows more variability despite the similarity of the product.

As expected, fresh fruit and vegetables show more variation than the overall grocery index, even among the major chains.

Dry packaged food

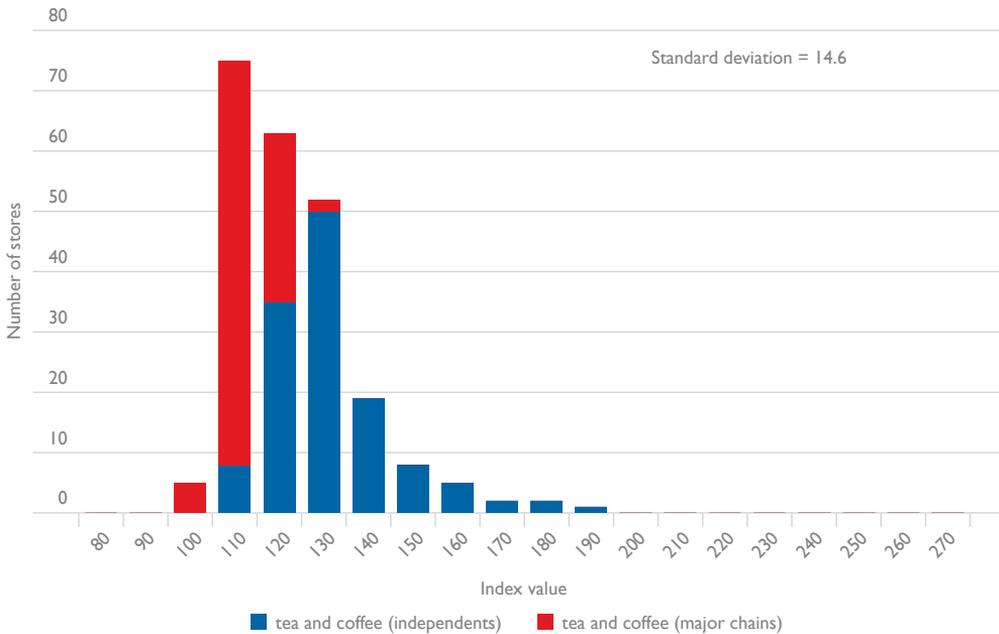
Figures D.9 to D.12 show the distribution for a number of dry packaged goods.

Figure D.9 Variation of indices in cereals and pasta category



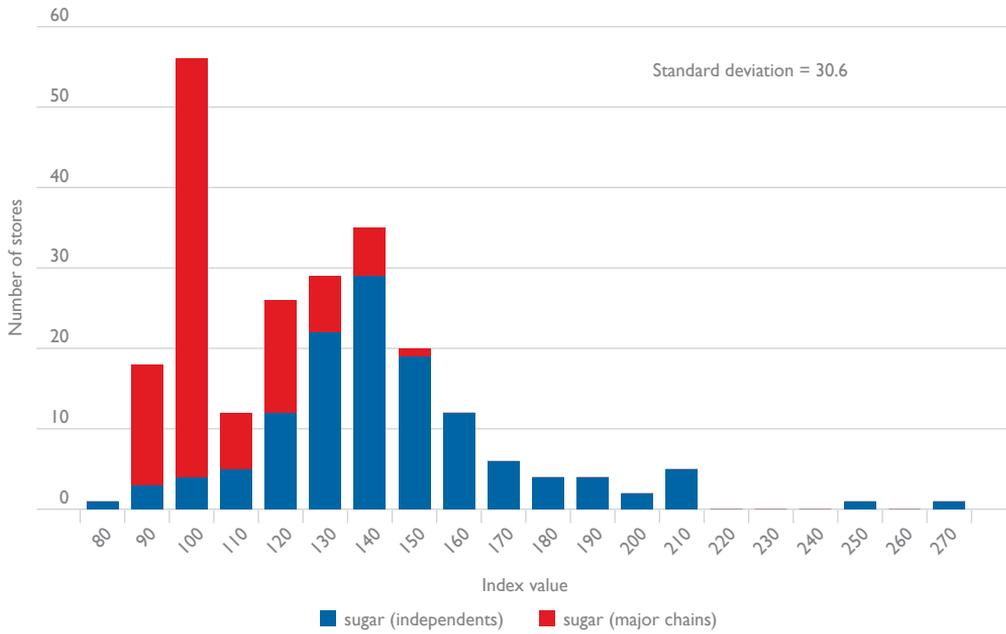
Source: BITRE spatial price database.

Figure D.10 Variation of indices in tea and coffee category



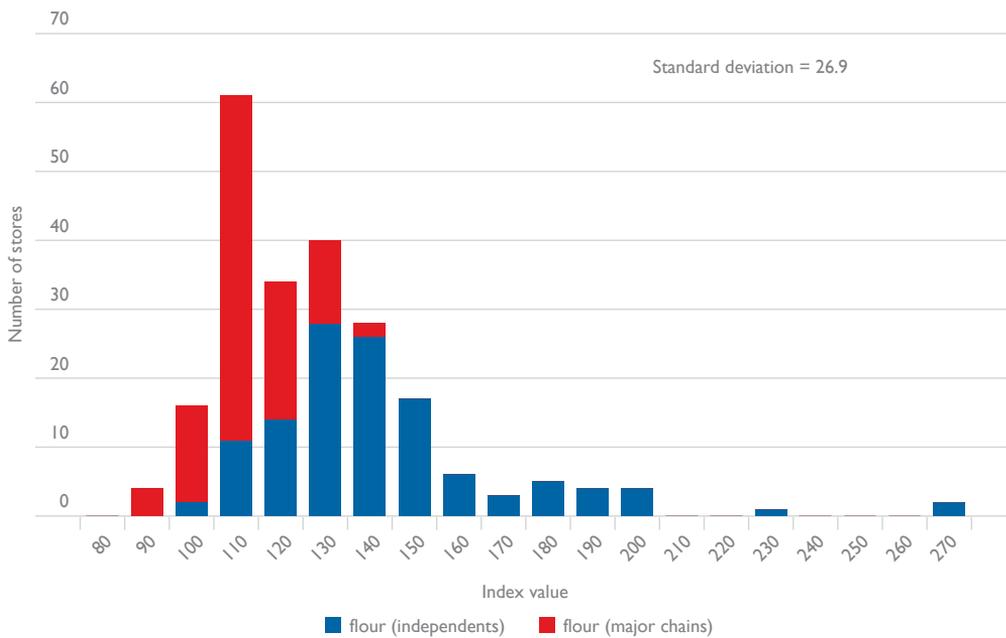
Source: BITRE spatial price database.

Figure D.11 Variation of indices in sugar category



Source: BITRE spatial price database.

Figure D.12 Variation of indices in flour category



Source: BITRE spatial price database.

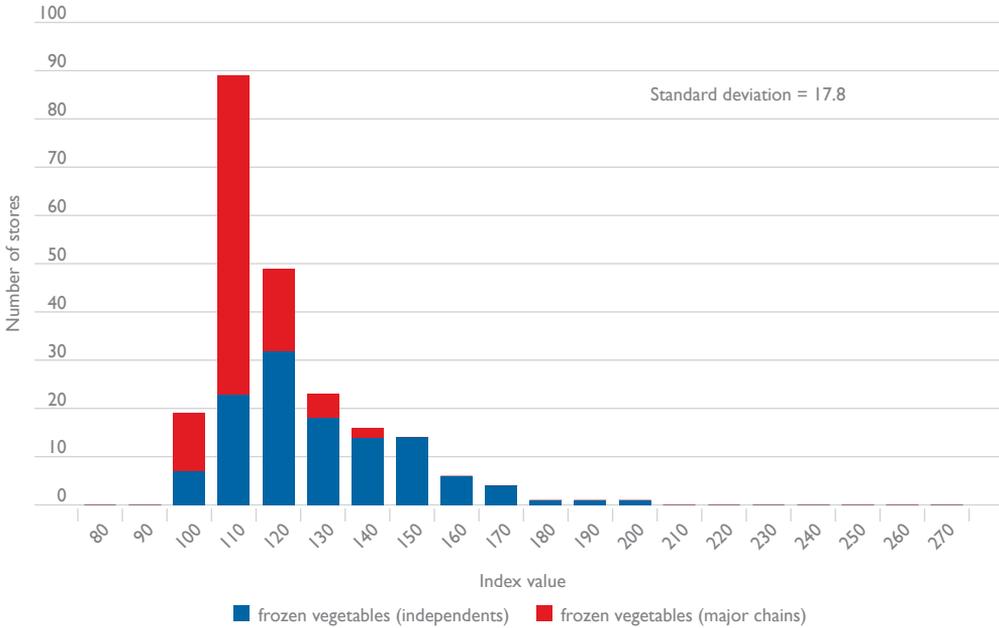
It was expected that dry packaged groceries would tend to show less variation among stores, due to a relative ease of transport, and a longer shelf life than fresh food. However, the findings show that this is quite diverse among different categories.

Frozen food

Figure D.13 depicts the variation in the frozen vegetables category.

While it was expected that the frozen vegetable category would show more variation due to the extra requirements of transport in more remote areas, its distribution is very similar to that of the overall grocery index. This may be because, despite the difficulty in transport, once the frozen food has reached the store, it has a much longer shelf life than its fresh equivalent.

Figure D.13 Variation of indices in frozen vegetables category

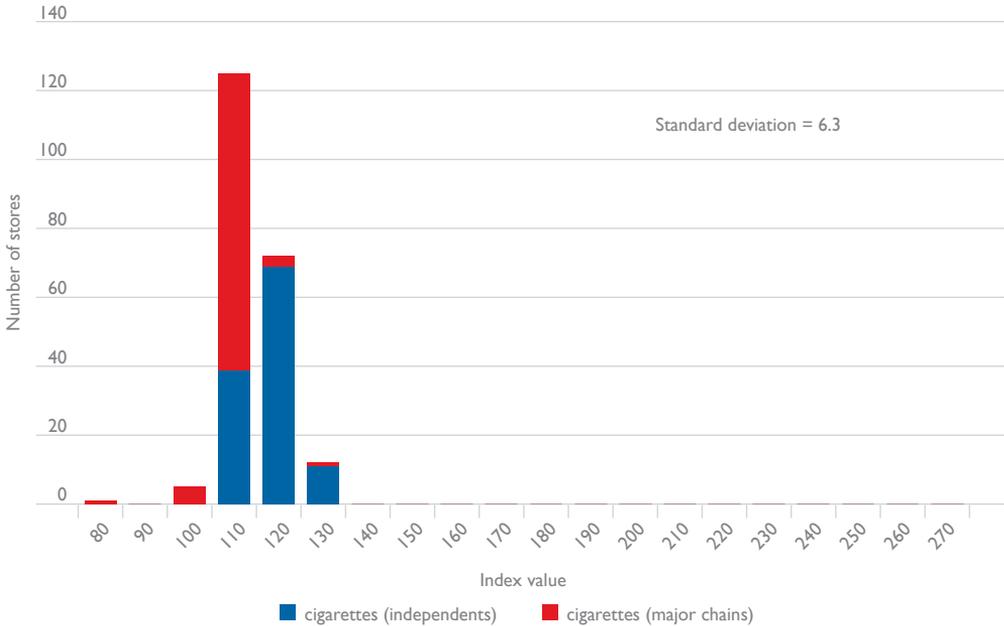


Source: BITRE spatial price database.

Non-food groceries

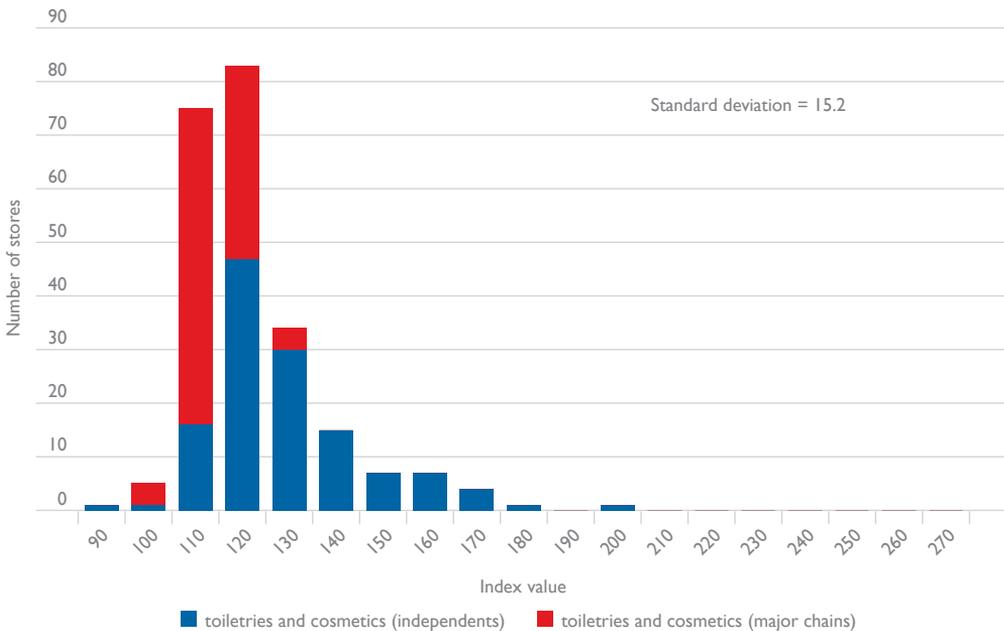
Figures D.14 to D.16 show the variation in the non-food grocery categories of cigarettes, toiletries and cosmetics and cleaners, paper products and food wraps.

Figure D.14 Variation of indices in cigarettes category



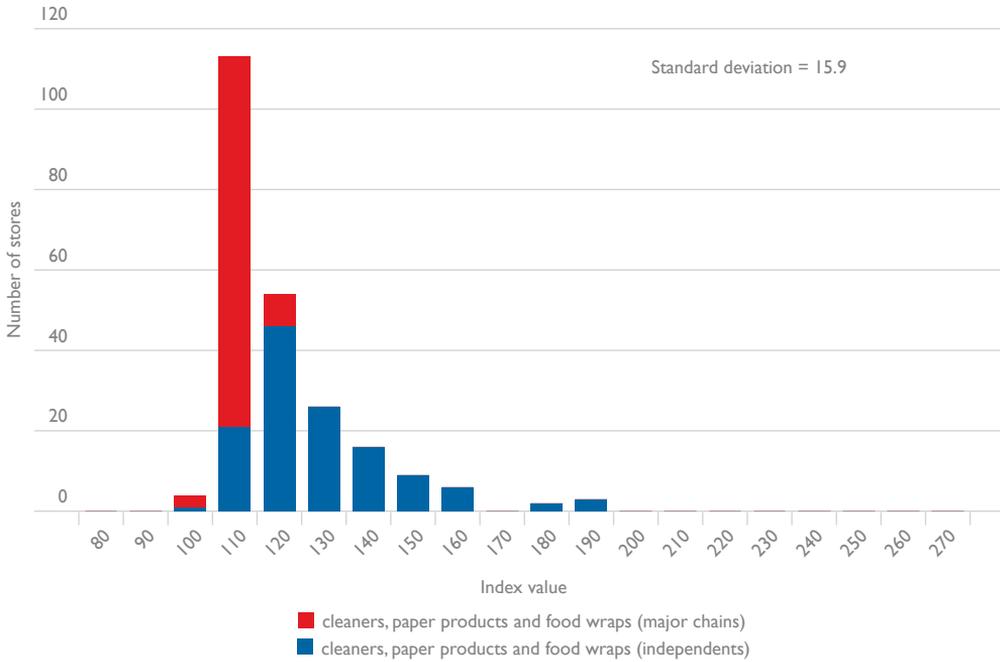
Source: BITRE spatial price database.

Figure D.15 Variation of indices in toiletries and cosmetics category



Source: BITRE spatial price database.

Figure D.16 Variation of indices in cleaners, paper products and food wraps category



Source: BITRE spatial price database.

Of the categories examined here, cigarettes display by far the most uniform pricing, in both independent and chain stores.

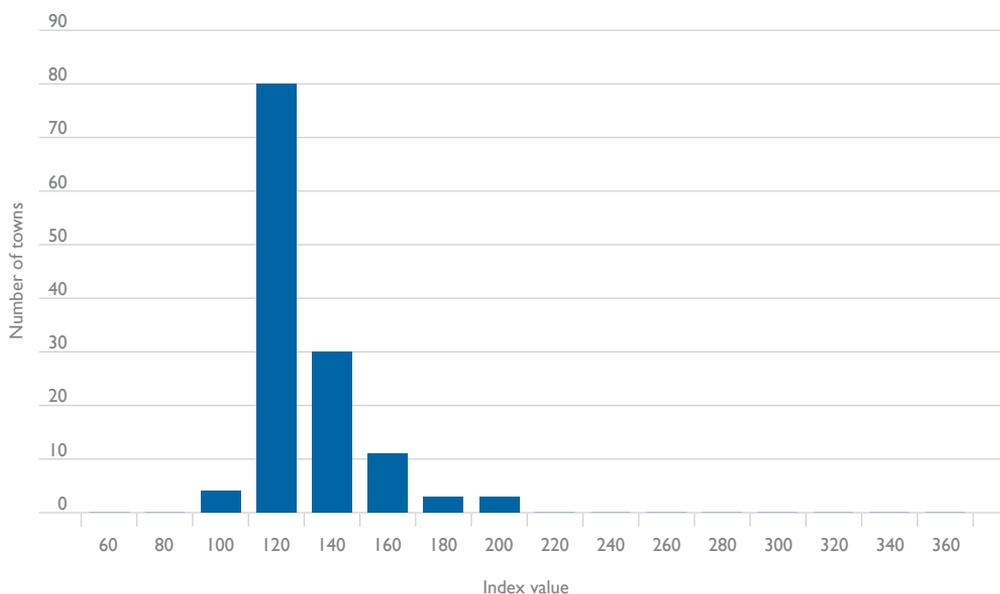
APPENDIX E

Other retail items

The grocery index

Figure E.1 is the distribution of town-based index values for the grocery index. It is provided for comparative purposes. The distribution is strongly clustered around a large number of towns in the 100 to 120 bracket and skewed to the right.

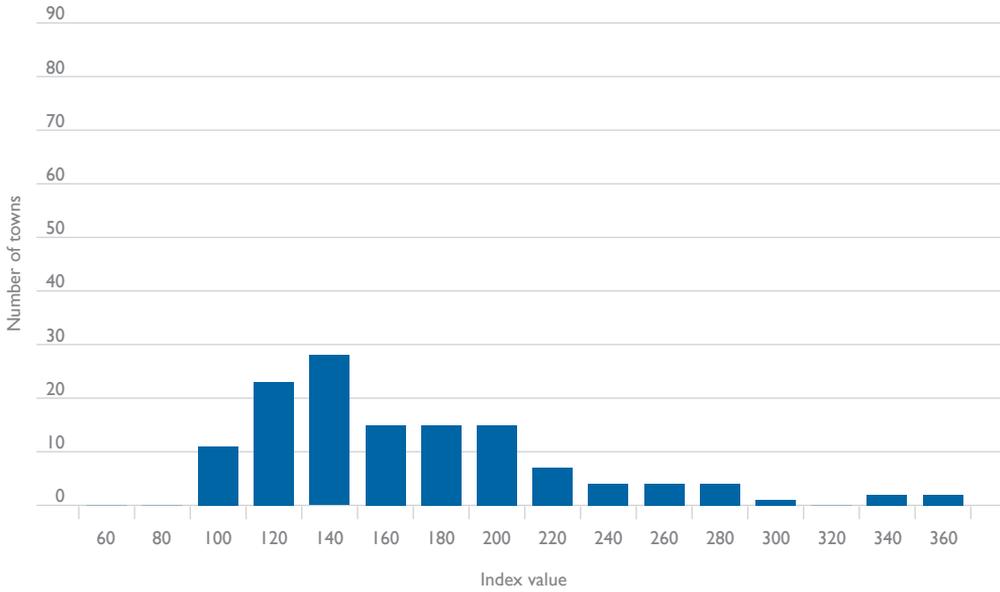
Figure E.1 Grocery index – distribution



Source: BITRE spatial price database.

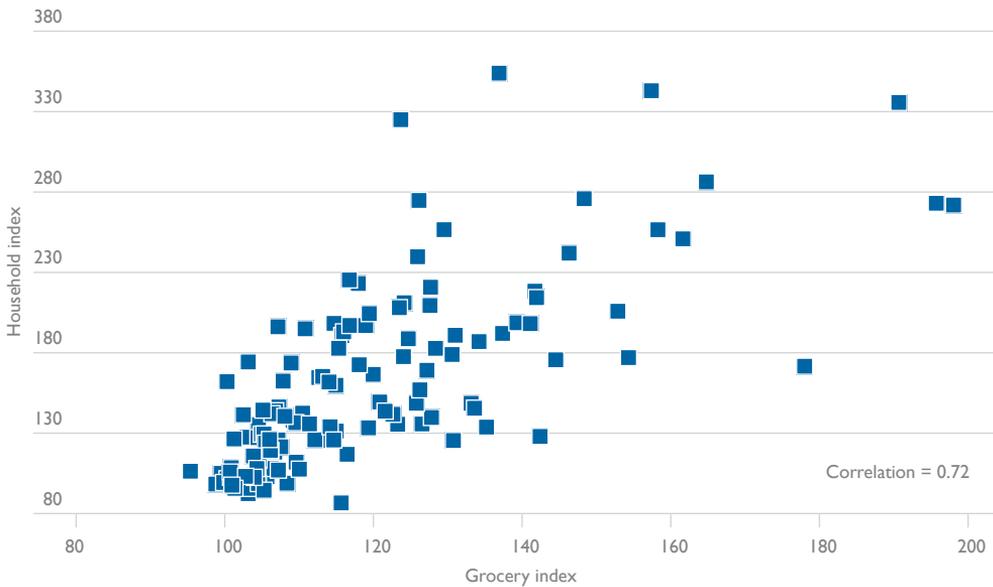
Household items

Figure E.2 The household items index – distribution



Source: BITRE spatial price database.

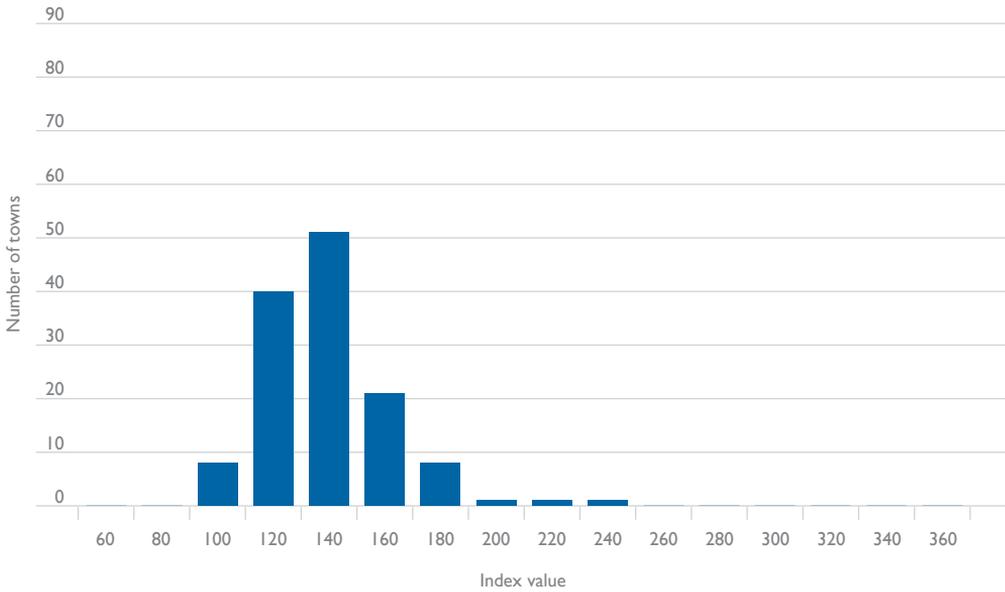
Figure E.3 The household items index and the grocery index



Source: BITRE spatial price database.

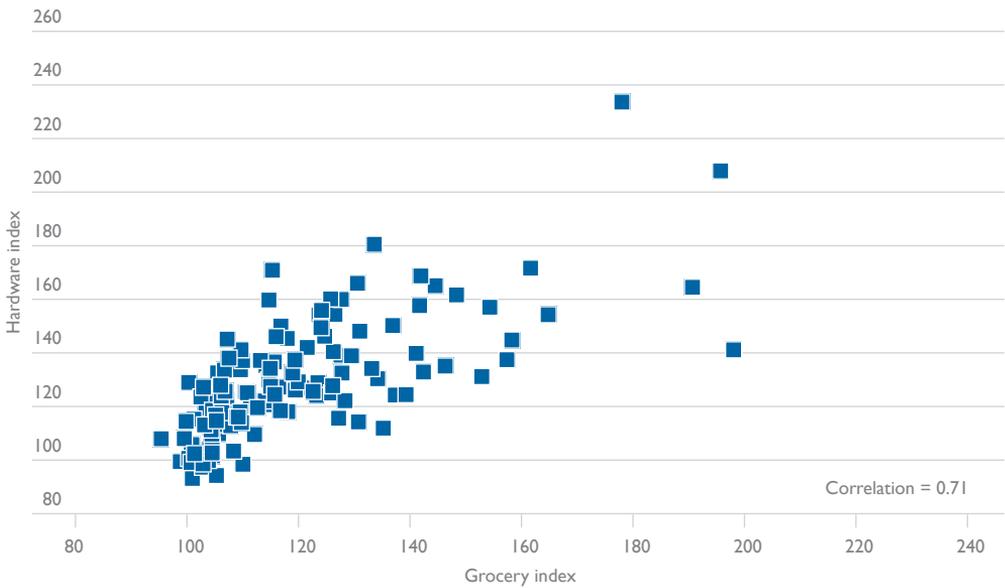
Hardware

Figure E.4 The hardware index – distribution



Source: BITRE spatial price database.

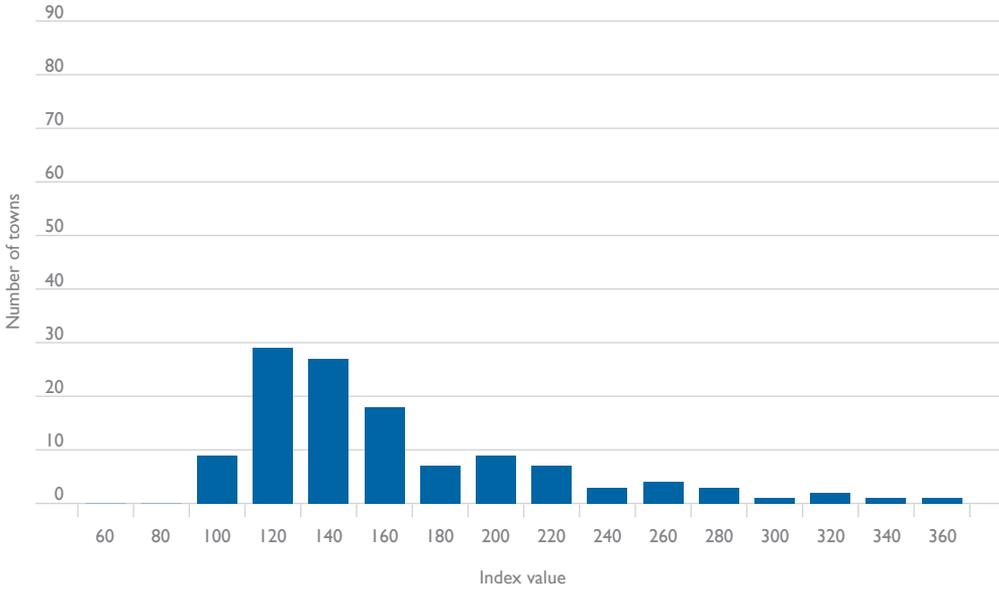
Figure E.5 The hardware index and the grocery index



Source: BITRE spatial price database.

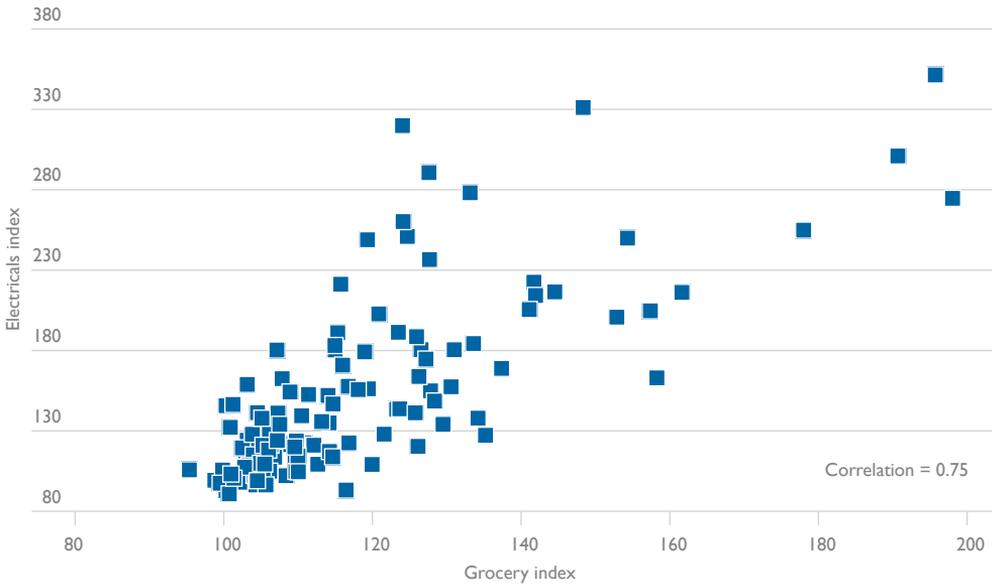
Electrical goods

Figure E.6 The electrical goods index and the grocery index



Source: BITRE spatial price database.

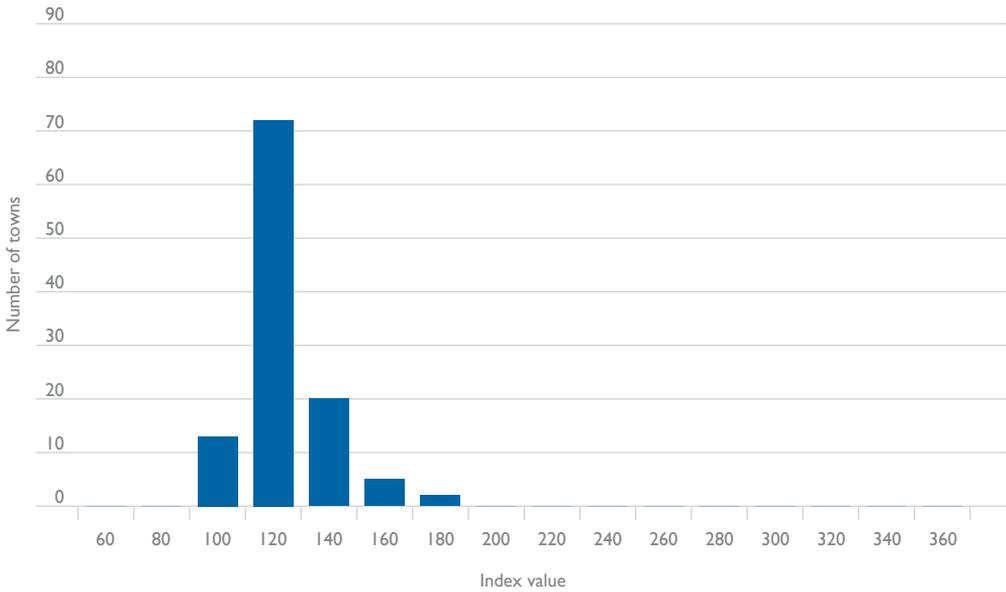
Figure E.7 The electrical goods index – distribution



Source: BITRE spatial price database.

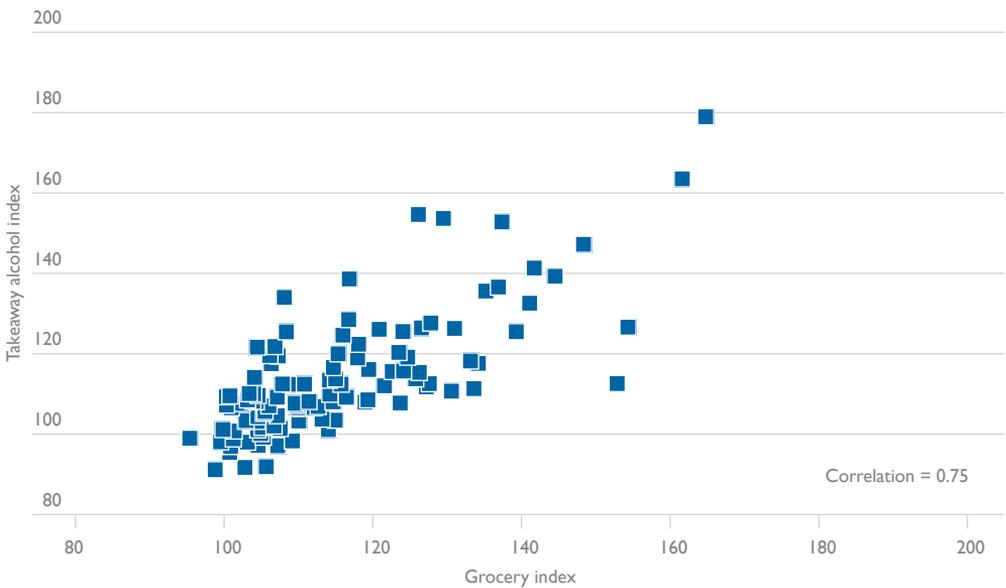
Takeaway alcohol

Figure E.8 Takeaway alcohol index – distribution



Source: BITRE spatial price database.

Figure E.9 Takeaway alcohol index and the grocery index

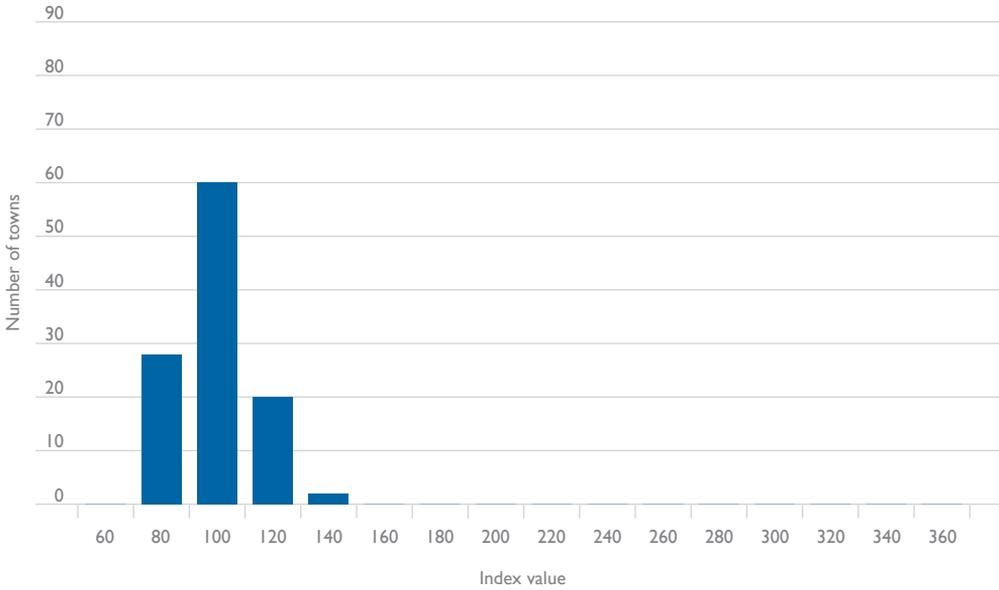


Source: BITRE spatial price database.

Services

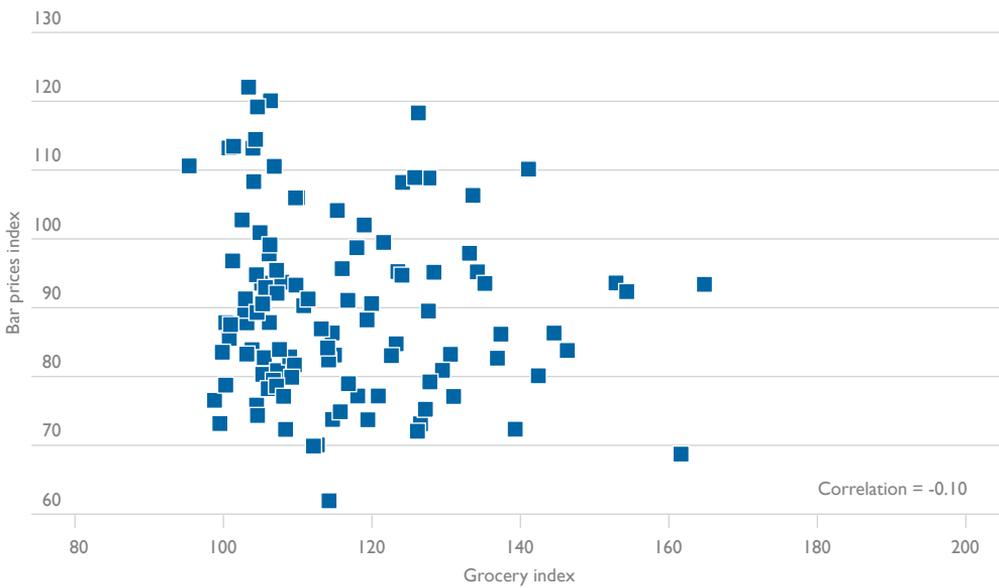
Alcohol: Bar prices

Figure E.10 Bar prices index – distribution



Source: BITRE spatial price database.

Figure E.11 Bar prices index and grocery index

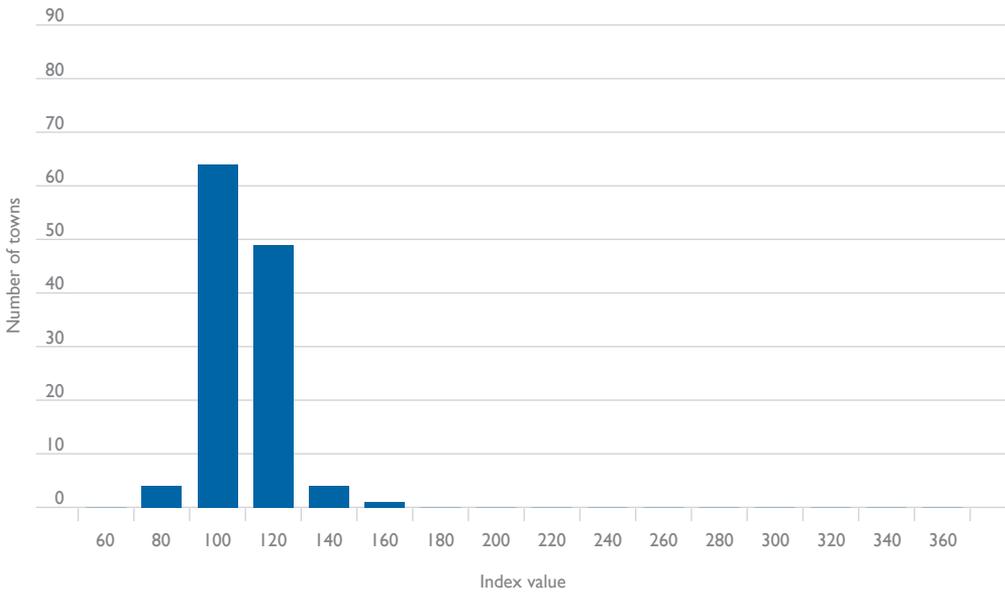


Source: BITRE spatial price database.

Local services

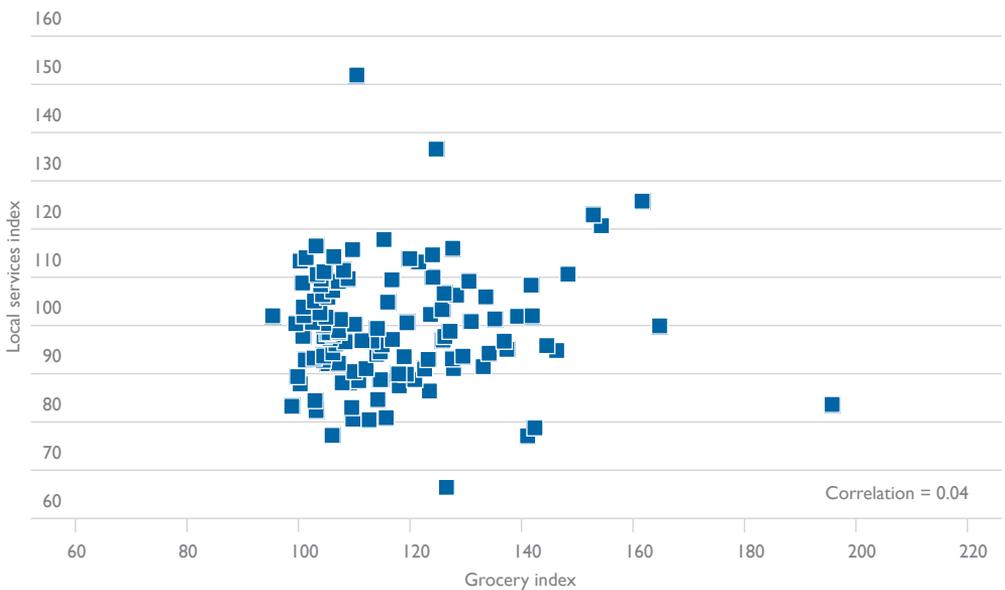
The local services category includes childcare, meals outside the home such as restaurant and takeaway food, dry cleaning, crash repairs and vehicle servicing, haircuts, whitegoods repair, vet charges, gardening services, fees associated with sport clubs (such as golf and bowls), gym membership, video hire and movie ticket prices.

Figure E.12 Local services index – distribution



Source: BITRE spatial price database.

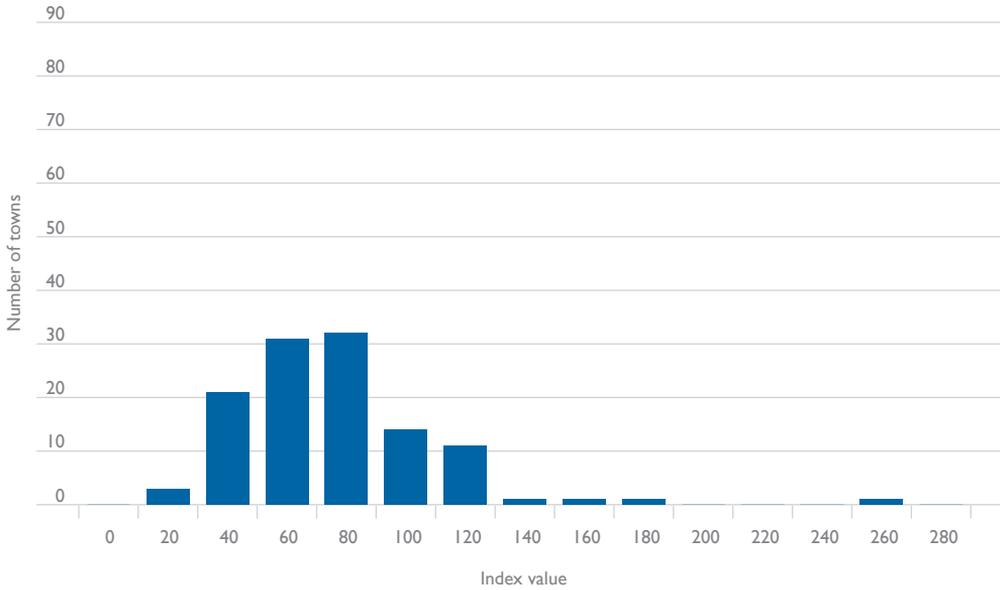
Figure E.13 Local services index and the groceries index



Source: BITRE spatial price database.

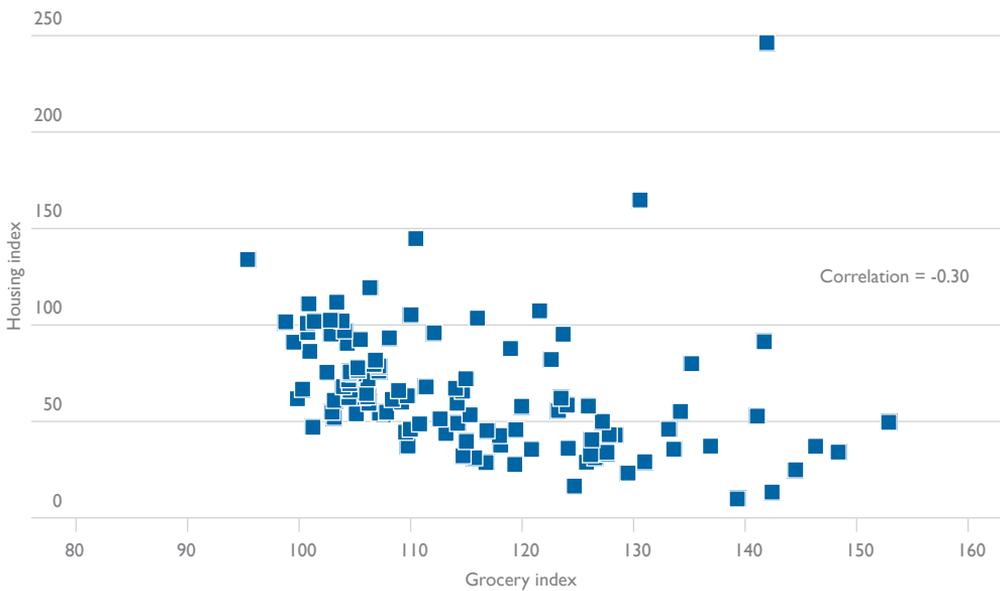
Housing

Figure E.14 Housing index – distribution



Source: BITRE spatial price database.

Figure E.15 Housing index and the grocery index



Source: BITRE spatial price database.

Abbreviations and acronyms

ABARE	Australian Bureau of Agriculture and Resource Economics
ABS	Australian Bureau of Statistics
ACCC	Australian Competition and Consumer Commission
ACT	Australian Capital Territory
AIC	Akaike's Information Criterion
AIHW	Australian Institute of Health and Welfare
APRA	Australian Prudential Regulation Authority
ARIA+	Accessibility/Remoteness Index of Australia +
ATSIC	Aboriginal and Torres Strait Islander Commission
AusCID	Australian Council for Infrastructure Development
AWM	Australian War Memorial
BIC	Bayesian Information Criterion
BITRE	Bureau of Infrastructure, Transport and Regional Economics
BHAS	Broken Hill Associated Smelters
BHP	Broken Hill Proprietary Co Ltd
BODC	Bathurst-Orange Development Corporation
BTCE	Bureau of Transport and Communications Economics
BTRE	Bureau of Transport and Regional Economics
CAFI	Centre for Australian Financial Institutions
CBCS	Commonwealth Bureau of Census and Statistics
CBD	Central Business District
CDEP	Community Development Employment Programme
CIA	Coleambally Irrigation Area
CLC	Central Land Council
CMA	Central Mapping Authority

CPI	Consumer Price Index
CQU	Central Queensland University
DI/DO	Drive-in/drive-out
DPCD	Department of Planning and Community Development (Victoria)
FI/FO	Fly-in/fly-out
FTE	Full-Time Equivalent
GDP	Gross Domestic Product
GISCA	National Centre for Social Applications of GIS
HES	Household Expenditure Survey
ICT	Information and Communications Technology
LGA	Local Government Areas
MDBA	Murray-Darling Basin Authority
MIA	Murrumbidgee Irrigation Area
NCP	National Competition Policy
n.d.p.	No date provided
NSW	New South Wales
NT	Northern Territory
OECD	Organisation for Economic Co-operation and Development
OLS	Ordinary Least Squares
QLD	Queensland
RBA	Reserve Bank of Australia
SA	South Australia
SAC	Scottish Agricultural College
SCEFPA	House of Representatives Standing Committee on Economics, Finance and Public Administration
SD	Statistical Division
SEC	State Electricity Commission
SLA	Statistical Local Area
SMH	Sydney Morning Herald
STC	Silverton Tramway Company
TAS	Tasmania

TRA	Tourism Research Australia
UCL	Urban Centre and Locality
UN	United Nations
VCR	Video Cassette Recorder
VHS	Video Home System
VIC	Victoria
WA	Western Australia
WC&IC	Water Conservation and Irrigation Commission

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