



A State Of Cities Or A City-State?

Metro-bound commuters and the distribution of people and employment in a monocentric city-region

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Declaration

I certify that except where due acknowledgement has been made, the work is that of the author alone; the work has not been submitted previously, in whole or in part, to qualify for any other academic award; the content of the project is the result of work which has been carried out since the official commencement date of the approved research program; any editorial work, paid or unpaid, carried out by a third party is acknowledged; and, ethics procedures and guidelines have been followed.

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Table of Contents

Abstract.....	1
Glossary.....	3
1 Introduction.....	5
1.1 Background to the Research.....	5
1.1.1 An Introduction to Metro-Bound Commuting	7
1.1.2 Changing City-regions	9
1.1.3 A Regional Political Economy Approach	11
1.2 Victoria and Melbourne, the study area.....	12
1.2.1 An Introduction to Victoria	12
1.2.2 A Regional Perspective	16
1.2.3 A Regional Economic History of Victoria	17
1.2.4 The Geography of Employment in Victoria.....	20
1.2.5 Policy and Planning.....	24
1.3 Research Aims and Questions	25
1.3.1 Research Questions	27
1.4 Thesis Outline and Summary	28
2 Commuting and Counterurbanisation.....	30
2.1 Introduction	30
2.2 Metro-bound Commuting.....	30
2.2.1 Transport, Communications and Commuting	31
2.2.2 Workforce Attributes.....	33
2.2.3 Personal Effects of Long-distance Commuting	34
2.2.4 Environmental Effects.....	36
2.3 Commuting and Regional Relocations	37
2.3.1 Counterurbanisation	37
2.3.2 Gentrification, Housing Markets and Social Division	40
2.4 Conclusion	43
3 The Spatial Outcomes of Changes in the Economy and Work.....	45
3.1 Introduction	45
3.2 The Metropolitan Tilt.....	46
3.2.1 The Big Picture.....	46
3.2.2 The Rise of the Central Business District	47

3.2.3	Regional Transition and Decline.....	48
3.2.4	Agglomeration and the Spatial Organisation of Industries	51
3.3	Metro-bound Commuting and Regional Employment	55
3.3.1	New Labour Markets and Social Divides	55
3.3.2	Population, Income and Expenditure Effects	57
3.3.3	Human Capital Effects	60
3.3.4	The Spatial Margin of Profitability	62
3.4	Conclusion	64
4	City-region Structures and Commuting Policy.....	67
4.1	Introduction	67
4.2	City-region Morphology.....	67
4.2.1	Polycentric Urban Regions.....	68
4.2.2	Networks, Borrowed Size and Agglomeration Shadows	69
4.2.3	Second Cities.....	72
4.2.4	Synthesis: A Metro-Bound Commuting and Regional Development Process... 76	
4.2.5	Summary	82
4.3	Metro-bound Commuting Policies	82
4.3.1	Place-Based and Spatially Blind Development Policies	83
4.3.2	Transport and Regional Economies	89
4.3.3	Residential Attraction Policies	93
4.3.4	Summary	98
4.4	Conclusion	98
5	Research Design	101
5.1	Introduction	101
5.2	A Regional Political Economy Approach	101
5.2.1	The Application of Political Economic Geography to Metro-bound Commuting 102	
5.2.2	Mixed Methods	103
5.2.3	Scope and Extensions.....	107
5.3	Detailed Description of Methods	107
5.3.1	Census Data.....	107
5.3.2	Survey Data.....	115
5.3.3	Interviews	119
5.3.4	Policy Analysis.....	123
5.4	Conclusion	124

6	People, Place and Travel	125
6.1	Introduction	125
6.1.1	A History of Metro-bound Commuting to Melbourne.....	125
6.2	Scale and Demography.....	127
6.2.1	The Scale of Metro-bound Commuting in Victoria	127
6.2.2	Demographics.....	128
6.2.3	Commuting households.....	130
6.2.4	Summary	132
6.3	Why Metro-bound Commute?	132
6.3.1	Residential Relocation Decisions.....	134
6.3.2	Finding Metropolitan Work	138
6.3.3	Summary	142
6.4	Places of Residence, Place of Work and the Commute.....	142
6.4.1	Places of Residence.....	142
6.4.2	Places of Work	144
6.4.3	Journey to Work.....	147
6.4.4	Summary	157
6.5	Housing.....	158
6.5.1	Tenure.....	159
6.5.2	House Prices.....	159
6.5.3	Summary	162
6.6	Conclusion	162
7	Employment.....	168
7.1	Introduction	168
7.2	Regional Expenditure Effects.....	168
7.2.1	Metro-Bound Commuters' Income	169
7.2.2	Commuting and employment growth regression model	170
7.2.3	Regional expenditure model.....	173
7.2.4	Summary	176
7.3	Human Capital and the Quality of Employment.....	176
7.3.1	Workforce Attributes of Metro-Bound Commuters.....	177
7.3.2	Metro-bound Commuters and Regional Knowledge Workers Model	183
7.3.3	Summary	193
7.4	Business Formation	194
7.4.1	Survey results.....	194
7.4.2	Business experiences.....	197

7.4.3	Summary	202
7.5	Conclusion	202
8	Commuting as Regional Development Policy.....	206
8.1	Introduction	206
8.1.1	The Tiers of Government within the Australian System.....	207
8.2	Regional Strategies and Metro-bound Commuting	207
8.2.1	Local Government Strategies.....	208
8.2.2	The Impact of Counterurbanisation on Regional Communities.....	219
8.2.3	Summary	221
8.3	State and Federal Government Policies.....	222
8.3.1	Metropolitan Planning Strategies	222
8.3.2	A Shift in Decentralisation Policy.....	227
8.3.3	Transport Planning and Investment.....	232
8.3.4	Regional Relocation Initiatives	234
8.3.5	Summary	236
8.4	A Policy Framework.....	236
8.5	Conclusion	241
9	Conclusion.....	243
9.1	Introduction	243
9.2	Contribution to Knowledge	243
9.3	City-Region Distributions and Policy Implications.....	245
9.3.1	Metro-bound Commuters and Regional Change.....	245
9.3.2	Lived Experience and the Importance of Employment Redistributions	248
9.3.3	Concentrated Decentralisation and Policy Implications	249
9.3.4	Transport Infrastructure, Metro-bound Commuting and Regional Development	250
9.3.5	Importing Prosperity	252
9.3.6	Local Government and Metro-bound Commuters	253
9.3.7	The Limits of Commuting, the Spatial Demarcation of Growth and Decline and	
Regionality		254
9.4	Concluding Remarks.....	255
10	References	258

Table of Figures

Figure 1: Victoria and Melbourne study region.....	14
Figure 2: Melbourne and surrounds, including Geelong	15
Figure 3: Employment by Place of Work, Victoria 2006 – 2016	21
Figure 4: Industry of Employment by Place of Work, Victoria 2016.....	22
Figure 5: Change in employment by sector and place of work, Victoria 2006 to 2016	23
Figure 6: Place of Work by Income, Victoria 2016.....	24
Figure 7: Commuting and city-region development process	81
Figure 8: Impact of transport improvements on people and employment in city-regions	92
Figure 9: Policy-focus hierarchy of city-region distributions	99
Figure 10: Explanatory research design process.....	104
Figure 11: Regional resident local government areas, Victoria, as defined in this study.	109
Figure 12: Yarra Glen and Healesville location, local government area boundaries.	110
Figure 13: Bunyip and Koo Wee Rup location, local government area boundaries.....	110
Figure 14: Sunbury location, local government area boundaries.....	110
Figure 15: Inner, middle and outer Melbourne local government area places of work.....	111
Figure 16: Inner, Middle and Outer Melbourne SA2, place of work.....	112
Figure 17: Residential location of survey respondents	118
Figure 18: Peri-Urban Group of Regional Councils member local government areas.	122
Figure 19: Data collection and analysis sequence	124
Figure 20: Melbourne- exurban LGAs with more than 10% of the workforce commuting to the Central Business District – 1991 Census Data.....	126
Figure 21: Number of metro-bound commuters by Place of Work, Victoria 2006-2016.....	128
Figure 22: Metro-bound commuters by age and place of work, 2016.....	129
Figure 23: No. of children ever born by place of work, 2016.....	131
Figure 24: Number of dependent children	131
Figure 25: Reasons for regional relocation: survey data.....	134
Figure 26: Main reason for relocation: second city v. other regional	135

Figure 27: Reasons for metropolitan employment: survey data	139
Figure 28: Main reason for finding metropolitan work - employment factors	140
Figure 29: Metro-bound commuters place of residence, Urban Centre/Locality 2016	143
Figure 30: Metro-bound commuters' place of work - SA2, 2016	144
Figure 31: Employment by major industry, indicative SA3s 2016.....	146
Figure 32: Commute distance by place of work – 2016	147
Figure 33: Boroondara SA3 workers' place of residence, 2016.....	148
Figure 34: Transport mode of commute by place of work – 2016	149
Figure 35: Travel Demand Model, Public Transport.....	150
Figure 36: Travel Demand Model, Vehicle Transport.....	152
Figure 37: Median house price to LGA median by year of purchase	160
Figure 38: House purchase price compared to outer suburban average house price	161
Figure 39: Income by place of work, 2016	169
Figure 40: Metro-bound commuters by industry of employment, 2016.....	179
Figure 41: Metro-bound commuters by occupation, 2016.....	180
Figure 42: City of Greater Geelong local government area.....	209
Figure 43: Shire of Moorabool local government area	212
Figure 44 Jobs gap, Shire of Moorabool, 2016.....	214
Figure 45: Relationship between liveability and economic development	215
Figure 46: Macedon Ranges Shire location	217
Figure 47: Jobs gap, Macedon Ranges Shire Council 2016	218
Figure 48: Framework for the analysis of metro-bound commuting policy	237

Table of Tables

Table 1: Number of people commuting between Ballarat, Bendigo and Geelong LGAs, 2016	13
Table 2: Victorian population projections: 2016-2051	17
Table 3: Economies and Diseconomies of Scale as Factors in Commuting	75
Table 4: Research questions and methodology	106
Table 5: Undefined place of work – Regional Victorian residents 2006 and 2011 censuses	113
Table 6: Imputed Places of Work, Victoria 2016	114
Table 7: Summary of survey results	117
Table 8: Survey respondent occupations	119
Table 9: Interview subject demographics	121
Table 10: Metro-bound commuters by sex and place of work, 2016	129
Table 11: Marital status by place of work, 2016.....	130
Table 12: Place of usual residence 5 years ago by place of work, 2016.....	133
Table 13: Reason for commencing metro-bound commuting	134
Table 14: Share of metro-bound commuters by top 20 place of work SA2s - 2016	145
Table 15: Comparison of the number of house sales and increases in metro-bound commuting, 2006-2016	158
Table 16: Metro-bound commuter housing tenure	159
Table 17: Summary of variables, employment model.	172
Table 18: Metro-bound commuters and regional employment regression summary data.....	172
Table 19: Metro-bound commuters and regional employment regression coefficients.....	172
Table 20: Expenditure regression descriptive statistics	174
Table 21: Regional expenditure regression summary data	175
Table 22: Expenditure regression coefficients.....	175
Table 23: Highest level of education attained by place of work, 2016.....	181
Table 24: Commuter partners employment summary.....	182
Table 25: Manager and professional partners, place of work and occupation, count.....	183
Table 26: MaPKII Regression Summary Data	187

Table 27: MaPKII regression summary data	187
Table 28: MaPKII regression coefficients	190
Table 29: Post-commuting business concepts identified by respondents.	194
Table 30: Council support for business formation.....	197

Abstract

This thesis investigates the relationship between metro-bound commuting and regional development; asking whether over time metro-bound commuting results in a redistribution of economic functions and the reorganisation of the city-region into a more functionally polycentric urban structure. There is an increasing number of metropolitan workers living in rural or non-metropolitan areas, referred to as metro-bound commuters in this research. At the same time, there are concerns regarding the concentration of prosperity in major cities and diminishing opportunities for high-quality employment in regional cities and towns. This change has been seen as a consequence of the transition to service- and knowledge-based employment in developed economies. Previous research has indicated that there are consumption-based regional employment benefits from metro-bound commuting. This study extends these findings by assessing the quality of employment generated and the impact on regional communities as a result of metro-bound commuting. The outcome of this assessment indicates whether metro-bound commuting is a precursor to functional polycentrism, which has been promoted as a more equitable and efficient city-region morphology than monocentrism, or solely population-based polycentrism.

The research uses mixed methods to investigate the regional employment effects of metro-bound commuting to Melbourne, Australia from its regional hinterlands. Census data and the results of a survey of commuters provide the basis for qualitative analyses. Interviews with commuters and representatives from government provide further insights into metro-bound commuting and its impacts on individuals and regional communities. The survey and interviews also provide new insights into the relationship between metro-bound commuting and regional employment through the effects of commuters' human capital and their households. The outcomes of the qualitative and quantitative analyses inform the analysis of local, state and commonwealth government policy and infrastructure proposals relating to regional economies and population.

The results of this investigation demonstrate that the number of metro-bound commuters residing in a regional settlement is correlated with the population of regional settlements and the inverse square of the settlement's distance from the metropolis. Population growth as a result of metro-bound commuting may be increasing expenditure and employment in regional settlements, but the results of the research indicate that there is not redistribution of higher-value knowledge-based employment. Therefore, this research does not find evidence that metro-bound commuting facilitates functional polycentrism. Such travel is more appropriately

described as population-based polycentrism or the suburbanisation of regional settlements. Given this finding, the current government focus on population distribution facilitated by large scale infrastructure projects is questioned. The central conclusion of the thesis is that governments should assess policy and infrastructure proposals on their capacity to redistribute economic functions and employment opportunities, not population.

Glossary

The following terms are used to describe various areas and types of cities and towns within this thesis.

City-region: A metropolitan area and its hinterland, represents the area from which metro-bound commuting takes place. For this thesis, the analysis uses the Australian city of Melbourne and the state of Victoria as the study region.

Commutershed: The region surrounding a metropolitan area in which metro-bound commuters reside.

Counterurbanisation: The residential movement of population from larger places to less populous ones (see Champion 1989) as “a redistribution of population from larger to smaller places across the urban system, where places are defined on a functional basis”.

Local Government Area (LGA): The third tier of government in Australia, similar to Counties in the United States and Councils in the United Kingdom. In Australia, LGAs may be urban Councils or regional Shires.

Monocentric city-region: A city-region with one dominant city, which is much larger than other cities and settlements in the city-region. Melbourne, Chicago, London and Paris are examples.

Outshopping: Retail expenditure in a region different to that of the place of residence.

Polycentric city-region: An urbanised region of large urban centres but with none dominant in function or scale. The Randstad and Rhine-Ruhr are examples.

Primary City: The major city within a monocentric city region. For the investigations undertaken in this research, Melbourne is the primary city.

Second City: A smaller city within a monocentric city region. Similar to what is referred to as a Regional City in Australia. Urban centres with a population of more than 10,000 are defined as a city. Ballarat, Bendigo and Geelong are second cities that feature in this research project.

Regional Settlement: A town, population less than 10,000 people. Within the Melbourne commutershed, prominent regional settlements in this research include Castlemaine, Ballan, Kyneton and Woodend.

SA1, SA2, SA3 and SA4: Statistical areas used for data analysis by the Australian Bureau of Statistics (2016a), with SA4 the largest, which is then divided into SA3s and so on. The SA structure is equivalent to the NUTS system used by the European Union.

Urban Centre: Contiguous urban area, either city or town. The Australian Bureau of Statistics uses the Urban Centre/Locality designator for clusters of SA1s that meet population criteria (Australian Bureau of Statistics 2016a).

1 Introduction

1.1 Background to the Research

Commuting is a part of the daily experience of most employed people, as most do not live and work in the same place. Most of us need to travel some distance to arrive at our place of employment for some or all of our working week. The financial and wellbeing costs of this travel are traded off against the lifestyle and affordability of residential location and the quality of employment that can be accessed. Commuting from non-metropolitan areas to cities for work has been occurring at least since the garden city movement (Buder 1990) and the development of new towns around London post World War Two (Alexander 2009). In recent decades, increasing numbers of households have been choosing to work in cities while living in their hinterlands, referred to as metro-bound commuters in this thesis, as a result of factors such as housing affordability and amenity, the distribution of employment, improvements to transport infrastructure and networks, and is enabled by the increasing flexibility of employment and improvements to communication technologies.

The phenomenon of metropolitan residents moving to live in regional areas has been termed counterurbanisation, and has been a trend in developed nations since the 1980s. This trend has been associated with people maintaining metropolitan employment, which Champion (1989) refers to as ‘spill-over’ counterurbanisation. While not all metro-bound commuters are counterurbanisers, as some regional residents find themselves working in metropolitan areas, they are of particular interest for this research as they represent a potentially greater agent of change in regional settlements.

While the lives and experiences of long-distance commuters and their households have featured in previous studies (Sandow 2011, 2013; Sandow & Westin 2010), this research focuses on the effects that people who live in regional areas and work in major cities have on the distribution of economic activity and employment in city-regions. Given the trend towards regional living has been observed for some decades (Champion 1989), the important question is whether this redistribution of people is accompanied by redistribution of employment. While previous studies have used econometric techniques to quantify correlations between commuting and employment growth in regional areas (Lavesson 2016; Partridge et al. 2010), they have not considered the quality of employment and the redistribution of prosperity and opportunity arising as a result of metro-bound commuting.

The redistribution of employment in association with – or as a result of – metro-bound commuting and counterurbanisation is a topic that has implications for contemporary transport and land use planning in city-regions. For strongly monocentric regions such as London, Paris, Chicago and the major cities in Australia, there has been an increasing disparity between the fortunes of the cities and the regional areas surrounding them. Scott and Storper (2003, p. 581) note that major metropolitan regions, referred to as primary cities in this thesis, have grown faster than other regions in recent decades; they are the “locomotives of the national economies within which they are situated”. The plight of Gary, Indiana, located 75 kilometres from Chicago with a population of 77,000, is an example of this divergence:

Gary Indiana is dying. It's a city built around a manufacturing industry mostly gone. The death isn't complete; there are still a few factories and a few neighbourhoods with nice, small homes. Other parts are only slightly scarred, with boarded-up or burned-down houses sandwiched tightly between well-kept homes. Some parts are just dead: overgrown streets lined by empty lots and broken buildings ... Although Gary is only 40 miles from Chicago, it has the feel of an isolated town. Walking the emptier parts, I see only a few solitary signs of life: the rush of a passing police car, a grandmother walking her grandchild to a corner store (Arnade 2017).

Gary is within the commutershed of Chicago, the surrounding area of the city from which it is possible to commute to work. There is a proposal for a high speed rail network in the region (Midwest High Speed Rail Association 2018), and as Metz (2008) observed, travel improvements tend to lead to people living further from their work, rather than not travelling for less time, indicating the prospect of commuters relocating to places such as Gary. The consequences of increasing commuting from Gary to Chicago have not been directly referred to in the Midwest High Speed Rail documentation, but it raises the question of what benefits might accrue as a result of Chicago workers living in Gary, as well as what the costs may be to the community.

Similarly, the city of Geelong, 65 km south of Australia's second largest city Melbourne, has seen the closure of much of its manufacturing in recent decades, and the Federal and State Governments have committed funding to support the construction of a high speed rail link to the nearby State capital Melbourne. While Geelong has continued to grow, and does not suffer from the ‘white flight’ evident in Gary (Arnade 2017), both the Federal and State Governments’ recent interest in high speed rail is connected to commuting and counterurbanisation (Department of Economic Development, Jobs, Transport and Resources 2016; Morrison & Frydenberg 2019). The decline of regional cities and lagging regions and

the fast rail infrastructure proposals to respond to this decline, such as the two proposals mentioned here, as well as the high profile High Speed 2 in the UK, indicate the need to develop a greater understanding of the relationships between redistributing population and economic outcomes. The central question of this research is whether the increase in people commuting to major cities such as Chicago, London and Melbourne leads to the economic development of the commutershed cities and settlements.

1.1.1 An Introduction to Metro-Bound Commuting

1.1.1.1 What is Metro-bound Commuting?

The phrase *metro-bound commuter* is used in this thesis to describe the subjects of this project. Metro-bound commuters are people who work in metropolitan areas and live in regional areas. Metro-bound commuters may be people who have moved their residence to the regions but retained their metropolitan place of work, or people who find metropolitan work while living regionally. The focus on metro-bound commuting connects questions relating to exurban and peri-urban development to the literature on long-distance commuting, each of which are topics frequently addressed within the literature.

1.1.1.2 Why is Metro-Bound Commuting Increasing?

The number of metro-bound commuters has been increasing in recent decades. This increase is a global phenomenon; more than 13 per cent of workers in Houston and Dallas were found to be ‘super-commuters’, living beyond the county boundaries of their workplace (Moss & Qing 2012), and the peri-urban regions of cities such as London, Paris, Milan, Sydney and Melbourne are becoming home to more city workers (Burnley et al. 1997; Buxton et al. 2015; Champion et al. 2009; Partridge et al. 2010; Pucci 2017; Renkow & Hoover 2000; Schafran 2015). Butt (2011, p. 61) notes that “the growing connectedness to the social and economic conditions of large cities, is the critical indicator of Australia’s patterns of population growth”. Long-distance commuting has also become a regular topic in the media, as cheaper housing, rural amenity and lifestyles attract city dwellers who are unwilling to give up the benefits of metropolitan employment, or are unable to find similar work in the regional cities and towns to which they move (Lucas 2016; Morris-Marr 2016; Mount 2015; Paumgarten 2007).

This trend towards living further from work results from push and pull factors. The growth of major cities across the world, a recognised effect of globalisation (Florida 2005b; Hall 1996; Kelly 1999; Scott 2001b), has led to increasing problems of housing affordability in areas

close to centres of employment (UN-Habitat 2016). As cities grow there are associated externalities, such as congestion and pollution for example, that reduce the amenity of city living (Dicken & Lloyd 1990). In addition to these factors, there appears to be an increasing preference for regional lifestyles, referred to as ‘sea-changes’ and ‘tree-changes’, pulling people and households out of the city (Argent et al. 2010; Burnley & Murphy 1995; Gosnell & Abrams 2011; McGuirk 2011; Renkow & Hoover 2000).

Recent media reports in Australia identify factors that contribute to metro-bound commuting and counterurbanisation decision-making processes, which include family connections, housing affordability, and lifestyle:

The number one thing is family ... it’s a chance to reconnect with family and friends, to let Roman get to know his grandparents, aunties and uncles ... The second thing is affordability because what we can buy in Newcastle in terms of size and space is more than what we could get in Sydney. Having grown up with it, I felt it was important for my family to have the backyard and access to the outdoors and the beach (cited in Collett & Fitzsimmons 2018).

Similar media commentary can be observed in the US North Eastern seaboard:

“We are now getting more middle- and upper-level executives with young families looking for prime waterfront property,” said Meig Walz of Coldwell Banker in Madison, Conn., which is about 15 minutes east of New Haven and halfway between New York and Boston. Four- and five-bedroom waterfront homes in Madison are in the \$2 million range, half of what they would fetch in Fairfield County, and with lower taxes. Middlesex County, traditionally a region where city dwellers bought second homes, is seeing growth in full-time residents who commute, Ms. Walz added (Miller 2017).

This second quote introduces the attributes of counterurbanisation metro-bound commuters that make them agents for change in regional communities, as they are well-paid and highly educated and skilled workers in jobs and industries that are concentrated within metropolitan areas. These changes may include additional regional employment due to expenditure and human capital effects, as well as the prospect of gentrification and the dislocation of regional communities.

1.1.2 Changing City-regions

Metro-bound commuting and the associated trend towards counterurbanisation raises questions regarding the distribution of people as well as employment within city-regions. Widening the spread of people without changes to the geographic distribution of employment is seen as inefficient and unsustainable (Hall & Pain 2012). Metro-bound commuting as a result of counterurbanisation is by definition a redistribution of population, therefore the resulting impact on regional employment as a measure of functional redistribution is important from an efficient city-region structure perspective as well as for regional economic development. In this regard, the questions addressed in this thesis recall earlier questioning of whether people follow employment or vice-versa (Muth 1971; Partridge & Rickman 2003) and the jobs-housing balance debates (Cervero 1989, 1996; Gordon et al. 1989; Gordon & Richardson 1996). The effect of metro-bound commuting on regional employment can be seen as the distinction between metropolitan suburban expansion versus progress towards polycentric city-regions and independent regional economic centres.

This question of prioritisation of functional redistribution within city-regions also means that the research is focused on the impact of metro-bound commuters on metropolitan hinterlands rather than on the primary city. As the research is concerned with commuting in monocentric city-regions, the effects on the hinterlands are potentially much greater than those on the primary city given the difference in population and employment between the core and peripheral areas in monocentric regions. That is, a proportionally small loss of population by the metropolis may comprise a proportionally large influx to a small recipient regional town. The regional focus is also a response to the growth in counterurbanisation and metro-bound commuting in the context of a policy framework that seeks to support this phenomenon. Yet there has been little questioning of the assumption that this is a positive effect for regional communities, or to whom it is of benefit to and why. Regional employment outcomes are also of interest due to concerns regarding the concentration of population employment and opportunity within the major cities and how governments may intervene to address this. A further consideration is the impacts of the additional resources and energy required for commuting longer distances, as well as the social and health impacts associated with long commutes.

As Alonso (1960, 1964) in his foundational contributions argued that commuting can be seen as the result of a spatial utility maximisation trade-off between housing consumption and employment access. Therefore, the investigation of commuting draws on trends in the location of housing and employment in the region under investigation, and changes in the costs of travel between these locations (Van Ommeren 2018). As a simplification, the

increase in metro-bound commuting can be viewed as resulting from employment, and particularly well-paid employment, concentrating in the major cities, and the trends in households relocating to non-metropolitan locations over recent decades. This was prefigured by Alonso's (1960, 1964) analysis of transport and property markets in monocentric regions. In this regard, the study is founded on the division of space into metropolitan and non-metropolitan regions. While the delineation is superficially simple, metro-bound commuting can be seen as blurring the boundaries of conventional understandings of city limits (Champion & Hugo 2004) and as part of a process of smaller settlements being subsumed into the metropolis by the expanding cities (Mitchell & Stimson 2010; Taylor & Pain 2007), indicating that the spatial settlement demarcation is more subjective than objective. This blurring also reflects the view that what is described as rural and urban, or regional, is a continuum "with real people and communities falling somewhere between two hypothetical extremes" (Lang 1986, p. 120). For this research, the delineation of space into metropolitan and regional is not only essential, it also illuminates movement along the continuum between the urban and rural. In Australia, the term regional is also used to refer to non-metropolitan areas, with rural tending to be used to describe agricultural and more remote areas, although there are no strict definitions for either. Regional and metropolitan categorisations in turn raise the question of whether the evolution of regional settlements as a result of counterurbanisation and metro-bound commuting is a process of suburbanisation, regional gentrification, or a precursor to revitalised regional economic centres.

To date, there has been little consideration of how the growth in commuting between regional residences and metropolitan employment may facilitate the redistribution of employment and economic activity in city-regions. O'Connor et al. (2002, p. 115) identified a counterurbanisation trend in metropolitan hinterlands, but suggested it has minimal economic effect:

There has been some dispersal of population, and some population-related activity has followed that dispersal, but this outcome is not matched by the location of economic activity (especially in the area of services). This outcome implies that some of the movement of people to non-metropolitan locations includes the movement of persons outside the workforce – such persons add to the population, but do not change the geography of employment or economic activity all that much.

Others have found positive regional outcomes as a result of people leaving their geographic area of residence for their commute to work. Partridge et al. (2010, p. 331) conclude that for "rural areas within commuting distance (say <120 kms), integration with the urban economy may be the best rural development strategy" based on the relationship between local

population growth and out-commuting. Lavesson (2016) found that rural to urban commuting was associated with rural employment growth in retail and service sectors, and no evidence of negative impacts for other sectors due to the increased labour demand.

These conflicting conclusions can be seen as a reflection of the questions being asked and the criteria for success: O'Connor et al. (2002) are concerned with the distribution of employment from a city-region perspective, while Partridge et al (2010) and Lavesson (2016) are concerned with growth within regional settlements, not in the context of the wider region. Similar distinctions can be found in the assessments of high speed rail in France, where a place like Lille can be seen as a success based on the city's progress in recent years, but not when it is compared to the growth of Paris (Chen & Hall 2013; Halbert 2006).

While wider aspects of metro-bound commuting are covered in this research, such as the health and wellbeing effects of long-distance commuting, and the effect on regional house prices and divisions within regional communities, the main concern is the regional employment outcomes from metro-bound commuting. Without regional employment arising from this phenomenon, metro-bound commuting may be seen as a process of regional suburbanisation. In monocentric city-regions, the resulting settlement structure is likely to reinforce the metropolis as an economic 'city state', rather than a 'state of cities' involving a network of cities with complementary and distinct economic and social functions.

1.1.3 A Regional Political Economy Approach

This thesis takes a regional political economy approach to investigate the relationship between metro-bound commuting and regional development. As a result of this foundation, mixed methods are used in this thesis, which is a standard approach within regional political economy research as qualitative methods add social dimensions and lived experience to illuminate the factors that influence the results of quantitative analysis (Peck 2015, 2016; Sheppard 2010; Tebes 2012). The methods used in this research include analysis of census data, a survey, interviews and policy analysis, each of which provides different perspectives on metro-bound commuting and regional development and employment outcomes. The methods and their foundations are discussed in detail in Chapter 5.

1.1.3.1 Monocentric city-regions

The relationship between metro-bound commuting and regional development explored in this thesis is principally applicable to strongly monocentric city-regions. The processes under investigation in this research are more readily apparent in strongly monocentric regions, as

the majority of the commuting will be to the single, primary centre and the concentration of employment in the central location will be more pronounced. In contrast, polycentric regions such as the US Eastern Seaboard, northern UK cities, the Randstad, Central Belgium and the Rhine-Ruhr have more complex and multi-directional commuting flows and more equitable distributions of employment and prosperity, which has led to increasing polycentrism becoming a normative agenda in European spatial policy (European Commission Committee on Spatial Development 1999; Hall 2010). In addition to the Melbourne case study region, the outcomes are generally applicable to comparable monocentric cities such as London, Paris, Dublin, Chicago, Toronto or Sydney.

1.1.3.2 Urban, Regional and Rural as Spatial Signifiers

As discussed in Section 1.1.3, The term ‘region’ is used to designate different geographies depending on the context, such as a collection of countries; a shared land form, feature or climate; or a city and its hinterlands. This thesis uses the terms ‘region’ and ‘regional’ as a descriptor for non-metropolitan space, as widely used in Australian geography and policy and is similar to the use of the term ‘rural’ in international literature. This is not the only way the terms ‘region’ and ‘regional’ are used in Australia, for example, the Australian Bureau of Statistics uses the term inclusive of metropolitan and non-metropolitan regions (2019a), and also to signify a different geographic entity to cities and suburbs (2019b).

1.2 Victoria and Melbourne, the study area

This section of the thesis provides an introduction to the geography and economy of Melbourne and the State of Victoria, which is used as the basis for the analysis of metro-bound commuting patterns and regional employment in Chapters 6, 7 and 8. As well as describing the geographic and economic patterns and history of Victoria, this section explains its utility for investigating the questions raised in this study, including the concentration of employment in primary cities, why the research focuses on the regional impacts of metro-bound commuting and how recent policy in Victoria can be seen to be promoting metro-bound commuting.

1.2.1 An Introduction to Victoria

Melbourne is the capital city of the State of Victoria, one of the eight States and Territories that comprise Australia. In the Australian commonwealth system, the Federal Government has sole responsibility for areas of national importance, such as defence, immigration, foreign

affairs, currency and trade. Victoria, as a State, has responsibilities for law and order, schools, hospitals, water transport, agriculture and forests, while the third tier, Local Government, has responsibility for local functions, land use planning, building regulations and waste management for example (Parliament of Victoria 2010).

Given the focus on commuting patterns in monocentric city-regions, Melbourne and its hinterlands provide an appropriate region for analysis. Melbourne is the centre of a strongly monocentric region: as of 2016 Greater Melbourne was home to 76 per cent of the population and employment within the State of Victoria, and its population is more than 17 times that of the second-largest city, Geelong (Australian Bureau of Statistics 2016b). As well as this primacy of Melbourne within the Victorian settlement hierarchy, it is a relatively closed system as there are no other cities of scale that may generate multi-directional commuting patterns; the closest city with a population of more than a million people is Adelaide, over 700 kilometres away. Also, Melbourne is surrounded by a ring of second cities – Geelong, Ballarat, Bendigo and Shepparton - and the La Trobe Valley cluster of Moe, Morwell, Traralgon and Churchill. At 200km north of central Melbourne, Shepparton is the furthest of this ring from Melbourne and Geelong is the closest, approximately 70km south west of the city. The location of Melbourne and the second cities in the State are shown in Figure 1 on the following page.

Each of these second cities services a distinct region of the State and together they provide a reasonable approximation of the metropolitan commutershed. The three largest second tier cities of Geelong, Ballarat and Bendigo are to the west of Melbourne, with populations between 100,000 and 210,000 in their LGAs in 2016 and are located between 75kms and 150kms from Melbourne, and also similar distances between each other. There is limited interaction and low levels of commuting between the main regional cities in the State, as shown in Table 1.

Table 1: Number of people commuting between Ballarat, Bendigo and Geelong LGAs, 2016

Residence	Place of Work		
	Ballarat	Greater Bendigo	Greater Geelong
Ballarat	37,255	70	296
Greater Bendigo	86	41,242	35
Greater Geelong	306	50	78,907
Total	37,647	41,361	79,246

Source: Australian Bureau of Statistics (2016b)



Figure 1: Victoria and Melbourne study region

Source: © OpenStreetMap contributors, accessed from AURIN Portal, aurin.org.au.

While the major regional cities are located to the west of Melbourne, the city itself is skewed to the east of the CBD, as shown in Figure 2. This skew has become less pronounced in recent years due to residential subdivisions expanding the city to the west, but this map indicates that travel distances from regional cities and settlements to the west of Melbourne are similar to those to the south east of the metropolitan area. As discussed in Chapter 6, the population distribution within Melbourne and its surrounding settlements means that metro-bound commuting is more prevalent to the west and southwest of Melbourne, particularly in the case of those who work in the CBD.

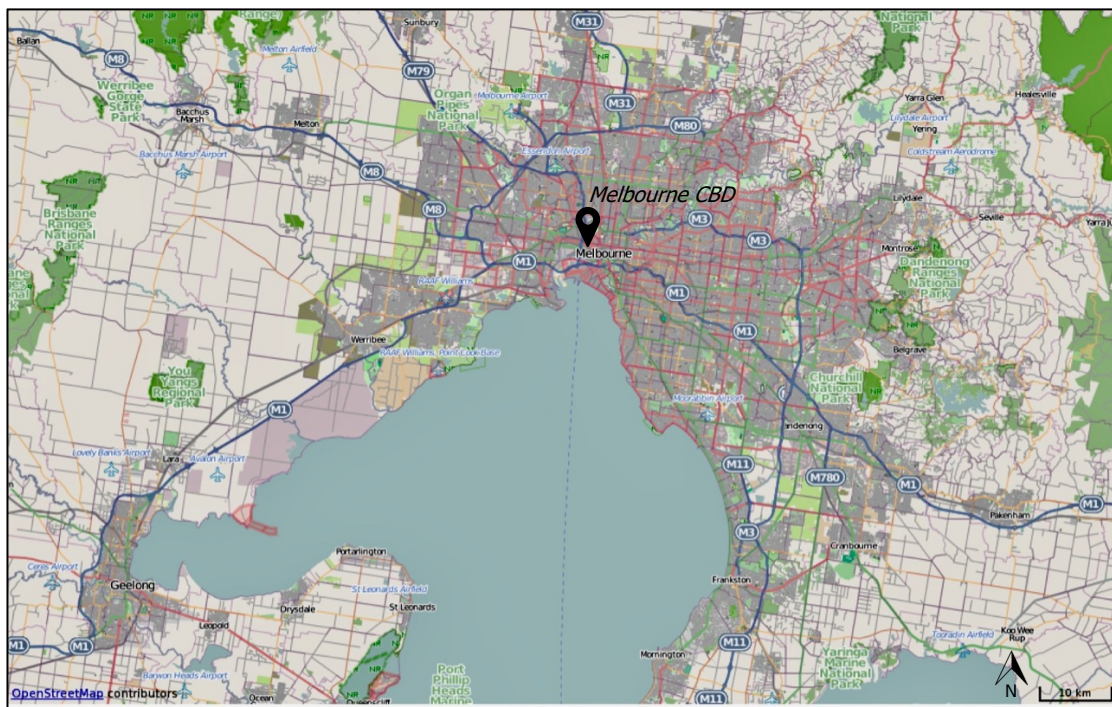


Figure 2: Melbourne and surrounds, including Geelong

Source: © OpenStreetMap contributors, accessed from AURIN Portal, aurin.org.au.

The concentration of Victoria’s population within Melbourne also has implications for both housing and employment markets, as the Reserve Bank of Australia (2014, p. 9) recently observed:

Unlike many other comparable countries, Australia lacks the medium-sized cities (500,000–1,000,000 inhabitants) that could provide alternatives to households seeking to avoid high housing costs in the largest cities, while still offering the range of job opportunities that cannot be supported in smaller towns.

These Reserve Bank observations - namely outward pressure due to housing costs, inwards attraction for employment opportunity - are factors in people's decision to become metro-bound commuters.

Therefore, the metropolitan primacy and distinct settlement pattern make Melbourne and Victoria a suitable region for the study of metro-bound commuting and the resulting changes to regional economies. Melbourne has a highly productive central business district, with a concentration of the advanced producer services that are the drivers of globalised economies (Globalization and World Cities Research Network 2016; Kelly et al. 2014). Also, commuting in the metropolitan city-region is predominantly to Melbourne with little commuting between the regional cities, which makes the impact of metro-bound commuting clearer than in a region with less focused commuting patterns.

1.2.2 A Regional Perspective

This research investigates the metro-bound commuting phenomenon from a regional perspective, considering the implications for regional residents and settlements within the sphere of metropolitan influence. This position is taken because of the size of the metro-bound commuting workforce and population relative to the regional and metropolitan ones.

The 2016 census found that the Greater Melbourne metropolitan region was home to 76 per cent of Victorians (Australian Bureau of Statistics 2016b) and the most recent State Government projections estimate that by 2051, 8 of the 10.1 million residents of Victoria will reside in this area (Department of Environment, Land, Water and Planning 2019). While there are diseconomies associated with the continued and rapid growth of Melbourne (Brain et al. 2019), this indicates that if regional population relocation, including the growth of metro-bound commuting, is to have a tangible effect on Melbourne's population trajectory, the impact on regional Victoria will be immense and require significant infrastructure investment. For example, if 5 per cent of the projected 2051 Melbourne population is redirected to regional Victoria, these additional 400,000 regional residents represent a 20 per cent growth in the 2051 regional projection and the total projected growth from 2016 to 2051 would be 1 million people, as shown in Table 2 on the following page. This observation demonstrates that redirecting growth to regional Victoria is unlikely to mitigate the population growth pressures in Melbourne, despite such relocation being a recurrent theme in recent metropolitan planning strategies (Department of Environment, Land, Water and Planning 2017; Department of Planning and Community Development 2008; Department of Transport, Planning and Local Infrastructure 2014).

Table 2: Victorian population projections: 2016-2051

	2016 Population	2051 Forecast	Forecast Growth	5% Rebalance	Rebalanced Growth	Rebalanced Growth - Share
Greater Melbourne	4,485,210	8,000,000	78%	7,600,000	3,114,790	69%
Rest of Vic.	1,433,818	2,100,000	46%	2,500,000	1,066,182	74%
Total	5,926,624	10,100,000	70%	10,100,000		70%

Source: Australian Bureau of Statistics (2016b), Department of Environment, Land, Water and Planning (2016c).

However, metro-bound commuters are more significant from the perspective of regional communities, particularly those within the metropolitan commutershed, than for the primary city of Melbourne. For example, the top two industry sectors of employment in regional Victoria in 2016 were *Health Care and Social Assistance*, with 92,086 employed and *Retail Trade*, with 68,247. Metro-bound commuters, of which there were 57,827, are of a similar scale in number to the third and fourth largest regional sectors of employment in regional Victoria generally, which are *Construction* (58,721) and *Education and Training* (56,488) (Australian Bureau of Statistics 2016b). This scale of metro-bound commuting relative to regional employment overall is the basis for analysing its impact from a regional rather than a metropolitan perspective.

1.2.3 A Regional Economic History of Victoria

Unlike the capital cities of other Australian States, Melbourne lies close to Victoria’s geographic centre with most of the State’s population living within 200km of the city. The city was established in 1835 by a group of capitalists and speculators from Launceston following earlier aborted attempts at settling Port Phillip Bay, attracted to what Matthew Flinders described as an extensive port and the surrounding country as “low, grassy, and very slightly covered with wood” (Shaw 1990). John Batman, the settlers’ leader, paid the local indigenous Dutigalla tribe the equivalent of £200 in supplies for the land around the bay stretching to Geelong, thus beginning a process of displacement from their lands (cited in Shaw 1990, p. 200). The colony of Victoria was established in 1851 and what was to become the State boundaries of the Murray River to the north and the 141st meridian to the west placed Melbourne close to the centre of the land excised from New South Wales.

The early agrarian years of the colony saw substantial growth. By 1850 there were 6,600,000 sheep, as many as in modern day New South Wales (Blainey 2013, p. 37), which provided an

economic impetus for separation from New South Wales. Fortuitously, this coincided with the discovery of gold in Ballarat and the start of the gold rush (Blainey 2013). Following the discovery of gold, annual emigration from Britain increased from twenty thousand to almost ninety thousand (Hobsbawm 2010, pp. 64-65). Within 20 years of settlement, Melbourne had become one of the wealthiest cities in the world, known as 'Marvellous Melbourne' (Chandler 2017; Davison 1979).

The gold rush has had a lasting impact on the distribution of people and economic activity in the State, particularly the difference between the central gold rush areas of the State in comparison to the eastern Gippsland region and the far west. Approximately 60 per cent of the State's regional population lives to the west of Melbourne, including the three largest regional cities of Geelong, Ballarat and Bendigo. Geelong, while smaller than Ballarat and Bendigo during the second half of the 19th century, became known as The Pivot, due to its port, road and rail access to western goldfields and agriculture (Blainey 2013; Houghton 2018). Many of the State's smaller towns that have become appealing tree-change and weekender destinations were either gold towns, such as Daylesford, Hepburn, Castlemaine, Trentham and Maldon, or were stopovers for diggers traveling to the goldfields, such as Melton, Kyneton, Woodend, Bacchus Marsh and Ballan. Outside of the goldfields, Regional Victoria developed at a slower pace, based on the development of agriculture; largely dairying in Gippsland; wool in the south west; orchards in the Goulburn Valley and wheat in the Wimmera-Mallee (Blainey 2013, p. 198).

The gold-rush boom spurred local manufacturing which grew to become the dominant industry in Victoria during the 20th century. Geelong in particular grew rapidly in the 20th century, from 11,368 people in 1921 to more than 120,000 by 1971 (Australian Bureau of Statistics 1921, 1971). This population growth coincided with substantial manufacturing development, including textiles, clothing and footwear as well as major manufacturing firms such as Pilkington's glass, International Harvester agricultural machinery, and most significantly, the Ford Motor Company, which commenced production in the city in 1925 (Blainey 2013). By the 1980s the Geelong statistical district had the highest proportions of manufacturing workers in Australia, at 33.4 per cent. At this time, 27 per cent of the Melbourne workforce was in manufacturing, the highest for a capital city in Australia (Rich 1987, pp. 198-199). Beyond Melbourne and Geelong, there were around 20,000 manufacturing jobs in regional Victoria in the early 1980s. Agriculture has been important in the State's east; however, the most prominent industry in this region has been brown coal and the electricity generators in the Latrobe Valley, originally developed by the State Government in the 1920s. The brown coal reserves and their use in providing cheap electricity were central

to the State Government's economic development strategies of the 1970s and 1980s, providing a competitive advantage to power-intensive industries, such as the aluminium smelters located in Portland and Geelong (Rich 1987, pp. 187-188).

Watkins (2009, p. 1574) documented the post-industrial transitions in the Melbourne economy between the 1970s and 1990s, reporting that the changes in the spatial distribution of economic activity included a "CBD highly specialised in financial and business services, the general decline of manufacturing in favour of various types of service industries". The growth in service sectors has a strong bias towards larger cities, such as Melbourne (Badcock 2000a; Kelly et al. 2014; O'Neill & McGuirk 2002; Watkins 2009). The result has been diverging productivity across Victoria, where inner city Melbourne has been estimated to have contributed 11.4 per cent of Australia's GDP growth in 2015-16, while the contribution of the rest of the State was stagnant or in decline (SGS Economics and Planning 2017). The geography of employment in Victoria is explored in more detail in Section 1.2.4.

While the population and economic growth in Melbourne have outstripped the rest of the State, the larger regional centres have also grown over the past century even as manufacturing has declined. Improvements in personal transport and communications, as well as increased specialisation in goods and services, explain the greater concentration of people and employment in larger regional centres (Bureau of Infrastructure, Transport and Regional Economics 2014; Collits 2001). The State's regional cities have become services centres for the surrounding districts, employment growth has been in population services industries such as health care, education and retail trade reflecting changing consumption preferences and an ageing population (Bureau of Infrastructure, Transport and Regional Economics 2014; Connolly & Lewis 2010; O'Connor et al. 2002; Ruthven 1999a, 1999b). The five main regional hubs that ring Melbourne can also be seen as a delineation between the regions that are growing and those that are declining. As Polèse (2013b, p. 26) observes, Australia "should expect the search for sea and trees to generally reinforce existing growth trajectories in and around large metropolitan centres", that is these amenities are available in many locations so there is no need for the population to move far from the metropolitan areas to experience or live amongst them. This is borne out by the growth of Melbourne's peri-urban towns in recent decades, particularly in areas of high amenity and in proximity to regional centres (Barr 2002; Budge 2006; Buxton et al. 2015; Llausàs et al. 2016).

Victoria's economic and settlement history implies that metropolitan proximity and interaction are important determinants of regional prosperity in the 21st century, including outward migration and as sites of recreation and consumption for metropolitan residents. Victorian Government population forecasts indicate that the State's population growth will

continue to be predominantly in Melbourne and the larger regional cities. It is of note that the five regional LGAs expected to experience the fastest growth in forthcoming decades are the largest regional cities – Geelong, Ballarat and Bendigo – and two peri-urban areas where the metropolitan boundary is rapidly encroaching – Baw Baw and Mitchell (Department of Environment, Land, Water and Planning 2016c).

In summary, up to the 1980s the development of regional Victoria was linked to the trajectories of three industry sectors; the steady progression of agriculture from settlement through to the long boom years of the mid-20th century; the upheaval and transformation of the gold rush years, over by the economic depression of the 1890s; and concentrations of manufacturing and industrial employment in the larger cities during the post-war long boom period. The 21st century has seen the rise of knowledge- and service-based economies, which has resulted in a greater concentration of the State's population and economic activity in Melbourne. The resulting economic and demographic geography is a State dominated by Melbourne, a position fortified by institutions and infrastructure networks as much as the economic transitions of recent decades.

1.2.4 The Geography of Employment in Victoria

This section outlines the general trends in the location of employment in Victoria, primarily using data from the 2006 and 2016 censuses and the Inner, Middle and Outer Melbourne categorisations, as described in Section 5.3.1.1 of this thesis. This is important in the context of studying metro-bound commuting as it underscores the need for generating employment in regional areas, as well as suggesting that many metro-bound commuters are unlikely to find work similar to their inner city employment in regional areas.

Victoria experienced more rapid population growth than any other Australian State or territory between 2006 and 2016, receiving an additional 1.1 million residents. This presents a 22 per cent increase in population in a decade. Only Western Australia recorded a larger percentage growth, due to a boom in the mining sector. Notably, total employment in Victoria increased by 26 per cent between 2006 and 2011, a greater percentage than the population growth (Australian Bureau of Statistics 2017b). However, the growth in employment has been spatially uneven, as shown in Figure 3 on the following page. The greatest employment growth has been in the three LGAs of Inner Melbourne, which increased by 171,965 between 2006 and 2011, followed by Outer Melbourne with 160,528 additional jobs and then Middle Melbourne with 129,066. The growth in Outer Melbourne employment is related to the

increasing population in this area. Excluding employment of No Fixed Address, the least employment growth was found in the Rest of Victoria, with 83,458.

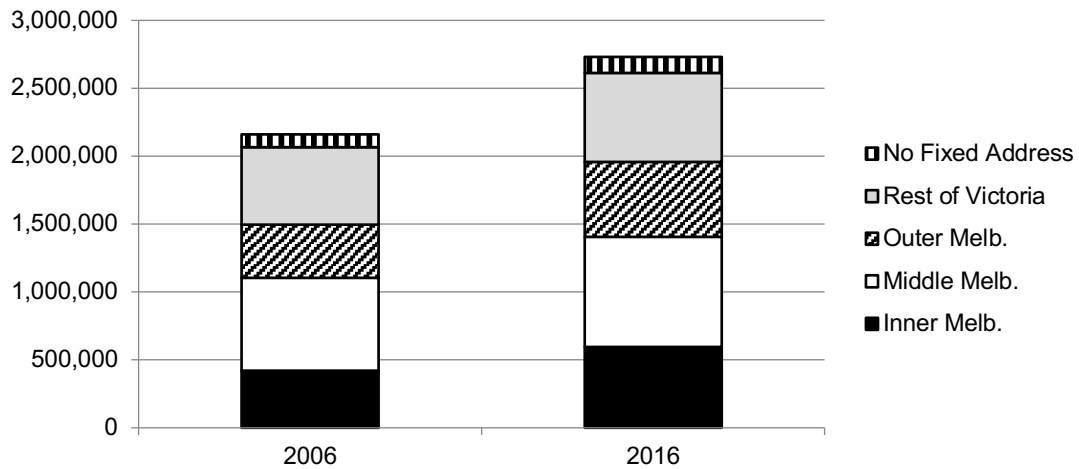


Figure 3: Employment by Place of Work, Victoria 2006 – 2016

Source: Australian Bureau of Statistics (2006b, 2016b)

For the Rest of Victoria, 56 per cent of the employment growth occurred in just five LGAs: the regional cities of Geelong, Ballarat and Bendigo and the peri-urban Melton and Mornington Peninsula. As a result, these five LGAs increased their share of employment in the Rest of Victoria from 47 per cent in 2006 to 49 per cent in 2016. These LGAs also have the highest number of residents in the Rest of Victoria classification (Australian Bureau of Statistics 2006b, 2016b)

The overarching trend to be taken from this data is that employment in Victoria is concentrating on a number of different geographic scales. Combined employment growth in the three Melbourne categories was more than four times that of the Rest of Victoria. Within Melbourne, the greatest absolute and percentage growth was within the three LGAs at the centre of the city. While employment grew in the Rest of Victoria between 2006 and 2016, it was also increasingly concentrated in the populous peri-urban regions and regional cities nearest Melbourne. In recent years, high-paying industry sectors have been concentrating in Melbourne, such as finance, which is associated with diverging productivity between metropolitan and regional Australia as discussed in Section 1.2.3. There is also analysis indicating declining gross regional product in regional Victoria (e.g. Brain et al. 2019). However, such estimates do not capture the interconnected and cross-regional nature of economic activity and are generally extrapolated from regional worker income data (Thomson et al. 2019).

In 2016, most Victorian employment was within Health Care and Social Assistance, Retail Trade, Education and Training, Construction, Professional and Scientific Services and Construction, as shown in Figure 4. While manufacturing employment has declined over recent decades, more than 200,000 people are still employed in this sector.

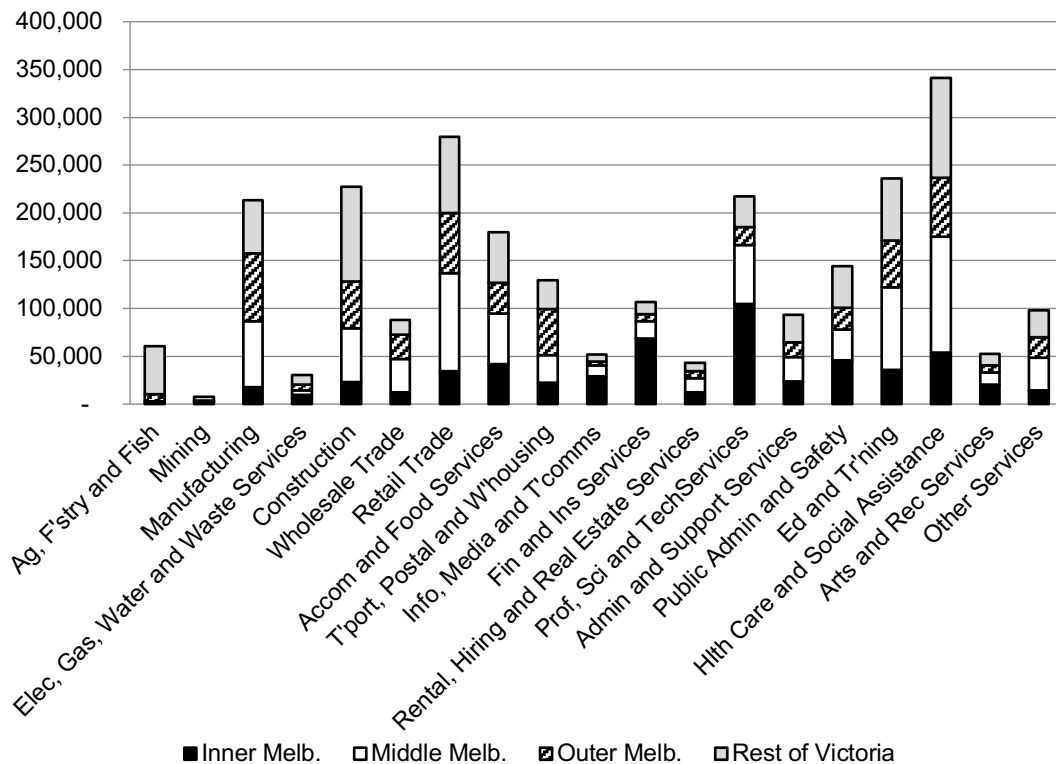


Figure 4: Industry of Employment by Place of Work, Victoria 2016

Source: Australian Bureau of Statistics (2016b), ANZSIC level 1 industry code.

Sectors that are predominantly associated with population services, such as *Health Care and Social Assistance*, *Retail Trade* and *Education and Training*, are evenly distributed when the scale of the geographic areas is taken into account. The sectors most closely associated with the knowledge economy, *Finance and Insurance Services* and *Professional and Scientific Services* are more prevalent in Inner Melbourne. Figure 5, on the following page, indicates that there has been growth in Inner Melbourne in these two sectors over the decade from 2006 to 2016, with almost all additional employment in *Finance and Insurance Services* occurring in the city centre. However, the greatest changes are in *Manufacturing*, which lost more than 60,000 jobs over the decade and the increase of 110,000 in the *Health Care and Social Assistance*. Four of the top five growth sectors over this period are associated with population growth; *Health Care and Social Assistance*, *Construction*, *Education and Training*, and *Retail Trade*. The other major growth sector was *Professional and Scientific Services*.

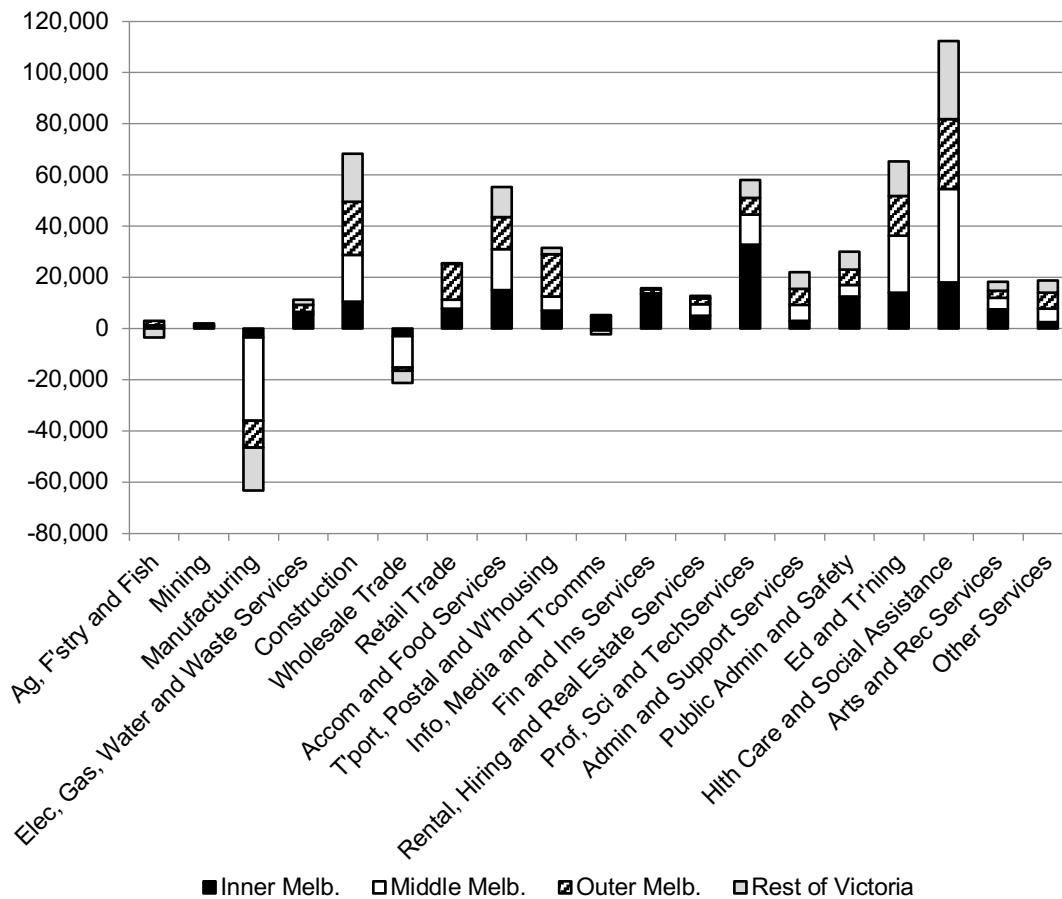


Figure 5: Change in employment by sector and place of work, Victoria 2006 to 2016

Source: Australian Bureau of Statistics (2006b, 2016b), ANZSIC level 1 industry code.

The sectors such as *Finance and Insurance Services* and *Professional and Scientific Services* that are associated with high incomes are concentrated in the inner city, which explains why most employment in the two highest income categories in the 2016 census was in Inner Melbourne. The income distributions are reasonably constant in Middle and Outer Melbourne up to \$78,000 per annum, as shown in Figure 6 on the following page. However, as incomes increase, they are more likely to be found in Inner Melbourne and less likely to be found in the Rest of Victoria and Outer Melbourne. More than 40 per cent of employment that pays between \$104,000 and \$155,999 per annum is located within the 3 LGAs of Inner Melbourne, which increases to 50 per cent for incomes of over \$156,000. If Inner and Middle Melbourne are combined, these percentages increase to 70 per cent and 75 per cent respectively. There was a total of 17,676 jobs paying more than \$156,000 distributed across the Rest of Victoria in 2016, compared to 63,655 in Inner Melbourne. The high paying jobs in the Rest of Victoria were mainly in *Health Care*, with 3,452; *Agriculture* with 1,522; and, *Professional and Scientific Services* with 1,459 (Australian Bureau of Statistics 2016b).

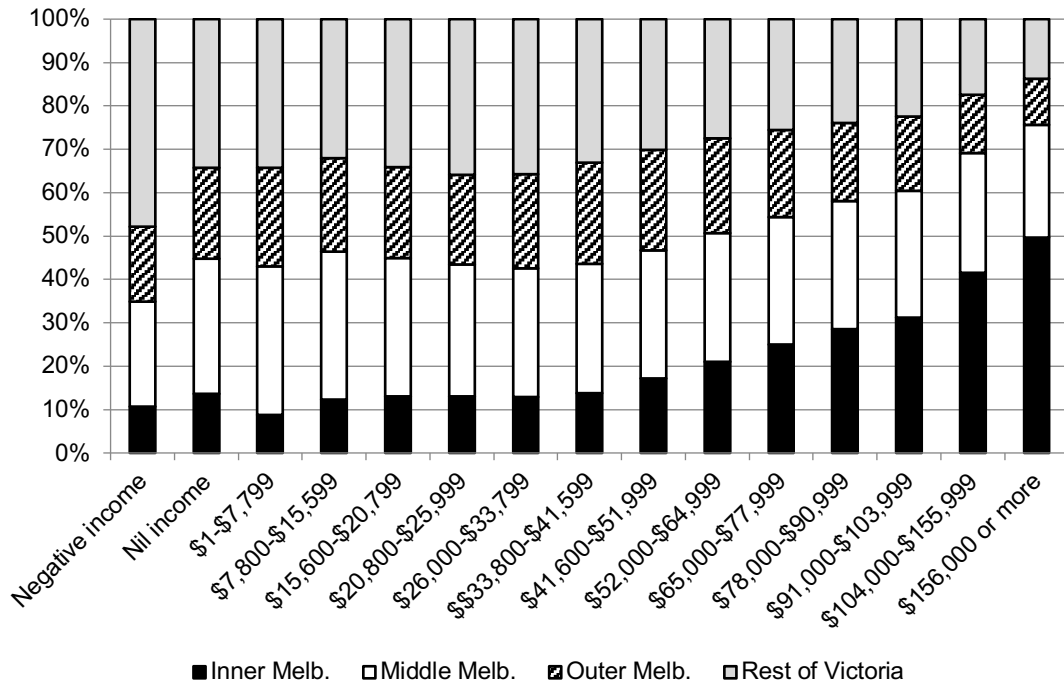


Figure 6: Place of Work by Income, Victoria 2016

Source: Australian Bureau of Statistics (2016b), INCP

Income also indicates the level of skills and experience required for a role; therefore, the data suggests that it is also senior and positions requiring high levels of skill and training that are primarily located in the Inner and Middle sections of Melbourne.

This overview of employment in Victoria indicates distinct patterns with implications for metro-bound commuting. First, employment growth is occurring mainly in Inner and Outer Melbourne. Industry mixes and incomes are not equally distributed, with well-paid employment, and work in *Finance and Insurance Services* and *Professional and Scientific Services* more increasingly concentrated in the central areas of Melbourne. This indicates there is a need for regional development as the economies of metropolitan and regional areas diverge. Second, Inner and Outer Melbourne could be considered the most accessible for metro-bound commuters due to the transport services linking regional Victoria to the inner city, and the proximity of Outer Melbourne.

1.2.5 Policy and Planning

There is political interest in population distribution issues in Victoria, at both State and Federal levels. In the lead up to the Victorian State election in November 2018, both major

political parties made promises to investigate high-speed regional rail services, which indicates the concerns with the concentration of population growth in Melbourne. In particular, the Victorian Government has promised \$50 million to investigate high-speed rail services to Geelong. The opposition Liberal Party convened the Victorian Population Taskforce in 2016 to investigate the redistribution of people in the State and promised to invest \$19 billion into the State's regional rail services in the lead up to the 2018 election. The Federal Government is also promoting regional population growth through its Faster Rail program, which has provided funding for the development of three business cases for transport investment (McCormack 2018a). One of the projects to receive Faster Rail funding is CLARA, a private consortium investigating the development of new cities between Melbourne and Sydney, connected by high-speed rail and self-funded by the value uplift attained through the redevelopment of agricultural land (CLARA 2016). A similar scheme is proposed by the Balance Victoria group, financed by land value uplift as a result of the development of a new city between Geelong and Ballarat and connected to Melbourne by high-speed rail. The argument for the Balance Victoria project is founded on arguments for population redistribution and promoted by a previous Premier and Deputy Premier of Victoria (Bracks & McNamara 2018).

1.3 Research Aims and Questions

The focus of this thesis is the impact of metro-bound commuting on regional employment. It is an investigation into whether metro-bound commuting can act as an economic spreading mechanism; part of a cumulative causation process distributing the wealth created in the centre of metropolitan areas to the surrounding regions, via regionally residing workers. The analysis provides the basis for assessing policies for regional population growth and investment in intra-regional transport and communication services.

This thesis is founded in three prominent debates within planning, employment and regional economies. The first is whether people follow employment or vice-versa, which was described by Muth (1971), and later Partridge and Rickman (2003), as a 'chicken and egg' question when applied to inter-city migration. For cities and their suburbs, the concurrent or subsequent redistribution of employment with population was central to the jobs-housing balance arguments, where Cervero (1989; 1996 for example) contended that government intervention was required to engender an efficient arrangement of people and employment. While others argued that the 'invisible hand' of market-based spatial equilibrium would lead to a reduction in commuting (Ewing et al. 2014; Gordon et al. 1989; Gordon & Richardson 2000; Gordon et al. 1991), evidence of increasing commuting times indicated that jobs were

not moving to the areas of population growth. Metro-bound commuting is positioned conceptually and empirically between the inter-city and the outer suburban, indicating that similar questions need to be addressed at the meso-scale of cities and their dilated commutersheds.

The second strand of debate is the connections between human capital and economic development, originally put forward by Becker (1962) and most prominently argued for as a remedy for ailing cities in Florida's (2004b) creative class construct. The underlying theory posited by Florida is that city economies can be revitalised by the three t's: technology, talent and tolerance. Similar arguments regarding the importance of knowledge-based and innovative workers include Reich's (1991) symbolic analysts and Scott's (2008a) cognitive cultural workers. While Florida's prescriptions in particular have been widely criticised (Markusen 2006; Peck 2005; Storper & Scott 2009), increases in the income and productivity of workers engaged in industries that are knowledge-based and dependent on intellectual capacity have outstripped other sectors (Moretti 2012; Scott 2008). The connection to the topic of this thesis is that these types of workers present a sizeable proportion of the metro-bound commuting cohort (Denham 2017), therefore raising the question of what the impact of the increased numbers of these workers residing in regional communities is. A further question is whether commuters with high levels of human capital and capabilities of importance and value in contemporary economies can be used to greater benefit in developing regional economies. The underlying question is whether the circumstances and prosperity of regional settlements are improving through importing more well-to-do people rather than directly improving the lives and opportunities for longer-term residents.

The third argument extends the consideration of regional employment generation to efficient and equitable city-region formations and settlement patterns, particularly the comparison of monocentric and polycentric urban regions. Hall and Pain (2012) posit that a polycentric distribution of population is inefficient without attendant functional polycentrism, due to the increasing commuting distances that result. In addition to this transport efficiency argument, there is an economic case for polycentric urban regions (PURs), as they are:

... able to develop new sources of competitive advantage and better market their city-regions. Due to their specific spatial structure, PURs would even have the potential to enjoy economies of scale, scope and complexity similar to their monocentric counterparts without, however, incurring the same costs or agglomeration diseconomies (Meijers 2013, p. 143).

The reference to agglomeration, economies of scale, scope and complexity, and competitive advantage indicates that it is the capacity to provide goods and services to other locations within the city region network, and further afield that is central to the economic advantages of polycentricity (Boix 1993; Camagni et al., 2013), recalling economic base theories (Hill & Brennan 2000; Hoyt 1954). It is of note that the relationships between commuting and employment calculated by Lavesson (2016) are restricted to the non-basic population services sectors of the regional economies.

If metro-bound commuting does not increase the outwardly focused tradeable sectors of regional economies, it may lead to an increasingly inefficient city-region involving long commuting distances to nodes of high-value employment. Furthermore, the influx of metropolitan workers to regional settlements has implications for regional communities, such as increasing house prices and the social issues that arise from “the ever-widening gap between the incomes and economic prospects of the upper and lower halves of the labour force” (Scott 2013, p. 386). Therefore, it is important to assess the quality of employment created as a result of increased metro-bound commuting, not just the quantity of employment, as enhancement of quality is the primary determinant of whether government intervention to facilitate metro-bound commuting is worthwhile.

1.3.1 Research Questions

This thesis builds on the proposition that metro-bound commuting has increased over recent years, yet the understanding of how this growth affects regional communities is underdeveloped. The primary focus is on employment growth in regional areas, however other issues that arise from commuting growth and counterurbanisation that need to be considered in regional strategies are also included.

Therefore, this thesis responds to the following research questions:

Does metro-bound commuting lead to functionally polycentric city-regions?

1. How are metro-bound commuters and their households changing the social, demographic and workforce structures of regional areas?
2. Has increased metro-bound commuting led to growth in regional employment and industry?
3. Do jobs follow people at the meso-scale of city-regions?
4. How should governments assess metro-bound commuting as a regional development policy?

1.4 Thesis Outline and Summary

The introduction has set out the themes, context and research methods of this thesis.

Following the introduction, the overarching structure is:

- Chapters 2, 3 and 4 provide the literature review.
- Chapter 5 describes the methodology.
- Chapter 6,7 and 8 are the results chapters.
- Chapter 9 provides the conclusions to the research.

In more detail, Chapter 2 introduces metro-bound commuting, including the factors associated with people's decision to begin metro-bound commuting and the personal and social impacts of that decision. The relationship between metro-bound commuting and counterurbanisation is also introduced, as well as the associated prospect of gentrification and displacement of regional residents that may result.

Chapter 3 is concerned with employment and workforce factors associated with metro-bound commuting. It includes theories of how regions may benefit from the changes to the regional resident workforce that results from metro-bound commuting.

Chapter 4 considers how metro-bound commuting alters city-region morphology, addressing the distribution of both population and employment, bringing together the arguments from Chapters 2 and 3. The insights provided by this review provide the basis for the final section of this chapter, which assesses the need for government intervention in city-regions and critiques government interventions that may increase metro-bound commuting.

Chapter 5 describes the methodology used in this research. As discussed in Section 1.1.4, the approach is founded in political economic geography and thus draws on mixed methods to respond to the research questions. This Chapter describes the quantitative analysis data sources and methods, and also details the methods used to obtain the qualitative data.

Chapter 6 analyses the people and population effects of metro-bound commuting. The relationships between metro-bound commuters and population growth and changing regional demographics are investigated through census data, results of a survey of and interviews with metro-bound commuters. Insights into metro-bound commuters' choices and experiences are also included in this chapter, such as why they have become metro-bound commuters, where they live and work and how they travel between the two, and their housing.

Chapter 7 assesses the regional employment effects of metro-bound commuting as a result of three processes. First, employment resulting from increased regional expenditure is analysed. Second, the effect of increased human capital residing in regional areas and its impact on knowledge-based employment assessed. The third effect is the propensity for metro-bound commuters to form regionally-based businesses, as well as business people's experiences in operating businesses that are either post-commuting or require frequent commuting to Melbourne.

Chapter 8 reviews Local, State and Federal policies and strategies that affect metro-bound commuting and regional economies. The Chapter reviews Local Government economic development strategies for key commuter locales, with a focus on the connections between metro-bound commuting led population growth and the connections to regional economies. The connections to regional Victoria in Melbourne metropolitan planning strategies are reviewed, to consider how regional Victoria is seen as a way to solve metropolitan issues. This chapter also includes critiques of State and Federal infrastructure strategies, such as fast rail programs and 'commuter-style' regional train services. The chapter concludes with a framework for assessing policies that facilitate or respond to metro-bound commuting.

Chapter 9 is the conclusion to this thesis. It summarises the results of the research, including the effectiveness of metro-bound commuting in creating regional employment, policy outcomes and whether the focus on population redistribution in current Australian discourse is adequately addressing the central issues in the increasing monocentricity of our urban systems. Therefore, the overarching conclusion of this thesis is that there needs to be a greater focus on the distribution of employment in city regions, rather than relying on the unfounded expectation that employment, and high-quality employment in particular, will follow people to the regions.

2 Commuting and Counterurbanisation

2.1 Introduction

This chapter discussed in detail commuting from regional areas and to work in primary cities. The discussion presented here includes previous studies of intra-regional and long-distance commuting, as well as counterurbanisation in order to provide insights into the factors in people's decisions to become metro-bound commuters. The literature on long-distance commuting and the effect of introducing metropolitan wage earners to regional housing markets indicates that while metro-bound commuting appears to be increasing, the outcomes for regional communities as well as for the commuters themselves are complex and multi-faceted and not well understood.

The first section of this chapter is concerned with metro-bound commuting and the second with counterurbanisation. The metro-bound commuting section begins with the consideration of the relationships between transport, communications and increasing commuting distances. While this study is concerned with the economic impacts of metro-bound commuting the negative effects of long-distance commuting need to be taken into account. This includes personal effects such as physical and mental health problems, increased divorce rates and lower social engagement, as well as the environmental effects of the associated transport energy use.

The second section of the chapter is concerned with the effects of counterurbanisation, as a proportion of metro-bound commuting results from metropolitan workers relocating to regional areas. Counterurbanisation may engender greater change in regional communities with the possibility of effects similar to the gentrification of inner city areas in recent decades due to inflationary house price effects.

2.2 Metro-bound Commuting

Metro-bound commuters are defined as those people who live in a regional or rural area and travel to a primary city for work purposes, as previously stated. This section of the thesis expands on this definition by explaining why they are a topic of interest and how they may change regional settlements and commutersheds. Previous studies related to commuting from regional areas to metropolitan ones and the associated literature on long-distance commuting have been reviewed to establish current knowledge of the characteristics of metro-bound

commuters that support the contention that metro-bound commuters affect their places of residence. Discussion of the detrimental personal and environmental effects of long-distance commuting is also included in this section, which metro-bound commuting-led regional development policies need to take into account.

2.2.1 Transport, Communications and Commuting

Developments in transport and information technology have transformed cities. Hobsbawm (2010) posits that the developments of rail transport and wire communications during the mid 19th century led to more populous cities as they developed into global hubs of global trade and communications. Not only have transport and communication developments facilitated the growth of cities, they have also allowed them to spread out, making it possible for people to live greater distances from their place of work. Marchetti (1994) found that across space and time, people have commuted on average for one hour per day, providing an insight as to why people are choosing to live further from their place of work as transport improved. Metz (2010) found similar trends in a study of commuting over a 35-year period in Great Britain, concluding that improvements to transport infrastructure led to increased travel distances, rather than reduced travel times.

Brooklyn can be seen as a prototypical metro-bound commuter town – being situated as it is across the river from Manhattan, the centre of New York business district – and a separate community when the first ferry service to New York began operating in 1836. By 1859, 1,250 services to New York were operating per day. This expansion was associated with population growth from 2,378 at the beginning of the 19th century, to 15,394 in 1830, and then 96,838 in 1850 (Jackson 1985, pp. 27,28). It is of note that by 1860, 40 per cent of the Brooklyn workforce commuted to New York and “they tended to be above average in wealth and position” (Jackson 1985, p. 27), which echoes the metro-bound commuters of today. This growth occurred across the United States, where the greater commuting distances facilitated by the replacement of horse-borne transport by streetcars –and later railways – connected new suburban settlements that were populated by the middle-class fleeing disease and crime in the heart of the city. Rail-led city expansion also occurred in Melbourne, as new rail networks in the 1880s facilitated the land boom and the development of disconnected and sprawling suburbs (Cannon, 1966). Similar processes occurred in Sydney, as the development of the train line south to the Illawarra – initially intended to transport coal – became the focus of residential land speculation and subdivision (Muir 1987). In a more recent example, the TGV fast train system in France has enabled commuting to Paris from cities more than 100 kilometres away, such as Reims and Orléans (Schafran 2015, p. 82).

While rail had led to suburbanisation, the introduction of previously separate communities to the commutershed increased with the widespread adoption of the car as the preferred mode of travel in cities (Davison 2004). McKenzie (1933) observed the impact of the car on the relationship between large cities and their surrounding settlements at a time when the car was becoming a more widespread form of personal transport. In particular, increased mobility had also led to the increased concentration of higher-order services in major cities, in sectors that accord with the knowledge industries: finance, communications and professional services as well as management functions. Partly as a result of prevalent car ownership in Australia, there has been a reduction in the number of towns with a population of up to 3,000 people, while regional cities such as Ballarat, Bendigo and Geelong have grown since the early 20th century (Bureau of Infrastructure, Transport and Regional Economics 2014). The second half of the 20th century saw these patterns of dispersal and concentration continue as car ownership and freeway construction became widespread, increasing the distances spanned by cities and their satellite communities (Badcock 2002; Davison 2004; Jackson 1985; Lang et al. 2006; Newman 2003). Therefore, the car has facilitated metro-bound commuting and counterurbanisation in two ways: it has enabled people to live further from their work, as well as concentrating certain economic sectors within major cities.

In a 1990s investigation into peri-urban migration in Sydney, improving transport infrastructure and people's increasing access to flexible work arrangements facilitated by telecommunications improvements were found to have contributed to an increased number of people commuting from peri-urban regions into major cities for work (Burnley & Murphy 1995). Other factors in the increase in metro-bound commuting were high-income earners trading off longer commutes for larger and lower density housing and the decentralisation of employment opportunities at that time. Similar trends were observed in the United States between 1960 and 1990 (Renkow & Hoover 2000, p. 271). As the intervening years have seen further improvements to transport and communications, workplace flexibility, increasing differentials between inner city and exurban housing costs, and the increase in economic activity in the centre of cities over the past two decades, metro-bound commuting can be expected to have grown.

The social welfare benefits as a result of transport improvements that provide greater housing choice have been found to be far greater than the productivity benefits to industry from labour market sorting. This concurs with the previously cited findings of Marchetti (1994) and Metz (2010) because the benefits are:

... not so much the consequence of new recruitments at longer distances, but are much more the result of voluntary moves of households who relocate to other

dwellings ... It is therefore probable that the welfare improving effects for households are larger than the productivity improving effects for firms (Rietveld & Bruinsma 2012, p. 63).

The internet and telecommunication advances have changed metro-bound commuting, by flexible working arrangements and allowing people to work from home (Banister 2005; Lyons 2014; Mokhtarian 2002). However, there are indications that telecommuters choose to live further from their work, with fewer travel days allowing people to live more remotely (Mokhtarian et al. 2004; Zhu 2012, 2013). In an overview of research into telecommuting and distance travelled to work, Andreev et al. (2010) conclude that there is a short-term negative correlation between the two, as even if the distances are longer the frequency of the journey to work is decreasing.

There is a cultural dimension to the growth in counterurbanisation, as it has been more prevalent in the US than in Europe (Jackson 1985). Therefore, as much as transport and telecommunication improvements have enabled people to live at greater distances from their place of work, they are not the only factors. There also needs to be an underlying preference for country living, or comparatively lower housing costs outside of the booming metropolitan real estate markets, for increased metro-bound commuting to result.

2.2.2 Workforce Attributes

There is a body of literature that explores the correlations between regional migration, commuting distance and workforce attributes. This has been summarised as a relationship between education levels and propensity to migrate, suggesting that human capital is likely to leave rural areas and be attracted to cities (McKenzie 2016). There is also extensive research that connects commuting distance to income (Bill et al. 2006; Bureau of Infrastructure, Transport and Regional Economics 2016; Flood & Barbato 2005; Haas & Osland 2014; Reichelt & Haas 2015; Sandow & Westin 2010).

In an early Australian study of regional migration and commuting trends, McQuin (1978) observed that people living in the rural surrounds of Armidale, New South Wales and commuting into the city for work had attained high levels of education, were business people and professionals, and had high incomes. In Victoria – the region of focus for this research – analysis of census data from 2006 and 2011 indicates that those who do commute to the inner city are on average more highly paid than other metro-bound commuters and regional workers; they are more likely to work in the finance, public administration and professional services (Denham 2017).

The prevalence of metro-bound commuters in these sectors may be related to the greater workplace flexibility on offer, which is associated with greater commuting distance (Hu & He 2016; Moss & Qing 2012; Sweet et al. 2014; Zhu 2013). Longer commutes have also been seen as a result of increased specialisation in labour markets, as employment suitable for workers with higher levels of skills and education is likely to be concentrated in fewer locations than more generic employment (Hazans 2004; Manning 2003; Sandow & Westin 2010; Vega et al. 2016).

Flood and Barbato (2005) workers from areas of socioeconomic advantage are more likely to travel further to work than workers from areas of disadvantage, based on the Australian Bureau of Statistics' Socio-economic Indexes for Areas. The links between advantage and longer commuter times were also apparent in the finding that tradespeople and associated workers and managers and administrators were found to spend more time commuting than any other occupations, while the lowest commuting time was reported by elementary clerical workers and labourers (Flood & Barbato 2005). Evidence is also provided that the more highly paid and educated people are the more time they spend travelling to work, results supported by other research into commuting patterns in Australia (Bill et al. 2006; De Silva et al. 2011; Shen 2000; Watts 2005).

2.2.3 Personal Effects of Long-distance Commuting

While this thesis is focussing on the impact of metro-bound commuters on regional economies, other consequences of long-distance commuting are also pertinent. Metro-bound commuting has, for example, also been associated with health and social problems. These negative effects include “people’s psychological, emotional, and physiological wellbeing; their relationships and interactions with their families, neighbourhoods, communities, and workplaces; and the physical and social environment”, and are made worse by distance, complexity and congestion (Flood & Barbato 2005, p. vii).

The increased time spent sitting and inactive while undertaking long-distance commutes has been associated with a number of deleterious physical and mental health conditions. In a study of more than 21,000 people in southern Sweden, a relationship between the time spent commuting to “sleep disturbance, everyday stress, exhaustion, low self-rated health, and sickness absence” was identified (Hansson et al. 2011, p. 8). Stutzer and Frey (2008, p. 343) provide a summary of the negative effects of long-distance commuting, including “raised blood pressure, musculoskeletal disorders, lowered frustration tolerance and increased anxiety and hostility, being in a negative mood when getting to work and arriving home in the

evening, increased lateness, absenteeism and turnover at work, as well as with adverse effects on cognitive performance”.

These health conditions may also be responses to the additional stress caused by commuting. There are indications that feelings of stress are related to the time spent commuting to work: in a Canadian study, a third of survey respondents who spent more than an hour commuting reported elevated levels of stress (Haider et al. 2013, p. 11). This study also found exposure to congestion and travel delays related to higher levels of stress. Analysis of the Housing, Income and Labour Dynamics in Australia Survey indicates that the length of time spent commuting may present mental health risks (Milner et al. 2017, p. 6). Sandow (2013, p. 9) highlighted the social impact of long-distance commuting, finding that Swedish couples where at least one member was commuting more than 30km to work were 40 per cent more likely to get divorced.

In contrast, some people report positive aspects of commuting as it provides a chance to communicate, work, and provides a buffer between work and home (Mokhtarian et al. 2001; Redmond & Mokhtarian 2001). Lyons and Chatterjee (2008) provided an overview of the human impacts of commuting, noting the range of negatives listed above, as well as noting the that as communication technology improves commuting time can be used more productively, particularly for public transport patrons. There is evidence that the time taken for longer journeys by train can be productive, raising questions as to whether the working day could be considered to commence at the time of boarding rather than upon arriving at the office (Lyons & Urry 2005).

The high proportion of long-distance commuters who stop commuting over the medium to long term indicates that the negatives outweigh the positives. The Bureau of Infrastructure, Transport and Regional Economics (2016, p. 191) found that only 10 per cent of people commuting for 45 minutes or more will continue to commute for five or more years. Sandow and Westin (2010, p. 437) found a 60 per cent drop-out rate in long-distance commuters in Sweden between 2000 and 2005, and more than 80 per cent over a ten-year period. The disutility of commuting is also reflected in the finding that when people switch to a new job they are willing to accept lower pay to reduce their time spent commuting (Dauth & Haller 2016).

This attrition rate can be seen as a result of long-distance commuters not fully accounting for the costs discussed above. Stutzer and Frey (2008, p. 22) referred to commuting as the “stress that doesn’t pay” and conclude that “decisions about commuting involve a difficult trade-off between socially positively sanctioned income and some loss of spare time that is difficult to

assess”. Commuting disbenefits are not adequately compensated by higher rates of pay and lower housing costs because people do not correctly value the non-financial costs of the journey to work.

2.2.4 Environmental Effects

There has been a wealth of studies on the relationships between urban structure, transport usage, and greenhouse gas emissions and other sustainability issues. Detailed analysis of growth areas near Paris found that urban density and compactness, access to public transport, and proximity to employment hubs are associated with lower rates of emissions (Aguiléra & Voisin 2014). Based on census tracts in Toronto, it was found that the “highest emissions per capita neighbourhood is located in the suburbs, consisting of large, low-density single family homes, distant from commercial activity” (Hoornweg et al. 2011, p. 8). In summarising a review of research into urban transport patterns, Banister (2005, p. 105) found that inhabitants of places with larger populations tend not to travel as far and drive less, but the findings were not as clear in other countries. Taken together, these findings indicate that redirecting population growth from large cities to regional areas may lead to less efficient transport and higher greenhouse gas emissions. These issues are exacerbated by the low levels of public transport provision in peri-urban regions, and by policies encouraging counterurbanisation and metro-bound commuting (Newbold & Scott 2013).

As much as urban structure and widespread population distributions have been linked to higher car usage, some authors suggest that they are not the primary factor in automobile dependency. Mees (2010) argued that the quality of public transport provision as the most important factor in the reduction of car usage, while Bertaud et al. (2009) contended that changes in mode share and to lower emissions transport are likely to have a greater impact than changing urban structure or reducing travel distances. The environmental impact of commuting patterns is an important consideration in transport and land use planning. The further people travel to work is likely to be positively correlated with the energy expended in commuting, indicating that encouraging metro-bound commuting may be detrimental to the environment. However, there may be some instances where a change to metro-bound commuting coincides with commuting transport mode changes that reduce the environmental impact, such as outer suburban drivers changing to rail commuters.

In addition to the inefficient transport effects of metro-bound commuting, residential growth has an effect on sustainable land use in peri-urban regions. Within Victoria, the development of residential land in these areas within commutersheds has been associated with impacts

such as the reduced use of land for agricultural purposes, the fragmentation of landscapes, increased exposure to bushfire risk and degradation of landscapes (Llausàs et al. 2016). These effects are due to the land use planning and practices in the peri-urban regions:

The reliance on low density urban growth on township fringes is locating large numbers of people in areas poorly served by public transport, often far from town centres. This practice increases infrastructure and household running costs, removes agricultural land from production and is leading to a range of detrimental environmental impacts (Buxton et al. 2015, p. 5).

Therefore, it is not just the additional energy use and emissions associated with the distance of the commute from regional residences to metropolitan places of work, the lower density of residential development in rural locations also contributes.

2.3 Commuting and Regional Relocations

The propensity for metro-bound commuting to change regional settlements is to some extent a result of metropolitan workers relocating their places of residence from metropolitan areas. It is likely that these regional relocations have a greater effect on regional settlements than those who commence metro-bound commuting by changing their place of work from regional to metropolitan, due to the traits of metro-bound commuters discussed above in Section 2.2.2. Therefore, this section of the thesis provides insights into the effects of regional relocations on non-metropolitan communities.

2.3.1 Counterurbanisation

Counterurbanisation refers to the relocation of people from metropolitan to regional areas. In a foundational review of the phenomena, Champion (1989, p. 239) defined it as “a redistribution of population from larger to smaller places across the urban system, where places are defined on a functional basis”. There is also a distinction between ‘spillover’ counterurbanisation, where strong connections to the city are maintained, such as through commuting to city employment, and ‘clean-break’, where the remaining ties to the city are severed Champion (1989, p. 24).

Strategic plans and infrastructure investments have served to increase metro-bound commuting, an early example being London’s *New Towns Programme*, which aimed to relocate more than half a million people to satellite communities outside the city’s green belt after World War 2, serviced by rail connections back to London (Alexander 2009). While not

a response to the devastation of war, recent strategic planning for Melbourne has a similar intent in redirecting population growth to regional settlements within commuting distance of Melbourne and well serviced by transport (Department of Environment, Land, Water and Planning 2017, p. 156). The Victorian State Government also released a regional transport plan that aims to institute commuter-style services between Melbourne and the regional centres, promoting long-distance commuting as a solution to the problems created by rapid population growth in the city (Department of Economic Development, Jobs, Transport and Resources 2016). This indicates both the policy intent for regional population growth as a result of metro-bound commuting and that transport improvements are seen as providing the impetus for regional population growth.

While counterurbanisation is a feature of planning in the Melbourne area it is also a global phenomenon, with research indicating non-metropolitan migration in many developed nations (Marini & Mooney 2006; McCann et al. 2014; McGranahan 2008; Newbold & Scott 2013; Renkow & Hoover 2000; Rupasingha et al. 2015). Also of relevance is that the literature frequently notes that counterurbanisation is occurring in proximity to major cities, which indicates a similar scope to the commutershed (Beilin et al. 2014; Brown et al. 2015; Keller 2001; Mitchell 2004; Nelson & Dueker 1990; Veneri & Ruiz 2016). This metropolitan proximate counterurbanisation has also been observed in Australia since the 1980s (Burnley 1988; Hugo 1989), and while some more remote coastal areas are growing, those nearer metropolitan regions are more so (Gurran et al. 2016; O'Connor 2004). In 2008 the Australian Bureau of Statistics surveyed New South Wales and Victorian residents on residential and workplace mobility, providing insights into motivations for relocation. For both States, *living near family and/or friends* was the most frequently cited reason for relocating, followed by *better access to or prospects of work* (Australian Bureau of Statistics 2009). Housing costs were important for people whose place of work was removed from their place of residence, supporting the popular perception of tree changers fleeing rising inner city house prices (see Dobbin 2009 for example).

Badcock (2002, p. 54) observed the increased counterurbanisation as “middle-class families bypassed the suburbs to seek refuge in rural villages or on ‘lifestyle blocks’ and ‘hobby farms’ in semi-rural locations”. While counterurbanisation has been growing, it is not benign as:

In-migrants have been attracted to rural locations because of the perceived advantages of rural lifestyles, yet at the same time they bring with them key attributes of urban living and levels of expectation which often serve to transform the very communities they had been attracted to (Cloke 2006, p. 19).

The changes as a result of counterurbanisation may occur to the extent that they “may eclipse the amenities base that provided the initial attraction of migrants” (Marini & Mooney 2006, p. 95). Keller (2001, p. 26) observed population and economic growth in regional settlements at distances of up to 120 kilometres of metropolitan areas, opining that this is “quite possibly the final wave of spatial development of large urban centres before agglomeration occurs”, which is a positive perspective on the economic transformations referred to above. However, the number of people moving into a regional area would need to be large to change the balance of competition with other regional and metropolitan centres.

Counterurbanisation has been widely seen as a result of the appeal of regional lifestyles and lower cost housing, as well as existing connections to community (Gosnell & Abrams 2011; Keller 2001). In the UK it has been attributed to a “love affair with the countryside” (Champion 2001a, p. 45). An Australian survey of migration influences indicates housing costs and characteristics, neighbourhood attractiveness, proximity to family and friends, lifestyle, and access to services such as schools are important factors in counterurbanisation, as well as access to employment (Australian Bureau of Statistics 2009). Costello (2009) interviewed property market actors in the regional Victorian town of Castlemaine, which also indicated family connections, environment, the town’s gold rush era heritage buildings and the perception of a community of like-minded people as important in people’s decision to purchase housing in the town, either to live in or as a second home. While noting the difficulty in defining and quantifying amenity, Argent et al. (2007) found correlations between inward migration in regional Victoria and distance to the beach, employment in recreational and related services and irrigation water services, which indicates amenity preferences for regional relocators.

The connection between counterurbanisation and metro-bound commuting was established through the findings that recent migrants to city-accessible regional areas have longer commutes than longer-term residents (Axisa, Scott, et al. 2012; Brown et al. 2015; Champion et al. 2009). This was also evidenced by the result of the introduction of an urban growth boundary and regional growth policies in Canada, which has led to migration to rural settlements and increased commuting distances as people access employment within Toronto. The areas outside the Greenbelt growth boundary legislated in Toronto provide lower housing costs, different lifestyles and social outcomes, while there is a need to commute to employment within the Greenbelt. It is of note that the research found a correlation between income and commuting distance, which was attributed to the lack of employment for highly skilled workers in the rural area (Newbold & Scott 2013). Brown et al. (2015) also found a correlation between regional migration and commuting distance in the UK, particularly for

males and well-paid workers. A further finding of note is that while there is a reduction in commuting distance over time following regional migration, it is minimal, which gives rise to the conclusion that the commuting lifestyle has become the preferred arrangement of housing and employment (Axisa, Newbold, et al. 2012; see also Sandow & Westin 2010). This duration indicates that it is possible that regional relocators become trapped, through a combination of housing market differentials making relocating to the metropolis unaffordable, the unavailability of employment substitutes closer to home, and households becoming embedded within regional communities.

2.3.2 Gentrification, Housing Markets and Social Division

The introduction of metro-bound commuters to regional settlements is likely to have an effect on regional housing markets as well as on the social mix within these communities. The impact on housing markets can be seen as a result of introducing higher metropolitan incomes into lower cost regional housing markets. These effects are redolent of gentrification, which implies a change to social structures and stratifications, housing stock and property markets (Smith 1987). Rural gentrification is closely associated with – although not synonymous with – counterurbanisation or the suburbanisation of regional settlements. Class is an important distinction, as gentrification implies displacement of the existing population by one of greater socio-economic advantage, while suburbanisation does not suggest social stratifications (Phillips 2010). In this regard, gentrification may be understood as the difference between improving the circumstances of a region through importing more well-to-do people, as opposed to improving the lives of the existing residents of the location.

Gentrification likely displaces longer-term residents from their communities, as when gentrification occurs “being a winner is often at the expense of creating a loser” (Butler 2007, p. 759). Randolph and Tice (2014, p. 388) also refer to winners and losers as a result of gentrification, noting that housing is fixed in space and thus affordability “acts as a key spatial sorting mechanism in market economies”. While this research focused on displacement within major cities, it does not preclude similar processes occurring in regional settlements. Within the context of metropolitan gentrification, Badcock (2002, p. 157) alluded to gentrification as colonisation:

One side of the coin involves the ‘invasion’ of an area by high-status households, who upgrade the housing stock and raise property values along the way. The other side of the coin involves the gradual displacement of the incumbent residents who

may be economically weakened by the decline in traditional employment that used to be plentiful in the inner city, or by encroaching old age.

This notion of economic displacement is also evident in Australian coastal communities, where lower-paid residents are being displaced from high amenity locations and if jobs are created as a result they are tenuous and generally part-time (Gurran et al. 2016). These findings are reflected in the work of Brill et al. (2010), who questioned whether house prices on a par with those in and near London would be of benefit to Wales, given the likely result of excluding local workers from decent housing given the disparity in wages.

For metro-bound commuting and counterurbanisation, the distinction between suburbanisation and gentrification may reflect the difference between the commuting from regional areas to employment in the outer metropolitan suburbs, which is likely to be similar in pay and role to regional employment, to commuters to central business districts who typically earn more working in industries with limited presence in regional areas. It is these commuters working in well-paid jobs in the centre of cities that are likely to drive gentrification and displacement of longer-term residents. As Florida (2017, p. xvi) recently observed, “the revitalisation of our cities and our urban areas that I had predicted was giving rise to rampant gentrification and unaffordability, driving deep wedges between affluent newcomers and struggling long-time residents”. Similarly, Moretti (2012, p. 173) linked stronger labour markets to higher real estate prices within cities, leading to changes in the social mix and identity of the city.

Rent Gap Theory proposes that gentrification occurs due to the potential for the redevelopment of land within proximity to central area labour markets to be redeveloped to attain greater yields (Badcock 2002; Smith 1987). Scott (2013, 2014) sees the rent gap as an effect of gentrification rather than its root cause, and directly related to the proximity of areas undergoing gentrification to employment in management and professional roles. The importance of labour market proximity is that it provides demand for the redeveloped property, which was a factor in cities such as Melbourne where inner city working-class and industrial suburbs were on the doorstep of the central business district and were gentrified as the inner city economy grew from the 1990s on (Watkins 2009). As transport improvements and workplace flexibility enable people to travel further to work, it is possible to envisage similar processes of gentrification occurring within expanding metropolitan commutersheds, as proximity is analogous to accessibility in this context. A recent article in *The Economist* (2018) provides an example of Haining in the Yangzi River Delta, where plans for the city to be included on the high-speed train service between Shanghai and Zhejiang provided a partial

explanation for the doubling of house prices. A local property developer was said that “(t)he way that we measure distances has changed from space to time” (ibid.).

In this instance, the Rent Gap Theory of gentrification provides similar reasoning for increasing real estate prices as the models of wages, amenity and housing costs used in migration studies. The fundamental tenet of these models is that housing costs reflect the differences between wages and the value of the amenity of the housing location (Glaeser 2008; Overman et al. 2010; Van Ommeren et al. 1999). In both theories, decisions to enter a housing market at a specific location are driven by the prospect of capturing economic rent or utility in underdeveloped markets. Bosworth and Venhorst (2017) introduce inter-region commuting to a model of housing and wages, concluding that counterurbanisation and metro-bound commuting may have adverse effects on regional economies as housing became less affordable while wages did not increase, indicating a declining standard of living for non-commuting residents and the possibility of a divided community. The upshot is that if housing markets are seen as a competition between bidders whose valuation of a property is a reflection of amenity, or utility, and wages, then it is likely that metropolitan wage earners are going to win when bidding in regional markets, albeit tempered by the additional costs of the metropolitan commute (Alonso 1964).

The increase in regional house prices as a result of high-speed rail projects, and by extension metro-bound commuting, has been seen as a positive outcome by members of the Australian Government. In particular, a proposal for a 30 minute high-speed rail service between Sydney and Goulburn was predicted to increase house prices from \$200,000 to \$600,000, with the then Chair of the Standing Committee on Infrastructure, Transport and Cities, John Alexander, quoted as saying “[y]ou will push up prices enormously around Goulburn, people will be delighted” (Koziol 2016). This indicates that landlords and those involved in the property industry are likely beneficiaries of government interventions that lead to increased metro-bound commuting.

The concerns with housing market impacts are only one aspect of the disruption of regional communities as a result of gentrification and counterurbanisation. Conflict between newcomers and longer-term residents has occurred in the goldfields town of Castlemaine, known as ‘North Northcote’, due to the number of relocators from the gentrified inner Melbourne suburb of Northcote (Dobbin 2009). There have been changes to the town’s social and economic structures as a result of the increased interaction with Melbourne due to ‘tree-changers’ and metro-bound commuters (Butt 2011). Castlemaine has experienced community divisions over the introduction of poker machine venues and take-away pizza restaurants (Corsetti 2016a, 2016b), and in housing markets escalating as a result of the town’s lifestyle

appeal for metropolitan relocators (Costello 2007, 2009). In the argument as to whether the take-away pizza chain should open, the conflict is evident in the concerns of community members interviewed by Corsetti (2016a), who also cites the local council's Chief Executive:

Many people who moved to the Shire did that because they loved the lifestyle that was on offer and all that means, and they really don't want it to change.

There are also many people in the community who want to see more of the opportunities and the business investment.

This recalls the observation of Badcock (2002, p. 157), that

Often, in historic areas, the newcomers lobby city hall to designate urban conservation areas in order to protect their investment. Much less often, the existing inhabitants mobilise to defend their neighbourhood from 'middle-class takeover'.

Also in Castlemaine, Costello (2007, p. 93) observed "tension between existing residents and newcomers, over development projects and the 'look and feel' of this rural space", as well as the introduction of cafes and new retail outlets. This suggests a contradiction within regional gentrification: that new residents change the community, retail sector and housing markets of a town while at the same time working to preserve the aspects of the place that they value.

2.4 Conclusion

Metro-bound commuting can be seen as a result of counterurbanisation push factors such as high metropolitan housing costs and the negative externalities associated with metropolitan growth: pollution, crime and congestion. There are also regional pull factors, such as regional amenity and lifestyles, and connections to friends and family. While these factors explain regional relocation, it is the differences between the metropolitan and regional economic structures and labour markets that mean people commute to the metropolis rather than becoming 'clean breakers' in the terminology of Champion (1989). Sustained metropolitan population growth since the 1990s has exacerbated the push factors, particularly for primary cities that serve as the entrepôts of their region's or country's global knowledge transfers (UN-Habitat 2016). While push and pull factors provide the reasons for regional relocation, metro-bound commuting has been facilitated by improvements in transport and communications technology, as well as increasing workplace flexibility, enabling people to commute further but on fewer days of the week.

That metro-bound commuting is occurring, and growing, is not enough to make it a topic of importance in considering city-regions and their morphologies. It is the changes to regional communities' social and economic structures that provide the impetus for in-depth consideration of metro-bound commuting. The literature suggests that metro-bound commuting is associated with counterurbanisation more than regional residents finding work in primary cities. This has two implications: first, that increasing metro-bound commuting changes the housing markets of regional settlements, which introduces the spectre of gentrification and displacement of the existing population; and second, that it changes the human capital and workforce profile of the regions, as longer commute times are associated with higher levels of income and education, as well as being more likely to work in knowledge or tertiary services sectors such as finance, public administration, and professional services and information technology. While it is not within the remit here to provide definitive statements on the net benefits of metro-bound commuting, what is clear is that metro-bound commuting changes regional settlements in many ways, potentially creating conflict and the likelihood of economic and personal dislocation, as well as the prospect of opportunity and development. Metro-bound commuting is also an effect of wider economic spatial and structural changes, which are discussed in Chapter 3.

3 The Spatial Outcomes of Changes in the Economy and Work

3.1 Introduction

This chapter examines the greater concentration of employment and prosperity in metropolitan areas in recent decades, and how metro-bound commuting may mitigate these trends. As commuting is a result of housing and employment choices and locations, this chapter analyses trends and prospects for employment in the city region, providing insights into metro-bound commuting alongside those from Chapter 1.

The first section investigates the spatial implications of the transition from manufacturing-based economies to knowledge-intensive and service-based economies, particularly the diverging trends in metropolitan and regional areas. This relates to the research within this thesis in two ways: first, it means that metropolitan workers who would like to relocate to regional areas are less likely to find appropriate employment there, and therefore metro-bound commuting is a resolution to this conflict. Second, this thesis is investigating whether increasing metro-bound commuting can lead to the revitalisation of regional economies, as the need for revitalisation is a result of the transitions in economic structures, both within firms and national economies.

The second section of this chapter connects these economic trends to the effect of metro-bound commuting's effect on regional economies and employment generation. Changes to employment, such as increased work-place flexibility and the so-called 'gig economy', are also influences in people's decisions to metro-bound commute. The economic and employment changes provide the basis for establishing processes whereby metro-bound commuting may generate regional employment, which is one of the central concerns of this research. Three processes by which metro-bound commuters may generate additional employment are included: as a result of additional expenditure in regional areas; the effects of increased regional-resident human capital; and, changes to the spatial margin of profitability for regionally-based businesses.

3.2 The Metropolitan Tilt

This section of the thesis investigates the spatial implications of the overarching trajectory of the global economy in recent decades. It begins with a summary of the rise of the knowledge and service sectors as the latest in the long ebbs and flows of global economies, which is based on the rapid information transfers enabled by innovations in telecommunications and computing. The second and third parts of this section argue that this elevation of knowledge and innovation as the primary source of economic output and profit has been prominent in the ‘metropolitan tilt’ – the gravity-like pull of employment, prosperity and opportunity to the major cities, and their central business districts in particular. The final part of this section explains how different industry types respond to agglomeration effects, which are the economic spillovers that arise from proximity to other businesses and are seen as a primary determinant of the spatial decisions of business.

3.2.1 The Big Picture

The series of long-waves of economic growth and decline driven by the development, adoption and then market saturation of technologies are known as Kondratiev or K-waves (Dicken & Lloyd 1990). Previous K-waves include steam power and the industrial revolution in the 1780s, followed by the age of steamships and railways, through a series of more recent cycles linked to the combustion engine, plastics, natural gas pipelines and nuclear power (Ayres 2006; Dicken 2011; Dicken & Lloyd 1990; Korotayev et al. 2011). The technology associated with these waves such as fixed rail transport, the car, wire communication and now the internet, have progressively reduced the impact of distance on transactions and interactions (Glassman 2012).

The innovations driving the fifth K-wave are the digital revolution and the increasing prominence of information and systems of exchange that have enabled the globalisation of economic systems (Ayres 2006; Dicken 2011; Modelski 2012). The widely used descriptor for the post-industrial, information-based economy is the ‘knowledge economy’, which derives productivity from human capital (Rooney et al. 2005). It is the instantaneous information flows that have been enabled by the innovations such as the internet and email that have transformed global economic – as well as social and cultural – interactions in recent years (Castells 2011). These long waves of economic growth and decline are pertinent as “apart from their fundamental role in influencing patterns of world trade and movements of people on business, each of these revolutions - at any rate, from the second Kondratiev forward – just as profoundly helped shape the subsequent growth of cities” (Hall 1996, p. 2).

3.2.2 The Rise of the Central Business District

While many predicted a decline in the importance of location as a result of the digital revolution, epitomised by the bestselling popular book *The world is flat* (Freidman 2005), there is overwhelming evidence that the opposite is the case (Broad & Cavanagh 2006; Florida 2005b; Glaeser & Gottlieb 2006; Hall 1996; Scott 2006; Simmie 2010). Sassen (2001b, p. 16) was particularly prescient, arguing that:

... the more globalised the economy becomes, the higher the agglomeration of central functions in relatively few sites ... The extremely high densities evident in the business districts of these cities are one spatial expression of this logic. The widely accepted notion that density and agglomeration will become obsolete because global telecommunications advances allow for maximum population and resource dispersal is poorly conceived. It is ... precisely because of the territorial dispersal facilitated by telecommunication that agglomeration of certain centralizing activities has sharply increased.

This centralisation of activities in dominant cities is significant, as it points to major changes in the economies of city-regions that are central to the process under consideration here. The cities at the top of global hierarchies have developed networks and grown substantially in recent decades through cumulative causation processes, as large and wealthy cities with the best telecommunication and transport infrastructure become the most profitable places to establish headquarters and invest (Belderbos et al. 2017; Dicken 2011; Sassen 2001b). The CBD has become central not only within the city, but also to international trade and industry:

This is why CBDs now have such overwhelmingly packed and heavily occupied office complexes; why streets are busy with workers during the day and not only during rush hour; and why – given long stressful hours of product completion and deal-making – there are so many gyms, bars and restaurants tucked in close proximity to the office floors where the primary work is taking place. These cities are *centres*: they are *central* to the functioning of the global economy in a very material sense (McNeill 2016 p. 110).

The key point is that new information technologies have restructured the global economy, which has led to the increasing concentration of economic activity, population and prosperity in the network of global cities. This ‘spiky’ world has created areas of disadvantage in nations and also within city-regions. Alongside increasing regional housing choices, it is this redistribution of economic activity in city-regions that forms the backdrop for the metro-

bound commuting and underscores the need for new models of regional development that reflect the new logic of business location.

3.2.3 Regional Transition and Decline

The globalised, information-based economy is associated with significant change to the geography of employment. The major cities have grown significantly as the industries that have grown, such as finance, professional services, and creative industries, are those that benefit from being in proximity to each other. Meanwhile, the industries that were prominent in regional cities and towns in the twentieth century, such as manufacturing, have typically declined as sources of prosperity and employment. This has also led to population decline in many regional areas, as young people in particular have left for the cities for education and employment opportunities. This is the metropolitan tilt, the landscape has shifted in a way that makes people, jobs and wealth move towards the city.

The spatial impact of these changes can be seen as a result of capital flows between low- and high-profit industry sectors, from the old, established and often outmoded sectors, to new and profitable sectors (Smith 2010). The spatial clustering of the traditional economic strengths in regions, particularly primary industry and the lot size demands of Fordist modes of production, are important in this consideration of uneven development. Decline in manufacturing employment has occurred across the developed world, which is associated with a shift in economic orthodoxy from comparative to competitive advantage in the 1980s, and further as the globalisation of industries has progressed in recent decades (Dicken 2011, p. 401; Stimson et al. 2006, p. 12). In many rural areas and regional cities that may have experienced employment growth in recent decades, it has been in lower-skilled jobs, and there is an associate divergence in incomes in comparison to metropolitan areas (Iammarino et al. 2018).

O'Neill and McGuirk (2002, p. 243) provide evidence of the dramatic change in the structure of the Australian economy during the 1990s, noting that the proportion of the share market capitalisation of the mining and manufacturing sectors almost halved between 1991 and 2002. They also cite a study published in the Australian Financial Review that illustrates the rapid change in the economy, as of "Australia's top 100 companies in 1991, 49 had disappeared altogether by 2001 while another 15 had dropped out of the top 100 list. Only 13 of the new entrants were in existence as smaller listed companies a decade ago" (O'Neill & McGuirk 2002, p. 243)

The downturn in manufacturing has been particularly severe in second cities and regional areas, as unlike the major cities it has not been mitigated by growth in knowledge sector employment. This can be seen as a result of the share of industry types across regions being remarkably consistent over time, that even as the total employment within a sector rises or falls it remains attracted to the same locations (Mulligan et al. 2012; Polèse et al. 2007). In particular, Polèse and Shearmur (2006) found that the location quotients, a measure of proportional employment in specific industries, had not varied greatly in Canada between 1971 and 2001. The salient point is that even when it was not as prominent, knowledge work was always concentrated in major cities and more routine industries in regional areas and secondary cities. For example, the concentration of UK financial service employment within London was in place well before the economic transitions discussed here (Young 1986, p. 63). Likewise, in Australia the growth in service sectors has a strong capital city bias, particularly in Sydney and Melbourne (Badcock 2000b; Kelly et al. 2014; O'Neill & McGuirk 2002; Watkins 2009). There is indication that this bias is cumulative, 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). This also suggests that in strongly monocentric regions such as those centred on Melbourne and Sydney, there are few alternatives to metropolitan locations for businesses in these sectors.

It should be noted that at least part of the reduction of employment in the manufacturing sector has been due to the adoption of new technologies and a shift to advanced manufacturing - employment may have declined but output hasn't. Moretti (2012, p. 36) reported that even though there have been outcries regarding the effect of Chinese imports on employment:

American factories produce the same output as China, more than double that of Japan, and several times that of Germany and Korea. The US manufacturing sector alone is larger than the entire British economy, and it is growing.

In addition to manufacturing, the loss of employment in agriculture has also contributed to altering the relative balance of primary and regional cities. While agricultural productivity increased over the 20th century as trading barriers have been dismantled, it has done so by replacing labour with capital and consolidation of farm holdings, resulting in declining rural populations and catchments for second city goods and services (Bowler 2014; Goetz & Debertin 1996; Lawrence 2005; Productivity Commission 2005; Sumner 2014). The history of the Victorian town of Warracknabeal, located amid wheat-growing country more than 300 kilometres west of Melbourne, highlights that this process began from the state break up of

squatter holdings in the 1880s, where families had to take on other's plots to be viable (Priestley 1967). The result has been two-fold: farming families leaving regional areas, and the ongoing reduction in the demand for goods and services leading to fewer regional businesses. Also of note, Partridge et al. (2010, p. 305) point out that much of the regional development policy in the US and Canada is still focused on traditional extractive industries, even though they have long ceased to be the primary sources of employment in these areas.

The spatial impacts of globalisation have been reinforced by the concurrent rise of neo-liberalism as the guiding philosophy of government, which is the belief in small government and free trade (Steger & Roy 2010). In the US President Ronald Reagan's view, government "was not a solution to our problem, government is the problem" (cited in Dicken 2011, p. 170). Harvey (1989a, p. 5) refers to the role of government changing from managerialism to entrepreneurialism, that facilitation of economic development has become the central role of municipalities and as they compete for footloose global capital, "greater polarisation in the social distribution of real income" is the result (ibid, p. 12). As with globalisation, neo-liberal agendas had spatial implications. In the UK, Margaret Thatcher set out to restructure employment, through the privatisation of state assets and a process of deindustrialisation, which was countered with the 'Big Bang', when regulations were repealed in 1986 in order for London to compete as a centre of global finance (Steger & Roy 2010, pp. 68,69). In effect, the Thatcher Government promulgated the processes of employment redistribution from regionally distributed manufacturing employment to city-centric financial services.

Neo-liberalism and economic rationalism have also resulted in a reduction of services in regional areas in Australia. Victoria's Kennett State Government in the 1990s pursued a strong neo-liberal agenda including the reduction of the number of LGAs and regional public services. This resulted in the State being strewn with "the ruins of small country towns, effectively closed down by the withdrawal of government services" while economic recovery was occurring "almost solely in Melbourne, in an arc radiating from Collins Street in the city through to the Dandenongs in the outer east" (Hayward 1999, p. 61). The Kennett Government's unexpected loss of the 1999 election, where disaffected voters turned to the Labor Party who campaigned on regional issues (Department of the Parliamentary Library 2010). By 2002, a report by the Victorian Labor Government "clearly revealed that there is general concern about the cumulative impact of continued reform on an already declining population base and the continued viability of service delivery in many small and medium sized towns" (Economic Development Committee 2002, p. 239).

The concentration of employment opportunities in the centre of cities, both in quantity and quality, is a result of the logic of industrial location responding to the fifth K-wave. The

metropolitan tilt has two implications for this thesis investigating the regional effects of metro-bound commuting. First, it can explain the growth in the ‘spill-over’ counterurbanisation of metro-bound commuting, as people who would prefer regional residency may have limited work opportunities outside of metropolitan areas: this is particularly the case for people who work in the knowledge-based sectors. Second, it underscores the possible regional benefits of metro-bound commuting, as it provides a direct connection between regional areas and the hubs of economic activity in major cities.

3.2.4 Agglomeration and the Spatial Organisation of Industries

Agglomeration is the productivity benefits that occur as a result of the co-location of people and economic activity and is central to explanations of city growth and productivity (Scott & Storper 2015). The economics of agglomeration, which provides a reasoning for the continuing increase of city size, is defined as the “decline in average cost as more production occurs within a specified geographical area” (Anas et al. 1998, p. 1427). If urban areas are “just the absence of physical space between people and firms” (Glaeser & Gottlieb 2009, p. 22), then agglomeration economies can be seen as a result of the reduced cost to transport goods, labour and ideas over shorter distances. In essence, agglomeration is a result of improved sharing, matching and learning as a result of urban density (Duranton & Puga 2004). Agglomeration is of interest in this discussion as it is fundamental to the rise of central business districts, and the different types of agglomeration economies have implications for how the location of economic activity changes as a result of economic transitions. Moreover, economic growth has been linked to agglomeration economies, which implies a more favourable position for large dense metropolitan areas compared to regional settlements.

Scott (2006, pp. 21-22) describes the three types of benefits that comprise the economic benefits of agglomeration:

Transactional interdependencies: the co-location in one place of many producers bound together in a social division of labour makes it possible for them continually to fine-tune their production activities by means of frequent readjustment of their input-output relations:

Local Labour markets: The congregation of numerous workers in one place facilitates the hiring and screening of job candidates by employers, just as the gathering together of widely assorted firms in one place facilitates job-search on the part of workers.

The Creative Field: Above all, the intense, multifaceted encounters that are endemic within disintegrated industrial agglomerations are the source of endless flows of information, both voluntary and involuntary. The result is a continual circulation of informal, often tacit knowledge about issues of production and work, and the concomitant upwelling of new commercial ideas and insights as complementary pieces of intelligence come unexpectedly into synergistic relationship with one another.

There are two theories of agglomeration within economic geography literature that ascribe productivity benefits to the size and industry mix within the economies of a geographic unit, typically a city. Localisation economies, also known as the Marshall-Arrow-Romer Model (MAR), refers to the location of complementary and competitive businesses in close proximity that obtain benefit through shared employment markets, equipment and transport, and the sharing of innovation and knowledge within their industry. Urbanisation economies result from the concentration of people and economic activity within cities regardless of the industry composition (see Beaudry & Schiffauerova 2009). Urbanisation economies are closely related to the diversity and innovation theories of Jacobs (1969, p. 54), where “the greater the sheer number of and variety of division of labour, the greater the economy’s inherent capacity for adding still more kinds of goods and services”.

Studies have attempted to distinguish between these agglomeration effects, with results indicating that both occur, with the importance of each dependent on the system being studied. The seminal statistical analysis of agglomeration spillovers by Glaeser et al. (1992), based on data for industries in 170 US cities between 1956 and 1987, indicates that as cities with diverse economies grew faster than those with specialisations, Jacobsian cross-industry spillovers were more important than MAR effects for city development. The conclusion contained an important caveat; the period of analysis coincided with the period where US manufacturing was subject to increasing international competition and had reached a mature stage of development in many cities. As a result, it was hypothesised that MAR externalities may be more important in growing industries, and Jacobsian for established industries. Subsequent analyses of localisation and specialisation economies provide further insights into the industry types and agglomeration benefits. Other studies provide a contrasting result regarding industry life-cycles, with urbanisation more important in fostering innovation and new businesses, but as production increases and matures specialisation economies provide the basis for growth (Duranton & Puga 2004; Neffke et al. 2011). Beaudry and Schiffauerova (2009) use metanalysis to conclude that the relative importance of the urbanisation and specialisation varies with the geographic and industrial classification detail used in the

analysis, but also that low-tech industries are more likely to benefit from specialisation and high-tech from urbanisation economies. Caragliu et al. (2016) conclude that locations with higher population density may benefit more from diversification, while low-density areas are more likely to benefit from specialisations. These distinctions can be seen to reflect the different focuses of the theories: Jacobs was concerned with innovation and new industry while the MAR model is more concerned with production outcomes. A further distinction is how agglomeration effects relate to different industries: localisation economies have been used to explain the development of manufacturing specialisations in regional cities as the increased profitability due to the spillovers crowds out other industries, whereas urbanisation is seen as more important in technology and information sectors (Henderson 1997, 2010). This difference has also been linked to industries where the main knowledge generation is through either divergent or convergent thinking (Spencer 2015, p. 886). These results are tempered by the spatial organisation of different industry types making it difficult to statistically separate the effects: for example, manufacturing is not regularly located in dense city centres, but retail and some service types mainly are (Graham 2009).

In summary, it is likely that manufacturing receives greater benefit from MAR-based specialisation, such as those achievable in regional cities and outer suburban areas due to land costs and availability, and knowledge industries benefit more from urbanisation (Jacobsian) economies, and thus are attracted to the larger agglomerations in major cities. Scott (2008, p. 70) makes a key point about the spatial organisation of knowledge industries, or what he refers to as cognitive-cultural sectors, in large cities because “increasing-returns effects residing in the external economies of scale and scope that flow from selected aspects of their joint operation in particular localities”. The inference of different types of spatial location benefits for industry sectors is critical in this context, providing a distinction between the spatial decision-making of knowledge industries and manufacturing. Melo et al. (2009) undertook meta-analysis of 34 studies, which included 729 estimates of agglomeration elasticities. Overall, the average elasticity was found to be 3 per cent, but 8 per cent for the agglomeration of service industries, providing statistical support for the contention that there are greater benefits for cognitive-cultural sectors. Graham et al. (2009, p. 21) found similar elasticities, ranging from 2 per cent for manufacturing and consumer services to 8 per cent for business services, as well as noting that the benefits for manufacturing decay over distance at a lesser rate than for other elements of the economy. However, as Melo et al. (2009, p.24) caution it is important that for these estimates “there is no a priori reason to expect similar estimates of comparable magnitude between sectors, urban areas, or countries”.

For knowledge industries in particular, urbanisation economies are associated with the exchange of tacit knowledge, “the localised processes of learning and socialization” (Scott 2008, p. 70). This need for personal interaction provides a basis for the strong agglomeration tendencies and central city locations of these industry sectors (Grabher 2002; Leamer & Storper 2001). Further consequences of the link between urbanisation economies and knowledge work are the need for a range of advanced services required to undertake projects, and for face-to-face interaction between these changing combinations of providers is more important than interacting with clients (Sassen 2001b, p. 21). Grabher (2002, pp. 209-10) notes the benefits of being located near similar industries in this type of work, as well as the continuous evolution of business networks based on projects and the geographic dispersion enabled by telecommunications.

Agglomeration also provides an explanation for manufacturing clusters and specialization in regional or second-order cities, particularly those within 90 minutes’ drive of major cities (Polèse 2010). This is attributed to crowding out effects, where the benefits of agglomeration and co-location lead to a willingness of businesses to pay higher rents than businesses in other sectors, resulting in geographic specialisation (Henderson 1974, 1997). Henderson (1997, p. 610) also notes the knowledge-intensive aspects of manufacturing, such as research and development, along with creative intensive industries such as publishing and clothing design are located in larger cities and concludes that “they experience significant scale economies connected with urban area size, not just industry size”. In effect, Henderson is noting the different agglomerative processes for knowledge industries and manufacturing. These links between industry types, agglomeration, and city size and hierarchy have profound impacts on the spatial distribution of prosperity and opportunity when economies transition, and the impacts of declining industries are concentrated.

Agglomeration economies were originally used to explain the emergence of industrial districts in 19th Century Britain (Belussi & Caldari 2008), but in recent years have become central to explanations for the concentration of economic activity in major cities as well as a prescription for economic growth and development. In particular, knowledge industries such as finance, professional services, IT and creative industries benefit from co-location due to tacit and codified information exchanges, deep labour markets, access to specialised skills for project teams and market access. As these industry sectors have become prominent in developed economies (Dicken 2011), agglomeration theories present a theoretical explanation for the diverging fortunes of cities and regional areas over recent decades. Along with providing a central argument for the concentration of employment in major cities in post-Fordist economies, agglomeration theories provide foundation for the concentrating effects in

the following discussions. A further implication is that due to the increasing returns to scale of agglomeration economies (Toner 1999), the effect is cumulative and therefore without government intervention there will be continued divergence between metropolitan and regional prosperity.

3.3 Metro-bound Commuting and Regional Employment

This section explores the processes by which increasing numbers of metro-bound commuters may be associated with employment growth in regional areas. The first section builds on the previous discussion of economic transitions by showing how these changes have led to increasing polarisation in the labour market, between knowledge-intensive and other forms of work and how this facilitates metro-bound commuting, as well as provides further concerns regarding the social divisions discussed in Section 2.3.2. The connection between knowledge work and metro-bound commuting indicates how they may contribute to regional employment growth, due to the demand effects of increased population, income and expenditure in regional areas, and the supply effects related to the increase in regional human capital. The two types of effect change the spatial margin of profitability in regional areas, which indicates that there is a greater chance that businesses will survive, albeit in the context of intra-regional competition, including with the major metropolis.

3.3.1 New Labour Markets and Social Divides

The rise of the knowledge economy, powered by globally interconnected cities, has led to a polarisation of the labour market into well-paid and high-skill and low-paid low-skill sectors. This disparity between winners and losers in the contemporary economy has been linked to the spatial segregation of the two types of workers, with low-paid workers resigned to the periphery of cities (Pacione 2005; Scott 2008; UN-Habitat 2016). Capacity to innovate and generate ideas is paramount in the knowledge sectors and is fostered by investment in education (Rooney et al. 2005). In observing these changes, Scott (2013, p. 385) identifies a new structure of employment, replacing the Fordist era blue- and white-collar distinctions, where:

This alternative structure is represented, on the one hand, by highly qualified symbolic analysts and, on the other hand, by a low-wage service underclass, or what we might call in more polemical terms ‘a new servile class’. Moreover, the character of this structure as a division is accentuated by the ever-widening gap between the

two groups of workers in terms of their incomes and life chances as well as their forms of work.

Levy and Murnane (2005, p. 12) consider the prevalence of the computer in the workplace as central to the widening gap in the labour market:

As computers have helped channel economic growth, two quite different types of jobs have increased in number, jobs that pay very different wages. Jobs held by the working poor— janitors, cafeteria workers, security guards— have grown in relative importance. But the greater job growth has taken place in the upper part of the pay distribution— managers, doctors, lawyers, engineers, teachers, technicians. Three facts about these latter jobs stand out: they pay well, they require extensive skills, and most people in these jobs rely on computers to increase their productivity. This hollowing-out of the occupational structure— more janitors and more managers— is heavily influenced by the computerization of work.

These conjectures are supported by evidence. Pacione (2005) detailed the transition from manufacturing to advanced services employment in the Great Lakes metropolitan areas of the US and the UK. Given the wide difference in skill requirements in these sectors, it is unlikely that the people who lost jobs in manufacturing gained employment in advanced services, a point Australian Prime Minister and Treasurer in the 1980s and 1990s, Paul Keating, found difficult to acknowledge (O'Brien 2015). Soja (2000, p. 174) cites United States' Department of Commerce data indicating that "inflation adjusted real wages for non-supervisory employees in private industry have been falling since 1973". Long term changes to the returns from labour were also observed in the 1990s, with examples of the shift towards specialised and technical services in the production of automobiles and semiconductor chips provided by Reich (1991, p. 104).

This divide has been observed as inner city areas have gentrified, as the newly residing, prosperous knowledge workers clash with longer-term residents, resulting in "a tense political milieu marked by collisions over social and economic opportunity" (Storper & Scott 2009, p. 164). Standing (2014) defines a 'precariat', the growing number of workers on short-term and casual contracts, frequently changing roles depending on work available, and spending much of their labour efforts on finding or training for new jobs. The impact of these circumstances, such as the lack of security and non-wage benefits of labour are behind the precariat's engagement with a range of disruptive political movements such as nativism, riots and the occupy movement. Further to this, such divides and collisions between the two groups of workers have been argued to be central to the election of Donald Trump in 2016, as

'landscapes of despair' have resulted from economic transitions and the spatial division of between opportunity and high-income employment and disadvantage and insecure work (Monnat & Brown 2017; Storper 2018; Walley 2017).

The divisions of labour introduced in this section are of note for this study for three reasons. Firstly, metro-bound commuting enables knowledge workers, symbolic analysts or cognitive-cultural workers, with their high incomes and human capital, to move to regional settlements. The possibility of increases regional employment is the focus of this thesis and results from the relationship between incomes, expenditure and employment in the first instance, and human capital, innovation and business formation in the second. Secondly, the divisions of labour build on the notion of the spatial impacts of economic transitions, that as knowledge-intensive industries are concentrating in inner city areas so do well-paid jobs. Along with the decline in number and the value of jobs in sectors such as manufacturing and agriculture, which were at the forefront of outer suburban and regional economies (Moretti 2012; Polèse 2010; Standing 2014), the outcome is an increasing spatial polarisation of opportunity and prosperity. This leads to the third point, that given these spatial patterns in the labour market, metro-bound commuting and counterurbanisation can be seen to shift the fault-line of gentrification and associated social divisions from the inner suburbs (Storper & Scott 2009), to regional settlements as discussed in Section 2.3.2.

3.3.2 Population, Income and Expenditure Effects

The direct employment effects due to metro-bound commuters are a result of the additional population, incomes and expenditure that should translate to additional employment in regional areas. The integration with urban economies and the flow of metropolitan incomes into regional economies is an important contributor to regional prosperity (Parr 2014; Partridge et al. 2010). Also, the correlation between length of commute and income indicates that metro-bound commuters may generate additional expenditure in regional areas (Bill et al. 2006; Bureau of Infrastructure, Transport and Regional Economics 2016; Flood & Barbato 2005; Haas & Osland 2014; Reichelt & Haas 2015; Sandow & Westin 2010).

Population growth is a result of individuals and their households moving to regional settlements to become metro-bound commuters, as well as population retention in the case of people being able to remain in regional areas if they were not able to access metropolitan work. This population growth can be expected to lead to increased employment in regional areas, as demand for goods and services increases, as well as retail, population-based services and hospitality (Lavesson 2016). This can be expected to include growth in government

services such as health, education and justice facilities that are typically allocated on demand-based projections. The associated increase in housing demand may result in additional construction employment, although this is dependent on whether the demand response is more supply or higher prices (Evans 2008). While these effects may be important, particularly if metro-bound commuting is occurring in settlements that would otherwise be in decline, they are not specific to metro-bound commuters. Therefore, the rest of this section is concerned with the marginal effects of metro-bound commuters above what could be expected from population growth.

The expenditure effects of commuters on regional employment have been investigated previously. Shields and Deller (1998, p. 72) used data for the US State of Wisconsin from 1982, 1987 and 1992 US Censuses, finding that in-commuters have a greater impact on retail sales than out-commuters in a majority of retail sectors. However, the study did not adequately account for agglomeration effects and the diverse size of the locations included, which would bias the study towards places where people travel to work as opposed to travel from to work. Also, the scenario analysis undertaken by Shields and Deller (1998) indicates that in-migration can be expected to generate greater expenditure than in-commuters, but excludes the analysis of what the benefits may be attributable to out-commuters who relocate to regional areas. Lavesson (2016) investigated the relationship between commuting to cities and employment growth in rural areas in Sweden, between 1995 and 2009. The research investigated the impact of city-bound commuters on rural retail and service sectors, the spatial limits of these impacts and the relationship between levels of education and the spatial reach of the impacts of commuting. The results of the regression analysis found that a 10 per cent increase in rural-urban commuters resulted in a 1.59 per cent to 2.92 per cent increase in retail and service employment in rural Sweden (Lavesson 2016, p. 34). While the higher incomes of rural-urban commuters were identified as an important factor in this positive effect on local employment, the results did not indicate a significant difference between high and low levels of education.

However, out-commuters having a greater propensity to outshop, that is to shop in places other than the residential location offsets these higher incomes. In a review of consumer outshopping behaviour, Papadopoulos (1980, p. 57) notes that people may not necessarily travel specifically to shop, but will take advantage of the opportunity to shop when travelling for activities such as work. This observation implies that out-commuters may exhibit a greater propensity to spend in their metropolitan place of work than their regional place of residence, offsetting the impact of their higher incomes. A similar negative relationship between out-commuting and retail expenditure was found in a survey-based study undertaken in rural

Indiana, where “the distance travelled to work each day appears to be inversely related to the extent of local purchasing” (Boehm & Pond 1976, p. 10). For rural migration in Scotland, Stockdale et al. (2000) found that people who commuted to work in other areas spent less with local retailers: this lower local expenditure was found to not offset the higher incomes of commuters. People with higher incomes may also be more likely to outshop, due to demand for a greater range of products than are provided in smaller retail centres (Ingene & Eden 1981, pp. 540-545; Shields & Deller 1998), although this may indicate that the different demands of metro-bound commuters may increase the range of viable businesses in regional areas.

This points to outshopping also being related to a location’s position within a retail hierarchy. As Van Leeuwen and Rietveld (2011, p. 1110) found, a greater number of stores makes shopping destinations more attractive. Therefore, the size or appeal of surrounding retail centres can affect the relationship between income and retail trade (Walzer & Schmidt 1977). Shields and Deller (1998) included an elemental factoring of broader regional effects in their retail model, only including the distance to the nearest city with a population of greater than 25,000 people. Walzer and Stablein (1981) added a retail gravitation component to their investigation into the determinants of income and retail sales per capita in Illinois locations with populations of 2,500 to 10,000 people, finding significant positive correlations between retail attractiveness and retail sales as well as leakage of retail expenditure from rural areas to regional cities. Lavesson (2016) included factors for distances from urban centres as well as a matrix to include surrounding regions in the analysis.

The correlations between metro-bound commuting growth and regional employment in population services industries, such as retail trade, personal services and hospitality can be seen as a regional trickle-down effect. Although the evidence that people who commute to work away from their residential location are less likely to shop in their place of residence, the evidence indicates this is outweighed by the higher incomes. This may be due to the role of the entire commuter household in this consumption pattern, as it is likely that other household members will remain in regional cities and towns spending the higher metropolitan-earned incomes. However, these studies provide little evidence of growth in other industry sectors. Lavesson (2016, p. 21) tested for growth in non-retail sectors, finding no correlation between rural-urban commuters and employment in other sectors of the rural economy. O'Connor et al. (2002, p. 115) assessed the counterurbanisation trend in metropolitan hinterlands, suggesting that “such persons add to the population, but do not change the geography of employment or economic activity all that much”.

3.3.3 Human Capital Effects

In addition to the direct effect of additional regional expenditure, metro-bound commuters may also increase human capital residing in regional areas (Luck et al. 2010), which may lead to employment generation due to firms recognising this underutilised capacity. As with the expenditure effect, the prevalence of knowledge workers is an important factor in human capital effects, as they are associated with high levels of education. There is an extensive literature that elucidates the links between human capital and endogenous economic growth, as well as important factors such as innovation and entrepreneurship (Bosma & Schutjens 2011; Gennaioli et al. 2013; Glaeser & Resseger 2010; Karlsson & Johansson 2012; Moretti 2012). An implied assumption in these studies of creativity, human capital and economic outcomes is that people live and work in the same place, or that the housing and employment markets that they engage in are contiguous. This assumption does not hold for metro-bound commuting; therefore, this thesis can be seen as assessing the strengths of human capital effects in places of residence compared to places of work.

There have been numerous formulations and categorisations of workers in knowledge-intensive service roles in recent decades, from Bells' 'post-industrial society' (1973), Gouldner's 'new class' (1979), symbolic analysts (Reich 1991), the euro-centric 'cognitariat' (Berardi 2005), and the "transnational capitalist class" which adds a focus on global activities to the mix (Sklair 2012). These ideas can be seen as the basis for city development strategies based on attracting people with high levels of human capital. For example, Glaeser (2005, p. 594) suggests "urban success comes from being an attractive 'consumer city' for high skill people" and Clark (2004) makes a similar contention in considering the "city as an entertainment machine".

In recent decades the most prominent and widely discussed categorisation of these workers has been the 'creative class'. This concept along with the associated economic development strategy is explored in this section. In a series of influential publications, Florida (2002, 2006; 2004b) promoted his theory of economic development through attracting what he called the creative class through the three Ts of technology, talent and tolerance. While Florida's ideas have been widely criticised (Berry 2005; Markusen 2006; O'callaghan 2010; Peck 2005, 2007), the creative class does reflect the substantial literature connecting human capital and productivity, as argued by Florida (2005a; see also O'callaghan 2010).

There are well-established connections between human capital and economic development, with the analysis of Becker (1962) identifying the productivity gains from education an early example. Moretti (2004a, 2004b) considered productivity and income effects from educated

residents within cities, finding that not only did a college education increase the income of graduates, there was a spillover effect whereby high school graduates and drop-outs also received higher wages in cities with more college graduates. More recently Moretti (2012, p. 4) extolled the employment benefits of attracting educated workers in knowledge sectors, as:

The presence of many college-educated residents changes the local economy in profound ways, affecting both the kinds of jobs available and the productivity of every worker who lives there, including the less skilled.

And as an example, Moretti offers:

For each new software designer hired at Twitter in San Francisco, there are five new job openings for baristas, personal trainers, doctors, and taxi drivers in the community (op. cit., p.13).

Moretti is silent on whether these effects occur at the place where these college-educated knowledge workers live, or where they work – the implicit assumption is that the effects are within a single housing and labour market. For this thesis, as well as for strategies to develop regional areas through metro-bound commuting, then the spatial distribution of these employment multipliers and income effects is an important question. A further point of note from Moretti's analysis is that by focusing on education attainment - readily measurable in census data – the issues with analysing qualitative and ways-of-working categorisations such as the creative class or symbolic analysts are avoided.

Researchers have connected regional development outcomes to the introduction of human capital and knowledge workers to regional areas. In an investigation into relocators to regional areas who were seen as part of the creative class, Herslund (2012) reported a propensity for metro-bound commuters to start businesses in their places of residence, as a response to the time spent away from home travelling to and from work. Commuters and their partners also indicated that shortage of employment that matched their skills and expertise was a factor in starting their own business. Gennaioli et al. (2013, p. 106) undertook an extensive statistical analysis of regional development, finding that human capital as measured by education as the “most consistently important determinant of both regional income and productivity of regional establishments”. In an interesting adjunct to Herslund's findings, educated entrepreneurs were seen as particularly important, due to the correlation with business formation and productivity identified by Gennaioli et al. (2013). There is also evidence that people with higher levels of education are more likely to be entrepreneurial, particularly in starting new businesses in response to identifying opportunities rather than out

of necessity - a response to job loss for example (Svaleryd 2015; Wagner 2005). An additional factor is neighbourhood effects, whereby skills and knowledge transfers to other residents through processes such as role models and social norms regarding education and employment (Katz 1992; Manley 2019; Rosenbaum & Popkin 1991).

A further human capital effect of metro-bound commuters residing in regional areas is the creation of thicker labour markets, one of the three factors in agglomeration economies (Scott 2006). Essentially, regional businesses should benefit from improved labour market sorting, increasing productivity as they are more likely to find suitably endowed employees when there is a greater number of prospective applicants in their employment catchment. The propensity for metro-bound commuters to have higher levels of education and be likely to work in different jobs than regional workers indicates that they may provide regional businesses with access to skills and capabilities that would otherwise be in short supply (Lavesson 2016; Sandow 2013). Also of note is that people have been found to reduce their commute for a reduction in pay (Dauth & Haller 2016), as lower staff costs are a source of advantage for regionally-based business (Keeble & Nachum 2002).

3.3.4 The Spatial Margin of Profitability

The demand effects related to income and population growth and the supply effects of human capital and thicker labour markets both improve the probability that businesses will be established and be profitable in regional areas. Earlier models of industry location were concerned with profit-maximising locations: such as Weber's (1929) location triangle and Hotelling's linear city model and the example of ice cream sellers on a beach (Brown 1989). Rawstron (1958) considered these models too abstract, as a business person should know the relationship between expenditure and profit, but not necessarily know what the maximum obtainable profits are. That is, for any business:

As long as his necessary expenditure is considerably lower than his income, he can incur all manner of peculiar extra costs within these limits. An apparently peculiar location may be one of these extra costs. We may come to know the marginal locations; we shall never know the optimum (Rawstron 1958, p. 142).

In Smith's (1966) theoretical exposition of spatial margins of profitability factors that impact the limits are considered, such as access to information and how entrepreneurial skill expands the margins, as well as introducing Greenhut's (1956) 'psychic income' model of industrial location, which in contemporary parlance includes wellbeing as well as financial considerations. The non-financial elements of location decisions increase the chance of

selecting a site in a non-profitable location: the influence of the entrepreneur's place of residence on business location is an example of this (see Keeble & Nachum 2002).

The element of chance in the spatial margin of profitability concept has been included within evolutionary economic geography explanations of regional development. These location decisions may be unrelated to rational assessments of the costs and profits inherent in place: they may be a result of the entrepreneur's place of residence for example. Therefore, there is then a degree of chance as to whether firms start in profitable locations (Boschma & Lambooy 1999). Boschma and Frenken (2006, p. 292) place the notions of chance and location within the realm of evolutionary economic geography as:

... firms' location decisions are heavily constrained by the past. For example, most firms start from home, and spin-offs typically locate in the region of the parent firm. In both cases, previous decisions taken in a different historical context determine the location decision of a new firm.

Metro-bound commuters can be seen to be both expanding the spatial margins of profitability in, or to, regional settlements through their expenditure and their workforce and human capital effects. From both supply and demand perspectives, the additional population and more diverse workforce should improve the possibility of successful and sustainable businesses in regional areas. The connections between human capital and business formation also indicate that not only should the chance of success improve, there should also be a greater propensity for entrepreneurship in regional areas. While this indicates that metro-bound commuters may change the factors that determine the spatial margin of profitability – the location-specific costs and market access – it does not mean that the margins are shifted enough for regional business locations to successfully compete with metropolitan businesses in regional markets.

Dicken and Lloyd (1990) postulate a significant difference between service businesses and manufacturing in these considerations of location and spatial margins of profitability: manufacturers involve physical inputs for and outputs of production and therefore need to look to supply as well as demand in determining location, while service industries essentially need to consider the market for their speciality. For advanced producer services and knowledge-intensive industries, the market is in the large cities: seats of government or where large businesses require the services of specialised consultants. Also, agglomeration theory would suggest there are also supply-side reasons for services to locate in the major cities in addition to the market effects. First, the main input in services is human capital and cities is where the labour market is thickest. Second, informal interactions and tacit knowledge

transfer are fostered by the dense activity of major cities, it's where "the mysteries of the trade become no mystery, but are, as it were, in the air" (Marshall 1890 [2013]). The market benefits of inner city locations also result from the tendency for work in these areas to be project-based, with teams of specialists forming for tasks as required and therefore knowing and being known by a range of other specialists generates work (Grabher 2002, 2004; Rooney et al. 2005; Scott 2008). Hall and Pain (2012, p. 10) found that consultants could operate within a radius of two hours' travel time from metropolitan centres and airports, a span similar to commutersheds. The quality of transport and communications infrastructure enabling frequent connections to the city was vital in these operations. This indicates that these businesses were operating as satellites rather than being sustained by regional markets, both for clients and suppliers, but raises the possibility that these types of operation have little connection to and benefits for local residents and industry.

The spatial margin of profitability provides a heuristic for considering how metro-bound commuters may improve productivity and the prospects for business formation and survival in regional areas. When considered at the settlement scale, the income and human capital effects indicate that the spatial margins of profitability should expand as a result of metro-bound commuting, that the economies of regional cities and towns should evolve and develop with the influx of wealth and education. However, for the city-region scale, this increased probability of business success needs to be considered in the light of metropolitan competition. The strength of agglomeration benefits in metropolitan areas for the types of industries that generate employment and prosperity in modern economies are difficult to overcome or else the concentration of economic activity discussed earlier would not be occurring. Therefore, the question for governments, as well as this thesis, is whether there are interventions that can facilitate metro-bound commuting growth in ways that shift the competitive balance, not just improve the prospects of regional areas. As discussed in the following chapter, this challenge is made more complex by such as improvements to transport infrastructure also reduce the transaction costs of businesses within city-regions, often leading to a greater concentration of activity in major cities (Halbert 2006; Storper 2017; Tomaney 2011).

3.4 Conclusion

This chapter has reviewed how the distribution of employment has changed in response to the transition to post-industrial economies. The change has not been a gentle drift of activity across space, but the growth or decline of industry sectors in particular places. That is, the location of industries has not shifted, the relative size and importance of the sectors has

(Polèse 2010). Manufacturing has declined and it has been an important employer in regional areas, while financial services have blossomed in recent decades and they have always been prevalent in the central business districts of major cities. Agglomeration economies have been used to explain the attraction of knowledge economies to the dense activity hubs of central business districts, and they also have provided an explanation for manufacturing's location in regional cities. That knowledge industries derive greater benefits from the diverse localisation while manufacturing industries benefit from specialisation provides further explanation of the patterns of change in city-regions.

If employment opportunities, and therefore careers, were available in greater numbers in regional areas then it is unlikely that metro-bound commuting would be increasing as it is. Whether metro-bound commuters may alter the uneven distribution of employment is a focus of this research. Chapter Four takes up this thread, exploring how the distribution of people and employment affect the efficiency, sustainability and equity of city-regions.

The changes in the composition of the economy are also associated with changes to the way people work, particularly in the knowledge economy where flexible working conditions have been associated with people moving to reside further from their workplace. This is an important relationship, as the higher incomes and human capital of knowledge workers in comparison to other cohorts provide the basis for the proposition that they will generate more employment per commuter in regional areas. More metro-bound commuters with higher incomes should, in theory, lead to additional demand in regional areas, and therefore more employment than those associated with population growth. This relationship is due to the propensity for higher consumption, but this needs to be weighed against a greater propensity to outshop, which is retail consumption outside of the place of residence. The supply effects of human capital have been central to endogenous economic growth theories in recent decades, due to the associated increased productivity and entrepreneurship. Together, the demand and supply effects change the spatial margin of profitability, the set of locations that if a business decides to locate, it may be profitable. An important aspect of spatial margin of profitability theory is the notion of chance: business location decisions are made based on personal factors and imperfect information, and therefore should be seen as having a probability of success rather than a perfect response to profit and utility functions across space. The proposition in this chapter is that metro-bound commuters are increasing the probability of business success through demand and supply effects, but this change needs to be compared to external competition to determine whether the impact will be enough to generate additional employment.

In addition to the demand effects that result from population growth and the higher incomes of metro-bound commuters, there are also supply effects. These supply effects are connected to the human capital of metro-bound commuters, who tend to be more highly educated and tend to work in different industries and roles than regional workers. Both of these effects can be expected to be larger for the deep commuting knowledge workers than other types of commuter, as on average they earn more and have higher levels of education. There are two considerations for these employment effects. First, they derive from the commuters' entire household, not just the person travelling to the city for work each day. Second, the literature connecting human capital to productivity increases and economic development does not distinguish between place of work and place of residence, a distinction that is central to the questions posed by this thesis.

This chapter has introduced novel aspects of the research undertaken for this thesis, which provide a new and original approach to the topic. First, commuters' households need to be included in the analysis, as they will provide consumption and human capital in regional settlements in addition to those of the individual commuter. Second, the human capital theories and proponents have not considered how the associated economic effects are distributed between the place of work and place of residence. Metro-bound commuting means that these two places are not the same, and therefore raises the question as to whether there are benefits associated with residential attraction if it is separate to employment. This consideration has consequences for metropolitan and regional economic policy, which is discussed in Chapter 4.

4 City-region Structures and Commuting Policy

4.1 Introduction

The purpose of this chapter to develop a foundation for the analysis of how metro-bound commuters may affect change in the structure of city-regions, to provide a basis for policy analysis. The trends in population and employment distribution from Chapters 2 and 3 indicate the changes to city-region morphologies and regional communities as a result of metro-bound commuting. This chapter considers how these trends associated with metro-bound commuting may lead to more equitable, sustainable and productive systems of cities and settlements within monocentric city-region structures, and what this means for policy making.

The first section of this chapter analyses the research and policy arguments for increasing the functional polycentrism of city-regions, including the economic interactions and the role of second cities in city-regions. A process hypothesising how a Fordist-era city region may transition into a more functionally polycentric and complementary network of cities as a result of metro-bound commuting concludes this section.

The second section introduces policy considerations for metro-bound commuting as a regional development initiative. The arguments introduced in this section include place-based and spatially blind economic development strategies and their philosophical underpinnings, the relationship between transport and regional economic development, and residential attraction strategies. This analysis establishes the basis for the analysis of the regional effects of policies that facilitate and encourage metro-bound, by considering the distributional outcomes in three domains: economic functions, employment and population.

4.2 City-region Morphology

This section considers how the structure of city-regions and the interactions between metropolises and their surrounding settlements influence productivity and economic activity. City-regions and networks have been defined by the socio-economic flows between the urban areas, and inter-city commuting is a part of these flows (Hall & Pain 2012). The purpose is to consider how commuting affects change in the relationship between urban locations, and how the city-regional morphologies that result from metro-bound commuting growth are a crucial concern for spatial planners.

4.2.1 Polycentric Urban Regions

Polycentric city-region morphology is a prominent topic in European spatial planning in response to concerns regarding increasing disparities between cities and regional areas (European Commission 2003; European Commission Committee on Spatial Development 1999; Hall & Pain 2012). Meijers (2007) argued that polycentrism can provide for similar agglomeration economies of scale as monocentric regions, with lower diseconomies than those associated with large cities. Polycentric regions have been seen as an important source of global competitiveness as well as equity within the city-region (Harrison & Hoyler 2015; Scott & Storper 2003). An immediate connection between morphology and metro-bound commuting is that inter-city commuters are regularly used as indicators of polycentrism, with the balance of the two-way flows indicating the degree of mono- or polycentricity (Burgalassi 2010; Limtanakool et al. 2007). Sassen (2001a, p. 80) thought the polycentric city-region may ameliorate the metropolitan tilt, as “the concept of the global city-region allows us to see the possibilities for a more distributed kind of growth, a wider spread of the benefits associated with the growth dynamics of globalization”.

Castells’ (1996, 2011) conceptualisation of the “space of flows” was central to the idea of the mega-city-region, as the operations of organisations dispersed across globally connected hubs and regional nodes, coordinated with improved transport and telecommunications. Hall (2010, p. 29) includes flows of commuters and information in describing the emerging polycentric city-regions as a new urban structure, where cities and towns remain distinct localities but are:

.... functionally networked, clustered around one or more central cities, and drawing economic strength from a new functional division of labour. These places exist both as separate entities, in which most residents work locally and most workers are local residents, and also as parts of a wider functional urban region connected by dense flows of people and information along motorways, high speed rail lines, and telecommunications cables.

However, polycentrism is not clearly defined and its meaning changes depending on the scale of the area under discussion: it is applied to geographies from urban regions through to cross-border constellations of cities with different implications for planning (Jenks et al. 2013; Wegener 2013). Van Meeteren et al. (2016) argue that as a result of the lack of definition, polycentrism has become essentially an unarguable proposition, as discussion reflects different understandings of the term. In application, as the scale increase, polycentrism transitions to a normative agenda rather than an analytical concept based on notions of

proximity, separation and functional interconnection, along with rules of thumb on commuting times (Davoudi 2003).

A further criticism is that the main arguments for polycentric regions on the basis of spatial equity and efficiency have not been supported by empirical evidence (Malý 2016; Meijers 2007; Parr 2004; Turok & Bailey 2004; Veneri & Burgalassi 2012). The productive benefits of polycentrism have also been questioned, as there:

... is wide-spread agreement that the promotion of the largest metropolitan areas at the expense of the secondary cities is likely to generate maximum growth because of their global connectedness, agglomeration effects and highest productivity, but that such a policy would increase economic disparities between the regions in Europe (Wegener 2013).

In Australia, it has also been argued that the large cities and monocentric regions are essential to compete in modern global economies, and distributing growth outside the major cities could be detrimental to the economy (Collits 2004; O'Connor et al. 2002; Sloan 2010).

Functional polycentrism, as a normative agenda for the development of city-regions, should be a primary consideration for regional development policies including those related to metro-bound commuting. The redistribution of economic roles and purposes from primary to regional cities can provide a more efficient and equitable city-region, and a residential-based commuting polycentricity is unsustainable (Hall & Pain 2012). This is not to say that functional polycentrism should be the only consideration but at the top of a hierarchy of outcomes from redistributive city-region policy, followed by redistribution of employment and then population. For regional cities and settlements with declining population, the introduction of metro-bound commuting residents may be the first step towards regeneration, but for those already experiencing population growth, and increased employment as a service hub then functional and complementary economic functions should be the aim.

4.2.2 Networks, Borrowed Size and Agglomeration Shadows

A defining feature of polycentric urban regions is that they are networked; that there is a flow of people, goods and information between complementary urban centres that enables them to attain the attributes of a larger city. These beneficial effects have been termed 'borrowed size' when a smaller city is advantaged by being proximate to a larger city, or 'network effects' where similarly sized cities achieve agglomeration benefits through exchange (Boix 2003). Improved transport can bring about these benefits of interaction in city-regions, bringing

previously separate settlements within range of each other's influence. Jacobs (2005) provides the examples of the connecting of St Paul and Minneapolis following the introduction of the automobile, and how the large Ikea store in Delft survives as it services the south west of the Randstad.

In a prescient conclusion to an analysis of the efficiency of city sizes, Alonso (1971) posited that city size affects both costs and productivity, and needs to be considered in the context of the other cities within the urban system. This provides the basis for the efficiency of polycentric regional structures, as:

... if the diseconomies of size are strong, it would follow that the pattern of development would tend to favour small metropolitan areas in the vicinity of large ones, or clusters of strongly interconnected medium-sized cities. These smaller metropolises would be in the position of having their cake and eating it, or they would enjoy the advantages of agglomeration without the disadvantages of size (Alonso 1971, p. 80).

Subsequently, the interplay between primary cities and the regional cities and settlements in their orbits has been considered further, as the regional benefits of network effects and borrowed size and the disbenefits of agglomeration shadows have been used to develop an understanding of the geographical economic relationships. Boix (2003) posits that city networks are based on socio-economic flows, facilitated by transport and communications infrastructure and can be flat or hierarchical in structure. The importance of these networks is that they may provide positive externalities due to "size effects, knowledge effects, transaction costs and organizational advantages" (Boix 2003, p. 32). Cities acting as networks indicate a shift from the urban hierarchy models of Christaller and Losch to horizontal and synergistic relationships in the way that regions are organised and function: examples include the Randstad and Rhine-Ruhr region (Meijers 2005). In this conceptualisation of differentiated and specialised complementary functions, networked cities can compete with cities of a scale similar to the aggregate of the smaller ones. In effect, network externalities can be seen as an extended, city-region agglomeration benefit (Hague & Kirk 2003; Meijers & Burger 2017).

Closely associated with network effects is borrowed size, where functional connectivity leads to "a small city or metropolitan area exhibiting some of the characteristics of a larger city if it is near other population concentrations" (Alonso 1973, p. 200). Two distinct borrowed size processes have been identified: borrowed performance, where population growth and income in the smaller city reflect what is observed within the larger city; and borrowed function,

where the smaller city is home to a larger array of organisations than would be expected were it more remote (Cardoso & Meijers 2016). Improved transport, telecommunications and workplace flexibility have increased the borrowed performance effects, providing greater opportunities for people to live and work in regional areas while still accessing metropolitan employment markets, entertainment and services (Banister 2005; Lyons 2014; Mokhtarian 2002). Polèse and Shearmur (2006) use the phrase ‘borrowed agglomeration economies’ to describe functional effects, as networks enable businesses to receive the benefits of large city locations with the lower land and labour costs typically associated with smaller, nearby cities.

There is also evidence that suggests being proximate to a primary city may reduce the range of goods and services in regional centres, indicating the effect of competition. This is an *agglomeration shadow*, where the activities within the larger city crowd out the development of industries in smaller, nearby areas (Beer & Clower 2009; Fujita et al. 2001; Puga 2002). Agglomeration shadows provide an explanation for why more remote communities may retain a wider array of functions, as only at larger distances from the larger city where transport and labour costs become more substantial factors is there sufficient market potential to support additional iterations of first city functions (Partridge et al. 2010; Redding & Turner 2014). The agglomeration shadow concept can be related to the formative settlement hierarchy theories of Christaller (1933 [1966]) and Lösch (1940 [1954]), where higher-order functions only occur in central places where there is a large enough range and threshold to sustain business activity, while the lower order places between the larger activity centres only offer a reduced range of basic requirements (Cardoso & Meijers 2016; Chen & Vickerman 2017). To this end, Burger et al. (2015) concluded that Christaller-esque hierarchy and agglomeration shadows were prevalent in Europe, as high-end cultural amenities were located in larger cities. However, it should be noted that different industries may exhibit different types of networks and relationships (Boix 2003).

These conflicting theories of spatial outcomes present a dilemma for policy makers: will improving infrastructure networks result in borrowed size or agglomeration shadow effects? The differentiating factor appears to be whether the secondary cities complement or compete with the primary city. There is a common-sense logic to this conclusion: for a pair of cities with distinct and complementary functions both will benefit from reduced costs of travel and transacting between them, whereas if the two cities compete then it is likely that the larger, stronger economy will win out. As indicated in the discussion on polycentricity, in a competitive situation this may be a more efficient and productive outcome but will not provide for a more equitable regional distribution of employment and prosperity.

4.2.3 Second Cities

Second cities, as the name implies, are the second largest or most important within settlement systems, behind the primary metropolis. While there are several different nomenclatures and definitions for second cities (see Correia & Denham 2016 for a summary), recurrent methods for classification include population, position within administrative region hierarchies and their functions. The interest in second cities arises because they are estimated to be home to 50 per cent of the world's population, have been outperforming first cities and that they may provide opportunities for development outside of congested metropolitan regions (Camagni & Capello 2015; Evans 2015; Naylor 2015; Parkinson et al. 2012; Torné 2014). Second cities may also be the focus of concentrated decentralisation policies, as there may be greater benefits in growing larger non-metropolitan settlements than widely distributed counterurbanisation and commuting.

Frick and Rodríguez-Pose (2018) examined the relationship between aggregate national growth and the distribution of city sizes. Based on data from 118 countries between 1980 and 2010, the notable finding was that a higher proportion of people residing in cities with a population of less than 500,000 was associated with economic growth. While the results are dependent on the total population and the industry mix within countries, the substantive finding was that continuing to increase the size of large cities is not necessarily the most productive outcome for a country's economy. Also, Camagni et al. (2013) assessed the size of 59 urban areas in the European Union, finding that rather than a single optimum, the balance of costs and benefits associated with population indicates that there is a range of optimum city sizes, depending on the specific attributes and circumstances of each city.

Theoretical explanations for the growth of second cities are also founded in the interaction between the benefits of agglomeration benefits to productivity and the diseconomies of scale that increase as cities grow. These diseconomies of scale include pollution, congestion and higher costs of living (Camagni & Capello 2015; Camagni et al. 2015; Dijkstra et al. 2013). Henderson (1974, 1997) posits that it is the profitability of a city's specialisation that determines its size, as it will grow until these profits are countered by the increasing diseconomies of scale such as congestion and pollution. Specialisation is the driver of growth in Henderson's model, as the benefits of localisation economies for producers connected with the specialisation sector will crowd out other industries by being willing to pay higher prices for labour and rents. As well as this theoretical position, manufacturing specialisations as drivers of growth in medium-sized cities are frequently noted within the literature (Glaeser 2011; Pacione 2005; Polèse 2010, 2013).

There was a tendency for these manufacturing cities to be located nearby primary cities, for ease of access by specialised business services and management, typically within one and a half hours travel time so meetings can occur within one day (Polèse 2010). Garreau (1991, p. 90) shares an anecdote from a real estate agent who suggests this is because “your boss’s boss will never approve a remote location unless he can personally imagine travelling there for a meeting without having to stay overnight”. The need for proximity and specialised services is also evident in the changing locations of production during product lifecycles: research, development and prototyping are more likely to occur in major cities, and if production is to transfer to regional cities, if not overseas, it will be when products are in a mature form (Glaeser 2011; Henderson, JV 1997; Jacobs 1969). These notions of specialisation and networked, functional divisions with major cities indicate complementary economic functions rather than those that compete with primary cities.

Therefore, the comparative appeal of second cities is because:

... large cities are expensive machines, requiring large social overhead capital investments and exhibiting expensive real estate markets and high-rise, capital-intensive buildings. Second-rank cities, once endowed with some necessary preconditions for a modern development—namely international links, high-education and cultural facilities—may well exhibit higher public resources efficiency and better quality of life conditions than first-rank cities, being in a condition to find appropriate specialization niches inside the international division of labour (Camagni et al. 2015, p. 1070).

This recalls the discussion in Chapter 3, in that the advantages of second city locations for manufacturing industries are not as applicable to knowledge-intensive industry sectors, which are dominant within modern, advanced economies. As the knowledge-intensive industry sectors have become more specialised, it becomes more likely that the only suitable location to invest is in large cities, particularly for monocentric city-regions (Cardoso & Meijers 2016; Neutze 1968; Rodriguez-Pose 2001). The transition to knowledge industries and the increase in outsourcing has also been associated with a change in specialisation, from industry sectors to economic functions (Duranton & Puga 2005). There are examples of post-industrial second cities that have prospered through specialisation in knowledge-intensive sectors, such as Cleveland’s health precinct, the arts and cultural institutions in Dundee and the high-tech Brainport innovation region in Eindhoven (Correia & Denham 2016). The implication is that the agglomeration benefits associated with increasing city population may facilitate growth in knowledge industry activities. Metro-bound commuters are particularly pertinent in this context, as there is a propensity for metro-bound commuters to work in these industries, as discussed in Section 2.2.2.

Even in strongly polycentric regions the borrowed size and network relationships cannot overcome the need for some activities to be located in large cities to be sustainable (Meijers 2008; Meijers et al. 2018). In strongly monocentric city-regions this indicates a cumulative effect, as there is not a secondary city of a size large enough to support some functions, leading to greater concentration of activity in the primary city and reinforces the agglomeration advantages in that location. This conclusion was reached by Neutze (1968) in an early study of the Australian urban system, and is seen in the Reserve Bank of Australia (2014) view that Australia has a deficit of cities with population between 300,000 and 500,000. To this end, Duranton and Puga (2000) argued for large, diverse cities that benefit from urbanisation effects, and smaller specialised cities that prosper due to localisation economies. This may suggest thresholds of population or employment to support different types of economic activity and attain agglomeration benefits, indicating growth targets as a policy response to questions regional redistribution. However, this indicates a causality direction that if a city reaches a certain size, then it can sustain a certain type of economic activity, rather than the more complex literature on specialisation, sorting and city growth summarised here.

Specialisation does come with the risks of less innovation and greater impact of economic transitions, as evidenced by the plight of many post-industrial cities. This is referred to as lock-in (Arthur 1988, 1989), where the increasing returns to scale and positive reinforcement cycles associated with agglomeration and products in the early stages of their lifecycle encourage investment. Over time, this lock-in may eventually be detrimental, as there is no guarantee that once industry development has moved in a certain direction it is the most productive or fruitful path. The specialisation of regional economies can lead to declining city and region at the end of the cycle, or when the spatial logic of production changes (Beer & Clower 2009; Duranton & Puga 2000; Lagerholm & Malmberg 2009; Martin 2010).

In summary, the redistribution of people and employment to regional cities may provide greater employment and economic benefits than evenly distributing growth in the city-region or concentrated primary city growth. Concentrated decentralisation, also known as concentrated deconcentration, may also provide a more sustainable morphology when growth is directed to places connected to the major city by public transport (Hall & Pain 2006, p. 13). Therefore, the focus on second cities in strongly monocentric city-regions reframes the problem, from the “capital cities are eating up the rest of Australia” (Wright 2018) to the second cities are not large enough. The proposition is that it is not whether people should be encouraged to move away from the primary city but should be encouraged to move to second cities. However, the problem is that it is of benefit to relocate a number of firms and

government agencies to regional cities but not one, and multiple relocations are difficult to coordinate (Neutze 1968). Also, there may be political ramifications in selecting some regions and not others (Pennay 2005).

4.2.3.1 *Economies and Diseconomies of Scale as Factors in Commuting*

The interplay between economies and diseconomies of scale within cities is typically used to provide a theoretical basis for industrial location. It may also provide an understanding of why metro-bound commuting is seemingly increasing, by considering how the costs and benefits of scale are different for households and industry.

Table 3 summarises the economies and diseconomies for scale for households and industry.

Table 3: *Economies and Diseconomies of Scale as Factors in Commuting*

	Economies of scale	Diseconomies of Scale
Households	Higher wages More job opportunities Urban amenities, cultural institutions	Higher housing costs Longer and more expensive commutes Crime Pollution
Industry	Backwards and forwards linkages Thicker labour markets Knowledge spillovers & innovation Cheaper transport - non-material	Higher land costs More expensive labour More expensive transport - material Crime Pollution

Source: Summarised from Dicken and Lloyd (1990), Scott (2006) and Burger et al. (2015).

Metro-bound commuting and counterurbanisation can be seen as a result of the greater share of the economies of scale accruing to industry, while the diseconomies of scale being borne by households, particularly if the relationship between wages and housing prices is accepted (e.g. Glaeser 2008). The benefits and disbenefits of industry also indicate why knowledge-intensive businesses agglomerate in large city centres, as the diseconomies of land process and transporting material items are less of an impact, but there are greater benefits from the links to specialised suppliers and markets, more opportunities for tacit knowledge transfer, better access to airports and transport networks, and in some cases better communications infrastructure for information transfer. Also, as larger cities become denser and more congested, intra-city commuting times and costs increase, therefore the difference in commuting time and costs from regional areas in comparison to metropolitan housing of similar costs becomes marginal. That is, metro-bound commuting may result from diseconomies of scale making regional living more appealing than metropolitan living, but as the economies of scale are of greater benefit to knowledge-intensive industries in particular,

means that employment opportunities remain concentrated in the central business districts of primary cities (Belderbos et al. 2017; Dicken 2011; O'Neill et al. 2018; Sassen 2001b).

4.2.4 Synthesis: A Metro-Bound Commuting and Regional Development

Process

This section of the thesis synthesises Chapters 2 and 3, and this Chapter's discussion of city-region morphology into a process of polycentric city-region development and change. The purpose is to place commuting in the context of the spatial impact of economic transitions and changing housing preferences beginning with Fordist city-regions and then focusing on post-Fordist changes from Chapter 3.

The process of metro-bound commuting and regional development presented here comprises four stages, beginning with post World War II city-regions, structured around the Fordist manufacturing economies through the trade deregulation of the 1980s and culminating with the prospect of the extensively networked and globally connected polycentric region. It is an idealised account of spatial changes and development in monocentric city-regions as a result of economic transitions and commuting growth.

4.2.4.1 Foundations

The *Metro-Bound Commuting and Regional Development Process* draws from four previous models of city-region development. First, Taaffe et al. (1973) constructed a model of the sequence of transport and network improvements as countries develop. A key element of this model is that transport nodes lead to uneven development and transport improvement “sets in motion a series of spatial processes and readjustments as the comparative locational advantages of all centres shift” (Taaffe et al. 1973, p. 36). The *Metro-Bound Commuting and Regional Development Process* shares intent with this predecessor, as a heuristic of how regions develop and change in response to iterative changes to economies and transport infrastructure, as well as how network developments promote growth in the central hubs.

Second, Soja (1989, 2000) provides a geographic interpretation of the changes in city-regions from the mercantile cities of the 1820s to the Fordist city-region of the 1970s. Soja's primary concerns are the interactions between capital, geography and social unrest and division, rather than regional employment distributions. However, the processes of urbanisation and suburbanisation as a result of capital interacting with space reflect the changes in the location of people and industry within the processes presented here.

A third foundation is the processes of polycentric development described by Taylor and Pain (2007). Of the two processes, *Process A: Mega-City Region Expansion* is the most relevant as it is where metropolitan activities spill out into the surrounding region at a “new scale of expansion ... the city-region is enveloping previously separate cities as well as promoting growth in settlements not previously deemed to be ‘cities’” (Taylor & Pain 2007, p. 65). As an important element of this process of increasing polycentrism is that the secondary cities develop direct connections into global networks, even though the metropolitan primacy is retained, what is being described is an emerging network of complementary and networked roles for each of the cities. *Process B: Construction of Megaregions of Proximate Cities* is where existing metropolises interact, sometimes bypassing intermediate second cities, and is therefore not relevant to this thesis.

The fourth foundation is Champion’s (2001b) *Urbanisation, Suburbanisation, Disurbanisation and Reurbanisation* model of regional population dynamics. The model is concerned with post-Second World War trends in population distribution. Four trends are observed in the model. Urbanisation is first, as from the 1950s population flowed into metropolitan and regional cities as the expense of smaller settlements and rural areas (see also Bureau of Infrastructure, Transport and Regional Economics 2014). The second stage is the suburbanisation of the 1960s, followed by counterurbanisation in the 1970s. The final stage proposed is reurbanisation is hypothesised, a flow of population back into the major cities, which indicated a cycle of population flows. Champion (2001, p.143) notes the “environmental, economic, social, cultural and political factors” that influence the observed population flows, the model is based on observations rather than addressing causality.

The *Metro-Bound Commuting and Regional Development Process* draws on these four models and the literature review to construct a process for polycentric development based on transport, spatial economies, functions and networks. It is a generalisation of changes to economies, settlements and commuting patterns over recent decades, to elucidate how these trends and influences interact. The purpose is not to develop a model for statistical analysis and testing, but to provide a heuristic for assessing the contribution of commuting in changing the distribution of people and employment in city-regions.

4.2.4.2 Metro-bound Commuting and City-region Development Process

The four stages of the commuting based City-region Development Process are depicted in Figure 7 on the following page. As a guide, stage one represents the archetypical mid-1970s

city-region, with a dominant central city that provides support and is the main entrepot for the specialised primary and secondary production occurring in its hinterlands (Polèse 2010).

Stage 1: Fordist City-region

The initial structure shown in Stage 1 is a *Primary City* (P) connected to two *Regional Cities* (RC1 and RC2), with *Settlements* (S1, S2 and S3) located in spines or fingers emanating from the city. There will be differing levels of interaction between the *Regional Cities*, but each have stronger connections to the *Primary City*. The two-way arrow at the bottom of the *Primary City* represents the city-region's external trade: it is the main entry and exit point for goods and services in and out of the region. As a result of manufacturing specialisations, *Regional Cities* may also have developed direct linkages to international markets: in Australia examples include the ports at Geelong, Newcastle and Wollongong. However, there is a need for connection to the *Primary City* for higher-order producer services and head office command and control functions (Henderson 1974a, 1997; Polèse 2010).

Stage 2: Economic Transition

The reduction of tariffs and trade barriers and floating exchange rates associated with the late 1970s and late 1980s leads to the emergence of global supply chains and the offshoring of production (Dicken 2011; Quiggin 1999). As a result, the entire city-region entered a period of economic decline as manufacturing, a major provider of employment, closes as a result of competition from lower-cost jurisdictions, as occurred in Melbourne (Watkins 2009). For *Regional Cities* with concentrations of manufacturing, this transition had dire consequences, with the 'Rust Belt' cities in the US and northern England prime examples (Pacione 2005). It is also important to note that the increasing global competition for agricultural produce also led to farm consolidation and a transition from labour intensive to capital intensive farm practices resulting in increased productivity, but reduced catchment populations for regional service cities and towns.

While *Primary Cities* may also have lost major industries due to increased international competition, they were likely to fare better due being the centre of advanced services and administration. While the entire city-region may experience an economic decline, within the region it is likely that the dominance of the *Primary City* will have increased, as its economy is founded on a wider range of goods and services and less exposed to international trade (Hall 1996; Sassen 2001b), as occurred in London and the UK (Young 1986).

Employment declines may have occurred in the *Settlements*, and proximity to the primary city and the introduction of regional freeway networks and town bypasses enabled commuting to

employment opportunities in the *Primary City*. The growth in commuting is also associated with changing lifestyle preferences as recognised in the counterurbanisation literature (Champion 1989).

Stage 3: Expanding city and commutershed

The next stage of the process coincided with the rise of the service economy as central to the economic fortunes of cities. These industries are strongly attracted to the dense centres of *Primary Cities* (Scott 2001a, 2011), creating a greater imbalance with the economies in the surrounding region.

The *Primary City* became the focal point for trade in and out of the region and its population grew as a result of the concentration of the region's economic activity within it. The expansion of the city means previously separate settlements are enveloped, as shown by *S2* in the diagram. People also considered relocating out of the *Primary City* as a result of increases in housing costs, congestion and pollution. Metro-bound commuting becomes more evident from the *Settlements* and *Regional Cities*, as the *Primary City* expands towards them and for access to employment opportunities. Changing lifestyle preferences, the sea- and tree-changers, also contributed to increasing metro-bound commuting.

Intra-regional transport improvements may also be undertaken as regional development initiatives during this period, such as France's TGV, the UK InterCity125 high speed rail projects, and the Regional Fast Rail and freeway developments in Victoria (Bonnafous 1987; Bracks 2012, 2016; Chen & Hall 2011), as well as investment in freeways in many jurisdictions. These improvements brought the *Regional Cities* into the commutershed of the *Primary City*. Improved telecommunications and increasing workplace flexibility also facilitated metro-bound commuting, through working from home reducing the number of days travelling to the city and also non-standard working times to avoid peak hour traffic congestion.

Stage 4: Polycentric City-region

The prospective stage in the development trajectory outlined in this process is the polycentric city-region, where the *Primary City* is the largest population and economic centre of the system. The *Regional Cities* are "functionally networked" (Hall 2010, p. 29) and are home to spill over industries from the metropolitan centre (Taylor & Pain 2007). The *Regional Cities'* complementary and specialised functions result in bi-directional flows of information and people throughout the network (Burgalassi 2010; Limtanakool et al. 2007), which may result in direct connections to global markets (Taylor & Pain 2007). The development of economic

specialisations and functional complementarity of the *Regional Cities* in this phase of development is in some respects a return to Stage 1, but economic functions aligned with the knowledge focus of contemporary economies in developed countries rather than the Fordist-era manufacturing specialisations.

The increasing polycentricity of the region may result in the growth of the *Primary City* reaching a point where the diseconomies of scale, or network benefits as a result of economic complementarities, outweighing the benefits from agglomeration (Boix 2003; Camagni & Capello 2015; Camagni et al. 2015). In some instances - the *Primary City* may be reaching its physical or political boundaries - *Regional Cities* and *Settlements* begin to grow as alternatives to the *Primary City*.

Concentrations of population growth in *Regional Cities* that may result from metro-bound commuting provides the impetus for employment and new industries, through expenditure and human capital effects. The *Regional Cities* may also grow in different ways, depending on factors such as transport times and complementary economies. For example, *RC2* may be connected to the *Primary City* with new fast rail or freeway connection, which encourages more commuters and population growth. However, the decreased costs of travel results in greater competition with *Primary City* industries, and therefore a weaker economy due to the agglomeration shadow effect (Fujita et al. 2001; Krugman 1998). There may also be borrowed size effects, where smaller settlements can assume characteristics of larger cities due to metropolitan proximity (Alonso 1973).

Increased commuting flows occur from the *Primary City* and *Settlements* to the *Regional Cities* as polycentricity increases, providing more efficient use of transport infrastructure capacities than unidirectional flows. High amenity *Settlements* may become increasingly popular as tree- and sea- change destinations and for people at certain stages of life, such as the desire for back yards when starting families, or appeal for functional reasons if members of households work in different cities within the network. Small consultancies, such as those that work out of a home, may begin appearing in the *Settlements*, serving the nearby *Primary City*, or if close to airports markets further afield (Hall 2010; Keeble & Nachum 2002).

Process Diagram

The codes in the diagrams on the following page refer to:

P is the *Primary City*, the largest city in the region, for both population and economy, and is the focal point transport network.

RCs are *Regional Cities*, which provide regional services centres, are within 1 ½ hours' travel time of the *Primary City* to be within the commutersheds. The order of magnitude of the population would be a hundred thousand or more.

Ss are *Settlements*, which may have a population in the order of 10,000 people. They may provide services for the surrounding population, and some may have major employers. *Settlements* in close proximity to *Primary Cities* may also offer amenity appeal to commuters, such as seaside locations, largely intact heritage streetscapes and natural environs, as well as more relaxed lifestyles in comparison to the cities.

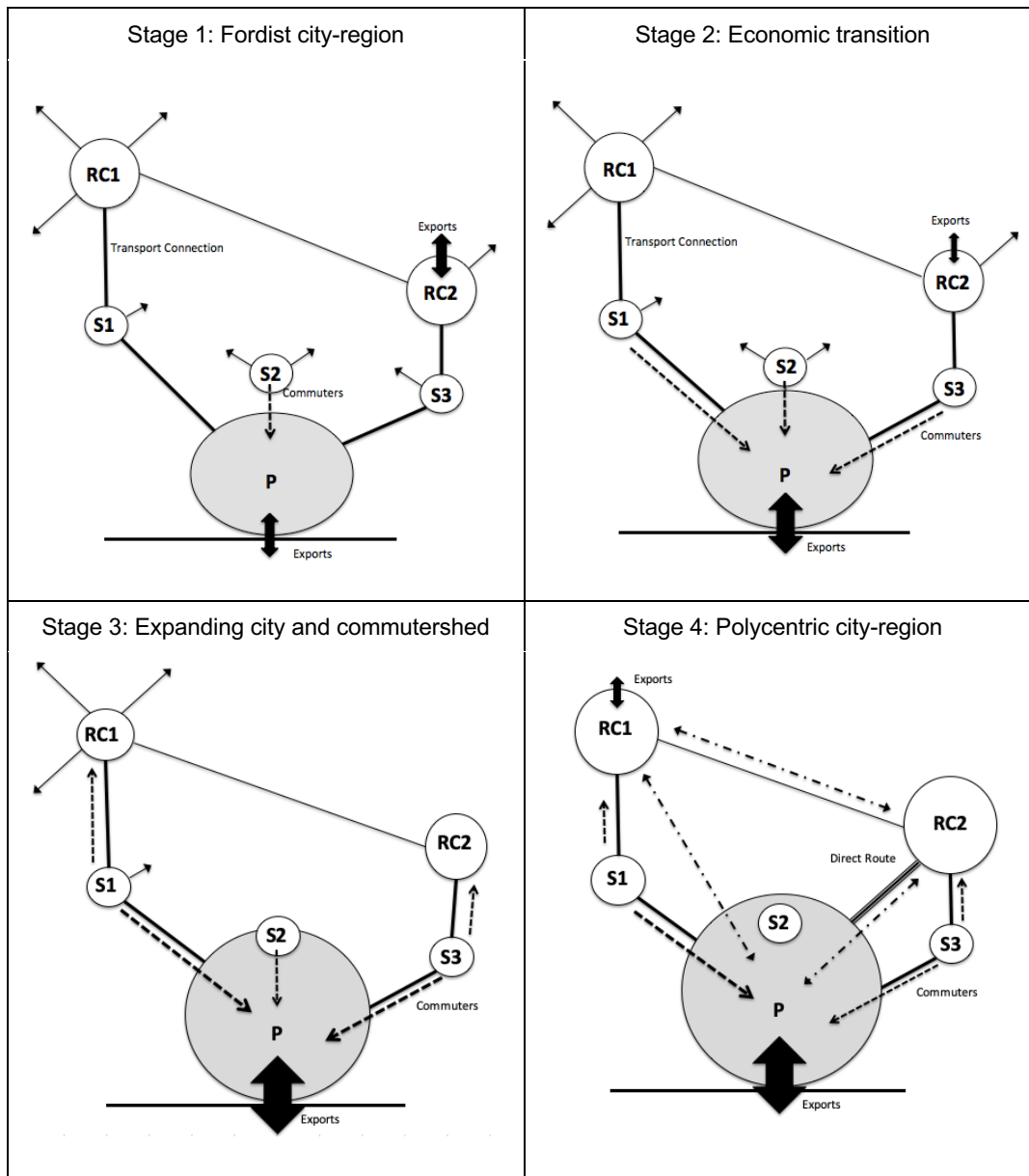


Figure 7: Commuting and city-region development process

4.2.5 Summary

The purpose of this section has been to place metro-bound commuting within the context of the arguments regarding city-region morphology and provide a summary of the literature review as a basis for the following section on metro-bound commuting policy. The contention is that the relocation of people to the non-metropolitan areas of city regions is not sustainable without attendant employment redistribution, which underscores the importance of this thesis's focus on regional employment outcomes. Further analysis indicates that there is a need for concentrated decentralisation to second cities, rather than a widely distributed counterurbanisation that does little to shift the balance between primary cities and their surrounds. Therefore, a different perspective on the problems associated with monocentric city regions is that it is not that the primary city is too large, but the regional cities are too small.

The *Metro-Bound Commuting and Regional Development Process* in Section 4.2.4. makes clear how metro-bound commuters are a result of economic transitions and transport developments within city-regions. The process synthesises the four foundation models, illustrating the interactions between population distributions, transport, spatial economies, functions and networks and by drawing on the different concerns of each foundation provides a more comprehensive overview of regional dynamics and development.

4.3 Metro-bound Commuting Policies

This section considers metro-bound commuting as regional development policy, using the proposition that functional polycentrism is the preferred outcome from sustainability and economic equity perspectives, as well as the possibility that it provides a more efficient arrangement of people and work.

Regional development policies can be seen as place-based or spatially blind, which have fundamental differences in their philosophical underpinnings and their outcomes for regional residents. To simplify, place-based policies are founded on notions of uneven development and are intended to enable people to remain in their community, while spatially blind policies are focused on enabling people to relocate to places where employment and opportunity is on offer and are based on economic rationalism. This is followed by discussion relating to the two main policy levers for increasing metro-bound commuters: transport investment and residential attraction strategies.

4.3.1 Place-Based and Spatially Blind Development Policies

At their core, place-based and spatially blind regional and economic development strategies have different ideological underpinnings. Place-based policies are founded in the belief that differences in the economies of regions can be reduced by investing in infrastructure and institutions within less-developed locations. Spatially blind policies, also known as people-based policies, promote development through increasing skills and supporting entrepreneurship in residents, which will lead to regional development through people moving to find better employment and increasing knowledge spillovers (see World Bank 2009 for example). Governments' preferences in intervention can be seen as either the efficiency of spatially-blind policies and the equity and distribution of place-based policies (Neumark & Simpson 2015; Pike et al. 2007, 2016; Scott & Storper 2003). The choice between the two policy positions is not clear cut. Iammarino et al. (2018, p. 288) point out the benefits of knowledge spillovers and agglomeration may not arise in declining regions as a result of the outwards migration associated with spatially blind policies, and place-based policies may not stop the outflow of labour rendering them “social rather than economic development policies”.

4.3.1.1 *Spatially Blind Policies and Orthodox Economics*

Spatially blind policies are an outcome of General Spatial Equilibrium theory, whereby when each location is in equilibrium for wages, productivity and housing markets “there are no rents to be gained by changing locations” (Glaeser 2008, p. 18). The policy manifestation of this theory is that regional disadvantage can be overcome by people-focussed initiatives such as training, fostering entrepreneurship, and promoting mobility to enable people to relocate to places of greater opportunity (Varga 2017).

General Spatial Equilibrium is encapsulated in the following equation, that higher wages (productivity) and quality of life (amenity) will lead to higher real estate prices (rent) (Glaeser 2008, p. 87).

$$\text{Urban Productivity Premium} + \text{Urban Amenity Premium} = \text{Urban Rent Premium}$$

The three constituent elements of this equation are also determined by equilibrium conditions:

First, workers must be indifferent across space. This ensures that real wages, corrected for local price and amenity levels, must be equalized across metropolitan areas. Second, firms must be in equilibrium, which means that wages equal the marginal productivity of labour. Third, the housing market must be in equilibrium,

which requires housing prices to equal the costs of providing housing, at least in growing markets (Glaeser & Gottlieb 2009, p. 9).

The hallmarks of orthodox economics' position on ameliorating regional unemployment through removing barriers to inter-regional mobility can be seen in policy recommendations from major institutions such as the OECD (2005, p. 75), which argued that “reducing transaction costs – legal, taxes, but also real-estate fees – on housing” would facilitate greater movement of people to places where they were more likely to find employment. The World Bank (2009, p. back cover) argued for mobility as a response to uneven and concentrated prosperity, as “to try to spread it out is to discourage it—to fight prosperity, not poverty”.

Spatially blind economic development policies have been prominent since the 1970s, and have been cited as a factor in a period of increasing divergence between metropolitan and regional economies (Storper 2018; Varga 2017). Recent election results such as Brexit, the Donald Trump presidency and the rise of nationalist political parties in France, Austria and Germany reflect increasing disenchantment in the regions that have lost out in the transition to globalisation and knowledge-intensive economies (Rodríguez-Pose 2018). Given the spatial dimensions of these results, Storper (2018, p. 250) questions the reliance on utility maximising models of mobility and employment:

The interregional divergence and especially the political anger that accompanies it that we observe today nonetheless should cause us to ask whether the geographical process of utility maximization is functioning and how well we understand the utility of households in different regions.

Similarly, critiques of spatial equilibrium models argue that they do not adequately account for the diverging fortunes between regions, as there is increasing divergence as people leave declining regions rather than move to them (Evans 1990; Kemeny & Storper 2012). In addition, Storper (2018) argues that the greater propensity for highly skilled people to migrate to already prospering locations is exacerbating spatial divergence, as they leave declining regions while low-skilled workers remain. The empirical reliance on correlation rather than causation in the underlying statistical analysis that provides support for the equilibrium theories has also been criticised (Peck 2016; Scott 2008).

A further criticism, not explored in the literature cited above, is that the dual nature of housing as an investment and consumption good is not included in the model (Evans 2008). Glaeser and Gottlieb (2009, pp. 5,6) posit house prices result from “income heterogeneity across space, amenities and land use restrictions”, and that changing house prices do not

affect national wealth. This ignores the effect of spatial unevenness in house prices, and that households may “have an asset demand for housing that exceeds the consumption demand” indicating housing may comprise income as well as cost (Maclennan & Miao 2017, p. 141). While it is beyond the scope of this research to undertake extensive economic analysis of how asset demand affects the model, it is possible that including this in the model may arrive at predictions of divergence rather than equilibrium in some circumstances.

In addition to these technical critiques, General Spatial Equilibrium is founded in neoclassical and free market schools of thought. Therefore, it provides the basis for arguing against place-based government interventions on the grounds that it is more efficient for people to relocate than to support people in place (Peck 2016). For instance, Glaeser (2005) controversially suggested that following Hurricane Katrina thought should be given to handing New Orleans residents cheques to restart their lives elsewhere rather than rebuilding the city, and has made similar critiques of Federal funding to support ailing cities such as Detroit and Buffalo (Glaeser 2007, 2010). General Spatial Equilibrium is shrouded with the façade of the objectivity of statistical analysis. Its philosophical foundations are based in the Chicago School philosophies of small government and public choice (Peck 2016) and resonate with the observation that “economic debates are typically quite theoretical (which is the academic word for ideological)” (Denniss 2019).

4.3.1.2 New Economic Geography

New Economic Geography models economic activity over space, analysing the concentration and dispersal of production and employment. Introduced in the Nobel Prize-winning work of Krugman (1990), the innovative aspect of the theory is that it was the first to provide “a full-fledged general equilibrium model [that] became available to explain why, how and when the economic activity may be agglomerated in a few places” (Fujita & Thisse 2009, p. 109). In the theory, industrial location is a result of the trade-off between the productivity benefits of agglomeration and the transport costs associated with greater concentration of production in locations removed from the demand. New Economic Geography is an orthodox economic model due to the basis in equilibrium and rational choice, but also draws on the heterodox economics of cumulative causation and increasing returns (Dymski 1996; Scott 2004).

While there was further development of the New Economic Geography models and theories during the 1990s and 2000s, it is only in the past 10 to 15 years that the theory’s focus on agglomeration benefits has informed policy analysis and development (Martin & Sunley 2010). When used in policy analysis, the New Economic Geography’s equilibrium focus and agglomeration focus result in a position similar to General Spatial Equilibrium, in that

policies that promote growth in lagging regions may be “economically inefficient from a national growth point of view” (Martin & Sunley 2010, pp. 360-361). As a basis for development policy, New Economic Geography leads to simplistic agglomeration-based policy prescriptions that can be implemented equally in “rich and poor areas, in America or Europe or in the developed and the emerging world” (Rodríguez-Pose 2010, p. 352). Further to this, the model has been criticised as it does not reflect reality (Martin & Sunley 2010, pp. 360-361), and in particular ignores institutional, social and cultural factors, and that the agriculture-manufacturing dual economy model does not reflect modern, knowledge-based economies (Scott 2004).

These criticisms reflect the divide between economists and geographers on the usefulness of such models. While geographers consider them too abstract to provide insights into real-world situations (Gaspar 2016; Martin & Sunley 2010), Krugman (2011, p. 3) indicated that real-world application may not be central to the considerations of economists:

I have no problem with people investigating local specificity and engaging in discursive persuasion. But the New Economic Geography was designed to attract the attention of mainstream economists. And mainstream economics decided long ago that devising abstract models is an essential part of being a useful profession.

Later, after the global financial crisis, Krugman (2009) was of the opinion that “the economics profession went astray because economists, as a group, mistook beauty, clad in impressive-looking mathematics, for truth”. While models such as New Economic Geography provide insights into how the spatial distribution of economies may change as a result of transport developments, or changes in production, they are based on simplified versions of space and society which limits their predictive power in real-world situations.

4.3.1.3 Place-based Policies and Cumulative Causation

Place-based regional development policies are concerned with the interaction between institutions and geography (Barca et al. 2012). Examples of place-based policies are enterprise zones where businesses within may pay lower taxes on profits or employees in certain locations and other incentives for businesses, infrastructure investment, grants, community-led initiatives and education and research (Neumark & Simpson 2015). These types of place-based interventions were prominent in the post-World War II decades (Varga 2017), and have been returned to in recent years. This is particularly the case in the European Union, where spatial inequity and lagging regions are a concern (Barca et al. 2012), and the prominent Smart Specialisation regional development and cohesion initiative is inherently

place-based (McCann & Ortega-Argilés 2015). There has been a similar turn in Australia, as initiatives such as City Deal collaborations between Federal, State and Local Governments, the Faster Rail program and the Victorian Government's Latrobe Valley Authority are examples of place-based policy (Department of Infrastructure, Regional Development and Cities 2019; Department of Premier and Cabinet n.d.).

Place-based interventions arise from analyses of uneven development and cumulative causation. While emerging from different intellectual traditions, both of these theories share an outcome that growth is self-reinforcing, that is uneven development is not a legacy of geography and natural endowments, it is a result of the accumulation and interaction of capital (Hudson 2015). Uneven development, or the concentration of capital in distinct locations within regions, can be seen as a consequence of capitalism, whereby agglomerations and telecommunications improve the flow of goods and capital in order to increase market reach and increase surplus (Smith 2010). The greater concentrations of capital enables increasing specialisations in employment, which further improve the competitive position of larger agglomerations (Harvey 2006; Smith 2010; Soja 1989). Harvey (1989b, 2001, 2006) refers to the 'spatial fix', as the increased agglomerations and capitalisations seek to increase their geographic market spread as a resolution to the resulting overcapitalisation. A further concentrating effect is the inter-urban competition for industry, where wealthier jurisdictions can attract more industry through investment in public infrastructure and labour reforms (Harvey 1989b). The competition between regions can lead to diverging outcomes, as prosperous areas either invest locally or if they do invest in lagging regions they return the profits for use in the prosperous ones (Edel 2013).

Cumulative causation suggests that positive or negative influences are reinforced rather than balanced out as neoclassical equilibrium economics would suggest. A central distinction is that orthodox economics assumes decreasing returns to scale, while cumulative processes result from increasing returns (Toner 1999). The theory is one of self-reinforcing feedback loops, where positive influences and shocks lead to further benefits within a regional economy, while negative impacts lead to further decline, a "vicious circle" (Myrdal 1957, p. 11). Therefore, cumulative causation predicts divergent regional economies, where small changes accumulate into regions of advantage and vulnerability. This is opposed to the equilibriums of classic microeconomics, where trajectories would be balanced out through changes in supply and demand (Myrdal 1957).

Within the cumulative and circular causation literature commuting to large cities from their hinterlands is considered an important mechanism for distributing economic benefits, as the outflow of benefits from centres of growth to the surrounding region is referred to as spread

effects. Backwash is the opposite to spread, referring to the attraction of capital and skilled labour back to growth centres, with the comparative strength of the two effects determining whether or not the regional location is prospering (Gaile 1980; Hale 1967; Myrdal 1957). Spread is more likely to occur closer to the metropolis, where there is ready access to urban markets for employment, as well as goods and services, and backwash effects are more widely distributed (Partridge et al. 2007).

Metro-bound commuting has been used as an example of a spread effect, in an exposition that recalls the population, income and expenditure effects discussed in Section 3.3.2:

... the migration of skilled and professional workers from the hinterland to the pole is a backwash effect, but later when the regional transportation system is developed middle class residences may decentralise leading to substantial regional-pole commuting. This is a spread effect because commuters earn and receive their income at the pole but spend at least some of it in the region (Richardson 2007, p. S31)

Richardson also describes a similar process for businesses, whereby those that were originally attracted to growth centres due to the benefits of agglomeration may later decentralise.

Theories of uneven development and cumulative effects leading to diverging prosperity are in distinct contrast to orthodox economic models' prediction that population and economic activity grows will balance out due to labour and housing price effects. There is evidence that cumulative theories provide a better explanation than equilibria for diverging economies across space. Reich (1991, p. 7) reported that in the US since the 1970s the trend had been for wealthy towns to become wealthier, and "the poorer have grown steadily poorer by comparison". Kemeny and Storper (2012, p. 87) agree, concluding that "households in larger American cities enjoy greater access to amenities, higher nominal wages, and most importantly, higher incomes after accounting for differences in housing costs".

Microeconomic models were also refuted by Evans (1990), who concluded that persistent migration patterns and the resulting changes in house prices do not accord with spatial equilibrium theories. If the economic system is not moving towards equilibrium under market conditions, the implication is that governments need to act to address the spatial divergence of economic fortunes, as market forces will not address diverging growth and prosperity and disadvantage will become entrenched.

4.3.1.4 The Case for Spatial Intervention

The purpose of this section has been to argue that place-based interventions are required, that the preponderance of people-based, spatially blind development policies has exacerbated the

disparity between regional and metropolitan policies. This argument reflects the heterodox economics of uneven development and cumulative causation provide a better basis for understanding the spatial distribution of people and employment than orthodox economics.

In the orthodox models, policies that restrict mobility such as stamp duties, and restrictive land use planning only serve to restrict the self-regulating propensities of the economic system. In effect, it can be seen as an argument between the efficiency focus of orthodox theories –Glaeser’s prescription for New Orleans for example - and distribution in the heterodox theories. The theoretical explanations founded in neoclassical economics, such as general spatial equilibrium, argue for facilitating workforce mobility, as housing markets and differential land and wage prices will balance across the region. The heterodox theories lead to the conclusion that if governments are concerned with the unequal distribution of economic activity and prosperity then intervention is required: specifically, place-based interventions (Rodríguez-Pose & Wilkie 2018, p. 2). For this thesis, the question is whether promoting metro-bound commuting through the redistribution of people in city-regions is an effective way to address economic divergence and spatially entrenched disadvantage, or whether more substantive government interventions are required.

4.3.2 Transport and Regional Economies

This section reviews the literature regarding the effects of transport on regional economies and the distribution of activity between primary cities and their hinterlands. Improving transport access to regional areas is the main policy option for governments to increase metro-bound commuting from regional areas: as discussed in Section 2.2.1, improvements to transport infrastructure have facilitated increased metro-bound commuting. This is a result of transport improvements leading to increased commuting distance, rather than shorter travel times (Metz 2008).

The weight of opinion is that transport improvements between primary cities and other areas advantage the primary city. As the costs of providing goods and services to regional markets decline through transport improvements the competition increases and the stronger economic centre will likely win out (Chen & Vickerman 2017; Puga 2002). As Scott and Storper (2003, p. 582) note, it is transport improvements “helping to spark off new rounds of specialization in established urban areas” in conjunction with the increased market reach that is the basis for the primary city being advantaged. It is the relationship between specialisation and the required market area for sustaining business that is the starting point for arguing that the economic activity concentrates in major cities as a result of transport improvement. This is

typified by unbundled and evolving modes of production with increasing fine divisions of labour, which are leading to a greater concentration of activities within large cities (Grabher 2002; Scott 2008, 2011). Puga (2002) also suggests that improved inter-city rail services may mean that second offices are no longer required in regional areas, as it is easier to service a wider region from the centre, citing evidence of this occurring in France and the US. This also indicates the benefit of being placed at a network node as it allows for better access to larger market areas, “as firms located there face lower transport costs to spoke locations than firms in one spoke to another” (Puga 2002, p. 397 see also De Rus 2008; Chen & Vickerman 2017). For example, a study of the Mezzogiomo region of southern Italy found that transport improvements were associated with the deindustrialisation of the region, as local industry was exposed to greater competition from the more efficient northern producers (Faini 1983).

There is also an argument that in regions with adequate transport infrastructure additional investment “is more likely to result in duplications and redundancies than in increases in productivity and economic dynamism” (Rodríguez-Pose & Wilkie 2018, p. 6). This observation is a reflection on the outcomes of road projects in the European Union, where poor project selections and outcomes have been attributed to weak governments and decision-making processes that allow for pork-barrelling and political motivations rather than rational decision-making processes (Crescenzi et al. 2016). Similar concerns have been raised in Australia, where transport investment has been focused on marginal electorates (Terrill et al. 2016).

The concentrating effects of regional transport projects have been prominent in the debates of the benefits of high speed rail projects to regional areas, particularly as projects such as High Speed Rail 2 in the UK and the Faster Rail program in Australia are being proposed to alter the distribution of economies in strongly monocentric states (Department for Transport 2011; McCormack 2018a). In a series of critiques of High Speed Rail 2, Tomaney (2011; 2013, see also Tomaney & Marques 2013) presented theoretical and empirical evidence that the project was unlikely to reduce the economic disparity between London and the south east and the north of England, concluding that it was very difficult to find unambiguous evidence in support of the contentions that are being made about the potential impacts of High Speed Rail 2. Evidence cited in these critiques includes that the rail network improvements had contributed to the growth of Madrid rather than the lagging regions intended to benefit (Rodríguez-Pose & Fratesi 2004). Also, Lille and Lyon were two regional cities that have been seen to benefit from the TGV rail service in France, but the conclusion was that Paris benefited more as the weight of trips on the service were to Paris rather than from Paris

(Albalade & Bel 2012). In a recent lecture, Storper (2017) expressed a similar view of the impact of the TGV:

One of the biggest mistakes we've made was being naïve about connectivity, give infrastructure and it spreads. Well, often it concentrates. The high speed train network in France, guess what it did? It advantaged Paris.

There is an opposing view of the impact of High Speed Rail 2 on Manchester and the north, as Rosewell and Venables (2013, p. 5) outline a longer-term J-curve trajectory for the city's economy:

There are opposing forces at work. Initially, firms with headquarters in one city might have served the other through branch offices. These may now close as better connectivity enables each firm to supply from a single office or plant. Closures will tend to reduce employment in the smaller location (Manchester) which was deriving proportionately more of its employment from these branch offices. But pulling in the other direction, Manchester now becomes a more attractive location for headquarters; it starts off with lower wages and rents, and improved connectivity means that it will get better access to London's large market and large base of suppliers. It is therefore likely to attract headquarters and other business activity, creating new sources of employment in the city. Combining these forces, theory suggests that better connectivity is a force for convergence.

This prognostication recalls the General Spatial Equilibrium of Glaeser (2008), but the evidence from European rail investments indicates that the rebound is not certain, and could be considered unlikely. Other research has indicated that transport improvement can be beneficial, but accompanying regional development initiatives are crucial, such as commercial developments, education, housing and amenity improvements, and connections into local transport networks (Chen & Hall 2012, 2013). There are also social benefits that result from rail services, by improving the liveability of regional areas through providing non-car options to access metropolitan services, entertainment, employment and family and friends (Davern et al. 2018). Improved transport services do also provide access to greater housing choice for primary city residents and employment access for regional residents, which undoubtedly improve patrons' lives.

In Germany, high speed rail has led to an increased flow of commuters out of the population centres to work in regional cities, which is a measure of polycentricity (Burgalassi 2010; Limtanakool et al. 2007). There are two salient aspects of this increase in outwards

commuting that provide the obverse to the trends in monocentric city-regions that are the focus of this study. The first is that many of the prominent businesses in Germany are located in smaller cities, such as Audi, Volkswagen and Siemens. The second is that there is an “increasing number of young and well-educated workers who prefer to live in the urban centres” (Heuermann & Schmieder 2018, p. 360). Fast rail and other inter-city transport improvements are therefore of greater benefit in polycentric than monocentric regions, if it is assumed that there is a basic level of service already in place.

When taken in conjunction with the population redistribution effects of transport, as well as the associated employment growth in population and consumption-based industries (Lavesson 2017; Partridge et al. 2010) the likely outcome of transport improvements is that people and low-paid employment will flow out to the regions while highly-specialised and well-paid employment will flow in, as depicted in Figure 8 on the following page. The quality of the bi-directional employment flows is salient: functional polycentricity implies that the focus of regional development policy needs to be the creation or relocation of specialised goods and services to the regional cities.

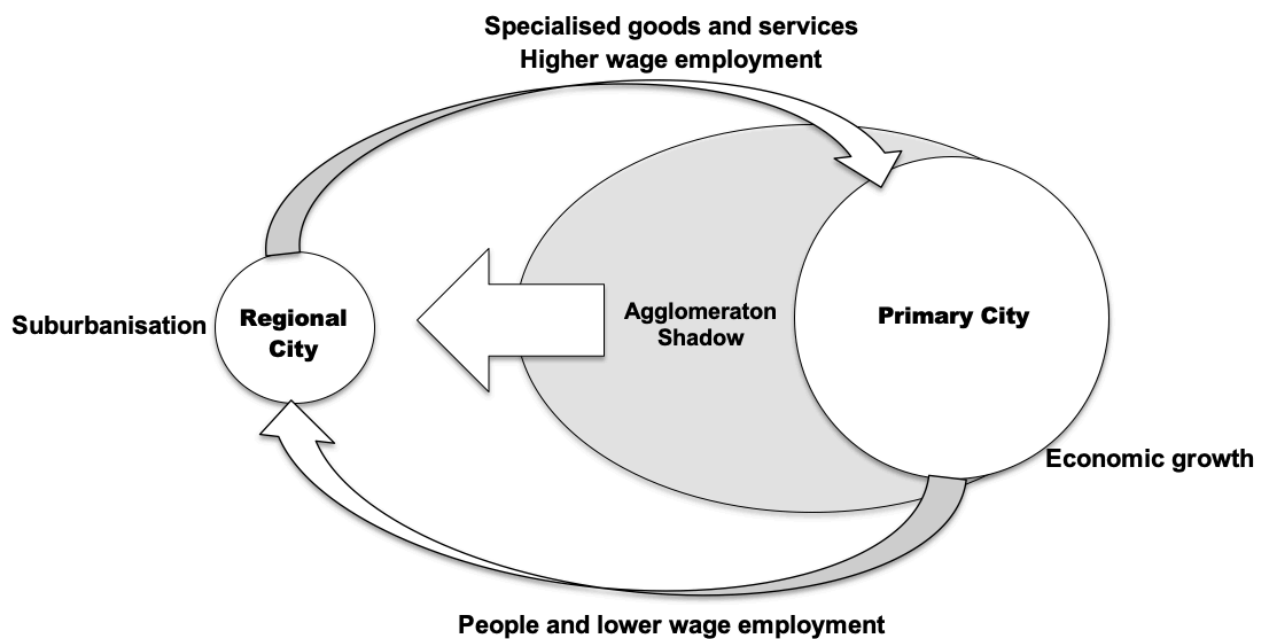


Figure 8: Impact of transport improvements on people and employment in city-regions

Thus, the conclusion is that in situations where there is an existing imbalance between primary and regional cities, transport improvements may have the opposite effect to the intended regional economic benefits. As Tomaney and Marques (2013, p. 423) conclude in their assessment of the proposition of regional economic benefits, the “clear balance of this literature suggests that these impacts are ambiguous at best and negative at worst”. The

possibility of negative regional outcomes, even if only in the short term (see Rosewell & Venables 2013), indicates that intra-regional transport improvements represent a substantial and expensive risk to regional economies, even when the social benefits and increased housing and employment choice effects are taken into account. It also suggests that better outcomes may come from direct interventions in regional economies, or that greater benefits may be realised from making regional cities hubs of their own networks rather than spokes of the metropolitan network (De Rus & Nombela 2007; Tomaney & Marques 2013). Of course, there is a limit to this as there is a need for some transport connections within the regions. There is a need to balance the distribution and efficiency effects of regional transport improvements, as underscored by the extreme example of 19th-century French regions calling for breaks of gauge in rail services to provide employment (Dobes 2017). This indicates that there may be some ‘goldilocks’¹ level of service that supports trade and interaction but keeps the agglomeration shadow boundary well short of the regional cities. In practice, achieving this balance is not clear cut as agglomeration shadow effects vary by industry and degree of specialisation, and the ‘goldilocks’ level of service is related to the balance of complementary and competitive elements of the economic centres being connected, as exemplified by the functional specialisations in the polycentric Rhine-Ruhr region, and to a lesser extent the Randstad (Hall & Pain 2012).

4.3.3 Residential Attraction Policies

The proposition that cities can grow and develop economically through attracting talented workers has been prominent in urban economics in recent decades, as discussed in Section 3.3.3, and is related to notions of cities as places of consumption, entertainment and tolerance (Clark 2004; Florida 2004b; Glaeser & Gottlieb 2006; Glaeser et al. 2001). Metro-bound commuting policy presents a problem with residential attraction policies as these theories assume place of work and place of residence are the same. The crucial question for proponents of encouraging metro-bound commuting by making regional cities and settlements better places to live is the extent that benefits of residential attraction strategies accrue to the place of residence compared to the place of work.

It should be noted that population increase can be expected to create some forms of employment in regional areas, due to consumption effects and demand for government-supplied services such as health, education, justice and community services. This growth is similar to import replacement theories, where population growth increases demand, a greater range of goods and services can be profitably supplied (Jacobs 1969).

¹ i.e. not too hot or too cold, but just right.

For strategies designed to increase metro-bound commuting through residential attraction, the pertinent consideration is whether jobs follow people. Conversely, if people follow jobs then the implication is that the attraction of people to regional settlements is unlikely to produce the shifts in regional employment and economic functions that this chapter argues are the primary considerations for policy. There have been two main threads of inquiry into whether jobs follow people: inter-regional migration analysis, and the arguments regarding suburban employment patterns and jobs-housing balance. Both of these literatures hold insights into metro-bound commuting and policy responses, but they also highlight the gap in the understanding of meso-scale relationships between population and employment distributions. The inter-regional migration literature finds that people are more likely to follow jobs, and the jobs-housing balance debates concluded that jobs were not following people to outer suburb locations. These debates regarding the relationships between employment and population growth provide a similar outcome to the discussion of place-based and spatially blind regional development policy, that market mechanisms will not resolve regional economic divergence.

4.3.3.1 Inter-regional Migration and Employment

The relationship between inter-regional migration and employment has been a recurrent theme in economic geography. A pertinent reason for this focus is that migration is an essential element of spatially blind regional development strategies founded in spatial equilibrium models, as discussed in the section above.

Relationships between employment and migration patterns have been frequently investigated. Based on 1950s census data Muth (1971, p. 295) found that generally employment and population growth “affect and are affected by the other”, referring to it as a “chicken and egg” problem. A notable conclusion from Muth’s analysis is that inter-regional income and unemployment differentials influenced migration, indicating that improving employment prospects and remuneration were important in people’s location decisions. The importance of employment factors in migration patterns was affirmed in subsequent analysis of migration in the United States between 1957 and 1975, which found that economic factors were more important than amenity in determining migration flows (Greenwood & Hunt 1989). However, Partridge and Rickman (1999) reported inconclusive results based on a larger array of employment measures than the previous studies indicating that the motivations for migration are complex and not just a result of employment considerations. There is an important distinction between people moving to a region and then gaining employment and additional regional employment that is generated as a result of population growth. That is, the employment-led migration has a second-round job creation effect that if not accounted for may lead to an overestimation of jobs-following people migration. While these results

indicate that employment acts as a magnet for population, the effect varies across different nations (Glaeser & Gottlieb 2009).

To provide an Australian perspective, employment spikes in regional Australian communities - mainly due to government programs and mining projects - have led to rapid population growth as well inflated housing markets (Beer et al. 2011). Regression analysis of regions clustered by functional specialisation indicated that accommodation and food services professional, scientific and technical services, and retail trade were positively correlated with population growth, whereas agriculture, forestry and fishing; and mining were associated with negative growth (Mardaneh 2016). While the notion of industry specialisations attracting population has useful policy implications, further investigation is required to determine causal relationships between industry specialisation and population growth, as there may be other socio-economic factors that relate to both industry and population trends that have not been included in this model. Trendle (2009) analysed migration and employment patterns in Queensland, concluding that while both processes were evident, the outcome was people following jobs provided a stronger explanation for the observations. However, he concludes that this is problematic for policies aimed at creating jobs to reduce regional unemployment, as “ the benefits from these policies will dissipate as population growth via in-migration” (Trendle 2009, p. 306). This insight into the disconnection between regional employment growth and mitigating unemployment has also been observed in Sydney and rural Scotland and is a result of a mismatch between the skills and qualifications of residents and the jobs created (Bill et al. 2006; Stockdale et al. 2000).

The evidence that employment growth precedes population growth indicates that access to employment accords with the increase in metro-bound commuters as spillover counterurbanisers, as well as the concentration of employment in primary cities. While this is obvious - most people need to live in a place where they can access employment - it also supports the position that the concentration of population in primary cities is a result of the distribution of employment. From the perspective of regional development strategies, it indicates that direct government intervention in regional employment creation may provide better distributional outcomes than the population-based interventions related to metro-bound commuting. This insight is relevant to the consideration of the relative advantages of interventions, for instance comparing regional commuter transport infrastructure to government department relocations.

Another important issue raised in this section is that as population will follow employment, job creation may not mitigate local unemployment impacts if residents do not possess appropriate skills and qualifications. To elucidate, the distinction between improving the

spatial indicators of prosperity, such as higher incomes or educational attainment, and the population indicators is crucial for metro-bound commuting and counterurbanisation. A likely outcome of the gentrification discussed in section 2.3.2 is that census data will indicate a prospering community, when it is possible this a result of more well-to-do in-migrants displacing those at the lower end of the socio-economic spectrum. If the point of the intervention and regional development policy is improving the economic prospects of regional residents, whether it is employment generation or facilitating metro-bound commuting, then importing more prosperous people is not solving the problem.

4.3.3.2 The jobs-housing balance debates

Jobs-housing balance refers to a matching of housing needs to employment, including price and form as well as numeric equivalence. How the balance of housing and jobs in a location impacts on commuting times, pollution, costs of infrastructure and government service provision and social cohesion is an ongoing debate (Ewing et al. 2014), becoming a prominent debate in America due to increasing exurban resident populations and suburbanisation of employment during the 1980s (Cervero 1989; Nelson & Ducker 1990; Renkow & Hoover 2000). There were similar trends in exurban relocation apparent in Australia (Burnley & Murphy 1995) but not the “edge city” developments that were prevalent in the US at this time (Badcock 2000b, p. 225; Freestone & Murphy 1998). The central argument in the debate was whether people and employment would self-sort into increasingly efficient arrangements and commuting times would reduce. If commuting times were declining in American cities, then the best policy position would be to reduce any impedance to housing and industrial mobility.

The counter position was argued by Cervero (1989, 1991, 1996), that government intervention to improve suburban jobs-housing balance was required, in order to reduce commuting times and the social, economic and environmental impacts of congestion. In this regard, the jobs-housing balance debates are a smaller scale iteration of the place-based and spatially blind regional development arguments, reflecting philosophical positions on economics and the size of government as much as efficient urban structures. The inclusion of ‘costly planning interventions’ in the argument put forward by Gordon et al. (1991, p. 419) is indicative of the philosophical basis of the debate:

... spontaneous relocation decisions by firms and households do a very nice job of achieving balance, and of keeping commuting times within tolerable limits without costly planning interventions. The appropriate role for planning agencies and local jurisdictions should be to facilitate the decentralization of jobs by relaxing zoning

restrictions that limit commercial land uses in residential communities, to help in land assembly, to provide economic infrastructure, and to discourage growth control initiatives-in other words, help the market to work rather than attempt to strangle it.

A critical point in the debate was reached when the proponents of the Gordon and Richardson self-organisation model predicted that the 1990 census would find the average journey to work time to have decreased from 21.7 minutes to 20 minutes (Garreau 1991, p. 127). However, analysis of the data by Cervero indicated an increase to 22.4 minutes, with greater increases in urban areas (cited in Peter McNabb and Associates 2001 pp. 21,22). Further analysis by Newman and Kenworthy (1999, p. 105) supported Cervero's results, finding "US cities increased more than 2,000 kilometres per person in total car travel between 1980 and 1990 ... in fact, growth in car use in the US cities is still exponentially increasing". This outcome is summarised by Pisarski (2008, p. 76), highlighting cumulative processes of exurbanism, housing preferences and industry location:

The expanding size of metropolitan areas is having substantial repercussions for commuting and travel time. This geographical expansion has largely been driven by the desire among Americans for bigger, better, cheaper housing in suburban areas. As workers have moved, employers have followed. Yet these shifts in the location of workplaces have not led to shortened commutes. Rather, they have allowed workers to move even further from the city centre in search of cheap housing and enabled workers living in rural areas and even other metropolitan areas to compete for those jobs.

Ewing (2008, p. 523) also observed that the "growth and decentralization of population have led to the decentralization of other activities, as market thresholds have been reached at outlying locations". However, commuting times were not declining in line with the decentralisation. This result may reflect a criticism of the jobs-housing balance proposition, that as there are more considerations than place of work in housing preferences, even if there is balance it does not mean that residents will work locally (Giuliano 1991). It also suggests that even if employment opportunities are created in the places of residence, they may be filled by non-residents (Bill et al. 2006).

The outcome suggests that jobs do not follow people within an expanding city, as if they did, then as people moved outwards in fringe suburbs, employment would follow and commuting times would reduce. The result is troubling for policy makers looking to foster regional development through commuter-based population growth, as the implication is that not only do jobs not follow, but it also results in a less efficient and sustainable regional form,

particularly if commuting is car-based. It is of note that population growth in metropolitan fringe areas does not come with an expectation of economic strength or strong employment outcomes. The opposite is the case in Australia, as the lack of access to employment in outer suburbs undergoing rapid population growth is of concern (Denham et al. 2018; Nicholls et al. 2017), which raises the question of why introducing population growth in regional areas would lead to different outcomes.

4.3.4 Summary

The purpose of this section has been to put forward an argument for place-based interventions that focus on the creation of regional employment. Spatially blind policies have been seen as a contributor to the notion that some regions are being ‘left behind’, rather than as mitigating regional disadvantage. Therefore, this section concludes there is a need for place-based interventions, and particularly those that are focussed on the creation of jobs in regional areas.

The two interventions that are most likely to result in metro-bound commuting growth are transport investments and residential attraction strategies. The analysis of previous research indicates concerns as to their capacity to generate regional employment in addition to population growth. For the inter-city and inter-regional scale, studies point to employment being an important driver of migration: people follow jobs when moving across countries. For scale cities and their suburbs, the outcome of the jobs-housing balance debates was that jobs were not following people as commuting times were getting longer, indicating the need for government intervention.

4.4 Conclusion

The purpose of this chapter has been to draw together the themes introduced in the literature review included in this and the preceding two chapters into the basis for policy formation. The overarching argument is that there is a hierarchy of outcomes for policies that facilitate metro-bound commuting and address city-region morphology, as depicted in Figure 9.

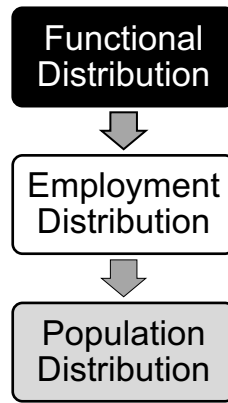


Figure 9: Policy-focus hierarchy of city-region distributions

Functional distribution is concerned with the subset of industry and employment that is focused on markets outside of the second city or settlement. It is at the top of the hierarchy as it indicates a specific economic role within the city-system and derives benefits from network economies and complementarity while mitigating diseconomies of scale. The broader employment distribution criteria provides indication that regional communities may benefit from additional employment opportunities related to servicing a larger and likely to be more wealthy population. Population distribution is at the bottom of the hierarchy, indicative of the creation of dormitory suburbs, satellite suburbanisation and extended urban sprawl if there is limited employment growth associated with it. In addition to a benchmark for policy outcomes, the hierarchy is useful in terms of assessing cities and settlements and what a positive intervention may be: for a second city that acts as a service hub, functional specialisations can be seen as a positive development for the city, while for a declining city population growth may be an initial step in rehabilitation and provide the foundation for future employment.

Functional polycentrism has been a feature of manufacturing-based economies, as the requirements of production lead to a spatial division of labour between coordination and producer services in the primary city and physical production in proximate regional cities. This division reflects how agglomeration economies and diseconomies of scale influence location decisions for different functions: the greater benefits of deep labour markets, backwards and forwards linkages and tacit knowledge transfer for knowledge-based functions in primary cities; and, lower land values and a ready supply of cheap labour in regional cities. An underlying factor in the divergence between primary city and regional economies is the agglomeration-based spatial logic of business: as manufacturing has moved offshore to lower cost jurisdictions a clear functional purpose for regional cities in the production cycle is not clear.

While metro-bound commuting may have contributed to redefining regional cities as service hubs for their own hinterlands, salient questions remain. In particular, whether this outcome justifies the magnitude of expenditure that projects such as regional fast rail services require, and whether service hub purposes are sustainable and providers of employment growth as demography and consumption patterns continue to evolve.

This chapter has also argued for concentrated decentralisation and a focus on regional cities, as opposed to widely distributed relocations from primary cities. That is, in monocentric city-regions the problem is not that the primary city is too large, but the regional cities are too small. Concentrated decentralisation and second city growth as a result of metro-bound commuting may also increase the agglomeration benefits of regional locations, particularly if metro-bound commuting increases the human capital residing in regional cities.

In this context, metro-bound commuting presents a challenge for governments as it is a redistribution of population within city-regions, but the functional and higher-order employment redistributions may not necessarily follow. Metro-bound commuter attracting investments in amenities and transport offer policymakers an opportunity to be seen to be addressing concerns about primary city growth and regional decline. However, the effects beyond population growth and associated employment are not well understood. The hierarchy for assessing metro-bound commuting growth and policy responses provides the basis for the analysis of metro-bound commuting to Melbourne in Chapters 6 to 8, providing insights into and policy recommendations for functional and employment redistributions in monocentric city-regions.

5 Research Design

5.1 Introduction

This chapter describes the mixed method research design used to respond to the research questions. It is an explanatory sequential design, where each phase of the research provides further explanation of the metro-bound commuting phenomenon. The four phases of the research were:

1. Census data analysis
2. Metro-bound commuter survey
3. Interviews with commuters
4. Policy analysis

In explanatory sequential design, each method provides additional insights to the topic under discussion, thus the results are presented thematically rather than as a series of outcomes from the distinct phases. This process and structure result in perspectives on metro-bound commuting and its effect on regional development and employment emerge that would otherwise be obscured or not apparent if only one method was used. The approach has precedent in political geographic economy (Massey 1984 for example), which draws on the social as well as the economic impact on and of the issues at hand (Peck 2015; Sheppard 2010).

5.2 A Regional Political Economy Approach

This thesis takes a regional political economy approach to the relationship between metro-bound commuting and regional development. It is multi-disciplinary, using mixed methods to provide insights into the distribution of people, employment and prosperity as a result of metro-bound commuting, which are central concerns of political economy approaches to city-regions (Edel 2013). This section justifies the use of mixed methods in addressing the research agenda.

5.2.1 The Application of Political Economic Geography to Metro-bound Commuting

The application of political economic geography to metro-bound commuting and regional provides new perspectives. Many studies of commuting patterns and regional development draw on econometric methods that establish correlations between commuting and regional economic factors (for example Lavesson 2016; Partridge et al. 2010), or address the qualitative personal and social experiences and impacts of commuting long distances (Bissell 2018; Lyons & Chatterjee 2008; Sandow 2011, 2013; Sandow & Westin 2010). By bringing together quantitative and qualitative research methods, key perspectives of economic geography can be considered, such as economic processes, uneven development, and “the inseparability of the economic from the political, the natural, the cultural, and so forth” (Peck 2015, p. 1).

Sheppard (2010) has proposed that political economic geography is defined by its heterodox rejection of neoclassical economics. While this rejection of neoclassical economics has been criticised as not taking into account the range of theoretical developments and approaches to political economic geography (Jones 2016), its quantitative bases are central to this thesis. This rejection of orthodox approaches is found in the foundational study of political economic geography by Massey (1984), who contended that the R-squared values that are central to quantitative research alone cannot capture the social and political aspects of de-industrialisation that were identified in her work, as:

In order to understand the causes and the significance of location decisions – or the geographical distribution of an industry, fortunes of a particular region, or the geographic differentiation within a country as a whole – it is necessary to embed that problem within the broader context of what is going on in society in general.

Peck (2015, p. 8) provides a similar critique, noting that while such analyses can provide insights, the focus on mathematical modelling “substantially (pre)determines what orthodox economics can see, and how that which is rendered visible is subsequently valued”. This should not be seen to exclude micro-level considerations and statistical analyses from economic geography. Markusen (2003, p.702) argued for the need for greater secondary data analysis in regional studies, as in part the lack of empirical data in the then contemporary research had let to “characterisations lacking conceptual clarity and difficult to operationalise”. This critique sparked debate on methodology in regional studies and economic geography (see Grabher & Hassink 2003), with Peck (2003, p.737) at least conceding the need for “increased utilisation of multi-method approaches, including the

combination and triangulation both of quantitative and qualitative data and of various forms of qualitative data”. The mixed methods used in thesis draws on both sides of this debate, using empirical analysis to consider the extent and scope of the processes under investigation and qualitative analysis to draw out processes.

The mixed-methods used in this research include qualitative and policy analyses to illuminate the social and political aspects of metro-bound commuting that might otherwise not be captured by quantitative models: the lived experience of commuting; the impact of counterurbanisation on regional communities; and, how metro-bound commuting influences the location of industry and employment.

5.2.2 Mixed Methods

The mixed-method approach used in this investigation is a standard technique within regional political economy research (Clark 1998; Peck 2015). Mixed methods research designs are frequently used to bring to bear social dimensions to the study of economic phenomena, providing an understanding of lived experience and insights into causality that complement quantitative analysis (Peck 2015, 2016; Sheppard 2010).

The four phases of the research are the analysis of census data, a survey of metro-bound commuters, interviews, and policy analysis. The purpose of and justification for the use of these phases of the data collection and analysis are provided in Section 5.3. In combination, these methods allow for conclusions to be drawn that take into consideration that:

... territories’ future trajectories cannot be deduced from their place-based attributes, but are shaped just as much by their positionality within broader economic systems; their uneven connectivities with other places (greater connectedness need not reduce inequality); and their embeddedness within multi-scalar economic, political, cultural and biophysical processes (Sheppard 2010, p. 327).

This conjecture concords with the aims of this research. While the subject of the research is metro-bound commuting, the questions that arise from the investigation relate to the outcomes from connectivity and spatial interactions, and their propensity to alter the spatial distribution of employment and prosperity within economic systems.

The qualitative and quantitative methods used in this thesis are sequential, following the explanatory research design intent of using the interviews to provide richer insights and

explanations for the analysis of census data and the survey, as shown in Figure 10 (Creswell 2016).

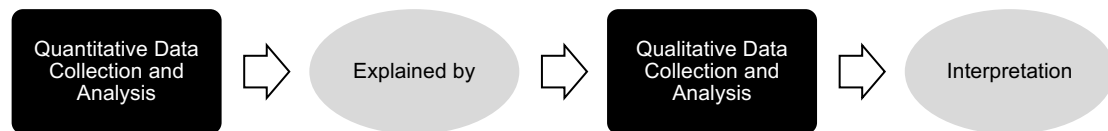


Figure 10: Explanatory research design process

Source: Creswell (2016)

Each step in the research process enables further exploration of the metro-bound commuting phenomenon, building a comprehensive perspective on its social and economic drivers. The analysis of census data informs the development of the survey instrument; for example, the recording of place of work in the Census is an element of determining metro-bound commuting, but it is recorded for an individual and therefore it is not possible to analyse the structure and attributes of a metro-bound commuter's household by analysis of Census data. Preliminary analysis of the survey responses then informed the interview schedule, which included questions regarding the reasons for housing and employment decisions, regional employment markets, and the lived experience of commuting. This process provides complementarity and expansion in the mixed methods typologies of Greene et al. (1989, p. 259):

Complementarity: seeks elaboration, enhancement, illustration, clarification of the results from one method with the results from another.

Expansion: seeks to extend the breadth and range of enquiry by using different methods for different inquiry components.

The final step is the interpretation of the data, which draws together the quantitative and qualitative results to analyse policy and respond to the research questions. The input of each

phase of the data collection process to the response to the research questions is laid out in Table 4 on the following page.

Therefore, the research design is based on the position that different data collection methods are best suited to address different agendas within a program of research methods have been chosen based on their “usefulness in engaging with the real world” (Guthrie 2010, p. 45). That is, a survey can collect frequency distributions within a population sample, while interviews are more suited to collecting “institutionalised norms and statuses” (Sieber 1973, p. 116). Brannen (1992, p. 13) argues that quantitative methods provide insights into outcomes, while qualitative methods address processes.

These notions of different perspectives on the same phenomenon in from the research and the way that the results are presented in Chapters 6 and 7, as different insights into the same aspect of metro-bound commuters’ effect on regional economies rather than as each methods’ insights into the thesis.

Table 4: Research questions and methodology

Research Question`	Literature Review	Method			
		Census Data	Survey	Interviews	Policy Analysis
How are metro-bound commuters and their households changing the social, demographic and workforce structures of regional areas?	2.2, 2.3, 3.3	Extent and growth Place of work, place of residence Demography Human Capital	Journey to work Housing tenure Household composition Primary reason for relocating work or residence	Experience and impact of commuting Location choices Impact on local communities Detailed reasons for commuting	
Has increased metro-bound commuting led to growth in regional employment and industry?	3.2, 3.3	Correlations between commuting and employment	Post-commuting work preferences Household employment Business formation	Regional employment markets Business experiences	
Do jobs follow people at the meso-scale of city-regions?	3.3, 4.2	Metropolitan-regional employment distribution	Motivations for commuting Business formation	Regional labour market experiences Business experiences	
How should governments assess metro-bound commuting as a regional development policy?	3.1, 4.2, 4.3				Federal, State and local policy analysis

5.2.3 Scope and Extensions

The methodology presented in this chapter describes an extensive qualitative and quantitative investigation into the relationships between metro-bound commuting and regional employment in one region, Melbourne and its surrounds. While developing this methodology, consideration was given to including other cities and commuter patterns in the scope of the research to provide further evidence of the relationships under investigation. In particular, Sydney, Canberra and Chicago were the other examples considered. Given the complexity of the methods outlined in the following section, including census analysis, surveys and interviews with commuters and government, and the available resources available, extended the study to other examples was not feasible, particular if census and journey to work data are not comparable between jurisdictions. This decision is also a result of the view that new insights into the regional effects of metro-bound commuting would arise from multiple perspectives within a single region, rather than a singular, or more limited, focus implemented in multiple locations.

Within the study region, the most prominent gap in the data collection methodology is that non-commuting regional residents were not interviewed to provide their perspectives on the effect metro-bound commuting on their communities and employment prospects. Given resource limitations, these regional perspectives were provided through a workshop held with the Peri-Urban Group of Regional Councils, as described in Section 5.3.3.3. Undertaking aspects of this research in other regions, as well as interviewing regional residents about metro-bound commuting, would likely provide additional insights into the research agenda and support for the conclusions of this thesis.

5.3 Detailed Description of Methods

This section describes the data collection and analysis methods used in the preparation of this thesis, including the census data, surveys, interviews and policy analysis. The approach taken in this research uses intensive and extensive research methods: intensive methods question what produces change and the actions of agents and extensive methods are concerned with the distributions and patterns of processes (Sayer & Morgan 1985).

5.3.1 Census Data

Australian Bureau of Statistics' Census data has been used in this research to determine the size and pertinent attributes of the metro-bound commuting cohort in the Melbourne study region. Specifically, this includes the geographic distributions of places of work and places of residence, demographic structure, and employment and education attributes of the metro-bound commuting cohort. The

Census data for metro-bound commuters is used to quantify the extent and growth of metro-bound commuting and to assess how the metro-bound commuting cohort is different to the regional workforce, which together provide insights into their capacity to change their places of residence.

The Australian Bureau of Statistics undertakes a census of population and housing every five years in Australia, with 2016 being the most recent. The Australian Bureau of Statistics' statistical geography changed for the 2011 census, from the LGA-based Australian Standard Geographical Classification (ASGC) to the Australian Statistical Geographical Standard (ASGS), to mitigate the effects of changes to Local Government jurisdictions between censuses and also to better reflect labour force areas rather than administrative boundaries (Australian Bureau of Statistics 2010). In order to provide a consistent geography for this thesis the analysis presented uses LGAs as the basis for the analysis of change over time, based on 2006 and 2016 censuses.

For a detailed analysis of the 2016 metro-bound commuting cohort, the Australian Statistical Geography Standard (ASGS) is used, predominantly at the SA2 level of detail (Australian Bureau of Statistics 2018). For regional places of residence, the Urban Centre/Locality geography is used, which are constructed from contiguous clusters of SA1s with a population of more than 1,000 people (Australian Bureau of Statistics 2016a).

5.3.1.1 Geographic Categorisations

The LGAs included in the definition of regional places of residence are depicted in Figure 11 on the following page. The City of Melton has been excluded, as it is neither a regional place of residence nor a metropolitan place of work. Melton is a metropolitan growth area, the population increased by more than 30,000 between censuses and 69 per cent of the Melton workforce commutes to Melbourne for work: it has become a residential satellite. Similar in its strong connection to the metropolitan area, the Mornington Peninsula Shire has also been excluded as a place of regional residence.



Figure 11: Regional resident local government areas, Victoria, as defined in this study.

Source: © OpenStreetMap contributors, accessed from AURIN Portal, aurin.org.au.

The restriction of using LGAs means that settlements that are expected to have large numbers of metro-bound commuters are excluded from the analysis as they are within predominantly metropolitan councils, based on the locations of employment and population. Examples of this issue are Yarra Glen, Healesville, Koo Wee Rup, Bunyip and Sunbury which as shown in Figures 12, 13 and 14 on the following page. Figure 13 indicates that Pakenham is also a separate locality from metropolitan Melbourne, but recent residential development has connected Pakenham to the metropolitan area, and it is now considered part of Melbourne. Therefore, the Australian Bureau of Statistics' Urban Centre/Locality geography is used for describing metro-bound commuters' places of residence in 2016.

To illustrate the changes in the location of employment and metro-bound commuting in Victoria, Melbourne’s LGAs have been categorised into three zones Inner Melbourne, Middle Melbourne and Outer Melbourne. As Figure 15 shows, the LGA boundaries do not coincide with what could be considered the edge of the city, therefore the outer categorisation mitigates the issue of not having a clearly defined metropolitan boundary by separating out the shallow, short commutes. The three categorisations enable more detailed analysis of the metro-bound commuting, particularly given the different economies and employment types of the three sections of the city. The designation of metropolitan SA2s into Inner, Middle and Outer Melbourne is depicted in Figure 16 on the following page. In comparison to the LGA definition above, the SA2s enable non-metropolitan urban centres to be included as regional places of residence, as discussed above in Section 5.3.1.1. There are also differences between the Inner and Middle designations due to the finer grain of distinction provided by SA2s in comparison to LGAs.

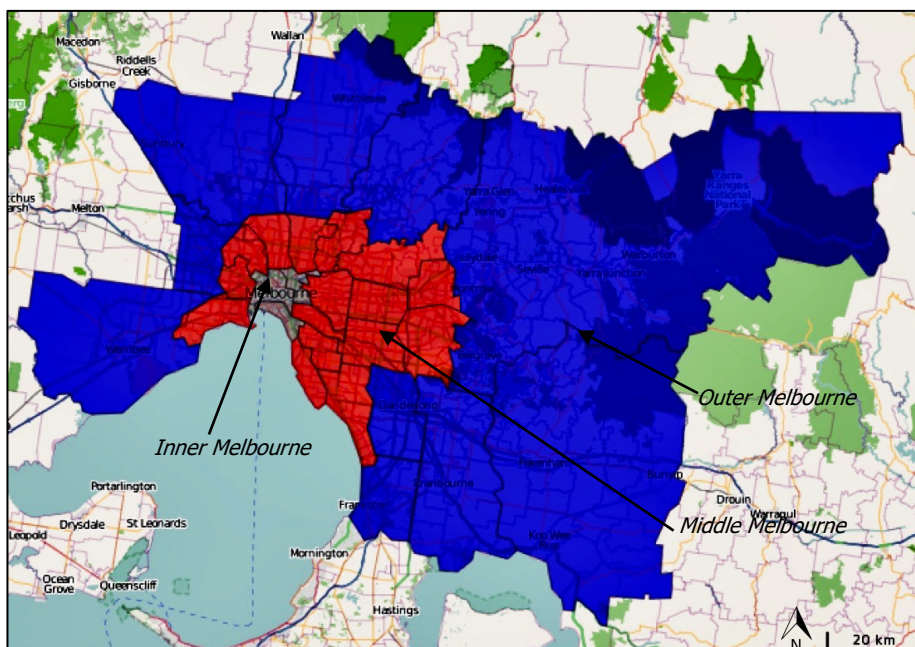


Figure 15: Inner, middle and outer Melbourne local government area places of work

Source: © OpenStreetMap contributors, accessed from AURIN Portal, aurin.org.au.

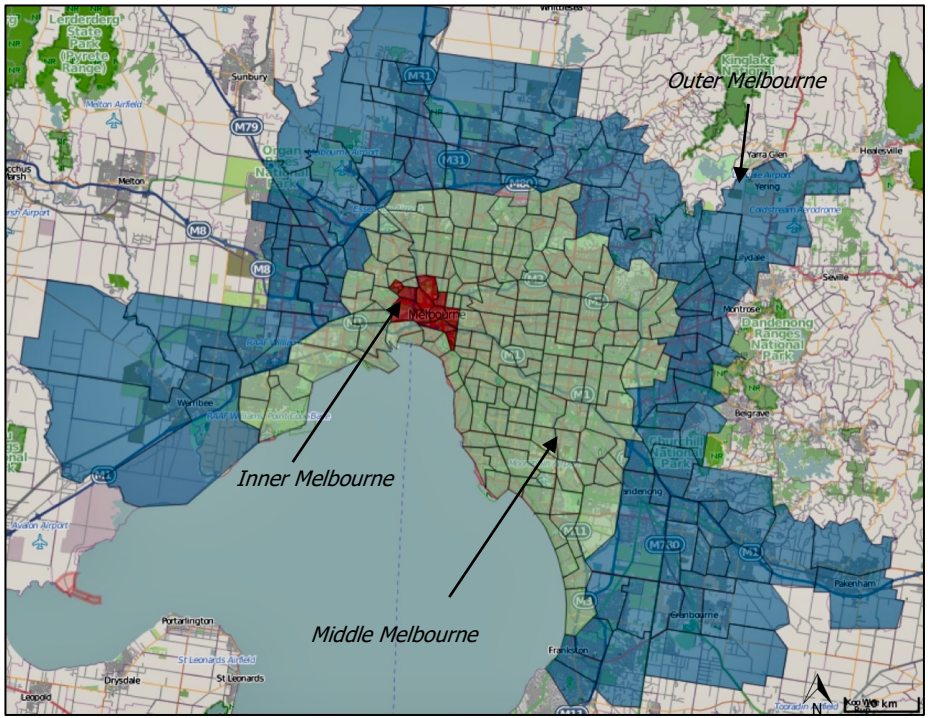


Figure 16: Inner, Middle and Outer Melbourne SA2, place of work

Source: © OpenStreetMap contributors, accessed from AURIN Portal, aurin.org.au.

The geographic classification of Australian cities and specifically Melbourne into inner, middle and outer regions is frequently found in policy and planning discussions, a likely result of their monocentric structures (e.g. Department of Environment, Land, Water and Planning 2017; Goodman et al. 2016). However, this triumvirate does not have a consistent definition or methodology for the determination of the boundaries of each of the three zones. Therefore, Inner, Middle and Outer Melbourne used in this thesis have been defined to reflect the different prevailing sources of employment across the city as discussed in Section 1.2.4. It is also representative of the methods for establishing frameworks for urban research by Scott and Storper (2015), where geographic delineations such as a metropolitan boundary are arbitrary the units of analysis employed in research should be determined by their capacity to reveal insights into urban conditions. For this thesis, the zones provide insights into two key aspects of metro-bound commuting; the intersection between travel patterns and the regional impacts of employment by types of metro-bound commuter.

5.3.1.2 Place of work data issues

Data from the 2006, 2011 and 2016 censuses is used for the analysis of the origins and destinations of metro-bound commuting in Victoria. However, the method for preparing and presenting place of work data has changed for each of the censuses, creating a degree of uncertainty in comparing the data across years. The Australian Bureau of Statistics (2016c) advised not to compare place of work

data between censuses due to changes in the base-level geographic classifications, and changes to the questions about place of work. The changes to base-level geographic zones that are aggregated to provide place of work data for LGAs are likely to have minimal impact for the analysis in this study, as the boundaries of the LGAs have not changed between 2006 and 2016.

The major issues are a result of the change in questions regarding place of work and the subsequent categorisations of responses as 'not applicable' and 'not stated'. There was a large reduction in the coding of places of work as undefined between the 2006 and 2011 censuses due to increased quality control and validation of responses by the Australia Bureau of Statistics. The State/Territory Undefined and Capital City Undefined categories are applied if the response to the address of the place of work on the census form cannot be assigned to either a destination zone or SA2 (Australian Bureau of Statistics 2012b). It could be assumed that the greater emphasis on validating place of work data would reduce the numbers coded in the undefined categories. However, the opposite is the case, with the State/Territory Undefined place of work increased nearly 10-fold as shown in Table 5 on the following page. To put this in context, the 39,866 workers in the State/Territory place of work undefined category represented 7.6 per cent of the Victorian regional workforce in 2011, as measured by resident working population.

Table 5: Undefined place of work – Regional Victorian residents 2006 and 2011 censuses

Year	Total Workers	POW Capital city undefined	POW Capital city undefined share	POW State/Territory undefined	POW State/Territory undefined share
2006	517,130	411	0.08%	3,996	0.77%
2011	524,491	2,875	0.56%	39,866	7.6%

Source: (Australian Bureau of Statistics 2006c, 2011)

For the 2016 census, an imputation process has been used to allocate undefined responses to destination zones and therefore LGAs, which is the primary regional geography used for time series analysis in this thesis. Imputation is based on the place of usual residence, industry of employment and method of travel to work of the response (Australian Bureau of Statistics 2017a). Therefore, unlike the 2006 and 2011 place of work data summarised in the table above, in 2016 all employed persons were allocated a place of work LGA by the Australia Bureau of Statistics. As shown in the table below, in 2016 10 per cent of place of work data was imputed for Victoria, with only 5 per cent of imputation based on a *not stated* response. This indicates that the imputation provides an accurate estimate of place of work across the state.

Table 6: Imputed Places of Work, Victoria 2016

Not imputed	Imputed - SA2 stated	Imputed - Capital city stated	Imputed - State/Territory stated	Imputed - Not stated	Total
2,447,270	85,695	31,226	24,506	141,645	2,730,341
90%	3%	1%	1%	5%	100%

Source: Imputed workplace addresses (IFPOWP), Victoria Australian Bureau of Statistics (2016b)

As a response to these issues with place of work allocation, the 2011 data has not been used for the analysis of changes in place of work and metro-bound commuting over time. While 2006 and 2016 use different methods to account for undefined responses to the place of work question, the low uncertainty of both data sets provides the basis for confident analysis.

5.3.1.3 Modifiable Areal Unit Problem

The Modifiable Areal Unit Problem arises where the results of data analysis are dependent upon the geographic boundaries used in data collation (Waller & Gotway 2004; Yang 2005). The Modifiable Areal Unit Problem affects data in two ways: the *scale* or *aggregation effect*, where correlations and inferences from data analysis change as the size of aggregation increases, and the *grouping* or *zoning effect* where different arrangements of geographic unit boundaries lead to different results.

Prescriptions to limit the effect of this problem include the use of disaggregated point data sources, not making inferences to individuals or different geographic scales other than that for which the data has been collected and developing statistics that are invariant with scale.

Commuting studies are prone to Modifiable Areal Unit Problems, as the scale of origin and destination zones used to determine out-of-region commuters will affect the results. That is, for larger studies based on larger geographies, a greater proportion of workers will live and work in the same unit, but this share will decrease as the geography reduces in scale (Bosworth & Venhorst 2017). For this reason, transport studies within Australian metropolitan regions are largely based on Destination Zones, the smallest geographic scale for which the Australian Bureau of Statistics provides data.

Where the analysis of census data included in this thesis uses LGAs as the geographic unit, it is the smallest unit for which the Australian Bureau of Statistics prepared comparable Place of Usual Residence and Place of Work data for each of the 2006 and 2016 Censuses. Therefore, other than acknowledging the issue and not inferring results for other geographic units, the Modifiable Areal Unit Problem cannot be mitigated in this instance. LGAs are also a more appropriate scale to

investigate regional development outcomes from commuting, as regional employment impacts may be masked by the disaggregation of employment and residential areas in small geographies such as Destination Zones. The use of the larger LGA and discrete Urban/Centre Location geographic classifications also filters out very small commuting journeys that may occur from metropolitan fringe residential locations.

5.3.2 Survey Data

The description of survey methods is based on the framework Punch (2003) developed to describe survey methodologies: why the survey was conducted, how the sample was collected and the resulting sample.

5.3.2.1 Objectives

The survey was designed to supplement the census data for metro-bound commuters, through gathering demographic, income, employment and travel information on households that include a commuter. A shortcoming of the census data is that place of work data is for individuals only and this data is not linked at the household level, such that the families that are supported by commuting workers cannot be identified. The survey also provides information on housing tenure, length of time commuting, the time taken to travel to work, number of days working in the city and household expenditure geography. To support the investigation into the human capital effects in regional areas, occupations and industry sectors of other household members are also recorded.

The survey data supplements the census data to provide a richer analysis of the regional economic impacts of metro-bound commuting. Where applicable, categories used by the Australian Bureau of Statistics for census data collection have been replicated in the survey questionnaire, such as ANZSIC codes for the occupation and industry sector, household incomes and demographic indicators.

5.3.2.2 Survey Method

The collection of survey data from the metro-bound commuting cohort presents methodological challenges. To source a cross-section of places of residence and places of work within the study area in person would require extensive door-knocking during times when people were likely to be at home or through intercept surveys at transport hubs such as train stations and service stations. These methods were seen as difficult to implement due to the resources available for door-knocking, and the possibility that car drivers would not take time out of their commute to complete surveys while filling their car with petrol. There is also the possibility that as car-based commuters are likely to be either very wealthy or to be in lower-skill occupations they would have a lesser propensity to respond to survey invitations. Therefore, in order to reach the metro-bound commuting cohort, survey responses

were collected by promoting the study via metropolitan and regional media channels that were likely to be consumed by metro-bound commuters. While this method resulted in 389 valid responses, there was a skew towards train travellers, which can be attributed to their having time on their commute to fill out an online survey. There is also a skew towards Managers and Professionals and inner city workers in the survey sample, which are also both correlated with train travel.

Media interest in the project was generated by distributing a press release, which outlined the aims of the research and focused on the human interest aspects of long-distance commuting to increase the appeal to media producers. The resulting media coverage included:

- ABC Radio Ballarat, Bendigo and Gippsland
- 3LO Radio Melbourne
- 3AW Radio Melbourne
- Channel 9 News, Melbourne
- The Age newspaper, Melbourne
- Regional newspapers, including the Ballarat Courier, The Geelong Advertiser, and the Melton and Moorabool Star Weeklies
- Articles published in The Conversation, Planning News and Economic Development Quarterly

The strategy for converting media interest into survey responses was to direct interested people to a Facebook page set up as a conduit to the Qualtrics survey instrument. For press reports, the link² was included in the article. For the interviews with radio, the Facebook page was mentioned as part of the discussion. The use of Facebook as a central point for collecting responses also allowed for snowball sampling, where respondents were asked to forward links to the page to other commuters they may know. Personal contacts were also asked to share the link with people they knew who resided in Regional Victoria and commuted to Melbourne for work.

The media campaign was successful in attracting respondents. On the 28th of July 2016, when Melbourne newspaper The Age published an article on the research and interviews with the candidate discussing the research were broadcast on major radio and television services in Victoria, the number of surveys commenced on the Qualtrics survey portal increased from 200 to 400.

Peri-urban and regional councils also promoted the research through community newsletters. Regional community groups on Facebook also publicised the research and provided links to the Regional Commuting Research page. The marketing division of Victoria's V/Line regional rail

² <https://www.facebook.com/RegionalCommutingResearch/>

service distributed the survey link to their VTalk Community Feedback Panel which they use for customer feedback on their regional rail services, resulting in a further 64 responses.

5.3.2.3 Sample

A survey of metro-bound commuters was distributed via RMIT's Qualtrics online survey platform. In total, 576 surveys were commenced, 483 completed and a resulting total of 389 valid responses following data cleaning. Based on an estimated metro-bound commuting population of 70,000, this gives a confidence interval of +/- 4.96 at 50 per cent, with 95 per cent confidence, as shown in Table 7.

Table 7: Summary of survey results

Are you currently living in a regional area and commuting to Melbourne for work?		Yes	No	Total
		333	46	389
For how long were you/have you been a regional-urban commuter?	Between 1 and 5 years	148	24	172
	Less than a year	34	2	36
	More than 5 years	151	20	171
Place of Work	Inner	257	27	284
	Middle	59	10	69
	Outer	5	0	5
	Various	12	9	21
Place of Residence	Second City	132	18	150
	Other	201	28	229

Figure 17, on the following page, shows the residential location of survey respondents. The residential postcode provided by survey respondents was translated to an LGA using Australian Bureau of Statistics' (2012a) correspondence table and then rounded to the nearest whole number. The results indicate a wide representation of LGAs, and respondents from second cities as well as smaller settlements. The most responses were received from Geelong with 98, and 79 from Ballarat.

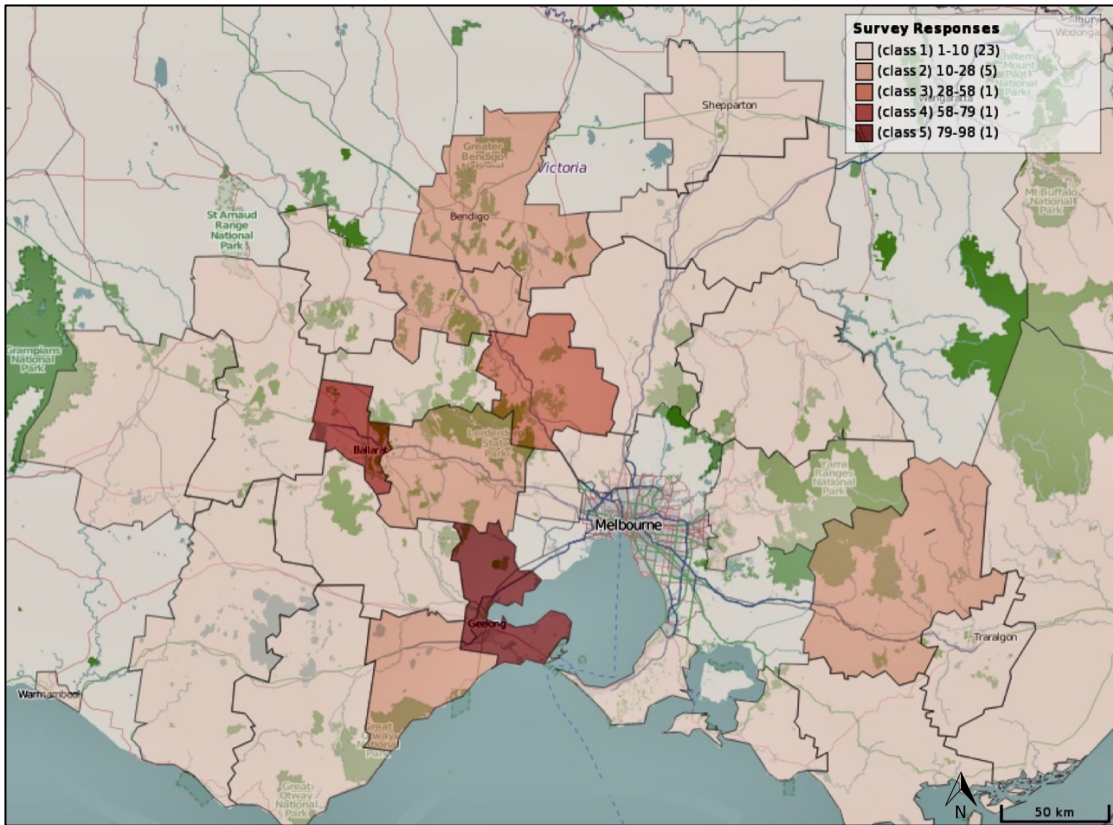


Figure 17: Residential location of survey respondents

Source: © OpenStreetMap contributors, accessed from AURIN Portal, aurin.org.au.

There is a strong skew towards *Managers* and *Professionals* in the survey sample, comprising 312 out of the total of 384 responses, as shown in Table 8 on the following page. All other occupations are under-represented compared to the census data. This result may reflect the likelihood that people in these types of occupations are more likely to self-select as survey respondents than people who work in other occupations, which has implications for the analysis of the survey data for Inner, Middle and Outer Melbourne places of work due to the different industries and occupations on offer in these regions. It is of note that several interviewees expressed interest in the project due to their own experience in post-graduate studies.

This disproportionate stratified sample results in lower precision for the overall results, but greater precision in the analysis of results within the stratification (Lewis-Beck et al. 2003, pp. 1085-1086). This skew in occupations can be expected to result in higher household incomes, as well as other factors such as education and demographic profile. The use of Facebook and an internet-based survey may also have contributed to bias in the sample, due to an expectation that younger people are more likely to use these media platforms.

Table 8: Survey respondent occupations

Occupation	Survey		2011 Census
	no.	Share	
Clerical or Administrative Worker	40	10.4%	15.8%
Community or Personal Service Worker	11	2.9%	8.5%
Labourers	1	0.3%	6.0%
Machinery Operators and Drivers	0	0.0%	8.0%
Manager	98	25.5%	15.8%
Professional	214	55.7%	23.6%
Sales Worker	9	2.3%	7.6%
Technician or Trade Worker	11	2.9%	15.1%
Total	384		

5.3.2.4 Data analysis

The overarching strategy to the analysis of survey data is to investigate differences in subsets of the survey sample; based on social categories, dispositions and actions (Rosenberg 1968). Social categories are properties of the individuals in the sample, examples used in this study are whether they are knowledge workers, or whether they reside in regional cities. An example of a disposition is whether respondents have considered ending metro-bound commuting, with a related action being whether it is likely that commuting will come to an end through changing the place of work or place of residence.

The categorisation of the sample into groups and questioning whether the dispositions and actions are independent is based on Pearson's chi-square test for independence. This test compares categorised data distributions and calculates the chance that the variations are random. The chi-square test is also used to assess whether the sample is a reflection of the broader metro-bound commuting population. Parametric tests use the z-tests, which are for comparing the mean of categorisations within populations and samples greater than 30 (Grimm & Nesselroade Jr. 2019).

5.3.3 Interviews

Interviews were conducted with representatives from two groups with experience in metro-bound commuting and related policy considerations. The first group were current or ex- metro-bound commuters. The second group was past and present politicians and public servants with connections to regional development and transport issues.

A semi-structured approach was taken to all interviews. For the metro-bound commuter interviews, a list of questions was prepared regarding metro-bound commuting, including the experiences and personal and household impacts of metro-bound commuting; the housing and employment decision-making processes that resulted in metro-bound commuting; housing choices; transport preferences and how they used travel time; and, their intentions for future work and housing arrangements. The semi-structured approach allowed for responses to be explored further as the interview evolved, which is an advantage of the semi-structured approach (Longhurst 2003). Interviews were carried out face-to-face where possible, with telephone interviews used in some circumstances as most of the subjects live in regional areas and fieldwork travel was not always feasible. The same method was used for the interviews with politicians and public servants, with sets of questions developed that related directly to their roles and history in policy making and implementation.

In addition to interviews, a presentation to the Peri-Urban Group of Rural Councils was conducted as the final stage of the data collection process. This group was selected as their location on the metropolitan periphery indicates that they provide places of residence for significant numbers of metro-bound commuters. Therefore, they may provide insights into the effect of metro-bound commuters on regional economies and communities. By holding the presentation at the end, key results and preliminary interpretations were able to be tested with representatives from LGAs that are experiencing increased numbers of metro-bound commuters as well as related trends such as increased house prices.

The information collected in the interviews and presentation have been transcribed and key content analysis applied.

5.3.3.1 Commuters

A total of 26 interviews with commuters were held, selected from the 248 survey respondents, equivalent to approximately 10.5 per cent of the survey cohort. As part of the survey the interviewees indicated that they were willing to participate in an extended interview regarding commuting experiences, household structures and expenditure, and employment.

The purpose of the interviews was to draw on the personal experience of metro-bound commuters to illuminate the quantitative data, as well as provide more insight into the longevity of commuting lifestyles and post-commuting intentions. The topics addressed in the interviews include the decision-making process for becoming a metro-bound commuter; the impact of commuting on them and their household; workplace intentions and whether they have applied for regional employment.

Table 9: Interview subject demographics

Sex	Age (years)					Total
	From 20 to 29	From 30 to 39	From 40 to 49	From 50 to 59	Older than 60	
Male	4	3	2	2	0	11
Female	0	5	5	4	1	15
Total	4	8	7	6	1	26

Five of the interviewees had established businesses in regional Victoria, and all regularly travel to Melbourne for work purposes such as client meetings and networking events. Four of these interviewees relocated their business to regional Victoria at the same time as moving their place of residence, while the fifth started a business as a way to end commuting. Effort was made to find more interview subjects who had started regional businesses, particularly through contacting regional business incubators in Macedon Ranges, Geelong & Castlemaine, to no avail.

5.3.3.2 Government

Interviews with government representatives have focused on policies for regional population growth and its connection to metro-bound commuting. The following politicians and public servants were interviewed for this research:

- The Hon. Steve Bracks AC, Premier of Victoria 1999-2007.
- Mr. Tim Smith MP, at the time the Chair of the State opposition's Population Taskforce.
- Two anonymous representatives from the Victorian Department of Environment, Land, Water and Planning, with experience in regional planning, population and employment issues.

5.3.3.3 PUGRC Presentation

A presentation about metro-bound commuting was held with the Peri-Urban Group of Rural Councils (PUGRC), which is an organisation that brings together Local Government representatives from the areas surrounding Melbourne to discuss infrastructure, regional development and population growth issues (PUGRC n.d.). The jurisdictions of the PUGRC member councils are depicted in Figure 18 on the following page.

The PUGRC was selected as an appropriate forum for the discussion of metro-bound commuting issues. The metropolitan proximity of these LGAs and the rapid population growth in some of the settlements within them indicates that they are likely to have experience of the population, housing and employment issues outlined in Chapters 2 and 3, as well as some responsibility for the planning, policy and regional morphology issues raised in Chapter 4.

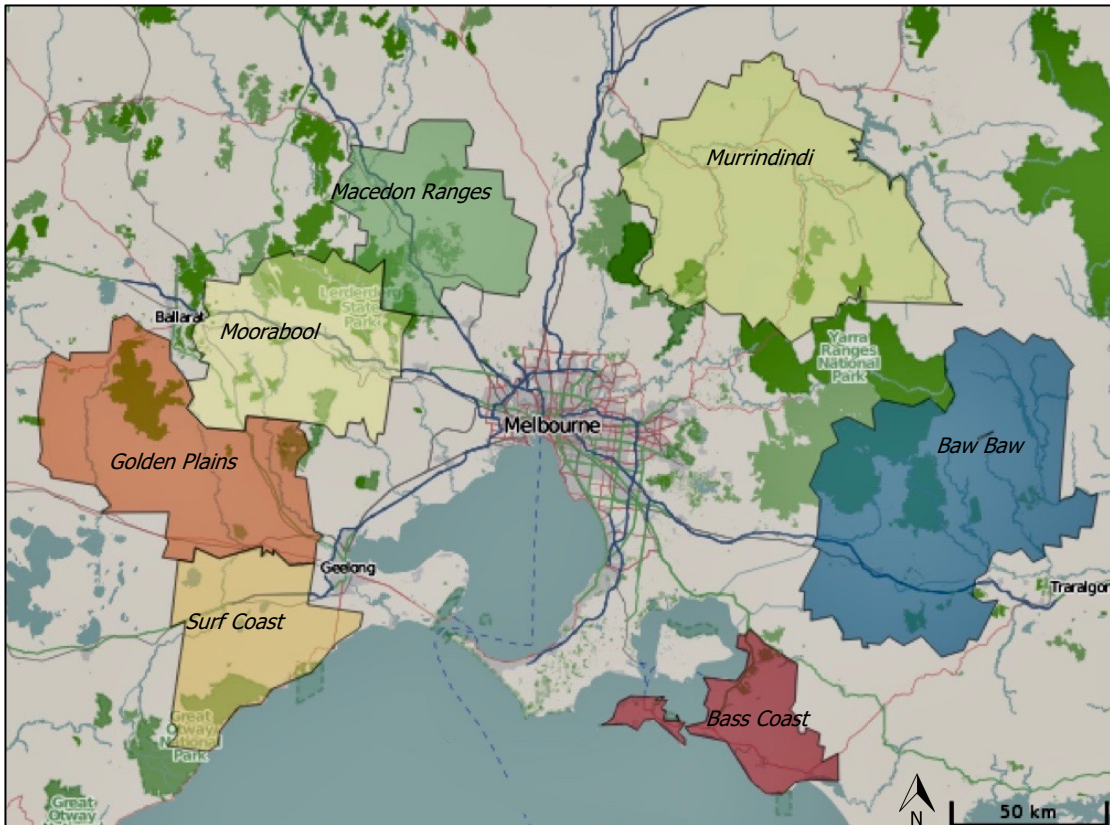


Figure 18: Peri-Urban Group of Regional Councils member local government areas.

Source: © OpenStreetMap contributors, accessed from AURIN Portal, aurin.org.au.

5.3.3.4 Ethical Concerns

Ethical concerns were raised by some of the interviewees, regarding how their anonymity would be protected in the thesis and subsequent publications. For commuters, these concerns were related to public information regarding dissatisfaction with their employment and efforts to find new work as well as the impact of metro-bound commuting on their households. Public servants and officials had similar concerns relating to criticism of public policy and government decisions. As required by the ethics approval for this research, and in respect of these concerns, any distinguishing comments or information included in the interview materials has been removed to ensure the anonymity of participants.

5.3.4 Policy Analysis

The policy analysis in Chapter 8 employs rational and argumentative styles of policy analysis. The rational style is a positivist method, where policy is assessed by what is measurable, whereas the argumentative style focuses on language and the justification for and logic of policy (Mayer et al. 2018). The analytical framework for the rational and argumentative analysis is provided by the outcomes of the literature review, as summarised in Section 4.4, and the results of the analysis of the population and employment effects of metro-bound commuting in Chapters 6 and 7.

5.3.4.1 Policy scope

The policy analysis is focused on Melbourne and the regions within its commutershed. There are two tranches of policy included in the analysis in Chapter 8. First, economic development strategies from the metropolitan commutershed LGAs are assessed. The most recent strategies for three LGAs are analysed in detail: Greater Geelong, Moorabool and Macedon Ranges. These LGAs were selected due to the number of metro-bound commuters residing within them, and also references to them or settlements within them in the most recent Melbourne metropolitan strategic plan (Department of Environment, Land, Water and Planning 2017). While in-depth analysis has been undertaken on the most recent economic development strategies, earlier strategies have been included to provide further evidence. Economic development strategies from other peri-urban LGAs have also been analysed, to provide further support for the conclusions reached from the Geelong, Moorabool and Mount Macedon strategies. The focus for the analysis is how the interactions between the LGA and Melbourne, and population, commuting and employment growth are considered within the strategies.

The second set of policies and initiatives have been produced by the Victorian State and Federal Governments. The focus for Victorian State policy is the 2014 and 2017 iterations of *Plan Melbourne*, the most recent Metropolitan planning strategies (Department of Environment, Land, Water and Planning 2017; Department of Transport Planning and Local Infrastructure 2014). Of particular interest within these strategies are the sections on the relationship between Melbourne regional Victoria; “A State of Cities” in 2014, and in 2017 an outcome of “Regional Victoria is productive, sustainable and supports jobs and economic growth”. An overview of earlier metropolitan strategic plans is also included, to provide a context for the analysis of the 2014 and 2017 versions of Plan Melbourne. In addition to the metropolitan planning strategies, Federal and Victorian decentralisation policies and transport initiatives have been assessed. In total, this provides an overview of policies that are designed to affect the distribution of people and employment in the metropolitan city region.

5.4 Conclusion

This chapter has provided a justification for the mixed methods used in this research. The central arguments are that this approach provides measures of scale, scope and impact as well as experiences of commuters and their households. The four methods combine in an exploratory and sequential way, as shown in Figure 19.



Figure 19: Data collection and analysis sequence

This chapter has also provided definitions of the metropolitan and regional areas that have been used in analysing metro-bound commuting, noting that such definitions are not

The data analysis has been presented in a thematic way over the following two chapters, drawing out the results from each method for the population, employment and spatial distribution effects of metro-bound commuters, as well as their motivations and decision-making influences. These results inform the policy analysis in Chapter 8, which includes Federal, State and Local Government policies and proposals that promote, facilitate and respond to metro-bound commuting.

6 People, Place and Travel

6.1 Introduction

This is the first of three chapters that present the results of the data collection and analysis. By offering insights into the scale, distribution, decision-making and households of metro-bound commuters, this chapter provides a basis for the argument that the increasing size of this group is changing second cities and regional settlements. This chapter also provides insights into the lived experience and of metro-bound commuters, including their reasons for becoming metro-bound commuters and the impact it has on their lives.

There are four sections of analysis in this chapter. The first sections the scale of metro-bound commuting in Victoria, compares the demography of metro-bound commuters to other regional resident workers, and assesses commuters' households and contributions to regional population growth. The second uses survey and interview data to provide insights into why people decide to metro-bound commute, as well as assessing the proportion of metro-bound commuting that originates from metropolitan workers relocating households compared to regional residents finding metropolitan work. The third section considers the spatial distributions of metro-bound commuters' residences and their employment, as well as how people travel between them. The fourth analysis section in the chapter is concerned with metro-bound commuters' housing circumstances, with a particular emphasis on appraising how the counterurbanisation dimensions of metro-bound commuting are influencing regional housing markets.

6.1.1 A History of Metro-bound Commuting to Melbourne

This section provides a review of previous studies of metro-bound commuting in Victoria, indicating that for some areas of the State a sizeable proportion of regional resident workers have been travelling to Melbourne to work for at least 30 years. As metro-bound commuting has been occurring for decades in the study region, there has been enough time for the regional employment and other development effects to be realised. The research summarised here also provides important insights into the metro-bound commuting phenomenon, including the motivations for regional relocation, how transport improvements lead to increased commuting, and the increasing number of inner city knowledge workers within the metro-bound commuting cohort.

Analysis of the 1991 census data for metro-bound commuters to Melbourne’s central business district found a strong western skew, as depicted in Figure 20 (McKenzie 1996, p. 40). The report notes the role of changing residential preferences, affluence and personal mobility, economic restructuring, cheaper land in regional areas, developers increasing peri-urban supply and metropolitan push factors as causes of increased commuting. Geelong is not included in Figure 20 as the proportion of the local workforce commuting to Melbourne was less than 10 per cent: an earlier report indicates that it was 6.7 per cent of the workforce in 1981 and projected to reach 8 per cent by 1997 (Geelong Regional Commission 1988).



Figure 20: Melbourne-exurban LGAs with more than 10% of the workforce commuting to the Central Business District – 1991 Census Data

Source: (McKenzie 1996, p. 40)

The 2002 Melbourne metropolitan planning strategy, *Melbourne 2030*, includes a similar map of city-bound commuters from regional areas, based on 1996 census data, and indicates that the more than 20 per cent of workers are from the metropolitan fringe LGAs located to the north and west of Melbourne. In the LGA directly to the east, more than 10 per cent of workers commuted to Melbourne. This lower percentage is similar to that of 1991 census data and underscores the impact of the metropolitan boundary being much further from the central employment cluster to the east than to the north and west. More than 10 per cent of workers from the second city of Greater Geelong also commuted to Melbourne in 1996 according to this analysis (Department of Infrastructure, p. 20).

The Bureau of Infrastructure, Transport and Regional Economics (2011) has published extensive analysis of commuting patterns in Melbourne including trends in commuting from the surrounding regions. The data included in these reports is not directly comparable to the data used in this research due to different geographic definitions of the metropolitan areas and the Place of Usual Residence. The analysis indicates that there have been more than 10,000 Geelong-Melbourne commuters since 2001 and commuting from all regions within the metropolitan commutershed grew in the 5 years between 2006 and 2011, except Ballarat. The explanations for this increased commuting were predominantly improvements to transport infrastructure. This included the completion of the Regional Fast Rail project in 2006, which led to increased patronage from Ballarat, Bendigo and Geelong particularly after service frequency was increased in 2007 (Bureau of Infrastructure, Transport and Regional Economics 2011, p. 283). Major road improvements and bypasses were also completed between 2001 and 2006, which improved access to employment in Melbourne (ibid).

This section has provided evidence that metro-bound commuting is long-standing within the Melbourne city-region, particularly to the inner city (McKenzie 1996) and from Geelong in particular (Geelong Regional Commission 1988). These previous reports and investigations also bring to light key aspects of metro-bound commuting for regional development effects: the influence of transport improvements, the distinct workforce attributes and human capital of metro-bound commuters, and the shortage of regional employment options as an explanation for deciding to metro-bound commute.

6.2 Scale and Demography

This section of the thesis is concerned with the population aspects of metro-bound commuting, including the scale and growth in recent years, and how the growth is changing the regional Victorian population. As well as the metro-bound commuters as individuals, the analysis indicates that metro-bound commuting is changing the demographic composition of the regions, due to the different age distributions of regional residents depending on their place of work.

6.2.1 The Scale of Metro-bound Commuting in Victoria

In 2016 there were 651,233 employed residents of the 48 regional LGAs used to define metro-bound commuting in this thesis. Approximately 8 per cent, or 57,827, of these regional resident workers commuted to Melbourne as shown in Figure 21 on the following page. This is a 46 per cent increase over the comparable data for 2006, with metro-bound commuting growth of 56 per cent to Inner Melbourne, 30 per cent to Middle Melbourne and 49 per cent to Outer Melbourne. Metro-bound commuting represents 3 per cent of the total employment of 2.7 million in Melbourne. Metro-bound commuters comprised 3 per cent of the Inner Melbourne workforce, in line with the total proportion,

Outer Melbourne was higher at 4.2 per cent and Middle Melbourne lower at 1.7 per cent. The data excludes locations that under different geographic definitions would be included as regional residents, such as the Yarra Valley and Mornington Peninsula, as well as the City of Melton, where 76 per cent of the workforce commuted to Melbourne LGAs for work in 2016, including more than 12,000 to Inner Melbourne (Australian Bureau of Statistics 2016b).

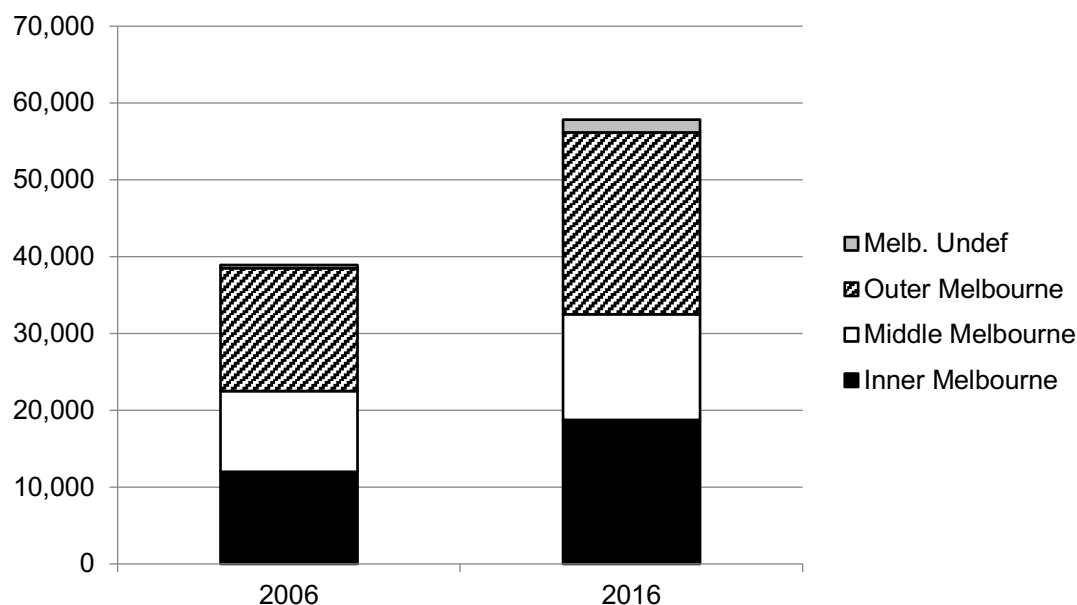


Figure 21: Number of metro-bound commuters by Place of Work, Victoria 2006-2016

Source: Australian Bureau of Statistics (2006b, 2016b), LGA place of work and place of usual residence

The different percentages for the three places of work indicate that accessibility and quality of employment opportunities are important factors in metro-bound commuting. Inner Melbourne is at the hub of the metropolitan rail and freeway networks is more accessible than Middle Melbourne for many commuters, and Outer Melbourne is by definition the most accessible from regional areas. There is a concentration of higher-income employment in Inner Melbourne, which is discussed further in Section 7.2.1.

6.2.2 Demographics

In comparison to the regional workforce, metro-bound commuters are more likely to be male, based on z-test analysis of the data in Table 10 on the following page, with a confidence of 95 per cent for the one-sided test. Also, the proportion of females commuting to Inner Melbourne is significantly

higher than for Middle and Outer Melbourne, also with a confidence of 95 per cent for the one-sided z-test.

Table 10: Metro-bound commuters by sex and place of work, 2016

Place of work	Male	Female	Total
Inner Melbourne	60%	40%	18,738
Middle Melbourne	63%	37%	13,754
Outer Melbourne	63%	37%	23,704
Total Metro-bound commuters	62%	38%	56,196
Regional Vic	50%	50%	540,890
Total	51%	49%	597,090

Source: Place of Usual Residence, Place of Work, Australian Bureau of Statistics (2016b)

z-test: $H_0: \%Males\ MBC = RegV.$ $Z=54.164, p<.00001.$ Reject $H_0,$ more males are MBCs

$H_0: \%Females\ Inner > Other\ MBC.$ $Z= -7.43, p<.00001.$ Reject $H_0,$ more females are Inner Melbourne commuters

The skew towards males may be related to the stage of life motivations for regional relocations, particularly the tendency for metro-bound commuting to be associated with growing families as discussed in the following section.

The difference between regional workers and metro-bound commuters is most prominent between the 25-29 and 50-54 years' brackets, as shown in Figure 22. The Inner Melbourne metro-bound commuters are more likely to be aged between 25 and 54 than the other place of work categorisations.

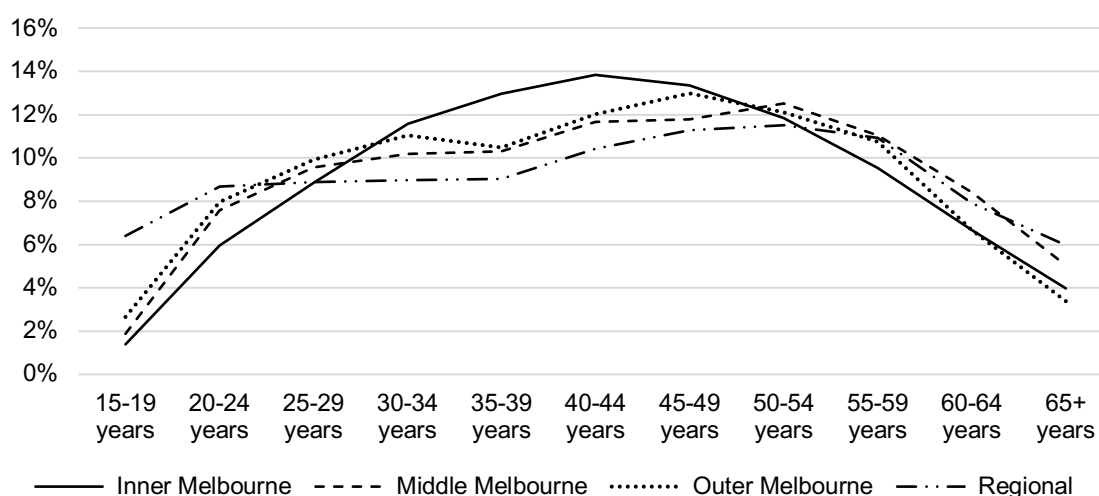


Figure 22: Metro-bound commuters by age and place of work, 2016

Source: LGA Place of Usual Residence, Place of Work, Australian Bureau of Statistics (2016b)

The implication is that metro-bound commuters are changing the demographic composition of the regional workforce, adding to the numbers of workers in the mid-career ages between 30 and 50 years of age in particular. Inner Melbourne commuters have the most distinct demographic distribution, indicating they are mitigating the ageing of regional populations and workforces more so than commuters to other areas within Melbourne.

6.2.3 Commuting households

The marital status of metro-bound commuters is similar to regional Victorian workers, as indicated in Table 11. The chi-squared analysis indicates that there is no relationship between place of work and marital status, that the propensity to be married, single or divorced is the same regardless of place of work.

Table 11: Marital status by place of work, 2016

Place of Work	Never married	Widowed	Divorced	Separated	Married
Inner Melbourne	32%	1%	8%	3%	56%
Middle Melbourne	33%	1%	9%	4%	52%
Outer Melbourne	33%	1%	9%	4%	53%
Regional Vic	35%	1%	8%	4%	52%
Total	34%	1%	8%	4%	52%

Source: MSTP, LGA Place of Usual Residence, Place of Work, Australian Bureau of Statistics (2016b).

chi-test: $X^2 = 311.1$, $DF = 12$, $P(X^2 < 311) = 1$, cannot accept null hypothesis, no relationship between place of work and marital status.

Figure 23, on the following page, compares the TISRP data for regional residents by place of work. The TISRP dataset provides the number of children ever born to females aged over 15 (Australian Bureau of Statistics 2016a). The chi-squared test indicates that the number of children is independent of place of work. Therefore, the implication is that females who work in regional areas are likely to have the same number of children as metro-bound commuters. This analysis is based on place of employment at the time of the 2016 census, therefore it does not capture women who may have left the workforce as a result of having children or the number of children born to the partners of metro-bound commuters.

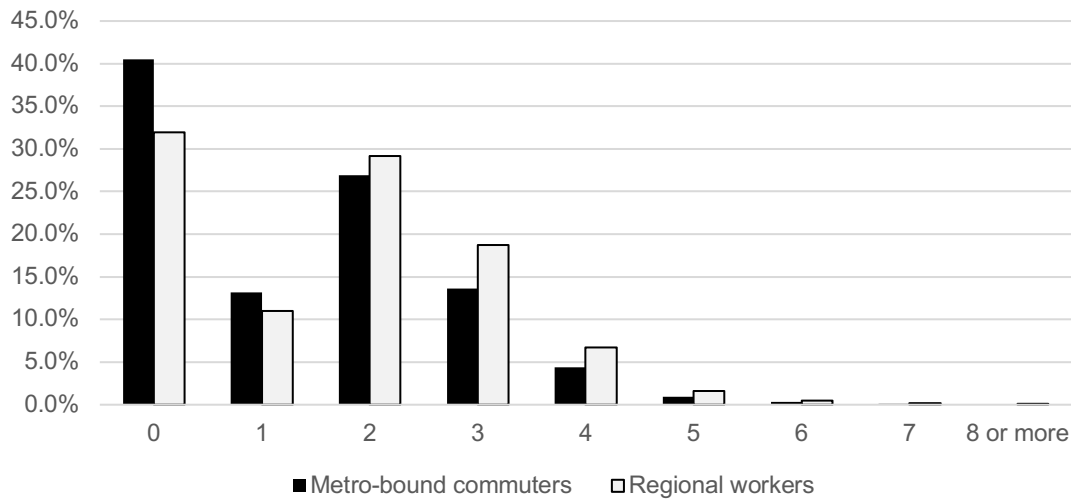


Figure 23: No. of children ever born by place of work, 2016

Source: Regional Victoria place of residence, TISRP Number of Children Ever Born (ranges), Australian Bureau of Statistics (2016b)

Chi-Squared statistics: $\chi^2 = 1090.5$, $DF = 10$, $P(\chi^2 < 1090.5) = 1$, cannot accept null hypothesis, no association between number of children and place of work.

The survey data on numbers of dependent children in metro-bound commuting households, as shown in Figure 24 gives some indication that household sizes increase over time. The data shows the proportion of no children households declines with commuting duration, while one-child households increases. The low number of *less than a year* responses prevents chi-squared tests for independence and reduces the confidence in the results.

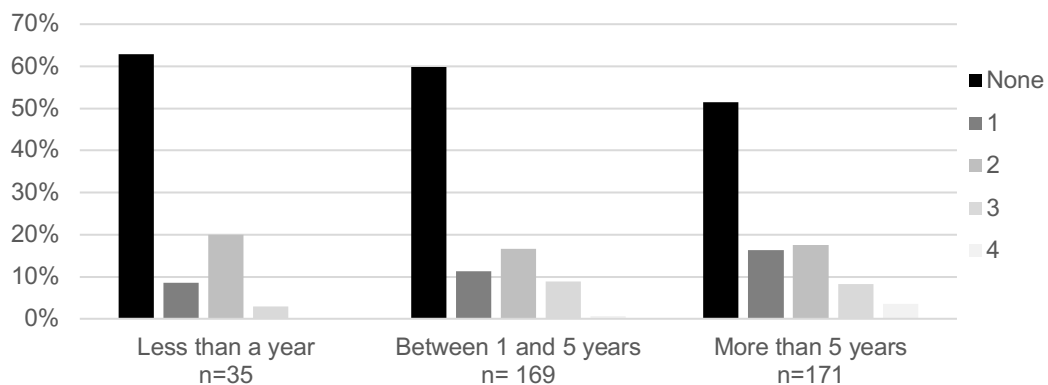


Figure 24: Number of dependent children

Source: Metro-bound commuting survey

While regional household sizes are the same regardless of place of work, the indication is that metro-bound commuting household sizes increase over time as the number of dependent children increases with the duration of commuting. This indicates commuters are relocating to start families or increase the family size: this can be seen as a reflection of the age differences between the commuting cohorts, particularly for Inner Melbourne commuters. Family considerations, including children, as a reason for counterurbanisation is discussed further in Section 6.3.1.1.

6.2.4 Summary

Metro-bound commuting increased between 2006 and 2016, particularly for commuters to Inner and Outer Melbourne places of work. This section also indicates that metro-bound commuters increase regional population and change the demographic composition of commutershed cities and towns. In particular, Inner Melbourne commuters are more likely to be aged between 30 and 50, indicating that they are in the prime of their working life and accords with the indication that family size increases with the duration of commuting.

6.3 Why Metro-bound Commute?

There are two ways people can become metro-bound commuters, either regional residents changing to metropolitan places of work, or metropolitan workers changing their place of residence. The proportion of metro-bound commuters as a result of residential or employment mobility has implications for transport policy in particular, as it indicates whether regional or metropolitan residents benefit as a result. If there is a greater propensity for residential relocation, it indicates that metropolitan workers are benefiting from greater access to regional housing markets. If metro-bound commuting is more likely to result from workplace mobility, then it indicates that regional residents are benefiting from access to more employment opportunities, which may also improve productivity through labour market sorting.

In comparison to Regional Victorian workers, metro-bound commuters were less likely to be living in the same place as five years ago, as shown in Table 12 over the page, Metro-bound commuters were particularly more likely to live *Elsewhere in Australia*, while Other Regional Victorian Residents were more likely to reside in the same place in 2011 as in 2016.

Table 12: Place of usual residence 5 years ago by place of work, 2016

UAI5P	Metro-bound Commuters		Other Regional Victorian Residents	
	No.	Share	No.	Share
Same as in 2016	27009	50%	670547	57%
Elsewhere in Australia	24789	46%	373157	32%
Overseas in 2011	1191	2%	21856	2%
Not stated	679	1%	108031	9%
Total	53668		1173591	

Source: Australian Bureau of Statistics (2016b), LGA place of usual residence, Melbourne SA2 place of work.

Chi-squared test for independence:

DF = 3 $X^2 = 7385.1$, $P(X^2 < 7385.1) = 0$, reject the null hypothesis, residential mobility is dependent on place of work.

An important qualifier of this data is that *Elsewhere in Australia* is not spatially delimited, in that it is a change not restricted by moving between settlements, LGAs, or States. Therefore, it does include shifts between houses within settlements as well as those relocating to regional areas to become metro-bound commuters.

The metro-bound commuter survey asked whether people became metro-bound commuters by changing their place of residence or place of work. That is, if metropolitan workers change their place of residence to regional areas, or if regional residents changed their place of work to a metropolitan location. The chi-squared test for independence indicates that the reasons for commencing commuting are not independent of the place of work. Table 13, on the following page, indicates that the majority of metro-bound commuters commenced by changing their place of residence to regional areas, indicating a response to housing rather than employment needs. The binomial exact calculation at 95 per cent confidence interval provides a confidence interval of between 60 per cent and 70 per cent. The chi-squared test for independence indicates that the reasons for commencing commuting are not independent of the place of work.

These two results provide strong indication that metro-bound commuting is more likely to commence due to regional relocation rather than beginning metropolitan employment.

Table 13: Reason for commencing metro-bound commuting

Place of work	Place of residence		Place of work		Total no.
	no.	Share	no.	Share	
Inner Melbourne	188	76%	95	24%	247
Other	59	63%	34	36%	94
Total	247	65%	129	35%	376

Source: Metro-bound commuter survey data

Confidence interval - Total: Lower bound = 60%, upper bound = 70%, confidence level 95%.

Chi-test: H_0 : Reason for metro-bound commuting is independent of place of work.

Degrees of freedom: 2, Chi-value = 0.2997, $P(X^2 < 0.2997) = 0.14$ therefore we cannot accept the null hypothesis.

6.3.1 Residential Relocation Decisions

The survey indicates that the main reasons for regional relocation were ‘Prefer the amenity or lifestyle’ and ‘Housing affordability’, with more than 75 per cent of respondents indicating that these were the main reason or somewhat important, as shown in Figure 25. For approximately 60 per cent of respondents, amenity reasons were the main factor in regional relocation.

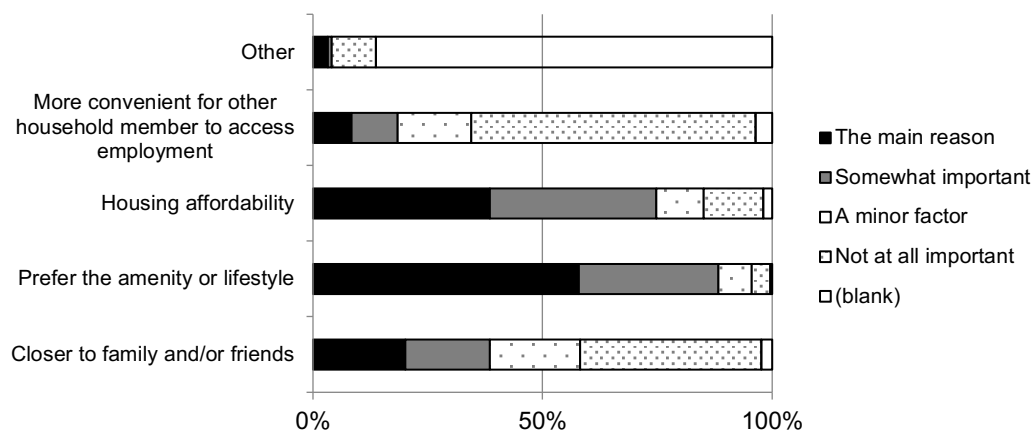


Figure 25: Reasons for regional relocation: survey data

Source: Metro-bound commuter survey data

There are also differences between the reason for relocation depending on whether the move was to a second city – Ballarat, Bendigo or Geelong – compared to other areas, as shown in Figure 26 on the following page. More than 30 per cent of respondents that moved to regional cities indicated that ‘Closer to friends and/or family’ was the main factor, compared to 13 per cent for other areas, which

is likely due to the greater numbers of potential friends and family in regional cities. While small, there is also a larger number of second city relocations that have occurred due to other family members' employment. Housing affordability was also more likely to be a motivation for second city relocations, 36 per cent to 42 per cent for other regional areas. The skew in the survey sample towards well-paid and Inner Melbourne workers may also explain the prevalence of lifestyle and amenity reasons for relocating, as it is likely that lower-paid workers would be more affected by housing affordability issues.

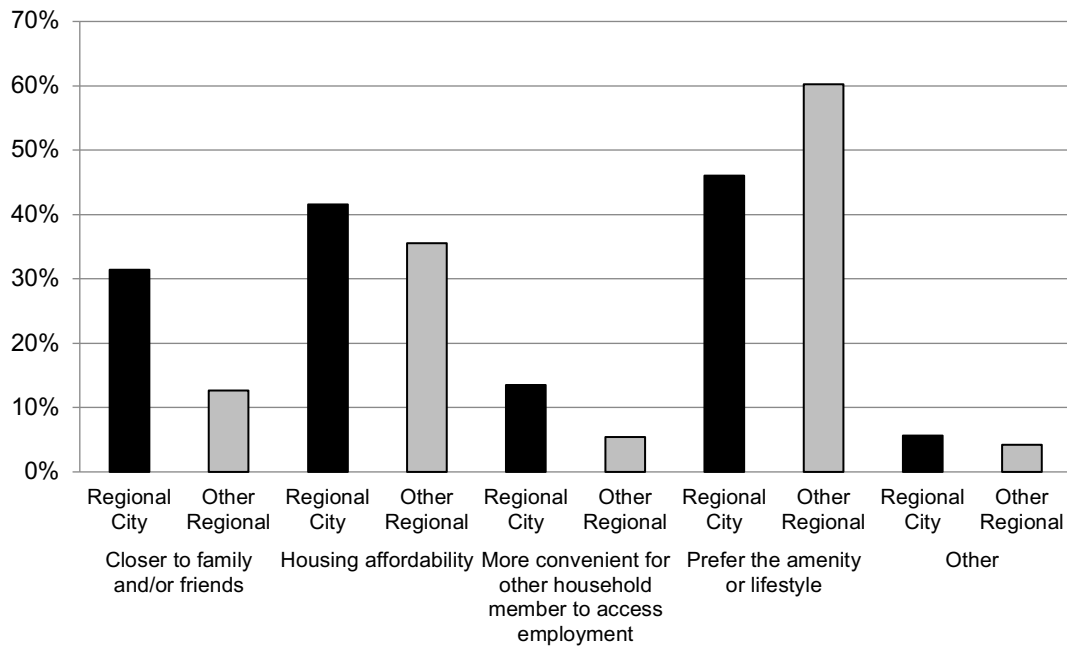


Figure 26: Main reason for relocation: second city v. other regional

Source: Metro-bound commuter survey data

Another notable difference is that 60 per cent of other regional relocators indicated that amenity reasons were the main factor in relocation, compared to 45 per cent for regional cities. This result supports the sea- and tree- change lifestyle choice discussions of recent years.

Further details of the factors in regional relocation decisions were discussed in the interviews. Two interviewees that had relocated to Ballarat indicated that part of the appeal was as a middle ground between metropolitan and rural living, providing essential services, affordability and the possibility of employment:

... it's big enough to have everything but small enough to get around easily. Affordable housing but still a choice of schools and all the other [...] it's a nice balance between the big and small I guess (Interviewee No.4).

You get the lifestyle and still get the access to everything within an hour. And in addition to that, it's just a good place to live and there's sufficient services that if you were to be there permanently for employment or whatever, there's enough options for me to do so ... it's like the cheap version of the best of Melbourne and there's hospitals and all the shops that you need. There's 3 Aldi's, there might be 4 now (Interviewee No.6).

Other interviews mentioned education facilities as important factors in regional cities. The importance of services in regional cities as a factor in residential decisions indicates that the cumulative effect of the concentration of activities in metropolitan areas has a similar impact in a regional context: that is, as service provision in regional areas is concentrated in the regional cities (Bureau of Infrastructure, Transport and Regional Economics 2014), they become more attractive residential locations. In contrast, a commuter who moved to a seaside location placed amenity reasons as a priority:

Proximity to the beach ... is the number 1 reason. We are both water sports people and our hobbies are completely surrounded by the beach, so when we were living in Melbourne, we were commuting to the lifestyle choices every weekend anyway (Interviewee No.8).

Interviewees who had relocated to inland areas also referred to aspects of the natural environment as central to the location's appeal: rolling hills, trees and nature in general.

As discussed in Section 2.3.2, regional relocations of metropolitan workers introduce the prospect of gentrification and the displacement of longer-term residents. Given this, the importance of perceptions that there were 'people like us' already in the communities in residential decisions is of note, as it is likely that it is previous metropolitan relocators are the 'people like us':

What appealed about [regional town] is that there is a large progressive element up here as well and that was, we didn't just want to move to any country town, there's a fair amount of like-minded individuals ... (Interviewee No.14).

And in reference to the same regional town:

There are a lot more people moving up here from Melbourne, making the change ... Even though we are 15 kms from [regional town] we are effectively a suburb of [regional town] for people who want a bit more land but have got the same mindset (Interviewee No.7).

Similarly, Interviewee No.2 said that they had not moved to the outer suburbs, as they "were not really our kind of people" and had relocated to a regional settlement with a rail service to Melbourne. This implies cumulative causation because as metropolitan relocators increase, regional settlements then become more appealing to other metropolitan residents.

6.3.1.1 Families and Commuting Decisions

The interviews also provided insights into the metro-bound commuting and stages of life, such as moving to the country while planning for families or about to have children, as well as moving home to care for sick or elderly parents. For example, Interviewee 14 had relocated to a town as his wife was nearing giving birth to their first child, as well as to be closer to her father, and Interviewee 12 had returned to their hometown to help care for a sick parent. An explanation for the higher proportion of *less than a year* households with two children, as shown in Figure 24 on page 131, was presented the interviews. Several respondents said that the second child provided the impetus for relocating due to the preference for the larger housing units on offer in regional Victoria, particularly in comparison to the metropolitan housing of commensurate cost.

An interviewee who started a business in regional Victoria after commuting for several years highlighted the desire to start a family as part of their decision to stop commuting:

I was at that stage that I wanted to go off and have a family, so I knew that I had to change, something had to change. We started looking at real estate in Melbourne, so we felt that if we were going up to Melbourne it would have to be on this side ... I couldn't imagine myself living in the city with no great space around me, not having a big area of land, in that apartment or in a small area didn't appeal to me [Interviewee 5b].

Interviewee No.2 relocated to regional Victoria shortly after the arrival of twins, so understandably “number one was more space” than what they could afford in the area of Melbourne they were living in.

A motivation for moving to regional areas is that children have a better, or at least different, experience of childhood:

We planted 25,000 native trees on two properties as a sort of environmental project. I was keen for my children to have that experience and be part of that tree-changing and non-urban life was the original driver for going into the country (Interviewee 15).

And,

My wife and I lived in Melbourne up until 8 months ago, we own a house there and got a couple of kids, were living in the city and we were commuting in to the CBD every day for work and our kids were commuting on the train with us to go to day care, it was just wearing us all down and it wasn't the sort of life we imagined our kids having. When we were at home, they couldn't really play on the streets outside, that's the life we'd led as kids, so we started thinking maybe there is a better way. We were down at [place of residence] visiting

some friends and sort of looked around, liked the look of the place and basically dared each other to move down here (Interviewee 17).

While this notion of better childhoods is reflected in other interviews, some noted that they do not see their children during the week and that it had shifted the division of responsibilities in the household.

We've gained a lifestyle, but it has come at a price and there is a lot more pressure on the family dynamic. So the first two years my wife wasn't working and that was a conscious decision while we settled in ok, and we had the best of the lifestyle and we could accommodate that. That was definitely a factor in us moving down there, going back down to a single salary so that was all factored in from a cost perspective, but what were the benefits from that. Now that [partner] is back at work, it's part-time and works in to that, there is a lot more obligation on her to manage that family because I'm not around, I'm around less (Interviewee 18).

The direction of relocations also indicates a preference to move towards other family members, which was associated with either the arrival of children or the need to care for ageing parents. That is respondents generally moved out of Melbourne towards where they have family living in more remote regional areas, while another two had returned to Geelong due to responsibilities in caring for unwell parents.

6.3.2 Finding Metropolitan Work

The most prominent factor in people commencing metro-bound commuting by finding metropolitan work is that their work does not exist in regional areas, at 53 per cent of survey respondents. In total, 80 per cent of respondents indicated that this was either the main reason or somewhat important, and 68 per cent indicated that the better pay and conditions on offer in metropolitan work was their main reason or it was somewhat important in their decision to metro-bound commute, as depicted in Figure 27.

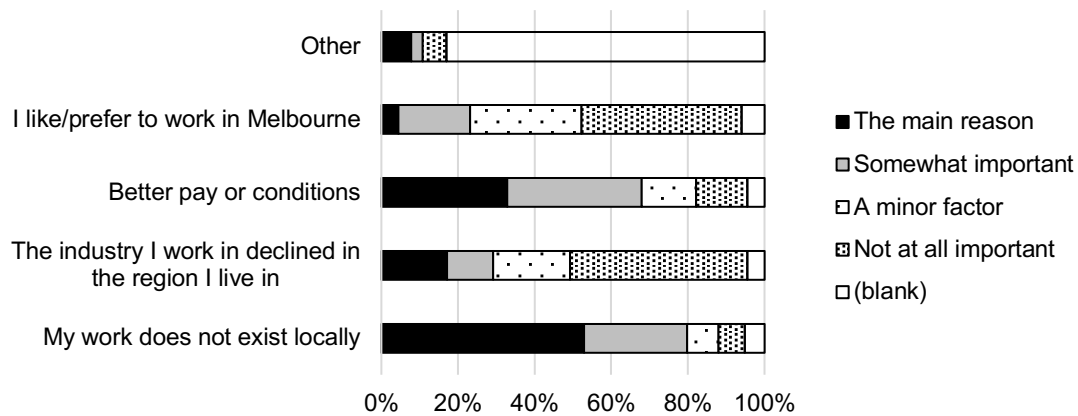


Figure 27: Reasons for metropolitan employment: survey data

Source: Metro-bound commuter survey data

In addition, 14 of 17 ‘other’ responses were related to the differences in employment and opportunity between metropolitan and regional areas. This included ‘professional opportunity’, ‘more interesting work’, ‘professional development opportunities with working in Melbourne’ and in two instances a new role with their employer led to a change in place of work. These results indicate the impact of the metropolitan tilt as discussed in Section 3.2: good employment opportunities are concentrating in the metropolitan areas.

The result that only 19 per cent of metro-bound commuters reported that ‘I like/prefer to work in Melbourne’ as the main reason is also of interest, as it indicates that if employment opportunities were to arise in regional areas, then it is likely that metro-bound commuters would apply. Therefore, metro-bound commuters are deepening regional labour markets and increasing the human capital available to regional employers.

The importance of ‘My work does not exist locally’ and ‘Better pay and conditions’ for regional cities and other settlements, and for Managers and Professionals and Other respondents is shown in Figure 28. For those who responded that ‘My work doesn’t exist locally’, the implication is that they have never worked in regional areas, or it is possible that they worked elsewhere, but not locally. While the results are similar, and account for at least 80 per cent of responses in each case, there is an indication that fewer second city residents commute to Melbourne because their work does not exist locally. The results for Managers and Professionals are similar in that the majority of responses were that the main reason for commuting were ‘My work does not exist locally’ and ‘Better pay and conditions’. These results both indicate a settlement hierarchy, as they are somewhat more likely to provide suitable employment and conditions than smaller settlements.

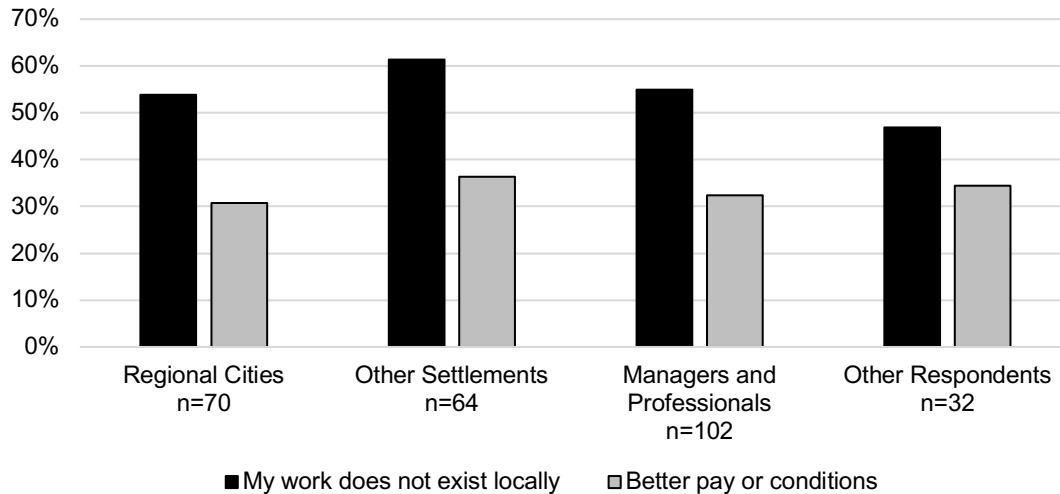


Figure 28: Main reason for finding metropolitan work - employment factors

Source: Metro-bound commuter survey data

The interviews support the conclusion that the main factors in employment-based decisions to commute are a result of the metropolitan tilt. Interviewee No.9's work moved to Melbourne as service delivery contracts were consolidated and centralised. For Interviewee No.6, opportunities and promotions have meant that her work has moved to Melbourne, even though her employer has a presence across regional Victoria:

For the stream that I'm sort of in, I have to be in Melbourne because it's in corporate governance, so we do policies and procedures and I often, or internal audit, you have to be available for meetings face-to-face, we do some via skype, but a lot of people still like to meet face to face rather than over the phone, so for that reason I need to be around (Interviewee No.6).

For Interviewee 5b, commuting to Melbourne's Collins Street business hub was essential for career development:

So for me to go up in the chain and further up the corporate chain I really didn't have a choice. I was working back in [residence] at the time, so for career progression, for me to go that next level of management there was nothing in [residence] ... I didn't really have a choice (Interviewee No. 5b).

Therefore, regional residents' decisions to metro-bound commute are related to the distribution of employment and opportunity within city-regions. The predominance of the 'My work does not exist locally' and 'Better pay and conditions' supports the metropolitan tilt argument, as well as the

conjecture that the problem is not that the primary city is too large, but the regional cities are not large enough to support the specialised economic activity that provides much of the high-quality employment in contemporary economies.

6.3.2.1 Why Aren't There More Regional Resident Metro-bound Commuters?

As metro-bound commuting is predominantly a result of metropolitan residents moving to the country, the subsequent question is why aren't more regional residents accessing metropolitan employment? Two hypotheses are provided here: the first is related to what regional residence may consider an acceptable amount of time spent commuting, and the second relates to the geographic distribution of industries and employment types.

Metropolitan workers are already spending longer times commuting than regional workers (Melbourne Institute 2019), and interviewees indicated that their commute from regional areas was shorter than some of their colleagues living in the outer suburbs of Melbourne. Therefore, it is likely that the prospect of travelling more than an hour to work - as is the case for many metro-bound commuters - is more likely to be within what a metropolitan worker considers normal or acceptable than regional workers.

The second hypothesis is that for many regional residents there is no benefit in travelling to primary cities to find work. The research that connects commuting distance to work specialisation (Hazans 2004; Manning 2003; Sandow & Westin 2010; Vega et al. 2016), as well as income (Carra et al. 2016; Johansson et al. 2003; Manning 2003; Ruppert et al. 2009; Shen 2000; Wang & Hu 2017) provides the basis for the argument that regional residents do not take up metropolitan employment opportunities. To gain employment in the knowledge sector jobs that pay well enough to justify the additional travel, regional applicants are competing against metropolitan workers that have experience in the highly specialised central city environment. This distinction was evident in interviews, where metro-bound commuters employed as foreign transaction accountants, legal advisors on large property acquisitions and IT system architects indicated that their work did not exist in regional areas. Interviewees from the private sector also suggested that working in the city was important for career development, that it enabled a depth of experience and network development that was not available in regional areas. The opposite experience was offered by one interviewee from the public sector, who considered the level of management experience gained in regional employment enabled him to 'leap-frog' contemporaries who had remained in the city. Also, for workers in geographically distributed and regionally prominent employment sectors such as retail, education and health, there is likely to be acceptable work nearby and as such, any advantage in travelling longer distances to metropolitan employment is not likely to outweigh the additional costs of commuting.

6.3.3 Summary

This section has explored the different reasons people commence metro-bound commuting. An important outcome from the analysis is that metro-bound commuting is more likely to be a result of counterurbanisation than regional residents finding metropolitan-based work. This finding suggests that investments in improved transport services connecting metropolitan and regional areas are of more direct benefit to those in metropolitan housing markets than the regional job-seekers. This is offset by the regional employment benefits from counterurbanisation, which are discussed in the next chapter.

The survey results indicate that for counterurbanisers, amenity was a more important consideration than housing affordability; it is likely a result of what type of housing can be purchased at similar costs rather than being priced out of metropolitan markets. This observation is more pertinent to the more highly-paid Inner Melbourne workers due to the survey sample skew. The interviewees also provided further support for the relationship between metro-bound commuting, regional relocation and increasing family sizes. For those who began commuting by finding metropolitan work, the data supports the metropolitan tilt notion as respondents indicated that their work did not exist locally, or that there were better pay and conditions on offer in the primary city.

6.4 Places of Residence, Place of Work and the Commute

This section investigates the spatial distribution of metro-bound commuters' places of residence and places of work, and how they travel between the two. The analysis provides insights into the relationships between metro-bound commuting and regional locality populations, factors that affect metro-bound commuters' places of work and the implications of those spatialities on transport mode choices.

6.4.1 Places of Residence

In the study region, metro-bound commuters mainly reside to the west of Melbourne, as shown in Figure 29. The central business area of Melbourne, referred to as Inner Melbourne in this thesis, is closer to the western limits of the city than the east and south east, which is apparent in Figure 29 on the following page.

Melton, in the darkest red, had the most resident metro-bound commuters with 13,507, which represented 65 per cent of the resident workforce in the urban centre and as noted previously indicates that it can be considered a suburb, even if there is not a concrete definition of what constitutes one (Forsyth 2012). A similar process has occurred in Sunbury, where the 10,152 metro-bound commuters

represented 62 per cent of the resident workforce. Of the urban centres that have remained distinct from Melbourne, Geelong had the most metro-bound commuters with 8,669, which was 13 per cent of the city's resident workforce. Commuters from the urban centres to the west are likely to be taking less time to reach Inner Melbourne places of work than those from eastern parts of the city: for example, the train service takes approximately 40 minutes from Melton to the central city, in comparison to an hour and a half from Frankston, a seaside suburb in Melbourne's southeast. Another factor is that the nine largest non-metropolitan urban centres in Victoria are to the west of Melbourne, indicating that there is likely to be more commuters by weight of numbers.

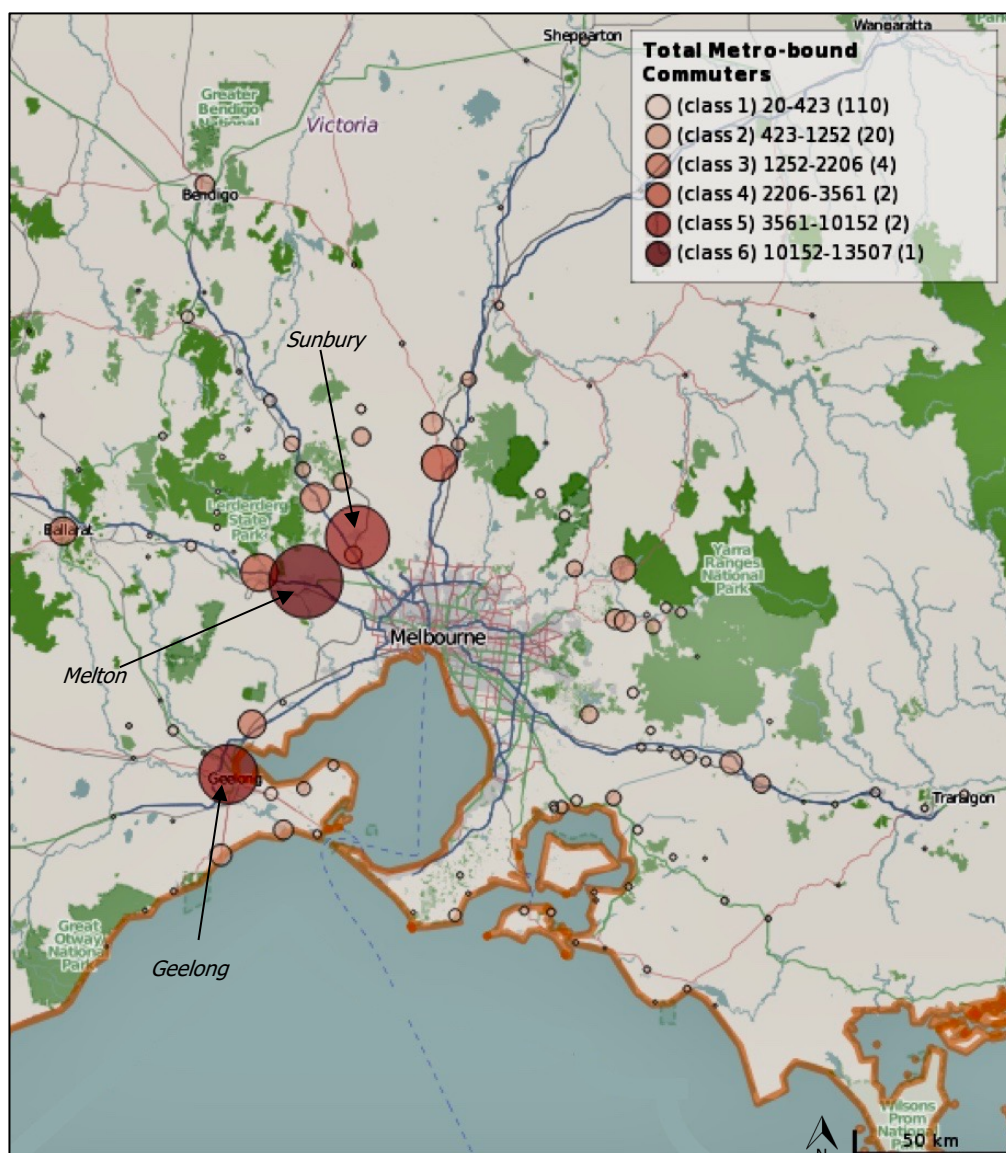


Figure 29: Metro-bound commuters place of residence, Urban Centre/Locality 2016

Source: Australian Bureau of Statistics (2016b), Melbourne SA2 definition. © OpenStreetMap contributors, accessed from AURIN Portal, aurin.org.au.

6.4.2 Places of Work

The places that metro-bound commuters work are quite concentrated within Melbourne, as shown in Figure 30. The main locations are the Inner Melbourne region, and the outer suburban employment nodes at Dandenong in the city's south east, the airport and manufacturing hub in the north east and Laverton to the west of the city. Other than these four regions, metro-bound commuting is dispersed through the city.

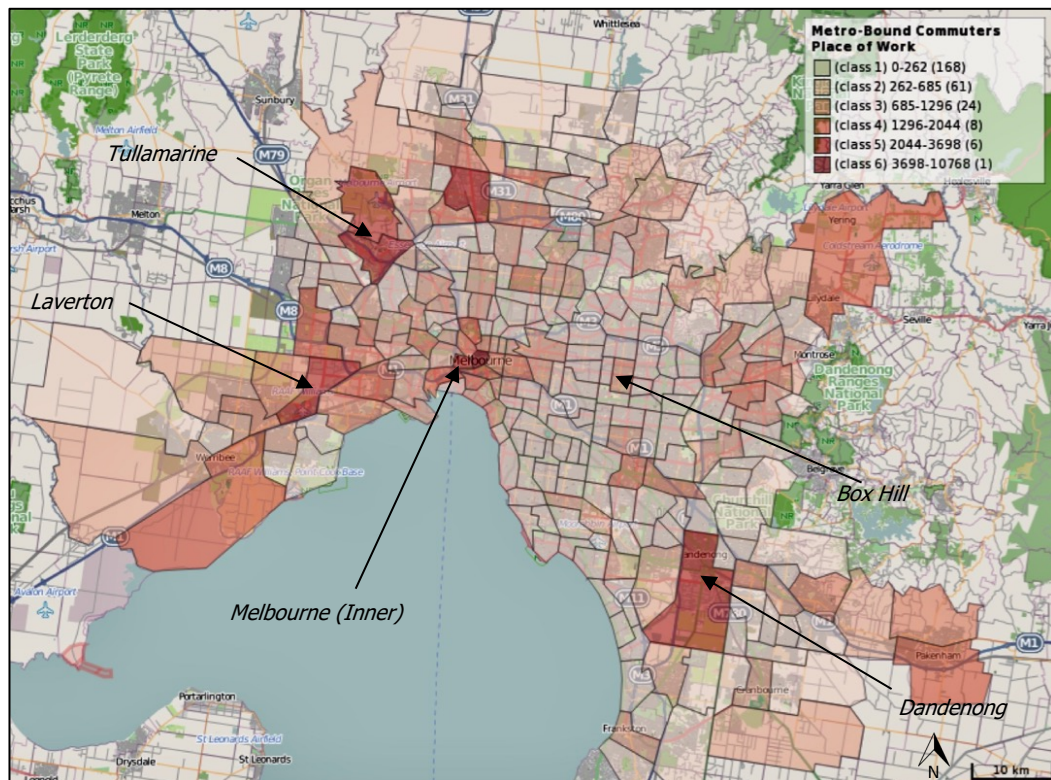


Figure 30: Metro-bound commuters' place of work - SA2, 2016

Source: Australian Bureau of Statistics (2016b), UC/L workers' place of residence. © OpenStreetMap contributors, accessed from AURIN Portal, aurin.org.au.

The implication is that accessibility from larger regional population centres is an important factor in metro-bound commuting. This is demonstrated by the proportions of shallow commuting to the outer suburban workplaces, or to the central transport network hub in the inner city where commuters can alight from regional train services with ready access to employment hubs or metropolitan public transport networks, as shown by the data in Table 14. The transport patterns are explored further in Section 6.4.3.

Table 14: Share of metro-bound commuters by top 20 place of work SA2s - 2016

SA2	Region	Metro-Bound Commuters	Total Workers	Share
Melbourne	Inner	10768	219809	5%
Dandenong	Outer	3205	65390	5%
Docklands	Inner	3698	57256	6%
Southbank	Inner	1873	38416	5%
<i>Richmond</i>	<i>Middle</i>	1236	36576	3%
<i>Clayton</i>	<i>Middle</i>	1060	34025	3%
Parkville	Inner	1661	28088	6%
<i>South Melbourne</i>	<i>Middle</i>	1242	25820	5%
Campbellfield - Coolaroo	Outer	2949	22954	13%
Port Melbourne Industrial	Middle	2044	22541	9%
<i>Mulgrave</i>	<i>Middle</i>	731	20958	3%
East Melbourne	Inner	1141	19800	6%
Laverton	Outer	3252	19207	17%
<i>Box Hill</i>	<i>Middle</i>	463	18918	2%
Keilor	Outer	2970	17424	17%
<i>Preston - East</i>	<i>Middle</i>	749	16865	4%
<i>Albert Park</i>	<i>Middle</i>	627	16383	4%
<i>South Yarra - West</i>	<i>Middle</i>	506	15883	3%
Melbourne Airport	Outer	2827	15835	18%
Carlton	Inner	762	15562	5%

Source: Australian Bureau of Statistics (2016b), SA2 place of work.

A further explanation for the lower concentration of workers commuting to Middle Melbourne places of work is that the employment on offer is similar to that on offer in regional Victoria, as indicated in Figure 31 on the following page. The Melbourne City SA3, which is the centre of the city, has employment strengths in *Finance and Insurance Services*, and *Professional, Scientific and Technical Services*, and Outer Melbourne indicative SA3 of Dandenong has more than 20% of employment in Manufacturing. While Geelong, representative of a regional SA3, had *Manufacturing* and *Retail Trade* as employment strengths in the 2016 data, the other major areas of employment are similar to those of the Middle Melbourne indicative SA3 of Whitehorse – West, which includes Box Hill: *Education and Training* and *Health Care and Social Assistance*.

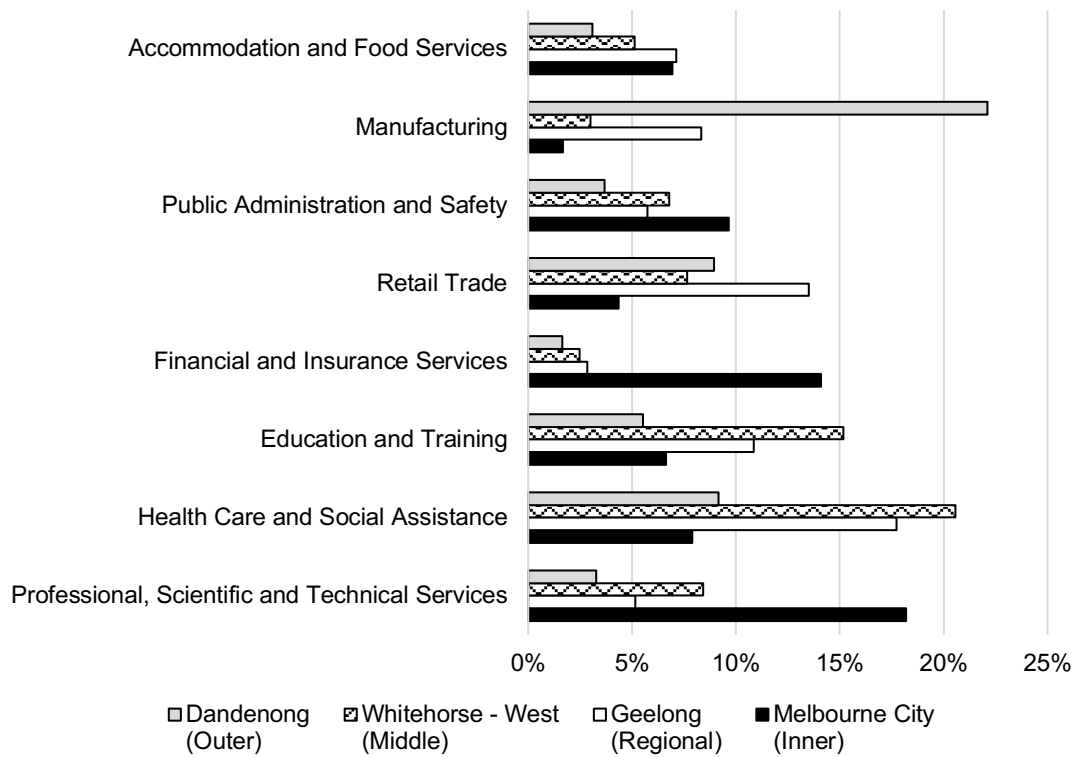


Figure 31: Employment by major industry, indicative SA3s 2016

Sources: Australian Bureau of Statistics (2016b).

Therefore, in addition to accessibility and concentrations of employment, metro-bound commuters tend to work in locations that offer different types of employment than available in regional areas. While manufacturing is also present in places such as Geelong, further analysis of the commuting to work in places such as Tullamarine and Dandenong indicates that the journeys to work to these commutes are from nearby settlements, as discussed further in the following section.

6.4.3 Journey to Work

The distance of the journey to work by metro-bound commuters varies by the place of work, as shown in Figure 32. Outer Melbourne commuters have the shortest journeys to work, indicative of shallow commuting from nearby settlements. This recalls the process of previously distinct settlements merging into the metropolitan area as described by Taylor and Pain (2007).

It would be expected that Inner Melbourne commuters would travel the furthest to their place of work. However, Middle Melbourne metro-bound commuters travel the furthest to work on average. Therefore, they either live further out of the city than Inner Melbourne commuters or the distribution of their places of work and residence mean that they are travelling through the inner city on the commute.



Figure 32: Commute distance by place of work – 2016

Source: Australian Bureau of Statistics (2016b), Melbourne Place of Work SA2s, LGA Regional Residence, DTWP distance to work indicator, level 3.

Figure 33, on the following page, provides further insight into commuting distances by place of work by depicting the Urban Centre/Localities of metro-bound commuters for the Middle Melbourne SA3 of Boroondara. The majority of metro-bound commuting workers of Boroondara are commuting through the inner city from places west of Melbourne such as Geelong, Melton and Sunbury, as suggested by the data in Figure 32 on the following page.

Middle Melbourne commuters to travel further than other metro-bound commuters, and to a more widely distributed range of employment locations. Therefore, it is likely that this cohort of metro-bound commuters is the least efficient from a transport point of view, which is compounded by their propensity to drive to work as discussed in the following section.

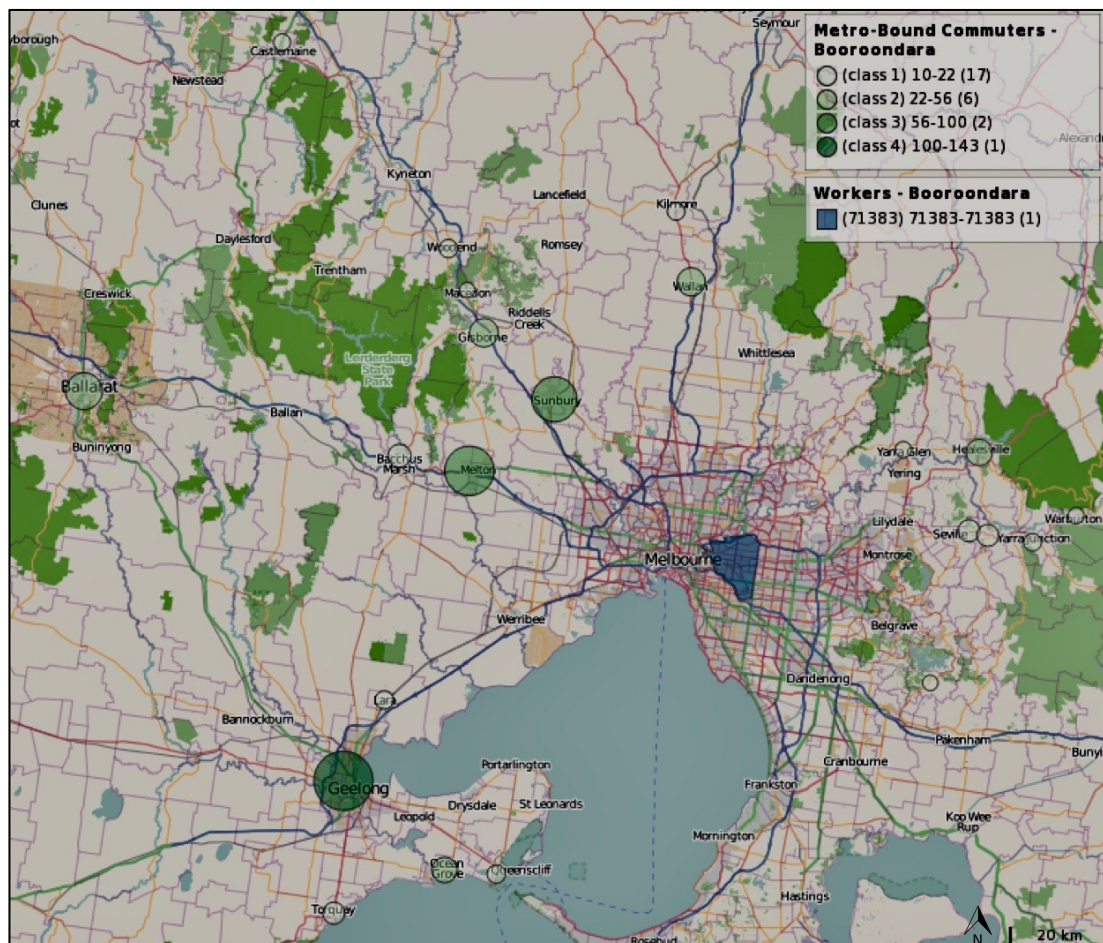


Figure 33: Boroondara SA3 workers' place of residence, 2016

Source: Australian Bureau of Statistics (2016b), © OpenStreetMap contributors, accessed from AURIN Portal, aurin.org.au.

6.4.3.1 Method of Travel

Private vehicle transport was the most common form of transport for metro-bound commuters, with 67 per cent using some form of vehicle to travel to work, as shown in Figure 34 on the following page. Most notable is the higher proportion of Inner Melbourne workers that use public transport at 52 per cent, compared with 11 per cent for Middle Melbourne and just 2 per cent for Outer Melbourne. There was little variance between the proportion of metro-bound commuters who worked from home, ranging from 11 per cent for Outer Melbourne workers to 15 per cent for Inner Melbourne workers.

The census is held on Tuesday, and as there is a tendency for people to work from home on Mondays or Fridays it is likely that there is a greater proportion across the working week than indicated by the census.

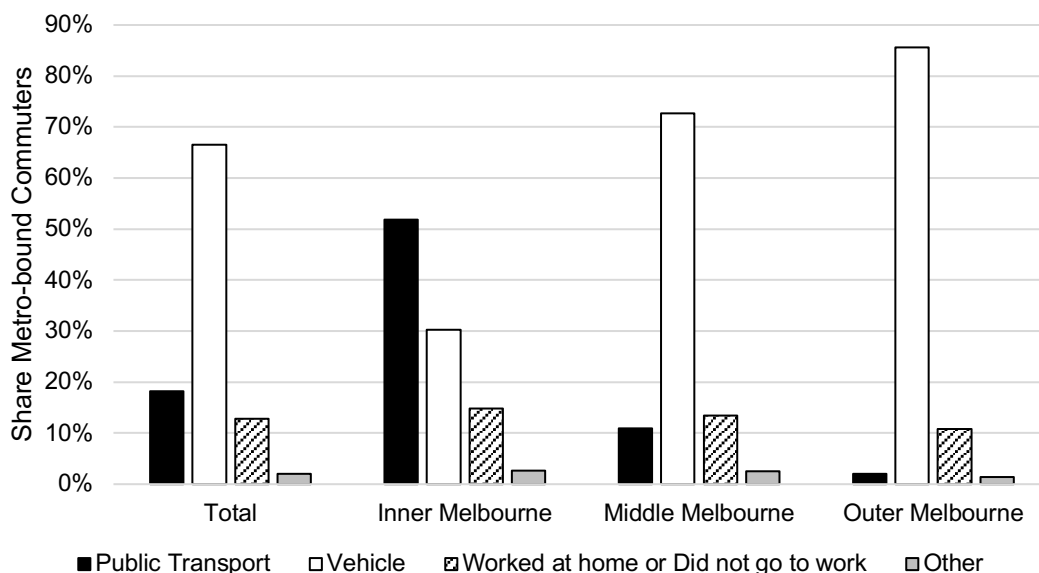


Figure 34: Transport mode of commute by place of work – 2016

Source: Source: Australian Bureau of Statistics (2016b), Melbourne Place of Work SA2s, LGA Regional Residence, MTW06P Method of Travel to Work.

The data presented in this section indicates that public transport improvements are likely to promote metro-bound commuting to Inner Melbourne place of work, as commuting to Middle and Outer Melbourne is predominantly by car, and the interviews suggest that it is unlikely that people will change transport mode. Important factors for the higher use of public transport to Inner Melbourne employment locations are the quality of services to the Inner City and the density of employment around the stops, and the usefulness of travel time for some Inner Melbourne workers. It is also likely that transport preferences are a result of the types of work undertaken in different locations. As discussed in Section 7.3.1, Middle and Outer Melbourne workers are more likely to be employed in sectors such as *Manufacturing, Transport, Postal and Warehousing, Construction and Health Care and Social Assistance*. These sectors are likely to have higher rates of shift work and commute outside of peak public transport service times, have requirements to travel during the working day, and also the requirements to either be mobile or to carry heavy equipment to and from work.

6.4.3.2 Transport Demand Models

The proportion of metro-bound commuters within the resident workforces by urban centre locality can be expected to decline with the travel time to the place of work. Based on this assumption, this section of the thesis simple transport demand models for metro-bound commuters who use public transport and private vehicle are analysed to indicate travel time elasticities.

Public Transport

Figure 35 plots the percentage of metro-bound commuters within the resident workforces by urban centre of residence. The data is restricted to place of work within the Inner Melbourne SA3, places of residence with more than 20 metro-bound commuters and that also have a train station, and have been categorised as using public transport in the 2016 census. More than 75 per cent of public transport using metro-bound commuters work in Inner Melbourne, indicating that simplifying the analysis by restricting the sample to inner city workers provides a sound basis for analysis. Travel times are based on an 8:30am on a Monday morning arrival by train at Southern Cross Station, the main regional point of departure from the regional services in central Melbourne.

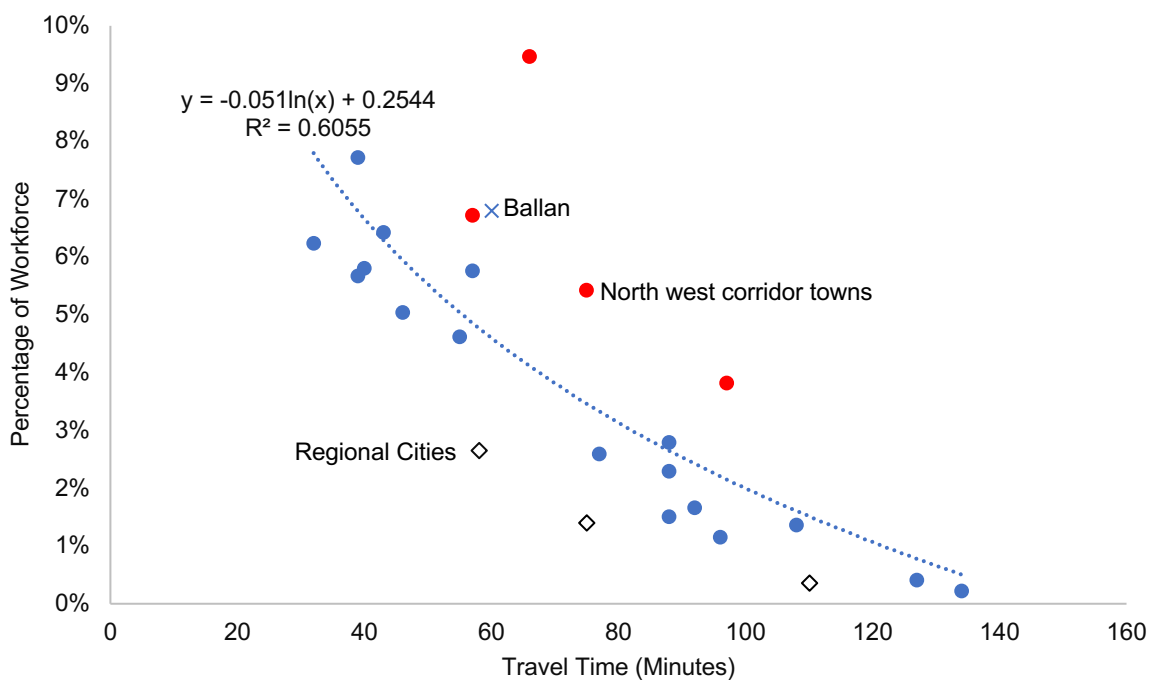


Figure 35: Travel Demand Model, Public Transport

Source: Australian Bureau of Statistics (2016b), Inner Melbourne SA3 place of work, UCL place of residence, MTW06P Method of Travel to Work – Public Transport.

The plot indicates a log-linear distance decay function, which is to be expected as public transport usage should decline with distance without becoming negative. This is supported by the log-linear trend line applied to the data, as the R-squared value indicates that the simple model explains 60 per cent of the variation in the data, indicating reasonable explanatory power for a simple model. The model indicates that public transport using metro-bound commuters declines by 5 per cent for each additional 10 minutes of travel time. Also of note is that the four data points in red are on the line between Melbourne and Bendigo: from top to bottom Woodend, Gisborne, Kyneton and Castlemaine. This indicating that towns on this service have an additional appeal to train-travelling metro-bound commuters, possibly amenity based on the survey results reported in Section 6.3.1. Ballan, on the Ballarat line, is the other outlier marked with a cross. It is also of note that the three regional centres are below the curve. The three diamonds represent Geelong, Ballarat and Bendigo as read from top to bottom of the figure.

Vehicle Transport

People who travelled by private car either as driver or passenger, truck or motorcycle were classified as using vehicle transport as their mode of travel to work in the 2016 census. Vehicle commuters travel to a wider range of employment destinations in Melbourne. Therefore to calculate elasticities of demand based on travel times requires a more complex method than that applied to public transport above. As the primary concern is the change in transport demand with the improvement to regional travel times by road, the travel times for each urban centre are calculated by the time taken to arrive at a major freeway or tollway intersection within Melbourne by 8:30 am on a Monday morning, using travel time data from Google Maps. The intersections used in the analysis were:

- For Geelong and the south west of Melbourne, the interchange between the Princes Freeway and the Western Ring Road in Laverton North.
- For Ballarat and the west of Melbourne the interchange between the Western Highway and the Western Ring Road in Derrimut.
- For Bendigo and the north west of Melbourne, the interchange between the Hume Freeway and Western Ring Road in Thomastown.
- For Healesville, in the north east, the interchange between the Maroondah Highway and East Link tollway at Ringwood.
- For the eastern regional areas, the connection of the Monash Freeway and East Link tollway at Dandenong North.

As with the public transport model above, on urban centres with more than 20 metro-bound commuters who were recorded as commuting by vehicles in the 2016 census were included in the analysis.

The vehicle travel time data depicted in Figure 36 also indicates a log-linear relationship. The R-squared value indicates the model explains 68 per cent in the variation in data, indicating reasonable explanatory power for a simple model as for the public transport example. The model indicates a 10 minute increase in travel time corresponds to an approximately 3 per cent reduction in the share of vehicle-using metro-bound commuters in the resident workforce.

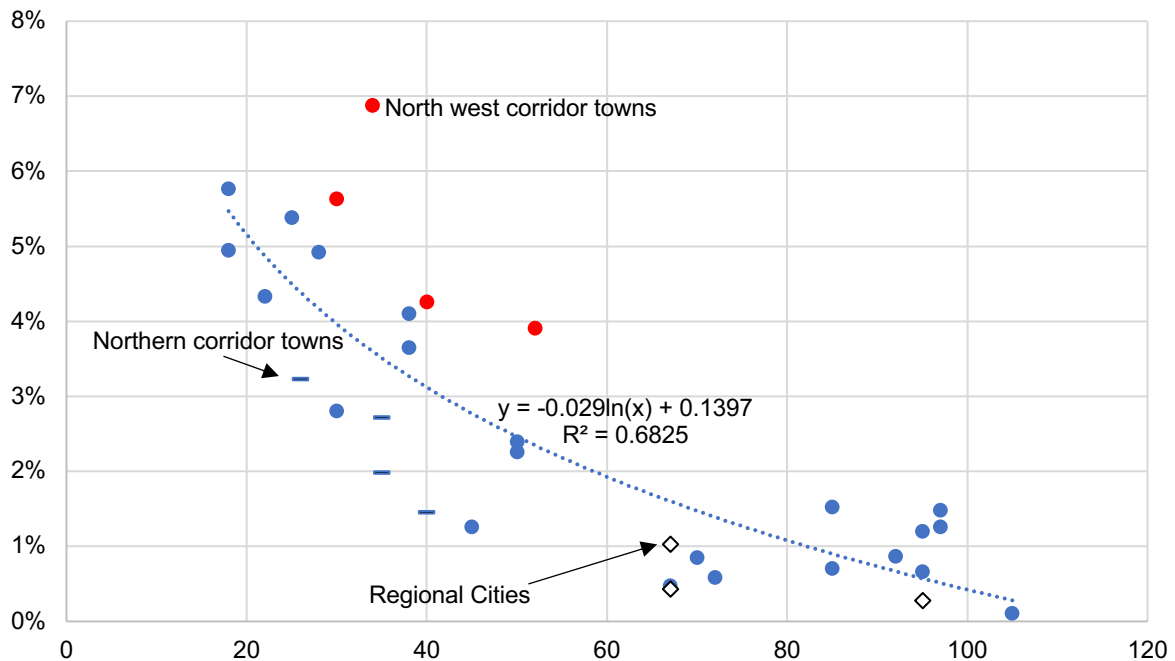


Figure 36: Travel Demand Model, Vehicle Transport

Source: Australian Bureau of Statistics (2016b), Metropolitan LGA place of work, UCL place of residence, MTW06P Method of Travel to Work – Vehicle.

As with the public transport model, four urban centres to the northwest of Melbourne were above the curve: Macedon, Gisborne, Woodend and Lancefield are marked in red, top to bottom. The four crosses are north of the metropolitan area: Wallan, Kilmore, Wandong-Heathcote Junction and Broadford also top to bottom. These two clusters of positive and negative bias by location in the results may be due to the use of the major road interchange points to determine travel time, That is, the northern point of the Hume Freeway-Western Ring Road interchange being further from places of work on average while the north west point of the Calder Freeway-Western Ring Road interchange closer on average. As with the public transport model, the three regional cities of Geelong, Ballarat and Bendigo are marked with diamonds, and all three are below the estimated curve.

Discussion

The simple transport demand models resulted in indications of reduced demand as travel time increases: 5 per cent of the resident workforce for public transport and 3 per cent for vehicle travel. This indicates greater regional relocations may result from improving public transport services, rail in particular, than in improving intra-regional road networks.

The models also indicate spatial clustering, that there is a greater percentage of the workforce commuting by public transport and vehicles along the transport spine to the northwest, and lower in the regional cities. The settlements to the northwest, along the Bendigo corridor, may have additional amenity appeal, as indicated by the survey results in 6.3.1. Urban hierarchies may explain the lower propensity for commuting in the model for regional cities, as a proportion of the workforce will be employed in roles that provide goods and services to their surrounding settlements and thus inflating the regional city workforce in comparison to other settlements.

This insight, along with the locations discussed in the paragraph above, indicate that the elasticities are not uniform, as has been contended for agglomeration elasticities (see Melo et al. 2009). Travel demand models such as those above cannot provide insights into the regional development outcomes of transport improvements, as it does not include measures of the extent of growth as a result of improved transport infrastructure, it is a static model of workforce share. To understand the elasticities of regional rail and road improvements on population and employment growth, panel data analysis of changes to travel time, metro-bound commuters, employment and population is required, which is beyond the scope of this research. Also of note is that calculations of elasticities of existing regional systems are unlikely to provide insights into the outcomes of regional high speed rail programs discussed in 4.3.2 and further in Section 8.3.3, given the significant change to travel times and the expectation that a substantial proportion of the patronage will be generated from new residents to the regional areas serviced.

6.4.3.3 Transport Mode Preferences

The interviewees indicated strong preferences for their chosen mode of travel, and in cases where train works had meant that they had to drive or take a bus, they had found the experience to be more stressful and tiring. Those who drove said they did so mainly due to it was substantially quicker than public transport, which was particularly the case for those working outside of the inner city. Another key point from the interviews in this regard is that those who commuted by train were likely to have factored the service into their housing decisions.

Train travellers reported the usefulness of the time on the train, for example:

I find I'm very productive, in a weird way I really enjoy it. It's down time, I put the headphones on, I get through my emails, I read reports, its productive time. My day starts when I get on that train ... I always thought I wouldn't enjoy it, a real downer, actually I quite enjoy it, I find it really productive and beneficial. I find that I'm better organised because of the commute, you have that two hours a day just getting no distractions or anything like that (Interviewee No.18).

The flexibility of car travel was particularly important for people in work that may have demands to remain at work for longer or different than expected hours, particularly due to the reduced frequency of train services later in the evening.

I love the flexibility of having the car. I can come and go as I please, I'm not reliant on the timetable (Interviewee No.5).

Drivers referred to using the time to listen to podcasts or make calls to family and friends, and prefer spending time in their own space, rather than with others in public transport:

But in terms of the actual commute I listen to podcasts, I don't mind the commute I'm comfortable in my own company (Interviewee No.8).

Another issue is the journey to the workplace once alighting from the regional train service, as Interviewee No.7 who worked in Carlton explained that driving to work was faster as:

I'd have to get off at North Melbourne, and from North Melbourne there was a bus over to Melbourne University. The time to get the bus to Melbourne University and then walk to [...] Carlton, or alternatively getting off the train at Spencer St and getting a tram added another 30 to 45 minutes on to the trip, so timewise it was better driving than catching the train.

This view was also evident in other interviews. People commuting to Middle Melbourne locations indicated that the time taken to get to their places of work from the city railway stations was integral to their decisions to drive.

The different benefits of travel modes were evident in the response of one interviewee who had changed between driving and train travel over the course of the years' spent commuting:

For a while when I did try driving but both ways are completely unproductive, which is why I moved from car to train. Car was unproductive both ways but with the train at least it was productive, and I used to say at least I could sleep on the other way, which you can't do in a car ... As long as you knew you could leave at a set time at night 9 times out of 10 the train was fine. As long as you got a seat that was another 50 minutes of productive time. But if you

couldn't get a seat it would be hell and even in the morning if you couldn't get a seat ... you were tired by the time you got to work (Interviewee No.12).

As indicated by this interviewee, the crowding on peak hour train services is affecting the productivity of travel time, as people cannot work standing up, or deal with sensitive information with people looking over their shoulders. This was of particular concern for travellers on the lines which service areas that have had increasing patronage in recent years, and interviewees reported leaving earlier and driving to earlier stops on the route in order to get a seat.

6.4.3.4 Commuting Experiences

There were mixed experiences of metro-bound commuting, with some interviewees indicating that it had affected their lives in negative ways, but were unable to stop for family, real estate market or employment reasons. Changing diets, reduced physical activity and less contact with family and friends were regularly cited, and one interviewee provided a particularly telling account of the impact of commuting:

I had to give up a lot of personal time, exercising, that went to the wayside, the eating, my food and dietary habits changed, you always feel like you are eating on the run, you can't plan because you didn't know what time you would get home ... it affected my relationship, I felt like I never saw my partner ... it's toxic (Interviewee 5b).

The long-distance commuting literature provides similar accounts of the impact of spending so much time travelling to and from work (Flood & Barbato 2005; Hansson et al. 2011). Another respondent saw commuting as functional, a way to maintain lifestyle and employment, stating that while the drive was arduous, they planned to continue commuting as "I love my job and I love where I live" (Interviewee No.8).

Also, due to the longer periods of the day that the commuter was away from home meant more domestic responsibilities on the non-commuting partner, in some instances this was a negotiated outcome as part of the relocation. This trade-off was made possible by the less time partners took to do tasks such as taking children to school, shopping, or travelling to local work in regional areas. For example, Interviewee No.2 had moved to the centre of a regional settlement, which allowed their partner to walk children to school and childcare in five minutes, rather than the half an hour each way in the car when they were living in Melbourne.

The interviews also indicated a relationship between workplace flexibility and the respondents' experience of commuting. Interviewee No.17, who commuted to work three days per week rather than

five when working in Melbourne noted that their time spent travelling to and from work had only increased from eight to nine hours per week, noting that this made the lifestyle work:

I think if I was working 5 days in the office, and that sort of timetable means I often miss the kids going to bed, so if I was working 5 days' I wouldn't get to see them during the week really. Doing the day at home, and only working a 4-day week means I get to spend one day with them full time and the other day I'm popping in and out of the office while they are around so, it's a pretty good balance for me [Interviewee No.17].

Others had shifted their hours, starting and leaving work earlier in the day to avoid the worst of peak hour traffic and also to arrive home at a time that allowed for time with young children of a night or just to see home in daylight. Flexible working conditions were also seen as integral to coping with the long commutes:

I sort of readjusted my life in some ways, I had to because I do get on the road very early every day and I leave work, tend to do 8 to 4, or 7:30 to 4 in order to not be stuck in traffic. I don't think I could do it for a very long time if I had to travel for 4 hours a day (Interviewee No.8).

Two interviewees had arrangements to include their time on the train home as part of their working day. For Interviewee No.2, it meant that he arrived home earlier of an evening than when he lived in Melbourne. For the other, it contributed to additional time spent at home:

One of my positions allowed me to count the work that I did on the train towards the time in lieu. So that would mean that that productive time was working time and therefore if you worked more than your regular working time - which often happened because I had a field and office-based role - then you could take time in lieu of those hours so you could be at home and still be paid (Interviewee No.11).

The interviews indicated that metro-bound commuting can be a difficult experience for some, affecting health and family life in particular. These effects are lessened by flexible working conditions, particularly for those who do not travel to Melbourne five days per week or who include travel time within their working day. For interviewees who had adopted or increased their flexible work arrangements, travelling for longer periods of time fewer days a week meant that their total weekly commuting time had not increased greatly. A further observation is that people who enjoyed their work, as well as where they live, seemed to have a more positive view of the long commute.

6.4.4 Summary

Metro-bound commuters' places of residence reflect the distinct geography of the Melbourne city-region, as more metro-bound commuters live to the west where the metropolitan boundary is closer to the city centre and there are larger population centres and settlements. These observations inform the transport demand models for vehicles and public transport, which indicates that the number of metro-bound commuters residing in a regional urban centre is a function of its distance from the city centre and its population size. This implies that as the population of regional settlements increases, the number of additional metro-bound commuters will be a function of the distance to the metropolitan employment hub. The places that metro-bound commuters work indicate that when applied to other regions accessibility, the number of jobs different types of employment than on offer and in regional areas are important factors.

The method of travel to work differences between Inner, Middle and Outer Melbourne commuters provides further insights into the role of accessibility in metro-bound commuting. In particular, 52 per cent of Inner Melbourne commuters used public transport, compared to more than 70 per cent of Middle and Outer Melbourne commuters travelling in private vehicles. The different transport usage by place of work reflects the higher quality of public transport services to Inner Melbourne, as well as the different types of work undertaken there. That is, Middle and Outer Melbourne workers are more likely to work in industry sectors that are associated with shift work, require travel between work sites and to transport equipment.

These observations of factors in transport preferences are borne out by the interviews, as the locations of work and public transport services were important determinants of mode choice. The appeal of car travel was in that commuters could leave when they were ready, rather than be beholden to timetables, while some train travellers used the travel time as part of the working day. Interviewees were largely wedded to their travel mode, as whether it was by car or train, the chosen method was the most productive, in terms of either minimising the travel time or in the personal or professional usefulness of the travel time.

The interviews also provided support for the evidence of the negative personal effects of long-distance commuting discussed in Section 2.2.3. Interviewees noted that their diets had deteriorated, had stopped going to the gym and the division of household responsibilities had shifted to non-commuting spouses. Workplace flexibility, including working from home and shifting hours to avoid peak traffic times were seen as mitigating these personal impacts of metro-bound commuting lifestyles.

6.5 Housing

This section assesses the impact of metro-bound commuting increases on regional housing markets. As metro-bound commuters are predominantly people who have relocated from metropolitan Melbourne, they will affect regional housing markets. While the focus of the research is on regional employment effects, housing needs to be considered as it indicates that metro-bound commuting and counterurbanisation can have tangible impacts on the lives of regional residents, particularly those who rent housing or are entering into property markets. To give an indication of the influence of metro-bound commuters on regional housing markets, Table 15 provides the 13 local government areas where the increase in metro-bound commuters between 2006 and 2016 was more than five per cent of the total house sales.

Table 15: Comparison of the number of house sales and increases in metro-bound commuting, 2006-2016

LGA	House Sales 2006-2016		Increase in Metro-bound Commuters	Metro-bound Commuters as a proportion of house sales
	Yearly Average	Total Sales		
Mitchell (S)	458.8	4588	3140	68%
Moorabool (S)	379.5	3795	1328	35%
Golden Plains (S)	125	1250	388	31%
Macedon Ranges (S)	587.7	5877	1788	30%
Baw Baw (S)	753.7	7537	1750	23%
Surf Coast (S)	580	5800	789	14%
Mount Alexander (S)	281.6	2816	364	13%
Greater Geelong (C)	3969.7	39697	4291	11%
Hepburn (S)	268.8	2688	199	7%
Strathbogie (S)	147.5	1475	92	6%
South Gippsland (S)	452.7	4527	260	6%
Bass Coast (S)	1013	10130	528	5%
Ballarat (C)	1982.7	19827	954	5%

Source: Australian Bureau of Statistics (2006b, 2016b), LGA place of work and place of usual residence, Valuer General Victoria (2016).

There have also been reports of increasing regional house prices as a result of people from Melbourne participating in these markets (e.g. Kernebone 2018; Pollock 2016). One real estate agent in Ballarat attributed these increases in the suburbs surrounding the Ballarat railway station to Melbourne people being active in housing market in the area (Power 2016). While the data in Table 15 indicates variations in the proportion of increased metro-bound commuting to house sales, it does indicate that in parts of regional Victoria metro-bound commuters have an effect on housing markets.

6.5.1 Tenure

Housing tenure for metro-bound commuters cannot be determined by analysis of census data, as tenure is collected by dwelling, whereas place of work and commuting data is by persons. Therefore, insights into the housing tenure have been collected in the metro-bound commuter survey, which is compared to the housing tenure for dwellings in the 48 regional Victorian LGAs, as shown in Table 16.

Table 16: Metro-bound commuter housing tenure

	Owned outright	Owned, with mortgage	Renting	Other Tenure	Total (Excl. not stated, not applicable)	Not stated, not applicable
Survey Data	66 18%	238 63%	49 13%	10 3%	363	12
Regional Vic (2016 Census)	213,165 39%	191,198 35%	134,303 24%	12,482 2%	551,176	163,634

Source: Metro-bound commuter survey data; TEND, housing tenure type by regional Victorian household (Australian Bureau of Statistics 2016b)

The comparison indicates that metro-bound commuters are more likely to be home-owners with mortgages than other residents of regional Victoria, at 63 per cent compared to 35 per cent. This may be related to the higher percentage of metro-bound commuters changing their place of residence, that it is likely that metro-bound commuters have been living in regional Victoria for a shorter period of time than other regional residence and the indication that housing affordability is a factor in decision to relocate to regional areas. These aspects of metro-bound commuters and their activity in regional housing markets are discussed in more detail within this section. The large number of *not stated, not applicable* households for regional Victoria in the 2016 census data is because vacant houses are recorded as not applicable (Australian Bureau of Statistics 2016a), which accounted for 114,840 of the total 163,634 houses recorded as *Not stated, not applicable* in the census.

6.5.2 House Prices

The survey questionnaire included a housing tenure question and for those who indicated they fully owned or had a mortgage on their place of residence, they were asked for year and purchase price of

the property. The residential postcode was allocated to an LGA through Australian Bureau of Statistics (2012a) correspondences, which was then used to compare the purchase price with the median price for the LGA at the time. All comparative median and average house price data is sourced from the Valuer General Victoria (2016). The house prices at the time of purchase compared to LGA medians are depicted in Figure 37.

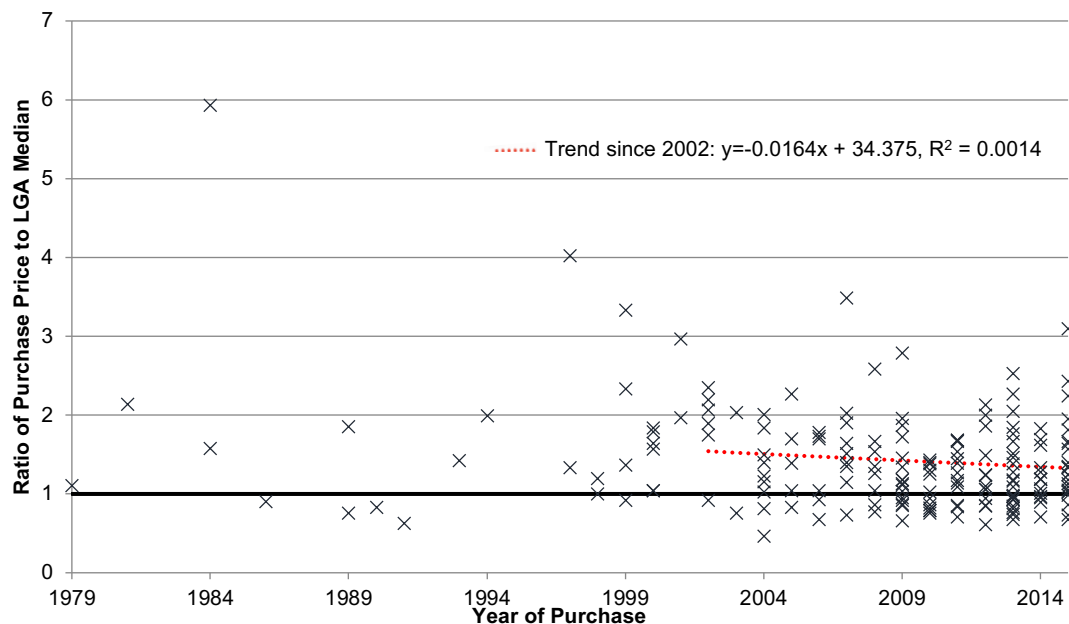


Figure 37: Median house price to LGA median by year of purchase

Source: Metro-bound commuter survey data

Of the 191 survey responses that provided house price details, 138 or 72 per cent reported house prices that were greater than the respondent’s local LGA median, while 53 were less. On average, the purchase price was a factor of 1.4 greater than the LGA median at the time, therefore metro-bound commuters are likely to have an inflationary effect on regional real estate prices, as found in previous research (Bohman & Nilsson 2016; Costello 2009). While the trend line indicates that extent that commuters’ purchase price was above the median has declined since 2002, regression analysis indicates that the ratio gradient is not significantly different to 0 at a 95% confidence level, indicating that the gap between regional median house prices and purchases by metro-bound commuters is most likely constant.

It is also of interest to compare metro-bound commuters’ house purchase prices with the average median price of outer suburban LGAs³, as depicted in Figure 38. Since the year 2000, 2010 is the only

³ Outer suburban LGAs used to create the average: Cardinia, Casey, Frankston, Hume, Mitchell, Nillimbik, Whittlesea, Wyndham, Yarra Ranges.

year that the average purchase price from the metro-bound commuter survey data has been lower the outer suburban average. This suggests that metro-bound commuters are choosing to live further from their place of work than models based on rational housing and transport choices would indicate (e.g. Alonso 1960, 1964), thus housing affordability alone is not the primary reason for purchasing houses in regional Victoria, assuming that equilibrium would otherwise apply.

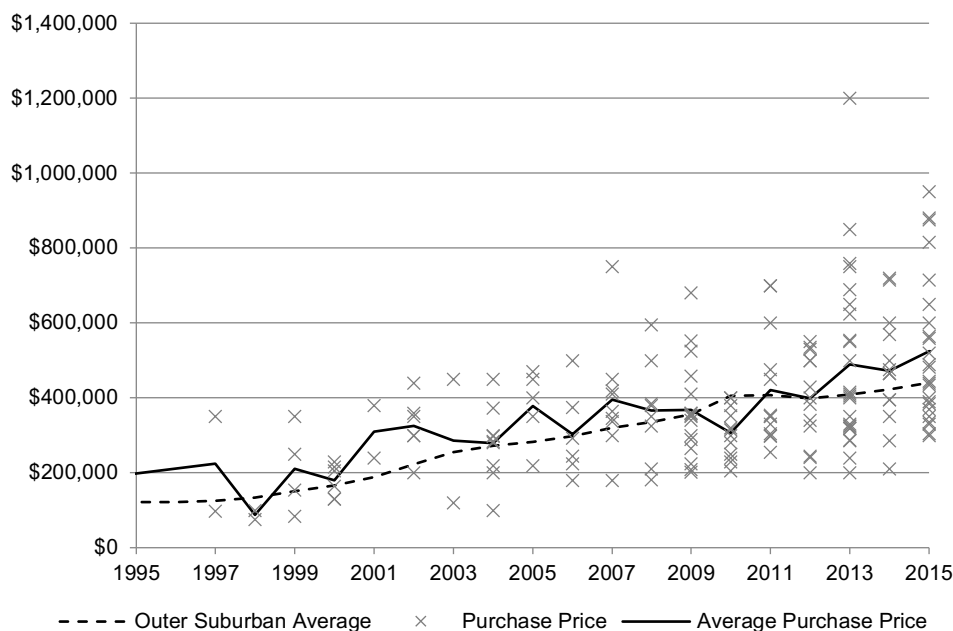


Figure 38: House purchase price compared to outer suburban average house price

Source: Commuter survey data.

The comparison between metropolitan and regional housing markets was also made in an interview by a representative from the State Government, who indicated that developers are adept at meeting housing market demands and that households made choices-based trade-offs between location and housing type:

The real estate market, which is really well understood by developers, is about which segment of the market am I providing this housing for. So your low-cost edge of Melbourne provision is one market, your Armstrong Creek new housing, and affluent housing for Geelong, is a different market altogether. So ... that consumer market for the housing product ... [government] don't tell people where to go, they will choose a location that suits them and their family point and financial point and if you've got \$300,000 to spend on housing in Victoria, your opportunity is quite limited in metro Melbourne, unless you want an apartment or a small house or a development on the edge, or a small place in Castlemaine, or a unit

maybe somewhere near Torquay or Geelong where you get the seaside benefit. Of all these choices, with your \$300,000, the choice is yours (State Government Interviewee No.1).

The same interviewee also stated that the State Government facilitated these choices through infrastructure provision but did not support long-distance commuting due to the associated social and environmental issues. The point that is that these choices are made with regard to access to employment, schooling and other social, commercial and economic functions and that for many it is not possible to live in Castlemaine, Torquay or Geelong without metro-bound commuting.

6.5.3 Summary

This section has provided an indication that metro-bound commuters have an inflationary effect on regional house prices. The survey found that metro-bound commuters are more likely to be mortgagees than other regional Victorian residents, 63 per cent to 27 per cent, but less likely to own their house outright, 18 per cent to 30 per cent. The majority of survey respondents also purchased houses at higher than the median in the regional LGA at the time, which indicates that the increasing metro-bound commuters can be expected to lead to inflated house prices. As the purchase prices were greater than the average of the outer suburban medians at the same time, further support is given to the conclusion in Section 6.3.1 that counterurbanisation is a result of preferences for regional housing over metropolitan housing at the same cost, not that metropolitan housing is absolutely unaffordable.

Given the predominance of Inner Melbourne workers in the survey data, this interpretation may not reflect the housing choices of Outer or Middle Melbourne workers, who tend to be as not well paid and therefore have greater restrictions in their choices. More detailed housing market modelling could further uncover these price dynamics, but such specific effort is beyond the scope and ambition of this thesis.

6.6 Conclusion

This chapter has provided support for the contention that metro-bound commuters are changing the second cities and regional settlements they reside in. The evidence presented in the chapter indicates that the commuter cohort is increasing regional populations and changing the demographic structure of regional areas. Section 6.3, which discussed reasons why people have become metro-bound commuters, affirms that the increase in regional residence is a result of the push factors of increasing housing costs and declining amenity in metropolitan areas and the pull factors of regional amenity and lower cost housing, particularly for families given the stage-of-life factors reported on in this chapter. The importance of high-quality metropolitan employment is also a factor in decisions to commute

rather than work regionally. The results presented in this chapter also provide evidence of the personal and social costs associated with metro-bound commuting, which aligns with the literature on the impacts of long-distance commuting in Section 2.2.3 and gentrification in Section 2.3.2. These results are discussed in the following sections, providing more detail as to why metro-bound commuters can change metropolitan commutersheds as places to live and work.

The designation of Inner, Middle and Outer places of work reflect the geography of the study region and its employment, but the conclusions are widely applicable. The key outcomes for this analysis are that from a place of work perspective, the size of the metro-bound commuting cohort is related to accessibility and the quality of work in comparison to the regional employment offer. While other cities and commutersheds most likely have different geographies of employment and transport services, these results accord with the previous findings, such as commuting distance increases with transport improvements (Marchetti 1994; Metz 2008, 2010) and that people travel further for more specialised employment and higher incomes (Hazans 2004; Manning 2003; Sandow & Westin 2010; Vega et al. 2016).

Population and demography

Metro-bound commuters contribute to regional population growth in two ways. Firstly, metro-bound commuters are more likely to originate from regional housing relocations than from regional residents finding metropolitan employment. Secondly, these regional relocations are associated with family formation and growing families, which may explain the greater percentage of males within the metro-bound commuting cohort. A third point is that metro-bound commuters are attracted to places where there are already people who have relocated from Melbourne, indicating that the growth is cumulative: as communities and localities change to cater for the preferences of ex-metropolitan residents, the localities become more appealing to other metropolitan residents. These changes may include the retail and hospitality sectors, entertainment and cultural activities and as indicated by the interviews conducted by this research, the security in being amongst people who appear similar.

Metro-bound commuters are more likely to be male and have a different age structure than the regional workforce, with more people aged in the key working period of life, between 30 and 50 years of age. The higher proportion of male commuters can be attributed to the association between metro-bound commuting and family circumstances, due to maternity leave, and a higher proportion of women than men providing care for children – only 4.6 per cent of Australian two-parent families had stay-at-home fathers in 2016 (Australian Institute of Family Studies 2018). The interviews provided examples of deliberate decisions around this division of responsibilities within households. It may also be a result of the tendency for industry sectors that have high proportions of female employment

to be disproportionately present in regional areas: *Health Care and Social Assistance; Retail Trade;* and, *Education and Training* (Workplace Gender Equality Agency 2018).

Why do people become metro-bound commuters?

The results presented in this chapter show that there are two ways to become a metro-bound commuter, by either changing place of work from regional to metropolitan, or by changing place of residence from metropolitan to regional. The analysis presented in this thesis indicates that the increase in metro-bound commuting is predominantly a result of metropolitan workers taking up regional residence. The distinction is important as it indicates that the direct benefits of government interventions and technological developments that facilitate metro-bound commuting accrue largely through providing additional regional housing options to metropolitan workers and residents. It also supports the contention that metro-bound commuters change second cities and regional settlements, as it is introducing new people to these localities, rather than enabling the existing population to remain within those localities.

For regional relocators, the main factor in deciding to become metro-bound commuters was lifestyle and amenity reasons. While this was somewhat unexpected given there has been concern over the costs of metropolitan housing in Australia, the skew in the survey sample towards well-paid Inner Melbourne workers may explain why affordability concerns were not more prominent in the survey responses. There was also a difference in the reasons for relocating to regional areas for those who had moved to regional cities and those who had moved to other settlements. The residents of the Ballarat, Bendigo and Geelong second cities were more likely to be moving to be near friends and family and to have moved due to housing affordability concerns than those moving to regional settlements. For regional settlement relocators, amenity and lifestyle factors accounted for 60 per cent of responses. The interviews also indicated different rationales between second city and regional settlement relocations. Regional cities were a ‘goldilocks’ option, offering an attractive balance of services, facilities and retail options and also offering the positive amenity aspects of regional living. Regional settlements were seen as better places to raise families than Melbourne, as interviewees tended to want their own small-town childhood experiences for their children and thus were less concerned with service and facility access.

For those who began metro-bound commuting by changing their place of work, the predominant reason was the quality of employment, including wages, career development and for many, that their specific type of work did not exist where they lived. These results imply that employment is concentrating in the primary city, and the outcome is that for many regional residents, their work type does not exist in regional areas, or if it does the benefits of the better quality of work on offer in the primary city outweigh the personal and financial costs of metro-bound commuting. These

observations also help to explain why more regional residents do not decide to commute to better employment opportunities in primary cities, as it is likely to be difficult to obtain the training and experiences required to compete in metropolitan labour markets while working in regional areas. An additional factor is that the amount of time taken to commute from some regional areas to metropolitan work is similar to intra-metropolitan commutes, while the local commute times for workers residing and working in regional cities are on average much less (Melbourne Institute 2019).

Places of Residence, Place of Work and the Commute

The localities in which metro-bound commuters reside were predominantly to the west of Melbourne, and also in larger population settlements. These observations were used to construct models for the metro-bound commuting population residing in urban centres, based on the metro-bound commuting proportion of the regional-resident workforce. Transport demand models also indicate that the metro-bound commuting proportion of the regional workforce declines with travel time, at 5 per cent for each ten minutes of travel time for public transport users, and 3 per cent for vehicle travellers.

Metro-bound commuters' places of work were concentrated within the city's employment hubs, particularly the Inner Melbourne region, and the employment hubs on the outskirts of the city. As the city's transport system - particularly the train and freeway networks – is predominantly in a hub and spoke arrangement centred on Inner Melbourne, the implication is that accessibility is an important indicator of where metro-bound commuters work, in addition to the number of jobs on offer. In this regard, it is of note that Middle Melbourne employment hubs have much lower proportions of metro-bound commuters than the Inner Melbourne and Outer Melbourne employment hubs, as they are the least accessible from regional areas.

It is as expected that of the three metro-bound commuting cohorts, Outer Melbourne commuters had the lowest average commute distance given that these places of work are closest to regional settlements. However, that Middle Melbourne commuters had longer commutes than Inner Melbourne commuters was unexpected. The indication is that some Middle Melbourne commuters are travelling past the Inner City in the commute to work, not that they are generally residing in urban centres further from the metropolis. The longer travel distances of Middle Melbourne commuters, as well as their greater propensity to travel by car, suggests that these are the least sustainable cohort of metro-bound commuters, from personal and environmental perspectives.

The importance of transport networks is highlighted by the method of travel to work data from the 2016 census, as 52 per cent of metro-bound commuters to Inner Melbourne used public transport, predominantly train services, compared with 11 per cent in Middle Melbourne and just 2 per cent in Outer Melbourne. Therefore, improvements to metropolitan-regional train services, as presently

proposed by the Victorian Government, are likely to result increased Inner Melbourne commuting, but have minimal appeal to those who work in other areas of the city. While it is obvious that train services should increase commuting between the places that are serviced by this mode, the higher incomes and human capital in comparison to the regional resident workforce indicates that the possible outcomes include gentrification as discussed in Section 2.3.2 and the employment outcomes discussed in Section 3.3.

An important insight from the interviews is that people's experiences of metro-bound commuting tend to be more positive if they have workplace flexibility, including working from home and the option to travel to work outside of peak traffic times. In the main, those who were travelling to Melbourne for work three days per week were positive about their experiences while those who were travelling five days per week were less so. Being able to include work while in transit in their day was also important to the two interviewees who had established this practice with their employer. Further observations from the interviews are that transport preferences are ingrained, with few metro-bound commuters changing between transport types or willing to consider alternative transport modes, and that as train services have become more crowded - in some part due to increased metro-bound commuting - it has become more difficult to be productive while commuting. The reduced productivity resulted from not having a seat and also privacy concerns as standing patrons were more likely to be able to look over shoulders.

Housing

The respondents to the metro-bound commuting survey were more likely to be mortgagees than other households in regional Victoria. In conjunction with the finding that metro-bound commuters are more likely to be regional relocators than regional residents finding metropolitan employment, this implies an inflationary housing market effect. The survey data also indicates that those regional relocators who rent tend to transition to home ownership over time.

While housing affordability was a frequently cited concern of the survey respondents, the data indicates it is not that they cannot afford to live in Melbourne, but given budget limitations metro-bound commuters opt for larger blocks and houses, access to nature and small town or second city living over similarly priced options in the city. Together, these conclusions indicate that metro-bound commuting exerts upward inflationary pressure on housing markets in regional settlements, and that the regional housing market begins to disconnect from the local employment market. This indication has ramifications for spatial equilibrium models, which rely on self-adjusting and spatially contiguous land and labour markets and suggests that the end result is likely to be the disadvantageous displacement of the resident regional workers who are not landowners. A major implication is that for metro-bound commuting to be of net benefit to regional communities, any regional employment

benefits would need to outweigh the reduction in effective disposable income as a result of increased housing costs. Otherwise the effect will be regional housing market gentrification into a regional labour market. The regional employment outcomes from metro-bound commuting are the concern of the next chapter.

7 Employment

7.1 Introduction

This chapter is concerned with the regional employment effects of metro-bound commuters. As Chapter 6 provided evidence of population redistribution as a result of metro-bound commuting, the analysis of the redistribution of employment and functions also offers insight into whether the resulting city-system is efficient and sustainable (Hall & Pain 2012).

The investigation of functional polycentricity and regional employment effects requires quantitative methods to determine extent and qualitative methods to provide insights as to types of employment generated. Therefore, three employment effects are included in the analysis. The first is the increased employment in regional areas as a result of expenditure effects arising from metro-bound commuters' income and their household expenditure in the regional area. The second is an analysis of whether the human capital of metro-bound commuters and their households is translating into regional employment beyond regional expenditure effects, particularly in knowledge-intensive sectors. The third section of analysis considers the propensity for and experiences of metro-bound commuters to form new businesses in regional areas, whether as a post-commuting strategy or as proprietors that have relocated to regional areas and commute to Melbourne for aspects of their business's operations.

7.2 Regional Expenditure Effects

The first analysis of the relationship between metro-bound commuting and regional employment is through regional expenditure effects. As metro-bound commuting can be conceptualised as a region exporting its labour in return for additional household income, the expectation is that additional regional expenditure, and therefore regional employment, will result from metro-bound commuting. In addition to the correlation between metro-bound commuting and regional employment, this section includes analysis of key aspects of this relationship: the comparison of metro-bound commuters' incomes to other regional residents, and analysis of the effect of household structure and places of work on regional expenditure.

7.2.1 Metro-Bound Commuters' Income

Regional expenditure effects result from the income differential between metropolitan and regional employment. There is significant variation in the incomes of the regional resident workforce, depending on their place of work, as shown in Figure 39. Of note is that Inner Melbourne commuters are more likely to earn more than \$78,000 per year - and particularly more than \$104,000 per year - than other regional resident workers. To look at it another way, 14 per cent of the regional resident workforce that earn more than \$156,000 per year are Inner Melbourne commuters, yet they represent only 3 per cent of the total regional resident workforce.

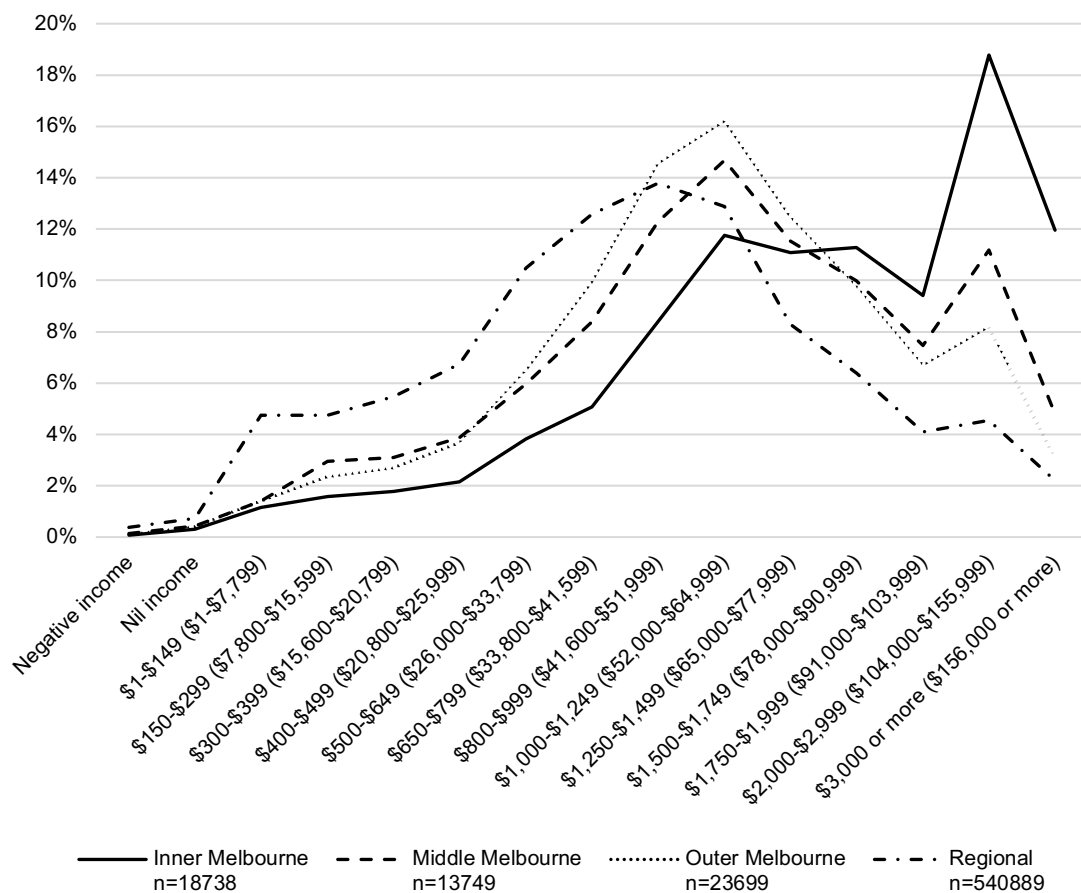


Figure 39: Income by place of work, 2016

Source: INCP, Australian Bureau of Statistics (2016b)

Chi-Squared statistics: $DF = 45$, $\chi^2 = 26,234$, $P(\chi^2 > 26234) = 0$, cannot accept null hypothesis, there is an association between income and place of work.

The Middle and Outer Melbourne commuters are most likely to earn \$52,000 to \$64,999 per year. Also, Middle and Outer Melbourne commuters are more likely to earn more than \$52,000 than people who work in regional locations. Therefore, metro-bound commuters increase total regional income.

7.2.2 Commuting and employment growth regression model

The notion that metro-bound commuters generate employment in their regional localities of residence is tested in this section by regression analysis. The purpose of this analysis is to establish a correlative link between metro-bound commuting and employment growth, as the basis for further investigation.

Specification of the model

The model used to test correlations between employment growth and metro-bound commuting is specified below. A log-log model is used to determine the elasticity of hours worked as a result of increases in metro-bound commuting

$$\ln(\Delta Hours_{i,2006-2016}) = \alpha + \beta_1 \ln(2006Pop_i) + \beta_2 \ln(\Delta MBC_{i,2006-2016}) + \ln(\Delta Popn_{i,2006-2016}) + \varepsilon$$

Where:

$\Delta Hours_{i,2006-2016}$: The change in hours worked in LGA i between 2006 and 2016, provided by the HRSP data for the 2016 Census and HRWSP for the 2006 census.

$2006Pop_i$: The population in the LGA i at the 2006 census, using the place of usual residence data.

$\Delta MBC_{i,2006-2016}$: The change in metro-bound commuting from LGA i between 2006 and 2016

$\Delta Popn_{i,2006-2016}$: The change in usual resident population in LGA i between 2006 and 2016

The sample size is 48, representing the regional LGAs. The $2006Pop$ is used to provide the size of the changes in each LGA - as with the analysis in Section 6.3.1 - as well as a measure of the size of the economy to account for agglomeration effects.

Hours worked is used instead of employment, as it builds into the model an allowance for underused capacity. The 2016 total hours is calculated using the *Hours Worked* data (HRSP), which provides recorded hours worked in all employment for persons aged over 15 in the week before the census, in single hours from 0 to 99 hours. The 2006 data uses the *Hours Worked (ranges)* (HRWRP), which is similar except the hours per week are categorised into eight bands, as HRSP is not available for 2006 (Australian Bureau of Statistics 2016a). For the highest unlimited band in the 2006 data (49 hours or

more), the 2016 average hours worked for those who worked more than 16 hours per week was used, which was 59.3. The population data is the same as used in the model in Section 6.3.1.

Model limitations

The population – metro-bound commuter model tested in Section 6.3.1 resulted in a significant correlation between the $\Delta Popn$ and ΔMBC variables, which indicates multicollinearity may be a problem with this model. Multicollinearity reduces the model's capacity to distinguish between the effects of each of the independent variables as they move in concert. Variance inflation factors (VIF) were included in the regression analysis to test for multicollinearity, and as the three values returned were less than five, the indication is that multicollinearity is not a concern (Montgomery et al. 2012).

The model is basic in comparison to more detailed examples of employment modelling and commuting patterns (see Lavesson 2016; Partridge et al. 2010; Shields & Deller 1998 for example), as the intent is to provide support for the notion that metro-bound commuters do generate some increase in employment in regional locations. Factors omitted from the elemental model presented here include regional income, age distribution, unemployment, in-commuting, distance to major employment hubs and spatial lags, which address autocorrelation between adjacent areas.

In the Australian context at least, it would be important to include the impact of tourism in such models, as regions that are increasing in metro-bound tourism residents are also places with strong tourism industries, such as the Surf Coast, Bass Coast, Macedon Ranges, Hepburn Springs and Mount Alexander LGAs. Closely associated with tourism is the possibility that peri-urban agriculture increased the value-added of their output over this period, such as wineries and artisan food producers exploiting the proximity of the metropolitan market as well as the need to increase the value of output to stave off competition from residential subdivision of land. These points also illustrate a critique of regression that limits its usefulness in gaining an understanding of phenomena: it reveals correlation rather than causation.

Regression data

Table 16 on the following page provides the summary data for the three variables used in this analysis. The change in hours worked was highly variable, from a maximum of 556,754 in Greater Geelong, which may seem large but employment in the LGA also increased from 74,644 workers in 2006 to 95,058 in 2016 (Australian Bureau of Statistics 2006b, 2016b). The greatest decline was in the Southern Grampians, 300 kilometres west of Melbourne. As discussed in the section describing the population model, Greater Geelong also recorded the greatest increase in metro-bound commuters over this period and Murrindindi decreased the most.

Table 17: Summary of variables, employment model.

Variables	Minimum	Maximum	Mean	StdDev
$\Delta Hours$	-21111.9	556754.5	48031.4	107959.9
2006Pop	3018	197477	27751.4	31836.3
$\Delta Popn$	-850	35943	3552.5	6363.4
ΔMBC	-33	4292	368	831

Source: Australian Bureau of Statistics (2006b, 2016b).

Results

The results of the regression using SPSS software are shown in Table 18. The R-squared value indicates that the model accounts for 85 per cent of the variation in hours worked and the F-statistics indicate that the coefficients in the model are highly unlikely to be zero.

Table 18: Metro-bound commuters and regional employment regression summary data

R	R Square	Adjusted R Square	Std. Error of the Estimate	F	Significance
0.924	0.855	0.845	0.185	86.205	.000

Both the change in metro-bound commuting and population between 2006 and 2016 had positive and significant coefficients. The results indicate that a 1% increase in population correlated with a 0.827% increase in local hours worked, and a 1% increase in metro-bound commuting correlated with a 0.24% increase in employment. The variance inflation factors (VIF) are less than 5, indicating that the multicollinearity is not a concern in this regression.

Table 19: Metro-bound commuters and regional employment regression coefficients

Factor	Coefficients		Beta	t	Sig.	VIF
	B	Std. Error				
(Constant)	.659	.622		1.059	.296	
ΔMBC	.240	.098	.196	2.449	.018*	1.944
2006Popn	-.011	.051	-.020	-.220	.827	2.551
$\Delta Popn$.302	.040	.793	7.515	.000*	3.368

* Denotes significant at 95% confidence.

Discussion

The simple model presented here indicates a positive correlation between metro-bound commuting growth and hours worked. This result concurs with those of Lavesson (2016) and Partridge et al. (2010), who also found correlations between out-commuting and regional employment. A caveat to such analysis is whether there is an omitted variable that may be the underlying reason for both commuting and employment increases in regional areas, such as tourism and changes in production, improved telecommunications technologies, changes in government policy or macro-economic factors.

7.2.3 Regional expenditure model

There were 336 valid responses to the questions regarding the location of metro-bound commuters' expenditure. The questions asked respondents to provide their weekly spend in the place they live, other regional cities and towns, and Melbourne, to provide insight into the propensity for metro-bound commuters to generate employment in sectors such as retail, non-tradeable services and hospitality. In-depth retail expenditure studies require participants to record expenditure and locations over a period of time, enabling analysis of patterns based on detailed data, thus the analysis here is based on respondents' perceptions of their retail expenditure patterns to provide indications of important factors in relationships between metro-bound commuters and the regional employment that may result.

As relationships between metro-bound commuting and employment in the sectors listed above have been established (Lavesson 2016; Partridge et al. 2010; Partridge et al. 2008), as well as place of employment and propensity to outshop (Lee et al. 2009; Papadopoulos 1980; Patel et al. 2015), the intention is to provide support for these findings in an Australian context without overburdening survey respondents with complex and time-consuming response instrument: it is respondents' perceptions of where they spend rather than actual spending patterns.

Specification of the model

The model used for this regression is based on previous research of regional retail expenditure, which indicates that income, out-commuting and dependent children are factors in retail spending (Merrilees & Miller 1997; Patel et al. 2015; Shields & Deller 1998).

The regression model for regional expenditure uses the following equation:

$$RE = \beta_0 + \beta_1 DWM + \beta_2 HI + \beta_3 PWR + \beta_4 PWM + \beta_5 C + \varepsilon$$

Where:

RE: Proportion of Regional expenditure estimated in the survey.

DWM: Days per week working in Melbourne.

HI: Weekly household income (after tax).

PWR: Dummy variable, 1 if partner works regionally.

PWM: Dummy variable, 1 if partner works in Melbourne.

C: Number of dependent children.

The expectation is that the coefficient for *HI* is negative, as higher incomes are associated with a greater propensity to outshop due to demands for a greater range of goods and services (Ingene & Eden 1981, pp. 540-545; Shields & Deller 1998). The coefficient for *PWR* is unclear, as it indicates that at least one household wage earner has opportunities to spend in regional areas. If the coefficient of both *PWR* and *PWM* are zero it indicates that there may be a non-working working partner who is responsible for household spending. *DWM* and *PWM* are expected to have a negative impact due to less opportunity to shop regionally and greater access to metropolitan providers. The impact of *C* is expected to be positive, as the expectation is that larger households will spend more on locally provided household items.

Regression data

The survey data used in the regression undertaken in SPSS software is described in the Table 20. The dependent variable, Regional Expenditure, is the local expenditure and expenditure in other regional locations added together as recorded by survey respondents.

Table 20: Expenditure regression descriptive statistics

Factor	N	Minimum	Maximum	Mean	Std. Deviation
<i>RE</i>	336	16%	100%	78.5%	17.2%
<i>DWM</i>	335	1.0	6.0	4.25	1.1
<i>HI</i>	336	244.5	6000.0	2026.60	1101.5
<i>PWR</i>	336	0	1	.36	.481
<i>PWM</i>	336	0	1	.22	.415
<i>C</i>	336	0	4	.81	1.1

Source: Metro-bound commuting survey

Results

The summary data indicates that the model is significant, based on the F statistic, but the R square value indicates that the independent variables included in the model account for approximately 25 per cent in the variation in regional expenditure. This result is not unexpected given the simplicity of the model compared to the complexity of consumption patterns and that the data reflects respondents' perceptions of where they consume, rather than detailed accounts prepared at the time.

Table 21: Regional expenditure regression summary data

R	R Square	Adjusted R Square	Std. Error of the Estimate	F	Significance
0.248	.062	.047	16.8%	4.326	.001

The coefficients for each of the factors are detailed in Table 22 below. *Dependent children* was significant at 95 per cent confidence, and *Days Working in Melbourne and Partner Working in Melbourne* were significant at 90 per cent confidence.

Table 22: Expenditure regression coefficients

Factor	Coefficients		Beta	t	Sig.	VIF
	B	Std. Error				
(Constant)	82.464	4.067		20.274	.000	
<i>DWM</i>	-1.411	.844	0.197	3.607	0.096**	1.003
<i>HI</i>	.000	.001	.019	-0.098	0.732	1.096
<i>PWR</i>	-0.210	2.151	-0.006	-0.098	.922	1.267
<i>PWM</i>	--4.646	2.490	-0.112	--1.866	0.063**	1.266
<i>C</i>	3.067	0.850	0.197	3.607	.000*	1.046

Source: Metro-bound commuter survey data. *Indicates significant at 95%, ** at 90%.

The variance inflation factors (VIF) are close to 1, indicating that the multicollinearity is not a concern in this regression.

Discussion

As expected, the data indicates that the number of dependent children of a commuting household is the strongest determinants of regional expenditure by commuters, albeit in a model with limited explanatory power. The significance of dependent children is of note given the connections between

becoming metro-bound commuters and family formation and expansion, as discussed in Section 6.3. Also interesting is the perception that local expenditure declines with the number of days worked in Melbourne, as well as if there is a partner who works in Melbourne, indicating that the propensity to outshop is related to the amount of time the household spent out of the local area. This may be seen as a result of the division of household responsibilities between commuters and non-commuters, as indicated in previous research (Sandow 2013). One interviewee noted that the amount of time away from home as a result of commuting was a factor in their expenditure patterns:

I am never in [residence] during business hours, except on the weekends when you really don't want to be doing any work or anything. I tend to do all my consumerism in Melbourne, where I used to do it in [residence] when I could work at home or have time in lieu. Now I don't have that, instead of buying things in [residence] I'm ending up buying everything in Melbourne so that's a loss to [residence] of my dollars which would have previously been there (Interviewee No.11).

The constant returned by the regression analysis indicates that on average, 82.5 per cent of metro-bound commuters' expenditure occurs in regional areas. While this perception of expenditure, along with the higher incomes, indicates a positive expenditure effect for regional communities, conclusions cannot be drawn as to whether metro-bound commuters are likely to generate greater regional expenditure than other residents. This form of analysis would require comparison of both wage and outshopping propensities for the commuting and non-commuting population.

7.2.4 Summary

The analysis in this section indicates that metro-bound commuters generate regional employment through their higher incomes and expenditure, affirming the results of Lavesson (2016). The survey data indicates that significant factors in the proportion of household expenditure in their places of residence are a positive correlation with the number of dependent children, and reduced regional expenditure as a result of household members work out of the region. These results do not take the quality of employment as a result of these expenditure effects into consideration, only providing statistical evidence that additional employment in regional areas results from metro-bound commuting.

7.3 Human Capital and the Quality of Employment

This section compares the workforce attributes of metro-bound commuters to people who work in regional Victoria. The Inner, Middle and Outer Melbourne classifications are also used in the

analysis, to draw further differences between the commuting cohorts and regional workers. In addition to the analysis of census data for commuters, survey responses provide data on the partners of commuters, including their occupation and place of work. The final part of this analysis questions whether the metro-bound commuters that are associated with high levels of human capital have led to apposite regional employment for them. That is, has the increased number of knowledge workers that reside in regional areas due to metro-bound commuting led to an increase in knowledge type jobs in the regional areas?

As discussed in Section 3.3.3, human capital has been associated with innovation, entrepreneurship, increased productivity and wages across workforces, thicker labour markets and employment growth multipliers (Becker 1994; Bosma & Schutjens 2011; Gennaioli et al. 2013; Glaeser & Resseger 2010; Karlsson & Johansson 2012; Moretti 2012; Moretti & Thulin 2013). The employment growth effects are accounted for within the analysis in Section 7.2.2 and it is beyond the scope of this thesis to differentiate between the expenditure and human capital multiplier employment effects. Therefore, the additional labour markets effects of human capital are investigated in this section, particularly whether metro-bound commuters with high levels of human capital is associated with regional growth in the type of jobs those metro-bound commuters work in.

7.3.1 Workforce Attributes of Metro-Bound Commuters

This section of the thesis compares the Inner, Middle and Outer metro-bound commuting cohorts to the regional workforce, highlighting differences in industry, occupation, and levels of education. The analysis shows how metro-bound commuters, and particularly those who work in Inner Melbourne, have changed the regional resident workforce, particularly when taken together with the demographic analysis in Section 6.2.2.

Also included in this section is the survey data on the working partners of metro-bound commuters. Similar to expenditure effects, entire households contribute to resident human capital as well as regional labour markets, not just metro-bound commuters themselves.

Industry and occupation

There are notable differences in the industry of occupation of regional residents, depending on their place of work, as shown in Figure 40 on the following page. Regional workers are also more likely to be employed in *Health Care and Social Assistance*, although Middle Melbourne workers are employed in this sector at a 3% lower frequency than regional workers. Regional, Inner Melbourne and Outer Melbourne places of work have distinct areas of specialisations, while the people who commute Middle Melbourne have a less distinct industry profile.

Regional workers are more likely to be employed in *Agriculture, Forestry and Fishing*, *Accommodation and Food Services* and *Retail Trade* than those who commute to metropolitan areas. The low proportion of agricultural workers in the Melbourne places of work is to be expected, due to land use. For *Accommodation and Food Services* and *Retail Trade*, it is likely that in these sectors there is little to be gained in commuting to Melbourne, as there are regional jobs and the low rates of pay would not provide adequate compensation for the additional travel.

Outer Melbourne commuters are more likely to work in *Manufacturing and Transport, Postal and Warehousing* employment, which is likely to be related to the concentration of these sectors in the outer suburbs of the city. Middle and Outer Melbourne workers have a similar skew towards *Construction* employment, and more than 10 per cent of Middle Melbourne workers commute to *Manufacturing* employment.

Inner Melbourne commuters are more likely to be employed in the sectors associated with the knowledge economy: *Finance and Insurance Services*; *Information, Media and Telecommunications*; *Professional, Scientific and Technical Services*; and *Public Administration and Safety*. This is to be expected, as these sectors are concentrated within the centre of Melbourne, provide incomes that make commuting worthwhile, and similar employment opportunities may not be available in regional areas.

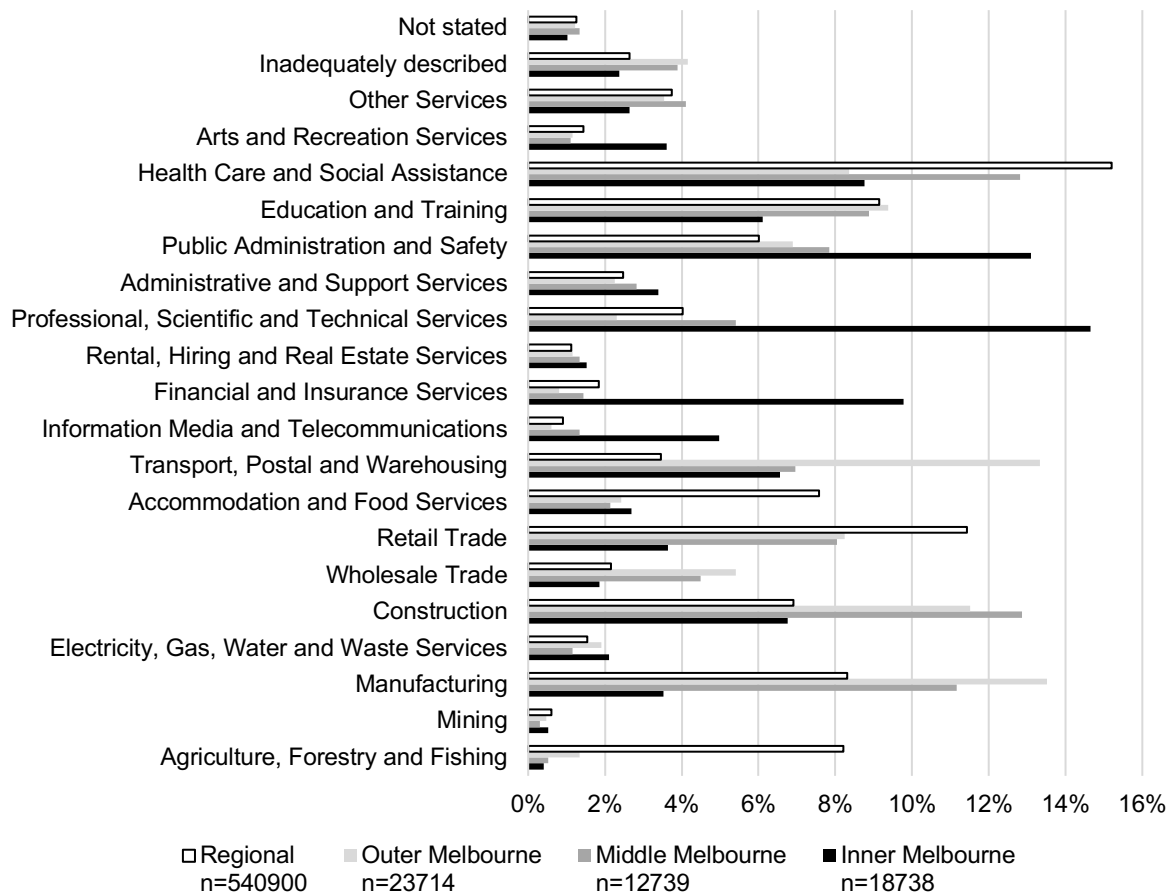


Figure 40: Metro-bound commuters by industry of employment, 2016

Source: INDP, Australian Bureau of Statistics (2016b). LGA definitions of Inner, Middle and Outer Melbourne.

Chi-Squared statistics: $DF = 90, X^2 = 34818.7, P(X^2 > 34818.7) = 0$, cannot accept null hypothesis, industry of employment is associated place of work.

The distinct differences between commuters to Inner Melbourne and other employment regions are also apparent in the census data for occupations, as shown in Figure 41 on the following page. At the 2016 census, approximately a third of Inner Melbourne commuters were *Professionals*, and half were either *Professionals* or *Managers*. For Outer Melbourne, *Machinery Operators or Drivers* was the main occupation, which aligns with the predominance of *Manufacturing* workers. Middle Melbourne did record the highest percentage of *Technicians and Trades Workers*, however only marginally more than Outer Melbourne.

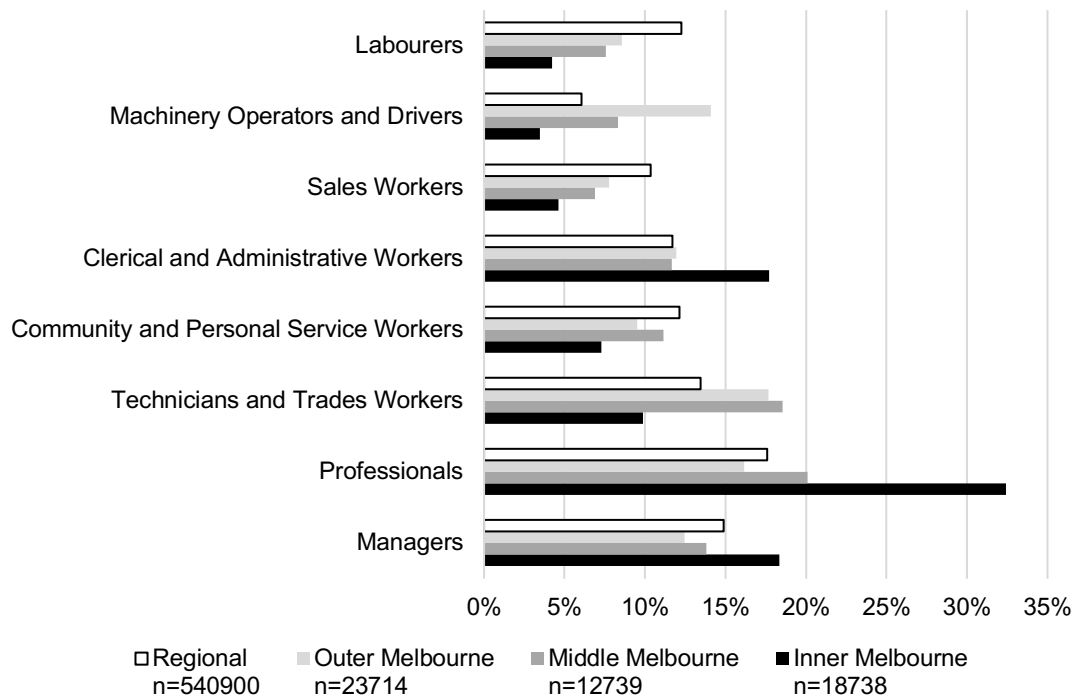


Figure 41: Metro-bound commuters by occupation, 2016

Source: OCCP Australian Bureau of Statistics (2016b) LGA definitions of Inner, Middle and Outer Melbourne.

Chi-Squared statistics: $DF = 27, \chi^2 = 9430.6, P(\chi^2 > 9430.6) = 0$, cannot accept null hypothesis, there is an association between occupation and place of work.

The categorisation of metro-bound commuters by Inner, Middle and Outer Melbourne work destinations indicates that it is the Inner Melbourne commuters who are most distinct from the regional Victorian workforce in terms of industry and occupation. These differences indicate different skills and experiences in their working life depending on place of work. However, as the following analyses indicate, it is the distinctive characteristics of Inner Melbourne commuters that are likely to engender the greatest change in regional communities.

Education

Table 23, on the following page, summarises the highest level of educational attainment by place of work for regional residents. The Australian Bureau of Statistics’ *Level of Highest Educational Attainment* (HEAP) Census data provides the highest levels of school and non-school qualification for people aged over 15 years (Australian Bureau of Statistics 2016a). The data has also been categorised by Place of Work, therefore the comparison of the data in Table 23 is for employed people only.

Table 23: Highest level of education attained by place of work, 2016

Education	Inner Melbourne	Middle Melbourne	Outer Melbourne	Regional Vic	Total
Postgraduate Degree	10%	6%	3%	3%	3%
Graduate Diploma and Graduate Certificate	5%	4%	3%	3%	3%
Bachelor's degree	27%	16%	13%	15%	15%
Advanced Diploma and Diploma	13%	12%	11%	11%	11%
Certificate III & IV	16%	27%	29%	24%	24%
Secondary Education - Years 10 and above	22%	26%	30%	33%	32%
Certificate I & II	0%	0%	0%	0%	0%
Secondary Education - Years 9 and below	2%	3%	5%	5%	5%
Supplementary Codes	3%	2%	3%	3%	3%
Not stated	2%	3%	3%	3%	3%
Total	18,738	13,749	23,699	540,889	597,078

Source: Place of Usual Residence, Place of Work, Highest Level of Educational Attainment (HEAP), Australian Bureau of Statistics (2016b). LGA definitions of Inner, Middle and Outer Melbourne. Chi-Squared statistics: $DF = 27$, $\chi^2 = 7046.6$, $P(\chi^2 > 7046.6) = 0$, cannot accept null hypothesis, there is an association between level of education and place of work.

Inner Melbourne workers are distinct from other places in terms of educational attainment. They are more likely to have postgraduate qualifications and bachelors' degrees in comparison to the other places of work, while Outer Melbourne metro-bound commuters are more similar to the HEAP distribution for regional Victoria. Middle and Outer Melbourne have higher percentages of Certificate III and IV workers and Outer Melbourne and Regional Victoria have higher percentages of Secondary Education of Years 10 and above. These patterns clearly reflect the prevailing understanding of Melbourne's spatial labour market, as described in Section 1.2.4. In particular, the inner urban zones that are associated with high skill knowledge work coincide with the highest concentration of university-level education.

Working Partners

An additional factor in the regional development outcomes from metro-bound commuting is the employment of the partners of commuters. This data cannot be obtained through Census data, as it is not possible to link individuals place of work responses to the same household.

Of the 384 commuting survey responses 215, or 56 per cent, indicated that they had a working partner. Of these 215 working partners, 62 per cent worked in regional Victoria, as shown in Table

24. The data also suggests that metro-bound commuting households also provide additional skilled workers in regional areas who do not themselves commute to Melbourne, particularly managers and professionals. Only 20 of the 235 survey respondents who relocated to regional Victoria to start commuting indicated that ‘More convenient for other household member to access employment’ was the main reason for the relocation. The implication is that for the partners working in regional areas, most had found local work after shifting and that metro-bound commuting households have contributed to regional labour supply. The survey method may also mean that double-counting may have occurred if more than one metro-bound commuter in a household responded to the survey. Given the over-representation of managers and professionals in the survey responses, it is likely that the data for these occupations is overcounted more so than other categories.

Table 24: Commuter partners employment summary

Occupation	No Working Partner	Working Partner			Total
		Melbourne	Regional	Blank	
Clerical or Administrative Worker		6	13	1	20
Comm'ty or Pers. Service Worker		3	5		8
Labourers		2	3		5
Machinery Operators and Drivers		0	5		5
Manager		17	22	1	40
Professional		41	57	4	102
Sales Worker		2	6		8
Technician or Trade Worker		10	13		23
Blank		0	2	2	8
Total	155	81	126	8	384

Source: Metro-bound commuter survey data

The survey data also indicates there is a high degree of occupational containment within households for managers and professionals and their partners, as shown in Table 24 on the following page. That is, the partners of metro-bound commuting managers and professionals are also likely to also be managers and professionals.

Table 25: Manager and professional partners, place of work and occupation, count

Survey Respondent	Partner						
	Metropolitan Place of Work			Regional Place of Work			Non-Working
	Manager	Professional	Other	Manager	Professional	Other	
Manager	11	8	5	5	14	14	37
Professional	7	30	14	12	36	18	88
Other	3	6	8	1	4	10	39
<i>Total</i>	<i>21</i>	<i>44</i>	<i>27</i>	<i>18</i>	<i>54</i>	<i>42</i>	<i>164</i>

Source: Metro-bound commuter survey data

This does suggest that metro-bound commuting partners may transfer to regional work over time, or that if both partners start metro-bound commuting, there is some likelihood that one will enter the regional workforce at some point. This conclusion is specific to the metro-bound commuting managers and professionals as a result of the skew in the data. There may be similar relationships between partners and employment for other commuting households, but the low response rate obviates similar conclusions for other occupations.

7.3.2 Metro-bound Commuters and Regional Knowledge Workers Model

The purpose of this section is to investigate if there is a relationship between metro-bound commuting and regional growth in knowledge work, as it provides insight into whether metro-bound commuting is generating the types of work associated with higher levels of human capital than might otherwise be expected for the regional locality. The concentration of knowledge work in metropolitan areas is a major aspect of the ‘metropolitan tilt’ discussed in Section 3.2, with evidence of this trend in the study region included in Section 1.2.4.

Managers and Professionals in Knowledge Intensive Industries

The analysis is based on census counts of Managers and Professionals in Knowledge Intensive Industries (MaPKIIs). The categorisation of MaPKIIs used here includes the ANZSIC level 1 occupations of *Manager* and *Professional* in the following ANZSIC level 1 industries:

- Manufacturing;
- Information, media and telecommunications;
- Financial and insurance services;
- Professional, scientific and technical services;
- Public administration and safety;

- Education and training;
- Health care and social assistance; and,
- Arts and recreation services (Australian Bureau of Statistics 2006a, 2013).

This categorisation is based on previous research into knowledge workers in Sydney and Melbourne (Hu 2014, 2016), providing a definition that is readily calculable from census data, particularly in comparison to the complex methods considered by the Australian Bureau of Statistics (Trewin 2002), or the intellectual and decision-making aspects of work that are not captured in censuses (see Florida 2004; Reich 1991 for example). For the purposes of determining regional employment growth relationships in sectors fundamental to modern developed economies, the two occupations and eight industries listed above provide a suitable definition for use in regression.

Specification of the model

The model takes 2006 as a baseline for MaPKIIs in the 48 LGAs in regional Victoria, assessing whether there is a correlation between the number of metro-bound commuters in 2006 and an increase in MaPKIIs employed in that LGA between 2006 and 2016. The difference between this model and the expenditure model in Section 7.2 is that the use of metro-bound commuters at the start of the period is to assess whether they are a precursor to MaPKII employment growth, rather than a direct associate. The hypothesis is that concentrations of metro-bound commuters, and thus higher human capital, result in the development of higher-order economic functions, as suggested by the discussion in Sections 3.3.3 and 4.2.2. The use of a 10-year time-frame provides an extended period for employment creation as a result of metro-bound commuters

The model is specified below:

$$\ln(\Delta MaPKII_i) = \beta_0 + \beta_1 \ln(MBC_{i,2006}) + \beta_2 \ln(Local MaPKII_{2006,i}) + \beta_3 \ln(\Delta Popn_i) + \beta_4 \ln(Lag) + \varepsilon$$

Where:

$\Delta MaPKII_i$ Change in MaPKIIs between 2006 and 2016, working in LGA i .

$\Delta MBC_{i,2006}$ Change in metro-bound commuters residing in LGA i in 2006.

$Local MaPKII_{2006,i}$ Number of MaPKIIs working in LGA i in 2006.

$\Delta Popn_i$ Population growth in LGA i between 2006 and 2016.

Lag Is a model of the increase in MaPKIIs working in neighbouring LGAs, discounted by the distance between the main centres squared.

If metro-bound commuting is a precursor to increased MaPKIIs working in regional areas, then $\Delta MBC_{i,2006}$ should have a positive and significant coefficient. The number of MaPKIIs working in the LGA in 2006 is also expected to have a positive coefficient, due to agglomeration effects. The population growth in each region is also expected to have a positive impact on MaPKII employment, due to increased regional demand.

A spatial lag has been included in the analysis, which is calculated by the increase in MaPKII employment in neighbouring LGAs divided by the distance between the major population centres squared. This represents the agglomeration impacts, as it is likely that MaPKII employment will be more likely to occur in larger and closer centres.

Additional variables did not improve the accuracy of the model or resulted in multi-collinearity issues. These alternate variables include regional income, population size in 2006 or 2016, commuters to other, non-metropolitan regions and size of the workforce in the LGA.

The regression data summary in

Table 26 indicates the variation in the growth of regional LGAs between 2006 and 2016. In particular, the population of Greater Geelong increased by 35,949, while more remote LGAs in Victoria's west such as Gannawarra, Buloke, Hindmarsh and Yarriambiack declined in population. The change in MaPKIIs ranged from an increase of 6,641 in Greater Geelong, predominantly in Health Care and Social Assistance, to a decline of 97 in Benalla, some 200 km north of Melbourne. The largest increase in metro-bound commuting was also in Greater Geelong, while several of the more remote LGAs had no increase, as could be expected. The negative lags indicate that there has been a reduction in MaPKII employment in the surrounding region.

Table 26: MaPKII Regression Summary Data

Factor	Minimum	Maximum	Mean	Std. Deviation
$\Delta MaPKII_i$	-97	6641	457.79	1054.70
$MBC_{i,2006}$	8	9427	785.4	1875
$Local\ MaPKII_{2006,i}$	116	13095	1541.40	2285.71
$\Delta Popn_i$	-841	35949	3555.54	6362.94
Lag	-0.028	24.32	2.41	4.84

Source: Australian Bureau of Statistics (2006b, 2016b).

Regression Results

The summary data in Table 27 indicates that the model provides a good explanation for the variation in MaPKII employment growth as the R Square value is 0.688, indicating that the independent variables used in the model are significant, as indicated by the F value and significance.

Table 27: MaPKII regression summary data

R	R Square	Adjusted R Square	Std. Error of the Estimate	F	Significance
0.829	0.688	0.658	0.707	23.148	.000

The two variables that were found to have a significant effect on the growth in MaPKIIs in the ten years to 2016 were the number of MaPKIIs employed in the LGA in 2006 and the population growth; the number of metro-bound commuters in 2006 and the spatial lags were not significant as shown in

Table 28. The relationship between population growth and MaPKII employment may be due to the inclusion of *Health care and social assistance* and *Education and Training* within the MaPKII specification, as employment in these sectors is associated with population.

The coefficients indicate that a 1 per cent greater number of MaPKIIs employed within an LGA in 2006 was associated with a 0.457 per cent increase in MaPKIIs in 2016. For each 1 per cent increase in population between 2006 and 2016, there was a 0.525 per cent increase in the number of MaPKIIs employed, as shown in

Table 28 on the following page.

Table 28: MaPKII regression coefficients

Factor	Coefficients		Beta	t	Sig.	VIF
	B	Std. Error				
(Constant)	-1.532	0.866		-1.770	0.084	
$\ln(MBC_{2006,i})$	-0.024	0.128	-0.35	-0.199	.850	2.776
$\ln(Local\ MaPKII_{2006,i})$	0.457	0.194	0.406	2.355	.023*	2.742
$\ln(\Delta Popn_i)$	0.525	0.180	0.509	2.920	0.006*	2.626
$\ln(Lag)$	0.147	0.246	0.103	0.599	0.553	2.069

* Denotes significant at 95% confidence.

The variance inflation factors (VIF) are less than 5, indicating that the multicollinearity is not a concern in this regression.

Discussion

The indication from this regression is that there is not a correlation between metro-bound commuters and employment in knowledge employment over time, given the use of the MaPKII designation as a proxy. Similar to the resolution of the jobs-housing balance arguments discussed in Section 4.3.3.2, the implication is that population and employment are not self-organising into more efficient morphologies as jobs in the knowledge sector are not following people at a meso-scale. Therefore, the increased human capital in regional areas that results from metro-bound commuting is not generating the economic benefits that the literature indicates it should, implying that these effects are likely to predominantly occur at the locality of work rather than residence.

7.3.2.1 Regional Employment Experiences

The interviews provided further qualitative insights into regional labour markets, which further complements the results of the MaPKII model. In particular, the qualitative data brings to light the disconnection between metro-bound commuters' employment attributes and the work on offer in regional areas. This can be seen as a result of the specialisation of work in the knowledge economy, that many types of jobs in these sectors are tied to primary city locations. The inability to identify the mismatch in census data was borne out in the interviews. Participants who indicated that they worked in jobs that may have a regional presence such as accounting, law and IT, said that their specialisation was only required in the metropolitan area, and needed to be in the central city due to the backwards and forwards linkages of agglomeration (see Scott 2006).

The interviews with metro-bound commuters included insights into regional labour markets and the quality of jobs on offer in comparison to metropolitan labour markets. Recent relocators to regional areas had been surprised by the limited prospects for finding local employment, not having researched regional labour markets prior to relocating. A sense of frustration and resignation was evident in some who had been commuting for longer amounts of time:

The guts of it is there are no jobs in regions. Like, that's the guts of it, I can tell you from having looked for and having been in that region for about 24 or so years. I did have one of the few jobs in that region at the time, but once I decided to bring the kids to town I couldn't get back and in the area I was working in, that was all gone, the funding had gone and all the rest of it. The guts of it is absolutely jobs [Interviewee No.14].

One interviewee also pointed to the lack of suitable regional employment as the main reason for their return to Melbourne:

... I can tell you unequivocally that at a senior level, and it would be the same in a lot of regional communities, you've got the Shire [local government], the hospital and the schools and that's really [all the] large employers. If you work in hospitality you've got a lot more options but for senior professional jobs it's very limited. So the whole time that I was commuting I was watching, keeping an eye for opportunities and there weren't any, so in the end I decided, well I was fed up ... I'll just come back to town (Interviewee No.14).

On the other hand, Interviewee 3b had been offered work in nearby regional cities as “they find it hard to get staff” in their field, which required a bachelor’s degree as a minimum.

A long-term commuter from a second city had given up looking for local employment:

I used to, I really don't any more. I think in particular with [large industrial employer] closing it means a lot of the really professional positions associated with [employer] also have gone and then you have also got [second manufacturer] that disappeared, earlier than that it was [third manufacturer] that's disappeared, even the [transport industry] has lost jobs. You know, there are so many professional people looking, so no ... and my husband looks at the paper every single weekend ... Things are starting to change now, but I think what's popping up is a lot of service industries like cafes and maybe little start-ups but nothing that's scaled up enough to really employ quite a few people. And it's that scaling that is always the big issue (Interviewee No.11).

The relationship between the decline of the large scale businesses in Geelong and the decline of professional employment is an interesting insight, recalling the theoretical correlation between the

degree of the division of labour and industry size (Jacobs 1969; Smith 1776 [2013]; Smith 2010). However, other interviewees from Geelong and the surrounding region saw the establishment of the three public sector social insurance agencies in the city as instigators for change in the regional labour market. The three agencies in central Geelong are the National Disability Insurance Agency, and the Victorian Government's insurance agencies for workplaces injuries and traffic accidents. Given the scale of the agencies and their workforces, interviewees were aware of new, specialised employment opportunities in the region as well as the prospect of the increased demand for labour increasing wages in the city.

Metro-bound commuters also observed the difficulty other residents had in finding suitable work in regional towns:

I have had a few friends who have moved [location], they've rented, been there for a year and there is absolutely no work except at the boning factory, the meat factory, and they've found that in order to get cash they have had to work these full-time jobs (Interviewee No.2b).

And,

One of our friends who lives in [location], she's got a master's and used to work [employment] ... She's struggling to find work, so she is waiting tables and working in cafes, it's just not easy to find work around here (Interviewee No.14).

While this summary of interviewees' experiences of regional labour markets indicates that there is a dearth of quality regional employment, the possibility of bias due to the sample needs to be taken into account. That is, these are the predominantly the reflections of those who have not found regional employment and are therefore metro-bound commuting. It does not include people who found regional employment and relocated, and it is likely that there was an under-representation of people who had ceased metro-bound commuting upon finding regional work, although this cannot be quantified through available data.

Given these caveats, the two interviews conducted with people who had found regional employment in careers commensurate to their previous metropolitan employment provide notable insights. In particular, it is of note that in both of these instances the regional employment had resulted from a strategic, long-term process of engagement with their new employer. Interviewee No.7 had initially taken a part-time position as:

I got the impression early on that it was a bit of who you knew, like me being from Melbourne no one knew who I was, so 'who's this person?'. It took me a while.

Interviewee No.21 holds a PhD in their field but could not find regional employment in the sector. Eventually, they resorted to engaging a recruitment consultant who advised the interviewee to get to know the people in the organisation:

The main reason I was successful in this case, is that while the job was advertised in a competitive process, I was already known to the people who were looking to appoint someone. I made them aware that I was interested in something that should come up, and when it did finally come up, I got a heads up and told here's a role we think would suit. It was very competitive, very difficult ... this one was a good outcome this time around because I was a known quantity (Interviewee No.21).

These examples indicate that even with experience and qualifications, it can be difficult for metro-bound commuters to be successful in competitive appointment processes. They are likely to be competing against people with existing connections to the organisations, particularly in smaller communities. However, there may be a selection bias at play in these interview responses, in that those who responded to the survey and participated in the interviews were those who had not found regional employment.

7.3.3 Summary

This section of the thesis has provided evidence that metro-bound commuters have changed the composition of the regional resident workforce. In particular, those who commute to work in Inner Melbourne are likely to have contributed to the change. They are more likely to work in industries and occupations that comprise the knowledge sector, and to have a university qualification, indicating their contribution to the human capital of the regional resident workforce. The survey data also indicates that metro-bound commuters' households are also contributing to human capital in regional areas, particularly as there is a propensity for the partners of metro-bound commuting managers and professionals to also be managers and professionals, some of whom work in regional areas.

However, quantitative and qualitative analysis indicates that the increased human capital residing in regional areas is not generating employment similar to that in which those who contribute to human capital work. The concentration of well-paid employment - particularly in the knowledge-based industries – in the centre of Melbourne remains an issue for residents of regional Victoria. Given metro-bound commuting, and commuting to Inner Melbourne for work, have been occurring in substantial numbers since the early 1990s (McKenzie 1996), it is difficult to make a case that commuting has had a substantial effect on the quality of regional employment on offer. The human capital and agglomeration literature suggests that this outcome may be due to the widespread distribution of metro-bound commuters in the city-region.

7.4 Business Formation

A third way in which metro-bound commuters may generate regional employment is through leaving their metropolitan employment and starting regional businesses. As Herslund (2012) observed, there is some propensity for commuters or their partners to start businesses in regional areas if there was not suitable local employment for them. This section provides the survey responses to questions regarding business formation, and interviews with five people who have established businesses in regional Victoria who have either commuted to Melbourne previously, or regularly commute to Melbourne as part of their current business activity

7.4.1 Survey results

Sixteen of the 374 survey respondents, approximately 4 per cent, indicated an interest in ending metro-bound commuting by starting a new business, as detailed in Table 29. Two responses have been omitted from the table due to the lack of information provided on their prospective business.

Table 29: Post-commuting business concepts identified by respondents.

Business type	Market	Employ other people	Main barrier to starting
Arts	National, global etc.	No	Time and the likelihood of poor pay
Cake Decorating	National, global etc.	Not sure	Cost
Commercial production	National, global etc.	After the business builds up	Time
Conservation services	National, global etc.	Not sure	Money
Consulting	Melbourne	Not sure	Economic
Dog training and care, hospitality	Home city or town	Not sure	Financial risk
Essential services delivery	Home city or town	After the business builds up	State Government delays in service. Local Council barriers.
Graphic design	National, global etc..	After the business builds up	Cost and sustainability
Development of a product	Not sure	After the business builds up	Time to do the prerequisite work - I am always commuting and then exhausted!
Photography	Home city or town	After the business builds up	Guaranteeing that my income would be the same
Policy consultant	National, global etc.	No	Need a steady salary to support 4 children

Business type	Market	Employ other people	Main barrier to starting
Property Development	Melbourne	After the business builds up	Finances
Professional Services	National, global etc.	After the business builds up	Clearly defining the specific services I would provide and the market.
Technology	Melbourne	After the business builds up	Working full time to fund development

Source: Metro-bound commuting survey

Only three of the respondents indicated that their business intended to serve primarily regional markets, the other twelve expected to trade in Melbourne or beyond. None expected to employ other people immediately, and nine expected to require employees as the business built up. The most frequently reported barriers to launching the business idea were financial, expressed as costs, lower pay or risk.

There were two other regional businesses referred to in the data collection process. Interviewee No.7's partner had commuted to Inner Melbourne for work until opening a retail store in regional Victoria, and a survey respondent who had moved to regional Victoria to commence metro-bound commuting noted that their partner had opened a retail business in their place of residence. This person indicated they would also prefer to end commuting but the "main barrier is maximising profits so that I too can work in the business".

The commuting survey respondents indicated that Local Government support for starting businesses were in providing incubators and planning support, as indicated by the summary in

Table 30 on the following page. Additional comments regarding council support for new businesses included less intervention through planning schemes, being more open to new industries and innovation, and running business events on weekends rather than weekdays. Interviewee No.9 also indicated that it was difficult to make use of the business support from councils when they were at work in Melbourne during the hours that these services were available.

Table 30: Council support for business formation

Response	Serviced office suite	Business planning support	Networking events	Business incubator
Yes, I would definitely use this service	2	4	5	5
I may use this service	5	7	9	6
This is of no use to me	4	4	1	3
Not sure	2	0	0	1
(Blank)	3	1	1	1

Source: Metro-bound commuting survey

7.4.2 Business experiences

Six regional business operators were interviewed, who had either classified themselves as metro-bound commuters due to their frequent travel into Melbourne for work purposes, such as meeting clients or had ended metro-bound commuting by starting their businesses. The businesses could all be classified as within the knowledge sector, including business services, design and creative services. These interviews provide additional insight into the regional business locations discussed in Section 3.3.4, such as the importance of maintaining connections to the metropolis, the costs and benefits of regional locations and communications.

7.4.2.1 Clients, networks, collaborators and employees

The interviewees indicated that the majority of their clients were in Melbourne or other State capitals. The reason given for this was the level of specialisation of the services required meant that there was not a market for their services in regional areas. As Interviewee 6b explained, it was:

... probably partly due to needs, local businesses not having the need for someone of my specialisation, it may be a budgetary sort of thing as well depending on how much of their business budget requires that sort of design and marketing spend (Interviewee No.6b).

Another service provider thought that the extent of Melbourne work was a result of the flow on from networks and projects in place before relocating:

The majority of clients are still in Melbourne, which is to do with not living here long and the longevity of a lot of my projects. For [industry], a good project usually lasts two years or so. The main method I get a lot of my projects is just referrals, from existing networks, the majority of which is in Melbourne but I'm hoping that will change, not that I've actively pursued it either (Interviewee 3b).

In this case, the interviewee suggests regional work may be possible over time, but the more specialised providers indicated that their clientele will continue to be located in Melbourne and other major cities. Interviewees with clients in cities other than Melbourne noted the advantage of being located in the Melbourne-Bendigo corridor due to the ease of access to Melbourne International Airport which is located in that radius.

Four of the five sole-providers interviewed still relied on Melbourne for maintaining industry networks, for collaborators on larger projects, and for employees and project team members, which are closely associated with agglomeration effects, particularly for knowledge industries (Scott 2006, 2008a). This was mainly a result of the sparse distribution of specialised service providers in regional Victoria, particularly in comparison to Melbourne. As noted in the previous discussion of client locations, this is also an effect of the interviewees having existing networks in Melbourne, established before they had relocated to regional Victoria. There was an opinion that regionally-based businesses needed to work harder at maintaining metropolitan networks due to the importance of such networks in sustaining the business:

Those networks still exist, but I work very hard to keep them for that very reason ... also make it known that I like working with them and if they need help ... or if they have got new clients and new work coming through that I am available. I try and prioritise them over other contacts (Interviewee 3b).

There were mixed reports about finding employees, or ongoing relationships with freelancers, with appropriate skills, as Interviewee No.1b reported:

I've interviewed a couple of people who were living up in [residence] but they were missing out on some of the key things I needed in my business.

On the other hand, Interviewee No.2b had networks and collaborators within the second city where they established their business, which enabled the sharing of facilities and project collaborations, also reporting that:

I actually found my [employee] on the train coming back from Melbourne last year, but there is a network of people I use in [residence].

Another interviewee had established a professional network in the region where he had established the business, but even though:

I have connected with a few other allied specialists in the area ... within surrounding towns ... It is something that may be a coffee, maybe an email which has been good. It is a little bit

of a challenge compared to the bigger centres, given the sheer amount of people working in the same profession (Interviewee 3b).

The implication is that while there are people in related fields nearby, there is not the concentration of people to foster the exchange of information and innovation that occurs in as a result of the dense networks and interactions in larger cities as espoused by Jacobs (1969).

While there is some indication of embeddedness within regional communities and business networks, the overriding sense is that these businesses are metropolitan satellites. Much like employee commuters, these business operators have retained the income-generating aspects of the metropolis while accessing the real estate and amenity advantages of regional locations, as discussed in the next section. These discussions suggest that these businesses would likely benefit from concentration and co-location in one or just a few regional towns, rather than being distributed across the smaller towns within the metropolitan commutershed.

7.4.2.2 Housing costs

The lower costs of housing were an important factor in establishing businesses in regional areas, particularly as the majority of these interviewees worked from home. Lower costs, including real estate, are referred to as a source of regional competitiveness in business location decisions (Keeble & Nachum 2002).

The lower real estate prices in regional Victoria allowed for larger homes with space to be used as an office, as well as to reduce the financial risks associated with taking on mortgages with the insecure incomes of new businesses, typified by Interviewee No.6b:

It was a major factor for us being able to own your own home and actually down the track building a studio or commercial space to work in over time. That sort of stuff I wouldn't be able to probably to achieve, or if I was able to in the city, I'd be under a lot more stress and duress in terms of financially. I'd be looking at somewhere in the realm of 5 times the price, not only for a house but also a workspace ... That cost aspect has afforded us a greater flexibility in what we can do and also less stress in that sort of way, not having to actually service a million-dollar mortgage and having space at home rather than a one- or two-bedroom apartment.

Similarly, Interviewee No.1b “one of the reasons for moving up here was I don't have an overhead any more with a massive [business facility] rent”, and had purchased a five-bedroom home, with enough room for their family as well as to operate the business out of. Interviewee No.2b had originally leased a property to operate their business but soon realised there was no need given the

size of housing available in their locality of residence. For the business it was a benefit due to “low overheads, I could live and work from home and not have too many expenses”.

This indicates that the regional-metropolitan housing cost differential is an important factor in regional business formation, particularly for housing of the size that enables home offices and workspaces. It can be seen as a factor in determining the spatial margin of profitability, due to the lower costs of business operations in regional locations. However, the benefits of lower regional costs need to be countered against the increased costs of accessing metropolitan areas, as discussed in Section 7.4.2.1.

7.4.2.3 Perceptions of regional businesses

The regional business operators indicated that being located in regional areas meant that they were perceived as providing a lower standard of services than metropolitan counterparts. This recalls a quote attributed to former Prime Minister Paul Keating, that “Sydney is the only place to live in Australia: the rest is camping out”. When questioned on that statement, he replied “No somebody falsely attributed those words to me. I love Melbourne the garden city of Australia” (Keating 1995).

Interviewee No.5b reported that while the market for their services was national, local businesses were sceptical of them as they were not located in Melbourne:

... because [the perception is] if you are in the country you don't know as much as if you work in the city. We get that more from [local] clients than what we do from national or Melbourne based clients, there is this mentality that, they feel that whether it's the resources, the IP, or the level of experience of consultants is what they're questioning.

That this perception is prevalent in regional clients raises the question of whether they see themselves as somewhat lesser than their metropolitan counterparts. Another interviewee reported similar perceptions:

Melbourne is a big, big place and sometimes because you are from out of Melbourne you are treated a little bit differently. Maybe not as serious because of whatever (Interviewee No.2b).

One person maintained an office in Richmond for similar reasons, as:

I avoid mentioning that I work from home in business situations, I say my office is in Richmond, I'm based in Richmond. If it does get more personal, I say I have a house in [residence]. There is this thing in their head that if you are in a country town you are not connected, you're not part of the Melbourne [industry]. I've noticed that, so I've changed to

having my business address in Richmond rather than my home address, which has made a difference. (Interviewee 1b).

It is of note that these three interviewees indicated that they served national markets in specialised fields and established their businesses following successful metropolitan careers in their field, indicating the perceptions were not a real reflection of the quality of the services provided. Therefore, these experiences of being seen as lesser providers due to their regional locations indicate that reputation and perceptions are an advantage of city locations, in addition to the frequently cited agglomeration effects of industry linkages, labour markets and information exchanges (Scott 2006 for example).

7.4.2.4 The importance of the internet

The business interviewees were all engaged in knowledge-based or creative services, therefore the efficient transfer of data and information to clients and other members of project teams was vital to their operations. The quality of internet connections is particularly important for those in design and image-based activities, due to the sizes of files requiring transfer:

I work in a virtual digital world, so you need a fast internet connection. [residence] is great for that, I can work with someone who is Melbourne, or in [residence] or somewhere else, get the same job done in the same amount of time, they can work from home or wherever. It doesn't really matter where they are located (Interviewee No.2b).

Quality internet connections were also cited by several respondents an important factor in client liaison and reducing the need to commute to Melbourne:

As long as you have good internet you're OK ... beginning to find alternatives to going into the city if there are any, such as video conferencing, longer phone calls, which reduces the need to travel (Interviewee No.3b).

The internet can be seen as enabling regional business locations, through improved communications and effectively instantaneous data transfers, but it hasn't obviated the need for face-to-face communication and market proximity discussed in 7.4.2.1. This is a similar conclusion to the observations of Hall and Pain (2012), that small-scale businesses can operate in regional areas if there is an adequate provision of communications infrastructure and ready access to metropolitan markets and transport infrastructure.

7.4.3 Summary

It is evident from the data presented above that there is some propensity for metro-bound commuting to result in new business in regional areas, either following a period of commuting or shifting metropolitan-focused businesses to offices in regional locations. However, only 4 per cent of survey respondents indicated that they were considering starting a regional business in order to end commuting. As it is unlikely that all of these would come to fruition, the relationship between metro-bound commuting and business formation is likely to be much less than 4 per cent. The main barrier to business formation was financial, including uncertain incomes and raising capital. Survey respondents indicated that they would use council services such as business planning support, networking events and business incubators to support their enterprises.

Six interviews were undertaken with regional business operators. Five of these interviewees indicated that they regularly commuted to Melbourne for work purposes, and the sixth had previously been a commuter and had started a regional business in direct response to the effect that it was having on their health and personal relationships. The data collected in these interviews concurs with the agglomeration and regional business formation literature. Specifically, the specialised nature of the services provided meant that their markets were predominately in Melbourne and other Australian capital cities; the sparse distribution of similar industries in regional areas meant that networking, collaborators and employees were more likely to be found in Melbourne; and, the lower costs of regional real estate reduced expenses and risk, as well as made affordable space for home offices. The implication is that there are countervailing factors at play in the locational choices of the interviewees' businesses: the need for access to metropolitan markets, projects, information and collaborators is counteracted by the benefits of lower costs. The choice to relocate to regional areas was also facilitated by communications and transport infrastructure.

A further insight from the interviews and survey data is that the proposals for new businesses and those that are already in operation have minimal employment outcomes for regional residents, with only one exception. The businesses interviewed indicated that their needs for specialised skills meant that suitably qualified people were unlikely to be found in regional areas, and many were 'front room' operations: people providing specialised services out of their home.

7.5 Conclusion

The results presented in this chapter demonstrate that the employment effects of metro-bound commuting are limited to expenditure effects, which can be described as employment that arises as a result of population growth, not through endogenous industrial factors. The employment effects related to human capital and business formation were found to be minimal, which may be a result of

competition from metropolitan businesses and service providers who benefit from agglomeration effects suppressing economic activity in the regional town. Given the literature relating productivity and economic growth to human capital, it is of particular note that there is minimal evidence that resident human capital is generating regional employment benefits. This disjuncture between population and employment indicates that human capital effects are more likely to occur in the location of employment than residence. In turn, this finding implies that regional residential attraction strategies will be inefficient if workers (and households) who relocate to the region rather work elsewhere. A second implication is that under current policy settings, regionally resident and metro-bound commuting human capital is an underused resource for regional development.

The implication of the results included in this chapter is that metro-bound commuting is not leading to functional polycentrism in terms of regional employment growth beyond population servicing. The results do suggest that for second cities and regional settlements in decline, and which have falling population and high levels of unemployment or non-participation in the labour market, metro-bound commuting may be of benefit, particularly in maintaining employment in otherwise vulnerable service sectors. However, in circumstances where counterurbanisation and commutershed population growth is occurring these results suggest further policy interventions are required to facilitate the redistribution of economic functions within city-regions to accompany regional settlement population growth. This overarching conclusion provides the basis for the policy analysis in the next chapter.

The following sections provide detailed findings regarding the expenditure, human capital and business formation effects.

Regional Expenditure Effects

There is a correlation between increasing metro-bound commuting and regional employment, based on analysis of 2006 and 2016 census data for Victoria. This finding accords with previous regression analyses of commuters and employment in Sweden (Lavesson 2016) and the US (Partridge et al. 2010). These relationships recall trickle down and economic base theories, as commuters can be seen as exporters of employment which generates additional expenditure and employment growth in commuters' places of residence. While these relationships indicate employment growth, they do not consider the quality of employment created.

Human Capital Effects

The industries of employment and occupations of the regional resident workforce vary with the place of work, which can be summarised as increasing levels of specialisation, knowledge-intensity, human

capital and income with proximity to the inner city. The distribution of occupations in the regional resident workforce reflects this geography of employment: the predominant occupations are *Laborers* in regional areas, *Machinery Operators and Drivers* in Outer Melbourne, *Professionals* and *Technicians* in Middle Melbourne, and *Professionals* by far in Inner Melbourne. These differences are also apparent in the highest level of educational attainment of these four places of work; Inner Melbourne has the highest proportion of bachelor's degree and postgraduate educated workers. It can be argued that these tendencies reflect the employment on offer in these sections of the city - manufacturing and logistics in the outer suburbs, population services in the middle, and the knowledge economy in the inner city – but because they are there, it does not necessarily follow that people will travel long distances to work in them.

While Middle and Outer Melbourne workers are especially different from their regional counterparts, the analysis presented here emphasises the Inner Melbourne workers' distinct qualities. The incomes, educational attainment, industries of work and occupations indicate that Inner Melbourne commuters work in Scott's (2008a) cognitive-cultural industries. It is important to also consider the employment of other members of metro-bound commuting households. The survey data indicates that metro-bound commuting managers and professionals are likely to include other managers and professionals within their households, some of whom are likely to have transferred to regional employment following their move to regional Victoria. Given managers and professionals are likely to commute to Inner Melbourne, it raises the possibility that encouraging growth in Inner Melbourne commuters may have benefits for regional labour supply due to the employment experiences and attributes of their partners. However, the discussion in Section 7.3.2.1 indicates that this effect may be tempered by the limited scale of demand for such human capital in the regional labour market, due the limited breadth and depth of the latter. The regional labour market does not appear to be discernibly responding to this additional human capital supply.

Business Formation

The data presented in Section 7.4 indicates a limited propensity for business formation as a result of metro-bound commuting. The survey indicates that 4 per cent of metro-bound commuters had some intention of forming a business as a way to end metro-bound commuting, while the percentage of metro-bound commuters actually forming regional businesses is likely to be much less than that. Survey respondents indicated that Local Government could assist in business formation through networking events, services offices and business planning support.

The interviews with businesses operators who had previously been metro-bound commuters, or by those who had established regional businesses that involved regular commuting to Melbourne as part of their work, highlighted some of the central issues of this thesis. While the businesses were

established in regional areas, they were predominantly focused on metropolitan markets, and much of the inputs to business were also sourced from the city. This includes project team members, networks and suppliers. One interviewee had retained a metropolitan address due to the perception that regional businesses were somehow second rate. The main benefit of regional locations was seen to be lower land costs, including affordable regional houses offered enough space for a home office as well as areas for living.

The findings of this section and the wider insights into metro-bound commuting in preceding sections and chapters have implications for regional development policy, which is discussed in Chapter 8.

8 Commuting as Regional Development Policy

8.1 Introduction

This chapter analyses Federal, State, and Local Government policy regarding the interaction between metropolitan and regional planning for population and employment in Victoria. The insights from Chapters 7 and 8 provide the basis for considering how strategic planning and transport proposals consider metro-bound commuting and issues relating to the distribution of population and employment within the city-region. This analysis of regional policy provides insights into how governments have conceptualised the relationships between commuting patterns, city-region morphologies and regional development, and therefore how policies relating to metropolitan-regional interactions can be improved.

The first section assesses the economic development strategies of selected Local Governments from within the metropolitan commutershed. The strategies of three LGAs are analysed in focus to provide a wide range of commuters' residential locations: Geelong City Council, Moorabool Shire and Macedon Ranges Shire. As discussed in Section 6.1.1, these three LGAs are long-term metro-bound commuting residential locations and include settlements referred to in recent metropolitan planning strategy as suitable residential alternatives to Melbourne (Department of Environment, Land, Water and Planning 2017). The main considerations are how connections are made within the policies between population growth and local employment, and how, or if at all, the local economic contributions of metro-bound commuters are included within the strategy.

Section Two is concerned with State and Federal Government interventions and policy, including metropolitan planning strategies and transport infrastructure. This analysis draws on the conclusion to Chapter 4, that functional polycentrism should be the primary goal of redistributive metro-regional policy, and the results of the analysis in Chapters 6 and 7, particularly that jobs do not appear to follow people at a meso-scale. Given this foundation, the analysis of regional policies assesses whether the primary objective of policy is on the distribution of population, employment or functions across city-regions.

The analysis indicates the need for an analytical framework for the assessment of Federal, State and Local Government policy as it relates to metro-bound commuting and the redistribution of people and employment in city regions. The final section of this chapter presents such a framework, providing an analytical tool that summarises the conclusions from the literature review and results of the analysis in Chapters 6 and 7 of this thesis. The framework illustrates the trade-offs between employment,

population, land values, economic competition and the costs of intervention to make clear the complex and inter-related nature of the regional effects of metro-bound commuting revealed in this research. The discussion in the chapter begins with background on Australia's territorial tiers of government.

8.1.1 The Tiers of Government within the Australian System

There are three tiers of government within the Australian system: Federal, State and Local. The analysis in this chapter includes policies from each of the tiers, therefore an understanding of their roles and responsibilities provides a framing for the following sections.

Local Government does not have constitutional recognition in Australia, and therefore State Governments have the authority to override contentious decisions, such as those involving infrastructure and land use, and also to enforce their dissolution or amalgamation (Megarrity 2011). Therefore, State Government is the principal government tier for planning and policy as it affects metro-bound commuting and the distribution of people and employment in city-regions. The role of Federal Government in spatial planning and infrastructure is limited to financial contributions, mainly in the provision of funding for major infrastructure, and decisions to fund projects and support State Government proposals (Searle & Bunker 2010, p. 165).

Given this, Local Government in Australia has limited capacity to influence decisions for people to become metro-bound commuters. The funding required to improve transport connections is well beyond their scope and intra-regional projects occur across their administrative boundaries. While Local Government may advocate for better transport linkages as well as pursue residential attraction strategies, their primary concern is how to respond to increased commuting. This response may include land-use planning, by monitoring land supply as mitigation for housing cost inflation, and by directing residential rezoning to areas in close proximity to transport services. The primary concern in this thesis is how Local Government economic development strategies consider metro-bound commuters as elements of regional economies. This includes the population and expenditure effects on regional demand, as well as the human capital associated with metro-bound commuters.

8.2 Regional Strategies and Metro-bound Commuting

This section demonstrates that metro-bound commuting is not adequately addressed in economic development strategies for LGAs within the Melbourne commutershed. There are two aspects to this: first, that the influence of metro-bound commuting on regional economies is not explicitly addressed; and second, that when included, it is not done so with a clear understanding of how commuters

influence regional economies and how Local Governments can garner regional development outcomes from their presence.

8.2.1 Local Government Strategies

This section reviews Local Government economic development strategies for key metro-bound commuters' residential locations: the second city of Geelong, and Macedon Ranges and Moorabool councils. Geelong has been the place of residence for metro-bound commuters for some time, with more than 5 per cent of the regional workforce travelling to Melbourne for work as far back as 1979 (Geelong Regional Commission 1979, p. 17). Macedon Ranges and Moorabool include the long-term commuting residential locations of Bacchus Marsh, Mount Macedon and Woodend, as well as the smaller settlements that have been identified for population growth in the most recent Melbourne metropolitan planning strategy, Plan Melbourne (Department of Environment, Land, Water and Planning 2017).

8.2.1.1 City of Greater Geelong

Recent economic development strategies for Geelong refer to the importance of metropolitan transport connections and the economic benefits of population growth without explicitly connecting the two aspects of the regional economy. The strategies note the importance of the proximity of Melbourne as a factor in population growth, and as a result advocate for improved transport links. Metro-bound commuters contribution to the regional economy is due to approximately 7 per cent of the Geelong's workforce commuted to Melbourne in 2016, and of the 6 per cent of all Geelong resident workers that earn more than \$2,000 per week 27 per cent work in Melbourne. This indicates that metro-bound commuting is contributing to income and expenditure within the LGA (Lavesson 2016; Parr 2014), as well as increasing the stock of resident human capital (Le et al. 2003). The strategies may include initiatives that would lead to additional metro-bound commuting, and also the benefits of increased population in the Geelong region, but a clear link is not drawn between two. The City of Geelong's jurisdiction is depicted in Figure 42 on the following page.

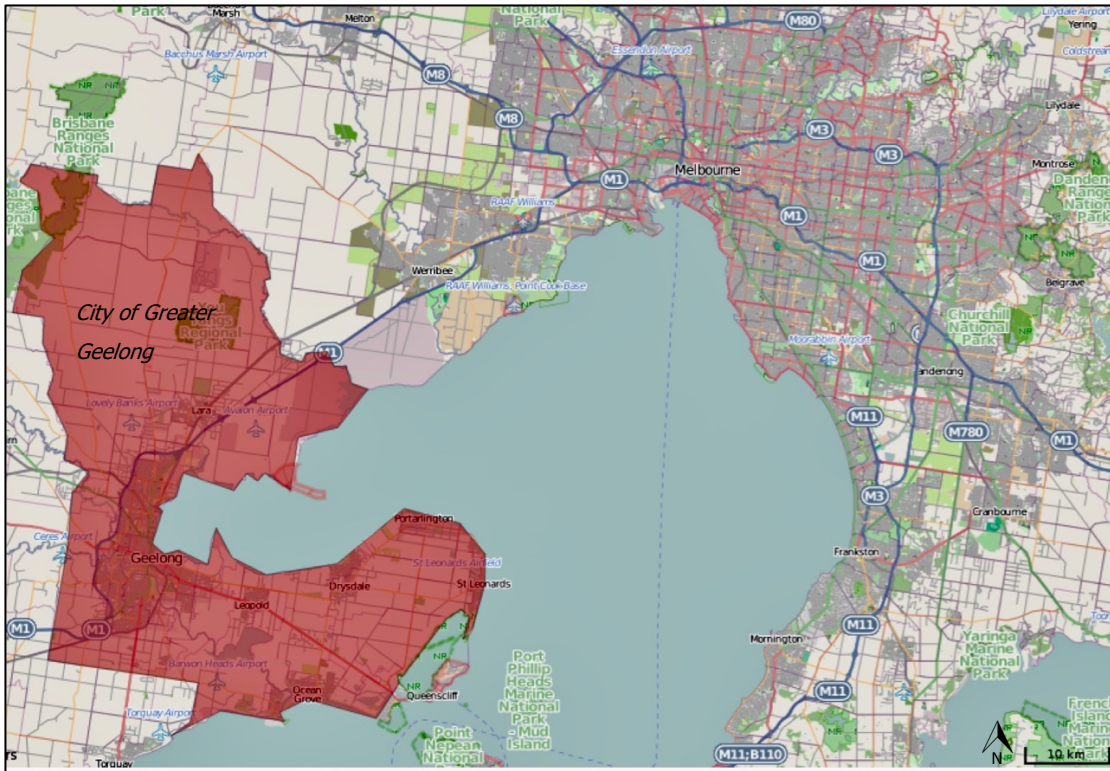


Figure 42: City of Greater Geelong local government area

Source: © OpenStreetMap contributors, accessed from AURIN Portal, aurin.org.au.

An earlier economic development strategy developed by the Geelong Regional Commission (1988) is notable as it directly includes economic benefits of increased metro-bound commuting. This previous strategy describes a city in transition, as opportunities for development were seen in the city as a result of its manufacturing, its role as a regional service centre and as a dormitory for Melbourne workers:

The Geelong Region Development Strategy is not only founded on the Region’s role in competing in international and interstate markets, it is also cognisant of Geelong’s role as a focus for South-Western Victoria and as an integral part of the Port Phillip economic system ... By 1997, over 8 per cent of Geelong’s workforce are expected to commute daily to Melbourne – a rise from the present level of 6.7 per cent. The potential for this dormitory role to be job-creating though local demand is obvious (Geelong Regional Commission 1988, p. 25).

In fact, this commuting potential was considered so obvious that this is the only reference to job creation as a result of increased commuting from Geelong. The technical paper on infrastructure that

was developed to inform the 1988 economic development strategy provides greater detail on the role of commuters in the Geelong economy:

Quality of life in the Geelong Region has emerged clearly from the Economic Development Study as a major strength of the region. This is an advantage in attracting businessmen to live in the area and in encouraging Melbourne commuters to live in Geelong. At the time of the 1981 census, some 6.7% of the Geelong workforce (over 4,250 persons) worked in the Melbourne Statistical Division, particularly in professional/technical, managerial/administrative and clerical occupations ... (Carter and Stanley 1985, p. 4).

Carter and Stanley (1985) also associated improvements to the quality and frequency of regional rail services between Melbourne and Geelong with increased numbers of metro-bound commuters.

More recent regional development strategies for Geelong and surrounds do not address the role of commuters in the regional economy, but rather obliquely refer to the transport connections or being within a commutable distance of Melbourne. The 2007 and 2013 regional development strategies for Geelong and the surrounding region was prepared by the Geelong Region Alliance, which has responsibility for strategic planning for the Geelong and the adjoining LGAs: Colac Otway, Golden Plains, Queenscliffe and Surf Coast (G21 Geelong Region Alliance n.d.). The 2007 strategy notes that:

The region is closely integrated with the Melbourne and Victorian economies. It is the largest and fastest growing region in Victoria outside the Melbourne metropolitan area ... Its proximity to Melbourne and good connections by road and rail bring the eastern parts of the region within easy commuter distance of Melbourne (G21 Geelong Region Alliance 2007, p. 9).

And that:

With increased services, rail travel to Melbourne is an accessible option that has potential for growth ... (G21 Geelong Region Alliance 2007, p. 46).

The strategy promotes the concentration and growth of population in the Geelong region as it enables a greater range of services and economic activity. The cited benefits of the growth of the Geelong population is that it enables it to support “higher level services such as accounting, finance, legal, health and allied services” (G21 Geelong Region Alliance 2007, p. 34).

The subsequent 2013 strategy indicates an emerging suburbanisation, because “[w]ith its close proximity to the State’s capital, Geelong is increasingly being seen as a major urban growth location within the broader Melbourne context” (G21 Geelong Region Alliance 2013, p. 10). Lara, a

settlement located between Geelong and Melbourne, was seen as providing an alternate residential land market to the western suburbs of Melbourne, and Melbourne was listed in the “key current & future employment nodes/sectors” for the settlement (G21 Geelong Region Alliance 2013, p. 53). The strategy promotes the importance of providing more public and active transport within the region, as well as “improved transport links that strengthen the connection to Melbourne and adjoining regions” (G21 Geelong Region Alliance 2013, p. 35).

An analysis of commuting questions in the plans described above suggests that over recent decades Geelong planners have become reluctant to overtly refer to commuting and associated outcomes such as becoming a metropolitan dormitory, while still arguing that proximity, transport improvements and inclusion within metropolitan housing markets were of benefit to the region. Both the 2007 and 2013 strategies allude to population growth as a result of people moving out of Melbourne, particularly as a result of transport improvements, but do not directly address what impact this will have on the regional economy. Recent commitments by Federal and State Governments to fund business cases and subsequently construction of a high speed rail connection between Geelong and Melbourne would likely result in increased metro-bound commuting from Geelong (Allan 2018; Morrison & Frydenberg 2019).

In addition to the faster rail proposal, the Federal, State and City of Geelong have committed to a City Deal with Geelong, which includes \$350 million in funding for a convention centre, tourism infrastructure and central city improvements (Department of Infrastructure 2018). In addition to Geelong, eight City Deals have been agreed to for metropolitan areas and other regional cities outside the study area (Department of Infrastructure, Transport, Cities and Regional Development 2019a). However, the Geelong package falls short of the interventions that would lead to a functionally polycentric city-region, or the long-term industrial planning and coordination of public and private sector investment that prevailed in the 20th century. It also pales in comparison to the scale of investment undertaken in the French city of Lille concurrent to the introduction of the fast rail service to Paris, which included more than 800,000 m² of area for commercial, residential and amenity developments and is seen as crucial in the second city’s benefiting from the improved transport connection (Bruinsma et al. 2008; Chen & Hall 2013, 2015).

The fast rail proposals and City Deal are at a time of transition in the Geelong economy. The closure of the Ford automotive manufacturing plant in 2018 is the most recent of a series of high-profile closures and redundancies in the city since the 1980s, yet employment, predominantly in health, and population in Geelong have increased over the last decade and growth is projected to continue (Correia & Denham 2016; Department of Environment, Land, Water and Planning 2019). The economic development strategies prepared for the city and surrounding regions do not adequately grapple with the interaction of metropolitan proximity, transport improvements, population growth

and economic development in the region. The likely result without further interventions is the steady transfer of the city from a once independent economic entity with global export links to a dormitory suburb. Therefore, the emerging cluster of public and private sector insurance agencies located in the centre of Geelong, as well as the hospitals and Deakin University, presents a significant opportunity for developing a knowledge-intensive economic specialisation within the city, as discussed in Section 8.3.2.

8.2.1.2 Shire of Moorabool

The Shire of Moorabool is located to the west of Melbourne, between the rapidly suburbanising City of Melton to the outskirts of Ballarat, as shown in Figure 43. Bacchus Marsh, the council seat, has been a residential location for Melbourne workers for at least two decades: 13 per cent of the workforce commuted to the Melbourne central business district in 1991 (McKenzie 1996, p. 40)⁴. Population growth in the Shire, which is associated with metro-bound commuting, has meant that economic development strategies note the need to protect productive agricultural areas from residential development (Geographia 2015; SGS Economics and Planning 2006).

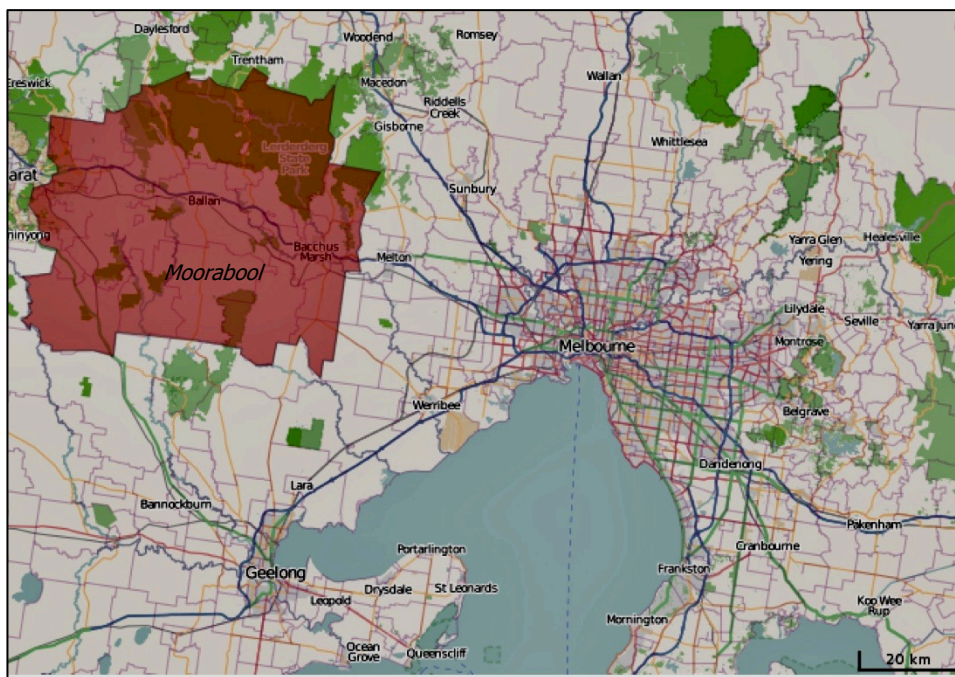


Figure 43: Shire of Moorabool local government area

Source: © OpenStreetMap contributors, accessed from AURIN Portal, aurin.org.au.

⁴ Discussions with the Moorabool Council economic development officers in 2011 provided the seed for this thesis, as even though they acknowledged that there were many metro-bound commuters, they were seen as ‘not providing much benefit’.

The 2006 Moorabool economic development strategy promotes population growth due to its propensity to support business activity:

The reality is that if Moorabool's economy is to grow its population must grow and grow substantially. In fact, given the rather immature state of the existing economy, population growth will be a two-phase phenomenon. Initially it will be driven by 'commuter' residents working mainly in the western metropolitan area and seeking a different lifestyle to the suburbs but later it will be associated with Moorabool as a place that has both business and job prospects in its own right, as well as providing a quality living environment (SGS Economics and Planning 2006, p. 46).

This position includes expenditure effects, as the strategy cites \$8,000 of annual expenditure per head of population on retail and retail services, but the local impact "depends on how much of this that the local suppliers can capture" (SGS Economics and Planning 2006, p. 46). The analysis of survey data in Section 7.2.2 indicates approximately 80 per cent of this expenditure is captured outside of Melbourne. The proposition that commuter-based population growth will be a precursor to more substantial economic development is notable, in that it suggests that in the longer-term growth may eventuate from import replacement (Jacobs 1969), but the strategy only directly refers to expenditure effects as a result of population growth.

The 2015 Moorabool economic development strategy states that the high population growth in the area is "[d]riven by proximity to Melbourne and its semi-rural lifestyle" (Geographia, p. 2), as well as noting that as a result two-thirds of the workforce commute out of the area for work, also a reflection of the surrounding regional cities: Ballarat and Geelong in particular. The impact of commuting is described as:

High levels of commuting create negative impacts for the Moorabool community. These include \$20 million in annual transport costs, lost retail expenditure, less time spent with family, and less time to participate in community life and build local social capital. While there are benefits associated with outward commuting (access to a variety of employment and higher wages), more local jobs, filled by local residents will underpin the sustainability of our growing community (Geographia 2015, p. 5).

It is questionable whether an improvement in the local jobs-housing balance in the context of a region where the largest settlement had a population of approximately 20,000 in 2016 and with substantial and increasing metro-bound commuting is achievable is questionable (cf. Cervero 1989). Given the specialisations, skills and experiences that prevail in the metro-bound commuting workforce, and their distinct differences to the regional employment offer, it is unlikely that suitable employment in

particular would eventuate within Moorabool. Figure 44, on the following page, depicts the jobs gap by industry sector in the Moorabool LGA, which is the difference between the number of people employed in the LGA and the number of metro-bound commuters employed in the same industry. The analysis provides an indication of the scale of employment growth required to achieve self-sufficiency in comparison to the size of the local industry.

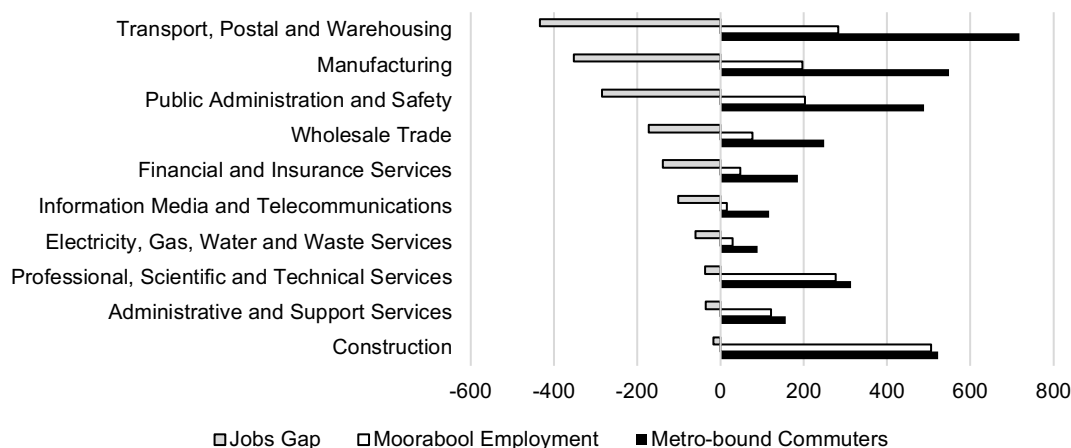


Figure 44 Jobs gap, Shire of Moorabool, 2016

Source: Australian Bureau of Statistics (2016b), LGA place of work and place of usual residence, ANZSIC level 1 industry sectors.

The data implies that for sectors with large metro-bound commuting cohorts there are comparatively few local jobs and therefore it is unlikely that local industries can provide sufficient employment in these sectors to increase employment sufficiency, particularly the Transport, Postal and Warehousing, Manufacturing and Public Administration and Safety sectors. Public Administration and Safety is the public sector, and thus would be reliant on either growth in Local Government or public service relocations to provide additional local employment. It also should be noted that this is aggregated data, it does not address the higher levels of specialisation that are associated with inner metropolitan employment in sectors such as Finance and Insurance Services, Information, Media and Telecommunications and Professional, Scientific and Technical Services. As indicated by the interview material included in Section 7.3.2.1, while employment data may indicate that while metro-bound commuters may work in broadly defined industry sectors that are present in regional areas, it does not mean that the equivalent roles exist in regional areas. Evidence presented in Chapter 7 indicates there may be some instances where metro-bound commuters change their industry of employment or start regional businesses in order to work closer to home, however it is unlikely to occur at a scale that will impact on the level of metro-bound commuting from the Moorabool Shire.

The 2015 Moorabool economic development strategy does recognise the economic contribution of metro-bound commuting to the regional economy, as “workers are the key ‘export’ of the Shire (in the form of commuters)” (Geographia 2015, p. 8), with an attendant footnote stating that:

Commuters generate an estimated \$500 million per year compared with, for example, farm income of around \$93 million per year

While developing agriculture is a recurrent theme in the strategy, the most direct out-commuting related economic strategy is improving liveability, as it results in population growth and improved workforce quality attracting investment in the local economy as depicted in Figure 45. The relationships recall the discussion in Section 3.3 without the explicit reference to metro-bound commuting’s propensity to increase population and workforce quality.



Figure 45: Relationship between liveability and economic development

Source: Geographia (2015, p. 24).

It is as if for Moorabool that commuters are the agents for economic development that cannot be named. This is a likely reflection on the negative connotations of ‘dormitory suburbs’ and underscored by the emphasis on increasing the local employment opportunities for residents. The connection between rapid population growth and the high proportion of the workforce commuting out of the region is not made, yet population growth is a key element of the strategy, while the clearly prevailing patterns indicate many of these new residents will be commuters. Also, the scale of income imported to the region as a result of out-commuting is a footnote rather than a factor in or opportunity for improving the LGA’s retail and population services sectors. As with Geelong, this analysis of the Moorabool case suggests that the Shire’s economic development strategies indicate an awareness that population growth may lead to economic development in the region but are not clear on the role metro-bound commuting plays that growth.

The analysis of the gap between the industry sectors that metro-bound commuters are employed in compared to jobs in local industry indicates the difficulty in increasing self-containment in regional shires such as Moorabool. While the data does not address detailed specialisations within the LGA and metro-bound commuting workforces, it does provide some support for the contention that metro-bound commuters do not generate employment for themselves in their places of residence. This conclusion is given further support as Moorabool is a long-standing place of residence for metro-bound commuters (McKenzie 1996), indicating that there has been sufficient time for industry to develop and respond to the outward-bound workforce.

8.2.1.3 Macedon Ranges Shire Council

The Macedon Ranges Shire Council is to the northwest of Melbourne, with the main population centres located on the road and rail services between the metropolis and the second city of Bendigo, as shown in Figure 46 on the following page. The LGA is of interest to this thesis as the town of Gisborne was listed in both the 2014 and 2017 versions the metropolitan planning strategy Plan Melbourne as a suitable location for population growth (Department of Environment, Land, Water and Planning 2017; Department of Transport Planning and Local Infrastructure 2014). Also, Mount Macedon and Woodend are high amenity locations with large metro-bound commuting workforces: the location of these settlements can be seen in Figure 46 on the following page. It also should be noted that economic development strategies for the Macedon Ranges are infrequent and long-term, the most recent is for 2009 to 2019, and the previous strategy was published in 1998.

The LGA's most recent economic development strategy notes that:

Over half (56%) of the employed population of Macedon Ranges Shire work outside of the Shire. This can be attributed in part to the Shire's close proximity to the metropolitan area and the resultant high proportion of residents commuting to Melbourne for work (Macedon Ranges Shire Council 2009, p. 4).

This is a concern for the local economy, as it:

... encourages a high level of escape spending as it is likely people will shop outside of the Shire when travelling to or from work. It is therefore important for the success of the overall economy that all efforts are made to facilitate local employment opportunities (Macedon Ranges Shire Council 2009, p. 13).

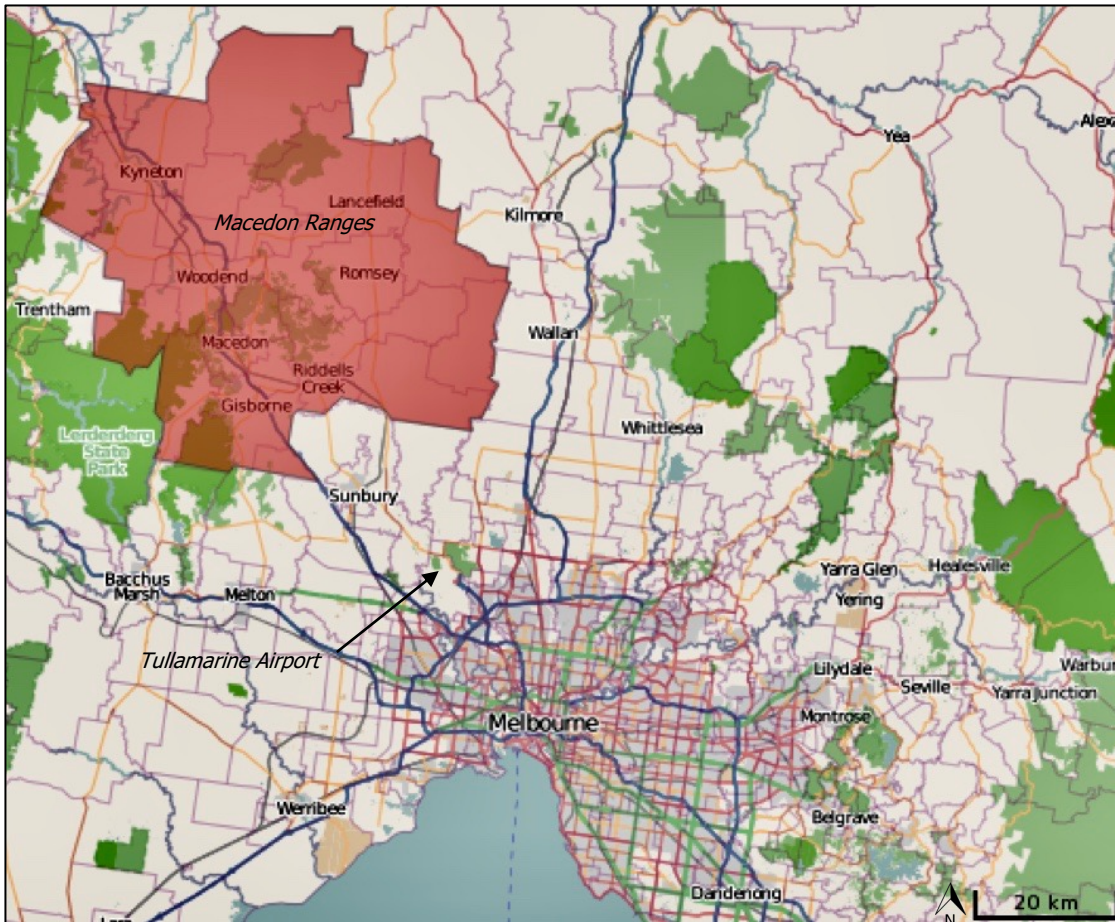


Figure 46: Macedon Ranges Shire location

Source: © OpenStreetMap contributors, accessed from AURIN Portal.

Similar to Moorabool, the likelihood of the LGA’s resident metro-bound commuters finding metropolitan work is questionable. The jobs gap analysis in Figure 47 on the following page indicates the difference in local employment and metro-bound commuters is predominantly in Transport, Postal and Warehousing, Public Administration and Safety and Financial and Insurance Services, indicating that the same issues as discussed for Moorabool above. It is likely that a major contributor to the jobs gap in Transport, Postal and Warehousing is a result of Macedon Ranges’ proximity to Tullamarine Airport, as shown in the map above. Tullamarine is Melbourne’s international airport and is where more than 2,800 metro-bound commuters worked in 2016, as shown in Table 14 on page 144.



Figure 47: Jobs gap, Macedon Ranges Shire Council 2016

Source: Australian Bureau of Statistics (2016b), LGA place of work and place of usual residence, ANZSIC level 1 industry sectors.

Also, the propensity to outshop is seen as a negative outcome of the number of residents who work in Melbourne, without considering that it is also possible that metro-bound commuting may be supporting the LGA’s retail sector through population growth, non-commuting household members and higher incomes.

8.2.1.4 Other Local Government Areas

The economic development strategies of other peri-urban council LGAs indicate similar issues regarding metro-bound commuting as discussed above. Proximity to Melbourne is seen as a source of advantage for regional businesses and population growth, yet metro-bound commuting is not considered at all (Bass Coast Shire Council 2016; Baw Baw Shire Council 2018). For the Mitchell Shire, approximately half the working population out-commuted for work, but “there is a threat that the job containment rate could fall even lower” (Urban Enterprise 2016, p. 50) as the population growth us predominantly in the south is a result of inclusion within Melbourne’s urban growth boundary. Therefore, the problem is seen as one of averages, not absolutes. The 2010-2014 Ballarat Economic Development Strategy does not refer to metro-bound commuting or population growth as a result of metropolitan proximity, which is likely to be due to its distance from Melbourne and lower proportion of out-commuting workers (SGS Economics and Planning 2010).

8.2.2 The Impact of Counterurbanisation on Regional Communities

The analysis of Local Government economic development strategies was supplemented by a workshop with representatives from the Peri-Urban Group of Regional Councils (PUGRC), as described in Section 5.3.3.3. The PUGRC representatives were cognisant of population growth as a result of metro-bound commuting and the associated social impacts. This includes the propensity for people to not remain metro-bound commuters, as:

For us, there are social implications. So, people moving down thinking they can do the commute and we get transient populations. When we said we were staying, people said “you’re staying? that doesn’t happen”. Normally people last three or four years and then they go “nup, can’t do this, it’s too far” and we’ve got a lot of that ... (PUGRC No.1)

The impact on regional housing prices was also a concern for the PUGRC representatives:

[Peri-urban city] is becoming a suburb of Melbourne, and the land price is going up, and affordability is an issue ... as rail extensions happen it’s going to make it more expensive, affordability goes out the window. At present we are not too bad, it’s only a matter of time unless more employment opportunities are put into regional areas, that’s not going to change (PUGRC No.2).

For a representative from an LGA associated with highly-valued amenities and substantial population growth:

We are dealing with the pressures, affordability is starting to creep up, getting out of reach of some people. The big debate in the community is how do we put a boundary around this town? How do we stop it? Which of course will put prices up, like a lock the gate mentality. These pressure and tensions ... at Council the challenge for us is to try and get local jobs so we don’t have a commuter population, we want a sustainable, viable community in our towns (PUGRC No.7).

These ‘pressures and tensions’ had also been observed by a public servant, who noted the division occurring in amenity locations in regional Victoria such that the development of these towns is likely to be a result of the migration of more prosperous households into these locations, rather than improving circumstances for longer-term residents:

Castlemaine, Beechworth places like that are really very interesting, because on a lot of these economic measures they have boomed. You look at businesses and everything else about them they have boomed, but they have often polarised ... if you are looking in a socio-economic

sense When we talk about successful and non-successful towns, it's a question of successful for whom? (State Government Interviewee No.2).

Local jobs were frequently mentioned by representatives from the PUGRC, particularly in preference to investing in faster transport connections:

The whole policy needs to be changed, not only providing fast transport, they should be looking at what job opportunities are going to be created. Decentralisation needs to be thought out (PUGRC No.2).

And,

One of the things with fast rail and low-end jobs that's happening ... is a proliferation of coffee shops (PUGRC No.5).

These observations from PUGRC representatives correspond with the insights of the literature review of the effects of transport in Section 4.3.2, particularly that transport in itself is not enough to stimulate regional economic growth. It also provides further support for the conclusions of Chapter 7, specifically that while there may be expenditure related outcomes from metro-bound commuting, such as coffee shops, but it is not leading to the increased higher-order economic activity and employment in regional areas.

From a policy perspective, there was a preference for improving transport within their regional areas rather than to the metropolis:

Public transport and connections back to the regional cities improved access back to them rather than into Metropolitan Melbourne would have a far greater effect in terms of opportunity than what's happening now, there's no doubt about it (PUGRC No.3).

In effect, the argument presented is that regional centres would be better off as the hub of their own transport networks rather than spokes of the metropolitan transport networks – it facilitates people coming to the regional centre rather than leaving it.

For another PUGRC representative human capital was a primary consideration, also in the context of regional transport provision:

... we were talking about not directly transport into the city, it was more about bringing the brains from the city back out to where we are. It was more about connections from one end of the region to the other. We were more interested in being able to travel between our region quickly ... our mindset was a little different. The rail for us is only east-west, we have huge

issues going north-south ... Job infrastructure and creation has been foremost in our thoughts for the last few years, even previous to the announcements about rail ... we still think we will be able to get some of the brains out of the city with what we have already got ... (PUGRC No.4).

The PUGRC representatives questioned the benefits to their communities of increasing metro-bound commuting. In particular, investments in local job creation and regional transport networks were seen as preferable to improved metropolitan connections. From a regional perspective, the increase in metro-bound commuting was seen as more of a burden than a benefit for these LGAs that are already experiencing population growth. In summary, the response of the PUGRC representatives indicates that increasing metro-bound commuting is creating problems for them, rather than solving them.

8.2.3 Summary

This review of economic development strategies for LGAs within the metropolitan commutershed indicates that there needs to be a greater understanding of how metro-bound commuters' impact on regional economies, as well as communities more broadly. The statistical model of metro-bound commuting populations in Section **Error! Reference source not found.** indicates that settlement population and proximity are good indicators of the number of metro-bound commuters, and therefore they will increase in correlation with the population. Thus, it is unlikely that population growth and the economic benefits arising from it can be obtained without metro-bound commuting and therefore higher rates of expenditure leakage and lower rates of employment containment: they are intrinsically linked. It is of note that the fastest growing non-metropolitan regions in Victoria adjoin or are close to Melbourne, with the exception of the City of Wodonga (Department of Environment, Land, Water and Planning 2019), providing circumstantial evidence to support the relationship between commuting and population growth. The failure to recognise this connection is evident in the strategies that promote the benefits of population growth but lament the lower local expenditure as a result of out-commuting.

This should not be seen as an argument against capturing a greater share of residents' expenditure and promoting local job opportunities, but rather favouring a more sophisticated understanding of metro-bound commuters' influence on regional economic development. In circumstances of rapid peri-urban population growth that is associated with metro-bound commuting, using employment containment as a measure of regional economies may mean that the growth of industry and employment in regional communities is not adequately recognised. Strategies to exploit regional resident human capital are absent, although the association between metro-bound commuting and human capital are referred to

in the 2015 Moorabool strategy and an earlier technical report for the Geelong Regional Commission (Carter and Stanley 1985; Geographia 2015).

8.3 State and Federal Government Policies

State and Federal Governments have a wider perspective and greater capacity to fund major (commuting) infrastructure projects than Local Government. Therefore, they have greater interest in the distribution of people and employment between cities, settlements and regions than Local Government. Melbourne Metropolitan planning strategies have referenced regional Victoria since at least the mid-1990s (Department of Planning and Development 1995), and there have also been regular planning for and investment in transport infrastructure in recent decades. This major section analyses these strategies and plans with a focus on whether the intention is to affect changes in the distribution of people, employment or functions within the city-region and the state of Victoria more broadly.

8.3.1 Metropolitan Planning Strategies

This section analyses how Melbourne metropolitan strategic plans have included peri-urban regions. The Victorian Government assumed responsibility for metropolitan planning in the 1990s, taking over from the Melbourne Metropolitan Board of Works.

8.3.1.1 Earlier Plans

The strongly monocentric morphology of Victorian has been referred to throughout this thesis; Melbourne is central geographically as well as to the states' economy, and home to more than three quarters of its population. An additional outcome of this metropolitan dominance is that since the 1990s strategic plans for Melbourne have included directions that directly address regional Victoria and the directly proximate regions in particular. The assessment of Melbourne metropolitan strategic plans provides context for the assessment of recent metropolitan strategic plans in the subsequent section.

Living Suburbs was the first planning strategy for metropolitan Melbourne that considered the relationship with the surrounding areas and the regional cities and was also the first to be prepared within the State Government (Nankervis 1996). The Melbourne and Metropolitan Board of Works, which had planning authority over Melbourne until 1991, had prepared earlier metropolitan strategic plans, which may provide some explanation for not considering integration with a wider section of the state due to their limited jurisdiction. The most relevant section of *Living Suburbs* is Direction 3 - "Strengthen links between Melbourne and regional Victoria to increase the competitiveness of the

Victorian economy as a whole” (Department of Planning and Development 1995, p. 32). Reflecting general criticisms of *Living Suburbs*, the regional aspects of the strategy failed to include tangible initiatives and were criticised as highlighting the anti-planning neo-liberalism of the Kennett Government (Buxton et al. 2001; Mees 2003; Nankervis 1996). The inclusion of ‘competitiveness’ and ‘Victorian economy’ in the citation above are also reflections of the market-based approaches associated with neo-liberalism.

The subsequent *Melbourne 2030* metropolitan plan, prepared in 2002, was prepared under the Bracks Labour Government, which had unexpectedly won the 1999 Victorian State election by appealing to regional voters through election promises such as investment in regional rail services (Department of the Parliamentary Library 2010). *Melbourne 2030* included ‘A Network of Regional Cities’ as one of its nine directions, forecasting “as settlements in this broad region become increasingly interdependent, there will be a far wider choice of places in which to live, set up business and find a job.... It will help share the benefits of growth across the State” (Department of Infrastructure 2002, p. 35). The network of cities concept is promoted as an improvement over the existing hub and spoke model in *Melbourne 2030*, however it is underdeveloped within the strategy, with no reference to improvements in the connectivity between the major regional cities or how such a network will evolve. In fact, the strategy can be seen as reinforcing the hub and spoke transport system, as it includes an initiative to:

Help local planning authorities to plan for growth in the key towns likely to benefit from improved rail services on each of the regional transport corridors between metropolitan Melbourne and the regional centres of Ballarat, Bendigo and the Latrobe Valley (Department of Infrastructure 2002, p. 74).

This section of *Melbourne 2030* does refer to local employment opportunities in the context of the towns likely to “come under more pressure for commuter or lifestyle-related development” (Department of Infrastructure 2002, p. 74). However, other than this limited reference to local employment the plan is silent what these employment opportunities might be and what interventions are required to facilitate regional employment. In effect, *Melbourne 2030* is based on an assumption that jobs follow people as a result of commuting as indicated by the interview for this thesis with the then State Premier Steve Bracks during the development of *Melbourne 2030*, cited in Section 8.3.2. It should also be noted that in the years following its development, the plan became increasingly criticised, predominantly for the failure in implementing its measures (Goodman 2017).

By 2008, rapid large-scale population growth led the State Government to review Melbourne 2020, resulting in *Melbourne @ 5 million*, subtitled “Melbourne 2030: a planning update” (Department of Planning and Community Development 2008). As this strategy is a response to metropolitan

population growth, it does not consider the relationship to regional Victoria in as much detail as *Melbourne 2030*. *Melbourne @ 5 million* does note that the main regional cities, nearby towns and amenity locations in regional Victoria were also experiencing rapid population growth and the strong interaction with Melbourne or areas within 100kms of the city (Department of Planning and Community Development 2008, p. 31). Also of note, *Melbourne @ 5 million* included the third expansion of Melbourne metropolitan urban growth boundary since 2003 (Goodman 2017) in has contributed to the subsuming of previously discrete settlements within in the metropolitan area, through “investigation areas” for residential subdivisions (Department of Planning and Community Development 2008, p. 20), recalling the mega-city expansion processes of Taylor and Pain (2007).

It is to be expected that metropolitan strategic planning for Melbourne and its connections to regional Victoria reflect the prevailing circumstances and the concerns of the government of the day. *Living Suburbs* reflects the disposition towards non-planning of the Kennett Government, as well as the primacy of efficiency and competitiveness within the neo-liberalism (Steger & Roy 2010). *Melbourne 2030*'s inclusive, ‘network of cities’ approach is a result of the importance of regional Victoria in the 1999 election and builds on the Bracks Government’s regional rail investments. *Melbourne @ 5 million* is a response to metropolitan population growth, which continues to be an issue for Melbourne as the population growth is projected to increase from 5 million in 2018 to 9 million in 2056 (Department of Environment, Land, Water and Planning 2019). What is notable about *Melbourne @ 5 million* is that while it expands the metropolitan boundary, it does not seek to mitigate metropolitan population pressures areas by redistribution to regional cities and settlements, as would occur in the subsequent plans analysed in the next section of this thesis.

8.3.1.2 Plan Melbourne

There have been two iterations of *Plan Melbourne*. The first version was released by the Liberal State Government in May 2014, and the second following the election of a Labour Government in November of that year. The second version was based on a consultation process to ‘refresh’ the plan, with a focus on climate change, housing affordability and transport (Department of Environment, Land, Water and Planning 2016b), with the updated version released in 2017.

The 2014 version of *Plan Melbourne* included “A State of Cities” as one of its major directions. It sought to redirect population growth from Melbourne to the regional cities and peri-urban area, as:

With Victoria’s population projected to rise to around 10 million by 2051, regional cities will need to take a greater share of population growth. This will enable regional cities to offer more opportunities to their residents and mitigate some of the population pressure on Melbourne (Department of Transport Planning and Local Infrastructure 2014, p. 154).

As highlighted in the discussion above, this presents a shift from *Melbourne @ 5 million*, which referred to the regional locations also experiencing rapid population growth, to *Plan Melbourne's* regarding regional Victoria as an outlet for metropolitan population pressures. The term used for the redistribution of population in the 2014 *Plan Melbourne* was “rebalance”, a term that had disappeared by the 2017 iteration of the plan. Metro-bound commuting is nonetheless implicit in how *A State of Cities* envisaged regional population growth:

With improving transport and communications links, Victoria's major regional cities are increasingly within commuting distance of Melbourne, opening up more employment opportunities for regionally based Victorians and more housing and lifestyle options for metropolitan residents. These links also help regionally based businesses access larger labour pools and improve their productivity, market access and competitiveness (Department of Transport Planning and Local Infrastructure 2014, p. 155).

However, the initiatives that responded to the ‘rebalance the growth’ intention did not give a clear indication of how this will occur. The most concrete initiatives were to create a permanent metropolitan growth boundary with the expectation that development would transfer to the regional areas as a result and to improve regional transport connections for people and freight. Other initiatives are responding to growth projections, such as land-use planning for peri-urban towns (Department of Transport Planning and Local Infrastructure 2014, pp. 162-165).

In the 2017 version of *Plan Melbourne*, Outcome 7 is the section relevant to this thesis - “Regional Victoria is productive, sustainable and supports jobs and economic growth” (Department of Environment, Land, Water and Planning 2017, p. 13). The document outlining the changes between the 2014 and 2017 versions of *Plan Melbourne* lists the changes to Outcome 7 as relocating the policies on the urban growth boundary to other sections of the plan, and that the focus “has been broadened to support housing and economic growth in Victoria through investment and supportive planning” (Department of Environment, Land, Water and Planning 2016a, p. 3). There is a noticeable reduction in the degree of imposition of metropolitan planning on non-metropolitan Victoria between the two iterations of *Plan Melbourne*, with the 2017 version stating that “planning for growth in regional Victoria must be led locally” (Department of Environment, Land, Water and Planning 2017, p. 128).

Together with the aforementioned need for local planning, this indicates a shift in how regional Victoria is considered within the plans. One of the interviews with public servants indicated that ‘rebalance’ was no longer a term used in government; it was up to people to decide where they wanted to live, facilitated by government:

We can encourage people, and we can provide a sufficient level of infrastructure and servicing for a multitude of locations where the population is able to support that level of servicing and we tend to follow population. Our strategy says help Geelong to grow, and we do that by a couple of things. We help Geelong to grow by improving regional rail by providing more carriages on each train so there's more chance of people getting a seat. We include more schools, we support Deakin [University], we support industry transitions when Ford goes, and we facilitate new business start-ups through economic development (State Government Interviewee No.1).

Between the 2014 and 2017 versions of Plan Melbourne, the policies for regional population distribution became less directive and more facilitative in their approach. Given the views of metro-bound commuting and associated developments expressed by representatives of the PUGRC in Section 8.2.2, the changes between 2014 and 2017 in this area are likely a result of consultations and submissions regarding the concerns of regional areas about the level of intervention included in the 2014 *Plan Melbourne*.

Also of note, both the 2014 and 2017 versions of *Plan Melbourne* list towns within the metropolitan commutershed suitable for accepting population growth: Warragul–Drouin, Bacchus Marsh, Torquay–Jan Juc, Gisborne, Kyneton, Wonthaggi, Kilmore, Broadford, Seymour and Ballan (Department of Environment, Land, Water and Planning 2017, p. 131; Department of Transport Planning and Local Infrastructure 2014, p. 158). Other than Kilmore, Broadford and Seymour, these towns are located within LGAs that from the PUGRC.

In 2016, the combined population of these listed urban centres was just over 100,000 people, compared to 4.2 million for Melbourne. It is questionable that population growth in these towns will have any tangible impact on the metropolitan area. Even if these towns doubled population by 2036, the 100,000 people not living in Melbourne as a result would only account for 1.5 per cent of the projected metropolitan population of 6.8 million at that time (Australian Bureau of Statistics 2016b; Department of Environment, Land, Water and Planning 2019). This point holds in general for population redistribution in Victoria, as discussed in Section 1.2.2. Therefore, the scale of shift required to tangibly mitigate population pressures in Melbourne is likely to create substantial infrastructure demands in regional Victoria, and fundamentally affect the lives of the existing residents.

There is also an indication that the impact of population growth in these towns within the city-region was reconsidered during the intervening period, as the 2014 plan recommends that regional towns:

... should offer a less crowded, low density housing product, with larger lots (Department of Transport Planning and Local Infrastructure 2014, p. 157).

In comparison, the 2017 version states that:

Growth boundaries should be established for each town to avoid urban sprawl and protect agricultural land and environmental assets (Department of Environment, Land, Water and Planning 2017, p. 131).

The 2017 *Plan Melbourne* also included improvements to public transport, to “enable a more integrated labour market with higher-income jobs to spread throughout Victoria” (Department of Environment, Land, Water and Planning 2017, p. 133). The reference to “throughout Victoria” is likely an overstatement, as it suggests the whole state will be part of the metropolitan commutershed, from Mildura 550 kilometres to the northwest to Mallacoota 515 kilometres to the east of the city.

8.3.1.3 Summary

Melbourne metropolitan planning has included references to regional Victoria over the past two decades, promoting the latter as an alternative for residential and economic opportunities. To some degree, it is to be expected that metropolitan planning strategies do not provide detailed considerations of regional settlements and their issues, as the primary focus of the metropolitan strategies is Melbourne. However, the impression that is left from the two iterations of *Plan Melbourne* is that regional Victoria is an outlet for metropolitan population pressures. Although it is up to people to make their own decisions on where they live, government is seeking to actively influence these decisions through infrastructure provision.

The retreat from the 2014 version of Plan Melbourne’s ‘rebalancing’ and the position that the State Government does not direct where people live and businesses operate ignores that governments facilitate location decisions through transport infrastructure, fiscal initiatives such as agency relocations and land use planning. The 2017 iteration still refers to peri-urban towns that are able to accommodate population growth, although there has been a shift from continuing the low-density rural allotments prevalent in rural areas, to a greater concern for urban densification and infill development.

8.3.2 A Shift in Decentralisation Policy

This section of the thesis analyses decentralisation policies based on their considerations of economic and population factors. This analysis draws on the city-region morphology discussion in Section 4.2 and the conclusion of Chapter 7, that the employment effects of population redistribution are

predominantly related to expenditure rather than those associated with higher-order, outwardly focused economic activity. Comparisons are drawn between examples of decentralisation policies from the Victorian Government in the 1960s and Federal Government in the 1970s and more recent strategies. The comparison illustrates the shift from earlier strategies' focus on growing regional industry with population growth as an indicator of success, to recent examples which are primarily concerned with population redistribution with economic growth as an outcome.

The first example is the Victorian 1967 *Report on the Selection of Places Outside the Metropolis of Melbourne For Accelerated Development*. Known as the Manson Report, was prepared by the Decentralisation Committee formed in 1964, with the following terms of reference:

Which places outside the metropolitan area within the meaning of the Town and Country Planning Act 1961 have the greatest potential for industrial and commercial expansion and the type and extent of stimulation required to ensure the future of development (Decentralization Advisory Committee 1967).

The report recommended three 'chosen places' – Ballarat, Bendigo and Latrobe Valley - and two 'special places' – Wodonga and Portland. Wodonga was included in the 'Albury-Wodonga Complex', which required support from New South Wales as the twin cities sit adjacently north and south on the New South Wales -Victorian border. The selection was based on places that could undergo accelerated growth to reach a population of 100,000: Geelong's population had reached 104,974 in 1966 and was therefore not included. The recommendations of the Manson Report for the 'chosen places' included economic development agencies with land purchasing and development powers and a role in liaising with state education and housing agencies, telephone charges in line with those in Melbourne, tertiary education facilities, and improved road and rail connections (Decentralisation Advisory Committee 1967).

A second example is of a Federal decentralisation plan, the Albury Wodonga Development Corporation, which was an outcome of the Whitlam Government's establishment of the Department of Urban and Regional Development in 1972. Albury-Wodonga was one of five designated growth centres, proposed for "draining people from the swollen wens of Sydney and Melbourne to less crowded growth centres which the government would deliberately create distant from both capitals" (Reid 1976, p. 185). This also reflects Whitlam's (1969, p. 11) preference for "developing regional concentrations" rather than unfocussed decentralisation. The plan was to relocate government departments as a facilitator of further investment and development, with an initial aim to increase the population of Albury-Wodonga to 300,000 by the year 2000. The New South Wales and Victorian State Governments also supported the economic development of the city through preferential tender arrangements for businesses located in Albury-Wodonga, concessional finance and loan guarantees,

tax rebates, housing support and training subsidies (Stein 2012). The dismissal of Whitlam as Australian Prime Minister in 1975 and the financial austerity of the subsequent Fraser Government reduced Federal investment in the development of Albury-Wodonga, but the development corporation continued until the two states and the Federal Government formally brought it to an end in 2003 (Pennay 2005).

In these two decentralisation plans, population growth is seen as a result of the strengthening of regional industry, population redistribution is a measure of the strategy's success, not its primary purpose. The reason they are included here is they highlight the shift in decentralisation policy in Victoria and Australia. The primary objective of much of the recent decentralisation discourse emanating from governments and development organisations is the redistribution of population, which is seen as a precursor to economic growth and development. The interview with Steve Bracks, Premier of Victoria between 1999 and 2007, undertaken for this thesis highlights this shift in thinking. Bracks is significant in this context for two reasons: he unexpectedly won the 1999 state election by appealing to disaffected regional Victorians (Department of the Parliamentary Library 2010), and connected to that was the election promise to invest in and improve the regional rail services that had declined and been closed over previous decades. In the interview, the direct connection was made between the decline in regional industries and the regional expenditure effects of commuters discussed in Section 7.2:

The winding back of tariffs and subsidies had effected the regional cities like Ballarat, Bendigo and Geelong, we couldn't compete in industries like textiles, footwear and clothing manufacturing, white goods manufacturing, and our car and components industries were also having tariffs and protections reduced under the Button plan. For these regional cities, fast rail connections mean population growth and commuters bring their city income back and spend it in the regions, they buy houses and white goods, and they create regional jobs (Bracks 2016).

And,

The Regional Fast Rail project was about bringing the provincial centres into the metropolitan economy, getting people to commute to the city and to create business development through better transport and communication links (Bracks 2016).

These views on fast rail are also evident in recent government announcements. For example, the 2019 pamphlet supporting the Victorian Government's Faster Rail program stated:

The regional centres have cheaper housing, more open spaces and other lifestyle amenities such as less congestion. This makes them attractive destinations. Fast rail to the regional

centres can accelerate their economic and population growth. The international experience demonstrates this (Department of Infrastructure, Transport, Cities and Regional Development 2019b, p. 3).

The reference to economic growth occurs frequently in recent government passenger transport project statements, which fails to take into account the evidence that transport improvements such as fast rail can have a negative impact on regional economies (Faini 1983; Storper 2017; Tomaney 2013), and an explanation is not provided as to how economic development outside of population-related employment is to occur.

Statements on the Faster Rail program by the Deputy Prime Minister and the Minister for Infrastructure and Transport provide the basis for the contention that the focus is on population redistribution, with the latter stating that “we need to make sure that congestion in our cities is eased” (McCormack 2018a).

The Hon. Tim Smith, Victorian Member of Parliament and leader of the state opposition’s population taskforce in 2016 expressed a similar view on promoting regional relocations:

I am asking the taskforce to give me ideas ... to take the population pressures off Melbourne ... and being a real opportunity for country Victoria to share in the bounty which is population growth (Smith 2016).

The Regional Australia Institute, a nationally coordinated regional research and policy organisation, has also argued for redirecting population growth from metropolitan to regional areas, arguing that regional productivity could be improved by population growth as it will result in increased agglomeration economies. Essentially the Institute is arguing that jobs will follow people to the regions, without considering that there is a lag between population growth and employment growth as a result of increased population growth. That is, people are more likely to move if there is a job for them already there (see Trendle 2009). The focus on population is evident in the suggestion that:

It is time for a proper exploration of the opportunities for better connecting nearby regions to our major cities and facilitating substantial population growth, so that regional Australia can play a prominent role in our National Population Plan (Archer et al. 2019, p. 35).

There are two issues with this statement by the Regional Australia Institute. The analysis in Chapter 7 indicates that agglomeration benefits are associated with metro-bound commuters’ metropolitan place of work more than their regional place of residence. The second is that as a strategy for regional growth it is only applicable to the metropolitan hinterlands, which are predominantly experiencing

population growth already (Department of Environment, Land, Water and Planning 2017; Gurran et al. 2016; Llausàs et al. 2016).

More than the theoretical arguments about agglomeration and whether jobs follow people or people follow jobs, the difference in strategic viewpoints for regional cities and metropolitan hinterlands between the examples from the 1960s and 1970s compared to the recent views on decentralisation are striking. The lack of strategising for an economic purpose other than population growth can be attributed to the end of the symbiotic relationship between the growth of second cities and manufacturing during the 20th century in regional cities in Australia, the US and Canada (Blainey 2013; Glaeser 2011; Polèse 2010; Rich 1987). That is until recently many regional cities had a clear role in national economies, such as automotive manufacturing in Geelong, which provided a central organising principle for strategic planning and government (see Badcock 1989; Berry 1984 for example). There are examples of regional cities that have prospered in recent years, based in some degree on the development of specialisations in areas that complement the city's resources and identify a niche in national and international markets (Correia & Denham 2016), but this involves more than a population-based development model. The recent Geelong City Deal is a place-based intervention involving the three tiers of government committing to more than \$350 million in expenditure over the next decade.

The retreat from industry-led planning may also be attributed to spatially blind regional development policy, with transport infrastructure an intervention intended to promote mobility as a resolution to urban issues. As a representative from the Victorian public service stated regarding residential location decisions:

That is a free market. That is basically people choosing themselves where they want to live at a certain point in their lives ... We do that all over the state, we do that in regional, we do that in metro. We try and encourage a spread of population and make the best use of established infrastructure where we can ... (State Government Interviewee No.1).

As discussed in Section 4.3.1, there are some instances of place-based regional development policy in Victoria, but the overarching position of both the Federal and State Governments, as well as associated agencies, is to encourage regional population growth through transport developments.

The impression is of politicians reaching for interventions that appear to be addressing prominent issues such as metropolitan population pressures, housing affordability and diverging regional economies without considering that the underlying cause of these problems is the concentration of employment and opportunity in the larger cities, that is the metropolitan tilt from Section 3.2. The concentration of employment and opportunity within the primary cities in monocentric urban systems is a recurrent theme within this thesis. It provides an explanation for the growth in metro-bound

commuting, as well as underscores the need for governments to address the diverging fortunes of metropolitan and regional areas. The policies and political announcements included in this section indicate a focus on addressing the symptoms of population problems, rather than the cause.

8.3.3 Transport Planning and Investment

In recent decades, transport proposals and developments have been prominent in discussions regarding decentralisation within Victoria, as referred to in Section 8.3.2. These strategies and plans indicate a belief that the benefits of regional transport improvements accrue solely to regional areas, rather than as Puga (2002, p. 398) warns that the result may benefit more developed places more as “[o]ne should not forget, however, that roads generally have lanes going both ways, and high-speed train lines also have tracks going both ways”.

The 2002 Linking Victoria transport strategy noted that “[i]nvestment in improved road and rail links ... and continuing advances in communications, have progressively increased the area influenced by metropolitan Melbourne’s day-to-day economy” (Department of Infrastructure 2002, p. 20). The Regional Rail Link, a rail line connecting Melbourne and Geelong via Melbourne’s western periphery, officially opened in June 2015 and was intended to provide amongst other benefits, “more reliable and more frequent connections to central Melbourne to get them to and from the city for work, study, business and recreation” (Public Transport Victoria 2015) for Geelong, Ballarat and Bendigo line users. This influence was seen as of benefit to regional economies through improved access to metropolitan employment markets, an example of governments failing to consider the countervailing effects of improved metropolitan businesses’ access to regional markets and residents’ access to housing. In 2017, the Federal Government announced the Regional Rail Revival Package, including a commitment to \$1.5 billion of funding towards passenger rail infrastructure improvements in Victoria (McCormack 2018b). Improvements have also been made to the freeway network connecting Melbourne and the regional cities in the past decade (Bureau of Infrastructure, Transport and Regional Economics 2011).

The 2017 Federal budget included \$20 million to develop three business cases for faster rail connections between capital and regional cities, including a proposal to build a high speed rail link between Melbourne and Shepparton. The prospectus for the funding submissions identified two types of development for consideration: new or extended lines that facilitate the development of new locations for housing and employment; and, improvements to existing services to support “affordable housing and job-rich centres that have good rail connectivity to the city” (Department of Infrastructure and Regional Development 2017). The problems that are to be solved through rail development are metropolitan population growth issues and providing better access to metropolitan

employment from regional areas (McCormack & McVeigh 2018, p. 154). Subsequent statements on the Faster Rail program by the Deputy Prime Minister and Federal Minister for Infrastructure and Transport tend to highlight the regional commuter impacts of the proposals, for example:

We ... need to make it easier for people in regional areas to commute to cities such as Brisbane, such as Sydney, such as Melbourne, so that they can enjoy the lifestyles of living in the wonderful [regional areas] such as the one we are in here right now, and also enjoy city wages, city living, but to be able to get home in good time so they can enjoy time with their families (McCormack 2018a).

A Victorian private-sector proposal by the Consolidated Land and Rail Australia (CLARA) consortium was granted funding to develop a business case through the Faster Rail program. CLARA proposes to pay for a fast rail link to a new city to the north of Melbourne through value capture. The new city is to be located near Shepparton, and would be the first of an ambitious plan for “eight of the world’s most advanced, sustainable, SMART, greenfield cities” located on a high speed rail link connecting Melbourne, Sydney and Canberra (CLARA 2016). While there is limited detail available on the economic case for CLARA, at least until the publication of the business case, the capacity for such an expensive project to provide a positive return on investment through value capture has been questioned (Clifton 2016; Newman 2016). The CLARA proposal also fails to provide any detail on the what the economy of these proposed new cities would consist of, other than the unsubstantiated claim that “[l]eading global companies will establish high tech employment with a mix of traditional jobs” (CLARA 2016).

As noted in Section 8.2.1.1, there have been Federal and State Government commitments and funding for high speed rail between Melbourne and Geelong. In 2018 the Victorian Government announced the \$50 million for investigations into fast rail between Melbourne and Geelong. The plan is to tie in the Geelong service with the proposed Airport Rail Link, for which planning has been funded by Federal and State Governments (Allan 2018). This is in addition to the \$1.7 billion Federal and State Government funded Regional Rail Revival program, which will upgrade passenger services in Victoria (Rail Projects Victoria 2018).

The Victorian Government has also released a “medium- to long-term” strategy for a “commuter-style service” between Melbourne and the regional cities (Department of Economic Development, Jobs, Transport and Resources 2016, p. 6), including 20-minute service frequencies during peak periods. The strategy is focused on improving passenger public transport in regional Victoria, drawing on community consultation, and is therefore not concerned with the economic development outcomes from transport improvements.

Similar to what was documented in the previous section, there is a focus on population redistribution as a result of transport investments with the expectation that employment will follow. The announcements and publications that promote regional transport infrastructure initiatives in Victoria are also silent on the two-way outcomes, referring only to the improved access of regional businesses to metropolitan markets rather than the reduced cost of competition in both directions. This omission, whether or not purposeful, means that transport infrastructure improvements are being promoted to regional communities without providing a clear understanding of what the consequences may be, such as increased housing costs or higher-order employment transferring to or remaining entrenched in the primary city.

8.3.4 Regional Relocation Initiatives

There are further examples of direct interventions by Federal and State Governments in regional areas, through relocations of government agencies. These initiatives indicate that governments are concerned with developing regional areas and redistributing population and employment, which is the reason for their inclusion in this section of the thesis as it provides further insights into how governments intervene in regional distributions.

State and Federal Governments have relocated public sector agencies to create employment in regional areas in recent years. The relocation of a total of 1,000 public service jobs to Ballarat, Bendigo and Geelong has occurred as part of a Victorian regional growth strategy (Regional Development Victoria 2010, p. 13). The Victorian Government is also constructing GovHubs, which will accommodate up to 1,000 public sector jobs in Ballarat and Bendigo, and 300 in the Latrobe Valley, which are intended to “to grow local economies and revitalise towns” (Regional Development Victoria 2019). The Federal Government also has a regional decentralisation program, relocating agencies to regional cities as well as Adelaide, Perth and Western Sydney (McCormack & McVeigh 2018). Whether these are meeting the intent of the policy has been questioned by the program’s initial champion, the ex-Deputy Prime Minister Barnaby Joyce, who opined:

Decentralisation has to be authentic decentralisation. That is not Sydney to Parramatta. From the top of a tall building in Sydney, I can see Parramatta. So you can’t say that is decentralisation ... Decentralisation from Canberra to Adelaide is yet another one (cited in Dingwall 2018).

Joyce’s statement brings to light an issue with regional development policy in Australia, that it is cloaked in a non-metropolitan benevolence on announcement, but the initiatives end up including funding for metropolitan programs. For example, the Regional Development Australia Fund was established through negotiations between three regional members of parliament and the Labor Party

in 2010 in order to provide funding for regional community and economic development initiatives, but ended up including metropolitan projects, such as pool in Ringwood, a suburb of Melbourne (Brett 2011; Department of Infrastructure and Regional Development 2014). While Collits (2014, p. 13) argued that “[c]ities should be recognised as regions” and included within the regional development remit, there is a disjuncture between the way ‘regional’ is used in policy announcements and the outcomes, as the examples cited here attest. This is not to say metropolitan projects should not be funded or are not worthwhile, but that ‘regional’ policy in Australia can be sold as rural but implemented as metropolitan. As an example, National Party politicians McCormack and McVeigh (2018, p. 1) begin a Federal regional policy document stating:

With a third of Australians living, working and raising their families outside our capital cities, regional Australia is at the forefront of this Government’s agenda.

They then include Adelaide, Perth and the Sydney suburb of Parramatta as examples of an initiative that “will benefit regional communities through the creation of local jobs, local economic diversification, and stimulation of regional economic growth” (McCormack & McVeigh 2018, p. 146). This highlights that in Australia the term ‘regional’ has no defined meaning (Eversole 2017) and when left open to interpretation can be exploited. Where this intersects with metro-bound commuting policy is that the lack of clear definitions of what is regional, or even what is a suburb (Eversole 2017; Forsyth 2012) means that arguments as to whether metro-bound commuting is regional development or metropolitan expansion have no final meaning or analytical basis for determination; their specific application can be adapted by politicians to justify particular electorates upon which they wish to bestow funding. Therefore, announcements such as those made in support of high speed rail cited in the previous section can be categorised as regional development while clearly pitched at participants in the metropolitan housing market.

The relocation of three public sector social insurance agencies to Geelong over the last decade is of particular interest, due to the evidence of the productivity benefits of economic specialisations in second cities, as well as the need for coordinated relocation and development to foster their development (Camagni & Capello 2015; Camagni et al. 2013; Neutze 1968). The agencies are the national office of the National Disability Insurance Agency, and the state insurance agencies for workplaces injuries and traffic accidents have all established offices in the centre of the city. GMHBA, a private insurance provider that has operated in Geelong since 1934, has also recently announced an office development in the centre of the city (GMHBA 2019). The investments in the insurance sector may form the basis of a knowledge-intensive industry specialisation in insurance, with the possibility of the agglomeration benefits through thicker labour markets – both supply and demand, and information transfer in particular. Thus, there is an opportunity for further research into the Geelong insurance sector, to provide insights into coordinated regional relocation programs effect

on regional labour markets and whether they are of greater benefit than single-city agencies in improving regional economies.

8.3.5 Summary

Federal and State Government proposals associated with the redistribution and decentralisation of metro-bound commuting are primarily concerned with addressing population pressures in Melbourne. Redistribution is a result of facilitating regional residency through transport connections to the metropolitan area, rather than the improving employment opportunities in regional areas. Transport proposals, and particularly the recent spate of high speed rail plans indicate that the “infrastructure turn” in metropolitan planning identified by Dodson (2009) has not ended, rather it has been extended to regional development. As Dodson (2009, p. 121) pointed out, the risk of this infrastructure dominated planning is that “it will exacerbate the economic, social and environmental ‘splintering’ of Australia’s major urban regions”, which echoes the proposition that improving transport infrastructure will benefit the more developed city, not those on the metropolitan periphery (Puga 2002; Storper 2017; Tomaney 2013).

In this context, the conclusion reached in Chapter 7 that jobs do not follow people at the meso-scale presents a fundamental flaw in public policy for the relationship between major cities and their regional hinterlands in Australia. The inherent belief that shifting population growth from the metropolis to the surrounding region is a precursor to regional development is unlikely to be realised without additional planning and interventions to grow employment and distinct economic functions within regional areas. While the range of investments in, and proposals for, regional transport projects indicates that governments are concerned with the concentration of prosperity in metropolitan regions, the predominance of spatially blind economic development philosophies and the failure to prioritise the development of employment and economic functions in regional areas suggests that the metropolitan-regional divergence is likely to continue. The fuzzy definition of ‘regional’ in Australia, where it is used interchangeably as a generic term for an area and as a synonym for rural, diminishes the programs aimed at improving non-metropolitan communities.

8.4 A Policy Framework

The critiques of government policy in Sections 8.2 and 8.3 demonstrate a need for a greater understanding of the effects of metro-bound commuters on regional policy, as well as the distinction between planning for population and planning for employment. Given this conclusion, Figure 48 on the following page provides a framework for assessing policies that encourage metro-bound commuting.

The policy framework includes four main elements for consideration: the increase in commuting due to people moving to regional housing and retaining metropolitan employment; people remaining in regional housing and commencing work in metropolitan areas; the change to the distribution of employment and economic activity; and, the costs of facilitating increased metro-bound commuting.

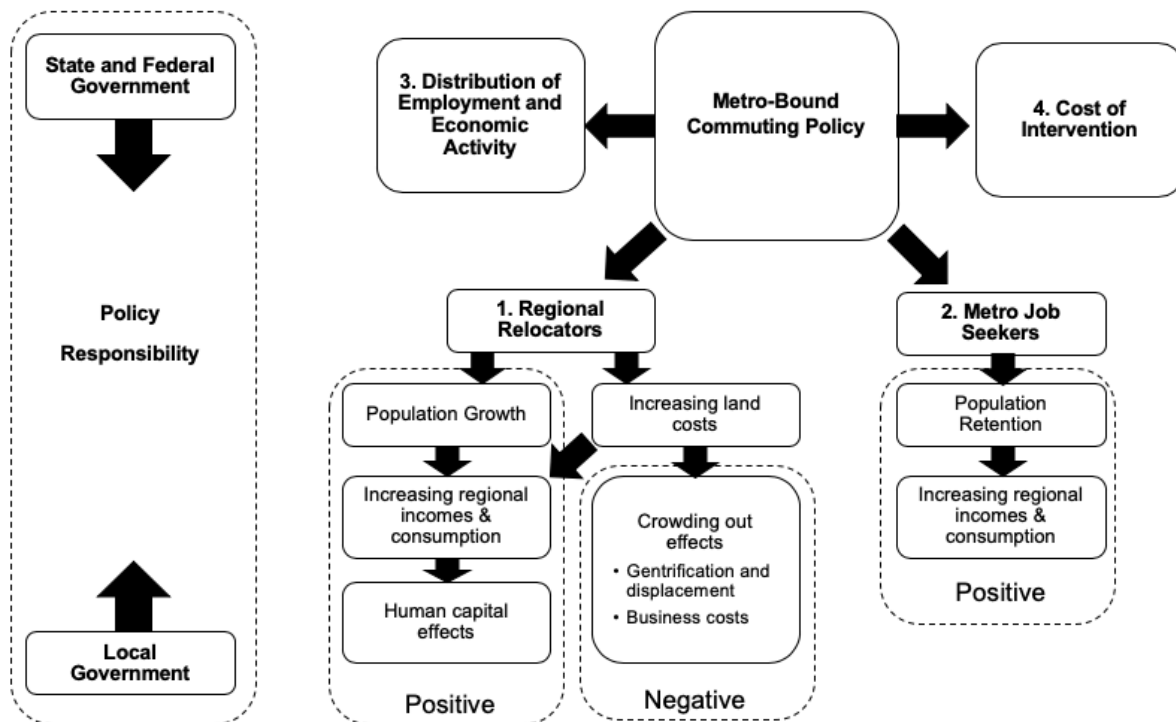


Figure 48: Framework for the analysis of metro-bound commuting policy

Elements 1 and 2 of the policy framework - Regional Relocators and Metro Job Seekers – are mainly the purview of Local Government; they are the localised population-related effects of increased metro-bound commuting. The interactions between population growth and retention, regional incomes and expenditure, housing and human capital were noticeably absent in peri-urban economic development strategies. Therefore, the framework is intended to provide a heuristic for the consideration of metro-bound commuting’s role in developing regional economies, as well as how Local Government can garner benefits from them. The Regional Relocators and Metro Job Seeker effects should also be taken into account by State and Federal Governments when considering interventions that facilitate increased metro-bound commuting, such as high speed rail. Given the role of State and Federal Governments in policy and infrastructure financing, their main concerns should be Elements 3 and 4, the effect on the distribution of economic activity in the region as discussed in Chapter 5, as well as the costs of the intervention.

This framework for policy analysis is focussed in the regional costs and benefits of interventions. As discussed in Section 1.2.2, the disparity in the population and economy of Melbourne, or by definition

any primary city in a monocentric city region, means that the primary city impacts of facilitating increased metro-bound commuting can be assumed to be marginal. This may be different for more equally balanced city-systems, but if the scale of intervention was of an order of magnitude to have an impact on the metropolitan issues (see Brain et al. 2019) then more complex considerations would be required.

1. Regional Relocators

Commuting as a result of household relocation can be seen as a result of the different labour markets in metropolitan and regional areas: if people who want to live in non-metropolitan areas could find an equivalent job nearer their place of residence, then they wouldn't commute to the metropolis. Therefore, the first-order benefit of enabling metro-bound commuting is providing access to regional housing markets for metropolitan workers. Although, this in itself has limited regional development outcomes.

Regional Relocators result in population growth, which can support public sector service delivery and employment within regional settlements: schools, hospitals and community services for example. This public sector increase is not specific to commuters or reflective of attributes of the residential location: it is a generic public sector response to population growth. However, Regional Relocators provide additional benefit over population effects through increased incomes and consumption within regional settlements, which are associated with increased employment. This employment growth can be seen as a regional trickle-down effect, mainly occurring in retail and population services.

A third series of effects are related to the changes in the composition of regional workforces as a result of Regional Relocators. The latter includes metro-bound commuters as well as the other members of the households that relocate with them. The skills and experiences of Regional Relocators may support the development of new industries, through the entrepreneurship of commuters and their households (Herslund 2012; Keeble & Nachum 2002) as well as a ready labour force to support other developments. These new businesses may result from import replacement, where population growth and innovation within existing industries may provide the impetus for local provision of goods and services previously sourced elsewhere (Jacobs 1969).

Regional Relocators will likely lead to an increase in house prices in their new places of residence, as a result of the interaction of metropolitan labour markets and salaries, regional real estate markets related to local wages, and the time lags associated with increasing housing supply (Glaeser 2008; Whitehead 1999). Increased regional house prices may be negative or positive for regional settlements: it is clearly of benefit to existing landowners which may also have income and consumption effects, but not so for renters or market entrants. However, as land values increase, rents

and relatively greater profits for residential redevelopment may result in the closure or relocation of industry, wage demands from labour in order to retain disposable incomes, or the workforce relocating to more affordable locations with suitable employment opportunities. While regional metropolitan real estate price differentials may be a driver of metro-bound commuting growth, in the medium- to long- term regional real estate is likely to increasingly correlate to metropolitan markets than regional ones: the regional settlement takes on metropolitan attributes, as described in the borrowed size conceptualisation of Alonso (1973), without the employment mix and higher incomes of the metropolis. This is a prediction resulting from the microeconomic models of housing and transport of Alonso (1960, 1964) where the costs of housing and accessing employment are in equilibrium, and the rent gap theory of gentrification put forward by Smith (1987) as discussed in Section 2.3.2.

2. Metro Job Seekers

Metro Job Seekers are regional residents who become metro-bound commuters by changing the location of their employment, from regional to metropolitan. Metro Job Seekers are responding to the difference in regional and metropolitan labour markets as a result of regional economic declines or transitions and the increasing concentrations of employment and opportunity in metropolitan areas.

While the indication is that Regional Relocators account for a greater proportion of metro-bound commuters, there are greater direct benefits from Metro Job Seekers due to the prima facie observation that regional residents are improving their employment options and outcomes. For many Metro Job Seekers, metro-bound commuting will also enable households to remain as regional residents and therefore maintain regional populations, which may be important in instances of regional industrial decline. Metro Job Seekers can also be expected to increase regional incomes and consumption, given the differentials between regional and metropolitan wages. As with Regional Relocators, these flow-on employment increases may be limited to retail and population service industries. Changes to the regional workforce would be minimal, limited to any additional training, experience and expertise that arise from metropolitan employment. The impact of Metro Job Seekers on regional house prices is also expected to be minimal, as they do not add to housing demand, except where higher incomes may lead them to upgrade their housing.

This analysis indicates that the overall changes to regional economies resulting from Metro Job Seekers may be less than those of Regional Relocators, but the economic benefits largely accrue to regional rather than residents metropolitan residents.

3. Economic activity distribution

Elements 1 and 2 are the population effects of interventions that increase metro-bound commuting, as well as the economic effects. Element 3 depicts how the intervention directly affects the redistribution of economic activity within the city region.

Improved regional-metropolitan transport connections that increase metro-bound commuting also reduce the costs of transactions between the respective locations in both directions and therefore increase the competition between businesses in both locations. While regional businesses that complement metropolitan economies may benefit, those that compete will likely decline due to the agglomeration economies and increased specialisation of the goods and services offered in primary cities (Broad & Cavanagh 2006; Hall 1996; Krugman 1990; Polèse 2013a; Scott 2006). As noted in Chapter 4, the literature provides differing conclusions on the benefits of intra-regional connectivity, with factors such as the relative strength of the regional economy, and regional strategies and plans to support development important determinants (Blanquart & Koning 2017; Chen & Hall 2011, 2013, 2015; Tomaney 2013). A further consequence of metro-bound commuting is increased outshopping for goods and services, as people who work in other locations have a greater propensity to outshop (Patel et al. 2015).

4. The costs of intervention

If metro-bound commuting is to be pursued as a regional development initiative, then the outcomes discussed above should be considered against the cost of intervention. While this does suggest the need to apply formal cost-benefit analysis to investment in metro-regional infrastructure connections, standard methodologies for assessing transport projects based on travel time savings are not suited to the range of costs and benefits discussed here (c.f. Denham et al. 2019). The focus on costs is due to the variation in the order of magnitude, as there is a considerable difference between households' decisions without explicit government intervention or as a result of a marketing campaign and the costs of high-speed rail construction.

This is not to say that regional rail initiatives are not of benefit, but as Stimson et al. (2006) note, they should be considered against a wider suite of strategies, such as the development of regional organisations; marketing and promotion; industry clusters; benchmarking; smart infrastructure and core competencies. Banister and Givoni (2017) make a similar observation, that it is important to consider alternatives to transport investment particularly for costly projects such as high speed rail. Whether commuting growth is facilitated by low-cost initiatives like lifestyle and amenity migration campaigns, residential land rezoning in well-connected areas, or investment in transport infrastructure

networks, the costs need to be commensurate with the outcomes and alternative interventions to meet the equivalent outcomes needs to be considered.

8.5 Conclusion

This chapter investigated regional economic development policies to assess how they addressed metro-bound commuting effects. The chapter identified two issues with the way public policy has dealt with and promoted interventions that facilitate metro-bound commuting. Firstly, Local Government has not adequately considered the connections between increasing metro-bound commuting and population growth, and how to take advantage of the potential associated regional expenditure and human capital effects. Second, State and Federal planning has been overly focused on population distribution rather than regional employment. Also, announcements have promoted benefits for regional businesses as a result of transport provision rather than acknowledging the increasing of spatial economic competition as a result of declining transport and transaction costs in both directions. In both of these cases, it is clear that there is a need for a greater understanding of the possible outcomes of transport improvements and commuting-based regional population growth, as provided by the commuting policy framework in Section 8.4.

The results presented in this chapter have demonstrated that policies that seek to redistribute people within city-regions do not necessarily result in the redistribution of employment, other than that which is associated with population. Policy settings and the political discourse promoting fast rail, second city lifestyles and metropolitan employment is exactly the type of outcomes that Hall and Pain (2012) warned of: inherently inefficient population polycentrism with functional monocentrism. Therefore, the central conclusion of this research is that current regional policy needs to be rethought in favour of the decentralisation planning of the 20th century, where governments and industry undertook coordinated planning and investment to support clearly defined economic roles, which resulted in the growth of regional cities, and which complemented rather than competed with, or were exploited by, the primary cities. The examples of the Manson Report and the Whitlam Government's Albury-Wodonga Development Corporation included in this chapter indicate an 'industry first' approach to regional development and decentralisation.

During this post-war period the growth of second city industry, and subsequently population, "depended on the routine state support provided by cheap railways, port facilities, favourable tax treatment and selective subsidies" (Berry 1984, p.64). In post-war South Australia the colocation of industry and public housing was due to "the primary objective of state housing policy was to lower the costs of production to local manufacturing by indirectly stabilizing rents in the private rental sector" (Badcock 1989, p.441), and thus foster industry in places such as Elizabeth, approximately 30

kilometres to the north of the Adelaide, the State capital. This connection between public housing and industry is also evident in Geelong, where the suburbs surrounding the Ford factory, a prominent employer in the city from 1925 to its closure in 2018, includes one of the largest tracts of public housing in Victoria. This should not be seen as a call to adopt re-emerging protectionist ideas regarding reinvigorating manufacturing via import restrictions, but rather favours an application of similar thinking in regional settings to the high-value-added knowledge-based specialisations and functions that are central to generating prosperity in the metropolitan centres contemporary economies through coordinated and strategic place-based interventions in infrastructure, business incentives and housing. While the current policy initiatives and proposals for Geelong, such as the faster rail service, conference centre and the relocation of the social insurance agencies, indicate Federal and State Government interest in developing Geelong, they are disconnected and do not combine in a way that resembles the coordinated strategic development of post-war second city development in Australia.

9 Conclusion

9.1 Introduction

This final chapter provides a summary of the conclusions of the thesis and identifies the original contributions to knowledge it has offered followed by a concluding statement. The contribution to knowledge is via the political economic geography insights arising from the response to the research questions. The quantitative and qualitative methods provided perspectives on the quality of employment redistribution as a result of metro-bound commuting, as well as the implications of commuters' lived experience, plus the impacts on regional communities and of metro-bound commuting in regional development policy.

The section following the contribution to knowledge provides implications regarding the distributional effects of metro-bound commuters in city-regions and the policy implications that arise from the research. The thesis comes to an end with the concluding remarks, providing reflections on the intellectual and analytical journey undertaken and the overarching contributions made to the understanding of metro-bound commuters' influence on city-region morphologies.

9.2 Contribution to Knowledge

The primary investigation of this thesis is the relationship between metro-bound commuting and regional employment. Assessing the quality of employment redistribution as a result of metro-bound commuting provides new insights into their effects on city-region morphologies, and thus the efficacy of metro-bound commuting as regional development policy.

There have been long-ranging debates about the relationships between population mobility and employment at the inter-regional macro-scale and the intra-city micro-scale (Cervero 1996; Ewing et al. 2014; Muth 1971; Partridge & Rickman 1999). Whether jobs follow the redistribution of people within city-regions is important due to the prominence of residential attraction strategies over recent decades. From Florida's (2002; 2004b) theories of the attracting the "creative class" to Moretti's (2012) correlations between high-tech workers and the number of baristas within cities, resident human capital has been promoted as an antidote to lagging city economies, including for second cities. The assumption within these strategies is that place of work and place of residence are the same. Because metro-bound commuting separates these residential and employment locations the study of this phenomenon provides insights into the effects of policies that promote population redistribution expecting that employment will follow.

The regional expenditure effects appraised in Section 7.2, as well as previous studies (Lavesson 2016; Partridge et al. 2010), provide further support for Moretti's multiplier effect. New insights into household factors in regional expenditure patterns are provided by the analysis of survey data in Section 7.2.3, indicating that the number of dependent children was the most important factor. On the other hand, the weight of the qualitative and quantitative analysis in Chapter 7 of this thesis, the conclusion obtained is that high-quality jobs do not follow people on a meso-scale in discernible numbers as a result of metro-bound commuting, or from another perspective, in the residential location of human capital. The salient question is whether employment in cafes and personal services - or in selling white goods as suggested by ex-Victorian Premier Steve Bracks in an interview for this thesis - is a regional development outcome worth pursuing in the absence of more substantive benefits to regional economies, such as regional business formation or attraction of firms to regional locations.

The analysis in Chapter 7 indicates that the innovation and productivity benefits of concentrated human capital appear to occur at places of work rather than places of residence, so in the case of metro-bound commuters such benefits accrue to the metropolis to which they commute rather than the region within which they reside. If metro-bound commuting does not lead to the redistribution of economic functions, which is implied by the result of the human capital effect investigations in Section 7.3, then doubts must be raised about the viability of human capital-focused residential attraction strategies (Florida 2004 for example) for locations that do not have higher-order employment opportunities. The sustainability and equity of city-regions have been shown to be enhanced through the location of complementary economic functions within second cities (Camagni et al. 2013; Hall & Pain 2012; Meijers 2013), which underscores the importance of the redistribution of higher-order employment opportunities. As with the suburbanisation jobs-housing balance conclusions of Cervero (1989, 1991, 1996), this thesis' findings imply that government intervention is required at the meso-scale government intervention is required to engender a more efficient distribution of people and employment; facilitating the relocation of people alone is not enough. That is, the redistribution of economic activity hypothesised in the *Polycentric City-region Development Process* in Section 4.2.4 is not occurring as a result of metro-bound commuting alone.

There is an important caveat to this conclusion, in that the circumstances of the second cities and regional locations need to be taken into consideration. The regional development outcomes depicted in Figure 9 on page 99 places functional redistribution above employment and population redistribution in a hierarchy, as the outcomes need to be assessed in the context of the second city in question. For a city such as Geelong, where population and employment have increased over the last decade within a shift from a manufacturing economy to one based on some higher-order services, functional redistribution should be at the forefront of policymaking relating to people and employment. In contrast, for a city experiencing the travails of Gary in Indiana, which was described

as dying in the introduction of this thesis, the increase of population and subsequent expenditure effects as a result of attracting Chicago-bound commuters may provide an initial impetus for economic revitalisation. Thus the initial state of the regional settlement needs to be taken into account in policy making. Towns facing economic decline due to population loss may benefit from population regrowth if only to sustain their population services sectors. In this context encouraging metro-bound commuters would be a ‘rescue’ strategy rather than a revival or development strategy. But for regional towns that already have a growing population and a stable population services base adding metro-bound commuters is unlikely to take the town to a level of economic performance that is disproportionately higher than population growth rates.

The contribution to knowledge is an outcome of the application of regional political economy and mixed methods to the questions regarding regional economic development and metro-bound commuting. As noted in Section 5.2, previous research on metro-bound and long distance commuting have been concerned with distinct outcomes in regional areas and for individuals and households. By combining insights into individual experiences, regional economic outcomes and policy interventions, the conclusions reflect a wider range of concerns than those that would arise from narrower methodologies, as well as arguments for heterodox economic geography based on its capacity to elucidate social, economic and environmental concerns (Peck 2015).

9.3 City-Region Distributions and Policy Implications

This section sets out the effects of metro-bound commuters on the distribution of people and employment in city-regions, providing additional conclusions that extend from the contribution to knowledge in the previous section. In particular, these conclusions draw on the literature review and the analyses in Chapters 6, 7 and 8 to consider the effects of metro-bound commuters on people and place, and how governments should consider those effects in policy-making processes.

9.3.1 Metro-bound Commuters and Regional Change

One of the starting points of this thesis was that metro-bound commuters are distinct from other members of the regional resident workforce, and therefore they are likely agents for change as their numbers increase. The most obvious distinction is that metro-bound commuters leave their residential locations for at least some of their working week, and therefore raise concerns in Local Government regarding the expansion of dormitory suburbs and retail leakage, as reported in Section 8.2.1.

Previous studies have drawn on metropolitan-regional wage differentials to provide evidence of regional employment increases as a result of metro-bound commuting (Lavesson 2016 for example), which the analysis in Section 7.2 on expenditure effects correlates to and also extends through the

analysis of the geography of expenditure reported in the survey of metro-bound commuters. In addition to this expenditure effect, this section includes new insights arising from this research as to the ways metro-bound commuters change regional settlements.

Metro-bound commuters have contributed to population increases in the Melbourne commutershed. The survey data presented in Figure 24 on page 131 provide additional evidence of the connection between metro-bound commuting and population growth, which indicates a propensity for the number of dependent children to increase with the years' spent metro-bound commuting. Interviews with metro-bound commuters undertaken for this research also provided support for this relationship, as the stage of life factors of family formation and intentions to have or the imminent arrival of children had provided an impetus for regional relocation.

The population effects and regional relocation also provide support for the conclusion that metro-bound commuters are likely to have an inflationary effect on regional house prices, another aspect of regional change. The survey data on housing tenure, purchase prices and locations analysed in Section 6.5 indicates that a majority of metro-bound commuters are purchasing houses at more than the regional LGA median and are also more likely to be mortgagees than other regional residents. The survey data indicating a greater importance of amenity over housing costs in regional relocation decision-making processes, as well as the analysis in Figure 38 on page 161 provides further support for this conclusion, as counterurbanisation is a likely a housing preference within budget allocations rather than a result of not being able to afford metropolitan housing. As the metro-bound commuting policy framework in Section 8.4 illustrates, regional landowners will benefit from housing market increases as a result of metro-bound commuters, but others, and predominantly the less well off, will likely be disadvantaged. This conclusion is important as it indicates that increasing metro-bound commuters in regional communities is not benign, and any employment benefits need to be considered against the possibility of gentrification and dislocating regional residents, as discussed further in Section 9.3.5. The skew in the survey sample towards managers and professionals is of note for this insight, as it indicates that the effect may not be a result of only this segment of the metro-bound commuting cohort.

The analysis of metro-bound commuters' industries of employment, occupations and educational attainment provided the basis for the hypothesis that metro-bound commuters may contribute to regional economies and employment through human capital effects. While no evidence was found in this investigation to support this hypothesis, the analysis did show that as a result of metro-bound commuting, there was a greater range of employment experiences, capacities, and people with tertiary qualifications present in regional areas. Additional human capital effects were found in the survey responses regarding the employment of other members of metro-bound commuters' households,

particularly that the household members of metro-bound commuting managers and professionals were also likely to be managers and professions, some of whom were working in regional areas.

The categorisation of metro-bound commuters into Inner, Middle and Outer commuters highlights that the differences between metro-bound commuters and the regional workforce are mainly due to those who commute to work in the centre of Melbourne. While these categorisations of metro-bound commuters are based on employment geography, it is the types of work that are the salient feature when considering the implications for metro-bound commuting policy. In particular, the distinctive characteristics of Inner Melbourne commuters is a consequence of the metropolitan tilt, the concentration within central business districts of well-paid employment in knowledge-intensive industries discussed in Section 3.2. For other cities, it is the commuters to the dense and knowledge-intensive employment hubs that will engender the greatest change in regional communities regardless of the geography of the primary city. Transport is also important, as Inner Melbourne commuting is also facilitated by the accessibility of the central region by train services, as Victoria's regional rail services terminate in the central business district. As discussed further in Section 9.3.4, the relationships between transport modes, employment location and the different attributes of sections of the metro-bound commuting cohort have particular implications for transport proposals. The evidence presented in Section 6.3 that metro-bound commuting is more likely to result from regional relocators than metro-job seekers (in the terminology of the framework presented in Section 8.4) is important in this discussion, as change is also more likely to result from people moving to regional communities than as a result of existing residents' metropolitan workplace experiences and incomes.

9.3.1.1 *Employment Data*

As this section illustrates, the composition of the locally employed workforce and the metro-bound commuting workforce may be quite different, particularly for regions within metropolitan commutersheds. In many of the regional strategies and plans reviewed over the course of this thesis, whether the employment data was for resident workers or jobs located within the region had not been specified. While this may again indicate the failure of regional LGAs to grasp the economic and social effects of metro-bound commuters on their constituencies, it also reduces the clarity and usefulness of the data provided.

The comparison of the workforce and human capital attributes of metro-bound commuters to regional workers in Section 7.3.1 provides an example of the differences between the cohorts, as well as the indicating the prospect of regional development as a result of human capital-related effects. The jobs gap analyses for Moorabool and Macedon Ranges Shires in Figures 43 and 46 provide a further example of this point. The data in these figures compare metro-bound commuters with the number of people employed within the shires by industry sector, highlighting the differences between the two

workforce cohorts, with the stark differences in some sectors leading to the conclusion of limited prospects of improving employment self-sufficiency within the LGAs. These examples underscore the importance of being clear as to what data is being reported as well as understanding the differences in employment cohorts in detail, as it provides a stronger foundation for formulating economic development strategies, particularly for regional LGAs within commuting distance of metropolitan areas.

9.3.2 Lived Experience and the Importance of Employment Redistributions

In addition to the arguments presented in Section 9.2, the employment redistribution effects of metro-bound commuters are important due to the lived experience of metro-bound commuters. There is a degree of ‘lock-in’ associated with metro-bound commuting, with interviews for this research providing factors such as families becoming embedded in regional communities, the increasing differential between metropolitan and regional housing markets making metropolitan return difficult and scarce opportunities for regional employment as barriers. The model presented in Section 7.3.2 indicates that the number of metro-bound commuters in 2006 was not a precursor to growth in the types of knowledge-intensive employment particularly associated with inner-city workers and metro-bound commuters. The interviews conducted in this research indicated both the difficulty in finding suitable regional employment and that for many commuters their type of work does not exist in regional areas.

Metro-bound commuting ‘lock-in’ is important as the many find long-distance commuting to be wearying over time. Section 2.2.3 summarised previous research that had found relationships between long-distance commuting and negative physical and mental health effects, higher rates of divorce and lower community engagement. The interviews conducted for this research, included in Section 6.4.3.4, provide further evidence that for many metro-bound commuting is a difficult and detrimental way of life: exercise, diet, family connections and social interaction fall by the wayside due to the hours away from home, particularly for those travelling to and from metropolitan work five days per week. These negative effects of long-distance commuting can be mitigated through flexible working conditions such as working from home, adjusting hours to avoid peak travel times and the inclusion of travel times as part of the working day. It is of note that the work-place flexibility that is required to minimise the days’ commuting is more likely found in knowledge-intensive types of work than the more direct service and physical production employment associated with suburban and outer areas of cities (Bosua et al. 2017). However, this research found a notable proportion of metro-bound commuters are finding the lifestyle difficult to sustain and cannot bring it to an end through residential and employment changes needs to be taken into account in any policy associated with metro-bound commuting.

9.3.3 Concentrated Decentralisation and Policy Implications

The evidence that the human capital effects of metro-bound commuting are not generating higher-order employment may be a consequence of their distributed residential locations, as dispersing population growth across many settlements will not create the agglomeration economies and the opportunities for import replacement that may shift the metropolitan-regional balance. The propensity for metro-bound commuters to work in knowledge industries, as shown in Figure 40 on page 179, is also important for this point, as these industries benefit from agglomeration and city locations, and metro-bound commuters provide thick labour markets to support new businesses in these sectors. Scott (2012, p. 105) outlines a relationship between a settlement size's and the structure of its economy: smaller populations are comprised of a greater number of "service underclass workers" and larger settlements have a higher proportion of "symbolic analysts".

This indicates that a possible regional economic development strategy would be to concentrate on locating metro-bound commuters in larger regional cities rather than distributed across the commutershed in order to generate the agglomeration benefits through thicker labour markets; links to intermediate factors of production and larger markets; and knowledge transfer. Agglomeration at its most elemental involves increasing returns to scale in urban systems, and while it is often cited as an argument for the continual increase in size of large cities to improve competitive positions (Sloan 2010 for example), this ignores the diseconomies of scale associated with large cities as well as the evidence of the efficiency networks of functionally complementary cities of a range of sizes (Camagni et al. 2013, 2015). The literature on second cities points to functional specialisation as a path to economic development for regional areas, which recalls the theoretical explanations for the growth of regional cities in the 20th century (Fujita, Krugman & Venables 2001; Henderson 1974, 1997). In these theories, regional specialisation is a result of localisation economies as the higher productivity of the businesses within the specialisation means that they are willing to pay higher rents and thus crowd out other sectors. A further argument for concentrated decentralisation is found in import replacement theory. That is, as local market sizes increase it becomes profitable to provide a greater range of goods and services to that market locally, and as the local supply increases, there are more opportunities to recombine elements of production into new and innovative industries (Jacobs 1969).

The implication is that there may be greater regional development effects from adding 200,000 people to one city than adding 10,000 to twenty cities, creating the basis for greater densities and agglomeration benefits. Therefore, the challenge is to consider how metro-bound commuters can be directed or encouraged to distribute themselves within city regions to generate regional economic development outcomes. As State Government Interviewee No.1 observed in Section 8.3.2, the government does not direct housing choices and, but facilitates them through infrastructure provision, improved services and support for businesses. Given this limited scope for intervention, which is

likely to reflect the situation in other democratic countries, there is a need to coordinate the available interventions: infrastructure improvements, industry development and subsidies, and land use planning in designated growth locations. The results of this research imply that second-to-primary city transport connections alone are not enough to generate these effects, which is similar to the conclusion of Chen and Hall (2013, p.357) regarding high speed rail, that “[b]oth transport accessibility (hubs and transport networks) and non- transport initiatives (education, housing and physical transformation) prove to be essential”.

This conclusion of Hall and Chen’s indicates the need for a coordinated approach to regional development. As the conclusion to Chapter 8 argues, the rapid growth and development of second cities in Australia during the 20th century was fostered by government interventions in housing, infrastructure and industry subsidies and incentives that worked in combination. Geelong can be seen as an example of this interconnected development strategy, where the city’s automotive manufacturer sector was located alongside the port, rail lines and surrounded by public housing development to provide worker housing. In this regard, the emerging cluster of social and private sector insurance agencies in central Geelong, as discussed in Section 8.3.4, provides the opportunity to test whether coordinating government policy and investment in ways that promote further development of the city’s insurance sector provides similar outcomes as the those of the 20th century. This development could provide an exemplar for the revitalization of other post-industrial second cities, and is therefore an important topic for further investigation.

While agglomeration, import replacement theories and the results of this research indicate that from an economic perspective there is more to be gained from concentrated decentralisation, there the pragmatics of democratic systems to contend with. Concentrated decentralisation is essentially a ‘picking winners strategy’. While it can be argued that other locations will benefit from easier access to the employment and services offered by larger centres, previous examples such as the Manson Report and the Albury-Wodonga Development Corporation included in Section 8.3.2 floundered due to the lack of co-operation from areas not included within these decentralisation initiatives (Pennay 2005). Regional decentralisation also requires the relocation of business, which may not be willing to be directed in the absence of ‘incentives’, and as Neutze (1968) observed, as the benefits arise from multiple relocations of businesses and associated organisations to the same location, there is also a problem of coordination.

9.3.4 Transport Infrastructure, Metro-bound Commuting and Regional Development

As metro-bound commuting is facilitated by transport infrastructure improvements, this thesis offers conclusions regarding the relationships between transport infrastructure connecting regional and

metropolitan areas, metro-bound commuting and regional development. This includes insights into transport mode preferences and how they differ by places of work, as well as transport infrastructure affects intra-regional competition and the distribution of economic activity. The transport demand models in Section 6.4.3.2 indicate that the proportion of metro-bound commuters within a regional resident workforce decline by 3 per cent for vehicle travel and 5 per cent public transport for each 10 minutes of travel time.

Most of the metro-bound commuters interviewed for this research seemed entrenched in their selected mode of transport. For car travellers, the added time getting to and from the rail station to work, the flexibility of departing times and the solitude and time for podcasts and personal calls were significant factors in choosing to travel by car. For train travellers, it was the productivity of the travel time, and the higher stress of and effort required to drive that were important factors. In both cases, interviewees indicated that they thought their mode of travel was at least as fast door-to-door and comparative financial costs were not regularly considered. The mode choices of workers commuting to different locations mean that the impacts on regional communities may be different: trains may attract inner-city workers, with higher incomes and human capital, while road developments are likely to be of benefit to middle and outer suburban workers, who tend to be more like regional residents in their workforce attributes as discussed in Section 7.3.1. This would be especially the case for construction workers employed in building new suburban development on the metropolitan fringe who need to cart tools and equipment to dispersed worksites thus excluding train travel as an option. Governments thus need to consider the different users of transport modes and their impacts when formulating regional transport policies.

From a metro-bound commuting as regional development perspective, improvements to regional rail services are likely to result in greater economic gains to regional cities and settlements than roads, as rail is the dominant mode of transport for well-paid and highly-educated inner-city workers. Therefore, it is likely that the regional expenditure effects of these metro-bound commuters and their households will be larger than those that choose to metro-bound commute as a result of road improvements on a per capita basis. It is also possible that the human capital attributes of these workers will also provide employment benefits in regional areas. However, the evidence presented in Chapter 7 of this thesis indicates government intervention is required to make use of this resource. Also, concentrations of inner-city metro-bound commuters within regional cities and settlements will likely lead to increased house prices and thus the prospect of gentrification.

Additional considerations for transport improvements have been raised in this thesis. The diagram in Figure 8 on page 92 summarises the theoretical impact of the increased accessibility of regional areas as a result of transport improvements: people and employment that serves them move outwards into the regions while higher-order employment and economic activity concentrated in the metropolis. The

second effect, a result of increased competition as a result of lower transaction costs across space, is crucial in the context of this thesis's arguments for functional polycentrism. This effect implies that if regional communities are to benefit from rail improvements and associated increases in metro-bound commuting, then the investment needs to be accompanied by regional development policies to ensure positive outcomes are leveraged for regional communities.

The framework for assessing metro-bound commuting proposals in Figure 48 on page 237 illustrates and summarises the range of positive and negative effects of metropolitan-regional transport developments presented in this discussion. As the analysis of Australian transport proposals in Section 8.3.3 concludes, recent announcements do not take into account the full range of effects that can result from improved transport connections. A notable example is the Federal Government's Faster Rail program (McCormack 2018b), which is promoted as providing regional housing options for metropolitan workers without considering the possibility of the concentration of higher-order economic activity in the metropolis that has occurred in other countries (Tomaney 2011, 2013). For policy makers, the central consideration is that transport infrastructure proposed as regional development interventions need to be assessed on the full range of effects that may result, and how those effects align with longer-term strategic visions for second cities and regional cities. Transport improvements on their own are not likely to address substantial imbalances between regional and metropolitan prosperity.

9.3.5 Importing Prosperity

As indicated by the results in Section 6.3, metro-bound commuting is more likely to result from the counterurbanisation of metropolitan workers than regional residents finding metropolitan employment. Given this greater propensity for regional relocation, there is a possibility that regional towns in particular may be prospering through importing the prosperity associated with the in-migration of inner-city workers, rather than through improving the circumstances and prospects of existing regional residents.

Badcock (2002) noted that in metropolitan contexts, gentrification comes with processes of displacement that recall colonisation, which can be an outcome of the house price effects of metro-bound commuters discussed above in Section 9.3.1. As well as earlier research by Costello (2007, 2009), this is exemplified in comments by the PUGRC representatives, who had observed both increasing housing costs and the people moving away from towns within the commutershed, indicating that this argument is more than conjecture, it is happening within the study region. An associated effect is the possibility of social division as a result of introducing metro-bound commuters to regional communities.

Given the evidence presented in this thesis regarding the limited employment outcome as a result of metro-bound commuting, the resulting prosperity of regional communities is dependent on their ability to attract expenditure from metropolitan workers. This recalls Scott's (2013, p. 385) observations of the split in the modern labour market between the "highly qualified symbolic analysts and ... a low-wage service underclass" as previously cited in Section 3.3.1. The divide in the labour market has been associated with friction in communities where the two labour force cohorts interact (Storper & Scott 2009). Therefore, it is beholden upon those promoting metro-bound commuting development strategies to consider the full range of effects that result from metropolitan workers residing in regional communities. Increasing prosperity in a city or town is not necessarily due to the improvement in the circumstances of the residents the interventions were intended to help, but an outcome from their displacement and subsequent relocation to less favourable locations. This conclusion is a fruitful topic for further investigation, as direct research undertaken with the residents of regional communities would provide greater understanding of how metro-bound commuters are affecting their lives and economic prospects.

9.3.6 Local Government and Metro-bound Commuters

The review of Local Government economic development strategies found a lack of understanding of the effects of metro-bound commuting on regional economies and populations, despite the substantial proportion of metro-bound commuters within the resident workforces of some LGAs. In many cases, the economic development strategies of peri-urban and second city Local Government areas did not mention the influence of metropolitan interaction, that at least some of the population growth was due to metro-bound commuting.

For Local Government, and particularly for smaller settlements, the challenge is how to navigate the complex and interrelated effects and impacts of metro-bound commuters. Recent regional development strategies reviewed in this thesis do not clearly address the connections between commuting and population growth or the economic impacts of the connectivity improvements they advocate for. It is also of note that the range of social and economic impacts as a result of metro-bound commuting discussed in this thesis are not evident in the conclusions of previous studies of the employment outcomes of metro-bound commuting, particularly those of Partridge et al. (2010, p. 331) who promote metro-bound commuting as a development strategy as it sustains regional populations.

This research has also found population effects as a result of metro-bound commuting. Regional jobs are also created as a result of the increased regional expenditure, but they are likely confined to retail and hospitality in the private sector. The increase in population may also lead to more employment in the public sector, in particular health and education. However, whether these public sector jobs are of

benefit to regional residents depends on whether there are qualified people within the communities, or if there is ready access to training. As other studies have found, there is a propensity for new jobs to be taken by non-residents rather than resulting in improved labour market outcomes for residents, particularly in roles that require qualifications (Bill et al. 2006; Stockdale et al. 2000; Trendle 2009). Local Government should also be concerned with housing impacts, given the propensity for metro-bound commuters to lead to inflation in regional housing markets.

Given the complex effects of metro-bound commuters on regional communities, the framework for assessing policies in Figure 48 on page 237 is an important contribution of this thesis. LGAs would benefit from a better understanding of the likely impacts metro-bound commuters, particularly in forming positions on projects such as regional high speed rail proposals and metropolitan strategies calling for the redistribution of population to within their jurisdictions.

9.3.7 The Limits of Commuting, the Spatial Demarcation of Growth and Decline and Regionality

There is only so much time that people will spend commuting to and from work. While transport improvements, communications technology and flexible working conditions have increased the distance people are willing to travel within their time allocations, the residential locations that people can metro-bound commute from were shown to decline exponentially with distance in Section **Error! Reference source not found.**. Therefore, the places that strategies for metro-bound commuting development can be applied is limited by metropolitan proximity.

In Victoria, the settlements that are experiencing population and employment stagnation, and in some cases decline, are located well outside the commutershed: the Wimmera, Mallee and East Gippsland for example. In contrast, the policies for regional rail promoted in the 2018 Victorian election, such as the Victorian Government's support for fast rail to Geelong and the Victorian Liberal-National opposition's \$19 billion regional rail development plan, are largely focused on the commutershed cities and towns. While they were announced as regional development, it is of note that these plans are focused on the parts of the state that have already experienced population growth over the previous decades and are projected to grow rapidly in the future (Department of Environment, Land, Water and Planning 2019). The Victorian metro-regional dynamic recalls the observation from the cumulative causation literature that the positive spread effects that emanate from prosperous centres that do not occur over as wide an area as backwash effects of economic concentration (Partridge et al. 2007). That is, more remote regions that to some extent have suffered from backwash are not likely to benefit from the spread effects of commuting.

Eversole (2017) observed that the use of the term ‘regional’ obscures that these areas are diverse in their circumstances. Therefore, proposals such as high speed rail to Geelong can be promoted as improving regional economies and prosperity, even if the focus is on an area that is comparatively well-off in the context of regional Australia. A further impact of ill-defined geographic terminology results from the unclear delineation of the urban and the rural (Scott & Storper 2015), or what constitutes a suburb (Forsyth 2012), which means the contention that metro-bound commuting is best described as metropolitan expansion and therefore not a regional development initiative cannot be easily substantiated by quantitative measures. While the terminology may be different in other countries, the implications are transferable: as the evidence provided here concludes the additional employment attributable metro-bound commuting is generated by increasing population, then the argument is that it is not regional development but rather metropolitan expansion, following the mega-city process typology of Taylor and Pain (2007), and regional suburbanisation. What is a suburb if not a place that supports people to work elsewhere?

9.4 Concluding Remarks

This research started from a position that metro-bound commuters could be seen as regional exports, such that by transporting labour out of the region in return for increased incomes, and therefore expenditure, increased regional employment would result. As the research progressed, factors became apparent that would need to be considered against any regional benefits: the personal costs of long-distance commuting, the environmental impacts and the possibility of gentrification and displacement. So too did questions regarding the quality of employment created, whether retail and hospitality employment was enough to justify not only the costs of commuting, but also the value obtained through infrastructure funding for regional transport projects. That there are still concerns regarding the diverging fortunes of metropolitan and regional Victoria after decades of metro-bound commuting, with notable increases in the past decade, suggests that metro-bound commuting has not provided an answer to this problem of regional distribution, and is unlikely to do so in other monocentric city-regions.

On reflection, it would seem that the government focus on redistributing population growth to regional areas might be seen as a result of regional cities not having a clear role in post-Fordist economies, as discussed in the conclusion to Chapter 3. Regional cities provided large tracts of land and a ready supply of labour - both at lower costs than the primary city - which along with access to raw materials meant that there was a logic to establishing manufacturing and heavy industry in these places. As employment in manufacturing has declined in developed economies and transport linkages improved, a clear spatial logic in favour of second city business location that holds over the agglomeration benefits within metropolitan centres has not been established. The importance of

agglomeration in contemporary knowledge-based economies is the driver for a cumulative causation process in monocentric city regions: as evolutionary economic geography attests, the starting morphology of city-regions is a determinant of the outcome.

In some regional cities, this decline in manufacturing has been masked by the growth in consumption of population services such as health and aged care, hospitality and retail trade. The city of Geelong is an example of this transition. Growth in population services and retail trade is also a result of metro-bound commuting, facilitated by improvements in transport and workplace flexibility. The question this raises is whether there is a grander role for regional cities than simply population service hubs and providing different housing choices for metropolitan workers; a role that complements the primary city and adds to the efficiency and productivity of the entire city-region. The challenge for governments is to discover a new variant of the 20th century paradigm of population growth as an outcome of industry development and specialisations – functional polycentrism - rather than the contemporary fixation on population distribution, particularly evident in Australian discourse in recent years. As pointed out in the conclusion to Chapter 8, this is not an argument for the reintroduction of manufacturing and trade protections, but to develop complementary and contemporary second city economies. Proposed infrastructure fixes such as high-speed rail services that provide travel times of less than one hour between regional and metropolitan cities need to be considered in terms of how they affect the economic structure of the city-region, not just the Australian Deputy Prime Minister’s stated outcome of “better options for people who want to have the lifestyle of a regional centre but access to the job opportunities of a big city” (McCormack 2018b).

These conclusions are contingent upon the circumstances of the second cities and regional towns that may provide residential locations for metro-bound commuters. While Geelong and many other second cities and settlements within commuting distance of Australia’s major cities have experienced population and employment growth in recent years, for other cities amidst different contexts and trajectories metro-bound commuting may provide the first step in a more substantial recovery - such as Gary, Indiana. For Drummondville in Quebec, whose “future growth hangs on its ability to provide an adequately skilled workforce – but not necessarily highly educated – at a cost below that of similar locations in Canada” (Polèse 2010, p. 178), it’s possible that concentrated human capital as a result of metro-bound commuting may increase innovation and productivity in the city, but the evidence presented in this research indicates getting inner-city workers to live there is not enough to generate these higher-order economic effects. In a context such as southeast of England where commuting has been associated with functional polycentrism due to the network of advanced producer services firms connected to London, the economic strength of the region “has deep roots” (Hall & Pain 2012, p. 125) and has been the primary economic region in the UK since the 1930s. This example provides support for the evolutionary insight above, as well as the arguments in Section 4.3.2, that the outcomes of

increasing connectivity in city-regions are dependent on the relative strength and complementarity of the localities being connected. It also implies that the causality may run the other direction: increased commuting results from functional polycentrism.

Therefore in such a context, metro-bound commuters may correct for population decline, and generate important employment in cities where opportunities are scarce. However, the conclusions presented in this thesis show that more substantial outcomes – new outwardly focused industry sectors, well-paying jobs and engaging careers that are comparable to those in the metropolises – are unlikely to occur if the dynamic involves metro-bound commuting alone. The answer to whether metro-bound commuting results in a state of cities or a city state depends on how we determine the extent of a city. While suburb is a widely understood concept, it does not have a single, agreed definition (Forsyth 2012). Similarly, regional as a geographic determinant in Australia may mean non-metropolitan to some, but Federal initiatives that are considered ‘regional’ have included metropolitan outcomes. The relevance to the question of city states is that metro-bound commuting outcomes can be both suburbanisation and regional development: arguments for redistributing population can be seen as creating a state of cities, rather than a series of disconnected suburbs. What this thesis concludes is that the key determinant of a ‘state of cities’ is the redistribution of economic functions into a complementary network of cities, and that is not occurring as a result of metro-bound commuting.

In summary, metro-bound commuting calls into question what is regional and what is metropolitan in conventional understandings of metro-regional geographies. The fluid geographic determination of what is deemed to be regional means that providing metropolitan workers access to regional housing can be promoted as regional development, not metropolitan expansion or regional suburbanisation. The focus on population redistribution, and by extension metro-bound commuting, as the primary purpose of regional development policy in Victoria can be seen as a failure of government to successfully redefine the role of regional cities in post-industrial economies. The plight of other second cities, such as those referred to above, and the economic revitalisation of the north of England as justification for the High Speed 2 project (Chen & Hall, 2013), indicates that this need to redefine the roles of second cities is widespread. In this regard, there is a need for place-based interventions to address declining regions and the political consequences of disadvantage and disaffected populations, as the prevailing spatially blind approach to regional development has contributed to these circumstances (Rodríguez-Pose & Wilkie 2018; Storper 2018). Based on the conclusions of this thesis, a greater emphasis on economic functions and higher-order employment in second cities is required in the formulation of regional development policy, as the essentially spatially-blind approach of facilitating population redistributions on the expectation that employment will follow is not likely to address the diverging prosperity between metropolitan and non-metropolitan regions.

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