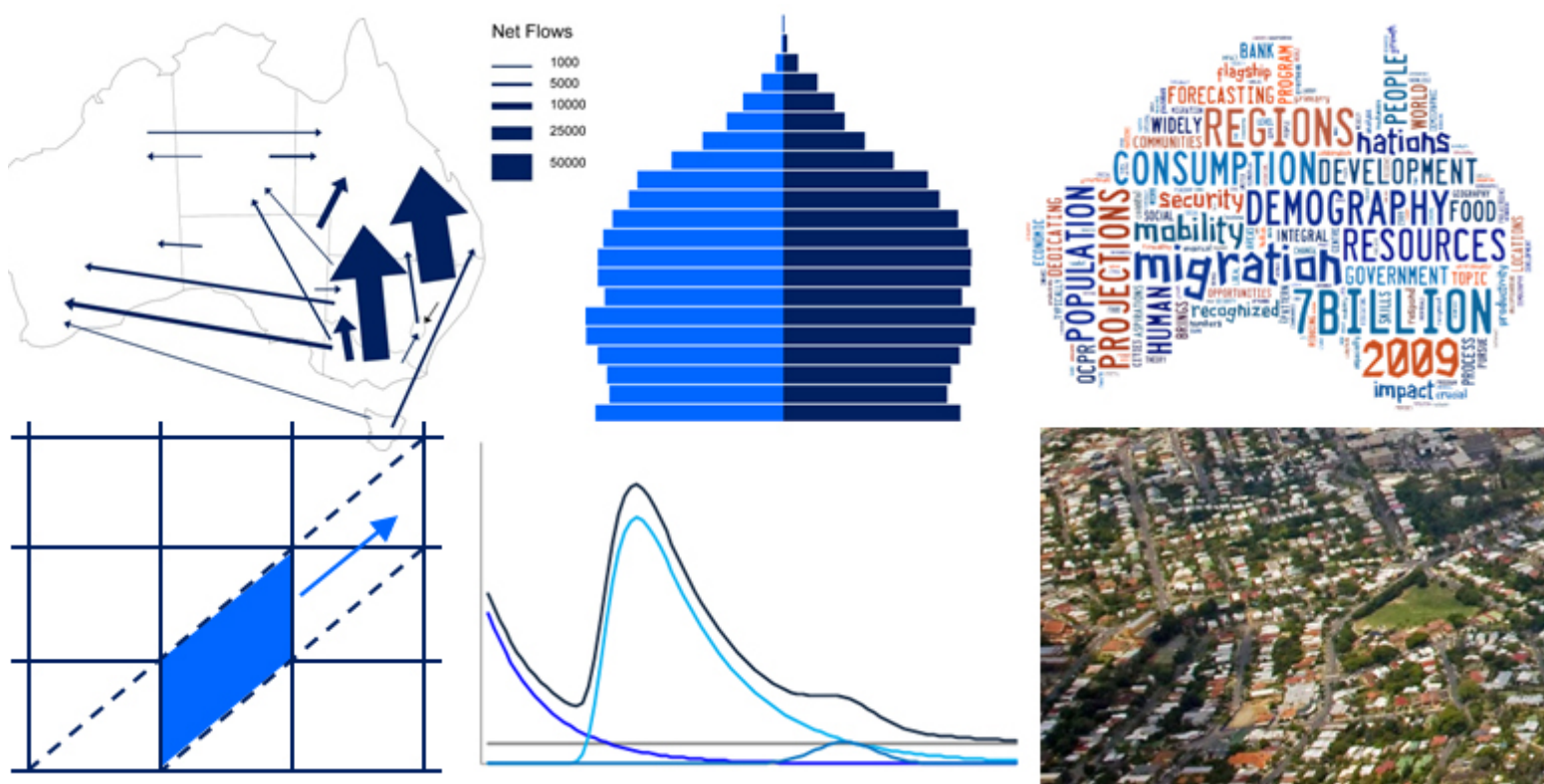# Queensland Centre for Population Research

Patterns and sequences of mobility

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Contents

1. Background

Australia is one of the most mobile societies in the world (Long 1991; Bell and Muhidin 2009; Bell and Charles-Edwards 2013). Between 2006 and 2011, thirty eight per cent of Australians changed their residential address, indicating that four in ten people moved to a new residential location (Wilson et al. 2013). Young adults stand as the most mobile group of the Australian population and comprise one of the largest groups of movers. People in the 15-24 age bracket alone account for almost one quarter of the total number of movers and tend to move as twice much as other age groups of the population.

In Australia, young adults typically move from regional areas to metropolitan locations, primarily towards state capital cities (Bell 1992). Accordingly, state capital cities have experienced continuing net migration gains of young adults, whereas other regions of the country have recorded net migration losses of young population (Hugo and Harris 2011). This movement of young adults from rural regions to metropolitan areas is a long-standing demographic phenomenon in Australia (Bell and Hugo 2000), and it is also common in other parts of the developed world, such as the United States (Bogue, Liegel and Kozloski 2009), Scotland (Stockdale 2002), Sweden (Nilsson 2003) and Canada (Mayer 2000).

In a knowledge-based economy context, understanding of the movements of young people is critical for economic growth and regional development (Romer 1986; Barro 1992). The movement of this large, highly mobile population group has arguably resulted in a transfer of skills, knowledge and labour from rural and remote communities into metropolitan areas of Australia, reinforcing concentration of economic activity and young labour force. At the same time, it has led to a gradual ageing of the population structure and an erosion of the local stock of human capital in many rural communities, placing constraints for local development (Hogan and Young 2013). To enhance their social fabric and economic performance, rural communities need to develop policies for improving the attraction and retention rates of young and educated population (Corcoran, Faggian and McCann 2010; Rowe, Corcoran and Faggian 2013). A comprehensive understanding of the complex blend of forces underpinning the migration patterns of young adults and their changes over time is therefore a critical component for regional policy development.

From an individual perspective, particular events over the life cycle are identified to influence the migration patterns of young adults. High levels of mobility at young adult ages are conceived to reflect a sequence of interlinked and concentrated life course transitions, covering the period from the mid-teens to the late twenties (Rogers and Castro 1981). At these ages, high propensities to move are related to particular changes in living arrangements, family configuration, educational formation and career development, representing entrance to higher education, partnership formation, childbearing, entry to the labour force and leaving the parental home (e.g. Mulder and Wagner 1993; Odland and Shumway 1993; Haapanen and Tervo 2012).

Existing scholarship has examined the links between life course transitions and migration. However, it has focused on single transitions for a particular cohort, or group of people. Thus, no distinguishably attempt has been made to integrate the collective influence of various life course sequences on migration or to analyse variations in the influence of these sequences over time by comparing different cohorts or groups of people. As a result, there is a limited understanding of the relative importance of the various life course transitions in shaping migration in the early stages of life and in the way in which the influence of these transitions changes over time.

Additionally, previous studies linking life course events and migration have placed little attention on the geographic origin of migrants. This has occurred despite long-standing evidence of marked differences in net migration outcomes across Australia's urban hierarchy which point to the role of a distinctive set of forces acting to trigger movements up and down the urban hierarchy (Plane,

Henrie and Perry 2005). Consequently, migration analyses should consider the geographic origin of migrants as an integral component to unveil the forces driving movements from metropolitan and non-metropolitan areas.

At the same time, a separate set of studies has used the geographic origin of movers to identify sequences of mobility, distinguishing between return and repeat migration (e.g. DaVanzo and Morrison 1981; DaVanzo 1983; Newbold and Bell 2001; Newbold 2001). While they consistently showed that the intensity of making a return or repeat move varies with age, and that most return and repeat mobility occurs at young adult ages (25-34 years old), there has not been a deliberate attempt to explore these movements within the overreaching context within which life course trajectories unfold. Mobility sequences represent only one element of a series of events occurring throughout people's lives. Mobility constitutes a response to transitions in one or more of a collection of overlapping life course domains –family formation, employment, education and living arrangement- all of which have a particular geographic position. Mobility sequences should thus be explored in a broad life course perspective.

Elaborating on these observations, this report seeks to examine the migration patterns of young adults in Victoria by drawing on two unique sources of data: the Australian Migration Database (AIM) and the 2003 Longitudinal Survey of Australia Youth (LSAY). The report begins by establishing the aims of the analyses before proceeding to review previous work on migration as a way to establish the conceptual framework for exploring the movements of young adults up and down the urban hierarchy as they transition from school to higher education and work. Then, the document describes the two data sources and methodological approach used for the analyses, and identifies main issues that prevent the disaggregation of LSAY data at a lower spatial scale than a dichotomous: metro-regional approach. Using data from the AIM database, the spatial patterns of young people in Victoria are explored before we focus on the sequences of these moves to determine the extent and timing of return migration to regional Victoria by drawing on data from the 2003 LSAY. This report ends by outlining the way forward for the project by describing the approach that will be adopted to tackle the original research questions, and the way this report fits under these questions.

2. Aims

This report pursues three specific aims:
- To explore the aggregate spatial patterns of migration of young people in Victoria;
- To identify how these patterns have changed over time; and
- To assess what the Longitudinal Survey of Australia Youth (LSAY) dataset can reveal about the sequences of movements of young people as they transition from school to tertiary education and work.

To address these aims in a coherent and integrated manner, two key domains require attention. First, it is imperative to establish a sound conceptual framework. This report seeks to develop this, building on the notions of mobility up and down the urban hierarchy proposed originally by McKay and Whitelaw (1978), and Jarvie (1989). Second, it is critical to identify data sources to construct a rigorous analytical approach that enables us to answer the five main research questions of the project. The next section elaborates the conceptual framework used for the analyses in this and subsequent reports to guide interpretation.

3. Conceptual framework: Migration and the Australian urban system

The regional structure of economic and social opportunities of countries undoubtedly plays a major role in shaping the patterns of migration flows. The spatial distribution of economic and social activity across a nation represents the overreaching context within which migration occurs. In this

vein, interpretation of migration patterns in Australia have been rooted in the theoretical work of McKay and Whitelaw (1978), and Jarvie (1989). Reflecting the spatial variations in socio-economic opportunities across the country, this work conceptualises internal migration in terms of a three-tier hierarchy, comprising two major metropolitan centres (Sydney and Melbourne) as the first tier and national core, four minor metropolitan regions (the other three state capitals and the Australian Capital Territory) as the second tier, and non-metropolitan areas (rest of Australia's regions) as the third tier.

Within this system, the major metropolitan centres are argued to play a pivotal role in the migration network. These centres are argued to act as `switching points and re-training areas', recruiting young people from their rural hinterland, other states and overseas, providing training, new skills and experiences, and then recycling them down the urban hierarchy (McKay and Whitelaw 1978, p. 66). Higher levels of the urban hierarchy are argued to attract young people from lower levels, from country and minor metropolitan areas, and provide training, education and employment opportunities unavailable in these lower levels. Subsequently, older people with skills and experience are distributed back down the hierarchy to fill positions being vacated by those seeking positions in major metropolitan areas or by the ageing of the workforce in rural communities.

Substantiating these observations, Jarvie (1989, p. 221) showed that the two major metropolitan areas of Australia (Sydney and Melbourne) absorb high levels of migration of young people from the hinterland and minor metropolitan areas, especially those aged 15-19 and 20-24. At the same time, these major metropolitan areas were shown to send back down to non-metropolitan areas migration flows dominated by older age groups, being those in the 25-29 age bracket the most prominent group. While this general structure of the migration network reflecting the hierarchical nature of the Australian urban hierarchy remained unchanged during the 1960, 1970s and 1980s, evidence from the 1986 census pointed to a diminishing in the role of Sydney and Melbourne as major national centres of mobility flows (Bell 1994). The current report provides updated evidence pointing to an increasing attraction of the Melbourne inner city area for young aged 15-24 during the 1990s and early 2000s and a subsequent weakening since then.

The high levels of migration of young people from nonmetropolitan areas to metropolitan centres are often attributed to the diversity of educational and employment opportunities in metropolitan areas that cannot be matched elsewhere within the state (Hillman and Rothman 2007). Young people often leave non-metropolitan locations in pursuit of further education and more promising career prospects, despite the presence of Higher Education Institutions (HEIs) and concentration of agricultural and mining employment opportunities in regional and rural areas. This is because metropolitan areas are home to the top universities of the country, and local HEIs offer a wide range of education course and programmes which are unavailable in non-metropolitan areas (Hoare 1991; James, Baldwin and McInnis 1999). While the decision to move to a metropolitan area appears to be greatly motivated by education reasons, people from non-metropolitan locations see this move as an opportunity to assert independent adult life, meet new people and have experiences that are not available in local communities (James, Baldwin and McInnis 1999; Monash University 2006).

In addition, metropolitan areas provide a wide diversity of employment and professional development opportunities. Metropolitan regions are the centres of trade, financial, cultural and retailing activities. They are the preferred headquarters location for large domestic and foreign-owned companies and concentrated much of the state government activity (Taylor and Thrift 1981; Tonts and Taylor 2010). The diversity of employment and career development opportunities in metropolitan areas appears another major driver of the out-migration of young people from regional and rural locations where job options are much restricted.

In Victoria, in the view of increasing population pressures on Melbourne, skills shortages and large net migration losses of young people in regional areas, the state government has expressed the will to attract skilled young and educated population to these areas (Victorian Government 2004). This report seeks to contribute a first study of the migration patterns of young people in Victoria, and provide practical insights to guide policy development for the attraction and retention of human capital. To this end, the career mobility and urban hierarchy theses advanced by McKay and Whitelaw (1978), and Jarvie (1989) constitute a useful framework to analyse the patterns of migration flows of young people.

4. Data and methods

4.1. Data

To explore the spatial outcomes of migration for young people in Victoria, we use data from the Australian Internal Migration (AIM) database, and the 2003 Longitudinal Survey of Australian Youth (LSAY).

AIM Database

Assembled from seven consecutive censuses, the AIM database represents a unique, temporally consistent dataset for the analysis of migration (for details, see Blake, Bell and Rees 2000). This database provides snapshots of migration over seven five-year census periods from 1976–81 to 2006–11. The data are organised on a geographical system of 69 regions with consistent boundaries over the 1981, 1986, 1991, 1996, 2006 and 2011 censuses. These regions are referred as to Temporal Statistical Divisions (TSDs), reflecting the fact that they were built from Australian Bureau of Statistics (ABS) Statistical Divisions (SDs). Figure 1 displays the TSDs representing Victoria, and identifies the distribution of the ten largest Local Government Areas (LGAs) in Victoria according to TSDs. Ideally, we would use a three-tier spatial framework to analyse migration flows in Victoria, differentiating between Melbourne, the main regional centres and smaller regional areas. However, since the ten largest centres and smaller neighbouring regional areas are contained within a same TSD, we focus on mobility between regional TSDs and Melbourne TSDs i.e. a two-tier spatial framework.
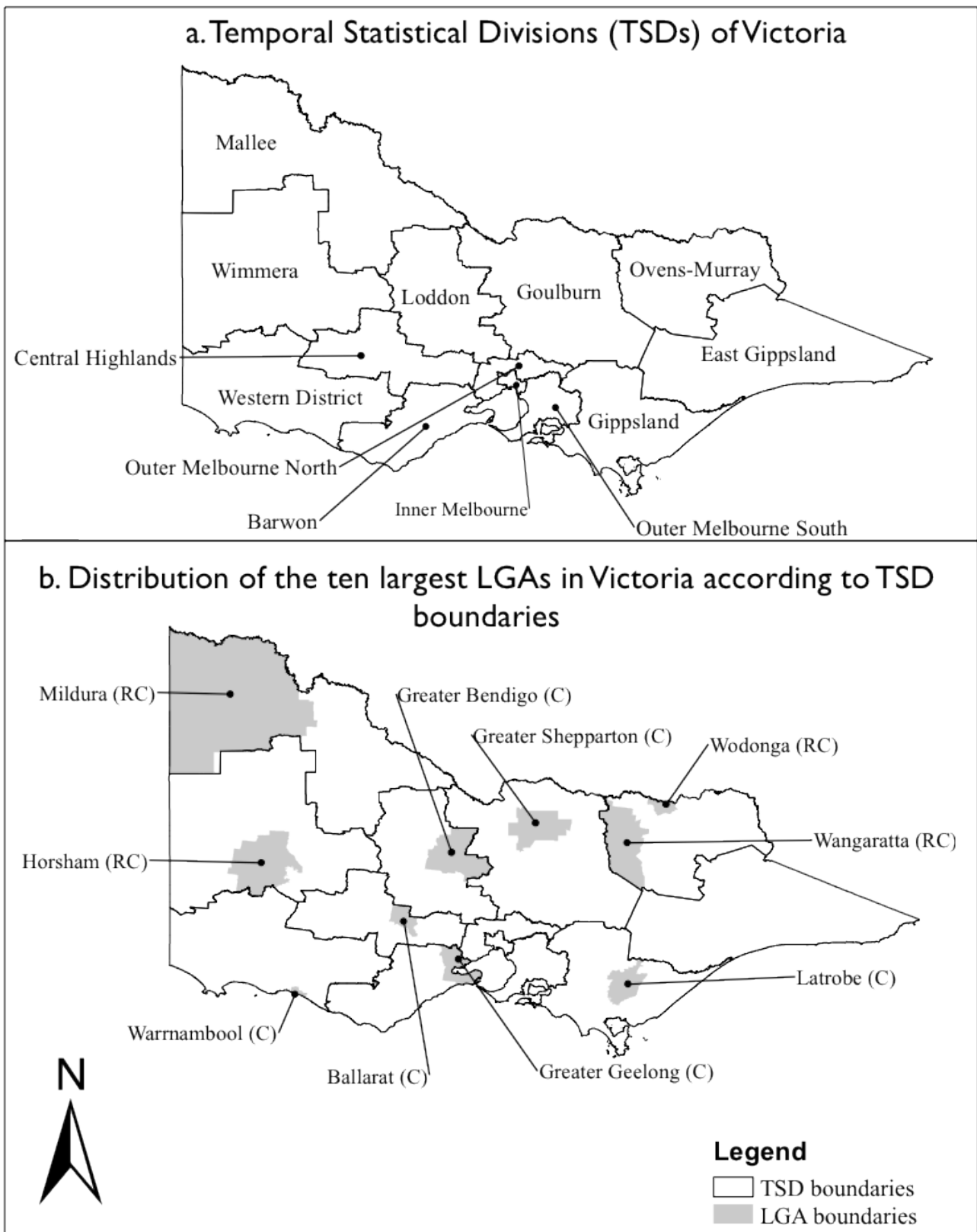
Figure 1: a. Temporal Statistical Divisions (TSDs). b. Distribution of the largest Local Government Areas (LGAs) in Victoria according to TSDs.
Note: Shaded areas represent the largest regional LGAs in Victoria.

LSAY data

The LSAY programme encompasses five nationally representative surveys. Each survey annually tracks a cohort of more than 10,000 young students as they move from school into higher education and employment. Surveys began in 1995 (Y95 cohort), 1998 (Y98 cohort), 2003 (Y03 cohort), 2006 (Y06 cohort) and in 2009 (Y09 cohort). In the 1995 and 1998 surveys, people entered the study when they became 15 years old, while in the 2003, 2006 and 2009 surveys people entered the study when they were in Year 9 of school. Each cohort is followed up for a period of 10 years.

For this project, data from the 2003 LSAY will be interrogated.[1] This is because, compared to previous LSAY, these data provide a contemporary representation of life course trajectories and mobility pathways of young people; and because, compared to more recent LSAY, they provide a timeframe long enough to life course transitions of school leavers over a nine-year period (i.e. between 2003 and 2011). The more recent LSAY (2006 and 2009) are still under way.

The 2003 LSAY collected information on a cohort of 10,370 students as they age from 15 to 24. The LSAY codes respondents' residential locations to postcodes. By comparing postcodes of usual residence between two successive waves, we can identify changes in residential location. However, since the LSAY is designed to be representative of students across Australia for state/territory, school sector and metropolitan/non-metropolitan strata (NCVER 2012), the data are expected to be not necessarily representative by postcodes. Spatial aggregation is required. By using ABS concordance files, postcodes were assigned to Statistical Area Level 4 (SA4), and then aggregated to represent Greater Capital City Statistical Areas (GCCSAs). Thus, states and territories are divided into Metropolitan Areas and the Rest of the state/territory (ABS 2011).

The use of LSAY data to capture migration involves another major challenge. Like most longitudinal surveys, the 2003 LSAY suffers from wave-to-wave attrition. The percentage of participants from the initial sample (2,005) who entered the survey in Victoria in 2003 declined from 89.5% in wave 2 in 2004 to 41.9% in wave 10 in 2011. Although it is a large reduction in sample size, it is a little smaller than that recorded by the national sample which accounted for 38% of the original sample, and comparable to attrition rates for the Household, Income and Labour Dynamics in Australia (HILDA) survey (MIAESR 2012).

Attrition can cause two major problems. First, it can reduce sample size, so that there is less scope to analyse certain groups that comprise relatively small segments of the population. Second, attrition may lead the subsequent wave samples to become unrepresentative of the original sample. Attrition poses a particular challenge for analysts if it is found to be selective (Taris 2000). While selectivity was observed for particular groups for the sample as a whole (Lim 2011), there was no evidence of selectivity for the sample of participants who entered the survey in Victoria.[2] However, we anticipate that migrants are more likely to be missed in the 2003 LSAY, as evidence suggests that there is a positive association between attrition and geographical mobility (Buck 2000).

Two approaches were adopted to minimise wave-to-wave attrition. First, following Coulter and Van Ham (2013), longitudinal imputation was used to fill one-year gaps on the variable containing residential postcodes. To this end, we used the postcode location of the respondent reported at the previous and subsequent waves. Postcodes were attributed if the locations reported for these waves

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[1] Recently, on 08th March 2014, the Queensland Centre for Population Research (QCPR) acquired the latest 2012 wave for the 2003 cohort. This will enable to extend the period of analysis to cover ten years (i.e. from 2003 to 2012).

[2] Analysis of the entire 2003 LSAY sample pointed to higher attrition for Indigenous Australians, the least academically successful individuals, people from low socio-economic households and immigrants (Lim 2011, p. 24).

were the same. Second, we used data of respondents who reported their residential postcode for all waves.[3] In this way, we removed changes in migration patterns arising from differences in sample size at each wave. As a result of these steps, the original sample of 2,005 students with a starting location in Victoria reduced to 847. From these students, 629 started in Melbourne in 2003 and 218 in regional Victoria. Melbourne is defined to comprise the Outer Melbourne North, Inner Melbourne and Outer Melbourne South TSDs in Figure 1, while regional Victoria encompasses the rest of state as a single unit. Table 1 summarises the nature of analyses, data and spatial framework used.

Table 1 Summary of data and spatial framework for the analyses.

Nature of analysis	Cross-sectional	Longitudinal
Dimension of analysis	Spatial patterns of mobility	Sequences of mobility
Spatial framework	TSDs	Melbourne/regional Victoria
Data	AIM data	2003 LSAY data
Group of study	People aged 15-19 and 20-24	A cohort of young people as they age from 15 to 23
Temporal coverage	1976-81, 1981-86, 1986-91, 1991-96, 1996-2001, 2001-06 and 2006-11	2003-2011

4.2 Methods

Two sets of analyses are conducted to tackle the aims outlined in section 2. First, we carry out a cross-sectional analysis focusing on two groups of young people, those aged 15-19 and 20-24. We focus on these groups because existing research indicates that they cover the period of life over which key transitions to adulthood occur (Gauthier 2007), and at which most migration exchange between Melbourne and regional Victoria takes place (DPCD 2013). Drawing on data from the AIM database, we document the migration patterns of young people and their shifts over a period of thirty-five years (1976-2011).

Second, we perform a longitudinal analysis of one cohort of 847 Victoria youth, using data from the 2003 LSAY. We track their mobility sequences over nine years, as they age from 15 to 24, to examine the spatial patterns they follow over time. We use descriptive statistical indicators and visualisation tools for sequence analysis originated in biological sciences (Abbott and Forrest 1986). We focus the analysis on movements between Melbourne and regional Victoria due to poor representation of LSAY data at lower levels of geographical disaggregation.

5. Results

5.1 Migration patterns of Victorian youth

Intensity of migration

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[3] It is important to note that we did not use longitudinal weights for the analysis as they provided a different number of observations for each period. However, it should be pointed out that the use of longitudinal weights provided similar results to those reported here.

Table 2, 3 and 4 show the numbers and percentages of young Victorians moving between Melbourne, regional Victoria and other states from 1976-81 to 2006-11. They reveal that those in the 20-24 age group dominate the migration flows of young people in Victoria. They also show that most young people from regional Victoria tend to move to Melbourne, while less young people move in the reverse direction (i.e. from Melbourne to regional Victoria). As result, regional Victoria has systematically lost young population to Melbourne, particularly those in the 20-24 age group. In 2006-11, net migration losses amounted around 2,000 people aged 15-19 and around 9,300 people aged 20-24.

Regional Victoria has reported significant changes in the net migration balance of young population. These changes have manifested in contrasting ways for people aged 15-19 and those aged 20-24. While regional Victoria experienced a decline in net migration losses of people in the 15-19 age group between 1976-81 and 2006-11, it recorded a rise in the net migration losses of those in the 20-24 age bracket. For the former age group, the net out-migration balance declined from around 4,300 in 1976-81 to 2,000 in 2006-11, whereas for the latter it rose from around 6,800 in 1976-81 to over 9,300 in 2006-11. It is important to point out, however, that although the net result was an overall rise in net migration losses of those in the 20-24 age bracket, net migration losses of this group recorded a significant decline between 1996-01 and 2006-11. Net migration losses of people aged 20-24 in regional Victoria dropped from over 13,000 in 1996-01 to around 9,300 in 2006-11. The main factor underlying this decline was a drop in the number of young people moving from regional Victoria to Melbourne as the young population base of regional areas as a whole shrinks.

The results also reveal that a larger number of young people tend to move from regional Victoria to other states than from other states to regional Victoria. Thus, in exchanges with other states, regional Victoria has reported systematic losses of young population through migration, particularly prominent of those in the 20-24 age bracket. While the extent of these net losses has decreased over time, there has been sudden changes in intervening census periods, pronouncing these net migration losses of young population. The most prominent feature is a peak in net migration losses of young population in 1991-96, reflecting a significant increase in the number of young people moving from regional Victoria to other states. In this period (1991-96), the net migration loss of people aged 15-19 and 20-24 amounted more than 9,000 people. Following this peak, the net out-migration balance of young people reduced to only 200 people aged 15-19 and around 3,000 people aged 20-24 in 2006-11, as a result of a reduction in the number of young regional Victorians moving to other states.

Historically, Melbourne has been the main source of young people moving to regional Victoria. However, this role appears to have diminished over time. This is evidenced by a significant reduction in the number of people aged 20-24 moving from Melbourne to regional Victoria. This number dropped from almost 9,000 in 1976-81 to less than 4,600 in 2006-11. As a result, the size of out-migration flows of young people from Melbourne to regional Victoria has reduced to a size similar to that of outflows concerning moves from other states to regional Victoria. Despite this, Melbourne still appears as the key source of migration flows of young people to regional Victoria.

Table 2. Number of moves of people aged 15-19, Melbourne, regional Victoria and other states, from 1976-81 to 2006-11.

Census period	Migration Melbourne-regional Victoria			Migration Melbourne-regional Victoria			Migration Melbourne-regional Victoria		
	Migration from Melbourne to regional Victoria	Migration from regional Victoria to Melbourne	Net migration for Melbourne	Migration from regional Victoria to other states	Migration from other states to regional Victoria	Net-migration for regional Victoria	Migration from Melbourne to other states	Migration from other states to Melbourne	Net-migration for Melbourne
1976-81	4,846	9,175	4,329	4,818	2,818	-2,000	8,001	6,746	-1,255
1981-86	5,604	9,799	4,195	4,970	3,655	-1,315	7,144	6,774	-370
1986-91	5,673	9,322	3,649	5,160	3,671	-1,489	6,978	6,438	-540
1991-96	3,974	9,019	5,045	5,896	2,818	-3,078	6,341	5,030	-1,311
1996-01	3,261	8,430	5,169	4,592	3,400	-1,192	3,926	6,293	2,367
2001-06	3,283	6,191	2,908	3,810	3,078	-732	3,809	5,319	1,510
2006-11	3,183	5,187	2,004	3,433	3,159	-274	3,384	5,200	1,816

Source: Authors' elaboration using census data retrieved from the AIM database.

Table 3. Number of moves of people aged 20-24, Melbourne, regional Victoria and other states, from 1976-81 to 2006-11.

Census period	Migration Melbourne-regional Victoria			Migration Melbourne-regional Victoria			Migration Melbourne-regional Victoria		
	Migration from Melbourne to regional Victoria	Migration from regional Victoria to Melbourne	Net migration for Melbourne	Migration from regional Victoria to other states	Migration from other states to regional Victoria	Net-migration for regional Victoria	Migration from Melbourne to other states	Migration from other states to Melbourne	Net-migration for Melbourne
1976-81	8,929	15,783	6,854	7,934	4,272	-3,662	12,969	9,691	-3,278
1981-86	7,676	14,750	7,074	7,661	4,340	-3,321	11,206	9,897	-1,309
1986-91	7,128	17,006	9,878	7,823	4,309	-3,514	9,924	10,598	674
1991-96	5,771	17,607	11,836	9,742	3,586	-6,156	10,352	9,090	-1,262
1996-01	4,254	17,525	13,271	6,587	3,973	-2,614	6,632	11,956	5,324
2001-06	4,341	14,910	10,569	6,849	3,602	-3,247	6,907	10,954	4,047
2006-11	4,508	13,906	9,398	6,746	3,667	-3,079	6,605	12,747	6,142

Source: Authors' elaboration using census data retrieved from the AIM database.

Table 4. Out-migration rates of people aged 15-19 and 20-24, Melbourne and regional Victoria, from 1976-81 to 2006-11.

15-19

Census period	Out-migration rates for Melbourne (%)		Out-migration rates for regional Victoria (%)		
	Migration to regional Victoria	Migration to other states	Migration to Melbourne	Migration to other states	Migration within regional Victoria*
1976-81	2.2	3.6	9.1	4.8	5.3
1981-86	2.4	3.1	9.6	4.9	6.1
1986-91	2.7	3.3	9.5	5.3	6.3
1991-96	2.0	3.3	9.7	6.3	5.8
1996-01	1.7	2.0	8.9	4.9	5.3
2001-06	1.6	1.8	7.0	4.3	4.7
2006-11	1.5	1.6	5.7	3.8	4.2

20-24

Census period	Out-migration rates for Melbourne (%)		Out-migration rates for regional Victoria (%)		
	Migration to regional Victoria	Migration to other states	Migration to Melbourne	Migration to other states	Migration within regional Victoria*
1976-81	4.1	6.0	17.3	8.7	7.9
1981-86	3.5	5.1	16.2	8.4	7.6
1986-91	3.1	4.3	18.6	8.5	7.5
1991-96	2.7	4.9	20.2	11.2	7.8
1996-01	2.3	3.5	22.3	8.4	8.0
2001-06	2.1	3.3	22.8	10.5	9.6
2006-11	2.0	2.9	20.0	9.7	9.0

Source: Authors' elaboration using census data retrieved from the AIM database.
Note: Out-migration rates were computed as the ratio between the number of migrants aged 15-19 (20-24) divided by the total population at risk from a particular region of origin (i.e. Melbourne or regional Victoria).
*This is the percentage of people who moved between TSDs within regional Victoria.

Table 4 also shows that the propensity of young people to move within regional Victoria has been modest. It has been prominently smaller than the propensity of regional youth to move to Melbourne. This difference has been particularly marked in the 20-24 age group. In 2006-11, the percentage of people in this age group staying and moving within regional Victoria was 9 percent, while that of regional people in the same age bracket moving to Melbourne was 20 percent. While the percentage of people aged 20-24 moving within regional Victoria increased between 1976-81 and 2006-11, the increase was tiny, of only one percent point.

Unexpectedly, Table 4 reveals that young regional Victorians have a similar propensity move to other states as they have to move within regional Victoria. This is surprising as moves occurring between neighbouring regions within Victoria can be expected to outnumber long-distance moves that involve crossing state boundaries. While differences between the propensity of young regional Victorians to move to other state and that to move within regional Victoria appear small, we observe that people aged 20-24 have been consistently more likely to make a move to another state than within regional Victoria, probably reflecting their high propensity to move to Brisbane and Sydney (DPCD 2013).

In regards to the exchange between Melbourne and other states, significant changes are observed in the net migration balance of young people for Melbourne over time. It shifted from net migration losses in the early 1980s to net gains in the late 1990s and 2000s, with sudden fluctuations in intervening census periods. The overall shift from net losses to net gains in the migration balance of young population has been a result of both a decline in the outflows of young people moving from Melbourne to other states, and an increase in the inflows of young people moving from other states to Melbourne. For instance, the outflow of those aged 20-24 moving from Melbourne to other states shrank by half dropping from over 12,900 in 1976-81 to 6,600 in 2006-11, while the inflow of people in the same age group rose by more than 3,000 over the same period, to over 12,700 people.

The aggregate picture of these patterns indicates that the outflow of young people from regional Victoria to Melbourne and other states has been consistently larger than the inflows in the reverse direction. Thus, regional Victoria has systematically lost young population. Although there has been a decrease in the number of people leaving regional Victoria, it has not led to a significant decline in the net migration losses of young people in regional Victoria. This is because Melbourne has also reduced the numbers of young people it sends to regional Victoria. Surprisingly, young people display a low propensity to move within regional Victoria. They tend to move more frequently to Melbourne or other states, particularly those aged 20-24. While this picture reveals that as a whole regional Victoria consistently losses young population, it conceals spatial differences in net migration outcomes. These net migration losses in regional Victoria may be concentrated in particular areas. Subsequent analyses explore these spatial differences after determining the extent of net migration losses of young people relative to other age groups in regional Victoria.

Patterns of net migration

Analysing the age profile of net migration between Melbourne and regional Victoria reveals a striking loss of young population in regional Victoria due to migration to Melbourne (Figure 2). Regional Victoria displayed net migration gains in most age groups, whereas it experienced large population losses in the 15-19, 20-24 and 25-29 age brackets. The loss is particularly large in the 20-24 group. These results provide strong support for McKay and Whitelaw's (1978), and Jarvie's (1989) theses. As these authors suggested, Melbourne appears to have acted as a receiving training centre for young people from regional locations in Victoria and recycled older, and presumably more experienced professionals to undertake jobs in these locations.
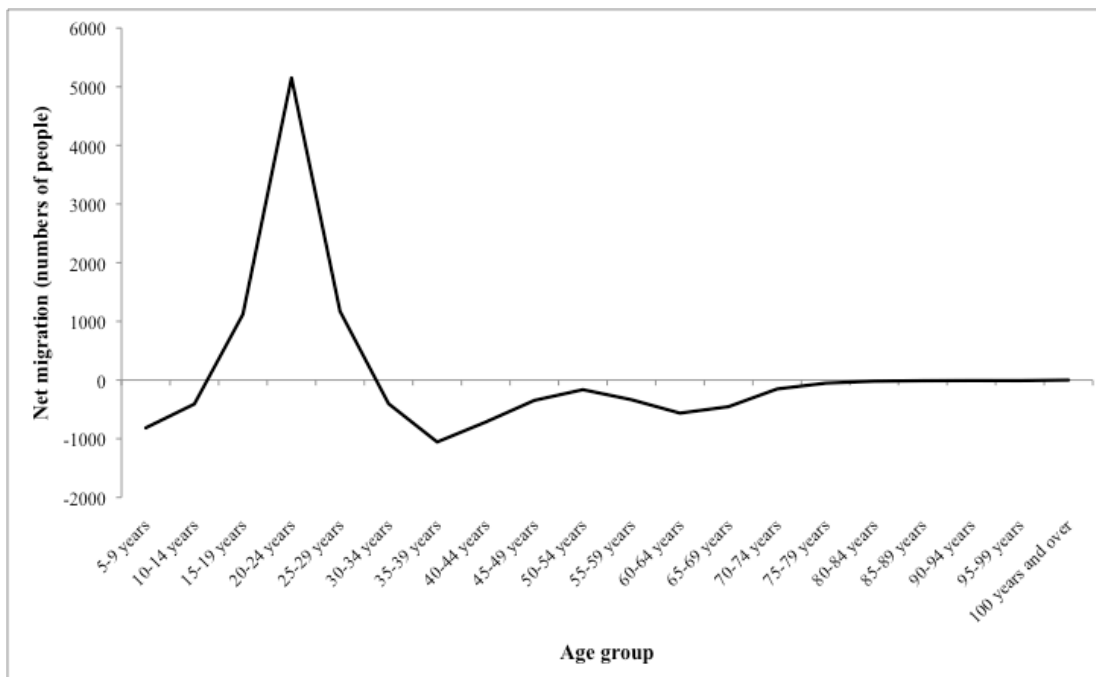
Figure 2. Age profile of net migration flows between the Melbourne Metropolitan Area and Regional Victoria, 2006-11.
Source: Authors' elaboration using census data retrieved from the AIM database.

Exploring the data in greater spatial detail reveals that the TSDs of Inner Melbourne and Outer Melbourne North recorded the main net migration gains of young Victorians (Figure 3). Inner city areas provide much of the higher density residential accommodation, employment opportunities and further education establishments, while outer western areas, such as Melton and Wyndham have experienced rapid housing and employment growth as a result of the urban expansion of Melbourne's inner city areas (DPCD 2013). Thus, vocational training, employment and the city lifestyle appear as key factors influencing patterns of redistribution among young adults in Victoria. This hypothesis is further supported by the migration losses observed in the Outer Melbourne South TSD (Figure 3). 2011 census data indicate that Inner Melbourne and Outer Melbourne North TSDs were the main recipients of young people in 15-19 and 20-24 age brackets from this region, indicating that young people from rural areas in the Outer Melbourne South TSD, such as Cardinia moved to inner and outer western regions for education, job opportunities and a large city life style.
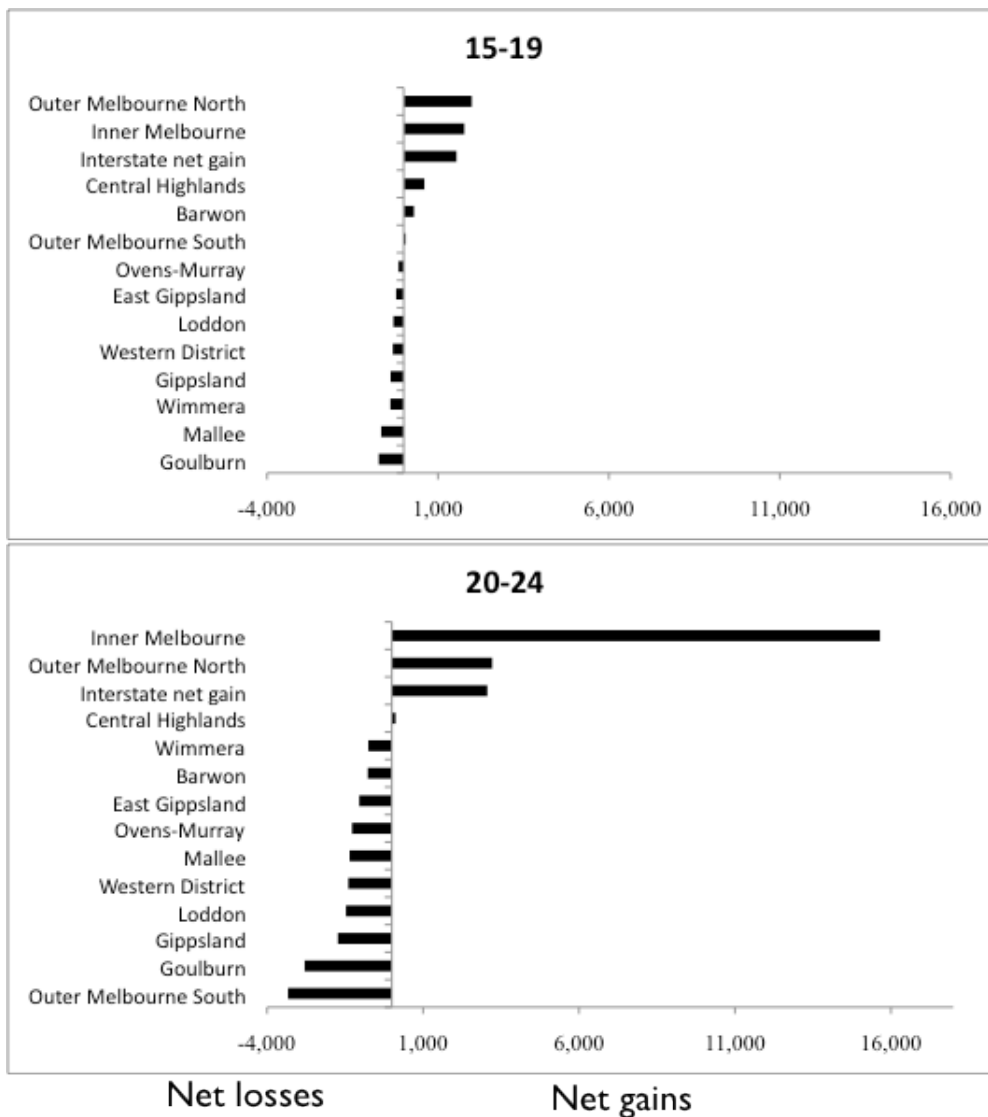
Figure 3. Net migration by TSDs, 2006-11
Source: Authors' elaboration using census data retrieved from the AIM database.

Figure 3 provides further evidence for the three-tier hierarchy hypothesis. It reveals that, as a whole, Victoria gained young population from other states/territories and that this gain was relatively large. The main destination of these interstate flows of young people was the Inner Melbourne TSD. As argued by Jarvie (1989), this evidence thus points to the role of Melbourne as a major national centre, acting as switching point and re-training area, recruiting young people from other states, supplying training, new skills and experiences, and sending back down the urban hierarchy.

This suggestion is further supported for the net migration outcomes in regional Victoria. Between 2006 and 2011, most regional TSDs recorded net migration losses of young population (Figure 3). The TSD of Goulburn, which includes the major regional centre of Shepparton, reported the largest net migration deficit in both age groups, those aged 15-19 and those aged 20-24. This region, however, attracts people in older age groups from Melbourne, principally young adult families and retirees seeking a change of lifestyle (McKenzie and Frieden 2010), pointing to the role of Melbourne as a switching centre, recycling more experienced people down to regional communities.

Only one TSD in regional Victoria reported net migration gains of young people in both 15-19 and 20-24 age groups. This was the Central Highlands, which encompasses the major regional centre of Ballarat. This region reported small net migration gains of approximately 600 and 120 people in the

15-19 and 20-24 age brackets. These gains were principally sourced from adjacent TSDs, the Loddon and Outer Melbourne North TSDs. This indicates that net migration gains in Central Highlands can in part be attributed to a spillover effect due to the urban expansion of the Melbourne Metropolitan Area towards neighbouring commuting towns, although this net gain may also include some movement of young people to the major regional centre of Ballarat.

The data analysed thus far have provided a representation of the spatial patterns of migration according to total migration flows. However, total flows are a function of population size. To better assess the impact of migration and their changes over time, we analyse in-, out- and net-migration flows (in Tables 5, 6 and 7) in combination with their associated net migration rates (Figures 4 and 5). These statistics reveal that the Inner Melbourne and Outer Melbourne North TSDs have consistently had positive net migration rates of young people, and that the former has recorded the highest scores, especially for age 20-24. This again reflects the greater range of opportunities for education, jobs and the magnet of the `bright lights' of this location, and also the persistently strong influence of educational, employment and lifestyle factors in attracting young population from regional areas of Victoria.

At the same time, net migration rates of young people in regional TSDs have been consistently negative and become increasingly large, particularly for the 20-24 age group. The largest increases are observed in Mallee, Ovens-Murray and Wimmera TSDs in western Victoria, in East Gippsland Western District in eastern Victoria and in Goulburn TSDs. Net out-migration rates from these TSDs have increased by an average of 26% percentage points. Rather than from a rise in out-migration flows, increases in net out-migration rates reflect declining young populations in these areas. On average, the share of people in the 15-19 and 20-24 age groups in these regions has reduced from 20 percent in 1981 to 13 percent in 2011. The continuing outflows of young population from these peripheral areas in Victoria represent another manifestation that they are regions without the infrastructure to offer post-school educational opportunities to a large section of their communities; and are at a relatively great distance from the major educational and employment centre of the state (Melbourne) which constrains the adoption of commuting as an alternative to migration. Thus, young people are likely to continue to relocate to this national hub of social and economic activity in Victoria.

The results show that the role of inner city Melbourne as the centre of migration flows of young people has diminished after strengthening during the 1990s and early 2000s. Following a peak in the 1996-2001 period, the net in-migration rate of Inner Melbourne TSD experienced a drop, particularly marked for those aged 20-24. The net in-migration rate for this group declined from 31 percent in the 1996-2001 period to 20 percent in the 2006-11 period. This drop in net in-migration rate reflects a reduction in inflows of people aged 15-24 from regional Victoria. The movement of young people from Regional Victoria to Melbourne declined by more than 5,500 people between 1996-2001 and 2006-11, with the largest drop occurring between 1996-2001 and 2001-06.

Figure 4. Net migration by TSDs over time, 15-19 age group, 1976-81 to 2006-11
Source: Authors' elaboration using census data retrieved from the AIM database.
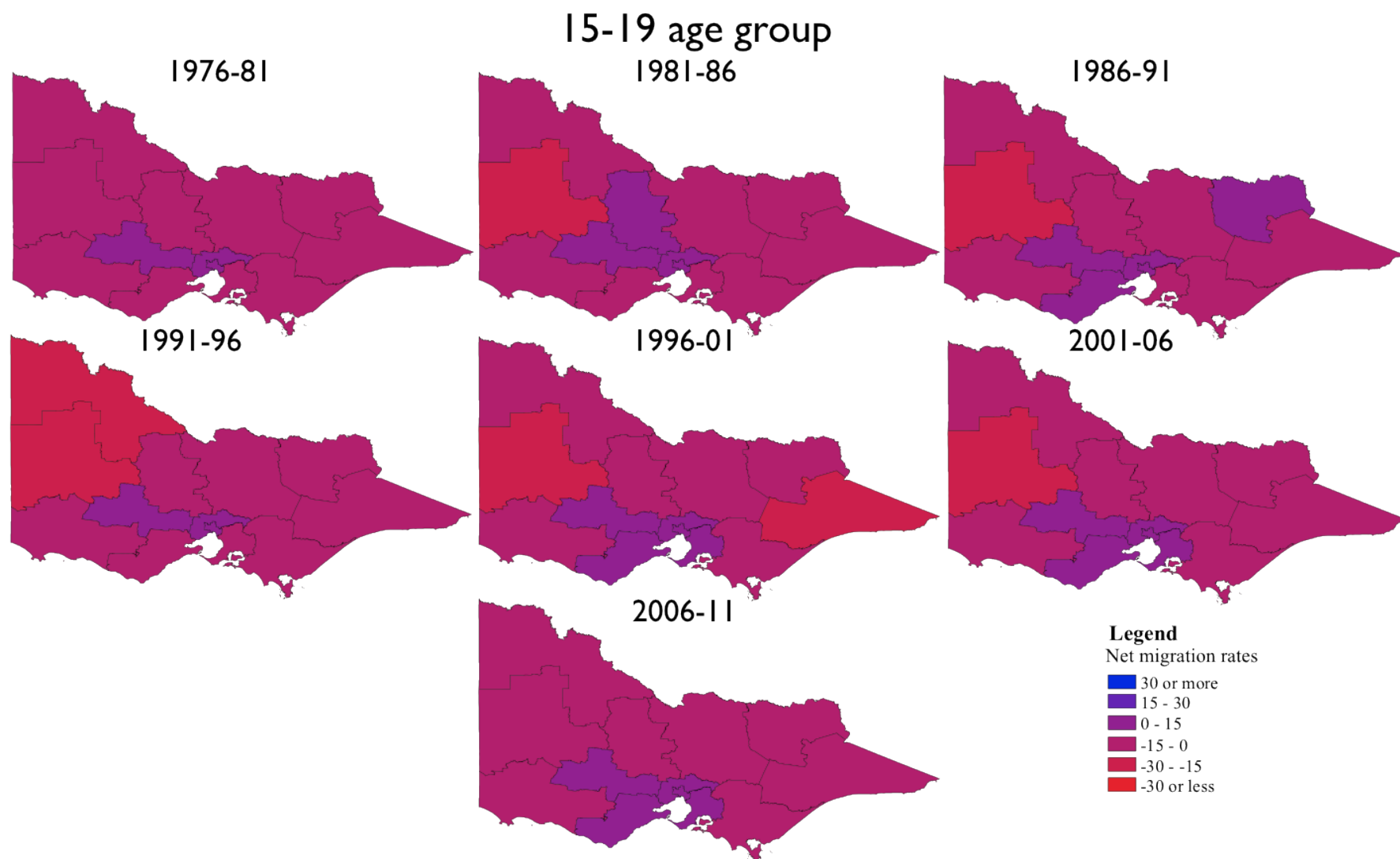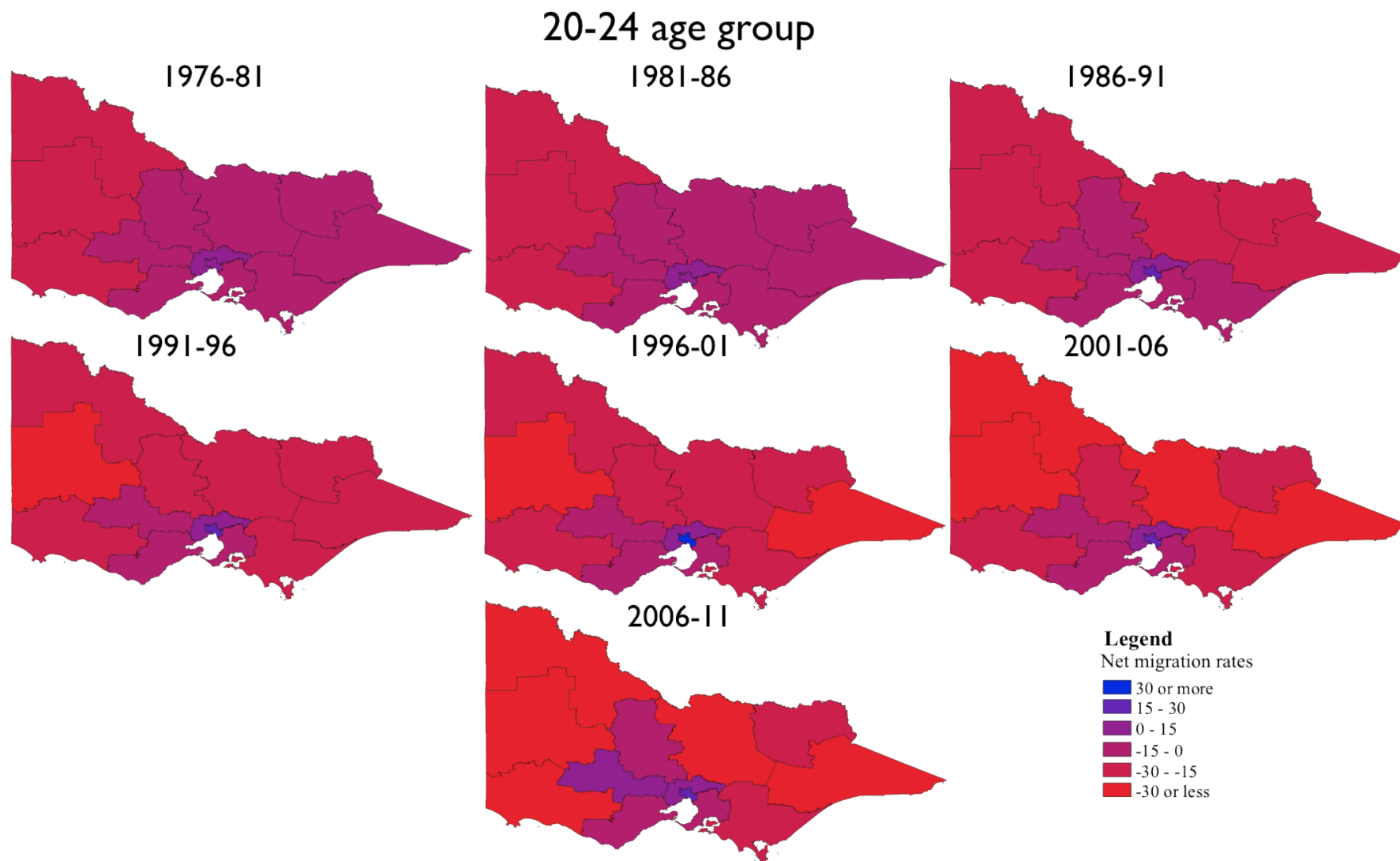
20-24 age group

Figure 5. Net migration by TSDs over time, 20-24 age group, 1976-81 to 2006-11
Source: Authors' elaboration using census data retrieved from the AIM database.

Table 5. In-migration by TSDs, 15-19 and 20-24 aged groups, 1976-81 to 2006-11.

In-migration	15-19							20-24						
TSD Name	1976-81	1981-86	1986-91	1991-96	1996-01	2001-06	2006-11	1976-81	1981-86	1986-91	1991-96	1996-01	2001-06	2006-11
Inner Melbourne	12,818	12,910	11,008	10,268	10,006	7,706	7,117	30,139	28,014	27,146	28,101	27,465	24,709	24,592
Outer Melbourne North	5,467	6,226	5,923	4,696	5,733	5,678	5,502	10,316	10,154	10,276	8,401	8,413	8,574	9,342
Outer Melbourne South	10,713	10,736	9,222	7,943	8,209	6,298	5,686	15,683	14,068	13,633	12,134	11,905	9,756	9,127
Barwon	1,754	2,133	2,269	2,158	1,906	1,701	1,660	2,656	2,253	2,572	2,531	2,452	2,541	2,665
Western District	828	1,175	1,070	842	785	690	559	1,468	1,467	1,377	1,208	959	1,008	791
Central Highlands	1,618	2,133	2,240	1,780	1,736	1,546	1,623	1,913	2,070	2,283	2,189	2,107	2,118	2,512
Wimmera	512	494	467	348	327	270	288	902	753	584	571	509	413	491
Mallee	904	896	868	729	702	706	539	1,620	1,357	1,260	1,080	1,104	901	769
Loddon	1,818	2,269	2,372	1,866	1,746	1,596	1,398	2,378	2,438	2,621	2,456	2,095	2,093	2,242
Goulburn	2,105	2,178	2,196	1,600	1,751	1,506	1,466	3,359	2,938	2,899	2,260	1,999	1,843	1,641
Ovens-Murray	1,066	1,523	1,635	1,205	1,002	905	857	1,709	1,625	1,415	1,447	1,273	1,262	1,193
East Gippsland	694	903	780	592	524	496	500	1,165	1,241	1,011	785	605	602	523
Gippsland	1,642	1,846	1,609	1,093	1,237	1,104	1,222	3,277	2,827	2,316	1,625	1,440	1,445	1,641
Interstate inflows	9,564	10,429	10,109	7,848	9,693	8,397	8,359	13,963	14,237	14,907	12,676	15,929	14,556	16,414

Source: Authors' elaboration using census data retrieved from the AIM database.

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Table 6. Out-migration by TSDs, 15-19 and 20-24 aged groups, 1976-81 to 2006-11.

Out-migration	15-19							20-24						
TSD Name	1976-81	1981-86	1986-91	1991-96	1996-01	2001-06	2006-11	1976-81	1981-86	1986-91	1991-96	1996-01	2001-06	2006-11
Inner Melbourne	10,154	10,045	8,273	6,382	6,201	5,852	5,345	21,175	17,319	14,567	11,808	9,440	9,084	8,943
Outer Melbourne North	4,744	5,028	4,860	4,384	3,753	3,482	3,512	9,286	8,418	7,723	8,234	6,542	6,390	6,123
Outer Melbourne South	11,026	10,974	9,911	8,407	6,458	5,930	5,628	22,101	20,734	18,213	18,020	13,206	12,949	12,455
Barwon	2,334	2,516	2,146	2,228	1,802	1,465	1,360	4,344	4,065	3,819	4,185	3,721	3,414	3,439
Western District	1,837	1,872	1,739	1,728	1,452	1,051	881	3,001	2,653	2,686	2,770	2,506	1,971	2,188
Central Highlands	1,544	1,653	1,681	1,627	1,434	1,163	1,021	3,077	3,060	3,047	3,544	2,846	2,663	2,391
Wimmera	1,286	1,440	1,238	1,143	1,030	865	680	1,865	1,784	1,734	1,684	1,509	1,248	1,244
Mallee	1,861	2,049	1,844	1,717	1,654	1,166	1,200	2,705	2,702	2,729	2,769	2,379	2,191	2,121
Loddon	1,921	2,267	2,559	2,620	2,213	1,856	1,704	3,662	3,523	4,087	4,553	4,237	4,002	3,713
Goulburn	3,358	3,993	3,833	3,416	3,098	2,505	2,200	4,915	4,685	4,965	5,145	4,481	4,516	4,436
Ovens-Murray	1,522	1,551	1,602	1,604	1,466	1,180	1,013	2,234	2,156	2,821	2,975	2,706	2,511	2,471
East Gippsland	1,084	1,172	1,281	1,277	1,331	901	724	1,526	1,499	1,789	1,953	1,934	1,673	1,570
Gippsland	2,523	2,547	2,721	2,976	2,597	2,008	1,607	3,634	3,237	4,053	4,566	4,109	3,853	3,372
Interstate outflows	12,819	12,114	12,138	12,237	8,518	7,619	6,817	20,903	18,867	17,747	20,094	13,219	13,756	13,351

Source: Authors' elaboration using census data retrieved from the AIM database.

Table 7. Net-migration by TSDs, 15-19 and 20-24 aged groups, 1976-81 to 2006-11.

Net-migration	15-19							20-24						
TSD Name	1976-81	1981-86	1986-91	1991-96	1996-01	2001-06	2006-11	1976-81	1981-86	1986-91	1991-96	1996-01	2001-06	2006-11
Inner Melbourne	2,664	2,865	2,735	3,886	3,805	1,854	1,772	8,964	10,695	12,579	16,293	18,025	15,625	15,649
Outer Melbourne North	723	1,198	1,063	312	1,980	2,196	1,990	1,030	1,736	2,553	167	1,871	2,184	3,219
Outer Melbourne South	-313	-238	-689	-464	1,751	368	58	-6,418	-6,666	-4,580	-5,886	-1,301	-3,193	-3,328
Barwon	-580	-383	123	-70	104	236	300	-1,688	-1,812	-1,247	-1,654	-1,269	-873	-774
Western District	-1,009	-697	-669	-886	-667	-361	-322	-1,533	-1,186	-1,309	-1,562	-1,547	-963	-1,397
Central Highlands	74	480	559	153	302	383	602	-1,164	-990	-764	-1,355	-739	-545	121
Wimmera	-774	-946	-771	-795	-703	-595	-392	-963	-1,031	-1,150	-1,113	-1,000	-835	-753
Mallee	-957	-1,153	-976	-988	-952	-460	-661	-1,085	-1,345	-1,469	-1,689	-1,275	-1,290	-1,352
Loddon	-103	2	-187	-754	-467	-260	-306	-1,284	-1,085	-1,466	-2,097	-2,142	-1,909	-1,471
Goulburn	-1,253	-1,815	-1,637	-1,816	-1,347	-999	-734	-1,556	-1,747	-2,066	-2,885	-2,482	-2,673	-2,795
Ovens-Murray	-456	-28	33	-399	-464	-275	-156	-525	-531	-1,406	-1,528	-1,433	-1,249	-1,278
East Gippsland	-390	-269	-501	-685	-807	-405	-224	-361	-258	-778	-1,168	-1,329	-1,071	-1,047
Gippsland	-881	-701	-1,112	-1,883	-1,360	-904	-385	-357	-410	-1,737	-2,941	-2,669	-2,408	-1,731
Net interstate migration	-3,255	-1,685	-2,029	-4,389	1,175	778	1,542	-6,940	-4,630	-2,840	-7,418	2,710	800	3,063

Source: Authors' elaboration using census data retrieved from the AIM database.

Although it is not apparent from Figures 4 and 5, the two TSDs neighbouring Melbourne, Central Highlands and Barwon, have recorded small but increasing net in-migration rates of people in the 15-19 age bracket. These rises reflect a continuing decline in the outflow of people aged 15-19. Amounting to a fall of more than 1,000 people in Barwon TSD and by over 600 in Central Highlands TSD. Declines in outflows from these regions are probably a result of urban sprawl. As local schools are established and transport infrastructure improves, the need for mobility fades as parents can commute to their jobs and prefer to send children to local schools, while living in less congested areas away from Melbourne inner city area.

Thus, consistent with research on other countries, the migration pattern of Victoria is characterised by continuing movement of young people from regional and peripheral areas to the main metropolitan centre of the region, Melbourne. Despite a general decline in outflows of young people from most regional areas of Victoria, there has been an increase in net out-migration rates. This has been the result of shrinking size of their young population base and smaller inflows of young population from Melbourne, which has historically been the main source of young migrants. The continuing outflow from regional areas appears to be principally associated with the vibrant cultural and social environment and with the diverse range of educational and employment opportunities available in Melbourne. Young people brought up in regional and peripheral communities are likely to benefit from experiencing this city lifestyle and educational and employment options. Attempts promoting and enabling this experience would thus greatly enhance human capital accumulation of young people from remote areas. However, we also need to recognise that net migration losses of talented young people represent a major barrier for regional development in areas of economic potential. Rather than constraining out-migration of young people, this situation involves a need to facilitate in-migration of people with the suitable skills to develop local resources and opportunities. Hugo, Feist and Tan (2013) argued that a key policy intervention to combat the loss of young population in regional areas through out-migration is return migration.

5.2 Migration sequences of young Victorians

Work on return migration has been commonly based on census data on place of birth, or place of residence one or five years earlier. Measures of return migration based on these data are prejudiced by differences in the points in time at which the information are recorded, as migrant characteristics are measured at the end of the census interval. However, the return move may have occurred much earlier (Newbold and Bell 2001). Moreover, the restricted number of time points at which data are available and wide gap between them also hinder measures of return migration. These measures miss moves in the intervening time intervals and thus the entire sequence of mobility over a person's life. Longitudinal surveys overcome these issues and represent a valuable data source to explore mobility sequences (including return migration) and relate these sequences to personal characteristics of movers.

Using longitudinal data from the 2003 LSAY, we examine the mobility sequences of a cohort of 847 Victorian youth over nine years as they age from 15 to 23. We differentiate between those (629) students with a starting residential address in Melbourne, and those (218) with a starting location in regional Victoria. In particular, the analysis seeks to: 1) identify the main mobility sequences of young Victorians with starting locations in Melbourne and regional Victoria; and 2) determine the extent and timing of return migration. To these ends, we use sequence analysis and visualisation plots adopted from the biological sciences. We compute frequency tables of mobility sequences, distribution state plots and median duration spent in four regions of residence: Melbourne, regional Victoria, other state metro areas and other state regional areas.

Figure 6 shows the annual distribution of residential status for students with a starting location in Melbourne and in regional Victoria over nine years. Compared to the modest drop in the number of students starting off and staying in Melbourne over the survey period, it reveals that a significant reduction in the number of students starting off and remaining in regional Victoria. This is a reflection of the large out-migration balance in rural and remote areas of Victoria. The number of young people reduced from 213 at the age of 16 to 155 at the age of 23. Prominent declines are observed at ages of 18, 19 and 23, but the largest drop occurs at the age of 21. The large majority of young people who left regional Victoria moved to Melbourne. At the age of 23, the number of regional students in the state capital was 39, while 24 were in other state. Consistent with our previous findings, these results indicate that most young people move from regional Victoria to Melbourne, and that regional students are more likely to move at the age of 21, presumably coinciding with the period of transition into the labour force.
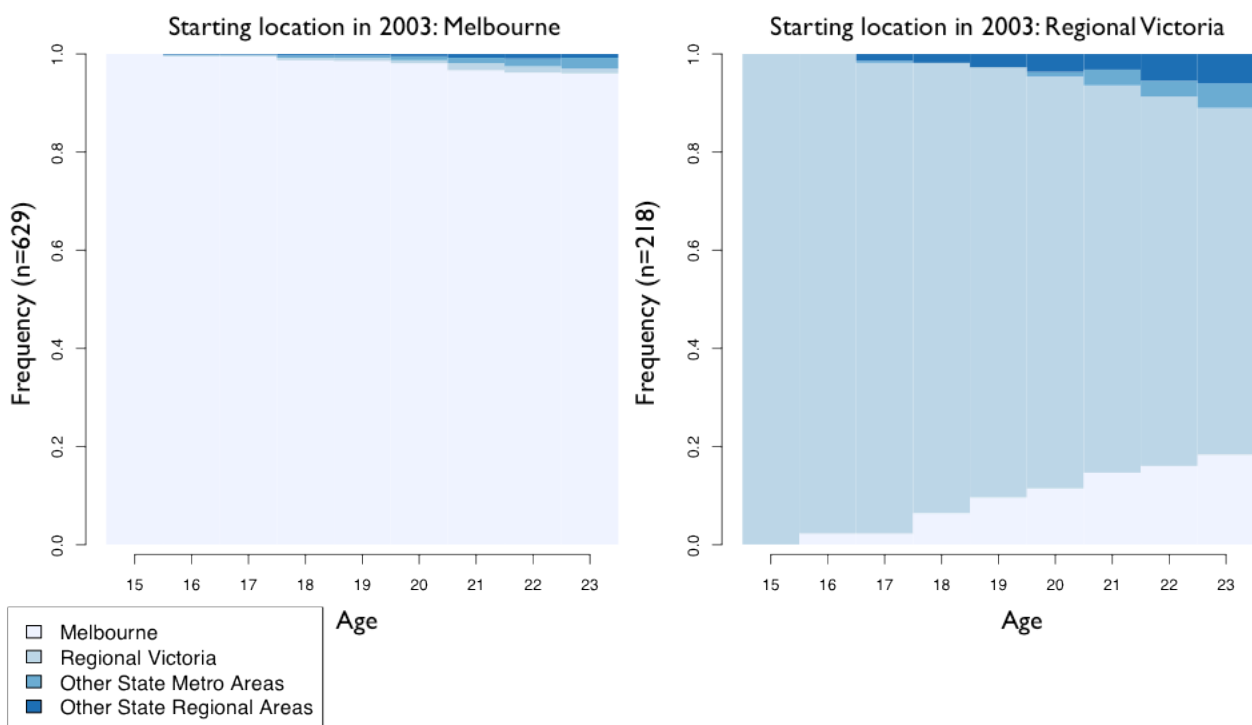

Figure 6. State distribution of place of residence by starting location from age 15 to 23.
Source: Author's elaboration using 2003 LSAY data.

There is substantial evidence that gradually young people return to non-metropolitan areas after relocating for high school or tertiary education. Some return to their home towns or other non-metropolitan regions. In Canada, one in four young people returns to their original non-metropolitan location, and one in three returns to a different rural community within the same province or state (Dupuy, Mayer and Morisette 2000). Using LSAY data on the 1995 cohort, Hillman and Rothman (2007) estimated that a similar number of young people (one in three) return to non-metropolitan locations in Australia, while two in three make a return move to their region of origin in Sweden (Nilsson 2003). Return moves to non-metropolitan areas of young people are often associated with a desire to provide their children with a childhood similar to the one they experienced (Nilsson 2003; McKenzie 2009).

By tracing places of usual residence through time, we can explore the sequences of residential changes over people's lives and thus determine the extent and timing of return migration. Using LSAY data, we re-construct the sequences of changes in place of residence for our sample. These sequences reveal the region of residence and number of years spent at each location. This information enables to determine the occurrence and during of return moves to regional Victoria.

Tables 8 and 9 present a summary of the mobility sequences analysed. Focusing on Table 7, we first analyse the sequences of mobility of young people starting off in Melbourne.

Table 8. Summary of residential sequences of young people starting off in Melbourne as they age from 15 to 23.

Residential sequences	Frequency	Percent
Stays	592	94.1
Sequences containing a move to regional Victoria:	15	2.4
- Sequences containing a return move to Melbourne	*9*	*1.4*
Sequences containing a move to other states	22	3.5
*Total (entire set of sequences)	629	100.0

MEL: Melbourne; RV: Regional Victoria.
*Total includes stays and sequences containing a move to regional Victoria and other states.
Source: Author's elaboration using 2003 LSAY data.

Table 9. Summary of residential sequences of young people starting off in Regional Victoria as they age from 15 to 23.

Residential sequences	Frequency	Percent
Stays	136	62.4
Sequences containing a move to Melbourne:	49	22.5
- Sequences containing a return move from Melbourne	*13*	*6.0*
Sequences containing a move to other states:	28	12.8
- Sequences containing a return move from other state	*7*	*3.2*
Sequences containing a move to Melbourne and another state:	5	2.3
- Sequences containing a return move from Melbourne or other state	*3*	*1.4*
*Total (entire set of sequences)	218	100

MEL: Melbourne; RV: Regional Victoria.
*Total includes stays and sequences containing a move to Melbourne, other states or both.
Source: Author's elaboration using 2003 LSAY data.

People starting off in Melbourne

From the range of mobility pathways followed by young Victorians starting off in Melbourne, Table 8 reveals that mobility sequences containing a move to regional Victoria (15) are less common than those containing a move to elsewhere in the country (22). Of the small number of students moving to regional Victoria, return moves to Melbourne were more common than stays in regional Victoria. Nine students moved back to Melbourne, while only six remained in regional Victoria. The annual duration of stay in regional Victoria appears to be very spread. Five students returned to Melbourne after one year in regional Victoria, four returned after two years, the same number of students went back after three and only two students returned after four years in regional Victoria.

People starting off in regional Victoria

For students starting off in regional Victoria, Table 9 reveals that the most common sequences comprise a move to Melbourne. Of the 82 young people who moved from regional Victoria over the follow-up, 49 students reported a residential location in Melbourne at some point, while 28 reported a location in other state and the remaining 5 reported a location in both Melbourne or other state at different times over the survey period.

Mobility sequences containing return moves from Melbourne appears to be less common than those involving no returns (Table 9). Of the 49 students who moved from regional Victoria to Melbourne, only 13 people returned at some point over the survey period. The remaining 36 students stayed in Melbourne. Of those who returned to regional Victoria, five people did at the age of 23, and seven appear to have stayed for only a year of their return. Care is needed in the interpretation of these statistics as the sequences of mobility derived from the LSAY are truncated at the age of 23. We do not observed what occurred after this age, and hence we cannot determine whether returns of young people to regional Victoria at the age of 23 represent a permanent or temporary relocation. However, the evidence on the age at which most returns moves take place (i.e. 23) coincides with evidence from census data. Using census data, Parr and Bell (2009) shows that return mobility peaks at the age of 23, and argued that return moves around this age represent moves of a planned nature, reflecting returns back the home location after moving to undertake tertiary education.

In regards to young people who moved from regional Victoria to other states, a few (7) returned. The majority (21) remained in another state, with 15 of them reporting a place residence in a regional area. This is consistent with evidence suggesting that young Australians with previous educational or working experience in regional or rural locales are more likely to move and stay in locations with similar characteristics (Corcoran, Faggian and McCann 2010).

The evidence assembled here suggests that few young people move from Melbourne to regional Victoria. When they move, they tend to gradually return to Melbourne. The evidence also suggests that a smaller number of young people who leave regional Victoria tend to come back. Most people stay at the destination region, commonly Melbourne. When they return, they tend to be 23 years old; however, the duration of stay of these returns in regional Victoria is unclear. A longer temporal coverage is needed to assess the duration of these returns, and determine the occurrence of a larger number of return moves at later ages. As shown in section 5.1, regional Victoria tends to experience large net gains of people in the 35-39 age group. A significant share of this gain may be due to return migration, which in the context of Jarvie's (1989) mobility-hierarchy nexus notion, may reflect the mobility of more experienced and skilled people after acquiring training and working experience in Melbourne.

6. Concluding remarks

This section comprises two components. It first seeks to discuss three major data implications, and second to describe the intersection between the analyses in this report and the main aims of the project.

6.1. Data implications

The evidence assembled in this report indicates that the mobility patterns of young people in regional Victoria display a clear spatial structure. The available data make difficult to examine the complexity of migration patterns that may emerge at low levels of spatial disaggregation. Data that enable investigation of differences in migration patterns across main regional centres, towns and rural areas may reveal this complexity. However, complex circuits of mobility patterns are likely to involve a small share of young population. There is substantial evidence from previous migration

studies that most young people from regional areas stay, study and work in their area of residence, while a few move for education and employment reasons, principally to metropolitan locations. Only a tiny proportion of young people are likely to engage in long-distance commuting or other more complex arrangements of mobility.

To capture the educational, occupational and mobility pathways of young Australians, the LSAY was identified as the best national source of information in the view of its temporal coverage and the richness of information. Despite these unique features, the LSAY is not designed to be representative of small sub-national areas. Thus, when the sample is sliced into small regions, the number of observations reduces significantly. The LSAY, however, is still considered as a valuable resource to enhance our understanding of the mobility patterns, educational and occupational transitions of young people in Victoria within a dichotomous spatial framework that differentiates between young people starting off in Melbourne, or in regional Victoria.

From these observations, we noted three key data implications for the project. First, the available data prelude analysis at fine spatial scales. Contrary to initial expectations, the available data only enable to explore the educational, occupational and mobility pathways followed by young Victorians at a coarse spatial aggregation that distinguishes Melbourne and regional Victoria. Further analyses are thus restricted to examine the educational and occupational of two groups of young Victorians, those starting off in Melbourne and those starting off in regional Victoria. As a consequence, this data constraint stresses the need for enhancement of the statistical representation of spatial data at lower levels of geography. This is a crucial data requirement if we aim to determine and thoughtfully investigate differences in mobility patterns across main regional centres, towns and rural areas in regional Victoria.

A second key data implication is on the role of the spatial mobility component in subsequent analyses. Mobility will play a minor role in these analyses. As shown in the current report, the numbers of people involved in mobility captured by LSAY data are small. These small numbers prevent the analysis of different sequences of mobility, such as return or onwards migration. The data may only afford analysis of the migration patterns of young people leaving regional Victoria. To the extent that the available data allow, subsequent analyses will endeavour to examine the educational and occupation pathways of the 82 students in the 2003 LSAY cohort who started off in regional Victoria and moved at some point during the survey period.

The third data implication concerns the analysis of the factors influencing the attraction and retention of school leavers and tertiary graduates. The small numbers in the available data prevent the application of a modelling approach to study the factors attracting people to regional Victoria. These data only afford analysis of the factors assisting in the retention of school leavers in regional Victoria. To study the factors influencing the attraction and retention of tertiary graduates to regional Victoria, complementary information will be required. The Graduate Destination Survey (GDS) appears as the best alternative.

6.2. The intersection between the results of this report and the five project questions

The analyses in this report establish the basis for subsequent analyses addressing each of the research questions of the project (Table 10). They provide the contextual background to guide interpretation of the interplay between the educational and occupational pathways, and migration patterns of young people in Victoria. The accumulated evidence indicates that migration concentrates at younger ages representing the transition to tertiary education and then to the labour force, and also that migration responds to the unequal spatial distribution of educational and career opportunities in Victoria.

The analyses also addressed research question 3 of the project by proving the `mobility' framework to explore the educational and career pathways followed by young people in Victoria. In particular, they revealed that the patterns and sequences of migration of young Victorians mirror the concentration of educational and employment opportunities in Melbourne. Young people starting off in Melbourne are likely to stay and develop their educational and career pathways in this centre of social and economic activity, whereas a relatively large number of young people starting off in regional Victoria are likely to leave their communities with limited tertiary education and job options and move to Melbourne.

The evidence assembled here indicated that only a small proportion of those students who move from regional Victoria to Melbourne tend to return. As these returns tend to concentrate at the age of 23, they are likely to be of a planned nature, representing a move back home after graduation of a HEI in Melbourne. However, the duration of these returns is less clear. Students may move back to the parental until they secure a job elsewhere, or they may return for education or to establish a career in regional Victoria.

7. The way forward

Building on this report, a series of analyses are planned to address the research questions of the project. Table 10 summarises the proposed analyses and timing of the resulting research reports. The LSAY data set will be utilised as the primary data source to carry out these activities. As noted earlier, three major data implications are foreseen restricting subsequent analyses. First, these analyses will focus on two groups of young Victorians, those 629 students starting off in Melbourne and those 218 starting off in regional Victoria. The analyses will focus on a nine-year period as these students transition from school to tertiary education and work. Second, the mobility component will play a minor role. To the extent that data permit, subsequent analyses will explore how the educational and occupational pathways play out in terms of spatial mobility for a particular group of young people; that is, those 82 students in the 2003 LSAY cohort who started off in regional Victoria and moved at some point during the survey period. Third, complementary information is required to address research question 5. We will borrow strengths from the GDS to examine the factors influencing the attraction and retention of tertiary graduates in regional Victoria.

Table 10. Summary of the planned activities and timing for report submissions.

	Research questions	Analytical approach	Expected date of report submission to Fiona
1	What are the principal educational and occupational pathways followed by school leavers and tertiary-educated graduates?	Assessment of the educational and occupational pathways followed by Victoria youth. Drawing on LSAY data, we will explore these pathways followed by two groups of young Victorians; that is, 629 students who started off in Melbourne and 218 students who started off in regional Victoria. A set of analyses will be conducted in sequential order. 1. Analysis will seek to establish differences in labour market outcomes between regional and Melbourne students. To this end, five outcome indicators will be used: full-time employment, unemployment, wages, job satisfaction and occupational status. Data from the final year of the 2003 LSAY survey will be used to measure these indicators, and establish the extent of any end of period differences between the two groups. 2. Exploration of the differences in the educational and employment pathways between regional and Melbourne students to explain differences in labour market outcomes. For this, the annual distribution of statuses according to the main education and employment activities will be examined for regional and Melbourne students. Main education activities will include: school, VET, university education and no studying. Main employment activities will include: full- and part-time employment, unemployment and not in the labour force. 3. To the extent the data permit, we will endeavour an examination of the differences in main educational and employment activities by analysing the annual distribution of these groups of students across fields of education, industries and occupations. This will reveal differences in the nature of educational and employment pathways followed by students who started off in Melbourne and those who started off in regional Victoria.	28/07/14

| 2 | What are the determinants of the transitions that underpin particular choices along these pathways? | To tackle this research question, the analysis will seek to determine the significance of particular educational and career choices in influencing labour market outcomes of regional and Melbourne students. Logistic regressions will be employed. To control for the effect of educational and career choices, we will utilise a range of personal characteristics that have been found to be important in previous research. They include:

- Demographic and social background: Sex, indigenous status, father's country of birth, language background, parental occupation, parental education.
- Educational background: school sector, year 9 achievement quartile, VET in schools and school-leaving status.

In addition, we include an indicator of mobility to assess the influence of migration on labour market outcomes of regional and Melbourne students. Since this calls for data derived to address a different aspect of the project, we expect to submit the research report addressing research question 3 before that tackling research question 2. (Note the expected submission dates).
The outcome variables for the analysis will be those proposed for addressing research question 1. | 30/04/15

Note that this report will be delivered after addressing research question 3. |
| 3 | How do these pathways play out in terms of spatial mobility and what role does mobility play in the choices individuals make? | To address this research question, we will conduct the set of analyses proposed to tackle research question 1 on data for the group of 82 students who started off in regional Victoria. These analyses seek to identify differences in labour market outcomes and educational and employment pathways between students starting off in regional Victoria who stayed and those who moved. | 21/11/14 |

4	How have these pathways, transitions and choices altered over time, and what role is played by shifts in the global, regional and local context?	To tackle this research question, we will apply the set of analyses proposed to address research question 1 on data from two other cohorts of the LSAY programme, the 1995 and 1998 cohorts of students. The focus will be on identifying significant differences in the educational and employment pathways, contrasting the results for three cohorts of young people starting off in Melbourne and three cohorts of students starting off in regional Victoria. Before performing the analyses, it will be crucial to have a thorough understanding of the policy context in Victoria, so that specific policies can be linked to differences in educational and employment pathways across cohorts.	
5	What factors might assist in retaining and attracting school leavers and tertiary-educated graduates to non-metropolitan cities, towns and rural areas?	To address this research question, we will assess the individual determinants of the decision of staying or moving among young people from regional Victoria. Logistic regression analyses will be used the principal modelling framework. Two components of the analysis are proposed: 1. Drawing on 2003 LSAY data, we will seek to determine the factors influencing the decision of staying in regional Victoria around the age of school completion. According to LSAY data, it is between the ages of 16 and 19. Analysis of the factors influencing the attraction of students from Melbourne to regional Victoria will not be possible given the small numbers of movers (15) captured by the LSAY data. 2. Drawing on GDS data, we will seek to determine the factors influencing both the retention and attraction of tertiary graduates to regional Victoria. Two sets of regression models will be performed. One set will examine the factors influencing the decision of staying in regional Victoria after graduation. The second set will explore the factors influencing the decision to move to regional Victoria among graduates from Melbourne, or other states.	11/01/16

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