

Journey to Work Patterns in Regional Victoria: Analysis of Census Data: 1996, 2001, 2006 and 2011

Christina Inbakaran¹ and Erwin Lagura²

¹Department of Transport, Planning and Local Infrastructure

²Regional Development Victoria

Abstract: This paper investigates the journey to work patterns in four regional local government areas (LGSs) in Victoria. It analyses the differences in journey to work patterns and travel methods between the regional areas as well as to metropolitan Melbourne. This work will help to understand the degree of work journeys occurring between regional local government areas (LGAs) and their relationship with Melbourne, providing a deeper understanding of regional transport demand. The analysis draws on journey to work data from the 1996, 2001, 2006 and the latest 2011 Australian Bureau of Statistics (ABS) census.

1 Introduction

Inbakaran and Harwood (2012) analysed the journey to work patterns of four cities in regional Victoria (Greater Geelong, Greater Bendigo, Ballarat and Latrobe) across the three census periods from 1996, 2001, and 2006 and recommended testing whether the trends between 2001 and 2006 continued in 2011 once the next census became available. The purpose of this paper is to expand the original analysis to include 2011 data, assess the changes seen and explore possible causes.

Also, there has been significant investment in regional Victoria, particularly in infrastructure. Of relevance to this paper is the Regional Fast Rail project, a rail transport project undertaken between 2000 and 2006 aimed at improving the passenger services on the Victorian regional railway network. The Regional Fast Rail projects specific aims were increase patronage reduce travel times, enhance service frequency and safety. The Ballarat line, Geelong line, Bendigo line and Traralgon line were covered by this project. Thus, this study seeks to answer the following key questions:

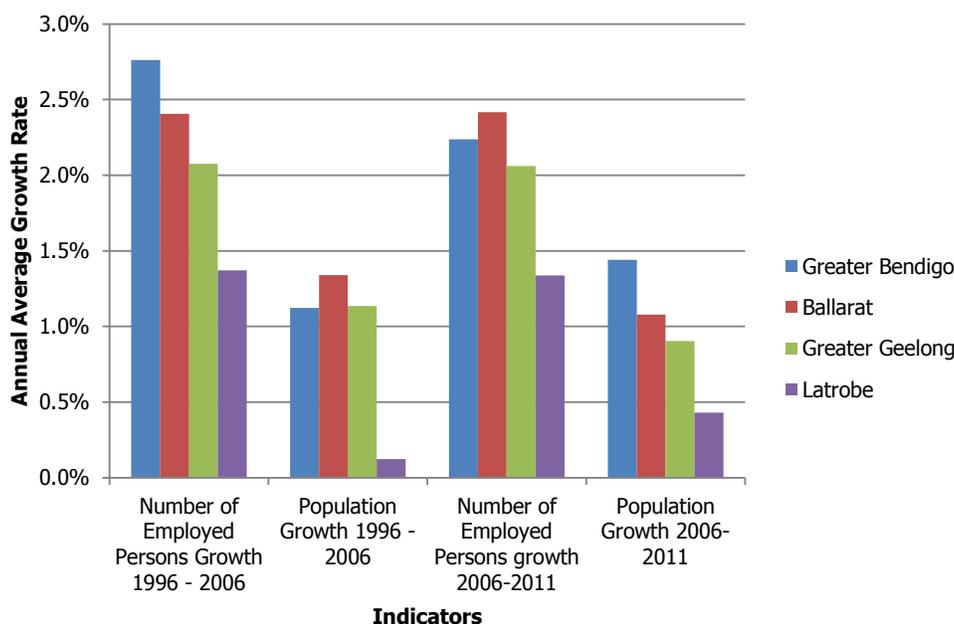
1. What are the changes across the census periods in work journeys from regional LGAs to the Melbourne Statistical District (MSD)?
2. What are the changes in mode share for work journeys from regional LGAs to the MSD?
3. Is there a significant pattern in work journeys between the regional LGAs studied?
4. Were the trends to 2006 found by Inbakaran and Harwood (2012) continuing in the 2006 – 2011 period?
4. Have the quantity and mode of journeys to work from regional LGAs to the MSD changed since the completion of the Regional Fast Rail project?

1.1 Background

Victoria's population has increased over the past decade. From 2002 to 2012, Victoria's population grew at an annual average rate of 1.5%. In 2012, the state's estimated resident population was 5.6 million (ABS, 2013). Regional Victoria's population grew at an annual average rate of 0.7% over the same period. Almost half (48%) of the total population growth in regional Victoria occurred in the four cities of Ballarat, Greater Bendigo, Greater Geelong and Latrobe from 2002 to 2012 (ibid). *Victoria in Future 2012* indicates that around 37% of the forecast growth in regional Victoria's population will occur in the four LGAs.

The four regional cities are growing not just in population terms but in employment as well. Figure 1 shows the population and employment annual average growth rate for the four regional cities from 1996 – 2006 and 2006 – 2011. All four cities experienced faster population growth rate in 2006 – 2011 compared to 1996 – 2006. Growth in number of employed persons was higher compared to population growth for both time periods as well.

Figure 1: Annual Average Growth Rate, Number of Employed Persons and Population, 1996 – 2006 and 2006 - 2011



Sources: ABS Census 1996, 2001, 2006 and 2011

Managing this growth is a current priority of the Victorian Government. The compactness and population density of the state including in regional Victoria and regional cities, are key opportunities for the state economy in *Securing Victoria's Economy*, the state's economic strategy.

A key government policy for regional Victoria is accelerating growth in regional cities. In recent times Melbourne, and in particular the outer suburbs, have experienced comparatively high population growth. The Government has identified that regional Victoria, part of which is also growing strongly, has a role to play in managing future State population. The rationale for this is two-fold:

- Regional areas have cost competitive land supply and capacity to grow, and larger and more diverse regional cities will improve quality of life for people living in regional and rural areas
- Accommodating more growth in regional and rural Victoria will reduce congestion, infrastructure and land supply pressures within metropolitan Melbourne

Thus, the economic strategy reflects a policy position of the government that regional and rural Victoria is the key to balancing the state's future growth. This policy position is reflected in Plan Melbourne, the Victorian Government's metropolitan planning strategy which was recently released for public discussion. The Plan elucidates the idea of a State of Cities, which is anchored on an alternative growth scenario whereby the regions and regional cities begin to capture a greater share of Victoria's overall population growth.

Taking regional growth and the government's economic agenda for regional Victoria in general and regional cities in particular into consideration, the main purpose of this paper is to understand the relationship between regional areas and Melbourne. There have been an increasing number of journeys to work from regional LGAs to the MSD. The 2011 journey to work data indicated that almost 14,000 work journeys to the MSD were from the major regional cities of Greater Geelong, Greater Bendigo, Ballarat and Latrobe. Across the four regional cities, the number of employed persons increased by almost 11 percent (to over 211,000) between 2006 and 2011 (ABS 2006 and 2011).

The increasing number of journeys to work to the MSD as well as the increasing labour force puts added pressure on the transport systems and infrastructure particularly in peak travel periods. This paper

investigates journeys from these four regional LGAs across the four Census periods of 1996, 2001, 2006 and 2011. Doing the analysis across four census periods also provides a good starting point in understanding the impact of the Regional Fast Rail, a major initiative undertaken by the Victorian Government between 2000 and 2006.

The paper will also briefly discuss the role that proximity plays in determining the volume of work journeys from the four regional LGAs to the MSD and between the four regional LGAs. Inbakaran and Harwood (2012) found that percentage of work journeys to the MSD decreases as the relative distance of each LGA from the CBD increases and that distance between the four regional LGAs is a factor that influences the volume of work journeys between them.

2 Literature Review

BITRE (2011) found that in 2006, 1.4 percent of Melbourne's workforce commuted from regional Victoria. Daily commuting to Melbourne was most common for those in Geelong, Ballarat, Latrobe Valley and Bendigo. Peri urban areas such as Mitchell North, Phillip Island and South Gippsland Central are also areas where frequent commuting to Melbourne occurs. Melbourne Inner, Melbourne Remainder and Wyndham North were the most likely work locations of Geelong residents commuting to Melbourne. Relatively frequent train connections facilitate commuting to the CBD while Wyndham North is easily accessible from Geelong. BITRE (2011) noted a similar trend among Ballarat and Bendigo residents who commute to Melbourne – they either work in the CBD or a part of Melbourne in close proximity to both locations. For those who commute from Latrobe Valley, Mitchell North, Phillip Island and South Gippsland, the journey to work is a relatively short distance to a directly adjoining part of the Melbourne working zone.

BITRE (2011) also noted that there is a smaller proportion of Melbourne residents who commute to a place outside of the MSD compared to those who commute into the MSD from regional areas. In 2006, 18,224 Melbourne residents commuted to a place of work outside the MSD. Geelong was an important destination for commuters from the Melbourne working zone. Commuting to Geelong was most common among employed Wyndham LGA residents, a neighbouring area. A similar commuting pattern was observed for Ballarat and Latrobe Valley.

The BITRE study considered the following as critical factors in a person's propensity to commute long distances:

- availability of suitable employment for multiple workers in the family in and around where they live
- highly paid city positions
- frequency of public transport
- freeway connections
- housing affordability in close proximity to workplace
- access to schools and social amenities

In looking at the role of land use and employment on journey to work patterns in Melbourne, Moriarty and Mees (2006) found that the increase in CBD employment concentration is a key factor in the total rise in non-car mode share since 1996. They noted that the mode share of non-car modes substantially declined when looking at non-CBD work travel. This was attributed to poor public transport provision in suburban areas.

Inbakaran and Harwood (2011) found that that work journeys from all four LGAs (Ballarat, Bendigo, Geelong, Latrobe) to the Melbourne metropolitan area show the same increasing pattern from the 2001 to 2006 collections.

3 Methodology

The main data source for this paper is the Australian Bureau of Statistics (ABS) population, employment and journey to work data from the Census of Population and Housing for 1996, 2001, 2006 and 2011. Journey to work data provides detailed information on modes people chose to travel to their employment location. The three key questions informing the data are:

- Where a person is counted on census night (Place of Enumeration)
- The mode used to reach their place of work on Census Day (Method of Travel to Work)
- The address of a person's usual place of work (Place of work)

The journey to work data provides a detailed breakdown of transport modes utilised (public, private and active transport) as well as information around the number of people who did not go to work or those who worked from home.

3.1 Classifications and Geography

This paper compares Journey to Work figures across four collection periods for four regional LGAs, identifies the number of work journeys from each regional LGA to the MSD and the work journeys between each of the LGAs studied. This builds on the earlier paper done by Inbakaran and Harwood (2012) which focused on the four key regional LGAs of Ballarat, Greater Bendigo, Greater Geelong and Latrobe.

Historically, journey to work data suggests that a high concentration of work journeys start and finished in the same LGA (in 2006 above 80 per cent of all journeys in the four regional LGAs). However, this paper focuses on the work journeys to the MSD and between the areas identified rather than those work journeys entirely within the regional LGAs studied.

This paper utilises place of work as the main census variable. The data has been extracted at a Statistical Local Area (SLA) level for the four Census periods and aggregated to an LGA level. The data is only applicable to employed persons aged 15 years and over.

3.2 Limitations

Place of work is determined from written responses to questions about the main place of work last week. Recent changes in the way Place of Work questions were coded by ABS for the 2011 Census has meant a reduction in the non-response rate and a corresponding increase in the geography undefined categories. The changes in the geography (from SLAs to Statistical level Areas SA2s) also had a role in the observed increase in geography undefined categories¹.

- As a result, the non-response rate dropped from 4.9% in 2006 to 2.5% in 2011 while the proportion of records coded to the 'capital city undefined' and 'state undefined' categories increased from 1.1% in 2006 to 5.8% in 2011.
- Recent changes in methodology have meant that considerable care should be taken in comparing place of work and journey to work data across Censuses.

The key reasons are:

- The destination zones (and hence place of work) have been redefined for each Census, to take into account changes and growth within each state/territory and the needs of state transport authorities.
- The specifications for their design differed between 2006 and 2011 (in 2006, destination zones aggregated to SLAs rather than SA2s).
- There have been changes to the questions about place of work, for example in the instructions for people with no fixed place of work, and in coding persons to 'not applicable' and 'not stated' categories.
- In 1996, the journey to work data collection in regional Victoria was only for selected LGAs.

¹ For 2011, where a respondent provided a response to the 'Business name' question but not the 'Workplace address' question, this was not considered to be 'non-response', though in some circumstances it was likely to have been coded as such in 2006. Further, there may also be an increase in these undefined categories as there are more SA2s (433) than there were SLAs (200). SA2s tend to be smaller, and consequently more addresses may be unable to be coded at that level of precision. This is because if a particular response cannot be coded to a DZN (Destination Zones), it will be coded to the SA2 level. If it cannot be coded to the SA2 level, it will be assigned to a "capital city undefined" category, or a "state undefined" category.

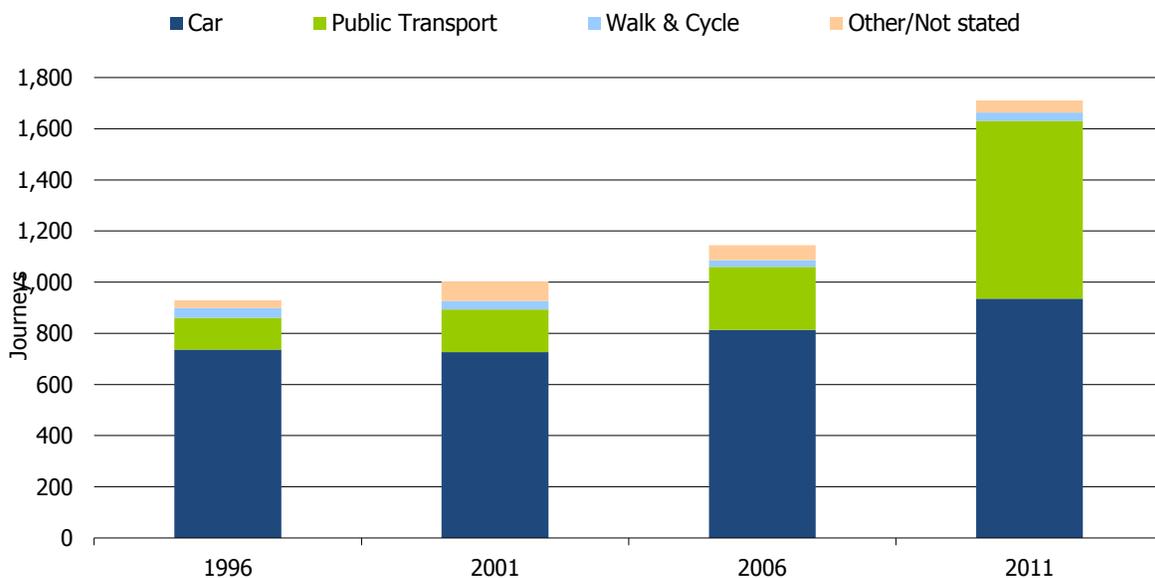
4 Analysis of Work Journeys from key Regional LGAs to the MSD

This section explores the Census Journey to Work data to the MSD for the four regional LGAs for the 1996, 2001, 2006 and 2011 collections.

Journey to Work - Ballarat LGA to the MSD

In the 2011 Census, 1,711 people commuted to the MSD from Ballarat for work compared to 1,145 in 2006 Census, representing an annual average growth rate of 8%. The proportion of journeys to work from Ballarat to the MSD increased, from 4% in 2006 to 5% in 2011. Public transport use for these journeys has increased considerably, at an annual average rate of 23% per annum from 2006 to 2011 (compared to 3% for car use). In 2011, 41% of work journeys to the MSD were completed by public transport, the highest share among the four LGAs in the study. The percentage of car use for work journeys to the MSD decreased, from 71% of all work journeys to MSD in 2006 to 55% in 2011 (Figure 2).

Figure 2: Work Journeys from Ballarat to the MSD²



*'Public Transport' refers to all journeys that include the use of at least one public transport mode
'Car' incorporates all journeys completed by 'car as driver' and 'car as passenger'*

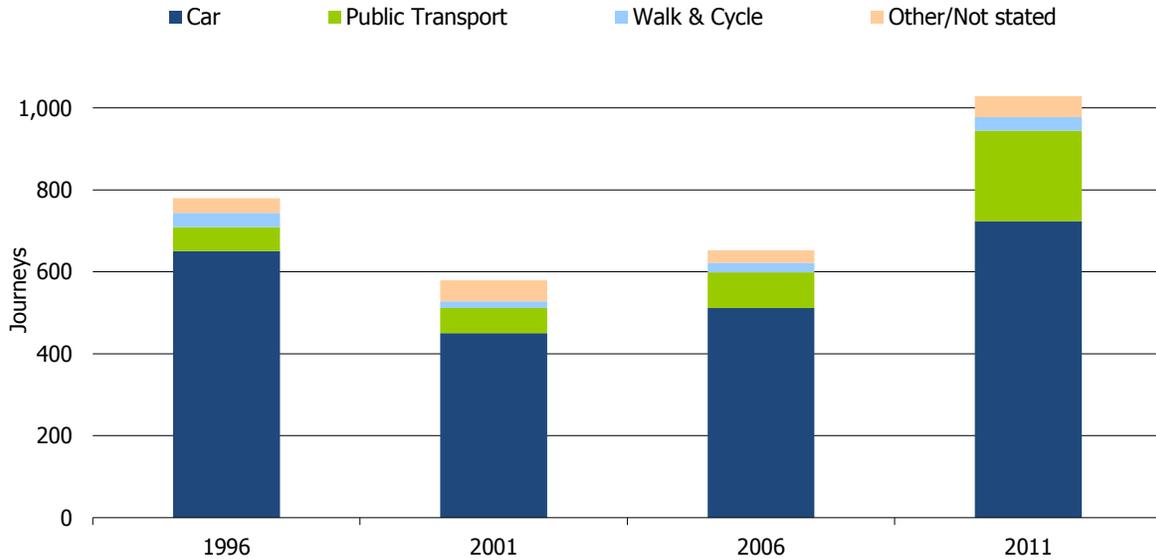
Source: ABS Census 2011

Journey to Work – Greater Bendigo LGA to the MSD

Around 1,029 work journeys (3% of total work journeys from Greater Bendigo LGA) to the MSD were recorded in the 2011 Census compared to 652 in the 2006 Census, representing an annual average growth rate of 10%, the fastest among all the LGAs in this study. The proportion of journeys to work from Greater Bendigo to the MSD increased, from 2% in 2006 to 3% in 2011. Public transport usage increased significantly – growing at an annual average growth rate of 20% from 2006 to 2011 compared to average annual growth in car usage of only 7% for the same period. Public transport now accounts for 21% of all work journeys to the MSD from Greater Bendigo up from 13% in the previous census. However, 70% of all work journeys to the MSD were completed by car in 2011 (Figure 3).

² Travel is to any work destination from the LGA on Census day 2011. Figures exclude people that worked from home, did not go to work, or did not state their travel.

Figure 3: Work Journeys from Greater Bendigo to the MSD



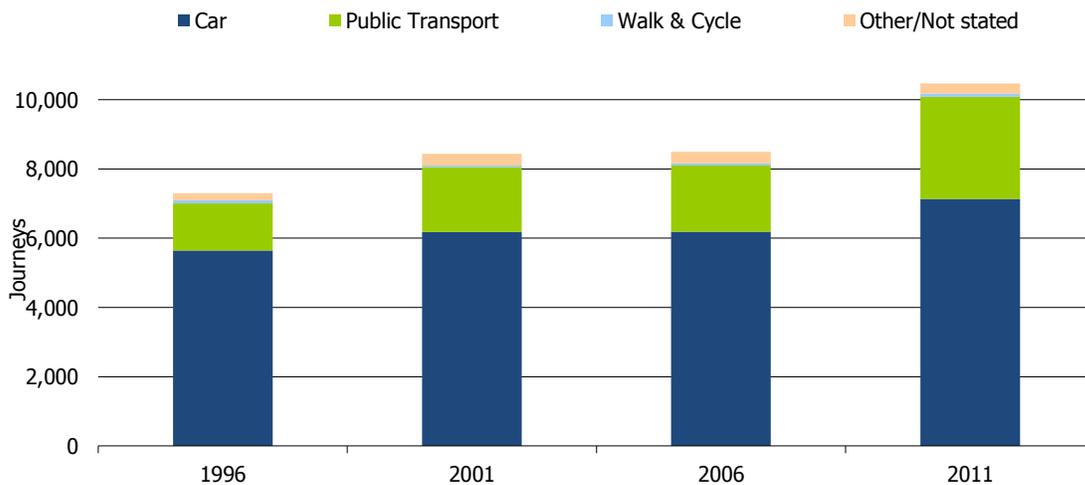
*'Public Transport' refers to all journeys that include the use of at least one public transport mode
'Car' incorporates all journeys completed by 'car as driver' and 'car as passenger'*

Source: ABS Census 2011

Journey to Work – Greater Geelong LGA to the MSD

In the 2011 census, there were 10,468 journeys from Greater Geelong to the MSD (13% of total work journeys from the LGA) compared to 8,495 in 2006 Census, representing an annual average growth rate of 4% (Figure 4). The proportion of journeys to work from Greater Geelong to the MSD increased, from 12% in 2006 to 13% in 2011. Public transport use grew at an annual average rate of 9% per annum from 2006 to 2011, higher than the growth rate for car use (3% annual average growth). However, car journeys still make up 68% of the total work journeys to the MSD from the Greater Geelong LGA. Public transport's share of total work journeys to the MSD increased to 28% in 2011, from 22% in 2006.

Figure 4: Work Journeys from Greater Geelong LGA to the MSD



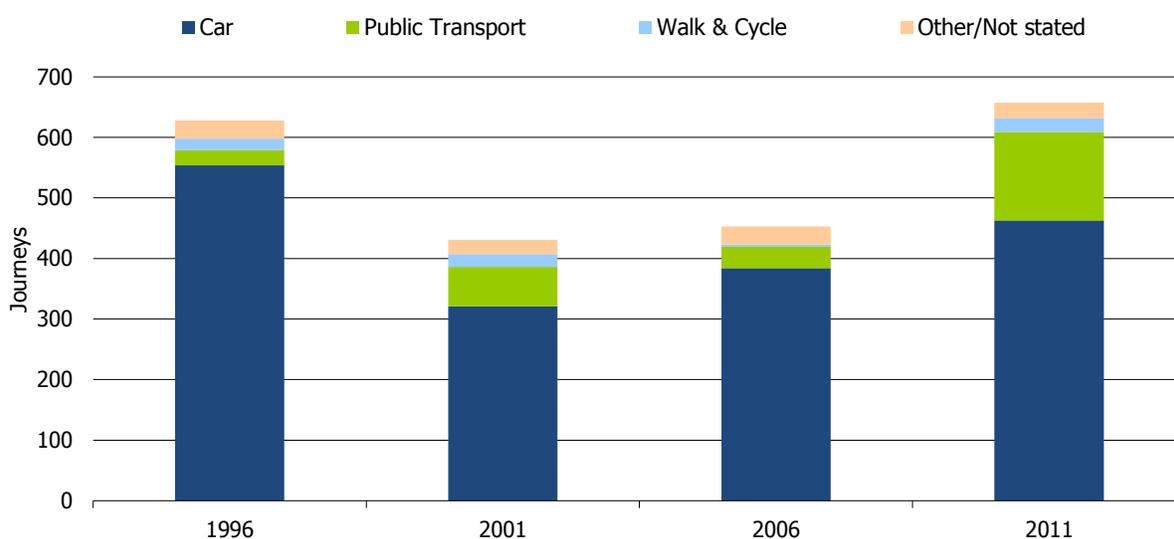
'Public Transport' refers to all journeys that include the use of at least one public transport mode

Source: ABS Census 2011

Journey to Work – Latrobe LGA to the MSD

Of the four LGAs, Latrobe has the smallest number of work journeys to the MSD. In the 2011 Census, 657 people (3% of total work journeys from Latrobe LGA) commuted to the MSD for work compared to 453 in 2006 Census, representing an annual average growth rate of 8% per annum (Figure 5). The LGA had the highest growth rate in public transport use for work trips to the MSD from 2006 to 2011, public transport use increased at an annual average rate of 33% per annum (compared to only 3% annual average growth rate in car use). As a result, public transport accounted for 22% of total work journeys to the MSD, compared to 8% in the 2006 Census. Car use still accounts for 70% of all work journeys to the MSD, compared to 86% in the previous Census.

Figure 5: Work Journeys from Latrobe LGA to the MSD



*'Public Transport' refers to all journeys that include the use of at least one public transport mode
'Car' incorporates all journeys completed by 'car as driver' and 'car as passenger'*

Source: ABS Census 2011

5. Analysis of Work Journeys between the Regional LGAs

This section looks at the work journeys between the regional LGAs in the 2011 Census.

Table 1: Number of Journeys to and from Ballarat LGA 2011

	To Ballarat	From Ballarat
Within Ballarat	26,946	26,946
MSD	501	1,711
Greater Geelong	169	179
Greater Bendigo	52	43
Latrobe	3	0
Other / Not stated	5,370	6,751
Total	33,041	35,630

Source: ABS Census 2011

Journeys to work – Ballarat LGA to Regional LGAs

Greater Geelong received the most number of work journeys from Ballarat. In 2011, 179 people made the journey from Ballarat to Geelong for work, up from the 2006 figure of 163. There was also a slight increase noted in work journeys to Greater Bendigo - 43 work journeys in 2011 compared to 36 in 2006. However, work journeys to Greater Geelong, Bendigo and Latrobe account for 1% of the total work journeys from the LGA – which shows that in terms of work journeys, the MSD is more relevant to Ballarat than the other regional LGAs considered in this study.

Journeys to work – Regional LGAs to Ballarat

Among the three LGAs in the study, Greater Geelong was the biggest source of work journeys to Ballarat (169 people). Again, the proportion of work journeys to Ballarat from the regional LGAs in this study was only 1% - which shows that the Ballarat LGA was not a strong driver of work journeys from the other regional LGAs studied.

Table 2: Number of Journeys to and from Greater Bendigo LGA 2011

	To Greater Bendigo	From Greater Bendigo
Within Greater Bendigo	29,023	29,023
MSD	468	1,029
Ballarat	43	52
Greater Geelong	22	23
Latrobe	3	8
Other / Not stated	2,068	7,929
Total	31,627	38,064

Source: ABS Census 2011

Journeys to work – Greater Bendigo LGA to Regional LGAs

Ballarat was the biggest destination of work journeys for the LGAs considered from the Greater Bendigo LGA. In 2011, there were 52 work journeys from Greater Bendigo to Ballarat, a slight increase from the 44 journeys recorded in 2006. Across the three LGAs, the total work journeys amount to less than 1% (0.2%). This shows that Greater Bendigo generated a low number of work journeys to the other regional LGAs.

Journeys to work – Regional LGAs to Greater Bendigo LGA

The biggest source of work journeys to Greater Bendigo among the three LGAs was Ballarat – in 2011, there were 43 work journeys from Ballarat to the LGA. Less than 1 percent (0.2%) of work journeys commencing in regional LGAs finished in the Greater Bendigo LGA

Table 3: Number of Journeys to and from Greater Geelong LGA 2011

	To Greater Geelong	From Greater Geelong
Within Greater Geelong	55,769	55,769
MSD	3,256	10,468
Ballarat	179	169
Greater Bendigo	23	22
Latrobe	17	10
Other / Not stated	7,061	13,741
Total	66,305	80,179

Source: ABS Census 2011

Journeys to work – Greater Geelong LGA to Regional LGAs

Ballarat was the biggest destination of work journeys from the Greater Geelong LGA. In 2011, there were 169 work journeys from the LGA to Ballarat, a slight increase from the 165 journeys recorded in 2006. Across the three LGAs, the total work journeys amount to less than 1% (0.3%). This shows that Greater Geelong generated a low number of work journeys to the other regional LGAs.

Journeys to work –Regional LGAs to Greater Geelong LGA

The biggest source of work journeys to Greater Geelong among the three LGAs was Ballarat – in 2011, there were 179 work journeys from Ballarat to the LGA, an increase from the 163 journeys recorded in 2006. Around 40 work journeys to the Greater Geelong LGA were recorded from the remaining LGAs. Less than 1 percent of work journeys (0.3%) commencing in regional LGAs finished in the Greater Bendigo LGA.

Table 4: Number of Journeys to and from Latrobe LGA 2011

	To Latrobe	From Latrobe
Within Latrobe	17,863	17,863
MSD	482	657
Ballarat	0	3
Greater Geelong	10	17
Greater Bendigo	8	3
Other / Not stated	3,295	6,650
Total	21,658	25,193

Source: ABS Census 2011

Journeys to work – Latrobe LGA to Regional LGAs

Greater Geelong received the most number of work journeys from the Latrobe LGA. In 2011, there were 17 work journeys from the LGA to Greater Geelong, a slight increase from the 13 journeys recorded in 2006. Across the three LGAs, the total work journeys amount to less than 1% (0.1%). This shows that Latrobe generated a low number of work journeys to the other regional LGAs. Given their relative locations this is not surprising.

Journeys to work –Regional LGAs to Latrobe LGA

The biggest source of work journeys to Latrobe among the three LGAs was Greater Geelong – in 2011, there were 10 work journeys from Greater Geelong to the LGA, a slight decrease from the 13 journeys recorded in 2006. There were no work journeys from Ballarat to Latrobe. Less than 1% of work journeys (0.1%) commencing in the three regional LGAs finished in the Latrobe LGA

6. DISCUSSION

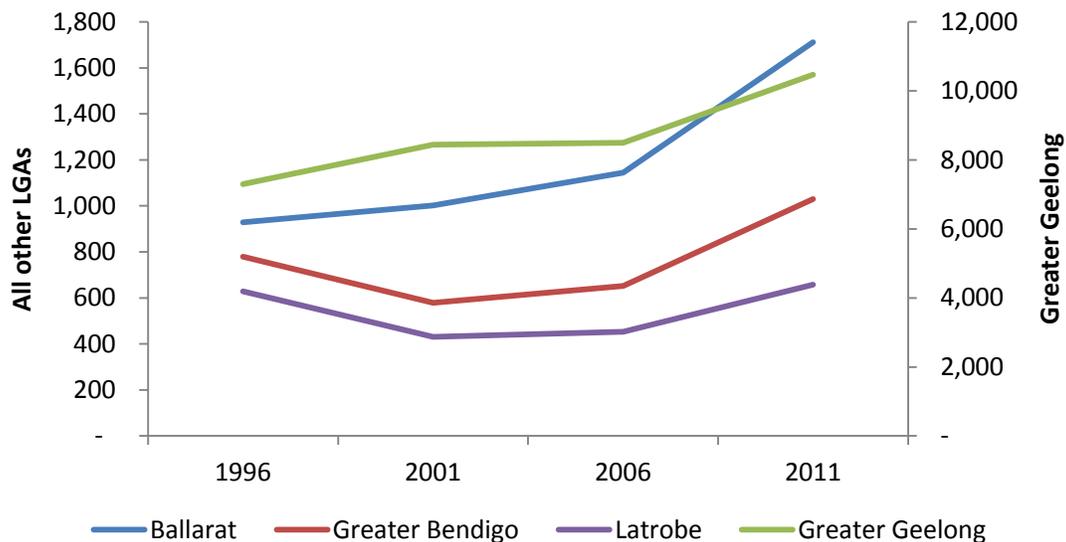
Work Journeys to the MSD

There was a considerable variation on the number of work journeys to the MSD across the four regional LGAs. Greater Geelong had the highest number of work journeys to the MSD – the total number of work journeys to the MSD from Geelong was six times greater than the number of work journeys from Ballarat.

Across all LGAs, there was a clear trend of faster growth in the number of work journeys to the MSD. Work journeys to the MSD from Greater Geelong grew at a faster pace from 2006 to 2011 (annual average rate of 4%) compared to the 2001 – 2006 period (annual average rate of 0.1%). Greater Bendigo registered the fastest growth in work journeys to the MSD from 2006 to 2011 (annual average rate 10%). In the 2001 to 2006 period, work journeys to the MSD from Greater Bendigo only grew by 2% per annum. Latrobe journeys to the MSD grew at an annual average rate of 8% from 2006 to 2011, an increase compared to the 2001 – 2006 growth of 1% per annum. Ballarat work journeys to the MSD expanded at an annual average growth rate of 8%, a substantial increase compared to the 2001-2006 annual growth rate of 3%.

All four LGAs had an increase in work journeys to the MSD from 2006 to 2011. On an aggregated basis, there were 13,865 work journeys from the four LGAs to the MSD, an increase of 5.2% per annum from 2006 to 2011 (Figure 6).

Figure 6: Change in work journeys to MSD from Regional LGAs, 1996, 2001, 2006 and 2011



Sources: ABS Census 1996, 2001, 2006 and 2011

However, of the total work journeys generated by the four regional LGAs, a declining percentage is to the MSD. The proportion of total work journeys generated in the LGA that went to the MSD only increased in Geelong and Ballarat. In 1996, journeys to the MSD accounted for 7% of all work journeys in the four

LGAs. In 2011, only 5% of all work journeys in the four LGAs were to the MSD. Table 5 shows the breakdown between the LGAs studied.

Table 5: Percentage of Total Work Journeys from Regional LGAs to the MSD 1996, 2001, 2006, 2011

	1996	2001	2006	2011
Ballarat	3.8%	3.6%	3.6%	4.8%
Greater Bendigo	3.1%	2.0%	1.9%	2.7%
Greater Geelong	12.3%	13.1%	11.9%	13.1%
Latrobe	3.1%	2.1%	1.9%	2.6%

Sources: ABS Census 1996, 2001, 2006 and 2011

Table 6 shows the population, number of employed persons and journey to work growth for the four LGAs and the MSD from 2006 to 2011. While population growth for the four LGAs was lower compared to the MSD, the annual average growth in total number of jobs for the LGAs of Ballarat, Greater Bendigo and Greater Geelong were close to the MSD rate. Also, the growth in number of employed persons was consistently higher compared to population growth across the four LGAs and the MSD.

Consistently higher growth in number of employed persons compared to population growth across the four LGAs may have influenced the decline in the proportion of combined total work journeys to the MSD from the four LGAs. The relatively robust growth in number of employed persons compared to the MSD (except for Latrobe) could have indicated more work opportunities within the four LGA boundaries. While the growth in journey to work the MSD was significantly higher compared to growth in number of employed persons for the four LGAs, these are coming off a very small base. For example, Greater Bendigo's journey to work to the MSD in 2011 was 1,711, more than double the 2006 number of 652. The increase in the absolute number of work journeys to the MSD could be driven by the employment growth in the MSD during the same period. These are all preliminary findings and would need to be tested further.

Table 6: Annual Average Growth Rate: Population, Employment and Journey to Work 2006 - 2011

	Population Growth	Number of Employed Persons Growth	Growth in Journey to Work to the MSD
Ballarat	1.4%	2.4%	8.4%
Greater Bendigo	1.1%	2.2%	9.6%
Greater Geelong	0.9%	2.1%	4.3%
Latrobe	0.4%	1.3%	7.7%
MSD	1.9%	2.4%	

Sources: ABS Census 2006 and 2011, Regional Population Growth Cat. No. 3208

Across the four LGAs, the predominant travel mode for work journeys to the MSD was by car (as driver/passenger). This mode accounted for 67% of all work journeys to the MSD – reinforcing its role as the primary travel method (Table 7). However, this is a decrease from the 1996 level of 79%. Despite the decrease in percentage of mode share, work journeys to the MSD by car increased in aggregate by 1,666 from 1996 Census to 2011 Census. There have been significant regional road network upgrades over the past decade. These include Pakenham Bypass (completed December 2007); Geelong Ring Road (sections one and two completed in December 2008 and section three completed June 2009) and Anthony's Cutting Realignment (completed June 2011).

Table 7: Mode Share, Work Journeys to the MSD, Ballarat, Greater Bendigo, Greater Geelong and Latrobe

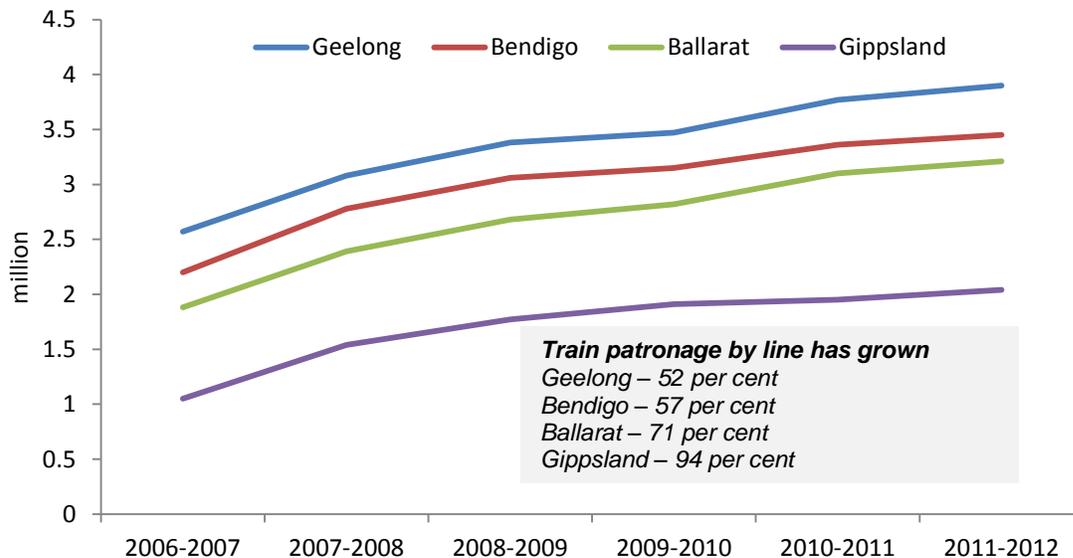
Census Year	Car	Public Transport	Walk & Cycle	Other/Not stated
1996	79%	16%	2%	3%
2001	73%	21%	1%	5%
2006	73%	21%	1%	4%
2011	67%	29%	1%	3%

Sources: ABS Census 1996, 2001, 2006 and 2011

All four LGAs experienced a net increase in public transport journeys to work from the LGAs to the MSD for the same period. Public transport mode share increased, from 16% of all work journeys to the MSD from the four LGAs in 2006 to 29% in 2011. Growth in public transport use for work journeys to the MSD across the four LGAs has outstripped that of car use.

In 2005-06, there were only 7.64 million trips undertaken in the V/Line network. Mees and Groenhart (2012) found that patronage on V/Line inter-urban rail services increased more rapidly than the suburban services. Figure 7 from V/Line’s annual report shows the rapid growth since the completion of the project. In 2011-12, there were 15.5 million trips on V/Line regional rail and coach services, an increase of more than one million from the previous year.

Figure 7: Regional patronage 2006-2007 to 2011-2012



Source: V/Line Annual Report 2011 - 2012

The most significant public transport project for regional Victoria over the past 10 years was the Regional Fast Rail project, which was completed on the Ballarat line late 2005, and the Greater Geelong, Greater Bendigo and Latrobe Valley lines in 2006. Considering that rail is a key public transport asset for the four LGAs, the 2011 census results indicate that the Regional Fast Rail project could be a significant contributor to the increase in public transport use in the four LGAs for work journeys to the MSD.

Work Journeys between the Regional LGAs

Inbakaran and Harwood (2012) investigated the work journeys between the four LGAs and found that as a proportion of total work journeys generated from a given regional LGA in 2006, the numbers were considerably low. The same finding holds true in examining the 2011 Census results.

While Ballarat and Geelong share the strongest co-directional work journeys across all the four census periods, these work journey volumes, while increasing over time, are also very small. The 2011 Journey to Work data highlights the importance of MSD as a generator of work journeys from the four regional LGAs.

Further in all four LGAs the 'Other/Not stated' category comprises a significant proportion of the work journeys. These journeys outweigh work trips between the four LGAs. It is not possible to assess whether the trends identified would change if full details of trips in the Other/Not stated category were available. Other/Not stated trips also outweigh trips to the MSD in each of the four LGAs. The Bureau of Transport Statistics in NSW has undertaken a project to impute a destination zone to persons who provided partial or incomplete workplace address information in the Census. The plan is to advocate for this process to be conducted automatically and the data released in the standard set which is also being explored in Victoria.

Table 8: Percentage of Other/ Not stated journeys in 2011

Regional City	To	From
Ballarat	16	19
Greater Bendigo	7	21
Greater Geelong	11	17
Latrobe	15	26

Source: ABS Census, 2011

Proximity as a factor

This study does not look into other factors that could influence journey to work volumes between the regional LGAs and the MSD or between the four regional LGAs. However, proximity was identified as a key factor that may influence the proportion of work journeys to the MSD (Inbakaran and Harwood, 2012). Greater Geelong, which borders the MSD and is also the closest LGA to the MSD, has the highest percentage of work journeys to the MSD among the four LGAs.

7. CONCLUSION AND FURTHER RESEARCH

Inbakaran and Harwood (2012) found that there were a declining percentage of total work journeys to the MSD from the four LGAs between 1996 and 2006. However, in 2011 Ballarat and Greater Geelong showed an increase. There was a clear trend of faster growth in work journeys to the MSD across all the four LGAs.

With almost 14,000 journeys ending in the MSD from the four regional LGAs in 2011, combined with the increasing trend in total journeys from across the four census periods, work journeys will continue to be an important input into transport infrastructure and planning.

Work journeys by car continue to be the predominant travel method to the MSD for the four regional LGAs. What has occurred from 2006 to 2011 was a significant increase in public transport use. The Regional Fast Rail project could be one of the contributors for the increase in MSD work journeys by public transport – however, the varied reasons for that have not been explored in this paper and could be subject to further research.

There are other road and public transport infrastructure projects that will be rolled out in the next 5 – 10 years which will directly and indirectly benefit the four regional LGAs. Of particular interest is the Regional Rail Link, which will benefit the LGAs of Greater Geelong, Greater Bendigo and Ballarat through improving reliability of train services and is expected to be completed by early 2016. The 2016 Census will provide valuable insights into the changes in work journeys as a result of this and other infrastructure projects.

The Victorian Government has included the Rail Revival Study and the Upgrading Regional Passenger Lines project as part of the 2012 submissions to Infrastructure Australia. The Rail Revival Study focuses on options for enhanced transport connections between the key regional centres of Greater Geelong, Ballarat and Bendigo. The Upgrading Regional Passenger Lines project will investigate future needs of the regional passenger rail network, and look at the provision of additional tracks, an electrified service between Sunshine and Melton and capacity improvements on the Ballarat and Bendigo lines. The results of this study, which shows a low volume of work journeys between the four LGAs but a co-directional work journey flow between Ballarat and Greater Geelong and a faster growth rate for MSD journeys to work using public transport, could be an input to both projects. Given the change of federal government and their policy around not funding rail projects, those two submissions might have to be reconsidered by the Victorian Government.

Further research could be undertaken on how the four LGAs act as a work journey attractor among its neighbouring LGAs, both in regional Victoria as well as the MSD. Population trends, industry-specific employment trends and Melbourne's growth are some of the factors that could be investigated with regards to their influence on journey to work patterns from the four LGAs to neighbouring LGAs as well as the MSD. Another area for further research would be to explore the destination within the MSD for work journeys from the four LGAs. Analysis of peri urban locations suggest work journeys are often to LGAs on the edge of the MSD rather than the CBD. If a similar pattern applies to journeys from regional centres, this would have significant transport implications

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