Introduction

> The carrying trade is the natural effect and symptom of great national wealth; but it does not seem to be the natural cause of it. Those statesmen who have been disposed to favour it with particular encouragements seem to have mistaken the effect and sympton for the cause.
> – Adam Smith, *The Wealth of Nations*, 1776.

The interaction of transport infrastructure, travel patterns and economic growth have been studied by geographers, economists, urban planners and transport planners for decades. In the northern hemisphere, particularly the United States, the last two decades have seen increasing attention devoted to the effects of circumferential freeways ('beltways') on travel patterns and urban form. Many commentators (e.g. Payne-Maxie Cons., 1980; Kowinski, 1985; Cervero, 1986; Garreau, 1991) have pointed to the tendency for beltways to induce the growth of 'edge cities' (to use Garreau's term) comprising large retail malls and significant concentrations of higher-order employment.

The transport and environmental consequences of such developments are of increasing concern to American planners. The predominant view is that the consequences are malign, with increasing trip lengths, and a decline in the share of travel by walking, cycling and public transport, leading to what Cervero (1986) calls 'suburban gridlock'. But Gordon & Richardson (1997) and others argue the converse: the dispersal of activity to 'edge cities' brings employment and services closer to suburban residences, and thus reduces the length of trips.

There is also a growing body of literature debating the relationship between transport infrastructure investment and economic growth (Boarnet, 1997). Does transport investment generate new economic activity, or does it merely cause an intra-urban redistribution of activity which would have occurred in any event? Is transport infrastructure more relevant to the 'old' than the 'new' economy, the latter with its supposed base in knowledge, information and electronic communications.

These questions are beginning to be debated in Australia. Commentators such as Brotchie et al (1995) have supported the American thesis that employment dispersal reduces trip lengths, and have advocated beltway construction as a means of promoting this dispersal. The Victorian Government's 1996 *Transporting Melbourne* strategy adopts this view, proposing a 'metropolitan orbital transport and land use corridor' comprised of a beltway around Melbourne integrated with employment and activity clusters. But other commentators (e.g. Newman & Kenworthy 1999) argue that dispersal is undesirable, and will lead to the adverse consequences seen in the United States.

The link between transport investment and economic growth has not been debated here: it tends to simply be assumed.

Melbourne's Western Ring Road provides an excellent opportunity to test these competing claims. The road, which runs from the Hume Highway at Campbellfield to the Princes

Freeway at North Laverton, opened in stages from 1989 to 1997. It is the closest Australian counterpart to an American-style beltway.

It has been widely reported that the Western Ring Road has indeed induced economic development in the Western suburbs of Melbourne, through which it passes, and that these benefits began to manifest themselves even before the road opened. But these reports are based on anecdotal accounts of new factory construction, not on empirical analysis. At the Panel Hearing into the proposed Scoresby Freeway in Melbourne in December 1998, the panel chairman challenged the considerable number of submitters who cited the Western Ring Road's alleged economic benefits to provide evidence, but none was forthcoming.

This paper aims to partially rectify this deficiency by analysing census data of economic activity. The paper reports on the first stage of a project to examine the medium-term effects of the ring-road on the region's economy and on travel patterns. The second stage will involve utilising data from the 2001 census, when in becomes available next year.

The Western Ring Road

Melbourne's Western Ring Road runs for 29 kilometres from the Hume Highway at Campbellfield to the Princes Freeway at North Laverton. The road was a joint project by the Federal and Victorian governments, and cost $631 million to build. The road opened in stages as follows:

Tullamarine Freeway to Pascoe Vale Road	September 1992
Pascoe Vale Road to Hume Highway	July 1993
Keilor Park Drive to Western Highway	July 1995
Western Highway to Boundary Road, Laverton	March 1996
Boundary Road to Princes Freeway	October 1996
Calder Freeway to Keilor Park Drive	December 1996
Tullamarine Freeway to Calder Freeway	June 1997

Soon after the last section opened, traffic levels on the road rose rapidly, to a level consideraby greater than forecast. One interpretation is that the traffic growth was 'induced demand' similar to that seen in the United States; in other words that the road had increased travel levels by encouraging a fall in self-containment (the tendency for people to work and shop locally). The dominant view, however, is that the traffic increase was benign, because it reflected an economic boom induced by the road in a formerly depressed area:

> Construction of the Western Ring Road… has dramatically improved access to and within the western suburbs of Melbourne, increasing land values and stimulating economic development and employment. The success of the Western Ring Road in attracting development now necessitates the provision of additional lanes and upgrading safety features… (Vicroads, 2000).

Because the last section of the road to open was the middle link, the full traffic effects of the road only became apparent in 1997. This means that, by the time of the 1996 census (in August), most of the freeway was open, but in the form of discontinuous links with the

connecting sections 'missing'. No sections of the road were open at the date of the 1991 census.

However, claims that the road had induced an economic boom in the western suburbs began to emerge well before the road's completion. The argument, essentially, is that the opening of the first sections had encouraged investors to move in anticipation of the completion of the remainder.

> The long awaited resurgence in the north west and west, associated with the ring road, has begun to appear, as construction in business premises involving transport, storage and communication facilities has increased.
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> —*Monitoring Melbourne*, 1995, p.43

> The better [unemployment] result in the North West could relate to the transport-related activity attracted to the ring road which may be beginning to have an impact upon the pattern of development.
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> —*Monitoring Melbourne*, 1996, p.26

> The soon to be opened Western Ring Road… will re-align Melbourne's urban development pattern…
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> –Ted Hopkins, 'New zest in 'wild' west', *Herald Sun*, 13/4/96, p.2

In 1994, the Victorian University of Technology's Outer Urban Research and Policy Unit published a report on a survey in which residents, businesses and decision-makers in Melbourne's western suburbs were asked to predict the likely effects of the Western Ring Road (Glanville et al, 1994). The researchers reported strong optimism that the road would revive the local economy, boosting employment and incomes. The researchers planned to return to the same households between 1997 and 1998 to determine the actual, rather than anticipated, social and urban effects of the Road. This did not occur, because the Unit was abolished in a university restructure.

The result is that claims about the effects of the Western Ring Road's effects are being made largely in a vacuum. An exception is the 'Monitoring Melbourne' series published by Monash University (O'Connor & Rapson, various), which reported on approvals for new factory construction. As indicated above, the early reports were favourable to the road-induced boom thesis, but more recently the news has begun to change; for example:

> The geography of factory construction in Melbourne changed in the past year, with falls in the significance of the Western region, after several years when new factory construction was very prominent there, and a large rise in the importance of the South and Eastern regions.
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> —*Monitoring Melbourne*, 1998, p.21

But perhaps the real question is whether the road created the increases in local employment and incomes anticipated by locals. Information on these questions can be obtained by comparing census data showing changes between 1986 and 1991, and 1991 and 1996. Given claims that the road had induced economic growth even before completion, some

short-term effects should be able to be gauged from the census data. Naturally, only preliminary conclusions can be drawn, pending a more complete study that brings in the 2001 census figures. The following sections of this paper report those results.

Census findings

The following discussion presents data for the municipalities that lie along the Western Ring Road. Because local government boundaries in Melbourne were altered between the 1991 and 1996 census, it was necessary to make some adaptations to ensure comparability of data over time. Details of these are available in an appendix, which can be obtained separately from the author. For comparative purposes, data is also presented for the 'Scoresby Corridor' in Melbourne's East, the area in which it is proposed to construct the Scoresby Freeway, partly on the basis that this will replicate the economic boom allegedly seen in the West (e.g. Vicroads, 2000: 12). The appendix lists the old and new municipalities which comprise these regions.

We have selected data that relate to the overall economic health of the region, and to the economic well-being of its residents. We begin with population and employment figures, and then consider unemployment and average incomes.

Population and labour force

Table 1 compares population trends across the whole Melbourne Statistical Division, the Western Corridor and the Scoresby Corridor. In recent years, population in the West has grown more rapidly than in Melbourne as a whole, or the Scoresby Corridor. However, the principal reason for this is the plentiful supply of developed land in the West, as opposed to the Eastern suburbs, where developable land is almost exhausted. This is underlined by the rapid growth in Wyndham/Werribee, a designated growth corridor, where population rose 20% between 1991 and 1996.

Table 1 Population trends

	MSD	Western	Scoresby
Population, 1986	2,867,378	543,228	631,956
Population, 1991	3,022,439	593,975	652,017
Increase, 1986-91	5.41%	9.34%	3.17%
Population, 1996	3,138,147	633,654	658,372
Increase, 1991-96	3.83%	6.68%	0.97%

Source: Census population tables

Table 2 shows trends in labour force numbers. These have also increased, roughly in line with population growth, but with stark differences between the two intercensal periods. Rapid growth between 1986 and 1991 reflected buoyant economic conditions; a decline,

relative to population, in the following period reflected the severity of the early 1990s recession.

Table 2 Labour force

	MSD	Western	Scoresby
Labour force, 1986	1,359,153	250,895	304,477
Labour force, 1991	1,501,209	284,702	330,407
Increase, 1986-91	10.45%	13.47%	8.52%
Labour force, 1996	1,531,262	292,916	320,869
Increase, 1991-96	2.00%	2.89%	–2.89%

Source: Census population tables

Employment

Table 3 shows the number of jobs located in each region and the MSD, measured by work trip destinations reported in the census. Areas where the population is increasing could be expected to show increasing employment, all other things being equal, because a higher population requires increased numbers of local service workers (e.g. shop attendants, teachers, etc). This may help explain why both the Western and Scoresby Regions showed job growth between 1986 and 1991. The West performed more poorly than expected over this period, with employment growing at less than the metropolitan-wide average. The West's performance improved in the 1991 to 1996 period.

Table 3 Employment

	MSD	Western	Scoresby
Employment, 1986	1,010,213	135,170	173,761
Employment, 1991	1,151,730	149,447	207,112
Increase, 1986-91	14.01%	10.56%	19.19%
Employment, 1996	1,266,571	174,540	235,385
Increase, 1991-96	9.97%	16.79%	13.65%

Source: Census Journey-to-work tables

Table 4 attempts to bring the above results together by measuring the ratio of local jobs to residents in the labour force, in an attempt to give an impression of the (theoretical) relative ease or difficulty of obtaining a job in the local region. It should be noted that this ratio understates the ease of obtaining local employment, because it combines the number of persons who told the census collector that they were in the labour force with the number who went to work on the day of the census. This factor is not expected, however, to affect the relativities between regions.

The theoretical ease of finding employment increased across Melbourne following 1991, largely due to slow growth in the labour force relative to employment growth (tables 2 and 3). There were substantial improvements in both the Western and Scoresby region, but the Scoresby region appears to have pulled strongly ahead of the Western Suburbs.

Table 4 Employment opportunity relative to labour force

	MSD	Western	Scoresby
1986 ratio	0.7433	0.5388	0.5103
1991 ratio	0.7622	0.5249	0.6268
1996 ratio	0.8271	0.5959	0.7366

Sources: Tables 2 and 3

Unemployment and incomes

Table 5 compares trends in unemployment, again reflecting the recession. But interestingly, here the increase in unemployment was manifest in the 1991 census figures, rather than 1996. Taking this table with table 2 suggests that unemployment may have fallen in the lead up to 1996 largely because people dropped out of the labour force.

The western suburbs had higher-than-average unemployment at all three censuses. The recovery between 1991 and 1996 was weaker in the west than in either Melbourne as a whole or the Scoresby Corridor. The worst performer in the Scoresby Corridor was the City of Greater Dandenong; the worst in the west was Broadmeadows, where the unemployment rate virtually doubled, from 7.26% in 1986 to 14.26% in 1996.

Table 5 Unemployment rates (per cent)

	MSD	Western	Scoresby
1986	6.55	7.72	5.55
1991	12.00	14.30	11.58
1996	9.12	11.79	8.72

Sources: Census population tables

Table 6 shows household income figures from the 1991 and 1996 censuses. Unfortunately, it has not been possible to obtain comparable figures for 1986. As with unemployment, the contrast between the poor performance of the West and both Melbourne as a whole and the Scoresby Corridor, is stark.

Table 6 Median weekly personal income ($)

	MSD	Western	Scoresby
1991	293	290	299
1996	311	285	313
Change	+6.14%	–1.72%	+4.68%

Source: ABS Cat. 2015.2, table1.

Discussion of findings

The population and employment figures show the economic growth in the late 1980s, and the recession of the early 1990s. This is reflected in rapid job growth between 1986 and 1991, and also in the stagnation of labour force participation between 1991 and 1996. The recession of the early 1990s affected Victoria and particularly the western suburbs of Melbourne severely because job losses were concentrated in manufacturing. The economic recovery from, the mid-1990s had a converse disproportionate effect in these areas. The western suburbs are also a region experiencing rapid population growth, owing to the exhaustion of subdividable land in much of Melbourne's east. For all of these regions, caution is needed when interpreting regional data in an attempt to gauge the effect of the Western Ring Road.

Overall employment levels in the west grew more rapidly than in other areas of Melbourne between 1991 and 1996, the period corresponding to the opening of the Western Ring Road. This may have been a result of the cyclical recovery in manufacturing, of service industry growth associated with rapid population increase, or with an economic boost provided by the ring road. A better answer to this question can be obtained using a breakdown of employment figures by job category (this will be attempted in a further paper).

Because employment grew more rapidly than the labour force in the West, theoretical employment opportunity levels improved. But the improvement was considerably less rapid than the improvement in the Scoresby corridor, which does not have a ring-freeway. Urban geographers have observed a nearly-universal tendency for local service jobs to follow residents with a 'lag' of some years.

Despite the theoretical improvement in western region job availability, local unemployment remained significantly higher than the rest of Melbourne in 1996. The recovery in unemployment following the 1990s recession was less rapid in the west than in the rest of Melbourne. Western suburbs unemployment was 19 per cent higher than the Melbourne average, and 21 per cent higher than in the Scoresby corridor, in 1991; by 1996, the difference had increased to 29 per cent and 35 per cent respectively. Reflecting this lag, average incomes in the west fell between 1991 and 1996, in comparison with the rest of Melbourne, where they rose.

The worst unemployment performance in the west was in the former City of Broadmeadows. This is the site of the first two sections of the Western Ring Road to open, in 1992 and 1993. Any positive economic effect of the road might be expected to have been strongest in Broadmeadows.

Until figures from the 2001 census are released, it is not possible to determine whether these trends continued through to the end of the 1990s. Some information on regional employment and unemployment levels in Melbourne can be gleaned from the ABS 'Labour Force' series (Cat. 6202.2), but the small sample size of this national survey means that regional estimates are based on very small samples, and figures tend to 'bounce around'. The general trend has been for unemployment rates in Melbourne's West and North-West to remain considerably higher than the metropolitan average, but the small sample size means the results must be treated with caution.

Conclusions

In 1994, Glanville and colleagues reported a widespread expectation that the Western Ring Road would improve the personal economic fortunes of residents of Melbourne's western suburbs. No such improvement was apparent by the time of the 1996 census. While the west, like the rest of Melbourne, had partially recovered from the recession of the early 1990s, the west's residents had fallen behind in relative terms. The contrast with the Scoresby Corridor is particularly dramatic.

There were positive signs, however. Employment had grown faster relative to population in the west than in other regions since 1991, creating the theoretical possibility of improved fortunes. If this trend has continued since 1996, then the 2001 census may show a turnaround in the situation of western suburbs residents. But against this is the fact that the first municipality to benefit from the ring road's construction (Broadmeadows) also showed the worst unemployment result.

One thing that can be concluded from the analysis is that the early prophecies of ring-freeway-induced prosperity in Melbourne's west appear to have been at best premature. It remains to be seen whether they will be vindicated in the longer term.

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