THE LINKS BETWEEN HOUSING MARKETS AND LABOUR MARKETS IN MELBOURNE

Prepared as part of research carried out for
The Australian Housing and Urban Research Institute

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Introduction

The new technical and structural dimensions associated with knowledge and information in the rapidly emerging "new economy", along with new organisational and social dimensions in the form of part-time work and labour market flexibility is changing the geography of labour markets. This new geography is reflected in changes in the pattern of jobs in metropolitan areas. Along with a broad range of social and demographic factors, the new geography of employment has contributed to changes in housing demand.

Paradoxically, this perspective seems to play a very small part in the analysis of urban development trends and the development and application of policy for the management of metropolitan development, including decisions on the location of housing. These areas of concern have drawn most of their ideas from the analysis of population and density, inspired in part from architectural concerns relating to housing styles. At the heart of this understanding lies the perception of a process called *urban sprawl*, that allegedly produces a range of urban problems. It is believed this process can best be controlled by increasing population densities within established areas through changes in controls over the location of housing.

Labelled "compact city", "urban consolidation" or smart growth" and involving growth boundaries and new planning attitudes to inner area residential development, recent urban policy has attempted to stimulate population density through changes in housing density, design and location. As a result, housing supply has shifted from an emphasis upon fringe and corridor expansion to infill on old sites and higher-density use of existing sites, especially in the inner city.

Higher densities are expected to provide physical benefits (in the form of energy savings) economic benefits (cheaper infrastructure provision) as well as social and community benefits (in the form of interpersonal contact and local network support). There has also been the widespread assumption amongst anti-sprawl advocates that higher urban residential densities will facilitate more equitable social outcomes, particularly in terms of access to jobs and affordable housing for low-income groups. This claim is premised upon the more general idea that higher-density residential development is inherently more sensitive to demographic complexity and, therefore, social diversity than the conformity of design characteristic of the traditional, low-density suburban development of the past. This view is strongly associated with the urban village ideal found in much of the new-urbanist literature. Although frequently reiterated, these assumptions ignore any understanding of the role that job location may play in residential change and housing demand.

Much of this policy is predicated just on an analysis of population trends and location. This is illustrated in the famous work of Newman and Kenworthy (1989). Rogers (1997) has suggested that there is a set of local links between population and employment and that population density increases will generate local employment opportunities, but no reasons are given for these links. It is unlikely however that metropolitan areas are shaped primarily by forces acting upon patterns of population growth and, second, that population trends and job location trends are contemporaneous and geographically aligned. In fact, the location of work could be a major influence upon the pattern of population and may need to be a significant consideration in both the analysis of metropolitan change and the development of policy weapons for housing location.

The current research uses the geography of employment to show that metropolitan areas are changing not because of a shift in the density of their residential populations, but because of a structural shift in the links between jobs and residences. The link between jobs and houses is one of the key dimensions in the structure and day-to-day operation of a metropolitan region. The character of that link both in terms of its geography and the transport technology it uses has important implications for equity in housing accessibility. It is possible these links may be becoming more occupationally and industrially stratified and, in turn, more geographically polarised than we have been accustomed to in the past. Policy to reshape housing density may in fact be contributing to a change in the geography and the sociology of these links.

Hence, a real challenge for both urban analysis and for policy makers is to develop a stronger socio-economic understanding of the links between housing and labour markets: the research reported here is a step in that direction. This report outlines the results of a detailed analysis of the geography of employment in Melbourne, and its links with the locations of housing.

Housing Market-Labour Market Links in Melbourne

The Approach

The study reviewed a number of ways in which the Melbourne metropolitan area can be subdivided before arriving at the set of regions displayed in Figure 1. This particular configuration of regions provides a large region that will capture change in the old inner area as well as in some mid-suburban high-status suburbs. The justification of this Core region was based on a recent reports into the social and economic structure of Australia' metropolitan areas (Baum 1999; Brain, 1999) These reports illustrate the strong similarities between former old industrial inner suburbs and high-status mid-suburban suburbs. This regionalisation also facilitates an analysis of two very significant suburban areas in the east and south east where job growth is known to have been important in the past twenty years or so. This pattern of regional boundaries also makes it possible to differentiate between an old inner and new outer west and north, thereby capturing the waves of industrial development that occurred in the inner region up until around 1960 and in the outer region more recently. This regionalisation reduced the number of individual areas from 74 Statistical Local Areas (SLAs) to 10 regions (listed below and identified in more detail in Appendix A) which not only expedited analysis, but also reflected the contemporary socio-economic structure of the Melbourne metropolitan area.

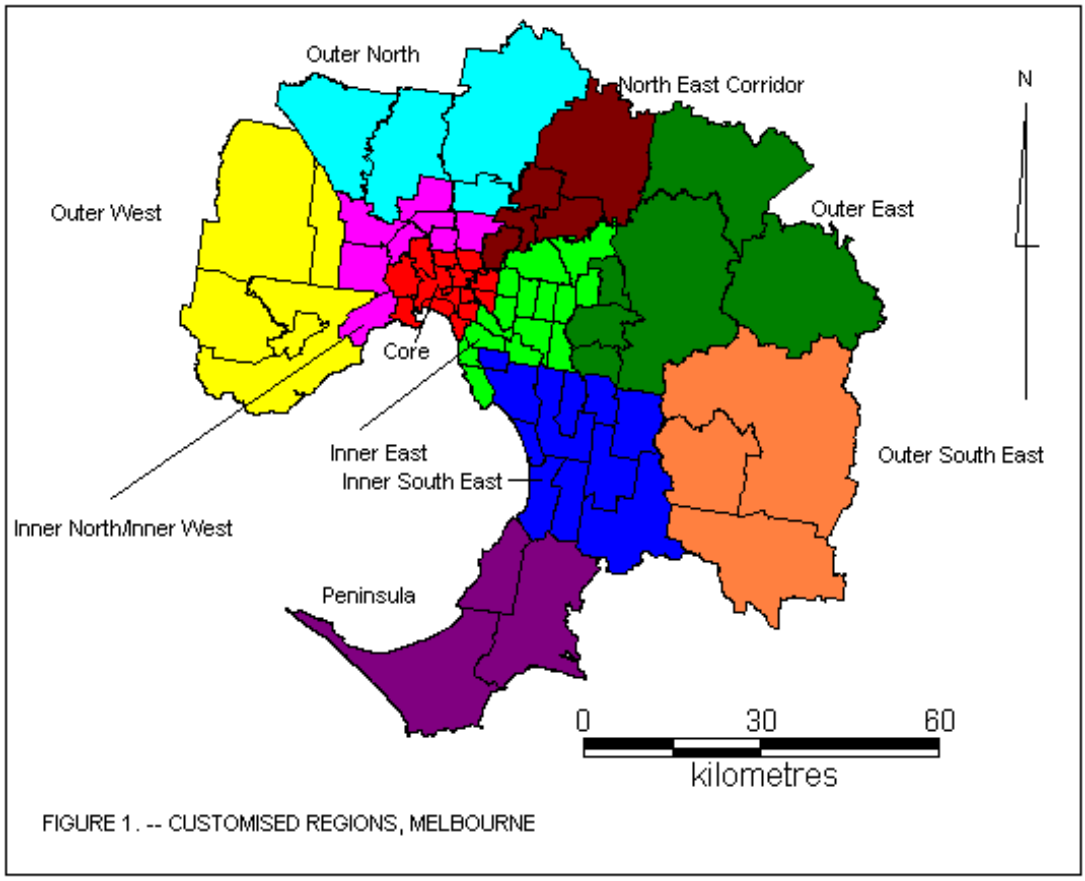


FIGURE 1. -- CUSTOMISED REGIONS, MELBOURNE

At the same time, it was necessary to reduce the number of industries to manageable number. The approach to this classification drew upon the experience of Reich (1991) and Clarke and Gaile (1998) who have carried out similar analyses using employment data. The present study created five classes of industry as listed below and outlined in more detail in Appendix B. This classification isolates for closer attention those activities that reflect new-economy or business service activity, in contrast to an older manufacturing-based economy. In addition, the industry categories used allowed greater insight into service-related work with some key distinctions within that area of activity.

A BROAD OVERVIEW

The first steps of the project were to establish the scale of regional change in the location of jobs, and then to explore the regional-level links between jobs and houses.

Table 1 shows that the basic geography of employment shifted marginally between 1986 and 1996 as 263,000[1] additional jobs were added to the region. This growth has reduced the role the central region plays in the overall pattern, as the share of employment in all suburban regions increased. Study of the pattern of commercial construction showed how new office, factory and warehouse building favoured some of the suburban regions where increases in share of jobs is registered in Table 1 (See O'Connor and Healy, 2001: 25-31, www.ahuri.edu.au/pubs/index.html). Although direct comparisons were hampered by changes in industrial classification, it was possible to see that the shift in the geography of employment varied by industry. Activities associated with the new economy built up in the Core while mass goods and service employment, along with old-economy jobs favoured suburban regions.

TABLE 1 JOBS AND JOBS GROWTH 1986-1996 BY REGION, MELBOURNE

REGION	1986 NOS	1986%	1996 NOS	1996%	CHANGE NOS	CHANGE %
CORE	401832	40.2	479784	38.0	77952	19.4
INNER EAST	192629	19.3	238595	18.9	45966	23.9
INNER SOUTH EAST	136086	13.6	184127	14.6	48041	35.3
INNER NORTH/INNER WEST	119895	12.0	131452	10.4	11557	9.6
OUTER NORTH	24880	2.5	38370	3.0	13490	54.2
NORTH EAST CORRIDOR	33580	3.4	39430	3.1	5850	17.4
OUTER EAST	58235	5.8	92249	7.3	34014	58.4
OUTER WEST	13790	1.4	22975	1.8	9185	66.6
OUTER SOUTH EAST	741	0.1	8636	0.7	7895	1065.5
PENINSULA	18400	1.8	27574	2.2	9174	49.9
TOTAL	1000068	100.0	1263192	100.0	263124	26.3

Source: ABS Customised matrices, 1986 and 1996 Censuses

Table 2 shows the residential location of the workers represented in Table 1. The share of the metropolitan area's working population living in the Core and the Inner East region fell up to 1996 even though the total numbers living in these regions increased. These declines are matched by increases in shares of population in outer metropolitan regions.

[1] This table and the ones that follow are derived from 1986 and 1996 Census data that only include employed persons 15 years or more and who reside and work in the Melbourne metropolitan area.

TABLE 2 RESIDENTS* AND RESIDENTIAL GROWTH 1986-1996 BY REGION, MELBOURNE

REGION	1986 NOS	1986%	1996 NOS	1996%	CHANGE NOS	CHANGE %
CORE	171835	17.2	213231	16.9	41396	24.1
INNER EAST	262705	26.3	307632	24.4	44927	17.1
INNER SOUTH EAST	167592	16.8	212982	16.9	45390	27.1
INNER NORTH/INNER WEST	151295	15.1	164033	13.0	12738	8.4
OUTER NORTH	37810	3.8	60879	4.8	23069	61.0
NORTH EAST CORRIDOR	58280	5.8	73038	5.8	14758	25.3
OUTER EAST	94983	9.5	132785	10.5	37802	39.8
OUTER WEST	28909	2.9	44075	3.5	15166	52.5
OUTER SOUTH EAST	2175	0.2	15983	1.3	13808	634.9
PENINSULA	24484	2.4	38554	3.1	14070	57.5
TOTAL	1000068	100.0	1263192	100.0	263124	26.3

Source: ABS Customised matrices, 1986 and 1996 Censuses

*Employed persons 15+ years

Table 3 ranks and compares the numbers of workers in regional journey-to-work movements for 1996, 1991 and 1986. It shows the stability in the rank of these movements at the regional level over time and the relative strength of internal regional movements. Of the ten largest movements in each of these years, 5 were those by people residing and working in the same region. This is graphically represented for 1996 in Figure 2.

TABLE 3 MAJOR INTRA- AND INTER-REGIONAL JOURNEY-TO-WORK MOVEMENTS, MELBOURNE 1996

	1996		1991		1986	
	PERSONS	RANK	PERSONS	RANK	PERSONS	RANK
CORE TO CORE	161377	1	140263	1	130625	1
INNER EAST TO INNER EAST	129265	2	122200	2	112497	2
INNER SOUTH EAST TO INNER SOUTH EAST	119959	3	109725	4	93483	4
INNER EAST TO CORE	118107	4	113979	3	103985	3
INNER NORTH/INNER WEST TO CORE	76189	5	72431	5	70361	5
INNER NORTH/INNER WEST TO INNER NORTH /INNER WEST	65171	6	68781	6	65063	6
OUTER EAST TO OUTER EAST	63603	7	59315	7	42667	7
INNER SOUTH EAST TO INNER EAST	40854	8	37548	8	34133	8
INNER SOUTH EAST TO CORE	36214	9	35992	9	31692	9
OUTER EAST TO INNER EAST	32472	10	29748	10	14474	10

Sources: ABS, Customised 1986, 1991 and 1996 Journey-to-Work matrices.
Employed persons 15+ yrs

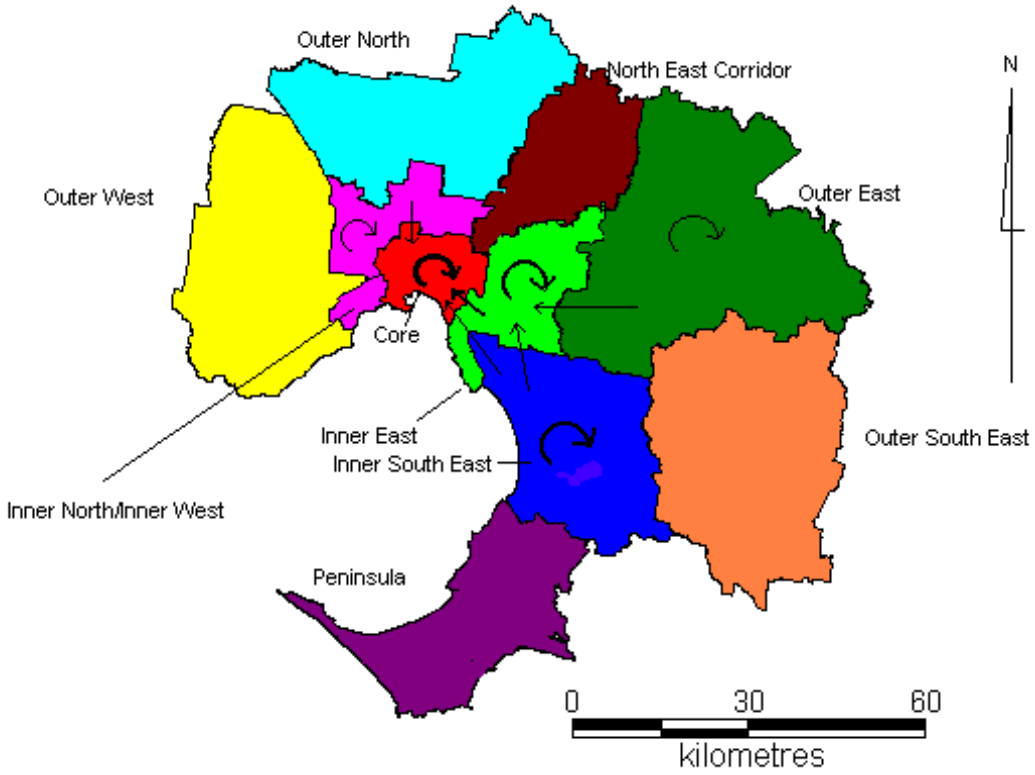


FIGURE 2. MAJOR INTRA AND INTER-REGIONAL JOURNEY-TO-WORK MOVEMENTS, MELBOURNE 1996

Measuring housing market-labour market linkages.

The study identified linkages in three ways. The first was by measuring the proportion of workers who found work in their residential region; the second was the share of regional jobs taken by regional residents. Once those aspects were identified and analysed, the research then explored the extent to which these measures were reflected in residential re-location within the metropolitan area. The third measure showed whether the movement of people from one region to another reflected the conditions in each regional labour market.

Where do Residents of a Region Work?

Table 4 shows the distribution of each region's resident workforce between other regions in 1996. The highlighted values along the diagonal provide a good indicator of the strength of the links between jobs and residents in each region. The most self-contained is the large Core region; several other regions employ around 50 percent of their resident workforce. In a number of cases, an apparently low level of self-containment (for the outer north for example) is made more significant by the fact that a high share of workers actually travel to the adjoining Inner north-inner west region, so that the effective level of self-containment in that sector of the metropolitan area is around 60 percent. A similar outcome can be seen in the links between the Inner East and the Outer East, a sector of the metropolitan area that accounts for over 60 per cent of the Outer East's workers. So, housing-market and labour-market linkages seem to be high, although regionally variable.

TABLE 4 SHARE OF RESIDENTS EMPLOYED IN REGIONS (%), MELBOURNE 1996

	WORK REGION										
RESIDENTIAL REGION	CORE	INNER EAST	INNER SOUTH EAST	INNER NORTH/INNER WEST	OUTER NORTH	NORTH EAST CORRIDOR	OUTER EAST	OUTER WEST	OUTER SOUTH EAST	PENIN.	**TOTAL**
CORE	**75.7**	8.3	2.4	8.8	1.6	1.4	0.7	1.0	0.0	0.1	100.0
INNER EAST	38.4	**42.0**	9.4	2.5	0.7	1.6	5.1	0.2	0.1	0.1	100.0
INNER SOUTH EAST	17.0	19.2	**56.3**	0.9	0.2	0.2	3.5	0.1	0.6	2.0	100.0
INNER NORTH/INNER WEST	46.4	2.6	1.1	**39.7**	5.4	1.7	0.3	2.6	0.0	0.0	100.0
OUTER NORTH	30.5	3.1	0.9	29.8	**28.9**	5.7	0.5	0.6	0.0	0.0	100.0
NORTH EAST CORRIDOR	33.9	9.7	1.5	14.0	6.5	**32.5**	1.7	0.2	0.0	0.0	100.0
OUTER EAST	16.5	24.5	8.2	1.2	0.3	0.9	**47.9**	0.1	0.4	0.1	100.0
OUTER WEST	42.4	2.1	1.1	18.1	2.0	0.4	0.4	**33.5**	0.0	0.1	100.0
OUTER SOUTH EAST	7.7	10.8	30.6	0.5	0.1	0.1	9.0	0.0	**40.6**	0.6	100.0
PENINSULA	7.2	6.0	27.4	0.4	0.1	0.1	1.0	0.1	0.2	**57.6**	100.0

Who Takes Each Region's Jobs?

Table 5 shows the source of each region's workers. Again, the diagonal provides a direct measure of the way that workers have matched regional jobs and regional residences. On this measure, the Core is the least self-contained, as it draws workers from many regions. In contrast, the outer suburban regions record high levels of self-containment; for example, 80 per cent of the jobs in the Peninsula region are taken by workers who live in that region.

TABLE 5 SHARE OF WORKERS FROM RESIDENT REGIONS (%), MELBOURNE 1996

	WORK REGION										
RESIDENTIAL REGION	CORE	INNER EAST	INNER SOUTH EAST	INNER NORTH/INNER WEST	OUTER NORTH	NORTH EAST CORRIDOR	OUTER EAST	OUTER WEST	OUTER SOUTH EAST	PENIN.	TOTAL
CORE	**33.6**	7.5	2.7	14.3	8.8	7.3	1.7	9.6	0.7	0.8	16.9
INNER EAST	24.6	**54.2**	15.7	5.8	5.3	12.1	16.9	2.9	2.6	1.7	24.4
INNER SOUTH EAST	7.5	17.1	**65.2**	1.4	0.9	1.1	8.1	1.3	14.5	15.5	16.9
INNER NORTH/INNER WEST	15.9	1.8	0.9	**49.6**	23.2	7.0	0.6	18.8	0.2	0.2	13.0
OUTER NORTH	3.9	0.8	0.3	13.8	**45.8**	8.8	0.3	1.6	0.1	0.1	4.8
NORTH EAST CORRIDOR	5.2	3.0	0.6	7.8	12.4	**60.2**	1.3	0.6	0.2	0.1	5.8
OUTER EAST	4.6	13.6	5.9	1.2	1.1	2.9	**68.9**	0.6	5.8	0.6	10.5
OUTER WEST	3.9	0.4	0.3	6.1	2.3	0.5	0.2	**64.3**	0.1	0.1	3.5
OUTER SOUTH EAST	0.3	0.7	2.7	0.1	0.0	0.0	1.6	0.0	**75.2**	0.4	1.3
PENINSULA	0.6	1.0	5.7	0.1	0.1	0.1	0.4	0.2	0.7	**80.6**	3.1
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Changes Over the Past Decade

Tables 6 and Table 7 provide a perspective on change from 1986 to 1996 on both self-containment measures. It is important to remember that this period corresponded to the addition of a quarter of a million new workers and jobs. Yet, the two self-containment measures barely changed. Some small declines were recorded; reflecting the fact that job growth in a number of regions drew labour from further afield.

TABLE 6
PERCENTAGE OF RESIDENTS WHO WORK IN REGION

	1986	1991	1996
CORE	76	76	75.7
INNER EAST	42.8	42.4	42
INNER SOUTH EAST	55.8	56.3	56.3
INNER NORTH/INNER WEST	43	43.3	39.7
OUTER NORTH	27.5	29.2	28.9
NORTH EAST CORRIDOR	33.2	31.7	32.5
OUTER EAST	44.9	47.5	47.9
OUTER WEST	32.5	32.6	33.5
OUTER SOUTH EAST	16.8	35.9	40.6
PENINSULA	59.3	60	57.6

Source: ABS Customised Journey-to-Work matrices, 1986, 1991 and 1996.

*Based on movement of persons who live and work in Melbourne only

TABLE 7
PERCENTAGE OF JOBS IN REGION HELD BY RESIDENTS

	1986	1991	1996
CORE	32.5	31.4	33.6
INNER EAST	58.4	56.3	54.2
INNER SOUTH EAST	68.7	67.5	65.2
INNER NORTH/INNER WEST	54.3	53.1	49.6
OUTER NORTH	41.8	43.7	45.8
NORTH EAST CORRIDOR	57.6	61	60.2
OUTER EAST	73.3	73.3	68.9
OUTER WEST	68.1	70.7	64.3
OUTER SOUTH EAST	49.3	79.6	75.2
PENINSULA	79	80.5	80.6

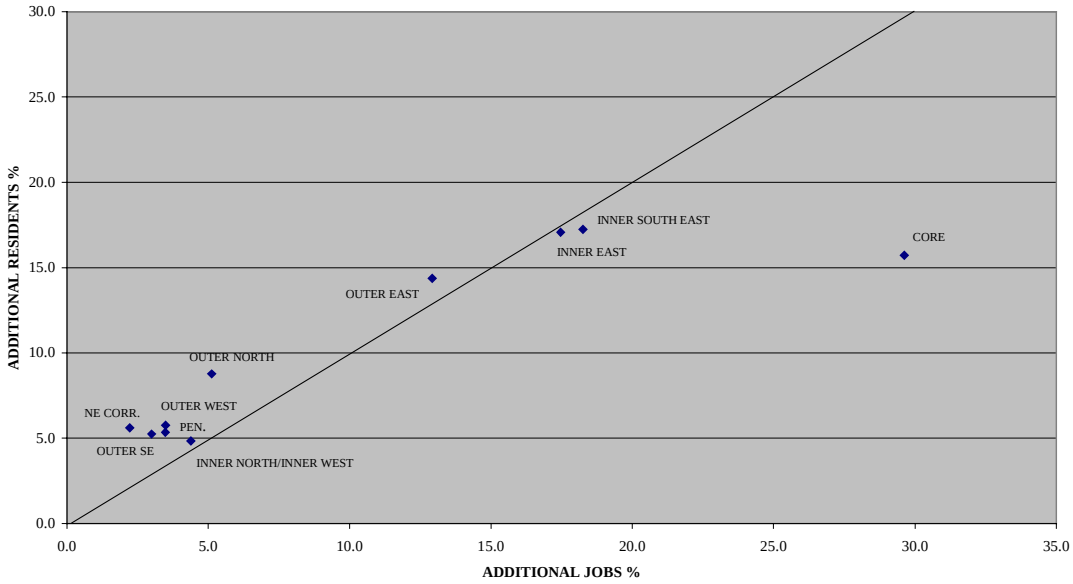
Source: ABS Customised Journey-to-Work matrices, 1986, 1991 and 1996.

*Based on movement of persons who live and work in Melbourne only

One reason why these rates have remained the same is that there have been similar changes in the number of workers and the number of jobs within each region. Graph 1 provides an insight into this aspect for the 1986 -1996 period. It shows the regional shares of additional jobs and additional resident workers[2] in Melbourne.

[2] The data used here refer to employed persons 15 years and over who both reside and work in the Melbourne Statistical Division.

GRAPH 1 SHARE OF ADDITIONAL JOBS AND RESIDENTS BY REGION 1986-1996, MELBOURNE



It is apparent that the relative shares of additional jobs and resident workers in each region are scattered around the diagonal which represents equal levels of change in the two measures. It would seem that a small number of suburban locations are emerging as work intensive (those above the line), while the rest are resident intensive (those below the line). Put simply, with the exception of the Core, the suburbanisation of employment and the suburbanisation of resident workers are following the same broad trend, although there are important differences in particular regions.

For the decade 1986 to 1996, the Core recorded the greatest increase in additional jobs, but ranked third in its share of additional residents, behind the Inner East and Inner South East regions. It received 30 per cent of additional jobs and 16 per cent of additional residents.

Although not applying equally in every region, these observations suggest some strong forces are linking the geography of jobs and the geography of employment within the Melbourne metropolitan area. To begin to understand these forces, the research explored the factors that might account for levels of self-containment within each region in more detail.

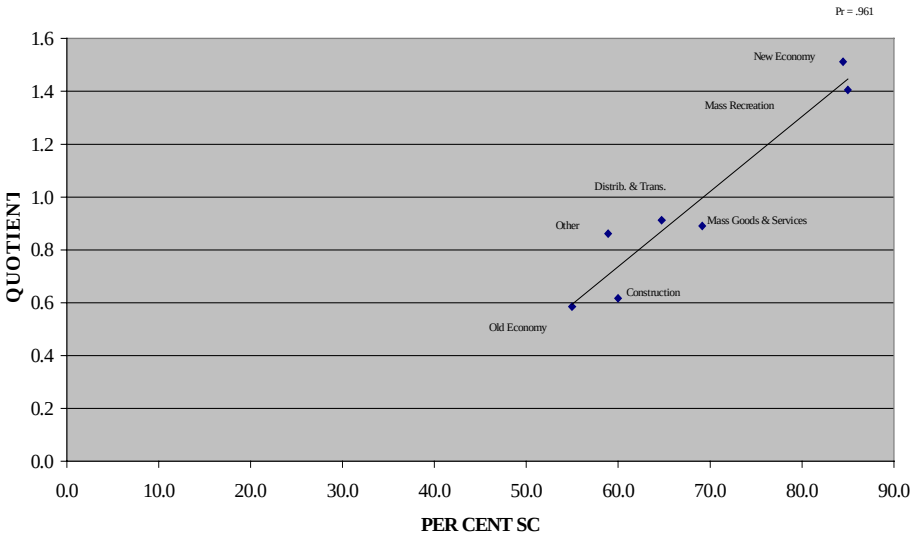
Accounting for Regional Self-Containment Levels

The results discussed above illustrate that there are strong housing market-labour market linkages at the regional level within the metropolitan area, but that they vary from region to region. Accounting for these levels became the first focus of the research. The research explored the association between self-containment and a number of measures of employment, including different types of industry and occupation, and the mix of part-time and full-time work.

Industry Specialisation

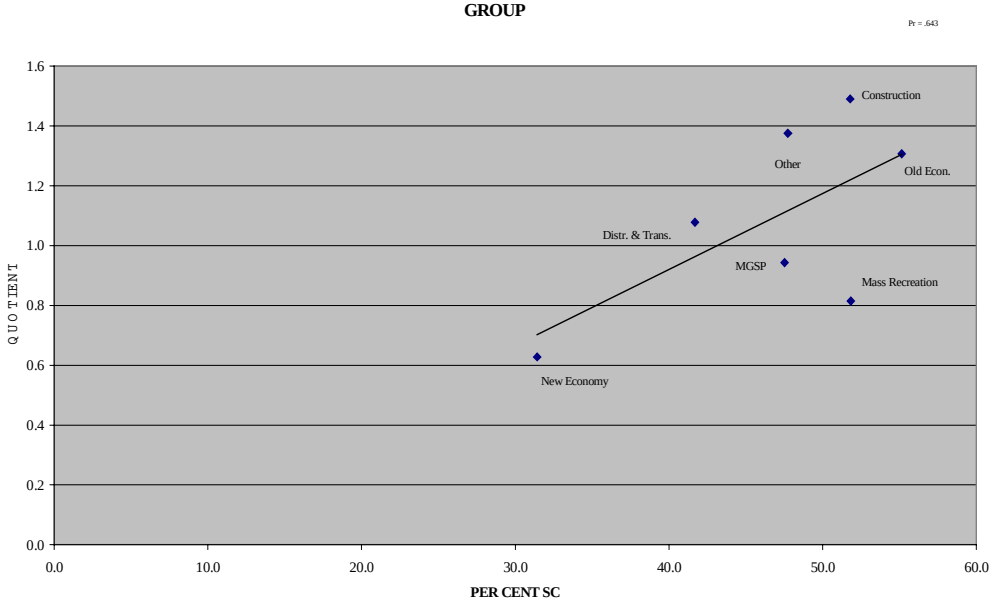
The strongest explanatory factor of regional labour-market self-containment was the level of specialisation of an industry group within a region. The significance of this factor can be seen in the series of graphs 2 to 11. These display the level of regional labour market self-containment of workers in a particular industry and the degree of concentration of that industry within that region as expressed by a location quotient[3]. In all regions there is a strong positive association between the two variables. When studying the figures it is important to note that the order of display of the industry groups varies from region to region. In the Core the new economy group has the highest self-containment and the largest location quotient, and the old economy appears at the bottom of the graph; the pattern is reversed for the Inner South East region. Yet the link between the two measures is the same – as an industry develops a concentration within a region, the workers in that industry seem to have negotiated within the housing market to find housing, so that self-containment levels are high. When the location quotients are low, and hence job opportunities not so apparent, regional housing market-labour market links are weaker.

GRAPH 2 CORE - SELF-CONTAINMENT BY JOB LOCATION QUOTIENT BY INDUSTRY GROUP

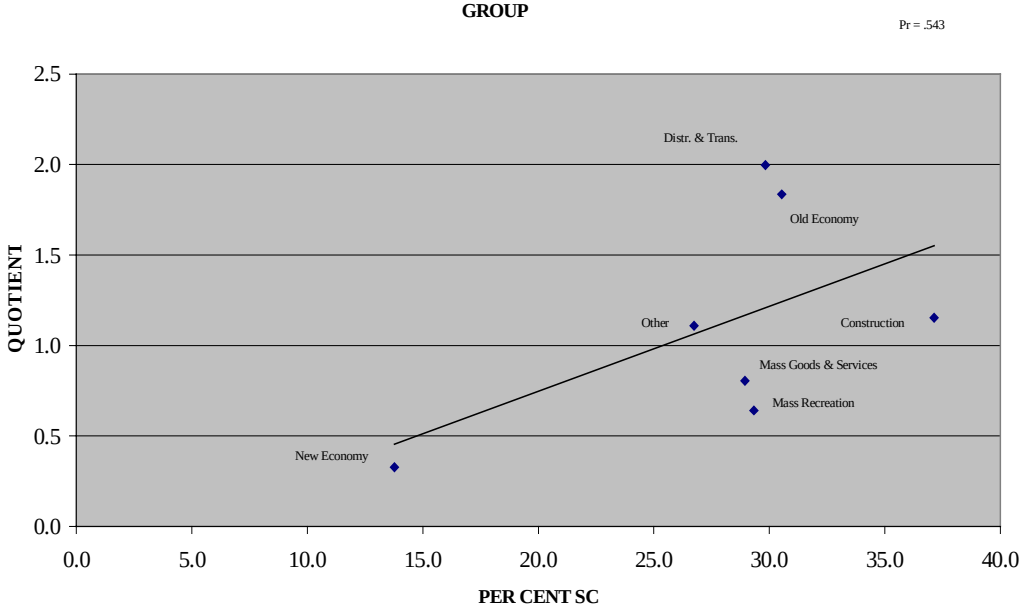


[3] Here, the location quotient can be understood as the extent of regional over or under-representation of an industry group relative to Melbourne overall. For example, if new economy workers constitute 38 per cent of all jobs with Melbourne, but new-economy workers constitute 58 per cent of jobs within a particular region, then, the location quotient for the new economy in that region is 58/38 = 1.5. That is to say, that region is over-represented in the new economy relative to Melbourne overall.

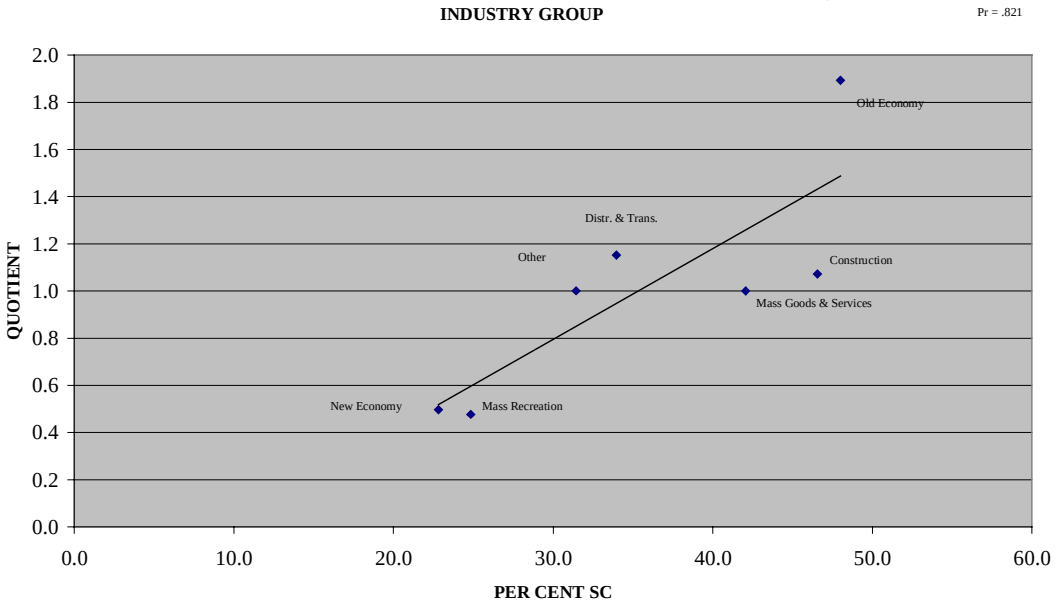
GRAPH 3 OUTER EAST - SELF CONTAINMENT BY JOB LOCATION QUOTIENT BY INDUSTRY GROUP



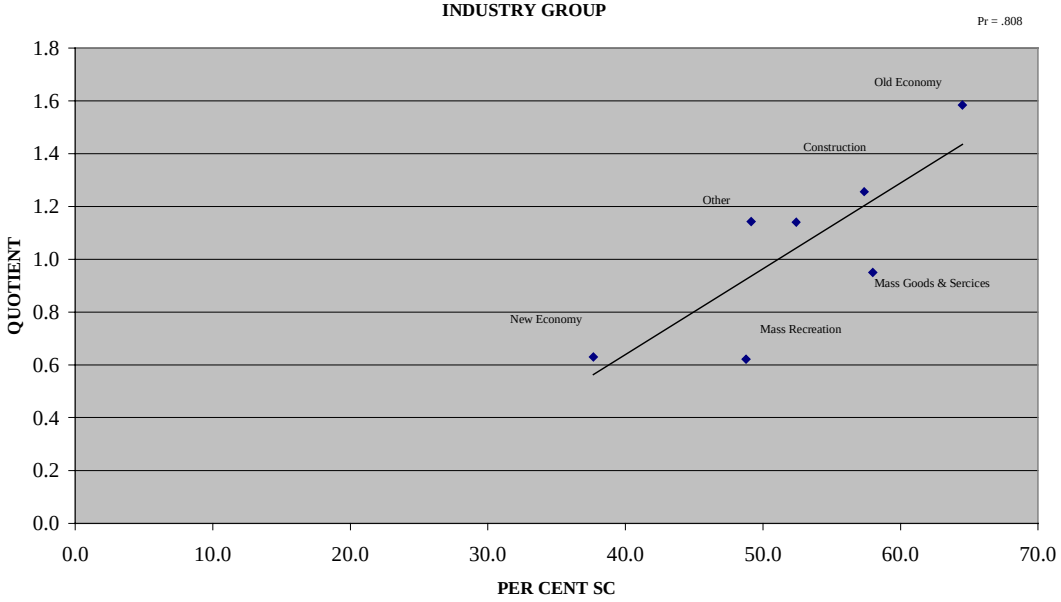
GRAPH 4 OUTER NORTH - SELF-CONTAINMENT BY JOB LOCATION QUOTIENT BY INDUSTRY GROUP



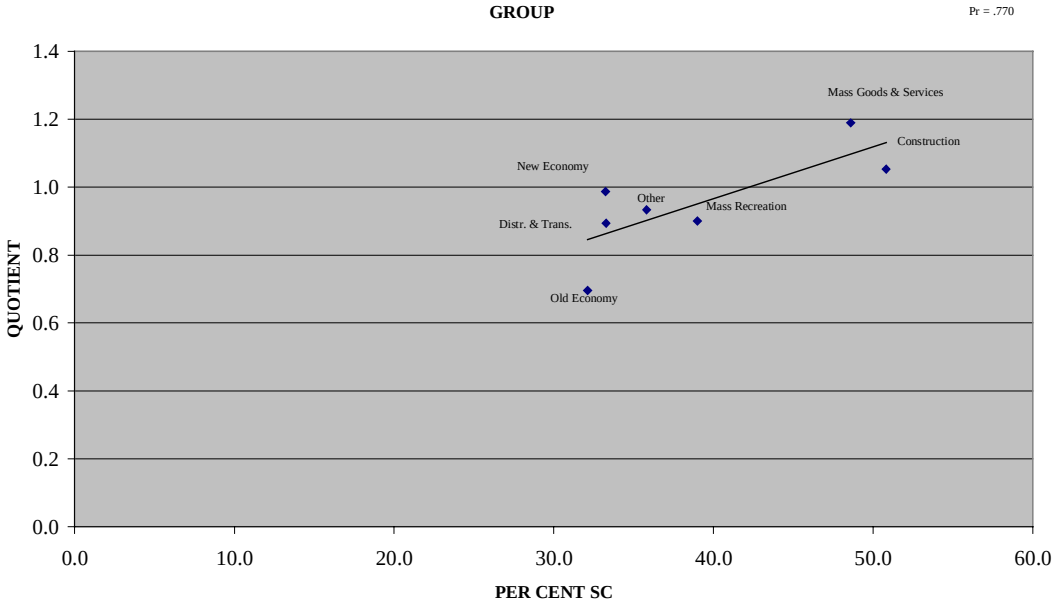
GRAPH 5 INNER NORTH/INNER WEST - SELF-CONTAINMENT BY JOB LOCATION QUOTIENT BY INDUSTRY GROUP



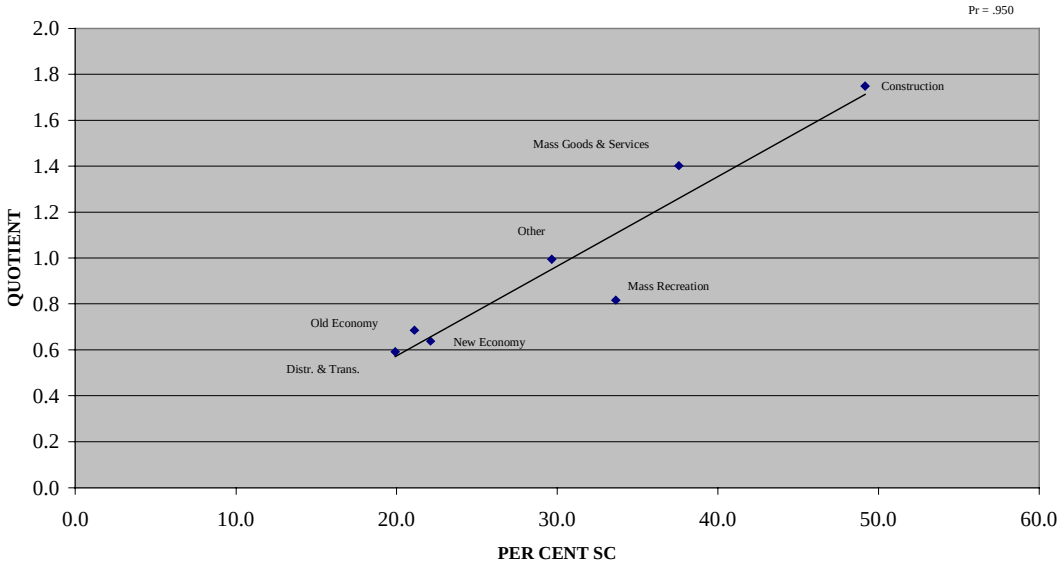
GRAPH 6 INNER SOUTH EAST - SELF CONTAINMENT BY JOB LOCATION QUOTIENT BY INDUSTRY GROUP



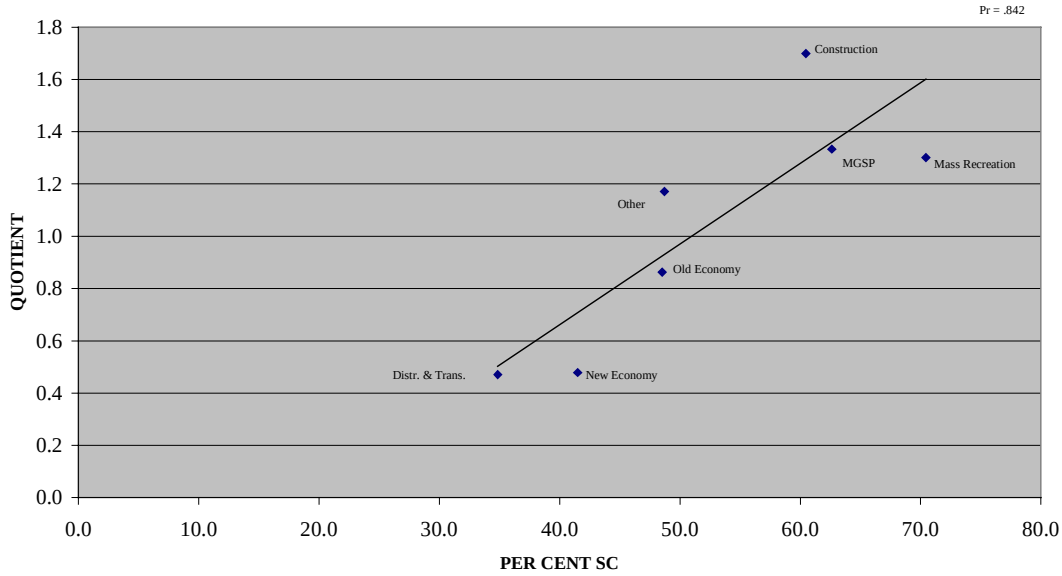
GRAPH 7 INNER EAST - SELF CONTAINMENT BY JOB LOCATION QUOTIENT BY INDUSTRY GROUP



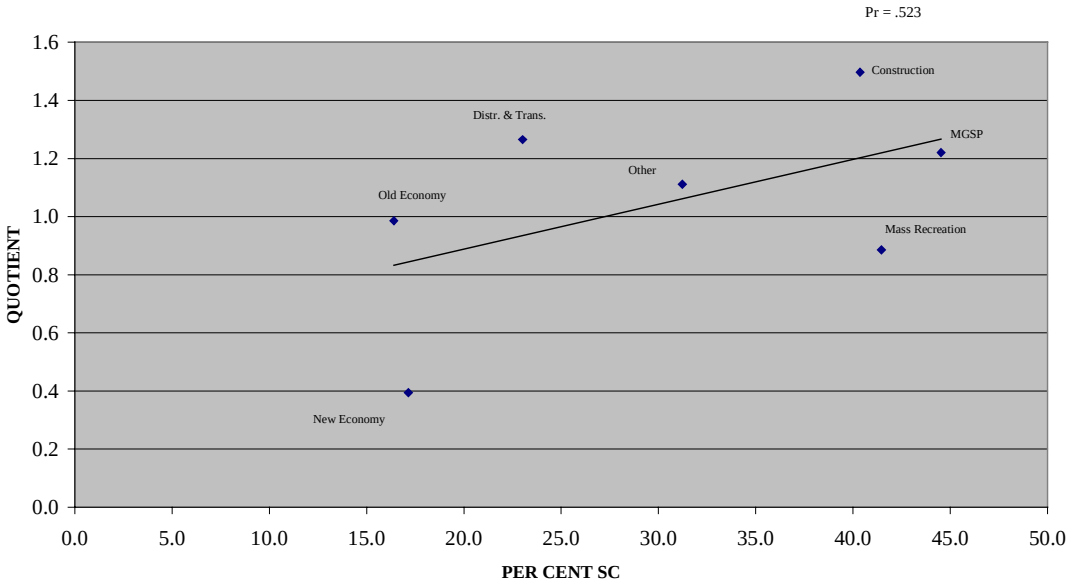
GRAPH 8 NORTH EAST CORRIDOR - SELF CONTAINMENT BY JOB LOCATION QUOTIENT BY INDUSTRY GROUP



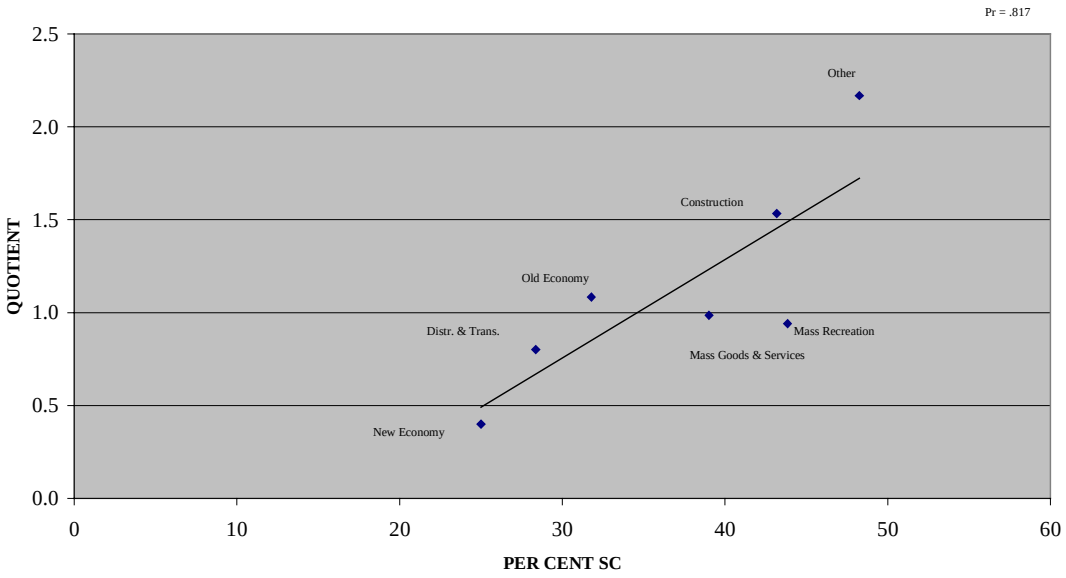
GRAPH 9 PENINSULA - SELF CONTAINMENT BY JOB LOCATION QUOTIENT BY INDUSTRY GROUP



GRAPH 10 OUTER WEST - SELF-CONTAINMENT BY JOB LOCATION QUOTIENT BY INDUSTRY GROUP



GRAPH 11 OUTER SOUTH EAST - SELF CONTAINMENT BY JOB LOCATION QUOTIENT BY INDUSTRY GROUP



This information implies that the presence of job concentrations (like the new economy in the Core and the old economy in the Inner South East) is reflected in the residential choice of workers, providing strong initial evidence that the geography of employment influences metropolitan development.

Type of Industry

Apart from industry specialisation, the type of industry also influences the level of regional self-containment. The data displayed in Table 8 shows that in industry groups like the old economy, and especially in mass goods and services provision, the share of a region's jobs taken by regional residents is generally higher than in other groups. This outcome shows the effect of social sorting within both the job and housing markets. In effect, workers in lower-paid industries are most likely to reside in lower-cost suburban regions.

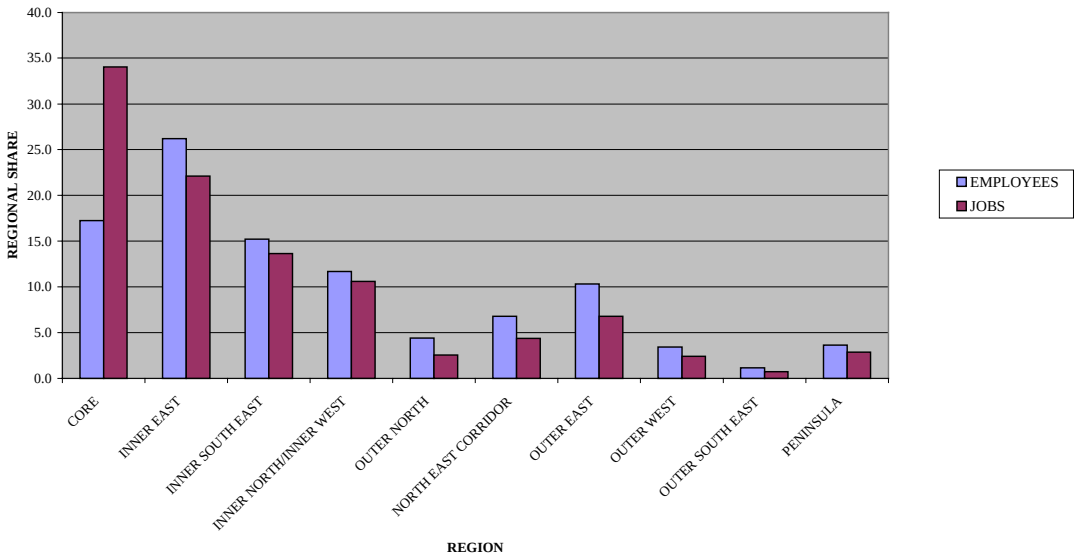
TABLE 8 PERSONS WHO RESIDE AND WORK IN SAME REGION BY INDUSTRY GROUP, MELBOURNE 1996

	NEW ECONOMY	DISTR. & TRANS.	OLD ECONOMY	MASS GOODS & SERVICES PROVISION	CONSTR.	MASS REC.	OTHER	Total
CORE	30.0	7.6	6.6	33.3	2.1	12.0	8.5	100.0
INNER EAST	20.8	7.4	6.8	44.3	4.8	6.2	9.7	100.0
INNER SOUTH EAST	12.4	10.5	21.7	33.0	5.6	4.3	12.4	100.0
INNER NORTH/INNER WEST	9.7	10.7	25.6	33.9	5.7	3.4	11.0	100.0
OUTER NORTH	7.9	12.8	22.1	32.5	6.9	4.6	13.3	100.0
NORTH EAST CORRIDOR	14.3	5.5	6.3	48.4	8.6	5.9	10.9	100.0
OUTER EAST	12.9	9.3	15.5	34.7	7.1	5.5	14.9	100.0
OUTER WEST	8.9	9.5	8.0	46.3	7.0	6.9	13.4	100.0
OUTER SOUTH EAST	9.0	8.5	12.7	31.0	7.5	5.3	26.1	100.0
PENINSULA	10.4	4.8	9.9	46.3	7.6	8.7	12.3	100.0
TOTAL	18.2	8.6	13.1	37.0	5.0	7.0	11.1	100.0

Source: ABS, Customised Journey-to-work matrix, 1996 Census.

The home-work links of employees in the mass goods and services group illustrate that outcome. The activities within this category (See Appendix B) are related in large part to the routine needs of a local or regional population, so that the job opportunities are likely to be dispersed in association with the pattern of population. This provides opportunities for regional residents to find regional jobs, as can be seen in Chart 1. The fit between the distribution of jobs and the distribution of employees is a very close one, except in the Core region. The weaker match in this case probably reflects the fact that the average employee within this activity is unable to pay the cost of housing in the Core region.

CHART 1 RESIDENTIAL AND WORKPLACE DISTRIBUTION OF MASS GOODS AND SERVICES PROVISION EMPLOYEES BY REGION, MELBOURNE 1996



Job Growth

The link between jobs in the mass goods and services category of employment (which is influenced by population growth) and self-containment suggests that regional job growth itself could influence self-containment. The results of the research confirm that outcome. Table 9 shows the percentage change in jobs and the percentage change in the number of persons living and working within a region between 1986 and 1996.

TABLE 9 SELF-CONTAINMENT CHANGE BY JOB GROWTH 1986 TO 1996, MELBOURNE

	CHANGE IN SELF-CONTAINMENT 1986-1996 ** %	JOB CHANGE 1986-1996 %
CORE	23.5	19.4
INNER EAST	14.9	23.9
INNER SOUTH EAST	28.3	35.3
INNER NORTH/INNER WEST	0.2	9.6
OUTER NORTH	69.1	54.2
NORTH EAST CORRIDOR	22.8	17.4
OUTER EAST	49.1	58.4
OUTER WEST	57.3	66.6
OUTER SOUTH EAST	1678.6	1065.5
PENINSULA	52.9	49.9

Source: ABS, 1986 and 1996 Censuses

**Change in Number of Persons Who Live and work in Same Region 1986-1996, as a Percentage of Number of Persons Living and Working in Same Region in 1986.

This data illustrates that the regions where job growth has been rapid have also been regions where there have been large increases in the number of workers who both live and work in the region. This shows further evidence of strong links between job location and residential location decisions.

Part-time Work

The research also explored differences in regional self-containment between workers employed part-time and full-time. Table 10 shows this information. It is commonly observed that part-time workers have shorter trips to work, so that part-time employment might be more regionally self-contained. This observation is consistent with the Melbourne experience, especially in the suburban regions. So, for example, the self-containment levels in the Outer East labour market for part-time workers are all higher than for full-time workers. This is less apparent for the Core. There, the levels of self-containment for individual industry sectors are not so different: for new-economy workers, for example, the difference is just 2 per cent between the less than 16 hour group and the more than 34 hours group. The distribution and transport and mass goods and services groups sectors show similar results. This suggests that the work-residence links in the Core have a number of distinctive characteristics, which will be explored in a following section of the report.

It is also important to note here that differences in industry group seem to be a more important influence on the level of self-containment than hours alone. For the under 16 hours group in the Core, for example, there is a 30 percentage point difference in self-containment levels; the largest difference due to hours is 8 percentage points. A similar observation applies in a number of the suburban regions.

TABLE 10 REGIONAL SELF CONTAINMENT: INDUSTRY BY WEEKLY HOURS WORKED (%) MELBOUNRE 1996

	CORE	INNER EAST	INNER SOUTH EAST	INNER NORTH/INNER WEST	OUTER NORTH	NORTH EAST CORRIDOR	OUTER EAST	OUTER WEST	OUTER SOUTH EAST	PENINSULA	MELB. AVERAGE
<16 HRS											
NEW ECONOMY <16 HRS	81.0	48.5	45.2	28.3	19.8	38.0	42.6	27.1	48.6	52.2	43.1
DISTRIBUTION AND TRANSPORT <16 HRS	63.7	37.2	53.7	36.7	41.0	27.2	52.3	35.5	43.1	45.2	43.6
OLD ECONOMY <16 HRS	59.1	44.9	67.8	48.5	35.2	43.9	60.1	26.6	46.9	62.1	49.5
MASS GOODS AND SERVICES PROVISION <16 HRS	69.8	61.8	68.3	52.9	41.0	49.8	61.3	59.6	54.0	67.8	58.6
CONSTRUCTION <16 HRS	51.4	58.2	58.5	53.1	43.8	61.2	57.0	50.5	53.5	64.3	55.1
MASS RECREATION <16 HRS	78.6	49.2	56.5	30.8	37.2	46.2	63.2	55.3	49.1	69.6	53.6
16-34 HRS											
NEW ECONOMY 16-34 HRS	83.1	46.2	49.1	27.8	21.1	34.5	41.5	23.7	43.4	52.8	42.3
DISTRIBUTION AND TRANSPORT 16-34 HRS	57.0	39.1	55.6	36.1	30.1	26.9	48.8	28.7	35.3	41.1	39.9
OLD ECONOMY 16-34 HRS	58.3	39.8	67.8	50.4	35.2	27.6	58.0	20.0	37.6	48.8	44.3
MASS GOODS AND SERVICES PROVISION 16-34 HRS	68.2	52.9	61.3	44.9	32.4	41.4	51.0	46.8	39.0	61.1	49.9
CONSTRUCTION 16-34 HRS	54.7	50.8	51.1	46.7	43.5	50.4	46.7	43.2	37.1	50.8	47.5
MASS RECREATION 16-34 HRS	82.3	42.3	52.2	26.3	32.4	35.4	54.5	42.5	44.1	73.0	48.5
>34 HRS											
NEW ECONOMY >34 HRS	83.9	28.8	34.1	20.9	11.6	17.7	27.5	14.3	17.7	35.3	29.2
DISTRIBUTION AND TRANSPORT >34 HRS	63.0	30.6	49.4	31.8	27.5	17.3	38.0	20.3	23.7	30.5	33.2
OLD ECONOMY >34 HRS	54.2	30.1	63.9	47.8	29.7	18.8	54.1	15.1	30.1	47.3	39.1
MASS GOODS AND SERVICES PROVISION >34 HRS	68.7	41.7	52.3	37.2	23.4	31.8	40.2	38.6	33.3	60.6	42.8
CONSTRUCTION >34 HRS	51.1	39.1	44.7	36.3	27.0	36.8	37.8	30.6	28.7	44.0	37.6
MASS RECREATION >34 HRS	86.1	31.0	42.2	20.9	23.1	24.6	41.2	32.4	39.9	68.6	41.0

Source: ABS, Customised Journey-to-Work matrix, 1996 Census.

Taken together, the information discussed in this section shows that the number and type of jobs plays a very big role in shaping the job-housing links within Melbourne's regions. It also suggests that workers involved in the job housing links have to be able to purchase or rent housing in a variety of circumstances, but especially within regions that have the jobs they are seeking. What this suggests is that the regional self-containment of a labour market is the result of a sorting process within housing and labour markets, where workers in particular industries seek out housing in places where those industries provide jobs consistent with their own skills and education, and subject to their ability to pay for housing.

If this process of social and industrial workplace sorting is the key to the self-containment measures displayed above, then it provides a new way to view metropolitan development, and recognises that 'urban sprawl' is in fact a highly ordered process. In addition, it suggests that the management of metropolitan development needs to draw upon an understanding of the location of jobs and requires more than actions designed to change the pattern of population density and growth alone.

Residential Re-location as a Labour Market-Housing Market Link

The above claim could be made even more firmly if it were possible to show that the pattern of residential re-location between regions reflects the industry specialisation of jobs at the regional level and, in turn, regional self-containment. The information at hand does not show that work location necessarily shapes home location and it provides no insight into individual worker decision making. Nevertheless, what can be explored is the extent to which aggregate patterns of residential movement reflect aggregate patterns of job location and self-containment.

To identify this outcome, Table 11 displays the correlation coefficients between regional measures of regional industry specialisation and residential net gain and loss.

TABLE 11 CORRELATION COEFFICIENTS BETWEEN REGIONAL RESIDENTIAL NET GAIN/LOSS 1991-1996 AND 1. REGIONAL INDUSTRY SPECIALISATION 1996 AND 2. REGIONAL SELF-CONTAINMENT 1996, MELBOURNE

	1. REG. IND. SPECIALISATION	2.REG. SELF-CONTAINMENT
CORE	0.915	0.945
INNER EAST	0.018	-0.407
INNER SOUTH EAST	0.869	0.493
INNER NORTH/INNER WEST	0.786	0.386
OUTER NORTH	0.709	0.398
NORTH EAST CORRIDOR	0.161	-0.111
OUTER EAST	0.441	-0.099
OUTER WEST	0.127	-0.729
OUTER SOUTH EAST	0.179	-0.37
PENINSULA	-0.115	-0.331

Sources: ABS, Customised Journey-to Work matrix, 1996 Census; Customised Internal Migration matrix, 1996 Census

This data makes it possible to ascertain whether regional industry specialisation is also associated with a net inward residential movement of persons working in that industry group. This relationship was tested by plotting the regional residential net gain/loss for each industry group against regional location quotients (industry specialisation) and against regional self-containment rates for each industry group. The columns of data Table 11 show the Pearson r correlations for each of these relationships.[4]

The data show a very strong association in the Core between residential net gain/loss and both self-containment and industry specialisation, respectively. This means that, for the Core, residential re-location is associated with that region's industry specialisations and the strength of the local labour market-housing market links for those specialised industry groups. These relationships are stronger in the Core than in any other region. This suggests that the new economy (which has been central to economic change in the Core) is reshaping both residential re-location decisions and home-work links in a way that distinguishes the Core from the broader metropolitan context.

In the remaining regions, the strength of relationship of residential net gain/loss to industry specialisation, and residential net gain/loss to self-containment, respectively, varies. Nevertheless, a general pattern emerges which suggests that the relationship between residential re-location and the strength of regional job-housing links is stronger in the inner regions than in the outer (the Inner East and Outer North being exceptions to this pattern). This means that the net effect of residential re-location upon these inner regions is to reinforce the positive relationship between industry specialisation and self-containment. By contrast, in some of the outer metropolitan regions, the effect of residential re-location seems to be a weakening of job-housing links, seen in the negative correlation found between self-containment and residential net gain/loss in some of these regions, for example in the Outer West.

The differences observed between the more established inner and the newer outer suburbs suggest that residential movement to the inner regions more closely reflects

[4] In Table 11, each of the variables used to produce the correlation coefficients was a quotient -- the degree to which each variable is either over or under-represented in a region compared with either the measure for the region as a whole or, in the case of industry group, Melbourne overall.

the regionally specific job opportunities there, while some residential movement to the outer suburbs may be motivated by the availability of relatively inexpensive housing, open space and other lifestyle options associated with fringe development. The more that residential movement to the outer suburbs is motivated by such considerations and not by job links, the weaker the regional job-housing links (self-containment rates) are likely to be, at least initially.

While it appears that industry specialisation and residential re-location help determine[5] self-containment in inner regions in a way that they do not in the outer regions, the remoteness of a region may also influence the strength of job-housing links in outer regions in ways that do not apply in the inner metropolitan area. In outer regions, the distance to alternative job locations may account for high regional self-containment.

Overall, it is clear that residential re-location can influence the strength of regional job-housing links. However, a basic factor determining regional self-containment is the degree of industry specialisation. It can be tentatively concluded that residential re-location influences the regional self-containment of an industry group by strengthening or weakening regional industry specialisation or the regional ratio of jobs to residents in specialised industries. Table 12 provides data to illustrate this idea.

This table explores the relationship between the degree to which industry groups are under or over-represented in a region with i/ the degree to which the region experienced a net gain or loss of residents through residential re-location (1991-1996) and ii/ the degree to which each industry group is either more or less regionally self-contained. In many cases, it was found that residential re-location mirrored an existing positive relationship within a region between relatively high self-containment and specialisation in a particular industry group. For example, in the Core region a net residential gain of new-economy workers is associated with regional over-representation of the new economy and high self-containment rates for new-economy workers. Similarly, in the Inner East, where there was a net residential gain of mass goods and services workers, mass goods and services is over-represented relative to Melbourne overall and self-containment for this industry group is high. The Inner North/Inner West provides a further and instructive example. In this case, there is a net residential gain of old-economy workers, some of which had come from the Core region. This gain of old-economy workers was associated with an over-representation in the old-economy and a high self-containment rate for that industry group.

It is also possible to identify cases where net residential loss is associated with industry under-representation relative to Melbourne and low self-containment. The figures relating to old-economy workers in the Core region provide a clear example. Taken together, these results show that the geography of employment is tightly connected to residential location patterns, and that changes in employment (by type and number) has a powerful effect on change in the residential location of particular workers.

[5] It is understood that correlations say nothing about cause and effect.

TABLE 12 INDICES OF REGIONAL INDUSTRY OVER/UNDER REPRESENTATION (SPECIALISATION) 1996, RESIDENTIAL NET GAIN/LOSS 1991-1996, AND SELF-CONTAINMENT 1996 BY INDUSTRY GROUP

CORE	RESIDENTIAL RELOCATION	INDUSTRY SPECIALISATION	SELF CONT.
NEW ECONOMY	1.9	1.5	1.1
DISTRIBUTION AND TRANSPORT	0.7	0.9	0.9
OLD ECONOMY	-0.4	0.6	0.7
MASS GOODS & SERVICES PROV.	0.7	0.9	0.9
CONSTRUCTION	0.1	0.6	0.8
MASS RECREATION	3.1	1.4	1.1
OTHER	0.4	0.9	0.8
INNER EAST	RESIDENTIAL RELOCATION	INDUSTRY SPECIALISATION	SELF CONT.
NEW ECONOMY	9.4	1.0	0.8
DISTRIBUTION AND TRANSPORT	-1.2	0.9	0.8
OLD ECONOMY	-0.3	0.7	0.8
MASS GOODS & SERVICES PROV.	1.2	1.2	1.2
CONSTRUCTION	-10.6	1.1	1.2
MASS RECREATION	-7.9	0.9	0.9
OTHER	-5.9	0.9	0.9
INNER SOUTH EAST	RESIDENTIAL RELOCATION	INDUSTRY SPECIALISATION	SELF CONT.
NEW ECONOMY	0.3	0.6	0.7
DISTRIBUTION AND TRANSPORT	1.4	1.1	0.9
OLD ECONOMY	3.5	1.6	1.1
MASS GOODS & SERVICES PROV.	0.3	0.9	1
CONSTRUCTION	0.8	1.3	1
MASS RECREATION	-1.8	0.6	0.9
OTHER	1.2	1.1	0.9
INNER NTH/INNER W.	RESIDENTIAL RELOCATION	INDUSTRY SPECIALISATION	SELF CONT.
NEW ECONOMY	-2.1	0.5	0.6
DISTRIBUTION AND TRANSPORT	-1.5	1.2	0.9
OLD ECONOMY	1.5	1.9	1.2
MASS GOODS & SERVICES PROV.	-1.7	1	1.1
CONSTRUCTION	-1.8	1.1	1.2
MASS RECREATION	-1.2	0.5	0.6
OTHER	-0.7	1	0.8
OUTER NORTH	RESIDENTIAL RELOCATION	INDUSTRY SPECIALISATION	SELF CONT.
NEW ECONOMY	0.7	0.3	0.5
DISTRIBUTION AND TRANSPORT	1.1	2	1
OLD ECONOMY	1.7	1.8	1.1
MASS GOODS & SERVICES PROV.	0.7	0.8	1
CONSTRUCTION	1.4	1.2	1.3
MASS RECREATION	0	0.6	1
OTHER	1.1	1.1	0.9
NORTH EAST CORRIDOR	RESIDENTIAL RELOCATION	INDUSTRY SPECIALISATION	SELF CONT.
NEW ECONOMY	0	0.6	0.7
DISTRIBUTION AND TRANSPORT	1.5	0.6	0.6
OLD ECONOMY	1.9	0.7	0.6
MASS GOODS & SERVICES PROV.	0.3	1.4	1.2
CONSTRUCTION	1.1	1.7	1.5
MASS RECREATION	-21.6	0.8	1
OTHER	-2.5	1	0.9
OUTER EAST	RESIDENTIAL RELOCATION	INDUSTRY SPECIALISATION	SELF CONT.
NEW ECONOMY	-1.1	0.6	0.7
DISTRIBUTION AND TRANSPORT	1.2	1.1	0.9
OLD ECONOMY	4.6	1.3	1.2
MASS GOODS & SERVICES PROV.	-1.7	0.9	1
CONSTRUCTION	-1.6	1.5	1.1
MASS RECREATION	-16	0.8	1.1
OTHER	0	1.4	1

TABLE 12 CONTINUED:

OUTER WEST	RESIDENTIAL RELOCATION	INDUSTRY SPECIALISATION	SELF CONT.
NEW ECONOMY	1.2	0.4	0.5
DISTRIBUTION AND TRANSPORT	1.8	1.3	0.7
OLD ECONOMY	2.1	1	0.5
MASS GOODS & SERVICES PROV.	0.4	1.2	1.3
CONSTRUCTION	1.3	1.5	1.2
MASS RECREATION	-0.1	0.9	1.2
OTHER	0.7	1.1	0.9
OUTER SOUTH EAST	RESIDENTIAL RELOCATION	INDUSTRY SPECIALISATION	SELF CONT.
NEW ECONOMY	1.2	0.4	0.6
DISTRIBUTION AND TRANSPORT	2	0.8	0.7
OLD ECONOMY	2.8	1.1	0.8
MASS GOODS & SERVICES PROV.	0.2	1	1
CONSTRUCTION	2.3	1.5	1.1
MASS RECREATION	-3.9	0.9	1.1
OTHER	1.2	2.2	1.2
PENINSULA	RESIDENTIAL RELOCATION	INDUSTRY SPECIALISATION	SELF CONT.
NEW ECONOMY	0.6	0.5	0.7
DISTRIBUTION AND TRANSPORT	0.4	0.5	0.6
OLD ECONOMY	1.2	0.9	0.8
MASS GOODS & SERVICES PROV.	1.9	1.3	1.1
CONSTRUCTION	0.3	1.7	1
MASS RECREATION	-1.6	1.3	1.2
OTHER	1	1.2	0.8

Source: ABS Customised Journey-to-Work matrix, 1996 Census; Customised Internal Migration matrix, 1991 Census.

These are the broad results of our work. However, they mask some revealing complexities in the way houses and jobs are connected in different parts of metropolitan areas, and the following section explores those special features in more detail.

The links between self-containment, job specialisation and type and residential re-location mean that the overall picture of stability in regional self-containment displayed in tables 6 and 7 above must be interpreted with some caution. These figures suggested regional housing-market and labour-market links remained steady over time. What now appears to be the case is that there have been changes in jobs and in the residents of regions as workers adjust to new opportunities. It is striking that regional self-containment levels remain virtually unchanged in face of the great change in jobs and housing demand. Such stability indicates stronger links in the way that housing markets and labour markets operate than is often recognised.

To develop a better understanding of these linkages, two detailed regional analyses were carried out, the findings of which can be found in the project's final report.

SUMMARY AND IMPLICATIONS

This project has found that there are strong and stable geographic links between housing markets and labour markets within the Melbourne metropolitan area. These links are of two kinds. First, most connections between job and house are made within a region; if people travel outside their own region for work, it is often to an adjoining region. Second, people move residence and these moves, too, are mostly either circumscribed within the region where people already live, or involve a move to an adjoining region. Closer study of these aspects shows that the number of jobs and the concentration of particular types of jobs within a region have a significant impact on the strength of housing market-labour market links. It is also apparent that the linkage between jobs and houses is in part shaped by the residential re-location of people in particular industries and occupations from one region to another, often involving a move toward regions where those industries or occupations are particularly prominent. These regional scale linkages attest to the importance of the geography of employment as an influence upon the structure of a metropolitan area, and the need for metropolitan policy to incorporate employment matters into the creation of policy on housing location.

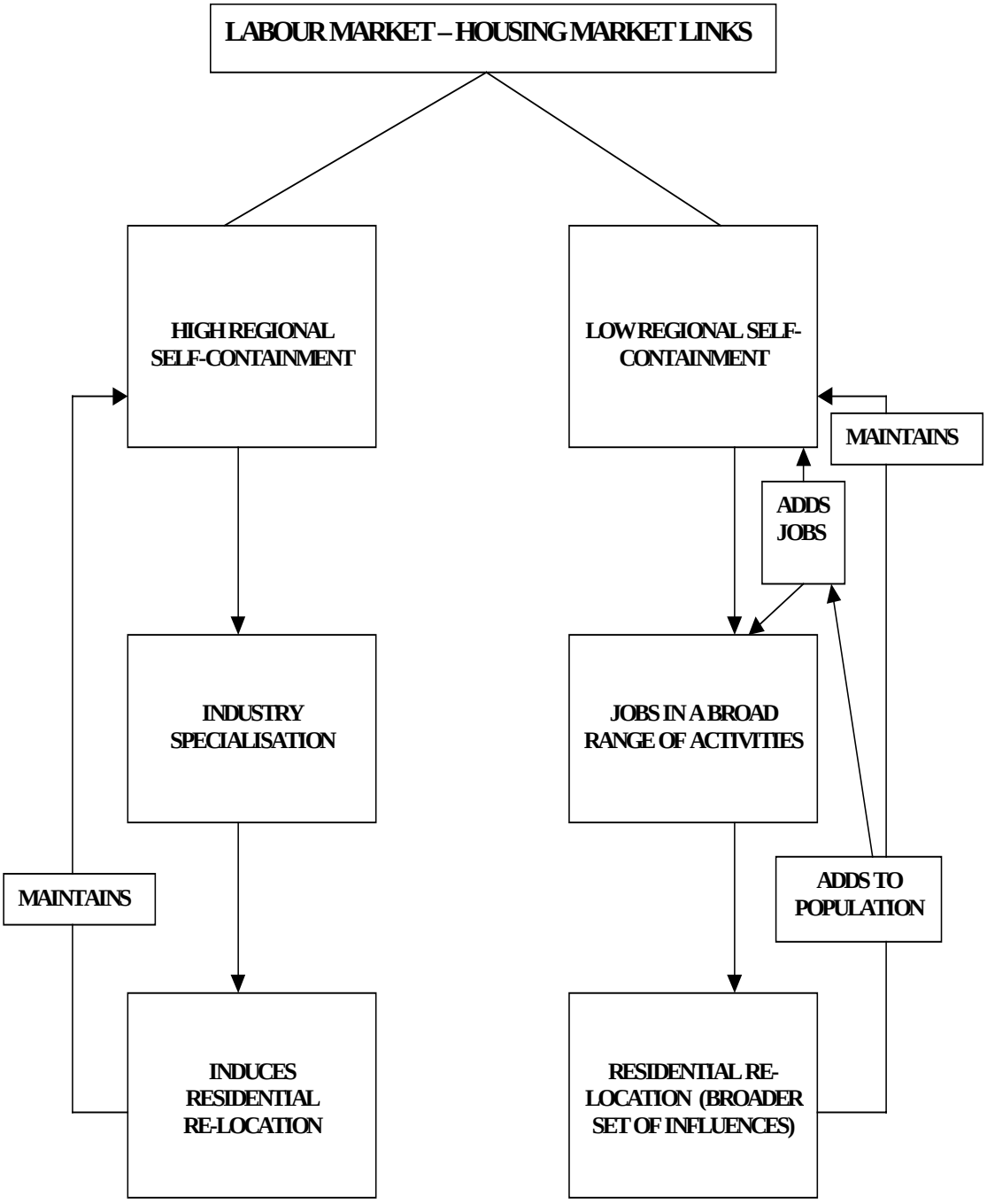
The strength and direction of the change in these linkages varies across a metropolitan area, primarily because the number and mix of jobs varies. This means there are two very general processes that are shaping and reshaping the structure of a metropolitan region. As outlined in Diagram 1. On the one hand, there are regions that have high self-containment. These usually have a concentration of a particular type of work, which induces residential re-location of workers in that activity, which maintains the self-containment ratio. This suggests *people follow jobs*, and in the case study on Melbourne this could be seen in the location of jobs and employees in the new economy in the Core and in the old economy in some middle suburbs. At the same time, there are regions that have lower self containment, and these often have fewer jobs, and a diversity of jobs; residential relocation occurs here also, but it is not as obviously shaped by the geography of employment. These are regions where population growth is running ahead of job growth. However, in these cases the population growth induces expansion in a range of population serving jobs. Local jobs, therefore, become available and are largely taken by regional residents, so that over time the self-containment level will begin to rise.

These results illustrate that the location and type of employment is a critical influence upon the structure and organisation of a metropolitan area, and the operation of housing markets within it. That suggests information on employment location should play a very significant role in the development of metropolitan planning strategies, and less attention paid to the location and density of housing.

DIAGRAM 1. MELBOURNE LABOUR MARKET-HOUSING MARKET LINKS

‘PEOPLE FOLLOW JOBS’ **‘JOBS FOLLOW PEOPLE’**

***NEW-ECONOMY IN CORE** ***MASS SERVICES IN OUTER**
***OLD ECONOMY IN MIDDLE SUBURBS** **REGIONS**



APPENDIX A: COMPOSITION OF CUSTOMISED REGIONS 1996 AND 1986/1991

1996	1986 and 1991
CORE	**CORE**
Melbourne (C) - Inner	BRUNSWICK (C)
Melbourne (C) - Remainder	COLLINGWOOD (C)
Port Phillip (C) - St Kilda	ESSENDON (C)
Port Phillip (C) - West	FITZROY (C)
Stonnington (C) - Prahran	FOOTSCRAY (C)
Yarra (C) - North	HAWTHORN (C)
Yarra (C) - Richmond	KEW (C)
Hobsons Bay (C) - Williamstown	MELBOURNE (C) - INNER
Maribyrnong (C)	MELBOURNE (C) - REMAINDER
Moonee Valley (C) - Essendon	NORTHCOTE (C)
Moreland (C) - Brunswick	PORT MELBOURNE (C)
Darebin (C) - Northcote	PRAHRAN (C)
Boroondara (C) - Hawthorn	RICHMOND (C)
Boroondara (C) - Kew	ST KILDA (C)
	SOUTH MELBOURNE (C)
	WILLIAMSTOWN (C)
INNER EAST	**INNER EAST**
Boroondara (C) - Camberwell N	BOX HILL (C)
Boroondara (C) - Camberwell S	BRIGHTON (C)
Manningham (C) - East	CAMBERWELL (C)
Manningham (C) - West	CAULFIELD (C)
Monash (C) - South-West	DONCASTER AND TEMPLESTOWE(C)
Monash (C) - Waverley East	MALVERN (C)
Monash (C) - Waverley West	NUNAWADING (C)
Whitehorse (C) - Box Hill	OAKLEIGH (C)
Whitehorse (C) - Nunawading E	RINGWOOD (C)
Whitehorse (C) - Nunawading W	SANDRINGHAM (C)
Maroondah (C) - Ringwood	WAVERLEY (C)
Bayside (C) - Brighton	
Bayside (C) - South	
Glen Eira (C) - Caulfield	
Stonnington (C) - Malvern	
INNER SOUTH EAST	**INNER SOUTH EAST**
Glen Eira (C) - South	BERWICK (C)
Kingston (C) - North	CHELSEA (C)
Kingston (C) - South	CRANBOURNE (S)
Gr Dandenong (C) - Dandenong	DANDENONG (C)
Gr Dandenong (C) Bal	FRANKSTON (C)
Casey (C) - Berwick	MOORABBIN (C)
Casey (C) - Cranbourne	MORDIALLOC (C)
Casey (C) - Hallam	SPRINGVALE (C)
Casey (C) - South	
Frankston (C) - East	
Frankston (C) - West	
INNER NORTH/INNER WEST	**INNER NORTH/INNER WEST**
Brimbank (C) - Keilor	ALTONA (C)
Brimbank (C) - Sunshine	BROADMEADOWS (C)
Hobsons Bay (C) - Altona	COBURG (C)
Moonee Valley (C) - West	KEILOR (C)
Moreland (C) - Coburg	PRESTON (C)
Moreland (C) - North	SUNSHINE (C)
Darebin (C) - Preston	
Hume (C) - Broadmeadows	

APPENDIX A **CONTINUED**

OUTER WEST	**OUTER WEST**
Melton (S) - East	MELTON (S)
Melton (S) Bal	WERRIBEE (C)
Wyndham (C) - North-West	
Wyndham (C) - Werribee	
Wyndham (C) Bal	
OUTER NORTH	**OUTER NORTH**
Hume (C) - Craigieburn	BULLA (S)
Hume (C) - Sunbury	WHITTLESEA (C)
Whittlesea (C) - North	
Whittlesea (C) - South	
NORTH EAST CORRIDOR	**NORTH EAST CORRIDOR**
Banyule (C) - Heidelberg	DIAMOND VALLEY (S)
Banyule (C) - North	ELTHAM (S)
Nillumbik (S) - South	HEIDELBERG (C)
Nillumbik (S) - South-West	
Nillumbik (S) Bal	
OUTER EAST	**OUTER EAST**
Knox (C) - North	CROYDON (C)
Knox (C) - South	HEALESVILLE (S)
Maroondah (C) - Croydon	KNOX (C)
Yarra Ranges (S) - Central	LILLYDALE (S)
Yarra Ranges (S) - North	SHERBROOKE (S)
Yarra Ranges (S) - South-West	UPPER YARRA (S) - PT A
	UPPER YARRA (S) - PT B
OUTER SOUTH EAST	**OUTER SOUTH EAST**
Cardinia (S) - North	Pakenham
Cardinia (S) - Pakenham	
Cardinia (S) - South	
PENINSULA	**PENINSULA**
Mornington P sula (S) - East	FLINDERS (S)
Mornington P sula (S) - South	HASTINGS (S)
Mornington P sula (S) - West	MORNINGTON (S)

APPENDIX B: INDUSTRY GROUPINGS

77 Property Services

78 Business Services (**less** 7865 'pest control services', 7866 'cleaning services', 7864 security and investigative services)

73, 74, 75
Finance
Insurance
Services to Finance and Insurance

71 Communication Services
24 Printing Publishing and Recorded Media

283, 284 Photographic and Scientific Equipment Manufacturing,
Electronic Equipment Manufacturing
2543 Medicinal and Pharmaceutical .Manufacturing

36, 37 Electricity and Gas Supply plus Water Supply,
Sewerage and Drainage Services
51,52, 53 Food Retailing,
Personal and Household Good Retailing,
Motor Vehicle Retailing and Services
81, 82 84, 86, 87,
Government Administration
Defence
Education
Health
Community Services

41, 42
General Construction
Construction and Trade Services

57 Accommodation, Cafes, and Restaurants
91, 92, 93 Motion Picture, Radio, and Television Services
Libraries, Museums and the Arts
Sport and Recreation

APPENDIX B CONTINUED:

45, 46, 47	Basic material Wholesaling Machinery and Motor Vehicle Wholesaling Personal and Household Good Wholesaling
61, 62, 63, 64, 65, 66, 67	Road Transport Rail Transport Water Transport Air and Space Transport Other Transport Services to Transport Storage

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21, 22, 23, 25,26,	Food, Beverage and Tobacco Manufacturing Textile Clothing Footwear and Leather Manufacturing Wood and Paper Product Manufacturing Petroleum, Coal, Chemical and Associated Product Manufacturing **(less 2543 Medicinal and Pharmaceutical Manufacturing)** Non-Metalic Mineral Product Manufacturing
27, 28	Metal Product Manufacturing Machinery and Equipment Manufacturing (**less 283, 284 Photographic and Scientific Equipment Manufacturing and Electronic Equipment Manufacturing**)

Other (incl. Not Stated)(also incl. 7865 ‘pest control services’, 7866 ‘cleaning services’, 7864 security and investigative services

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