Explaining Changes in the Social Structure of Employment: The Importance of Geography

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EXPLAINING CHANGES IN THE SOCIAL STRUCTURE OF EMPLOYMENT:
THE IMPORTANCE OF GEOGRAPHY

by Boyd Hunter

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The series is indebted to Diana Encel for her continuing editorial contribution.

Tony Eardley
Editor

Abstract

Spatial inequality of income and employment is increasing in Australian cities. This paper explores the factors underlying increasing neighbourhood inequality with a particular focus on employment inequality. Particular attention is paid to the role of public housing: the increased targeting of public housing is identified as a partial explanation of the observed changes. A conventional Blinder decomposition is used to identify the role of observable characteristics of the population, such as education, demographics, ethnicity and industry structure, and returns to those characteristics. The changes in observable personal characteristics indicate that there has been a significant amount of sorting by these characteristics since 1976. For example, Australian cities have become more socially stratified since that time with well educated people increasingly living together. However, it is important to note that the differences between low-status and other areas cannot be explained solely by changes in personal characteristics of the local residents. In summary, geography apparently matters!

Acknowledgments

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1 Introduction

Spatial inequality of income and employment is increasing in Australian cities. Gregory and Hunter (1995) demonstrate this with Census data between 1976 and 1991. Raskall (1995), using income tax data, shows that similar changes are evident. The basic thrust of this research is that increasing concentration of unemployment in neighbourhoods with low socio-economic status is the primary factor behind the large increases in income inequality observed within all Australia's major cities. This paper explores the factors underlying this increasing neighbourhood inequality with a particular focus on employment inequality across urban neighbourhoods.

This paper uses cross-sectional techniques to estimate the influence of importance of personal and non-personal factors on the employment–population ratio.[1] The analysis seeks to identify the relative importance of the sorting of observable personal characteristics into particular areas and neighbourhood-specific (non-personal) factors. Both of these factors indicate that important changes have occurred in the geography of Australian cities since 1976.

Cross-sectional analysis provides a flexible means of examining both the importance of geography and changes in its importance.[2] The flexible

1 UK studies of local labour markets tend to emphasise the personal characteristics of the people living in the areas as opposed to non–personal and spatial causes of intra–urban employment differentials (Cheshire, 1973; Metcalf and Richardson, 1976; Evans and Lynne, 1980). Where personal characteristics are judged to be important, the British studies tend to emphasise the distribution of the housing stock as driving the spatial concentrations of personal characteristics, and therefore employment differentials. The US literature also emphasises employment suburbanisation, housing segregation, inadequate public transport systems, poor labour market information and discrimination, when explaining the intra-urban distribution of employment.

2 Note that the approach taken here is entirely different from the recent literature on economic geography which has tended to focus on the demand side of the equation. Krugman (1991), for instance, examines the interaction of demand and the firms' locational choice on the emergence of a core-periphery pattern of national development. This paper concentrates on the supply side of the labour market because of the lack of meaningful Australian data on the neighbourhood distribution of demand factors.

approach adopted allows the decomposition employment–population changes into components due to changes in the characteristics (or endowments) of the population and the relative benefits (or coefficients) of these characteristics. This technique enables the following questions to be answered. Why has employment in low-status neighbourhoods declined relative to other neighbourhoods? What is it about these neighbourhoods that makes them different? Has the relationship between neighbourhoods changed over time?

The paper addresses these questions using data Collector Districts (CDs) from the 1976 and the 1991 Censuses. The analysis shows that the changes or differences in personal characteristics among CDs only provide a partial explanation of the relative decline in employment–population ratios. Therefore, policies which focus on individual characteristics will not be able to redress the employment inequality among CDs.

2 Data

Collection Districts are the smallest geographical area for which census data are available and usually contain 200-300 dwellings which are delineated by easily identifiable boundaries. The Australian Bureau of Statistics (ABS) assures us that the boundaries remain relatively unaltered, and therefore it is ‘possible to study changes over time’ (ABS, 1986a: 4).

An urban panel was constructed by rejecting CDs that were not comparable between censuses. Urban CDs were identified as being those CDs in the major urban areas with a population of more than 100,000. CDs were omitted from the panel if the total population was less than 50 to avoid the errors deliberately introduced by the ABS to protect the confidentiality of persons in the neighbourhood. The final urban panel used 9483 CDs from all four censuses between 1976 and 1991. We should reassure the reader that this panel was a substantial proportion of the CDs which existed in 1976. Indeed, the final panel includes more than 70 per cent of the major urban CDs from the 1976 census (see Appendix Table A1).[3]

We can gauge how representative our urban panel sample is by comparing the population weighted means of the sample to the corresponding statistics for all urban areas. Examination of Appendix Table A1 indicates that there were no significant differences in the male and female participation rates or in the average male and female personal income. Household income was also not significantly different in any census.[4]

The major difference between the constructed urban panel and all urban areas was that gross in-migration in the five years prior to the census was lower in the panel. The migration rate was two per cent lower in each census despite a generally lower rate of home ownership in the panel. The main reason for this is likely to be that some of the CDs in Table A1 did not exist five years before the census in question, and therefore the entire population had to move into it. Another contributory factor is the slightly higher age in the CDs in the panel. As mobility tends to decrease with age (because the non-pecuniary costs of moving increase), this lower rate of migration is likely to be partially caused by the age discrepancy. Therefore, despite the minor differences in these descriptive statistics, the urban panel appears to be reasonably representative of all urban areas.

The following analysis uses the ABS (1990) index of relative advantage to define the socio-economic class of urban areas. This index, like other measures of socio-economic class, is a one dimensional summary of the income, education and occupational status of an area or group of individuals. Similar socio-economic indexes were constructed for the 1976 and 1991 censuses using the factor scores from principal components analysis on a set of variables that were similar, but not identical to, those used by the ABS (1990) on the 1986 census. The 1976 and the 1991 indexes are based on the proportion of the population in Professional, Administrative and Clerical occupations, the proportion of

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3 Given that Australian city boundaries expanded substantially up to 1991 the panel may be slightly more unrepresentative of the later censuses.

4 The panel means were within two standard errors of the population means.

very high income earners, the average number of families per house, the proportion of families who own or are purchasing their own home, the percentage of the population with various qualifications, and the number of households with more than three cars. The rank correlation between our indexes and the ABS measure is about 0.85 which indicates that the class of an area is quite stable over time.

The relative stability of socio-economic class in an area is reflected in the fact that there is a similar decline in employment to that noted in Hunter (1995) and Gregory and Hunter (1995) when CDs are ranked by the 1976 index. While the use of the 1976, as opposed to the 1986 index, marginally increases the level of employment inequality in 1976 and marginally reduces employment inequality in other years, it appears that socio-economic status is largely independent of the processes which determine employment.[5] The 1986 socio-economic index is even more independent of employment in 1976 and 1991 because employment in those years is either pre-determined or yet to be determined The ABS's 1986 index is used in the remainder of this paper since this index is largely independent of employment in 1976 and 1991, and it is more widely used and understood than the indexes constructed by the author.

The panel areas have a slightly higher mean value for the ABS's index of relative socio-economic advantage, at 1005 compared to the population mean of 1000.[6] The median for this index in the urban panel is 984. However, since the index is more meaningful when thought of as an ordinal scale, the median is a more appropriate measure of central tendency. Overall, the panel is acceptably representative of the urban population, even though it is slightly skewed towards the socio-economically less advantaged in 1986. Notwithstanding the apparently representative nature of the urban panel, the standard Heckman (1979) sample selection correction will be used in the following regression analysis to ensure that estimates of coefficients are consistent.

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5 The ratio of employment population ratio in the top and bottom decile increases from 1.03 to 1.41 when using the ABS index, and 1.07 to 1.32 when using the 1976 socio-economic index.

6 The 1990 ABS indexes are all standardised so that the mean is 1000 and has a standard error of 100.

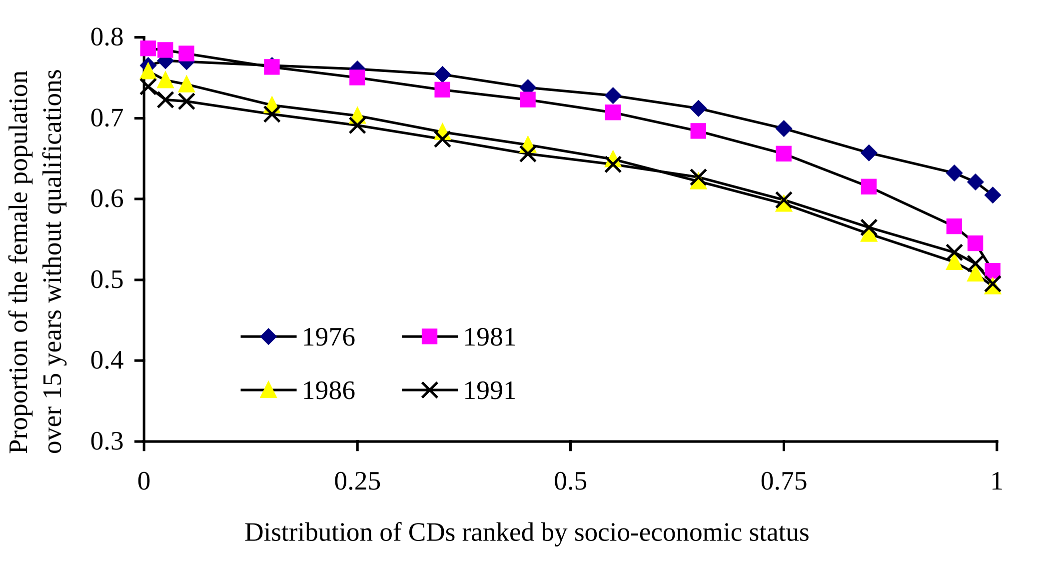
3 How have Endowments Changed?

The analysis and the appropriate policy prescriptions that arise from the increasing dispersion of neighbourhood employment depend crucially on whether endowments of low-status and other CDs have changed significantly. In particular, we should ask ourselves whether there have been substantial concentrations of educational qualifications, demographics or industries with poor employment prospects in low-status CDs?

Educational Endowments

The highest proportion of unqualified persons reside in low-status areas.[7] Although there has been a fall in the overall number of unqualified persons in each quantile, the fall has not been uniform. Slight increases in the concentrations of uneducated people in low-status CDs may help to explain the changes in the geographic dispersion of employment–population ratios.

Figure 1: Proportion of Females Without Post-secondary Qualifications

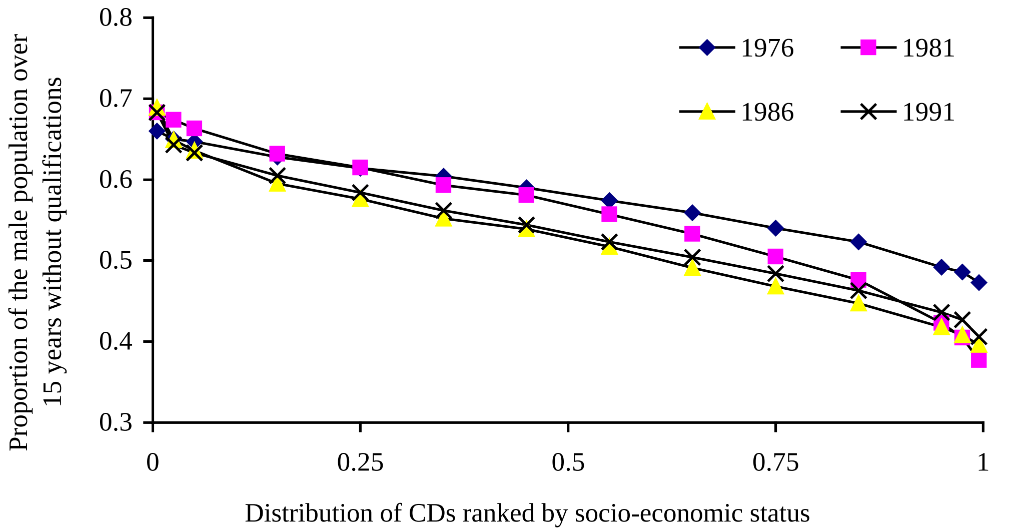


Source: ABS (1984a, 1984b, 1989, 1993) and the urban panel.

7 The reason for this is that socio-economic status is defined, *inter alia*, on the basis of the average level of education within an area.

The Australian data indicate that there has been a substantial expansion of education, especially post-secondary qualifications in the last fifteen years (DEET, 1993), and a substantial fall in the proportion of the population without qualifications. The overall fall in the proportion of the population without qualifications is clearly visible in Figures 1 and 2.

Figure 2: Proportion of Males Without Post-secondary Qualifications



Source: ABS (1984a, 1984b, 1989, 1993) and the urban panel.

It appears that the increase in education levels tended to favour high-status CDs. The proportion of females without qualifications in low-status CDs fell by about six percentage points, whereas the male proportion fell by less than two percentage points. The proportion of females and males in high-status CDs fell by ten and six percentage points respectively. In 1991, low-status areas had a higher proportion of the unqualified population than they did in 1976, although the change was not large.

The biggest decline in the proportion of the population without qualifications in high-status CDs occurred between 1976 and 1981. During this period there was little change in the unqualified population in low-status areas. However, residents of low-status CDs experienced the largest declines in the late 1980s. While the above figures did not control for the quality of the educational qualification, the story was very similar for the proportion of the population with degrees.

In low-status CDs many people left school before 16 years of age. However, there has been a marked change over the period 1976-1991 in the proportion of the population who left school before 16 in low-status areas, with the proportion increasing significantly in the 1986-1991 inter-censual period. Therefore, this indicator of educational attainment changes in a different way to the changes in the proportion of the population with qualifications and degrees. The overall impact of changes in educational endowments is not straightforward and will have to be resolved in a regression context.

Demographic Changes

The demographic structure of the working-age population across socio-economic status areas has been quite stable over time.[8] To the extent that there have been changes, these changes appear to have favoured low-status CDs. For example, in 1976, low-status areas had more 15 to 25 year olds than other CDs. This is an age group with low employment–population ratios. By 1991, the relationship had reversed, with high-status CDs having slightly more young adults. The story is very similar for older workers, who are now slightly more concentrated in high-status CDs.

Overall, the demographic changes are small. However, irrespective of the magnitude, given their direction it is unlikely that demographic changes in the labour force can explain the relative employment decline in low-status CDs.

Industry Endowments

Hunter (1995) found that industry structure played an important role in explaining the social structure of employment across CDs. The overall sectoral change was dominated by the decline of manufacturing employment in low-status CDs. Therefore, we should control for industry structure when analysing the observed changes in employment-population ratios.

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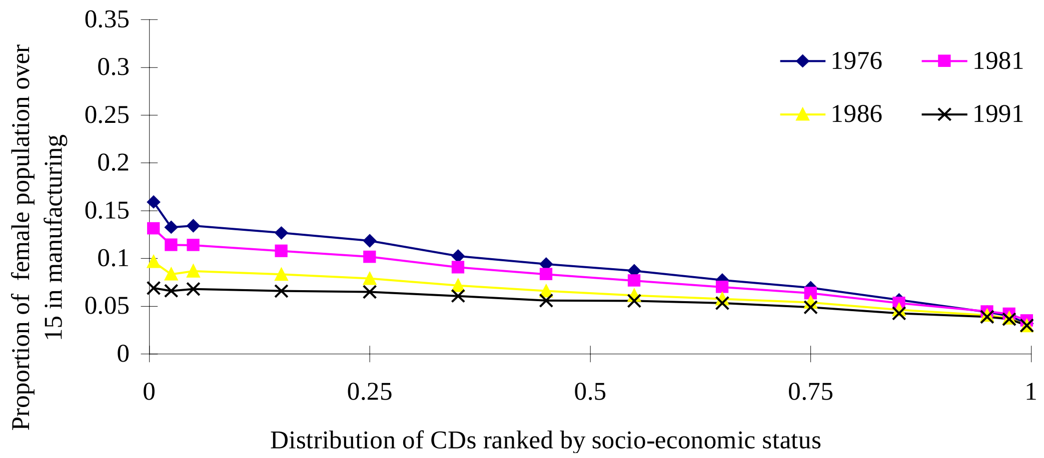
8 The working-age population is defined as the population aged between 15 and 64.

Figures 3 and 4 show that employment for the various social groups was concentrated in certain industries. Males and females from low-status CDs were more likely to be employed in manufacturing than their high-status counterparts in both 1976 and 1991. The high-status CDs were characterised by female employment concentrated in wholesale (and retail) and the community services sectors, while male employment was concentrated in the financial and business sector.

Figure 3: The Manufacturing Sector and the Social Structure of Female Employment

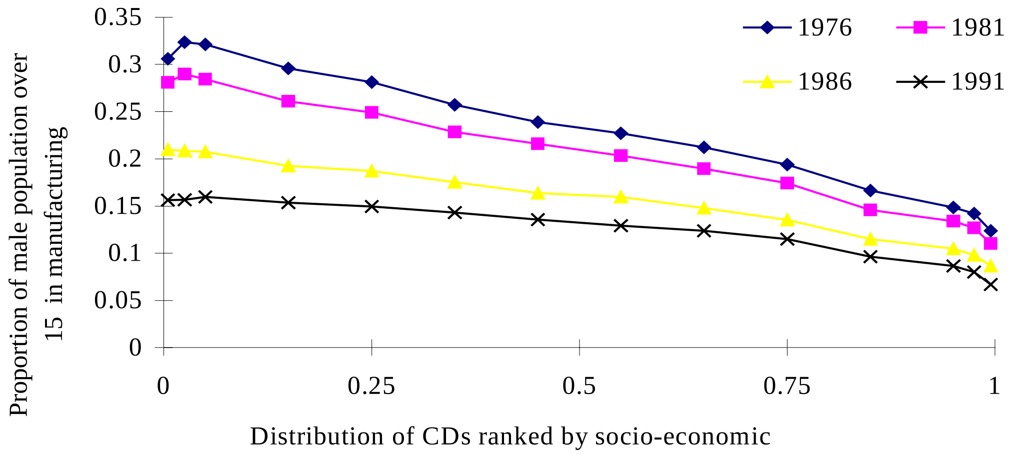


Source: ABS (1984a, 1984b, 1989, 1993) and the urban panel.

The decline of the manufacturing sector is one of the dominant elements in the variation of industry structure across social status. The decline in manufacturing employment had a pronounced effect on low-status CDs with the proportion of males employed in those CDs falling by over half. The proportion of working-age females in manufacturing in low-status CDs also declined substantially. The absolute size of the decline in manufacturing employment was much smaller for females than males.

Hunter (1995) noted that the unemployment increase in low-status areas was particularly pronounced in 1981–1986. One possible reason for this was that the 1981-82 recession involved a large loss of manufacturing jobs, and that those who lived in low-status CDs were disproportionately represented in manufacturing employment. Figures 3 and 4 confirm the substantial losses of manufacturing employment and confirm that it will be important to control for changes in industry structure in analysing the changes in the social structure of employment.

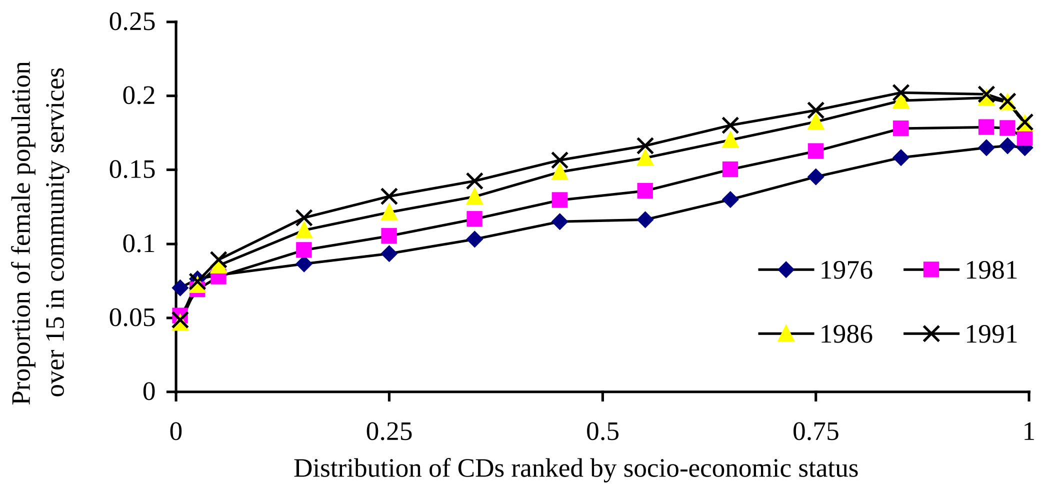
Figure 4: The Manufacturing Sector and the Social Structure of Male Employment



Source: ABS (1984a, 1984b, 1989, 1993) and the urban panel.

Two of the three industries which were the largest employers of women displayed an increased tendency to hire middle-class women. Community services increased employment of women in most regions, but increased the employment of women from high-status CDs by 25 per cent, whereas the proportion of women employed in low-status CDs increased by about 10 per cent (Figure 5).

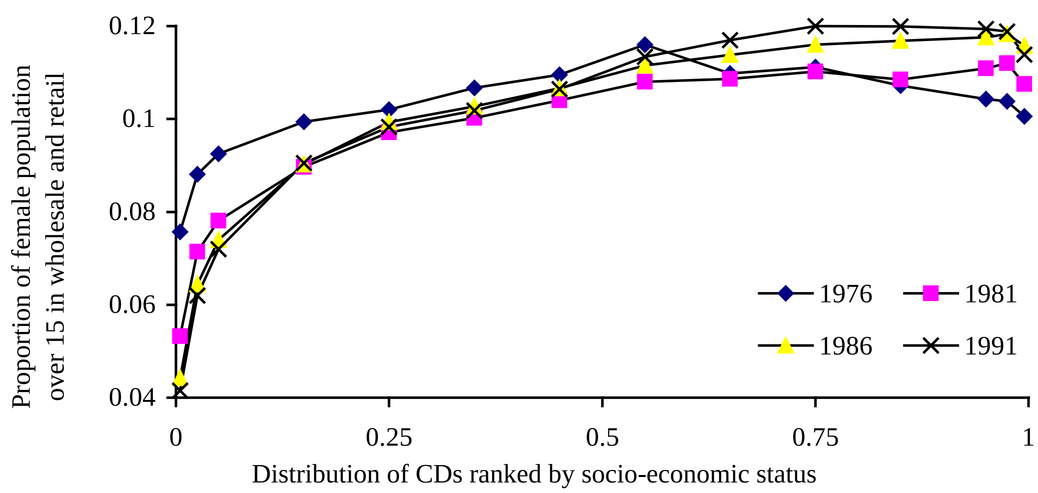
Figure 5: The Community Services Sector and the Social Structure of Female Employment



Source: ABS (1984a, 1984b, 1989, 1993) and the urban panel.

The wholesale and retail trade sector also employed more women from high-status areas (Figure 6). The proportion of working-age women employed in this sector in low-status areas actually fell.

Figure 6: The Wholesale and Retail Sector and the Social Structure of Female Employment



Source: ABS (1984a, 1984b, 1989, 1993) and the urban panel.

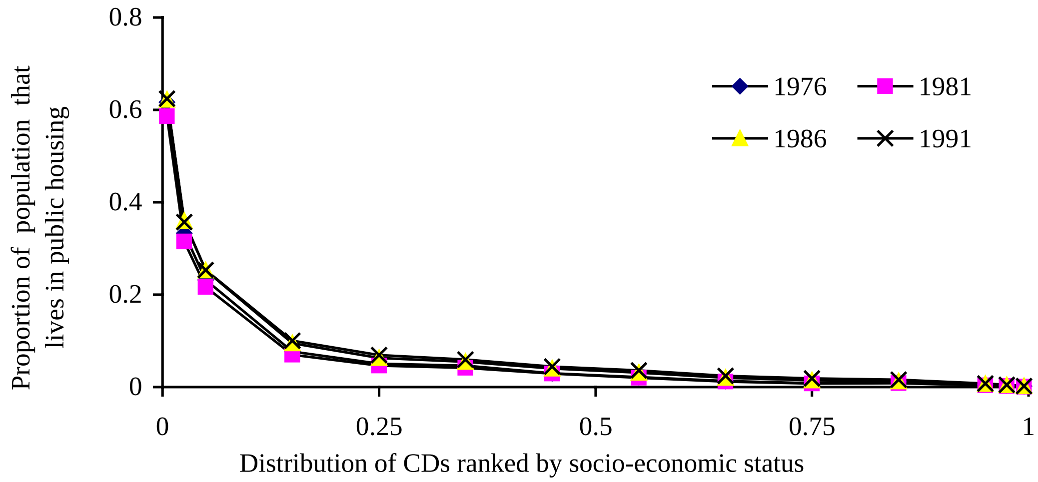
Not only were the jobs lost by the males and females in low-status areas different from those secured by people living in high-status CDs, but the differences between women in different CDs became larger between 1976 and 1991. For example, by 1991, women in high-status CDs were twice as likely as those in low-status CDs to work in the community services sector.

Systematic variations in industry structure imply that structural change in the fifteen years to 1991 may have impacted differently on various socio-economic groups. The decline in manufacturing appears to have depressed employment in low-status CDs. The next section explores this possibility in more detail.

The Role of Public Housing

One of the criticisms of the Hunter (1995) and Gregory and Hunter (1995) approach has been its failure to account for the public housing sector (Whiteford, 1995). Figure 7 shows that the distribution of public housing in the urban panel remained remarkably stable over the period being examining. There does not appear to have been any large increase in public housing located in low-status CDs. Indeed, the bulk of public housing has always been located in these areas.

Figure 7: Proportion of Population that Lives in Public Housing



Source: ABS (1984a, 1984b, 1989, 1993) and the urban panel.

However, there was a small increase in the proportion of the population in public housing in all but the top two deciles. That is, public housing has become slightly more concentrated in the low-status CDs. Nevertheless, the small changes in the distribution of public housing do not appear to have been important factors in explaining the increase in the dispersion of neighbourhood employment.

Notwithstanding the apparently small impact of the changing stock of public housing on the urban panel there are potentially important implications that arise from the increased targeting of public housing. For example, since the early 1970s both Commonwealth and State Governments have acted to improve the availability of public housing for low income groups (Whiteford, 1995).[9] Given the concentration of public housing in the low-status areas the possibility that increased targeting of public housing provision is affecting the results needs to be accounted for in the following analysis.

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9 The deliberate targeting of public housing increased following the 1981 Commonwealth-State Housing Agreement.

4 Cross-sectional Models of Employment–Population Ratios

To estimate the effect of changing endowments on employment–population ratios we need an estimate of the returns to these endowments. The simplest way to derive a measure of these returns is through estimation of a cross-sectional model of employment–population ratios in 1976 and 1991.

Since we are interested in explaining the increasing dispersion of employment within the urban panel, rather than in all urban areas, the estimation techniques must address the possibility of sample selection bias. That is, if the panel CDs are significantly different from other urban CDs then it is quite possible that the parameter estimates will be biased.[10]

The simplest way of getting consistent estimates of returns to personal characteristics is to use Heckman's (1979) two-step estimation procedure. The first step estimates the probability of being in the panel using the probit techniques.

$$\begin{aligned} &z^* = \alpha' W + u, \quad u \sim N[0,1] \\ &\quad z = 1 \quad \text{if } z^* > 0, \\ &\quad z = 0 \quad \text{if } z^* \le 0, \end{aligned} \tag{1}$$

where z indicates whether a CD is in the panel. The sample selection rule indicated in equation 1 is estimated using Probit and then the inverse Mills ratio is calculated using the probability density function and the cumulative density function (Greene, 1990: 740).

Now, if the process which determines the employment-population ratio of a CD (that is, equation 2) has disturbances which are correlated with the disturbances from equation 1, then Heckman's procedure, or some other sample selection bias correction, should be used.

10 Several critics have raised the possibility of sample selection bias in the Gregory and Hunter (1995) paper. The differences in the means of several variables in Tables A1 (for example, migration) also indicate that sample selection must be addressed.

$$EP = \beta X + \varepsilon, \qquad \text{where observed only if } Z = 1$$
$$(u, \varepsilon) \sim \text{bivariate normal } [0,0,1,\sigma_\varepsilon,\rho] \qquad (2)$$

where σ_ε and ρ are the standard deviation of ε and the correlation between *u* and ε respectively. The correlation between the disturbances of equations 1 and 2 induces a sample selection bias which is represented by the second term on the right hand side of equation 3.

$$E[EP|z = 1] = \beta X + \rho\sigma_\varepsilon \lambda(\alpha' W) \qquad (3)$$

where *EP* is the employment-population ratio for either males and females and λ is the inverse Mills ratio from the selection equation 1.

Heckman (1979) suggests that the problem of sample selection bias can be transformed from being a missing dependent variable problem to being an ordinary omitted explanatory variable problem. The two step procedure involves including the inverse Mills ratio as an explanatory variable in OLS can be used to get consistent estimates of β.[11] Therefore if we estimate equation 1 using probit techniques,[12] then this allows us to get consistent estimates of the effect of the independent variables on employment-population ratios using OLS in the second step of the procedure.

To ensure that the selection and the employment-population equations are separately identified the matrix, W, includes two additional variables: the distance of a CD from the central business district (CBD) and the population density of the CD. It is reasonable to suppose that both variables influence the probability of being in the panel given that high growth/low population CDs on the fringe of the city would tend to be excluded from the panel because their boundaries are more likely to be

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11 Heckman (1979) points out that such estimates are consistent but inefficient. The standard errors should merely be taken as indicative of the true standard errors. White's (1978) covariance matrix is used in the empirical section, given that heteroscedasticity appears to be an intractable problem. Other potential sources of heteroscedasticity include possible spatial autocorrelation and the 'quasi' limited nature of the dependent variable.

12 The use of the probit technique is essential because it allows us to invoke the properties of the moments of a truncated bivariate normal distribution (Greene, 1990: 740)

volatile. The distance of a CD from the CBD can be left out of the X matrix because other work has shown that it is not a significant factor determining employment-population ratios.[13]

The matrix of personal characteristics, X_{it}, allows us to control for the composition of a neighbourhood in a particular census. Equation 3 is estimated separately for males and females given the potential gender differences noted earlier. The explanatory variables in (3), X, include the proportion of the population who are educated, indigenous, born overseas, married, as well as other demographic controls. The explanatory variables also include the statistical division of residence, the industry structure, the stock of public housing in a CD and the inverse Mills ratio.

What are our *a priori* expectations of the influence of these personal characteristic variables on expected employment–population ratios? The coefficient on the inverse Mills ratio, λ, should be interpreted as the standard deviation of the disturbance term in equation 2, times the correlation of the disturbances in equations 1 and 2. Therefore, since the standard deviations are always positive, the coefficient on λ indicates the correlation between disturbances.

Increasing education levels should increase the employment–population ratios as better educated workers tend to be more flexible in employment and have a greater attachment to the labour force. Increasing the proportion of indigenous and people born overseas may reduce employment–population ratios if either group experiences discrimination or other disadvantage (endowments not controlled for in the regression) in securing employment.

Increasing the proportion of married people in a neighbourhood may tend to increase the employment–population ratio because of supply and demand-side factors. The supply-side stories tend to focus on the hypothesised higher marginal utility of income for married workers whereas the demand-side stories focus on the beliefs of employers about

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13 See Hunter B. (1995b), ‘Changes in the Geographic Dispersion of Urban Employment in Australia: 1976-1991’, Australian National University, unpublished thesis.

the marginal productivities of married workers. The industry structure and statistical division dummy are included to capture industrial and spatial variations in employment demand.

The demographic variables control for the age composition of a neighbourhood. The effect on the employment–population ratio of these demographic controls depends on the stage of the life cycle and gender. Employment ratios tend to increase towards middle age then gradually decline for both sexes. The average relationship between age and employment ratios differs between sexes because of, *inter alia*, the child-bearing years of some females and the greater share of family responsibilities undertaken by many women.

To control for differences in public housing there are two approaches adopted. The first approach puts public housing as an independent variable. This has two advantages in that we can observe variations in the role of public housing over time and that it uses information about all CDs in the panel. The second approach excludes CDs with large concentrations of public housing from the sample and then estimates equation 3. The rule used was to exclude a CD if more than ten per cent of the population lived in public housing.

The estimation results reported in Appendix A2 are for the model which includes all panel CDs, uses public housing as an independent variable and controls for the possibility of sample selection using the Heckman two step procedure. However, as the following analysis shows the results do not qualitatively change if we do exclude those CDs with more than ten per cent public housing.

5 Estimation of Models

The first stage of the Heckman procedure, the selection equation, is reported in Table A2.1. As expected, the further a CD is away from the CBD the lower the probability of being in the panel. Similarly, the higher the population density the more likely a CD is to be in the panel, as it will be in a more settled or stable area. The inverse Mills ratios, λ, are then calculated for use in the second stage of the procedure.

Employment–population ratios are estimated separately for males and females in all urban panel CDs in 1976 and 1991 (Tables A2.2 and A2.3).[14] The asymptotic Chow tests indicate that regressions should be estimated separately for the 1976 and 1991 censuses.[15] The joint tests of the major variable groups (i.e., demographic, education and industry structure) are significant in both 1976 and 1991. Clearly, these variable groups should be included in the regressions.

The constant declines substantially between 1976 and 1991. The constant is a scaling factor which also captures both the expected employment - population ratios of the reference group (defined by the omitted variables) and the macro-economic conditions which affect all CDs in the census under examination.[16] Given that the constant conflates these three factors, care should be exercised in interpreting it.

The sign and significance of most personal characteristics are similar to those expected. The demographic coefficients follow a predictable life-cycle pattern, while education variables and the proportion of married in the population increase the expected employment–population ratio. In general, the proportion of Aboriginal and Torres Strait Islanders and the population of overseas–born residents reduce neighbourhood employment–population ratios.

The coefficient on λ has a negative sign and is significant in all regressions. Therefore this provides evidence that there would have been some sample selection bias if λ was omitted from the regression. The negative coefficient indicates that there is a negative correlation between the disturbances of the section equation and the employment-population ratio equation. That is, the employment outcome in the panel CDs tends to be worse than in other CDs. This is consistent with the panel being

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14 The Breusch-Pagan test indicates that heteroscedasticity is significant in all regressions. Accordingly, White's robust covariance matrices are used for inferences.

15 The asymptotic Chow test (i.e., the Chow test applied to weighted data) provides an elementary test of whether the presence of heteroscedasticity is affecting the results (Thursby, 1992: 363). The statistic is distributed $\chi 2$ with 38 d.f. and was 13696 and 7611 for males and females respectively.

16 The reference group is non-indigenous, Australian-born, 30 to 40 year old males without qualifications working in the manufacturing industry in Sydney.

drawn from more stable, older parts of the city which may have missed out on new employment growth.

The regressions provide a good (for a cross-section) fit of the relationship between CDs, with the coefficient of determination being between 0.5 and 0.6. Interestingly, the coefficient of determination increases significantly between 1976 and 1991. This is an interesting observation that will be followed up in the discussion.

The consistent estimates in Tables A2.2 and A2.3 give us an opportunity to explore the factors behind the increasing dispersion of employment. Instead of resorting to a bivariate description of the factors driving the outcomes, we can engage in a more detailed multivariate analysis and begin to get some answers to the questions raised in the introduction. For example, is the changing dispersion of employment due to increasing concentrations of people with poor employment prospects in low-status CDs?

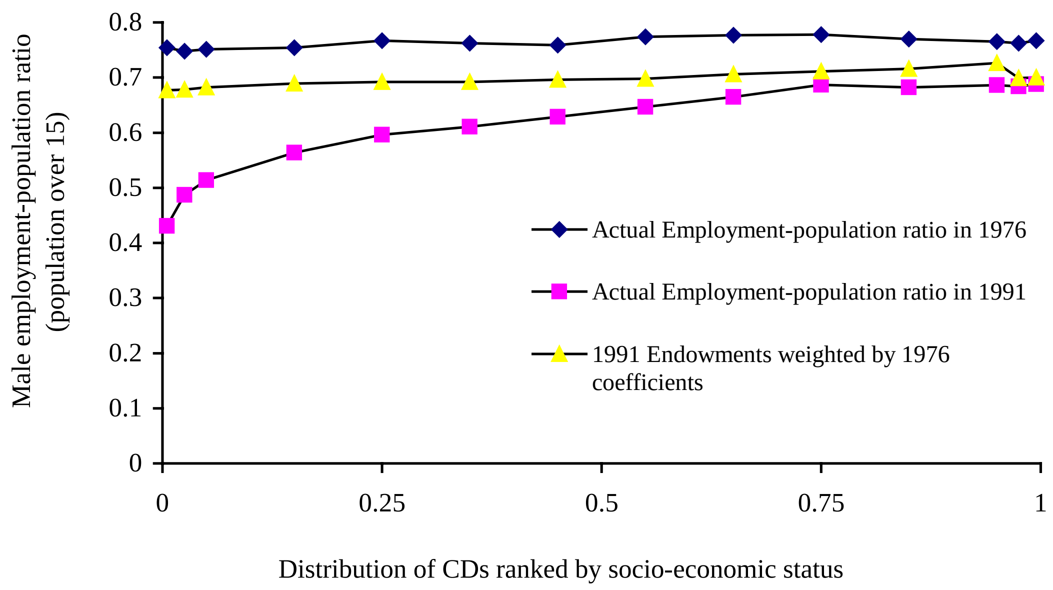
6 Why are Australian Cities Different Places in 1991 Compared with 1976?

There are two major hypothesis which may explain the increasing dispersion of employment across CDs. The first hypothesis is that people with poor endowments have sorted into low-status CDs while people with good endowments have gravitated towards high-status CDs. The second hypothesis is that CDs with a given set of endowments are treated differently. That is, there is some systematic variation in coefficients within the panel. The juxtaposition of the two hypotheses provides the ongoing theme for the rest of this paper. This rest of this section looks at the endowment versus coefficient question by examining the regressions for all the panel CDs in both 1976 and 1991 (Tables A2.2 and A2.3).

Endowments Hypothesis

The possibility that sorting is the dominant influence can be discerned indirectly by examining whether the endowments of CDs have changed dramatically between 1976 and 1991. However, rather than examine the effect of changes in endowments individually, we can reduce the dimensionality of the problem by asking ourselves what the expected employment–population ratios would be in 1991 if we use the 1976 coefficients taken from the regressions across all CDs and the 1991 distribution of endowments. Figures 8 and 9 compare the actual 1991 employment–population ratios with those calculated using the 1976 coefficients.[17]

Figure 8: The Effect of Changes in Endowments on Male Employment–Population Ratios



Note: The changes in endowments of each CD are weighted by the 1976 coefficients in Table A2.2. The average of the expected employment-population ratios for each quintile.

Source: ABS (1984a, 1984b, 1989, 1993), the urban panel and Table A2.2.

Figure 8 shows that very little of the relative changes in male employment–population ratios between 1976 and 1991 can be explained by changes in endowments when these endowments are weighted by 1976 coefficients. Almost all of the observed changes must be due to changes in coefficients from the male equation. CDs are drifting apart in terms of their employment–population ratios not because they are drifting apart in their measured endowments using 1976 weights, but because their endowment mix, relative to high-status areas, is less effective at delivering employment. That is, the male coefficients must have changed.

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17 Thus calculated the expected employment-population ratios, $EP7691=\beta^{76}.X^{91}$

One unusual feature of Figure 8, however, is that the average expected male employment–population ratio based on the 1976 coefficients is approximately 6 percentage points lower than the actual ratio in all CDs in 1976. Therefore the average change in endowments for males helps to explain the decline in average male employment–population ratios, but does not explain the relative disadvantage of males in low-status areas.

The results are similar for females (Figure 9). The change in the slope relating socio-economic status to employment–population ratios cannot be explained in terms of changes in endowments. The change in the social structure of female employment can best be explained in terms of changing coefficients.

Figure 9: The Effect of Changes in Endowments on Female Employment–population Ratios

Error! Not a valid link.

The results of this section show that to explain the dispersion of employment across CDs we must let the coefficient vary across groups of CDs. Figures 8 and 9 illustrate that if the coefficients are constrained to be equal across regions and time, then it is not possible to explain changes in the social structure of employment. Figures 8 and 9 can be considered as a 'disguised' form of a 'Blinder-style' decomposition calculated over the *whole* distribution of CDs (Blinder, 1973). In the next section we explicitly use a 'Blinder decomposition' to explain changes in the social structure of employment by allowing the coefficients to vary within the panel as well as across time. In this way the endowments of different CDs can be weighted by coefficients specific to the different neighbourhood sets.

7 Why are Low-status CDs Different?

It is apparent from Figures 8 and 9 that not only did coefficients change between 1976 and 1991 but the relationship between employment–population ratios and socio–economic status swivelled so that employment–population ratios fell in most low-status CDs. Given that the differences between low-status and other CDs was particularly pronounced in the bottom decile of socio-economic status, the cross-sectional model should be estimated separately for CDs in the bottom decile of socio–economic status (hereafter called low-status CDs) and other CDs, thereby allowing the coefficients to differ across areas.

The regressions for low-status and other CDs are similar to those reported for all panel CDs. For example, all regressions exhibit some sign of heteroscedasticity. Also, the coefficient of determination increases substantially for all regressions between 1976 and 1991.

The asymptotic Chow test of structural change confirms that we should estimate the relationships for low-status and other CDs separately for both censuses (see Appendix Tables A2). Indeed, the overall difference between low-status and other CDs, as measured in the Chow tests, appears to have become stronger over time.

The sign and significance of the individual coefficients are very similar to those reported in the previous section. However, rather than examine the differences in each coefficient individually, the following analysis uses a standard Blinder decomposition to summarise the differences between low-status and other CDs.

Blinder Decomposition of Employment–Population Differential Between Low-status and Other CDs

Blinder (1973) and Oaxaca (1973) independently proposed a decomposition (hereafter called the Blinder decomposition for simplicity) of the differences in the *average* differential of outcomes for two groups into endowment and coefficient components. The Blinder decomposition can be used to identify the relative importance of endowments and coefficients in explaining the difference of employment–population ratios between low-status and other CDs:

$$(\overline{X^o}\beta^o - \overline{X^l}\beta^l) = (\overline{X^o} - \overline{X^l})\beta^o + \overline{X^l}(\beta^o - \beta^l) \quad (4)$$

where the superscripts l and o refer to CDs in low-status and other CDs respectively. This Blinder decomposition in equation 4 provides a useful supplement to Figures 8 and 9 in discerning the importance of endowments and coefficients and is calculated for each census year.[18] Therefore in this section we focus on the cross-sectional difference between low-status and other CDs. In the next section we focus on the how *changes* in endowments and coefficients have affected the *change* in the differential between low-status and other CDs.

The first row of Table 1 indicates the actual differential in employment–population ratios between low-status and other CDs. In 1976, males in low-status CDs had a 1.6 percentage point lower employment–population ratios than in other CDs. By 1991, the differential had grown to 12.8 percentage points Females experienced a similar increase in the differential. The standard errors reported in brackets indicate that the differential was significant in both Censuses.

The third row of Table 1 indicates the endowment component calculated from equation 4 using the regression estimates from Tables A2.4 to A2.7. If public housing is included in the regression, as an independent variable, then about 80 per cent of the differential can be explained by differences in endowments between low-status and other CDs in 1991. For example, 10.2 percentage points of the male differential can be explained by the low-status areas having less desirable endowments in 1991. This represents a substantial increase in absolute terms from the endowment component for 1976. Indeed, the endowment component for males is not significantly different from zero in 1976.

The coefficient component, reported in the final row, also increased substantially between 1976 and 1991. The coefficient component contributes 2.6 percentage points to the actual differential for both males and females in 1991.

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18 Note that the coefficients from the other CDs are used to calculate the endowment component. Given that other CDs contain 90 per cent of all CDs this provides a more stable estimate of the influence of endowments.

Table 1: Blinder Decomposition Including Public Housing

	1976		1991	
	Male	Female	Male	Female
Average Differential	0.016	0.025	0.128	0.137
	(0.003)	(0.004)	(0.004)	(0.004)
Endowment Component	0.001	0.015	0.102	0.111
	(0.002)	(0.002)	(0.003)	(0.003)
Coefficient Component	0.015	0.010	0.026	0.026

Notes: The numbers in brackets are standard errors. The standard errors for the endowment component are calculated using the covariance matrix from the regression for other CDs. That is,

$$Var((\overline{X^o} - \overline{X^l})\beta^o) = (\overline{X^o} - \overline{X^l})Var\beta^o(\overline{X^o} - \overline{X^l})'$$

Source: Appendix Tables A2.4 to A2.7.

An alternative specifications and sample which excludes CDs with more than ten per cent public housing is also calculated to test the sensitivity of the Blinder decomposition (Table 2). Since the sample is varied, the average differential between low-status and other CDs changes. The average differential in employment-population ratios was not significant in 1976 for either males or females. However, by 1991 the average differential increases by about nine percentage points. Therefore the observation that the dispersion of employment across CDs is increasing is not affected when the distribution of public housing is accounted for.

The contribution of differences in endowments and coefficients undergo interesting changes when CDs with concentrations of public housing are excluded from the sample. The Blinder decomposition reported in Table 2 reveals that about two-thirds of the differential can be explained by differences in endowments between low-status and other CDs. Indeed, the endowment component is much smaller, both in absolute and relative terms, when public housing is excluded. The other third remains and can be attributed to differences in coefficients. Therefore excluding public housing actually strengthens the claim that the sorting of endowments into particular CDs does not explain all the changes in the geographic dispersion of employment since 1976.

Table 2: Blinder Decomposition without Public Housing CDs

	1976		1991	
	Male	Female	Male	Female
Average Differential	0.009	0.002	0.088	0.092
	(0.004)	(0.005)	(0.004)	(0.004)
Endowment Component	0.002	-0.009	0.061	0.060
	(0.001)	(0.001)	(0.002)	(0.002)
Coefficient Component	0.007	0.011	0.027	0.032

Notes: The regression estimates are based on a sample of urban panel CDs which has less than ten per cent of the population in public housing. The regression results are not reported here due to lack of space. The numbers in brackets are standard errors. The standard errors for the endowment component are calculated using the covariance matrix from the regression for other CDs.:

$$Var((\overline{X^o} - \overline{X^l})\beta^o) = (\overline{X^o} - \overline{X^l})Var\beta^o(\overline{X^o} - \overline{X^l})'$$

Therefore since eliminating public housing CDs does not change the story, the rest of the analysis merely reports the results for all CDs. There is no loss to the analysis in doing this, since public housing is still included as an explanatory variable. This approach can be justified on the grounds the analysis should consider all urban dwellers irrespective of whether or not they live in public housing.

Endowment Components

Table 3 merely expands the results reported in Table 1 to enable a more detailed analysis of the average differential between low-status and other CDs. The endowment and coefficient terms of equation 4 are broken down into the major variable groups. Given the difficulty of interpreting the coefficients without reference to the intercept term, extreme care should be exercise in interpreting the coefficient contributions to the coefficient component. They should be viewed as being indicative of the importance of the difference in the measured coefficients.

Table 3: Blinder Decomposition of Cross–sectional Differentials between Low-status and Other CDs

	1976		1991		1976–1991	
	Male	Female	Male	Female	Male	Female
Average Differential	0.016	0.025	0.128	0.137	0.113	0.112
Endowment Contribution						
Total	0.001	0.015	0.102	0.111	0.101	0.096
Constant	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Education	0.032	0.033	0.059	0.053	0.027	0.020
Industry	-0.022	-0.006	-0.008	-0.004	0.015	0.001
Demographics	-0.006	-0.014	0.004	0.002	-0.006	0.015
Dependents	-0.005	0.005	-0.001	0.003	0.005	-0.002
Capital City	0.002	0.002	0.003	0.004	0.001	0.002
Public Housing	0.000	0.015	0.025	0.036	0.025	0.021
Marriage	0.003	0.001	0.005	0.004	0.002	0.003
Overseas Born	-0.003	-0.011	0.013	0.015	0.016	0.026
Indigenous	0.000	0.000	0.001	0.001	0.001	0.001
Coefficient Contribution						
Total	0.015	0.010	0.026	0.026	0.011	0.016
Constant	0.118	0.072	-0.094	-0.199	-0.212	-0.271
Education	0.041	0.008	0.080	0.119	0.039	0.111
Industry	-0.025	-0.002	0.081	0.009	0.106	0.012
Demographics	-0.136	-0.044	0.002	0.102	0.138	0.146
Dependents	-0.003	0.021	0.007	0.006	0.010	-0.015
Capital City	0.006	0.009	0.012	0.015	0.006	0.006
Public Housing	0.015	-0.001	-0.001	-0.015	-0.015	-0.014
Marriage	-0.005	-0.027	-0.110	-0.101	-0.105	-0.074
Overseas Born	0.001	0.005	0.043	0.027	0.042	0.022
Indigenous	0.003	0.001	0.006	0.009	0.003	0.008

Notes: Derived using equation 6.1a.
n.a. refers to not applicable

Sources: Appendix Tables A6.1

Table 3 indicates that most of the endowment component can be explained by the concentration of educational endowments in particular CDs. In 1991, the differences in the endowments of education between low-status and other CDs explained 5.9 and 5.3 percentage points of the differential for males and females respectively. Education endowments explain about one-half of the average differential. Educational endowments have become more important over time, in absolute terms, since the education contribution increased by about two percentage points between 1976 and 1991.

The concentration of public housing, and to a lesser extent the overseas born population, in low-status areas also played a minor role in explaining the differential. Once the differences in public housing are accounted for, the differences between Tables 1 and 2 can be explained. That is, if the endowment contribution due to the high concentration of public housing is subtracted from the endowment component and the average differential then the results are very similar to those reported in Table 2 (that is, about ten percentage points). Other endowment contributions either have a small impact or have the wrong sign.

Coefficient Contributions

The size of the difference in coefficients between low-status and other CDs was also important in both censuses. In 1976 the average differences in coefficients between low-status and other CDs for males explained 1.5 percentage points of the differential. However, by 1991 the total coefficients contribution to the differential increased to 2.6 percentage points. The difference in female coefficients between low-status and other CDs also made a substantial contribution to explaining the differential.

The constant dominated the overall coefficient contribution for all equations. As previously noted, differences in the constant coefficient are difficult to interpret because they represent differences in the employment–population ratios of the reference group relative to other groups, or the way in which macro-economic influences impact on males and females. However, if we resist interpreting the intercept's contribution to the coefficient component then we should be circumspect about interpreting the other coefficients.

Differences in the returns to education between low-status and other CDs appeared to increase the differential. However, the influence of the returns to education was merely partially offsetting the large contribution from the constant term to the differential. That is, the overall returns to education must be viewed in the context of what happened to persons without qualifications. Since the returns to unqualified people were captured in the constant term we should exercise caution about interpreting the education coefficient contribution.

The other coefficient contributions may also be offsetting the contribution from the constant term. For the sake of completeness, the large contributions to the coefficient component are reported in Table 3.

Notwithstanding problems in interpretation, the coefficient contributions for two variable groups are particularly interesting. The coefficient contribution attributable to the city dummies is suitably small, and confirms that the differential between low-status and other CDs cannot be explained by the disadvantages of particular cities. Inter–city variations in employment–population ratios marginally increase the differential between low-status and other CDs. Therefore, the decline of Newcastle, and to a lesser extent Melbourne, during this period did not affect our results. That is, the relative decline in low-status CDs is not due to the changes in inter–city variations in employment.

The small size of the public housing coefficient to the differential is also reassuring. The differences in the public housing coefficients actually equalise the differential in 1991. If differences in the public housing coefficients were large, then this would indicate that the increased targeting of public housing acted to increase the differential as ‘lower quality’ persons moved into low-status CDs. Since this is not the case it appears that the composition of public housing is not a major factor explaining the difference between low-status and other CDs.

Given the difficulty in interpreting differences in individual coefficients, we should not place too much emphasis on the disaggregated coefficient contributions. Rather we should emphasise the whole package. Therefore differences in endowments between low-status and other CDs can explain four-fifths of the relative disadvantage of low-status CDs. The other fifth is due to neighbourhood–specific factors which make low-status CDs different from other CDs.

Changes in Blinder Decomposition of the Differential Between Low-Status and Other CDs

The last two columns of Table 3 show the average change in the various contributions to the differential between low-status and other CDs between the two censuses. About ten to 16 per cent of the change in the differential can be explained by increasingly different coefficients in low-status and other CDs. The remainder of the change in the differential can be attributed to changes in the endowment component of the cross-sectional Blinder decomposition.

Given the problems encountered with the interpretation of individual coefficients within each cross-section, it will be even more difficult to interpret the changes in individual coefficients' contribution to the overall differential. However, it will be useful to reflect briefly on the major endowment contribution changes.

Comparing the size of the endowment contributions in the two censuses indicates there has been a significant concentration of undesirable endowments in low-status CDs. For example, the concentration of desirable educational qualifications in high-status CDs has become more pronounced over time. Between 1976 and 1991 the changes in the endowment contribution attributable to education accounted for about two to three percentage points of the differential. That is, while the educational level of low-status CDs has increased, it has not increased to the same extent as it did in other CDs. Changes in the endowment contribution of public housing and proportion of the population born overseas also feature.

Therefore there have been significant changes in the importance of endowments and coefficients. To understand the cross-sectional differences between low-status and other CDs we must understand both the endowments of CDs and the differences in the relationships between CDs.

Explaining Changes in the Social Structure of Employment

Figures 8 and 9 illustrate the importance of letting the coefficients vary across time and space. The last few sections have analysed the extent to which the differential between low-status and other CDs can be explained by coefficient variations across space. In this section, we directly analyse the extent to which the change in the differential can be explained by variations in coefficients across time and space.

Another test of the importance of changing endowments and coefficients is to decompose directly the *changes* in the differential between low-status and other CDs. If we differentiate the Blinder decomposition, (4), with respect to time, and eliminate all cross-product terms, then we can estimate whether changes in endowments or changes in coefficients are important in explaining the average change in the differential between low-status and other CDs over time.

$$\frac{d(\overline{X^o}\beta^o - \overline{X^l}\beta^l)}{dt} = \left[\frac{d\overline{X^o}}{dt} * \beta^o - \frac{d\overline{X^l}}{dt} * \beta^l\right] + \left[\overline{X^o} * \frac{d\beta^o}{dt} - \overline{X^l} * \frac{d\beta^l}{dt}\right] \quad (5)$$

The major advantage of this approach is that the changes in the differential between low-status and other areas is divided into that part due to the differences in the changes in endowments between areas and that part due to the differences in the changes in coefficients. Note that unlike the usual Blinder decomposition, the results are not sensitive to the choice of weights for the reference ('non-discriminatory') distribution.[19]

The first term in the square brackets on the RHS of (5) indicates the importance of the changes in endowments. For example, if the average educational qualifications fell in low-status relative to other CDs between 1976 and 1991, then this term will help to explain the increasing differential. Therefore, if the first term is positive then it can be interpreted as a relative concentration of undesirable characteristics in low-status CDs.

The second term on the RHS of (2) gives the contribution of the change in coefficients to the change in the differential. If changes in coefficients are important, then this indicates that there are qualitative differences between low-status and other CDs. We can interpret these differences as evidence that the influence of the local social environment is changing over time.

Table 4 shows that the changing coefficients appear to be more important in explaining the changing differential than changes in endowments. Indeed, for females, changes in endowments are less than one-half as important as changes in coefficients. Clearly, the increased geographic

19 That is, changes in coefficients and endowments for low-status neighbourhoods are weighted by endowments and coefficients from low-status neighbourhoods etc. The weights (that is, the terms which did not change over time) are evaluated at their mid-points.

dispersion of employment–population ratios cannot be solely explained in terms of changes in endowments!

Table 4: Decomposition of Changes in the Differential of Employment–population Ratios between Low-status and Other CDs

	Males		Females	
	Changes in Coefficients	Changes in Endowment	Changes in Coefficients	Changes in Endowment
Total	0.056	0.056	0.063	0.049
Constant	-0.212	0.000	-0.271	0.000
Education	0.065	0.000	0.122	0.009
Industry	0.069	0.005	0.016	-0.003
Demographics	0.125	0.023	0.152	0.010
Dependents	0.016	-0.002	-0.020	0.003
Capital City	0.006	0.001	0.007	0.000
Public Housing	0.007	0.003	0.005	0.002
Married	-0.120	0.018	-0.087	0.017
OSB	0.052	0.005	0.045	0.003
Indigenous	0.001	0.002	0.006	0.002

Notes: Derived using equation 2.
n.a. refers to not applicable.

Source: Appendix Tables A6.1

Of the changes in endowments, only marriage and demographics provided a (limited) explanation of the increasing differential. Differences in the changes in educational qualifications between low-status and other CDs was not important for either males or females. This is consistent with Figures 1 and 2, which showed only a small concentration of unqualified people in low-status CDs. Given the small differences in the changes of educational endowments, we should be circumspect about policy designed to address the apparent concentration of educational endowments in high-status areas detected using cross-sectional Blinder decompositions (Equation 4).

The changes in the constant term and education coefficients were the two most important factors for the coefficient contribution. As with the cross-sectional Blinder decomposition the coefficient component is best examined as a package. However, we will briefly consider the coefficient contributions for selected variable groups.

In general, the returns to education increased for all groups, but they increased less in low-status CDs. Indeed, increasingly different returns to education widened the differential by between six and 12 percentage points for females and males respectively.

Changes in the coefficients on overseas-born increased the differential by about five percentage points for both sexes. Future research needs to tease out what is adversely affecting the employment in communities with large concentrations of minority ethnic groups. For example, has residential segregation of ethnic groups increased and does such segregation have a positive or negative impact on employment.

The overall results are basically consistent with the previous section. The differences between the results arise because we are now decomposing the changes in the average differential into components based directly on the changes in endowments and coefficients. The major difference in the two approaches arises because different weights are used to calculate the importance of changing endowments and coefficients. Since the approach in this section does not depend on the choice of weighting system we should place more faith in the results from this section.

In summary, geography is even more important when we examine the overall significance of changes in coefficients in low-status relative to other CDs. As much as 60 per cent of the decline in low-status relative to other CDs can be attributed to the differences in the changing relationships between CDs in low-status and other CDs.

The results in this section are comparable to Figures 8 and 9 which attributed almost all of the increasing differential between low-status and other CDs to changes in coefficients. However, as pointed out earlier, this section relaxed the constraint that the coefficients be equal for all panel CDs. In so doing we can explain more of the average differential by reference to the endowment contribution, but the changes in coefficients still dominate the influence of changes in endowments.

8 Discussion

The results of this paper confirm that the local neighbourhood environment is important. While personal characteristics are clearly significant and important, the substantial coefficient component in 1991 indicates that there are significant qualitative differences between low-status and other CDs. These neighbourhood-specific factors can be interpreted as either neighbourhood effects of living in low-status CDs or intra-family effects which are correlated with the socio-economic status of the area. If we accept this interpretation of the differences in coefficients, then neighbourhood-specific factors can explain about *one-fifth* of the actual differential between low-status and other CDs. If we focus on the changes in coefficients then as much as 60 percent of the changes in the differential can be explained. If we interpret these neighbourhood-specific factors as neighbourhood effects, then where one lives does matter.

The cross-sectional Blinder decompositions allow us to conclude that this has not always been the case. In 1976 the difference between low-status and other CDs was very small, especially for males. The small contribution from the coefficient components means that the returns to various endowments did not differ a great deal between CDs. Therefore the differences between low-status and other CDs have largely arisen since 1976. Therefore geography has become increasingly important.

The increasing importance of geography is emphasised by the overall increase in the explanatory power of the cross-sectional regression over time. Tables A2 show that the regressions provide a better explanation of the relationships between CDs in 1991 than they did in 1976 because the coefficient of determination increased for both males and females. However, this better fit has not eliminated the differences of coefficients for low-status and other CDs. Indeed, our analysis indicates that the importance of differences in coefficients has increased.

The impact of education in this process is difficult to determine. Despite the dramatic expansion of education throughout Australia, the cross-sectional Blinder decompositions show that the increased access to education may have been dominated by people in higher-status CDs. The relative disadvantage of low-status CDs appears to have been maintained and extended by the concentration of educational qualifications in other CDs. If this is the case, then efforts to ensure equality of access for all socio-economic groups have failed to deliver sufficient education to equalise the intra-urban differential of employment. However, if we differentiate the Blinder decomposition, then changing educational endowments has a very small effect on the dispersion of employment - population ratios. In such circumstances, while the changes in educational endowments did not increase the relative disadvantage of low-status CDs they have not equalised the existing disadvantage.

The overall results indicate that significant differences between low-status and other CDs have arisen since 1976. The changes in observable characteristics indicate that there has been a significant amount of sorting by these characteristics since 1976. That is, Australian cities have become more socially stratified since that time with well educated people increasingly living together. Furthermore, all of the differences between low-status and other CDs cannot be explained by changes in observable personal characteristics. In summary, geography apparently matters!

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Appendix A1: Representativeness of the Sample

The urban panel is conditioned upon a neighbourhood existing at the time of the 1976 census. Given that the panel includes more than 70 per cent of the CDs which existed in 1976, it should be reasonably representative of the urban population. However, to gauge how representative this urban panel sample is, the descriptive statistics from the panel can be compared to the corresponding statistics for all urban areas (see data section in text).

Table A1: Descriptive Statistics of Selected Variables

All Urban CDs	1976 census		1981 census		1986 census		1991 census	
Male Emp–Pop Ratio	0.847	(0.097)	0.815	(0.110)	0.757	(0.118)	0.656	(0.107)
Female Emp–Pop Ratio	0.501	(0.112)	0.516	(0.108)	0.520	(0.120)	0.509	(0.109)
Male Unemployment	0.041	(0.038)	0.058	(0.048)	0.090	(0.070)	0.128	(0.078)
Female Unemployment	0.050	(0.044)	0.069	(0.051)	0.096	(0.073)	0.110	(0.079)
Male Participation Rate	0.884	(0.092)	0.864	(0.100)	0.829	(0.101)	0.751	(0.090)
Female Participation	0.527	(0.113)	0.553	(0.107)	0.573	(0.113)	0.570	(0.103)
Household Income	11883	(2264)	11182	(2290)	11736	(2888)	11683	(3486)
Age (yrs)	33.564	(6.262)	34.765	(6.098)	35.551	(6.089)	35.832	(5.652)
Average Schooling (yrs)	9.505	(0.717)	9.792	(0.726)	9.908	(0.773)	10.367	(0.841)
Population over 15 in Manufacturing	0.133	(0.068)	0.115	(0.060)	0.090	(0.047)	0.076	(0.038)
Population over 15 with a Degree	0.033	(0.038)	0.051	(0.049)	0.064	(0.058)	0.095	(0.075)
Migrated into CD	0.415	(0.168)	0.407	(0.155)	0.425	(0.155)	0.431	(0.146)
N	13669		15206		16702		17997	
Urban Panel CDs	**1976 census**		**1981 census**		**1986 census**		**1991 census**	
Male Emp–Pop Ratio	0.851	(0.070)	0.816	(0.076)	0.751	(0.093)	0.650	(0.098)
Female Emp–Pop Ratio	0.508	(0.104)	0.526	(0.097)	0.526	(0.106)	0.511	(0.104)
Male Unemployment	0.041	(0.035)	0.058	(0.044)	0.091	(0.064)	0.132	(0.077)
Female Unemployment	0.050	(0.042)	0.068	(0.047)	0.095	(0.070)	0.113	(0.081)
Male Participation Rate	0.887	(0.063)	0.866	(0.060)	0.824	(0.069)	0.747	(0.077)
Female Participation	0.535	(0.105)	0.563	(0.094)	0.578	(0.098)	0.573	(0.094)
Household Income	11886	(2207)	11116	(2192)	11662	(2768)	11644	(3530)
Age (yrs)	34.066	(5.836)	35.589	(5.257)	36.755	(4.869)	37.127	(4.424)
Average Schooling (yrs)	9.498	(0.737)	9.798	(0.756)	9.935	(0.804)	10.446	(0.898)
Population over 15 in Manufacturing	0.139	(0.067)	0.120	(0.057)	0.090	(0.042)	0.074	(0.034)
Population over 15 with a Degree	0.035	(0.039)	0.054	(0.050)	0.069	(0.059)	0.107	(0.079)
Migrated into CD	0.397	(0.150)	0.382	(0.126)	0.399	(0.130)	0.407	(0.122)
N	9483		9483		9483		9483	

Notes: Household income is expressed in 1976 dollars.
Means are displayed first and standard deviations are then given in brackets
Source: ABS (1984a, 1984b, 1989, 1993).

Table A2.1: Probit Estimation of the Selection Equation for all Urban Areas

	1976				1991			
	Males		Females		Males		Females	
Constant	1.703	(0.506)	2.580	(0.440)	5.778	(0.503)	5.699	(0.452)
Distance to CBD	-0.002	(0.002)	-0.003	(0.002)	-0.026	(0.001)	-0.025	(0.001)
Population Densit	0.479	(0.063)	0.561	(0.062)	0.001	(0.000)	0.001	(0.000)
Marriage	-0.145	(0.187)	-0.328	(0.185)	-1.039	(0.185)	-1.746	(0.188)
Population 0-5	-1.465	(0.522)	0.031	(0.560)	-0.617	(0.381)	0.081	(0.400)
Population 5-15	0.167	(0.310)	0.202	(0.299)	-1.656	(0.360)	-2.163	(0.351)
Indigenous	-1.613	(0.763)	-1.265	(0.768)	-0.362	(0.784)	1.968	(0.929)
Overseas born	-0.074	(0.146)	-0.358	(0.148)	-0.580	(0.132)	-0.343	(0.124)
Age left school	-0.072	(0.033)	-0.094	(0.030)	-0.264	(0.033)	-0.263	(0.030)
Degrees	1.065	(0.386)	1.879	(0.600)	1.144	(0.270)	2.262	(0.293)
Diplomas	-1.245	(0.535)	-1.536	(0.561)	-1.696	(0.556)	0.379	(0.431)
Other certificate	-1.689	(0.493)	-0.045	(0.454)	-1.089	(0.729)	-1.633	(0.616)
Trade certificate	-0.503	(0.249)	-0.853	(0.633)	-1.753	(0.254)	-2.095	(0.820)
Population 15-24	-0.017	(0.200)	-0.693	(0.188)	-0.289	(0.189)	-0.289	(0.194)
Population 25-44	-1.598	(0.294)	-2.329	(0.300)	-0.509	(0.316)	-1.260	(0.296)
Population 45-54	-0.144	(0.291)	0.126	(0.281)	-1.785	(0.264)	0.010	(0.249)
Population over 55	0.735	(0.252)	0.503	(0.245)	2.674	(0.239)	3.389	(0.237)
Agriculture	-5.111	(0.844)	-3.946	(0.727)	-0.962	(0.671)	-1.773	(0.697)
Mining	-5.524	(0.569)	-0.865	(1.005)	-5.506	(0.635)	-2.322	(1.190)
Electricity, Gas	1.344	(0.581)	-0.930	(0.962)	1.124	(0.515)	-1.253	(0.831)
Construction	0.289	(0.266)	-2.259	(0.484)	0.211	(0.279)	-1.075	(0.443)
Wholesale	0.763	(0.222)	-0.098	(0.176)	0.451	(0.225)	-0.335	(0.224)
Transport	0.964	(0.321)	-0.005	(0.416)	0.648	(0.303)	0.041	(0.359)
Communication.	1.831	(0.550)	-0.317	(0.548)	1.752	(0.461)	0.907	(0.509)
Business	0.785	(0.302)	0.485	(0.223)	0.449	(0.246)	-0.312	(0.236)
Public Admin	0.571	(0.207)	-0.160	(0.265)	0.919	(0.228)	0.047	(0.274)
Community Services	0.166	(0.262)	0.078	(0.167)	0.603	(0.237)	0.520	(0.202)
Rec Services	-1.143	(0.349)	-1.045	(0.220)	0.021	(0.268)	-0.763	(0.248)
Newcastle	0.069	(0.078)	-0.188	(0.075)	-0.096	(0.075)	-0.382	(0.071)
Melbourne	0.398	(0.036)	0.458	(0.035)	0.262	(0.031)	0.263	(0.032)
Geelong	0.455	(0.124)	0.446	(0.123)	-0.050	(0.105)	-0.048	(0.105)
Brisbane	-1.037	(0.049)	-0.965	(0.046)	-1.172	(0.043)	-1.157	(0.045)
Gold Coast	-0.823	(0.108)	-0.800	(0.101)	-1.653	(0.083)	-1.518	(0.081)
Adelaide	-0.504	(0.048)	-0.425	(0.048)	-0.708	(0.043)	-0.737	(0.044)
Perth	-0.227	(0.055)	-0.153	(0.052)	-0.631	(0.043)	-0.686	(0.043)
Hobart	0.036	(0.105)	0.150	(0.105)	-0.350	(0.095)	-0.286	(0.095)
Canberra	-0.480	(0.104)	-0.257	(0.105)	-0.979	(0.085)	-0.828	(0.086)
Public housing	0.170	(0.106)	0.118	(0.106)	-0.308	(0.101)	-0.227	(0.102)
LR test	2327		2208		4337		4370	
N	13606		13604		17775		17769	

Notes: Standard errors are reported in brackets

The likelihood ratio test tests the null hypothesis that there is no regression - distributed. χ^2 with 38 d.f.

Table A2.2: Estimation of Male Employment–Population Ratio in all Panel Areas

	1976			1991		
	Coefficient	t-ratio	Mean	Coefficient	t-ratio	Mean
Constant	0.027	(0.7)	1.000	-0.439	(-10.9)	1.000
Population 0-5	0.497	(13.3)	0.074	-0.039	(-1.0)	0.062
Population 5-15	0.219	(9.4)	0.159	0.091	(2.5)	0.114
Population 15-24	0.228	(12.3)	0.238	0.289	(13.1)	0.208
Population 25-44	0.721	(28.3)	0.114	0.889	(31.3)	0.112
Population 45-54	0.411	(19.1)	0.157	0.675	(26.1)	0.162
Population over 55	0.220	(10.1)	0.206	0.209	(9.0)	0.180
Indigenous	-0.086	(-1.5)	0.005	-0.181	(-3.0)	0.006
Overseas born	0.040	(4.5)	0.271	-0.128	(-13.2)	0.305
Age left school	0.022	(10.2)	15.371	0.040	(15.5)	16.079
Degrees	0.116	(4.0)	0.050	0.220	(9.9)	0.124
Diplomas	0.173	(4.8)	0.036	0.282	(6.8)	0.041
Other certificate	0.381	(12.1)	0.041	0.498	(9.2)	0.024
Trade certificate	0.294	(17.9)	0.167	0.454	(21.2)	0.159
Marriage	0.169	(12.4)	0.601	0.157	(9.8)	0.504
Agriculture	0.232	(2.6)	0.005	-0.071	(-0.8)	0.005
Mining	0.325	(4.1)	0.005	-0.008	(-0.1)	0.005
Electricity, Gas	-0.224	(-6.1)	0.025	-0.014	(-0.4)	0.017
Construction	-0.122	(-6.4)	0.099	0.000	(0.0)	0.084
Wholesale	-0.077	(-4.6)	0.193	0.005	(0.2)	0.198
Transport	-0.005	(-0.2)	0.075	-0.010	(-0.4)	0.070
Communication.	-0.073	(-2.1)	0.027	-0.024	(-0.7)	0.024
Business	-0.067	(-3.2)	0.084	-0.001	(0.0)	0.142
Public Admin	0.005	(0.2)	0.070	0.173	(5.6)	0.063
Community Services	-0.287	(-10.0)	0.093	-0.165	(-7.3)	0.127
Rec Services	0.086	(2.7)	0.042	-0.005	(-0.2)	0.073
Newcastle	-0.038	(-7.1)	0.030	-0.079	(-15.3)	0.030
Melbourne	-0.004	(-1.5)	0.336	-0.026	(-10.8)	0.336
Geelong	-0.042	(-6.9)	0.015	-0.054	(-9.7)	0.015
Brisbane	0.087	(8.6)	0.059	0.009	(1.6)	0.059
Gold Coast	-0.068	(-5.6)	0.009	-0.069	(-6.4)	0.009
Adelaide	0.040	(7.6)	0.077	-0.018	(-5.4)	0.077
Perth	0.016	(3.8)	0.075	-0.021	(-6.4)	0.076
Hobart	0.001	(0.2)	0.017	-0.056	(-9.1)	0.017
Canberra	0.053	(5.9)	0.017	-0.031	(-3.2)	0.016
Public housing	-0.042	(-6.3)	0.047	-0.137	(-15.1)	0.064
λ^M	-0.127	(-8.4)	0.447	-0.037	(-5.1)	0.612
R^2	0.563			0.664		
B(38)	3076.9			2695.76		
n	9260			9260		

Notes: White's heteroscedastically robust covariance matrix is used for all t–ratios.
The constant reflects the omitted categories: Non-Indigenous, Australian born 30 to 40 year old Sydney residents without qualifications in the manufacturing industry.
B (38) is the Breusch-Pagan test for heteroscedasticity distributed. c^2 with 37 d.f. Significant at the 5 per cent level.

Table A2.3 Estimation of Female Employment–population Ratio in all Panel Areas

	1976			1991		
	Coefficient	t-ratio	Mean	Coefficient	t-ratio	Mean
Constant	0.153	(5.4)	1.000	-0.197	(-6.5)	1.000
Population 0-5	-0.585	(-13.4)	0.074	-0.221	(-6.8)	0.062
Population 5-15	-0.077	(-3.8)	0.159	-0.057	(-2.0)	0.114
Population 15-24	0.501	(30.6)	0.227	0.355	(17.4)	0.198
Population 25-44	0.876	(34.5)	0.107	0.981	(35.4)	0.103
Population 45-54	0.363	(20.2)	0.145	0.760	(38.7)	0.155
Population over 55	-0.019	(-1.1)	0.204	0.055	(2.5)	0.172
Indigenous	-0.009	(-0.1)	0.005	-0.243	(-1.8)	0.006
Overseas born	0.156	(16.2)	0.244	-0.149	(-15.9)	0.289
Age left school	0.005	(2.5)	15.067	0.022	(10.5)	15.768
Degrees	0.213	(5.3)	0.021	0.186	(8.5)	0.095
Diplomas	0.628	(15.3)	0.033	0.395	(12.5)	0.067
Other certificate	0.467	(13.7)	0.047	0.761	(17.0)	0.040
Trade certificate	0.387	(9.2)	0.027	0.711	(10.8)	0.022
Marriage	0.037	(2.6)	0.601	0.100	(6.3)	0.504
Agriculture	0.539	(5.4)	0.004	-0.047	(-0.7)	0.003
Mining	0.264	(2.8)	0.002	0.063	(0.9)	0.002
Electricity, Gas	0.080	(1.0)	0.004	0.079	(1.3)	0.004
Construction	0.264	(7.5)	0.018	0.029	(0.7)	0.016
Wholesale	0.019	(1.6)	0.230	0.031	(1.4)	0.204
Transport	0.097	(3.4)	0.024	0.070	(2.3)	0.028
Communication.	0.051	(1.5)	0.014	-0.001	(0.0)	0.014
Business	-0.040	(-2.6)	0.116	0.030	(1.3)	0.163
Public Admin	0.043	(2.0)	0.051	0.110	(3.2)	0.055
Community Services	-0.084	(-7.1)	0.258	-0.050	(-2.3)	0.306
Rec Services	0.107	(5.2)	0.081	0.027	(1.0)	0.095
Newcastle	-0.050	(-11.5)	0.030	-0.074	(-15.7)	0.030
Melbourne	-0.038	(-12.9)	0.336	-0.021	(-9.9)	0.336
Geelong	-0.113	(-19.0)	0.015	-0.081	(-17.2)	0.015
Brisbane	0.127	(14.3)	0.059	0.021	(4.5)	0.059
Gold Coast	0.044	(4.3)	0.009	-0.006	(-0.8)	0.009
Adelaide	0.051	(10.6)	0.077	0.008	(2.5)	0.077
Perth	-0.001	(-0.3)	0.075	-0.001	(-0.4)	0.076
Hobart	-0.031	(-5.5)	0.017	-0.037	(-6.6)	0.017
Canberra	0.074	(8.8)	0.017	0.025	(2.8)	0.016
Public housing	-0.084	(-14.5)	0.047	-0.166	(-20.2)	0.064
λ^F	-0.237	(-16.4)	0.451	-0.062	(-9.9)	0.611
R^2	0.541			0.738		
B(38)	1017.49			2184.42		
n	9260			9260		

Notes: White's heteroscedastically robust covariance matrix is used for all t–ratios.
The constant reflects the omitted categories: Non-Indigenous, Australian born 30 to 40 year old Sydney residents without qualifications in the manufacturing industry.
B (38) is the Breusch-Pagan test for heteroscedasticity - distributed. χ^2 with 37 d.f. Significant at the 5 per cent level.

Table A2.4: Estimation of Male Employment–population Ratio in Low-status Panel Areas

	1976			1991		
	Coefficient	t-ratio	Mean	Coefficient	t-ratio	Mean
Constant	-0.063	(-0.7)	1.000	-0.359	(-3.1)	1.000
Population 0-5	0.421	(4.0)	0.083	-0.129	(-1.3)	0.076
Population 5-15	0.282	(4.7)	0.159	0.114	(1.2)	0.121
Population 15-24	0.482	(10.2)	0.256	0.517	(7.5)	0.206
Population 25-44	0.728	(9.4)	0.123	0.741	(8.2)	0.126
Population 45-54	0.531	(7.6)	0.149	0.529	(6.7)	0.141
Population over 55	0.404	(6.0)	0.201	0.135	(1.7)	0.173
Indigenous	-0.471	(-2.3)	0.008	-0.598	(-2.3)	0.012
Overseas born	0.042	(1.6)	0.334	-0.216	(-8.1)	0.408
Age left school	0.020	(4.4)	14.846	0.036	(5.6)	15.639
Degrees	-0.007	(0.0)	0.013	0.573	(5.5)	0.050
Diplomas	0.113	(0.5)	0.012	0.538	(3.3)	0.022
Other certificate	0.625	(4.6)	0.023	0.668	(3.0)	0.018
Trade certificate	0.192	(3.4)	0.163	0.319	(4.4)	0.133
Marriage	0.185	(5.4)	0.586	0.369	(7.9)	0.468
Agriculture	0.085	(0.4)	0.004	-0.141	(-1.0)	0.004
Mining	0.152	(1.1)	0.006	-0.078	(-0.5)	0.006
Electricity, Gas	-0.068	(-0.7)	0.025	-0.211	(-2.2)	0.017
Construction	-0.187	(-3.2)	0.094	0.027	(0.4)	0.075
Wholesale	-0.015	(-0.3)	0.167	-0.100	(-1.9)	0.189
Transport	-0.081	(-1.3)	0.088	-0.215	(-3.3)	0.088
Communication.	-0.143	(-1.3)	0.025	-0.098	(-1.1)	0.027
Business	-0.031	(-0.3)	0.038	-0.090	(-1.0)	0.077
Public Admin	0.045	(1.1)	0.071	0.087	(1.5)	0.062
Community Services	-0.315	(-2.8)	0.059	-0.135	(-1.9)	0.093
Rec Services	0.005	(0.1)	0.034	-0.135	(-1.9)	0.069
Newcastle	-0.050	(-4.0)	0.069	-0.106	(-7.1)	0.072
Melbourne	-0.009	(-1.2)	0.321	-0.053	(-6.1)	0.323
Geelong	-0.055	(-3.6)	0.027	-0.099	(-6.7)	0.025
Brisbane	0.068	(3.0)	0.054	0.046	(2.1)	0.050
Gold Coast	-0.065	(-2.6)	0.011	-0.054	(-1.6)	0.011
Adelaide	0.017	(1.3)	0.107	-0.019	(-1.4)	0.109
Perth	0.047	(3.7)	0.046	-0.024	(-1.5)	0.046
Hobart	-0.040	(-1.3)	0.012	-0.095	(-3.3)	0.012
Canberra	0.159	(2.4)	0.007	-0.029	(-0.4)	0.004
Public housing	-0.066	(-5.7)	0.217	-0.112	(-6.7)	0.259
λ^M	-0.109	(-3.6)	0.420	-0.072	(-3.2)	0.596
Chow Test(37)	128			327		
R^2	0.650			0.727		
B(37)	417			331		
n	952			923		

Notes: White's heteroscedastically robust covariance matrix is used for all t–ratios.
The constant reflects the omitted categories: Non-Indigenous, Australian born 30 to 40 year old Sydney residents without qualifications in the manufacturing industry.
B (38) is the Breusch-Pagan test for heteroscedasticity - distributed. χ^2 with 37 d.f.
Significant at the 5 per cent level.
The Chow test is the asymptotic Chow test that low-status and other CDs should be estimated separately - distributed. χ^2 with 37 d.f.

Table A2.5: Estimation of Male Employment–population Ratio in Other Panel Areas

	1976			1991		
	Coefficient	t-ratio	Mean	Coefficient	t-ratio	Mean
Constant	0.056	(1.5)	1.000	-0.452	(-10.3)	1.000
Population 0-5	0.541	(13.5)	0.073	-0.015	(-0.4)	0.060
Population 5-15	0.203	(8.4)	0.159	0.101	(2.6)	0.113
Population 15-24	0.194	(10.2)	0.236	0.257	(11.4)	0.208
Population 25-44	0.719	(27.9)	0.113	0.879	(30.7)	0.110
Population 45-54	0.399	(18.8)	0.158	0.693	(26.0)	0.164
Population over 55	0.195	(9.7)	0.207	0.222	(8.9)	0.181
Indigenous	-0.066	(-1.5)	0.004	-0.119	(-2.0)	0.005
Overseas born	0.046	(4.8)	0.263	-0.111	(-10.5)	0.294
Age left school	0.022	(9.3)	15.431	0.042	(14.3)	16.128
Degrees	0.117	(4.1)	0.054	0.203	(9.1)	0.132
Diplomas	0.205	(5.6)	0.039	0.273	(6.4)	0.043
Other certificate	0.392	(11.9)	0.044	0.477	(8.9)	0.025
Trade certificate	0.303	(18.1)	0.167	0.446	(19.5)	0.162
Marriage	0.177	(11.8)	0.603	0.134	(8.0)	0.508
Agriculture	0.304	(3.3)	0.005	-0.068	(-0.8)	0.005
Mining	0.457	(5.0)	0.005	0.051	(0.8)	0.005
Electricity, Gas	-0.270	(-7.1)	0.025	0.028	(0.7)	0.017
Construction	-0.117	(-6.0)	0.100	-0.022	(-0.8)	0.085
Wholesale	-0.100	(-6.2)	0.196	0.004	(0.2)	0.199
Transport	-0.019	(-0.8)	0.074	0.007	(0.2)	0.068
Communication.	-0.083	(-2.3)	0.027	-0.028	(-0.8)	0.024
Business	-0.078	(-4.0)	0.090	-0.003	(-0.2)	0.150
Public Admin	-0.032	(-1.4)	0.069	0.148	(4.4)	0.064
Community Services	-0.287	(-10.4)	0.097	-0.177	(-7.0)	0.131
Rec Services	0.107	(3.2)	0.042	-0.003	(-0.1)	0.073
Newcastle	-0.037	(-6.2)	0.025	-0.073	(-13.6)	0.025
Melbourne	-0.008	(-2.5)	0.338	-0.024	(-9.4)	0.338
Geelong	-0.045	(-6.7)	0.014	-0.046	(-7.6)	0.014
Brisbane	0.108	(9.4)	0.060	0.008	(1.5)	0.060
Gold Coast	-0.053	(-3.9)	0.009	-0.065	(-5.9)	0.009
Adelaide	0.050	(8.4)	0.074	-0.017	(-5.0)	0.074
Perth	0.017	(4.1)	0.079	-0.020	(-6.1)	0.079
Hobart	0.006	(1.0)	0.017	-0.051	(-8.2)	0.017
Canberra	0.057	(6.1)	0.018	-0.025	(-2.4)	0.018
Public housing	0.002	(0.2)	0.027	-0.114	(-8.7)	0.043
λ^M	-0.157	(-9.0)	0.450	-0.034	(-4.5)	0.614
R^2	0.562			0.599		
B(37)	2501			2160		
n	8308			8315		

Notes: White's heteroscedastically robust covariance matrix is used for all t–ratios.
The constant reflects the omitted categories: Non-Indigenous, Australian born 30 to 40 year old Sydney residents without qualifications in the manufacturing industry.
B (38) is the Breusch-Pagan test for heteroscedasticity - distributed. χ^2 with 37 d.f. Significant at the 5 per cent level.

Table A2.6: Estimation of Female Employment–population Ratio in Low-status Panel Areas

	1976			1991		
	Coefficient	t-ratio	Mean	Coefficient	t-ratio	Mean
Constant	0.101	(1.4)	1.000	-0.022	(-0.2)	1.000
Population 0-5	-0.966	(-9.5)	0.083	-0.358	(-3.9)	0.076
Population 5-15	0.013	(0.2)	0.159	0.037	(0.5)	0.121
Population 15-24	0.593	(15.8)	0.253	0.410	(6.8)	0.205
Population 25-44	0.865	(11.4)	0.108	0.598	(7.8)	0.119
Population 45-54	0.381	(6.9)	0.141	0.588	(8.0)	0.130
Population over 55	0.062	(1.4)	0.204	-0.176	(-2.2)	0.169
Indigenous	-0.131	(-0.8)	0.009	-0.757	(-4.6)	0.014
Overseas born	0.147	(5.5)	0.306	-0.199	(-9.5)	0.391
Age left school	0.005	(0.9)	14.519	0.014	(2.5)	15.184
Degrees	0.155	(0.6)	0.007	0.351	(3.3)	0.046
Diplomas	0.558	(3.1)	0.014	0.815	(5.3)	0.034
Other certificate	0.236	(1.6)	0.026	1.044	(5.9)	0.028
Trade certificate	0.230	(1.6)	0.024	0.753	(3.1)	0.016
Marriage	0.085	(2.5)	0.586	0.306	(6.7)	0.468
Agriculture	0.847	(4.7)	0.003	0.148	(2.4)	0.004
Mining	0.001	(0.0)	0.001	0.344	(1.6)	0.001
Electricity, Gas	0.122	(0.7)	0.005	0.066	(0.5)	0.004
Construction	0.352	(2.7)	0.009	0.160	(1.9)	0.012
Wholesale	-0.030	(-1.0)	0.227	-0.010	(-0.3)	0.200
Transport	0.139	(1.7)	0.020	0.062	(1.0)	0.026
Communication.	0.065	(0.6)	0.017	-0.183	(-2.6)	0.019
Business	-0.059	(-1.3)	0.087	0.006	(0.2)	0.132
Public Admin	0.108	(2.3)	0.049	0.143	(2.5)	0.059
Community Services	-0.020	(-0.6)	0.189	-0.110	(-3.2)	0.252
Rec Services	0.053	(1.1)	0.085	0.008	(0.2)	0.102
Newcastle	-0.086	(-9.3)	0.069	-0.106	(-10.0)	0.072
Melbourne	-0.034	(-4.6)	0.321	-0.058	(-7.6)	0.323
Geelong	-0.127	(-11.9)	0.027	-0.111	(-9.0)	0.025
Brisbane	0.097	(3.9)	0.054	0.075	(4.4)	0.050
Gold Coast	0.012	(0.5)	0.011	0.065	(3.0)	0.011
Adelaide	0.015	(1.2)	0.107	0.008	(0.9)	0.109
Perth	-0.017	(-1.3)	0.046	0.001	(0.1)	0.046
Hobart	-0.051	(-3.2)	0.012	-0.084	(-4.5)	0.012
Canberra	0.179	(4.2)	0.007	-0.081	(-3.0)	0.004
Public housing	-0.075	(-6.9)	0.217	-0.107	(-10.1)	0.259
λ^F	-0.189	(-5.7)	0.417	-0.146	(-8.0)	0.603
Chow (37)	120			364		
R^2	0.703			0.772		
B(37)	142			337		
n	952			923		

Notes: White's heteroscedastically robust covariance matrix is used for all t–ratios.
The constant reflects the omitted categories: Non-Indigenous, Australian born 30 to 40 year old Sydney residents without qualifications in the manufacturing industry.
B (38) is the Breusch-Pagan test for heteroscedasticity - distributed. χ^2 with 37 d.f. Significant at the 5 per cent level.
The Chow test is the asymptotic Chow test that low-status and other CDs should be estimated separately - distributed. χ^2 with 37 d.f.

Table A2.7: Estimation of Female Employment–population Ratio in Other Panel Areas

	1976			1991		
	Coefficient	t-ratio	Mean	Coefficient	t-ratio	Mean
Constant	0.173	(5.6)	1.000	-0.221	(-6.8)	1.000
Population 0-5	-0.516	(-11.0)	0.073	-0.184	(-5.6)	0.060
Population 5-15	-0.089	(-4.1)	0.159	-0.021	(-0.7)	0.113
Population 15-24	0.501	(27.7)	0.224	0.351	(16.9)	0.197
Population 25-44	0.889	(33.2)	0.107	1.040	(40.5)	0.102
Population 45-54	0.355	(18.8)	0.146	0.758	(37.6)	0.158
Population over 55	-0.034	(-1.8)	0.204	0.062	(2.7)	0.173
Indigenous	0.008	(0.1)	0.004	-0.099	(-1.4)	0.005
Overseas born	0.162	(15.5)	0.237	-0.129	(-12.6)	0.278
Age left school	0.004	(2.1)	15.130	0.024	(10.7)	15.832
Degrees	0.213	(5.3)	0.023	0.173	(7.9)	0.101
Diplomas	0.661	(15.7)	0.035	0.372	(11.5)	0.071
Other certificate	0.483	(14.0)	0.049	0.747	(16.1)	0.042
Trade certificate	0.403	(9.4)	0.027	0.643	(9.5)	0.022
Marriage	0.039	(2.4)	0.603	0.091	(5.5)	0.508
Agriculture	0.485	(6.4)	0.004	-0.168	(-2.8)	0.003
Mining	0.308	(3.1)	0.002	0.001	(0.0)	0.002
Electricity, Gas	0.028	(0.4)	0.004	0.065	(0.9)	0.004
Construction	0.278	(7.6)	0.019	-0.003	(-0.1)	0.016
Wholesale	0.025	(2.0)	0.231	0.007	(0.2)	0.204
Transport	0.082	(2.7)	0.024	0.042	(1.1)	0.028
Communication.	0.058	(1.6)	0.014	-0.002	(0.0)	0.013
Business	-0.049	(-2.9)	0.119	0.008	(0.3)	0.166
Public Admin	0.021	(0.9)	0.051	0.055	(1.5)	0.054
Community Services	-0.093	(-7.3)	0.266	-0.071	(-2.6)	0.312
Rec Services	0.122	(5.5)	0.081	0.025	(0.8)	0.094
Newcastle	-0.039	(-7.9)	0.025	-0.061	(-11.3)	0.025
Melbourne	-0.044	(-13.3)	0.338	-0.019	(-8.6)	0.338
Geelong	-0.115	(-16.9)	0.014	-0.077	(-15.3)	0.014
Brisbane	0.144	(14.8)	0.060	0.023	(4.7)	0.060
Gold Coast	0.061	(5.5)	0.009	-0.007	(-0.7)	0.009
Adelaide	0.060	(11.6)	0.074	0.013	(3.7)	0.074
Perth	0.003	(0.8)	0.079	0.000	(0.1)	0.079
Hobart	-0.030	(-5.0)	0.017	-0.029	(-5.2)	0.017
Canberra	0.076	(9.8)	0.018	0.035	(4.2)	0.018
Public housing	-0.079	(-8.8)	0.027	-0.166	(-11.5)	0.043
λ^F	-0.265	(-16.5)	0.455	-0.059	(-8.8)	0.612
R^2	0.518			0.700		
B(37)	844			1499		
n	8308			8313		

Notes: White's heteroscedastically robust covariance matrix is used for all t–ratios.
The constant reflects the omitted categories: Non-Indigenous, Australian born 30 to 40 year old Sydney residents without qualifications in the manufacturing industry.
B (38) is the Breusch-Pagan test for heteroscedasticity - distributed. χ^2 with 37 d.f. Significant at the 5 per cent level.

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