Department of Labour
TE TARI MAHI

SETTLEMENT PATTERNS AND THE GEOGRAPHIC MOBILITY OF RECENT MIGRANTS TO NEW ZEALAND

Economic Impacts of Immigration Working Paper Series

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For the Department of Labour
April 2008

Acknowledgements

We thank Jacques Poot and Deborah Cobb-Clark for comments on the paper. We also thank James Newell for providing us with data and assistance in creating local labour market boundaries. Access to the data used in this study was provided by Statistics New Zealand under conditions designed to give effect to the security and confidentiality provisions of the Statistics Act 1975. All non-regression results using Census data are subject to base three rounding in accordance with Statistics New Zealand's release policy for census data. The project is funded by the Department of Labour's Economic Impact of Immigration research programme and by Marsden Fund grant 05-MEP-002. Any views expressed are the sole responsibility of the authors and do not purport to represent those of the Department of Labour, Motu or Statistics New Zealand.

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ISSN 1176-2667.

ABSTRACT

Twenty-three percent of New Zealand's population is foreign-born and forty percent of migrants have arrived in the past ten years. Newly arriving migrants tend to settle in spatially concentrated areas and this is especially true in New Zealand. This paper uses census data to examine the characteristics of local areas that attract new migrants and gauges the extent to which migrants are choosing to settle where there are the best labour market opportunities as opposed to where there are already established migrant networks. We estimate McFadden's choice models to examine both the initial location choice made by new migrants and the internal mobility of this cohort of migrants five years later. This allows us to examine whether the factors that affect settlement decision change as migrants spend more time in New Zealand.

JEL classifications: J61, R23

Keywords: Immigration, Settlement, Mobility, New Zealand

1. INTRODUCTION

Twenty-three percent of New Zealand's population is foreign-born and forty percent of migrants have arrived in the past ten years. Newly arriving migrants tend to settle in spatially concentrated areas and this is especially true in New Zealand. For example, almost 60% of the adult migrants arriving in NZ between 1996 and 2001 lived in either Central or South Auckland at the time of the 2001 census. A further 10% lived in Wellington and 8% in Christchurch. This paper uses census data to examine the characteristics of local areas that attract new migrants and gauges the extent to which migrants are choosing to settle where there are the best labour market opportunities as opposed to where there are already established migrant networks. We estimate McFadden's choice models to examine both the initial location choice made by new migrants and the internal mobility of this cohort of migrants five years later. This allows us to examine whether the factors that affect settlement decision change as migrants spend more time in New Zealand.

Understanding where migrants choose to live is important for a number of reasons. First, newly arriving migrants may affect the labour market opportunities of both the native-born and previous migrants in local communities and/or might encourage these individuals to move away to avoid potential displacement effects (Borjas 1994; Friedberg and Hunt 1995). Second, recent migrants are potentially more responsive to regional labour market differences in their new country than already settled individuals who may have important connections to their local community and thus migrant inflows might improve the efficiency of labour markets (Borjas 2001). Third, the clustering of migrants in particular locations may have negative impacts on infrastructure because of congestion effects or lead to increased prices for particular goods that are in high demand among migrants, such as housing and urban infrastructure (Poot 1998; Saiz 2006).

A number of recent studies examine the locational choices of migrants (Bartel 1989; Card and Lewis 2005; Chiswick and Miller 2004; Filer 1992; Funkhouser 2000; Jaeger 2007; Zavodny 1999). These studies find consistent evidence that migrants are attracted to areas where there are high numbers of migrants, especially from their own countries, but find mixed evidence on whether locational choices are responsive to spatial differences in local labour market conditions (Bartel 1989; Jaeger 2007). However, all of these studies examine the settlement decisions of migrants to the United States, where legal migration is primarily for family reunification and the majority of migrants are low-skilled. In contrast, New Zealand has a highly structured immigration system that focuses mainly on skilled migrants and has a highly mobile population both internally and internationally (Maré and Choy 2001; Poot and Cochrane 2004; Maré and Timmins 2005). Thus, it difficult to know whether these previous results are relevant for understanding the settlement decisions of migrants in New Zealand.

2. DATA AND SAMPLE CHARACTERISTICS

2.1 Data Sources and Variable Definitions

This paper uses unit record data for the entire usually resident New Zealand population from the 1996 and 2001 Census.[1] The Census collects information on each individual's country of birth and their year of first arrival in New Zealand.[2] We restrict our analysis throughout to individuals aged 30-54 with non-missing country of birth and years in New Zealand, if foreign-born.[3] We focus on this age group to exclude students and individuals nearing retirement. We classify individuals as being either New Zealand-born, a recent migrant or an earlier migrant, where recent migrants are all individuals who first arrived in New Zealand less than 5 years ago and earlier migrants are all individuals who first arrived between 5 and 10 years ago. All other foreign-born individuals are excluded from the analysis in this paper.

Information is also collected about the current usual residential location of each individual and their usual residential location (including overseas) five years before the census date (i.e. at the time of the previous census). This location information is coded to the census meshblock, allowing us to identify local labour market areas (LMAs). In practice, we utilise the 58 LMAs defined in Newell and Papps (2001) using an algorithm that ensures that most people who live in a LMA work in it, and most people who work in a LMA live in it.[4] We drop a small number of individuals for whom the address recorded on the census form is not sufficient for assigning an LMA to the current residence.[5] Focusing on functional local labour market areas has major advantages over using administratively defined geographic areas, as migration between LMAs is typically related to employment mobility, whereas migration within a LMA more strongly reflects residential factors (Maré and Timmins 2005).

These restrictions leave us with an analysis population of 1.04 million individuals in the 1996 Census of which 91% are NZ-born, 5% are recent migrants and 4%

[1] We also have access to the 1986 and 1991 Census data, but choose to focus on the 1996 and 2001 for two reasons: first, New Zealand underwent a period of comprehensive market-oriented economic reform from 1984-93 which complicates interpretation of any results from the early time-period (Evans et al. 1996); and second, the 1991 Census did not ask foreign-born individuals their year of first arrival in New Zealand making it impossible to separate recent from earlier migrants in this Census. We do present some descriptive results for 1986 for comparison purposes.

[2] Country of birth is a write-in question. All responses are coded to a particular country or region, if the answer is incomplete.

[3] 5% and 4% of individuals aged 30-54 are missing country of birth or years in New Zealand in the 1996 and 2001 Census, respectively.

[4] Appendix A contains further information on how LMAs are created and a map of the 58 LMAs in New Zealand. There is an additional 'overseas' LMA.

[5] Less than 1% of prime-age individuals have an undefined current address. As discussed below, we include individuals for whom the LMA of their previous residence is undefined.

are earlier migrants. For the 2001 Census, our total analysis population is 1.11 million of which 90% are NZ-born, 6% are recent migrants and 4% are earlier migrants.

2.2 Sample Characteristics

Table 1 presents demographic and socioeconomic characteristics of recent migrants and the NZ-born in the 1996 and 2001 Census. As in most countries, recent migrants are younger than the non-immigrant population (for example, 33% are less than thirty-five versus 24% of the NZ-born in 1996 and 31% versus 21% in 2001). But unlike the US where most immigrants are low skilled, in New Zealand, recent migrants are much more qualified than the NZ-born, with 44% of recent migrants in 1996 (36% in 2001) having university degrees versus 10% of the NZ-born (12% in 2001). This is reflected throughout the qualification distribution, with few migrants having no qualifications compared to the NZ-born.[6] This comes as no big surprise given that NZ operates a highly structured immigration system that focuses mainly on higher-skilled migrants. A similar proportion of recent migrants and the NZ-born are female. As will be discussed in more detail later in the paper, recent migrants are clustered in certain local areas, in particular, 69-70% of recent migrants live in Auckland, Wellington and Christchurch versus only 35% of the NZ-born.

The ethnic distribution of recent migrants is quite different from that of the NZ-born.[7] In both 1996 and 2001, among the NZ-born, 83% of individuals aged 30-54 report being European/Pakeha, 15% Māori, 1% Pacific Islander, 1% Asian and 0.1% Other. Among recent migrants in 1996, only 45% of the individuals aged 30-54 report being European/Pakeha, while 46% report being Asian, 5% Other, 4% Pacific Islander and 0.1% Māori. Among recent migrants in 2001, the percentage reporting being Pacific Islander increased to 7% and Other to 6%, with the percentage reporting being European/Pakeha or Asian decreased by 2%. These changes are consistent with the observed changes in the birthplaces of recent migrants. In general, the region of birth distribution of recent migrants is fairly stable between 1996 and 2001, but there has been an increase in immigration from the Pacific Islands and Sub-Saharan Africa (including South Africa) and a decline in immigration from North-East Asia.[8]

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[6] A large number of migrants have missing qualifications in 1996 because of the way that foreign qualifications were coded in this census. Qualifications are also missing for a smaller number of NZ-born in both years and migrants in 2001. These individuals are excluded from the qualification tabulations.

[7] Individuals in the census can report up to three ethnicities. We focus on the distribution of prioritised ethnicity, which assigns each individual to a single ethnic group. An individual is assigned to the first ethnic group they report in the following order: Māori, Pacific, Asian, Other, European/Pakeha.

[8] The Pacific Islands include Melanesia, Micronesia, and Polynesia (excluding Hawaii); the British Isles include the UK and Ireland; Western Europe includes Austria, Belgium, France, Germany, Netherlands, Switzerland and the smaller countries in that area; Northern Europe includes all the Scandinavian countries; Southern Europe includes Italy, Portugal, Spain and the smaller countries in that area; South-Eastern Europe includes Greece, Cyprus, the countries of the former Yugoslavia, Bulgaria and Romania; Eastern Europe includes all remaining former Eastern Bloc countries, Russia, Ukraine,

Turning to socioeconomic characteristics; employment rates are much lower among recent migrants compared with the NZ-born, confirming previous findings by Winkelmann and Winkelmann (1998) and Boyd (2003). For example, only 65% of male recent migrants and 42% of female recent migrants are employed in 1996 compared with 87% of male NZ-born and 71% of the female NZ-born. This gap has narrowed in 2001, with 73% of male recent migrants and 52% of female recent migrants employed versus 87% of male NZ-born and 75% of female NZ-born. The Census does not directly collect wage data. However, it does collect total annual income on an individual basis.[9] Recent migrants have lower levels of average income than the NZ-born. On the other hand, average incomes for full-time wage/salary employees are quite similar for recent migrants and the NZ-born, suggesting that the overall difference occurs because of differences in hours of work and other income for these groups and not wage rates.[10] In general, average incomes for full-time wage and salary workers are likely to measure something reasonably akin to a wage rate and thus we use the mean income for these workers to proxy for the wages of particular migrant/skill-groups throughout the remainder of the paper.

2.3 An Analysis of Attrition/Return Migration between 1996 and 2001

The second half of this paper examines the mobility of earlier migrants. These migrants are the cohort of recent migrants five years on from first settling in New Zealand. We would like to compare the results from this analysis to those from our first analysis that examines the settlement decisions of recent migrants. However, some migrants from this cohort will have decided to leave New Zealand in this five-year period. We examine whether there is likely to have been selective attrition among the 1996 cohort of recent migrants by examining the characteristics of these migrants in 1996 and comparing these to the characteristics of earlier migrants in 2001. Once properly restricting both samples to individuals aged 30-54 in 1996 (i.e. individuals aged 35-59 in 2001), these are

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Belarus and the Baltic republics of the former Soviet Union; North Africa and the Middle East includes Algeria, Egypt, Libya, Morocco, Sudan, Tunisia, Iran, Iraq, Israel, Jordan, Lebanon, Saudi Arabia, Syria, Turkey and the Gulf States; South-East Asia includes Myanmar, Cambodia, Laos, Thailand, Viet Nam, Brunei, Indonesia, Malaysia, Philippines, Singapore, and East Timor; North-East Asia includes China, Hong Kong, Macau, Mongolia, Taiwan, Japan and the Koreas; and Southern and Central Asia includes Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, Sri Lanka and the former republics of the Soviet Union in the Caucasus and Central Asia; North America includes the US, Canada and Bermuda; Central and South America includes the remainder of the Americas, and Sub-Saharan Africa includes the remainder of Africa including South Africa.

[9] Total income is collected using a bracketed question and covers all income sources. We create a continuous variable by converting the raw data using the mid-point of each bracket and an estimated mid-point for the top bracket.

[10] Full-time wage/salary workers are individuals who report working more than 30 hours per week at their main employer (defined as the employer at which they work the most hours) and report being a paid employee (as opposed to being an employer of others in their own business, otherwise self-employed, or an unpaid family worker).

two snapshots of the exact same group of individual minus those that are not in New Zealand in 2001, either because they have moved elsewhere or have died.[11]

Table 2 presents the demographic characteristics of these two migrant groups. The first thing to note is that only 71% of recent migrants in 1996 remain in New Zealand five years later. Some of these 'missing' individuals may be overseas at the time of the 2001 census, but intending to return to New Zealand. Yet, this is unlikely to explain much of the attrition of this cohort. Unfortunately, the census does not provide information on the visa that each migrant holds, but it is likely that a number of recent migrants are on temporary visas, such as working holiday visas, and are intending to stay in New Zealand for less than five years. Interestingly, the observed attrition has had almost no impact on the gender, age, ethnicity, or region of birth distribution of this cohort of recent migrants. The only noticeable differences are a slightly reduced percentage of migrants from Australia and North America and a slight increased percentage of migrants from the Pacific Islands and British Isles.

Larger changes are seen in the distribution of qualifications. The percentage of the cohort with no qualifications decreased from 15% in 1996 to 8% in 2001 and the percentage with degrees qualifications decreased from 44% to 34%, while the percentage with school qualifications increased from 21% to 42%. Unfortunately, the coding of foreign qualifications changed between the two census years resulting in the percentage of recent migrants having missing qualification declining from over 20% in 1996 to only 5% in 2001. The observed changes in the qualification distribution for this cohort are consistent with most individuals with missing qualifications in 1996 being recoded as having a school qualification in 2001. The changes are also consistent with selective attrition by both unskilled and high-skilled recent migrants, compared to low-skilled migrants. Unfortunately, it is not possible to distinguish between these two explanations.

While this analysis examines selective attrition only for one cohort of recent migrants, it suggests that the settlement decisions of recent migrants can be directly compared to the mobility decisions of earlier migrants to investigate how locational decisions change with time spent in New Zealand. However, we acknowledge that if there is selective attrition for other cohorts of recent migrants (or if the estimated relationships between local characteristics and settlement decisions differ across cohorts), our results for recent and earlier migrants may not be directly comparable.

[11] Mortality is unlikely to be an important factor for the age-group examined in this paper, as based on projections from Statistics New Zealand's life tables, less than 1% of this age-group should die over a five-year period.

3. DESCRIPTIVE EVIDENCE

3.1 Where do Recent Migrants Settle?

This section begins by examining where recent migrants initially settle.[12] Previous studies on the US have shown that migrants are more geographically clustered than native-born individuals in both the 1980s and 1990s (Bartel 1989; Chiswick and Miller 2004). We begin by examining whether this is also the case for New Zealand. Figure 1 illustrates the percentage of recent migrants out of the overall recent migrant population in each of the 58 LMAs relative to the percentage of the NZ-born out of the overall NZ-born population in each of these LMAs in 1986, 1991 and 2001. Darker shaded LMAs have greater concentrations of recent migrants. The Auckland, South Auckland, Wellington and Queenstown LMAs have a higher relative population of recent migrants in all three years. The only other LMAs with a higher relative population of recent migrants are Kerikeri, Hutt Valley, Whangarei and New Plymouth, all only in 1986. Wellington had the greatest concentration of recent migrants in 1986, with Auckland having the greatest concentration in 1996 and 2001. Over time, there has been an increasing concentration of recent migrants in Auckland and South Auckland and a decreasing concentration in most other LMAs.

3.2 The Geographic Concentration of Migrants and the New Zealand-born

We next examine the geographic concentration of migrants and the New Zealand-born. The concentration of different population groups can be measured by calculating a geographic Herfindahl index for each group in each year, H_{it}, where $H_{it} = \sum_{j=1}^{58} \theta_{ijt}^2$ and θ_{itj} is the share of population group i that is located in LMA j in year t. The Herfindahl index has the range [0.0003,1], with larger values of the index indicating that a population group is more geographically concentrated. For example, a value of 1 indicates that an entire group's population is located in just one LMA. Table 3 presents aggregate Herfindahl indices for recent migrants, earlier migrants and the NZ-born in 1986, 1996 and 2001, and Herfindahl indices for sub-groups of each migrant group defined by gender, age, qualifications, ethnicity and region of birth. The aggregate Herfindahl index is considerably higher for both recent and earlier migrants than for the NZ-born and migrants have become more geographically concentrated over time. For example, the Herfindahl index is 0.12 for recent migrants in 1986, increasing to 0.21 in 1996 and 2001 and, for earlier migrants, it is 0.13 in 1986, 0.18 in 1996 and 0.20 in 2001, while for the NZ-born it remains steady at 0.06 in all three years.

Within migrant groups, there is little variation in geographic concentration for men versus women or for different age-groups in any year. Among the NZ-born,

[12] More accurately, we examine where they live at the time of census, which can be between 1 day and 4 years and 364 days after they initially arrive in New Zealand. Thus, for some recent migrants we are not examining their initial settlement decision. Unfortunately, the census does not collect any data on mobility between each census.

individuals with university degrees are more geographically concentrated in each year than all other individuals, while among recent and earlier migrants, individuals with post-school qualifications and university degrees are generally less geographically concentrated than those with less qualifications. There is large variation in geographic concentration for different ethnic groups. Among the NZ-born, Pacific Islanders, Asians and Others are more geographically concentrated than European/Pakeha and Māori and these three ethnic groups have become increasingly concentrated over time. Recent and earlier migrants in all ethnic groups are generally more geographically concentrated than comparable NZ-born. Pacific Island and Asian migrants (except in 1986) are particularly concentrated.

There is large variation in the geographic concentration of migrants from different regions, with individuals born in Western Europe, Northern Europe, Australia, the British Isles and North America less geographically concentrated than the average migrant and individuals born in South-Eastern Europe, the Pacific Islands, Southern and Central Asia (except in 1986), North-East Asia (except in 1986) and Eastern Europe more geographically concentrated than the average migrant. Regardless of region of birth, migrants are more concentrated than the NZ-born in each year. There are no systematic changes in geographic concentration over time for migrants from different regions.

3.3 The Geographic Mobility of Earlier Migrants and the New Zealand-Born

We now examine the mobility of earlier migrants. This is essential an analysis of resettlement decisions for recent migrants after they have been in New Zealand for five years. As previously noted, recent migrants who have either temporarily or permanently left New Zealand in the next five years or have died are not included in this analysis. All individuals in the census are asked to report their address five years ago or to check a particular box if they have not changed their addresses in the past five years or if they were overseas five years ago. We use this information to code whether each individual has changed LMAs since the previous census.

Table 4 examines the mobility of earlier migrants and the NZ-born between 1981 and 1986, 1991 and 1996, and 1996 and 2001. Between 1-2% of earlier migrants and the NZ-born are missing their address from five years ago in 1986, 8-9% are missing this in 1996, and 7% are missing this in 2001. Earlier migrants are more mobile than the NZ-born in each of the three years being examined.[13] For example, in 1986, 72% of earlier migrants remain in the same LMA as in 1981, while 82% of the NZ-born are in the same LMA. Among the movers, 63% of earlier migrants are in a different LMA (17 out of 27% percent) and the remainder are overseas, while 82% of the NZ-born are in a different LMA (15 out

[13] It is worth noting that these differences are likely to be related to differences in the characteristics of earlier migrants and the NZ-born as age, gender and qualifications are typically correlated with individual mobility.

of 18 percent) and the remainder are overseas.[14] In 1996, 4% fewer earlier migrants remain in the same LMA than the NZ-born, with a similar percentage of both earlier migrants and the NZ-born in different LMAs five years ago (78-79%) versus being overseas. The mobility gap between earlier migrants and the NZ-born increased to 5% in 2001, and as in 1986, a greater proportion of earlier migrant movers than NZ-born movers are overseas five years ago (28% vs 16%).

3.4 Characteristics of LMAs in which Recent and Earlier Migrants are Living

We next examine the characteristics of LMAs in which recent and earlier migrants are living and compare these to the distribution of characteristics across all 58 LMAs. A number of previous studies on the US have found that the density of migrant networks is a key determinant of where migrants settle (Bartel 1989; Funkhouser 2000; Jaeger 2007; Zavodny 1999). These network are typically defined as the percent of a local population that is foreign-born and/or from the same country as a particular migrant. Thus, we consider two definitions of migrant networks in our analysis: i) the proportion of immigrants from an individual's region of birth in each LMA five years ago out of the total population of immigrants from that region five years ago (defined over the fifteen regions in Table 1); and ii) the proportion of each LMA's population that is foreign-born five years ago.[15] We also examine four measures of the socioeconomic characteristics of each LMA: i) the employment rate five years ago; ii) the mean log income of full-time wage and salary workers five years ago (our proxy of local wage rates); iii) the log mean house price five years ago;[16] and iv) the log population five years ago. We measure these characteristics five-years prior to the current census so that they reflect the conditions in each LMA prior to the arrival of the current group of recent migrants.

Table 5 presents summary statistics for the LMAs in which recent and earlier migrants are living and for all 58 LMAs, equally weighted.[17] For example, the first row illustrates that the average recent migrant in 1996 lives in a LMA that had 18% of the overall population of migrants from the same region of birth living in it in 1991, while the average LMA in 1996 has a same region of birth migrant density of 2% in 1991 averaged across all regions of birth. Overall, recent and earlier migrants live in LMAs with similar same region of birth migrant network

[14] Individuals are defined as earlier migrants based on the answer to the question "In what year did you first arrive in New Zealand". Thus, we are able to identify individuals that report first arriving in New Zealand between 5 and 10 years ago, but also report being overseas at the time of the previous census.

[15] It is worth noting that each of these measures has a different denominator and thus can vary independently.

[16] Local house prices are calculated using a dataset provided by Quotable Value NZ. The annual mean house price per area unit is aggregated to the LMA level, weighting by the number of house sales in each area unit.

[17] The summary statistics for recent and earlier migrants are calculated using an approximate 10% sample for each group that is also used for all regression analyses.

density (18-19% in 1996 and 21% in 2001) and both live in LMAs with 9-10 times higher levels of same region of birth migrant density than the average LMA (2% in both years). Migrants also generally live in LMAs that had larger proportions of foreign-born individuals five years ago. For example, the average recent and earlier migrant in 1996 (2001) lives in a LMA with a 26% (28%) foreign-born population in 1991 (1996). In contrast, 12% (13%) of individuals in the average LMA are foreign-born in 1996 (2001).

Turning to the economic characteristics of LMAs, the average recent and earlier migrant in both 1996 and 2001 lives in a LMA with a similar employment rate five years earlier as the mean employment rate across all LMAs. On the other hand, these migrants live in LMAs that, on average, have approximately 18% higher mean log income for full-time wage and salary workers than the average LMA in each year. Migrants also live in LMAs with much higher house prices than the average LMA. For example, the average recent and earlier migrant in 1996 lives in a LMA with nearly a 70% higher mean house price than the average LMA in 1991 and the average recent and earlier migrant in 2001 lives in a LMA with an approximately 80% higher mean house price than the average LMA in 1996. The most striking difference is that recent and earlier migrants live in LMAs that are, on average, much larger in population than the average LMA. In fact, the average recent and earlier migrant in 1996 (2001) lives in a LMA that, in 1991 (1996), was 10 (11) times larger than the average LMA.

3.5 Summary

Overall, these descriptive results show that recent and earlier migrants live in highly concentrated locations compared to the NZ-born and that earlier migrants are more mobile than the NZ-born and are more likely to have been overseas at the time of the previous census. These results also show that recent and earlier migrants are more likely to live in LMAs that have denser networks of migrants from the same region of birth, larger foreign-born populations and larger populations, in general. There is also weak evidence that these migrants are more likely to live in areas with better economic opportunities, in particular, in LMAs with higher average wages.

However, these findings do not provide direct evidence of the impact of say, LMA population, on the likelihood that a migrant chooses to live in a particular LMA, because all of the examined variables are co-related with each other. For example, larger LMAs typically have a greater percentage of the population that is foreign-born and have denser migrant networks. In the next section, we extend our descriptive analysis by estimating multivariate locational choice regression models. These models allow us to examine the independent effect of each local area characteristic on the locational choice of recent and earlier migrants, controlling for the impact of all other characteristics. These models also allow us to examine whether the locational choice of migrants depends more on the characteristics of all individuals in a LMA or on the characteristics of individuals from the same region of birth and/or age and education as a particular individual.

4. REGRESSION ANALYSIS

4.1 Empirical Model

We employ a discrete choice model to analyse the initial location of recent migrants, as well as, the location of earlier migrants (i.e. the resettlement of recent migrants). Following the same approach as Jaeger (2007), we estimate a McFadden's choice model (sometimes called a conditional logit model) where each individual chooses to locate in one of 58 LMAs based on the characteristics of each LMA, some of which may be individual specific (McFadden 1973; Greene 2003, section 7.3). It is assumed that individuals have an additive stochastic utility function of the form:

$$U_{ij} = Z'_j\delta + X'_{ij}\beta + a_j + e_{ij}, \quad (1)$$

where individual i is faced with J choices and Z_j is a vector of LMA characteristics, X_{ij} is a vector of LMA characteristics interacted with individual characteristics or LMA characteristics that are specific to individuals (such as the same region of birth migrant density in each LMA) and a_j are LMA fixed effects.

Further assuming that individuals choose to locate in the LMA that maximises their expected utility and that the stochastic error term, e_{ij} ~ iid weibull, this model can be estimated using a conditional logit model (McFadden 1973). The probability that individual i locates in LMA j is then:

$$P(y_i = j) = \frac{\exp(Z'_j\delta + X'_{ij}\beta + \alpha_j)}{\sum_{i=1}^{58}\exp(Z'_j\delta + X'_{ij}\beta + \alpha_j)} \quad (2)$$

where y_i is individual i's location choice out of the choice set of 58 LMAs. To estimate this model, we create 58 observations for each individual (one for each LMA) with characteristics specific to a particular LMA recorded in each observation, as well as a variable indicating the LMA in which each individual chooses to locate. It is worth noting that all individual specific characteristics that do not vary over the choice set are conditioned out of this model. Thus, for example, it is not possible to estimate whether gender is associated with living in a particular LMA, but it is possible to examine whether women are more responsive than men to local migrant networks when choosing a LMA.

Because we have data from two censuses, we are able to include LMA fixed effects in each of our regression models. These fixed effects control for time-invariant characteristics of each LMA, such as whether it a gateway LMA (Auckland, South Auckland and Christchurch), has a more desirable climate or has better amenities. Thus, the relationship between locational choice and the covariates in the model are identified by the within-LMA change in these characteristics between the 1996 and 2001 census. Including LMA fixed effects is especially important for identifying network effects, because areas with fixed characteristics that attract migrants are mechanically going to have denser networks making networks appear to attract migrants when perhaps they do not.

4.2 Where do Recent Migrants Settle?

We first use a McFadden's choice model to examine the initial location decision of recent migrants. Table 6 reports the results from estimating three specifications of this model. Each specification includes as covariates all of the variables presented in Table 5: i) the proportion of migrants from an individual's region of birth in each LMA five years ago; ii) the proportion of each LMA's population that is foreign-born five years ago; iii) the employment rate in each LMA five years ago; iv) the mean log income of full-time wage and salary workers in each LMA five years ago; v) the log mean house price in each LMA five years ago; and vi) the log population of each LMA five years ago. What varies across specifications is the population group that is used to define each variable. We do this because we have no apriori information or theory that tells us how recent migrants get their information about local areas.

The most readily available information is likely that which refers to the entire population of a LMA (e.g. what are overall employment opportunities like in Wellington). Thus, in the first specification all covariates besides the first measure of migrant networks are defined as being specific to each LMA (i.e. defined over the entire LMA population). However, if migrant networks are important for finding employment and are stratified by region of birth, recent migrants may not be attracted to a local labour market because of the overall economic conditions there, but due to how well past migrants from the same region are doing. Thus, in the second specification, labour market characteristics are defined as being specific to individuals from particular birth regions. For example, if a recent migrant is born in Australia, the employment rate in each LMA is measured for that individual as being the employment rate among all Australian-born individuals in that LMA five years ago. Another possibility is that recent migrants are drawn to areas that have good economic opportunities for individuals with similar 'skills'. Thus, in the third specification, all covariates besides local house prices are defined as being specific to an individual's skill-group, delineated by their age and qualifications (25 skill-groups based on the categories tabulated in Table 1 plus a missing qualifications group are distinguished). For example, if a recent migrant is 32 and has school qualifications, the employment rate in each LMA is measured for that individual as being the employment rate among all individuals aged between 30 and 34 with school qualifications in that LMA five years ago. We also assume in this specification that migrant networks are skill-group specific.

In each specification, we pool data from the 1996 and 2001 census and estimate the regression model on an approximately 10% random sample of recent migrants for computational reasons (note that even this results in 694,260 individual*LMA observations).[18] For all covariates, we present marginal effects evaluated at the average selection probability (1/58) and standard errors for

[18] In the second (third) specification, individual*LMA observations are dropped if the particular LMA does not have any individuals from the same region of birth (skill-group) living in it five years ago. This is equivalent to assuming that these particular LMAs are not in the choice set for particular individuals.

these effects. As shown in Jaeger (2007), these are calculated by multiplying the coefficients and standard errors from the conditional logit model by $(J-1)/J^{\wedge 2} \approx$ 0.0169. Overall, we have no reason to prefer the results from a particular specification, thus we focus on the commonalities and differences between the specifications to establish our overall findings

Starting with the first specification, the results reported in column (1) are interpreted as follows: i) a 10 percentage point increase in the proportion of immigrants from a recent migrant's region of birth five years ago in a particular LMA (say from 5% to 15%) is associated with a 1.1 percentage point increase in the likelihood of that migrant living in that LMA; ii) a 10 percentage point increase in the proportion of a particular LMA's population that is foreign-born five years ago is associated with a 1.2 percentage point decrease in the likelihood of a recent migrant living in that LMA; iii) a 10 percent increase in the population five years ago in a particular LMA is associated with a 0.3 percentage point increase in the likelihood of a recent migrant living in that LMA; and v) there is no significant relationship between the employment rate, average income of full-time wage and salary workers or mean house price five years ago in particular LMAs and the likelihood of recent migrants living in those LMAs.

In interpreting the size of these effects, it is useful to note that if a recent migrant chooses in which LMA to live by randomly drawing a name out of a hat, they will have 1.7% chance of living in any particular LMA, whereas the average recent migrant lives in a LMA containing 18% of their same-region population. The coefficient of 0.105 in the first column of Table 6 implies that recent migrants are approximately twice as likely to choose to live in a LMA with 18% of their same-region population than in a randomly chosen LMA, with 1.7% of their same-region population). In contrast, they are approximately 90% less likely to live in a LMA that has the percent foreign-born population for the average recent migrant (26-28%) than one that has the average percent foreign-born population across all LMAs (13%). Further, recent migrants are approximately 3.7 times more likely to live in a LMA that has the log population for the average recent migrant (11.40-11.53) than one that has the average population across all LMAs (9.08-9.15).

Turning to the second specification, the estimated relationship between migrant networks and settlement decisions is unaffected by changing how local labour market characteristics are defined. Contrary to what might be expected, it appears that recent migrants are actually settling in LMAs where past compatriots are doing badly in the labour market. For example, we find that a 10 percentage point increase in the employment rate five years ago among past migrants from the same region of birth as a particular recent migrant in a particular LMA is associated with a 0.3 percentage point decrease in the likelihood of that recent migrant living in that LMA. We also find a negative relationship between the average income of full-time wage and salary workers among past migrants from the same region of birth as a particular recent migrant in a particular LMA and the likelihood that a recent migrant settles in that LMA, but the estimated marginal effect is very small in magnitude. Examining the third specification, we find evidence that recent migrants are attracted to areas with greater foreign-born

and overall populations of similarly skilled individuals, but again that labour market outcomes for similarly skill individuals have little impact on the LMA in which recent migrants chose to settle.

Overall, we find consistent evidence that the density of migrant networks has a large impact on where recent migrants choose to settle. In particular, migrants are more likely to settle in LMAs in which a larger proportion of the previous immigrant population from their same region of birth are living, but not the same region of birth and skill-group. On the other hand, once we control for the strength of birth region migrant networks, our results indicate that recent migrants are less likely to settle in LMAs with proportionally greater foreign-born population, but are more likely to settle in areas with a greater foreign-born population of similarly skilled individuals. We also find consistent evidence that recent migrants are more likely to settle in larger population LMAs. We find no evidence that recent migrants choose to settle in LMAs with better labour market outcomes for either the general population, previous migrants from the same region of birth or individuals with the same skill-level.[19]

4.3 The Geographic Mobility of Earlier Migrants

We next use a McFadden's choice model to examine the (re)location decisions of earlier migrants. Table 7 reports the results from estimating three specifications of this model. These specifications are identical to those estimated in Table 6 for recent migrants, with one additional control variable added to each specification. This is an indicator variable for whether a particular LMA is the same LMA in which an earlier migrant lived in the previous census. If an individual reports being overseas at the time of the previous census or has a missing previous address, the same LMA indicator is coded as zero in all 58 LMAs. This variable allows there to be hysteresis in locational choice - once located in a particular LMA, individuals are likely to remain in that area. Again, in each specification, we pool data from the 1996 and 2001 census, estimate the regression model on a 10% random sample of earlier migrants (resulting in 488,244 individual*LMA observations) and present marginal effects evaluated at the average selection probability (1/58) and standard errors for these effects.

The results from the first specification are interpreted as follows: i) a 10 percentage point increase in the proportion of immigrants from a earlier migrant's region of birth five years ago in a particular LMA is associated with a 0.9 percentage point increase in the likelihood of that earlier migrant living in that LMA; ii) a 10 percentage point increase in the proportion of a particular LMA's population that is foreign-born five years ago is associated with a 1.4 percentage point decrease in the likelihood of a earlier migrant living in that LMA; iii) a 10

[19] We test the robustness of our findings to excluding LMA fixed effects, adding covariates measuring the change in each population characteristic between five years ago and current census (excluding recent migrants) and examining settlement decisions among individuals residing in LMAs only with a working-age population greater than 10,000. We do not find evidence in any of these specifications that recent migrants are settling in LMAs with better labour market outcomes, controling for other characteristics.

percentage point increase in the employment rate five years ago in a particular LMA is associated with a 1.6 percentage point increase in the likelihood of that earlier migrant living in that LMA; iv) living in a particular LMA five years ago makes it 7.6 percentage points more likely that a earlier migrant will still be living in that LMA; and vii) there is no significant relationship between the average income of full-time wage and salary workers, overall population or mean house price five years ago in particular LMAs and the likelihood of earlier migrants living in those LMAs.

In the next specification, we examine region of birth specific labour market characteristics. Contrary to what we found in the first specification, we now find evidence that earlier migrants are actually settling in LMAs where past compatriots are doing badly in the labour market, although the magnitudes of these effects are very small. Turning to the third specification, where we examine the impact of skill-group specific covariates, we now find the earlier migrants are less likely to live in areas with past compatriots in the same skill group (but more likely to live in LMAs with greater foreign-born and overall populations of similarly skilled individuals), which may indicate that these individuals are viewed as potential competitors in the labour market.

Overall, as with recent migrants, we find consistent evidence that the density of migrant networks has a large impact on where earlier migrants choose to settle. We find the same overall pattern as with recent migrants; earlier migrants are more likely to settle in LMAs in which a larger proportion of the previous immigrant population from their same region of birth live and are less likely to settle in LMAs with proportionally greater foreign-born population. In contrast, they are not more likely to settle in LMAs with a large proportion of people from the same region of birth and skill-group, but are more likely to settle in areas with a greater foreign-born population of similarly skilled individuals. The magnitude of these effects compared to those for recent migrants are generally smaller for region of birth networks, but larger for foreign-born population networks. We also find that earlier migrants choose to settle in LMAs with better labour market outcomes for the general population, but not in LMAs with better labour market outcomes for previous migrants from the same region of birth or for individuals with the same skill-level. This is the first indication that local labour market conditions may have an impact on where migrants settle and provides suggestive evidence that local labour market conditions become a more important determinant of where migrants live the longer they are in New Zealand.

4.4 Additional Results

The results in Tables 6 and 7 constrain the estimated impact of migrant networks and LMA characteristics on settlement decisions to be the same across individuals and over time. In Table 8, we present results from three specifications where we relax these assumptions in particular ways.[20] In the first two columns, we allow

[20] We also estimate an additional specification where impacts are allowed to vary by the gender of the migrant. We find no significant differences in the impact of migrant networks and LMA characteristics on the settlement decisions of men and women so we do not present these results.

the impact of migrant networks and LMA characteristics on settlement decisions of recent and earlier migrants to differ in 1996 and 2001. This is done by interacting a dummy variable for whether an observation is from the 2001 census which each of these variables. Otherwise, these models are identical to those estimated in first specification of Tables 6 and 7 – that is, covariates besides the first migrant network variable are population specific. Only the impact of migrant networks on the settlement decisions of recent and earlier migrants is found to vary over time. For both migrant groups, migrant networks have a larger effect on settlement decisions in 1996 than in 2001, and while differences are statistically significant, they are not large in magnitude, with migrant networks still having important effects on settlement decisions in both years.

The third and fourth columns report the results from an alternative specification where we interact all covariates with an indicator variable for whether each migrant was born in a region where English is generally spoken.[21] Perhaps surprisingly, we find that migrant networks have a larger impact on the settlement decisions of recent migrants from English-speaking backgrounds (ESB) than those from non-ESB regions. There is also some evidence that higher employment rates do attract recent migrants from non-ESB regions; a 10 percentage point increase in the employment rate five years ago in a particular LMA is associated with a 0.8 percentage point increase in the likelihood of that recent migrant from a non-ESB region living in that LMA, but this is significant only at the 10% level. On the other hand, there is no evidence that higher employment rates attract recent migrants from ESB regions (the interaction term is negative, significant, and nearly the same size as the positive effect for non-ESB recent migrants). Other interesting findings are that recent migrants from non-ESB regions are attracted to LMAs with lower house prices, while house prices have no impact on the settlement decisions of recent migrants from ESB regions and that the size of the LMA population matters less to the settlement decisions of ESB migrants than to those of non-ESB migrants. For earlier migrants, we find limited differences between ESB and non-ESB migrants in the impact of migrant networks and LMA characteristics on settlement decisions, but earlier migrants from ESB regions appear less mobile.

The fifth and six columns report the results from a final specification where we interact all covariates with an indicator variable for whether each migrant has a university degree. For recent migrants, we find that the highly educated are more attracted to LMAs with higher average wages five years ago than the less educated, but that, overall, average wages have an insignificant impact on the settlement decisions of both university graduates and other recent migrants. We also find that recent migrants with university degrees are attracted to LMAs with

[21] Winkelmann and Winkelmann (1998) developed a list of countries from which most migrants to New Zealand can speak English well based on individual responses to a question in the census about spoken languages. We use this list to identify which of the 15 regions in our data send primarily English speaking migrants to New Zealand. These regions are: Australia; UK and Ireland; Western Europe; Northern Europe; North America; and Africa (from which most migrants to New Zealand are English speakers from South Africa and Zimbabwe).

lower house prices (the combined main effect and interaction term are significantly different from zero), while house prices have no impact on the settlement decisions of the less educated. For earlier migrants, migrant networks have a smaller, but still important, impact on the resettlement decisions of highly educated migrants compared to other migrants. Consistent with other findings in the literature, earlier migrants with university degrees are also less likely to remain in the same LMA over time.

5. CONCLUSIONS

This paper uses census data to examine the characteristics of local areas that attract migrants and gauges the extent to which migrants choose to settle where there are the best labour market opportunities as opposed to where there are already established migrant networks. We estimate McFadden's choice models to examine both the initial location choice made by recent migrants and the internal mobility of this cohort of migrants five years later. This allows us to examine whether the factors that affect settlement decision change as migrants spend more time in New Zealand.

Our descriptive results demonstrate that recent and earlier migrants live in highly concentrated locations compared to the NZ-born and that earlier migrants are more mobile than the NZ-born and are more likely to have been overseas at the time of the previous census. These results also suggest that recent and earlier migrants are more likely to live in LMAs that have denser networks of migrants from the same region of birth, larger foreign-born populations and larger populations, in general. There is also weaker evidence that these migrants are more likely to live in areas with better economic opportunities, in particular, in LMAs with higher average wages.

Turning to our regression results, we find consistent evidence that the density of migrant networks have a large impact on where recent and earlier migrants choose to settle. In particular, migrants are more likely to settle in LMAs in which a larger proportion of the previous immigrant population from their same region of birth are living, but not the same region of birth and skill-group. On the other hand, once we control for the strength of region of birth migrant networks, our results indicate that recent and earlier migrants are less likely to settle in LMAs with proportionally greater foreign-born population, but are more likely to settle in areas with a greater foreign-born population of similarly skilled individuals. The magnitude of these effects for earlier migrants compared to those for recent migrants are generally smaller for region of birth networks, but larger for foreign-born population networks.

We find no evidence that recent migrants choose to settle in LMAs with better labour market outcomes for either the general population, previous migrants from the same region of birth or individuals with the same skill-level. On the other hand, we find that earlier migrants choose to (re)locate in LMAs with better labour market outcomes for the general population, but not in LMAs with better labour market outcomes for previous migrants from the same region of birth or individuals with the same skill-level. This is the only indication that local labour market conditions may have an impact on where migrants settle and provides suggestive evidence that local labour market conditions become a more important determinant of where migrants live the longer they are in New Zealand. The relative strength of migrant networks over local labour market conditions as a factor in migrants' settlement choices is particularly striking in a country like New Zealand that has immigration policies that favour skilled migrants. For countries that do not select immigrants primarily for their potential labour market

contribution, the dominance of migrant networks is likely to be even more pronounced.

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APPENDIX A: LABOUR MARKET AREAS

Newell and Papps (2001) create labour market areas (LMAs) using travel-to-work data at area unit level drawn from the 1991 census. They define two sets of labour market areas – one with 140 areas and one with 58. The main differences are that the 140-area set provides greater disaggregation of some relatively small areas. We have chosen to use the more aggregated areas because of the small size of some of the additional splits and because our main estimator is estimated on an expanded analysis sample that is the number of individuals multiplied by the number of LMAs. Thus, computational limitations make it difficult to estimate this model with 140 LMAs.

The advantage of using functionally defined LMAs over administratively defined areas, such as territorial local authorities, is that migration between LMAs is generally associated with a change of job, whereas migration within a LMA is often motivated by residential factors. By disregarding migration within LMAs, we are able to largely isolate job-related migration. Administratively defined geographic areas are much less able to separate these two types of migration.

APPENDIX TABLES AND FIGURES

Table 1: Demographic Characteristics of Migrants and the New Zealand-Born in 1996 and 2001

	1996		2001	
	Recent Migrants	New Zealand-Born	Recent Migrants	New Zealand-Born
Female	51%	51%	53%	51%
30-34	33%	24%	31%	21%
35-39	26%	23%	27%	22%
40-44	21%	20%	21%	21%
45-49	14%	19%	13%	19%
50-54	6%	14%	8%	17%
No Qualifications	15%	35%	6%	27%
School Qualifications	21%	29%	39%	36%
Post-School Qualifications	20%	26%	19%	25%
Degree Qualifications	44%	10%	36%	12%
European/Pakeha	45%	83%	43%	83%
Maori	0.1%	15%	0.1%	15%
Pacific Islander	4%	1.0%	7%	1.4%
Asian	46%	0.6%	44%	0.6%
Other	5%	0.1%	6%	0.1%
Male Employment Rate	65%	87%	73%	87%
Female Employment Rate	42%	71%	52%	75%
Male Average Income	33,000	39,800	37,300	45,200
Female Average Income	13,900	20,400	19,800	25,900
Male FT Wage/Salary Avg Inc	48,600	42,300	49,300	48,400
Female FT Wage/Salary Avg Inc	29,200	29,300	34,800	35,500
Lives in Akl, Wlg, ChCh	69%	35%	70%	35%
Australia	6%		5%	
Pacific Islands	5%		11%	
British Isles	18%		17%	
Western Europe	4%		3%	
Northern Europe	0.6%		0.4%	
Southern Europe	0.4%		0.3%	
South-Eastern Europe	4%		2%	
Eastern Europe	2%		2%	
North Africa, Middle East	3%		4%	
South-East Asia	7%		8%	
North-East Asia	30%		21%	
Southern and Central Asia	7%		9%	
North America	5%		4%	
Central and South America	0.7%		0.8%	
Sub-Saharan Africa	7%		13%	
Percent of Population	4%	79%	5%	77%
Individuals	51,621	946,506	68,715	997,950

Note: Recent migrants first arrived in New Zealand in the five years prior to the census. Variables definition are discussed in more detail in the paper.

Table 2: Attrition from the Census of Recent Migrants in 1996

	Recent Migrants in 1996	Earlier Migrants in 2001
Female	51%	53%
30-34 in 1996	33%	33%
35-39 in 1996	26%	26%
40-44 in 1996	21%	21%
45-49 in 1996	14%	14%
50-54 in 1996	6%	6%
No Qualifications	15%	8%
School Qualifications	21%	42%
Post-School Qualifications	20%	16%
Degree Qualifications	44%	34%
European/Pakeha	45%	44%
Maori	0.1%	0.1%
Pacific Islander	4%	4%
Asian	46%	47%
Other	5%	5%
Australia	6%	5%
Pacific Islands	5%	7%
British Isles	18%	19%
Western Europe	4%	4%
Northern Europe	0.6%	0.5%
Southern Europe	0.4%	0.4%
South Eastern Europe	4%	3%
Eastern Europe	2%	2%
North Africa, Recent East	3%	3%
South East Asia	7%	8%
North East Asia	30%	31%
Southern and Central Asia	7%	6%
North America	5%	3%
Central and South America	0.7%	0.6%
Sub-Saharan Africa	7%	7%
Percent of Original Population		71%
Individuals	51,615	36,729

Note: Recent migrants first arrived in New Zealand in the five years prior to the census. Earlier migrants first arrived in New Zealand between five and ten years prior to the census.

Table 3: The Geographic Concentration of Migrants and the New Zealand-Born in 1986, 1996 and 2001

Herfindahl Indices	1986			1996			2001		
	Recent Migrants	Earlier Migrants	New Zealand Born	Recent Migrants	Earlier Migrants	New Zealand Born	Recent Migrants	Earlier Migrants	New Zealand Born
Overall	0.12	0.13	0.06	0.21	0.18	0.06	0.21	0.20	0.06
Male	0.11	0.13	0.06	0.21	0.19	0.06	0.21	0.21	0.06
Female	0.12	0.13	0.06	0.21	0.18	0.06	0.21	0.20	0.06
30-34	0.12	0.13	0.06	0.20	0.19	0.06	0.21	0.19	0.07
35-39	0.11	0.12	0.06	0.21	0.18	0.06	0.21	0.20	0.06
40-44	0.12	0.13	0.06	0.22	0.18	0.06	0.22	0.20	0.06
45-49	0.13	0.13	0.06	0.23	0.19	0.06	0.21	0.22	0.06
50-54	0.12	0.14	0.05	0.20	0.20	0.06	0.20	0.23	0.06
No Qualifications	0.15	0.16	0.05	0.22	0.23	0.05	0.23	0.22	0.05
School Qualifications	0.12	0.14	0.06	0.23	0.21	0.07	0.22	0.22	0.07
Post-School Qualifications	0.11	0.11	0.06	0.19	0.16	0.06	0.19	0.17	0.06
Degree Qualifications	0.12	0.11	0.10	0.21	0.15	0.11	0.22	0.21	0.11
European/Pakeha	0.11	0.11	0.06	0.15	0.12	0.06	0.15	0.14	0.07
Maori	NA	NA	0.05	NA	NA	0.05	NA	NA	0.05
Pacific Islander	0.27	0.27	0.16	0.26	0.32	0.18	0.31	0.29	0.19
Asian	0.12	0.13	0.13	0.28	0.22	0.14	0.28	0.29	0.16
Other	0.12	0.13	0.10	0.23	0.20	0.10	0.23	0.24	0.15
Australia	0.10	0.09		0.11	0.10		0.12	0.09	
Pacific Islands	0.25	0.26		0.27	0.31		0.32	0.30	
British Isles	0.11	0.12		0.15	0.14		0.13	0.13	
Western Europe	0.09	0.10		0.10	0.10		0.10	0.09	
Northern Europe	0.13	0.09		0.15	0.18		0.15	0.13	
Southern Europe	0.19	0.18		0.20	0.16		0.21	0.18	

Herfindahl Indices	1986			1996			2001		
	Recent Migrants	Earlier Migrants	New Zealand Born	Recent Migrants	Earlier Migrants	New Zealand Born	Recent Migrants	Earlier Migrants	New Zealand Born
South-Eastern Europe	0.25	0.15		0.36	0.26		0.34	0.34	
Eastern Europe	0.18	0.17		0.26	0.18		0.29	0.23	
North Africa, Recent East	0.13	0.12		0.26	0.21		0.27	0.27	
South-East Asia	0.12	0.13		0.19	0.21		0.23	0.21	
North-East Asia	0.12	0.13		0.32	0.26		0.30	0.33	
Southern and Central Asia	0.12	0.16		0.26	0.17		0.31	0.24	
North America	0.11	0.11		0.13	0.12		0.12	0.11	
Central and South America	0.14	0.13		0.17	0.19		0.15	0.23	
Sub-Saharan Africa	0.13	0.12		0.18	0.15		0.22	0.18	
Percent of Population	2%	2%	80%	4%	3%	79%	5%	3%	77%
Individuals	19,983	18,078	780,903	51,621	41,589	946,506	68,718	44,061	997,947

Note: Recent migrants first arrived in New Zealand in the five years prior to the census. Earlier migrants first arrived in New Zealand between five and ten years prior to the census. The Herfindahl index is calculated as $H_{it} = \sum_{j=1}^{58} \theta_{ijt}^2$ where θ_{ijt} is the share of group i that is located in LMA j, in year in year t. There are very few migrants with Maori ethnicity, thus these entries are suppressed from this table.

Table 4: Five-Year Mobility for Earlier Migrants and the New Zealand-Born in 1986, 1996 and 2001

	1986		1996		2001	
	Earlier Migrants	New Zealand Born	Earlier Migrants	New Zealand Born	Earlier Migrants	New Zealand Born
In Same LMA 5-Years Ago	72%	82%	79%	83%	76%	81%
In Different LMA 5-Years Ago	17%	15%	17%	13%	17%	16%
Overseas 5-Years Ago	10%	3%	4%	4%	7%	3%
Pop w/ Non-Miss LMA 5-Years Ago	17,691	770,160	37,998	874,950	40,905	927,051
% Non-Missing LMA 5-Years Ago	98%	99%	91%	92%	93%	93%
Total Population	18,075	780,900	41,589	946,500	44,064	997,950

Note: Earlier migrants first arrived in New Zealand between five and ten years prior to the census.

Table 5: Characteristics of LMAs in which New and Recent Migrants Reside and Characteristics of all LMAs (Means and Standard Deviations)

	Recent Migrants		Earlier Migrants		LMA Characteristics	
	1996	2001	1996	2001	1996	2001
% of Overall Same Region Population in the LMA	0.18	0.21	0.19	0.21	0.02	0.02
	(0.12)	(0.15)	(0.13)	(0.16)	(0.05)	(0.05)
% LMA Population Foreign Born	0.26	0.28	0.26	0.28	0.12	0.13
	(0.08)	(0.10)	(0.08)	(0.10)	(0.06)	(0.06)
Employment Rate in LMA	0.75	0.77	0.75	0.77	0.74	0.78
	(0.02)	(0.03)	(0.03)	(0.03)	(0.04)	(0.05)
Mean Log Income of FT Wage/Salary in LMA	10.50	10.39	10.50	10.39	10.32	10.21
	(0.11)	(0.11)	(0.12)	(0.11)	(0.13)	(0.12)
Log Mean House Sale Price in LMA	11.79	12.14	11.79	12.14	11.27	11.55
	(0.26)	(0.32)	(0.26)	(0.32)	(0.33)	(0.35)
Log Population in LMA	11.40	11.53	11.34	11.51	9.08	9.15
	(1.00)	(1.00)	(1.01)	(1.04)	(1.13)	(1.14)
Population	5,190	6,780	4,152	4,266	58	58

Note: Recent migrants first arrived in New Zealand in the five years prior the census. Earlier migrants first arrived in New Zealand between five and ten years prior to the census. All characteristics are measured in the previous census (e.g. five years previous). The first two panels show weighted averages, weighted by the number of recent and earlier migrants, respectively. The third panel shows unweighted averages across LMAs. These estimates are based on approximate 10% samples of recent and earlier migrants.

Table 6: Conditional Logit Estimates of the Choice of Settlement LMA for Recent Migrants (Marginal Effects and Standard Errors)

	(1)	(2)	(3)
% of Overall Same Region Population	0.105*	0.089*	0.002
	(0.003)	(0.003)	(0.004)
% Population Foreign Born	-0.116*	-0.103*	0.015*
	(0.033)	(0.031)	(0.005)
Employment Rate	0.051	-0.032*	0.016
	(0.039)	(0.003)	(0.008)
Mean Log Income of FT Wage/Salary	-0.006	-0.003*	-0.005
	(0.025)	(0.001)	(0.003)
Log Mean House Sale Price	-0.009	-0.005	-0.005
	(0.006)	(0.005)	(0.003)
Log Population	0.027*	0.019	0.009*
	(0.012)	(0.011)	(0.001)
Covariates Calculated for the:	**Population**	**Region of Birth**	**Age-Qual Group**
Observations	694,260	636,306	693,045
Individuals	11,970	11,970	11,970

Note: All characteristics are measured in the previous census (ie five years previous). Employment rates and mean log incomes, in addition to the percent of same region population, are region of birth specific in specification (2). In specification (3), all variables are specific to a particular age-qualification group, except the mean house sale price. Each specification also includes LMA fixed effects.

* significant at 5% level

Table 7: Conditional Logit Estimates of the Choice of Resettlement LMA for Earlier Migrants (Marginal Effects and Standard Errors)

	(1)	(2)	(3)
% of Overall Same Region Population	0.090*	0.077*	-0.026*
	(0.008)	(0.008)	(0.011)
% Population Foreign Born	-0.137*	-0.203*	0.018*
	(0.063)	(0.060)	(0.009)
Employment Rate	0.156*	-0.019*	0.021
	(0.070)	(0.005)	(0.013)
Mean Log Income of FT Wage/Salary	0.019	-0.002*	-0.007
	(0.032)	(0.001)	(0.004)
Log Mean House Sale Price	-0.009	0.005	-0.002
	(0.010)	(0.009)	(0.006)
Log Population	0.027	0.014	0.004*
	(0.018)	(0.017)	(0.001)
Same LMA	0.076*	0.076*	0.077*
	(0.001)	(0.001)	(0.001)
Covariates Calculated for the:	**Population**	**Region of Birth**	**Age-Qual Group**
Observations	488,244	454,443	487,293
Individuals	8,418	8,418	8,418

Note: All characteristics are measured in the previous census (i.e. five years previous). Employment rates and mean log incomes, in addition to the percent of same region population, are region of birth specific in specification (2). In specification (3), all variables are specific to a particular age-qualification group, except the mean house sale price. Each specification also includes LMA fixed effects. The marginal effects for the same LMA covariate are calculated treating it as a continuous variable.

* significant at 5% level

Table 8: Conditional Logit Estimates of the Choice of LMA for Recent and Earlier Migrants (Marginal Effects and Standard Errors)

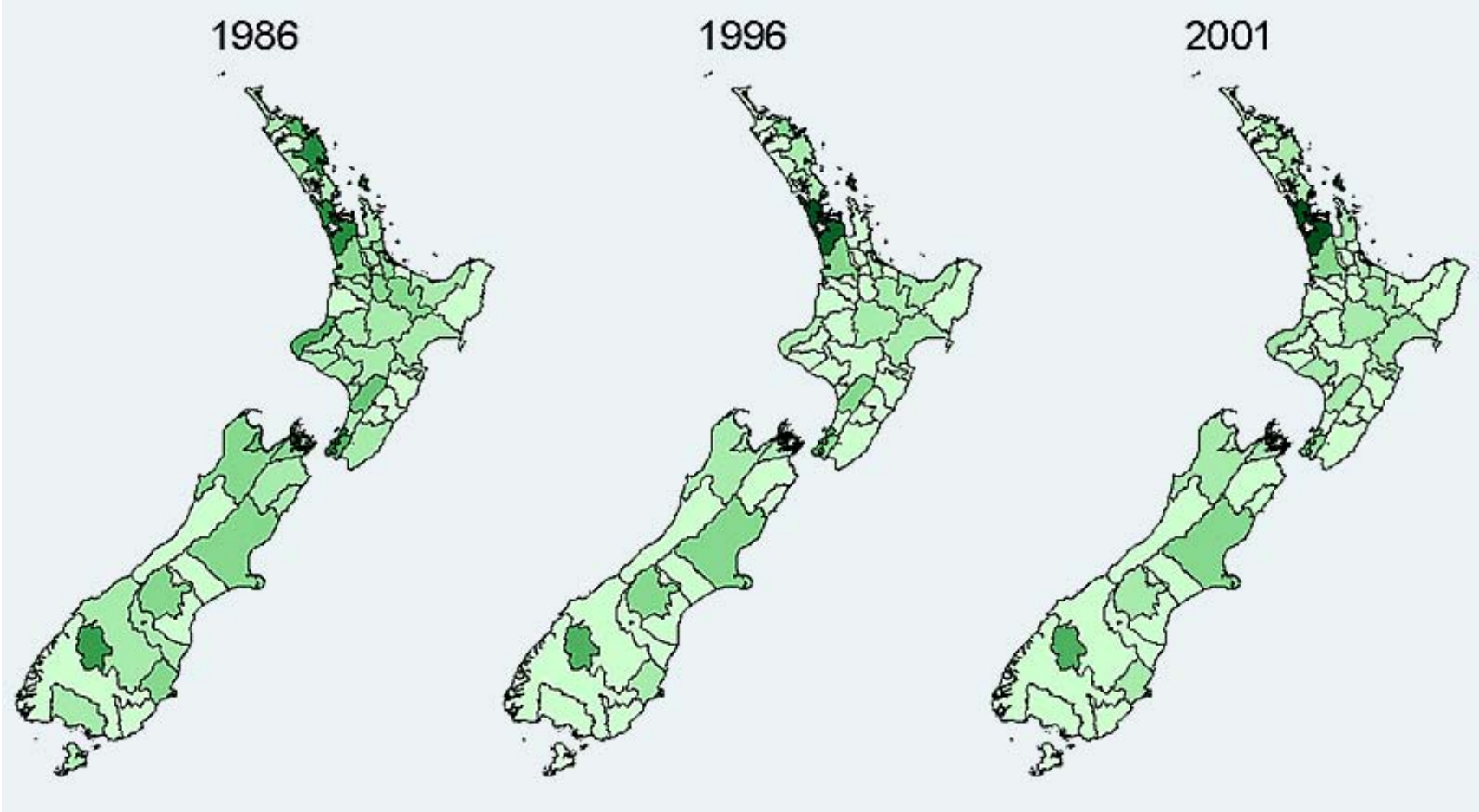
	(1)	(2)	(3)	(4)	(5)	(6)
Migrant Group	Recent Migrants	Earlier Migrants	Recent Migrants	Earlier Migrants	Recent Migrants	Earlier Migrants
Interacted with	Year = 2001		Has English Speaking Background		Has University Degree	
% of Overall Same Region Population	0.127*	0.113*	0.079*	0.068*	0.104*	0.099*
	(0.006)	(0.011)	(0.004)	(0.009)	(0.003)	(0.009)
% Population Foreign Born	-0.305*	0.014	-0.076*	-0.103	-0.112*	-0.142*
	(0.074)	(0.119)	(0.034)	(0.064)	(0.033)	(0.064)
Employment Rate	0.090	0.145	0.078	0.136	0.058	0.156*
	(0.068)	(0.100)	(0.041)	(0.073)	(0.040)	(0.071)
Mean Log Income of FT Wage/Salary	-0.012	0.020	-0.027	0.030	-0.017	0.018
	(0.027)	(0.037)	(0.025)	(0.034)	(0.025)	(0.032)
Log Mean House Sale Price	0.012	-0.004	-0.012*	-0.013	-0.007	-0.007
	(0.008)	(0.011)	(0.006)	(0.010)	(0.006)	(0.010)
Log Population	0.025	0.000	0.034*	0.025	0.027*	0.027
	(0.017)	(0.026)	(0.012)	(0.019)	(0.012)	(0.019)
Same LMA		0.079*		0.070*		0.078*
		(0.001)		(0.001)		(0.001)
Interaction Effects						
% of Overall Same Region Population	-0.029*	-0.039*	0.038*	0.005	-0.003	-0.027*
	(0.006)	(0.014)	(0.007)	(0.016)	(0.005)	(0.013)
% Population Foreign Born	0.044*	-0.014	-0.029*	-0.002	-0.007	0.036
	(0.012)	(0.023)	(0.010)	(0.020)	(0.010)	(0.020)
Employment Rate	-0.017	-0.004	-0.062*	0.006	-0.017	0.017
	(0.022)	(0.031)	(0.022)	(0.027)	(0.020)	(0.029)
Mean Log Income of FT Wage/Salary	-0.010	0.018	0.025*	-0.019*	0.037*	0.015
	(0.010)	(0.015)	(0.005)	(0.009)	(0.005)	(0.010)

	(1)	(2)	(3)	(4)	(5)	(6)
Log Mean House Sale Price	0.000	0.006	0.008*	0.006	-0.006	-0.006
	(0.005)	(0.007)	(0.003)	(0.005)	(0.003)	(0.005)
Log Population	0.001	0.001	-0.013*	-0.005*	0.000	0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Same LMA		-0.005*		0.012*		-0.007*
		(0.001)		(0.001)		(0.001)
Observations	694,260	488,244	694,260	488,244	694,260	488,244
Individuals	11,970	8,418	11,970	8,418	11,970	8,418

Note: All characteristics are measured in the previous census (i.e. five years previous). All covariates are population specific besides the percent of overall same region population and all specifications include LMA fixed effects. The marginal effects for the same LMA covariate are calculated treating it as a continuous variable.

- significant at 5% level

Figure 1: Relative Proportion of Population of Recent Migrants to Proportion of Population of New Zealand-Born (Darker Shaded Areas Have Greater Concentrations of Recent Migrants)



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DOL10427 OCT 07