New Zealand Population Review, 40:85–110.

Immigrants' Location Choices, Geographic Concentration, and Employment in New Zealand

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Abstract

Immigrants' location choices can play an important role in determining their employment outcomes. While it is generally accepted that new immigrants may initially face disadvantages in finding a job in their host country, a less-studied factor is the role of location choice, which includes major existing ethnic and cultural capital (networks and resources of the ethnic enclave) on reducing barriers to employment. In this paper, we examine the impact of ethnic enclaves on the location choices and employment outcomes of recent immigrants to New Zealand, a country where immigrants comprise a significant part of the labour force. We apply the new longitudinal individual-level Statistics New Zealand data, the Longitudinal Immigration Survey: New Zealand (LisNZ), which allows an in-depth analysis based on a wide range of important variables. We find that stronger ethnic networks significantly influence the settlement decisions of recent immigrants and assist their employment integration. We also find that, as hypothesised, migrant networks have a greater impact on the settlement decisions of recent migrants from non-English-speaking countries compared with the immigrants from English-speaking backgrounds. Our empirical evidence strongly suggests that existing ethnic enclaves play a significant positive role in immigrants' employment integration in New Zealand.

The location choices and employment outcomes of immigrants are important factors that influence their post-migration integration and economic success. An important but less studied factor that also influences these outcomes is the strength of social networks and resources that immigrants can access within broader ethnic diasporas.

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Please note that an earlier version of this paper, submitted by Xingang Wang, was awarded the 2013 Statistics New Zealand Jacoby Prize award by the Population Association of New Zealand.

Among recent studies that have investigated this question, there is disagreement as to whether immigrant settlement in locations that offer a strong linguistic or ethnic concentration is beneficial or harmful to their economic success (e.g. Bertrand, Luttmer, & Mullainathan, 2000; Chiswick & Miller, 2002; Edin, Fredriksson, & Aslund, 2003). As immigrants continue to comprise a significant and increasing proportion of populations in Western countries, this question is worthy of close examination across immigrant-receiving countries.

In this paper we examine the effect of ethnic enclaves, and the resources they offer, on location choices and employment outcomes of new immigrants. The term *ethnic enclave* refers to the geographic concentration of population groups from a similar ethnic or cultural background. In doing so, we examine the strength and quality of resources for different immigrant ethnic groups in their host country across geographic locations and time.

It is generally accepted in the migration economics literature that new immigrants face some disadvantages in finding a job in their new country. For example, as Chiswick (1978) has argued, in contrast to the native-born population, immigrants can be disadvantaged as they may lack local language skills, social networks, knowledge of customs, information about job opportunities, and information about local employers. This effect is supported empirically (De Jong & Madamba, 2001; Maani, 1994; Portes, 2008; Wang & Maani, 2014).

Borjas (1992) introduced the notion of *ethnic capital*. He theorised in the context of immigrant economic assimilation that the skills of the second generation (the children) of immigrants significantly depend on parental inputs, as well as the quality (i.e. the concentration and degree of education and economic resources) of the ethnic environment. In this paper, we extend this definition of ethnic capital to include a broader set of socio-economic variables based on cultural and social capital, such as social networks, geographic concentration, shared beliefs and other resources. We hypothesise that ethnic capital refers to the strength of ethnic networks as well as proximity to major ethnic enclaves, and that this may help immigrants to overcome those disadvantages, to some extent. New migrants are likely to locate in a place with greater access to this special resource. For example, in English-speaking countries, non-English-

speaking immigrants may benefit from having access to ethnic capital and face fewer barriers in finding a job than can otherwise be expected.

This broader definition of ethnic capital is a promising arena for immigration and location choice studies. Prior empirical studies of immigrants' location choices and employment have provided few theoretical explanations and little empirical evidence as to how ethnic capital influences immigrants' location choices, or how it improves immigrants' labour market integration. This study fills this gap in international research by addressing two research questions: (1) How are immigrants' location choices influenced by the choices of other migrants in their ethnic group? and (2) Why and how are ethnic enclaves (representing the geographic concentration of an ethnic population and resources) important to immigrants' labour market integration, as measured by employment outcome in this study?

In order to accurately capture the effect of ethnic socio-economic networks in our modelling approach, we hypothesise that location choices and resulting labour market performance of individuals may not be independent of the choices of other immigrants. Our analysis followed Goetzke's (2008) method to construct a network variable for immigrants, in order to capture the effects of social and economic resource networks for immigrant groups. By doing so, we are able to construct a representation of the individual's network of socio-economic resources from individual-level data, and observe the correlation of immigrants' location choices. This network effect is then incorporated into explaining the role of enclaves in employment success of immigrants.

Results are shown for both location choices and employment outcomes across immigrant groups, by language background and across skill levels. The results provide new findings on immigrants' location choices and their impact on the immigrants' employment integration in New Zealand.

This paper is organised as follows. Section Two provides hypotheses based on ethnic capital. In Section Three, we discuss the model and the data set used in this study. Empirical analyses are then provided in Section Four, followed by the conclusion, in Section Five.

Theoretical Framework

Ethnic networks and settlement decisions

Immigrants may be dependent on their social networks in order to be economically assimilated because they usually have less knowledge of the host country's labour market than do those born in the host country or earlier immigrants. For these reasons, individuals' labour market performance is often not independent of other immigrants' (independent and identically distributed). Their labour market performance is reasonably correlated with others, to some extent.

It has thus been argued that social networks are the most profitable avenue of job search for immigrants (e.g. Frijters, Shields, & Price, 2005). Social networks can exert a significant influence on an individual's labour market performance. For example, an individual's friends may introduce them to job opportunities, or assist them with their job applications.

As a result, networks encourage immigrants to be concentrated spatially. *Ethnic networks* (i.e. social networks based on cultural and/or language similarities) are particularly relevant to immigrants in a host country. According to the ethnic network hypotheses put forward by Piore (1979) and Kobrin and Speare (1983), previous ethnic networks assist new immigrants to adjust to the environment in the host country and to enhance their feelings of security, solidarity and identity, since they share the same culture, language and norms. At the initial stage of immigration, ethnic networks play a vital role in helping immigrants to settle and to access employment opportunities. Munshi (2003) observed that networks reduce the costs of employment for immigrants and offer higher-paying jobs. In addition, Munshi (2003) found that ethnic networks facilitate settlement of new immigrants in ethnic enclaves (i.e. spatial and ethnic-specific environments) in the host country. As such, new immigrants gradually adapt to the new environment and learn to merge with the local community.

Primary ethnic enclaves (high level of ethnic concentration)

Ethnic networks can affect immigrants' labour market performance through different channels. Immigrants may find greater opportunities of employment through geographic concentration. Firstly, ethnic enclaves,

through their geographic concentration, create employment opportunities for immigrants by offering requirements for employment that are more easily met; for example, having skills in the local language, or a recognised qualification (Reitz, 2007). In addition, immigrant-owned businesses can be the main source of employment opportunities for employees who come from the same ethnic group. Portes (1987) observed that even after being located in the United States for six years, around 40 per cent of Cuban immigrants were still working for Cuban-owned businesses, with the effect continuing for the group and only diminishing in prevalence for the second-generation immigrants (Portes & Shafer, 2007).

Secondly, the immigrant product market is potentially important for local mainstream companies. With the growth of the ethnic enclave, the immigrant market for products and services becomes a non-negligible market in the host country. Local businesses would also like to hire immigrants to serve and develop the immigrant market. In this scenario, there will be more job opportunities to be offered to immigrants from the mainstream economy (e.g. Holzer and Ihlanfeldt (1998) provide evidence that is consistent with this hypothesis). As native-born employees might know little about immigrants' culture and language, mainstream companies may consider hiring immigrants to serve the target immigrant market.

More recent international studies have indicated a negative effect of ethnic concentration on immigrants' labour market performance. The main reason is related to the potentially negative effect on language proficiency. For example, Chiswick and Miller (2002) and Bertrand, Luttmer, and Mullainathan (2000) showed that linguistic concentration negatively influenced immigrants' labour market performance in the United States.

Several international empirical studies have observed a negative relationship between ethnic concentration and the propensity for employment among immigrants (e.g. Aldrich & Waldinger, 1990; Clark & Drinkwater, 2000, 1998). Aldrich and Waldinger (1990) noted that the negative effect of the ethnic enclave on immigrants' employment was due to the effect of limiting opportunities, and the existence of too much competition within the ethnic enclave. In this case, the growing ethnic enclave could not generate sufficient opportunities and other socio-economic resources for immigrants to be employed.

However, a stream of other studies has focused on the network effects of immigrant enclaves. As such, primary ethnic enclaves (i.e. areas with a high level of ethnic concentration) might increase the employment possibilities for immigrants in and out of that ethnic enclave. Therefore, immigrants may benefit from a high level of ethnic concentration, as more job opportunities could be generated by ethnic and geographic concentration. For example, Edin, Fredriksson, and Aslund (2003) argued that immigrants' earnings were positively correlated with the size of ethnic concentration in Sweden.

Hypothesis

Our hypothesis in this paper is that the effect of language proficiency, years since migration, marital status and skill levels on immigrants' employment outcomes alter once they locate in an ethnic enclave.

Below are some of the major factors that are related to the role of ethnic concentration, location choice and employment outcomes for immigrants.

Language proficiency: Immigrants with host country language proficiency may be less likely to locate within an ethnic enclave than those with less proficiency. For example, Scott, Coomes, and Izyumov (2005) found that immigrants who were fluent in English faced fewer difficulties in communicating and obtaining information on local labour markets. However, immigrants without proficiency in English may face greater barriers outside of the ethnic enclave, as they lack basic skills (English communication) for employment in the mainstream economy. As such, it would be less problematic for them to live and work within the ethnic enclave. Therefore, we hypothesise that primary ethnic enclaves should have a greater influence in attracting new immigrants from non-English-speaking countries, and in particular, immigrants who are less proficient in English.

Years since migration: Immigrants with more years of experience living in the host country are potentially less likely to locate in the region with a large ethnic enclave, as they may be more experienced in utilising resources (e.g. services and facilities) provided by the local community than their counterparts. As a result, immigrants

with longer "years since migration" (YSM) may be more confident to locate outside of ethnic enclaves than are new immigrants.

Marital status: Primary ethnic enclaves also may provide more opportunities for single immigrants to find their partners. Thus unmarried immigrants may choose large ethnic enclaves for settlement, as they may provide much greater opportunities for marriage.

Ethnic enclaves and skill level: From an economics perspective it is not clear whether primary ethnic enclaves more strongly attract high-skilled or low-skilled immigrants. For example, less-skilled immigrants may be more reliant on ethnic capital and choose a large ethnic enclave to settle down. Compared with less-skilled immigrants, finding employment in the local mainstream economy is usually much easier for high-skilled immigrants (i.e. university graduates). As a result, high-skilled immigrants might be less likely than less-skilled immigrants to choose large ethnic enclaves to reside in.

Review of Previous New Zealand Studies

Immigrants' location choices have not been extensively examined in the New Zealand literature, and only a few recent studies have paid attention to this issue. Using 1996 and 2001 Census data, Maré, Morten, and Stillman (2007) identified local labour markets (LMAs) for every New Zealand region. They focused on examining how characteristics of LMAs attracted immigrants for settlement, and they adopted ethnic concentration as the proxy for immigrants' ethnic network.

Holzer and Ihlanfeldt (1998) conducted an empirical study on ethnic residential segregation in New Zealand, using data from the 1991, 1996, 2001 and 2006 Censuses. They specifically discussed recent Asian immigrants' location choices in New Zealand. They concluded that levels of segregation have increased gradually for Asians, and have declined only slightly for the Pacific population, providing evidence on generally persistent ethnic residential sorting.

Three important questions remain:

(1) Where are the primary ethnic enclaves for immigrants in New Zealand?

(2) What are the socio-economic factors that pull immigrants to locate in their primary ethnic enclaves?

(3) How do ethnic networks influence immigrants' location choices in New Zealand?

This study provides evidence on the above questions.

Model and Data

In order to explore the effects of ethnic networks, previous empirical studies have adopted either ethnic concentration (e.g. Aguilera, 2009; Borjas, 1995; Damm, 2009; Edin, Fredriksson, & Aslund, 2003; Toussaint-Comeau, 2008;) or linguistic concentration (e.g. Bertrand, Luttmer, & Mullainathan, 2000) as the proxy for ethnic network. Unlike these studies, we followed the methods of Goetzke (2008) and Wang and Maani (2014) to construct an ethnic network variable to represent the individual's network of economic resources in their host country.

The logit model is widely employed in testing discrete choices (e.g. location). According to our hypothesis, we investigate how primary ethnic enclaves attract recent immigrants to move in. We examine whether or not new immigrants in our study choose to locate in their primary ethnic enclave(s) in order to maximise their utility. We further examine employment outcomes of location choices of immigrants.

In modelling location choices, new immigrants to New Zealand choose among a set of possible regions for location (J). Each possible destination j provides a utility level U_{ij} for immigrant i. Individual i will maximise their utility and choose the place where they can have the highest utility. In addition, immigrant i's utility is a linear form of the level or change in the destination's characteristics L_j (e.g. the gross domestic product (GDP) for that place), individual's characteristics X_i (e.g. education level and English proficiency), and ethnic variables E_{ij} (e.g. ethnic network), and an error term, ϵ_{ij}.

$$U_{ij} = f(L_j, X_i, E_{ij}) \quad (1)$$

If $\epsilon_{ij} \sim i.i.d$ then the probability of individual i choosing location l is:

$$P(y_i = l) = \frac{exp(L_j'\xi + X_i'\varphi + E_{ij}'\phi + \epsilon_{ij})}{\sum_{j=1}^{J} exp(L_j'\xi + X_i'\varphi + E_{ij}'\phi + \epsilon_{ij})} \quad (2)$$

where: y_i is immigrant i's location choice

$Z_{ij} = [L_j \ X_i \ E_{ij}]$, and

$\beta = [\Xi \ \Psi \ \Phi]'$ is the parameter vector.

The parameters are estimated by maximum likelihood. In addition, this analysis requires estimation using $N \times J$ observations (where N is the number of immigrants and J is the number of distinct localities).

Measurement of primary ethnic enclave(s)

Primary ethnic enclaves refer to the location choices for each immigrant group, where the concentration of population from the same ethnic background is higher than a threshold level. We define primary ethnic enclave(s) for an ethnic group based on the calculations of a residential concentration quotient (RCQ).

$$RCQ_i = \frac{P_{ij}}{P_j} / \frac{P_{im}}{P_m} \tag{3}$$

where: $j = (1, \ldots, n)$ represents different localities

P_{ij} is the number of immigrants from a typical immigrant group (i) residing in location j

P_j refers to the total population in location j

P_{im} is the total population size of immigrants from immigrant group i in the host country, and

P_m is equal to the total host country's population size.

Therefore, when RCQ is equal to 1, ethnic concentration of immigrant ethnic group i in a certain region j is on par with the country average, while an RCQ larger than 1 shows a greater level of ethnic concentration for immigrant group i in region j. In this paper, we adopt a threshold of RCQ to identify the primary ethnic enclave for immigrants in New Zealand.

Different studies adopt different threshold values for defining an ethnic enclave, and a definite quantifiable criterion does not exist. For example, in Parks' (2004) paper, the cut-off RCQ was 5, while Zhu, Liu, and Painter (2013) adopted a RCQ value of 1.5. In this case, a threshold of RCQ of 1.2 is chosen. Based on the distribution of RCQ values in our data, the threshold value of 1.2 allows us to identify at least one primary ethnic enclave for every ethnic group in New Zealand. Table 1 reports our derived

RCQ measures for a selection of major immigrant groups, for all New Zealand regions.

According to this definition, for example, the Auckland region is identified as the primary ethnic enclave for Asian immigrants, as it is the only locality that meets the threshold requirement. Wellington and Nelson regions are the primary enclaves for immigrants from the United Kingdom (UK) and Ireland. As such, it is possible for more than one primary ethnic enclave to exist for an immigrant in their location choice.

We draw on the concept of *primary ethnic enclave* to dichotomise host country regions according to RCQ, as specific localities could be particularly meaningful to particular groups of immigrants. One such example is the significance of Auckland to Asian communities. Consequently, it is important to emphasise the role of location in influencing socio-economic integration within a host nation. We found that RCQ provides the most robust methodology by which to identify specific localities in New Zealand.

We have used 16 distinct locations in our analysis; namely, New Zealand's 16 local government regions (see Table 1).[1] The majority of earlier studies (e.g. Borjas, 1986; Yuengert, 1995) have examined immigrants' geographical decisions in light of Metropolitan Statistical Areas (MSA) in the USA.

We argue that New Zealand's regions are generally organised around a major city, and are similar in terms of size. As such, immigrants living in one suburb of a region (e.g. Auckland) are able to access knowledge and information, indirectly, regarding job opportunities in other suburbs of that region, and a network is likely to develop within that area. For example, Immigrant A, located in a western suburb, has a friend, Immigrant B, located in the central suburb, who is in turn connected to a third friend, Immigrant C, residing in an eastern suburb. Therefore, Immigrant A may obtain information about job opportunities in the eastern suburb through the network. We aim to capture the impact of an entire network on a particular location. For example, a common scenario is that some immigrants may live in one suburb, yet work in another suburb. Therefore, we think in considering locations in New Zealand, the regional perspective helps to best address location choices and employment outcomes in this setting.

Table 1: Residential concentration quotient (RCQ)

Country of origin	Local government regions					
	1	2	3	4	5	6
North America	1.124	1.052	0.785	0.851	0.655	0.613
UK and Ireland	0.960	1.086	0.865	1.002	0.523	0.878
Europe (excl. UK and Ireland)	0.934	1.170	0.880	0.826	0.427	0.692
Australia	1.139	0.996	0.977	1.048	0.744	0.833
Asia	0.185	2.044*	0.524	0.350	0.149	0.246
Pacific Islands	0.198	2.271*	0.376	0.237	0.264	0.415
Other	0.542	1.727*	0.826	0.641	0.356	0.544
	7	8	9	10	11	12
North America	0.603	0.712	1.253*	1.588*	1.799*	1.033
UK and Ireland	0.765	0.770	1.208*	1.195	1.408*	0.962
Europe (excl. UK and Ireland)	0.641	0.579	1.229*	1.412*	1.366*	0.884
Australia	0.904	0.836	0.989	1.213*	1.284*	0.977
Asia	0.233	0.401	0.818	0.158	0.306	0.188
Pacific Islands	0.133	0.299	1.008	0.068	0.197	0.171
Other	0.473	0.512	0.918	0.456	0.529	0.591
	13	14	15	16		
North America	0.788	1.039	1.366*	0.469		
UK and Ireland	0.588	1.030	0.921	0.492		
Europe (excl. UK and Ireland)	0.674	1.036	0.893	0.572		
Australia	1.137	1.048	1.211*	0.752		
Asia	0.121	0.733	0.491	0.131		
Pacific Islands	0.105	0.291	0.205	0.150		
Other	0.353	0.627	0.593	0.245		

Notes: 1. * Higher than threshold of RCQ of 1.2, and so these regions can be treated as primary ethnic enclaves for the specific ethnic group.
2. Raw data are taken from published 2006 New Zealand Census table: Birthplace (Broad Geographic Areas) for the usually resident population count (2006).
3. The New Zealand regions are: (1) Northland, (2) Auckland, (3) Waikato, (4) Bay of Plenty, (5) Gisborne, (6) Hawke's Bay, (7) Taranaki, (8) Manawatu-Wanganui, (9) Wellington, (10) Tasman, (11) Nelson, (12) Marlborough, (13) West Coast, (14) Canterbury, (15) Otago, and (16) Southland.

Despite the relatively small number of 16 regions, from a statistical point of view they provide sufficient variation for analysis – they are significantly different according to their economic, demographic and geographic characteristics. For example, the Auckland region has the highest GDP of all the New Zealand regions – it accounted for around 35.3 per cent of New Zealand's GDP in the year ended March 2013 (Statistics New Zealand, 2013).[2] In addition, the skill structure of the labour force and the economic specialisation of regions varies significantly across the New Zealand regions. This is a very positive feature of the data from a statistical point of view.

Data

This study uses data from the Longitudinal Immigrant Survey: New Zealand (LisNZ) data to examine recent immigrants' location choices and their employment outcomes in New Zealand. The LisNZ project includes three interviews (waves) with the same group of selected immigrants.[3] Immigrants were sampled at the time they were granted residence. LisNZ has been matched, at the regional level, with data from the 2006 Census (Statistics New Zealand (2006a) for RCQ measures.

Among the positive features of the LisNZ data set are that it includes an entire cohort of immigrants through their settlement choices and employment outcomes, and it provides comprehensive individual-level information on education, work experience and language proficiency. Another advantage of this longitudinal survey is that it incorporates information (e.g. location choices) on several occasions, thus capturing information on the complete dynamics of settlement and employment results.

In addition, LisNZ data can be categorised by the 16 regional council areas. LisNZ also provides detailed information on country of origin. As a result, it is possible to analyse specific ethnic group effects on ethnic capital. It also allows comparison of the effects of ethnic capital across different ethnic groups.[4]

New Zealand accepts immigrants of diverse backgrounds from both English-speaking and non-English-speaking countries. The economic performance of immigrants has a large influence on New Zealand's economy and development. In this study, primary ethnic enclave(s) for immigrants are identified based on calculations of RCQ according to their ethnicity; for example, the Auckland region is the primary ethnic enclave for immigrants from Asia.

In the international literature, the approach to modelling location choices is to adopt the logit model for empirical studies of the location choices of immigrants, and this is the estimation method that was adopted for this analysis.[5] Both immigrants' personal characteristics and a destination's characteristics (such as GDP and unemployment rate) are considered in the analysis of immigrants' location choices. The test of alternative hypotheses based on the theory of ethnic capital can point out

how ethnicity influences immigrants' location choices in a major immigrant-receiving English-speaking country.

In this study, the network model is applied to all recent male immigrants to New Zealand in the survey who are aged between 20 and 55 years. The total sample size is 8020.[6] There are 3183 observations for immigrants from Asia, and 1809 from the UK and Ireland.[7]

There were several key differences in these two broad groups. Recently approved permanent residents from the UK and Ireland were older (average age of 38.7 years) than the Asian immigrants (34 years).The rate of owning a dwelling in New Zealand was highest for recent immigrants from the UK and Ireland (approximately 54 per cent). Asian immigrants tended to have migrated more recently and therefore have a shorter duration of New Zealand residency. The mean "years since migration" variable for this group is around 6.3 years, compared with the sample average of 6.7 years. Asian immigrants are more likely to have achieved higher education. Therefore, it is reasonable that on average they have lower labour market experience. Table 2 provides a summary of the variable definitions utilised in this analysis.

In the following sections, we firstly examine the effect of ethnic capital on location choices of immigrants. Then we discuss our results on how primary ethnic enclaves increase immigrants' access to employment.

Table 2: Variable list and definitions

Ethnic Capital	
Network effect	This variable is derived according to immigrants' ethnicity, region of residence, and the survey year.
Human Capital	
Work experience	This is a derived variable which is equal to an individual's current age minus the age at graduation.
Proficiency in English*	Binary variable = 1 if that individual is proficient in English (self-reported initial language proficiency from first wave of data).
High skilled*	Binary variable = 1 if the highest education degree is bachelor's or higher (from first wave of data).
Personal Characteristics	
Years since migration (YSM)	This variable represents the duration of residence in the host country since immigration.
Married*	Binary variable = 1 if married.
Children*	Binary variable = 1 if has children.
Own dwelling*	Binary variable = 1 if owns house/flat.
Regional Characteristics	
GDP	Gross domestic product (measured at the regional level).
Unemployment rate	Unemployment rate (measured at the regional level).

*Note: Variables "Proficiency in English", "High skilled", "Married", "Children", and "Own dwelling" are based on the first-wave data.

Results

Immigrant location choices

We have adopted the Panel Logit Model approach to estimate the effect of ethnic capital, human capital and personal characteristics on immigrants' location choices.[8] This estimation process allows us to exploit the panel features of the data.[9] The results are summarised in Table 3.

Table 3: Immigrants' location choices with network effect

	Model (1)		Model (2)	
	Odds ratio	*Average marginal effect*	*Odds ratio*	*Average marginal effect*
Ethnic Capital				
Network effect	/	/	32.03*** (0.33)	1.3436*** (0.1759)
Human Capital				
Proficiency in English	-5.91*** (0.37)	-0.0063*** (0.0022)	-2.77*** (0.58)	-0.3278*** (0.1322)
High skilled	-1.36*** (0.2)	-0.00003*** (0.00001)	-0.19 (0.23)	-0.0078 (0.0093)
Personal Characteristics				
Age^	-1.16*** (0.13)	-0.00003*** (0)	-0.49*** (0.17)	-0.0207*** (0.0076)
Years since migration^	-1.05*** (0.05)	-0.00003*** (0)	-0.43*** (0.06)	-0.0181*** (0.0035)
Married	-3.37*** (0.17)	-0.0001*** (0.00002)	-1.40*** (0.21)	-0.0589*** (0.0107)
Children	0.08 (0.25)	0.000002 (0.00001)	-0.35 (0.29)	-0.0143 (0.0113)
Own dwelling	-0.88*** (0.24)	-0.00002*** (0.00001)	1.29*** (0.27)	0.0710*** (0.0214)
Country of Origin				
UK & Ireland	-4.62*** (0.26)	-0.0002*** (0.00002)	-5.50*** (0.3)	-0.2339*** (0.0281)
Asia	4.73*** (0.27)	0.0008*** (0.0002)	1.47*** (0.31)	0.0858*** (0.0273)
Regional Characteristics				
Observations	8020		8020	
Log likelihood	-9717.32		-3038.2945	
Wald Chi(2)	11999.19		10007.36	
AIC	19462.64		6106.59	

Notes: 1. panel logit estimations
2. standard errors in parentheses
3. * p<0.10 ** p<0.05 *** p<0.01
4. ^age-squared, years-since-migration-squared, regional characteristics, and Pacific dummy variables have been included in the model.

Firstly, a positive effect of immigrants' ethnic networks on their location choices in primary ethnic enclaves is observed. This result provides strong support for the hypothesis that recent immigrants tend to move to a common region rather than being dispersed throughout the country. This result is consistent with empirical evidence on location choices relating to ethnic concentration (e.g. Kobrin & Speare, 1983; Maré, Morten, & Stillman, 2007; Piore, 1979) that ethnic networks may encourage immigrants to be concentrated spatially.

Secondly, immigrants who are proficient in English have a lower probability of locating in their primary ethnic enclave. This result supports the hypothesis that with sufficient language proficiency, immigrants may face fewer barriers to living outside of the ethnic enclave. This result is also consistent with previous studies that have found that immigrants who are fluent in English face fewer difficulties in communicating and obtaining information about the local labour market and employment in the mainstream economy (e.g. Scott, Coomes, & Izyumov, 2005).

Thirdly, years since migration negatively influences the primary ethnic enclave choice by new immigrants. Therefore, with the experience of each additional year of living in the host country, recent immigrants are more likely to locate in other regions with lower levels of ethnic concentration. It seems that primary ethnic enclaves assist new immigrants to adapt to the new environment in the host country, as recent immigrants gain sufficient knowledge and prepare to connect with the host community. These empirical observations are consistent with Funkhouser's (2000) conclusion on years since migration.

Fourthly, the coefficients of country of origin variables indicate that immigrants from different language and cultural backgrounds differ in their preferences regarding locations. The fixed-effects coefficients for immigrants from the UK and Ireland are, for example, negative and significant in all of the conventional and spatial models. This finding suports the hypothesis that immigrants from English-speaking countries (e.g. the UK and Ireland) are less likely to locate within a primary ethnic enclave than are immigrants from the rest of world. At the same time, recent immigrants from Asian countries, with greater language and cultural distance from the host country in this case, are more likely (compared with immigrants from the rest of world) to locate in their primary ethnic enclave in New Zealand. Thus, empirical evidence supports our earlier hypothesis that immigrants from non-English-speaking countries prefer to locate in their ethnic enclave(s), as it will be less problematic for them to live and work within the ethnic enclave. In addition, it can lower the requirements of English proficiency for them. Furthermore, the average marginal effect of ethnic network for recent less-skilled immigrants is much greater than the same effect for recent high-skilled immigrants.[10]

Country of origin and location choices

Based on the spatial model (2) in Table 3, we examine effects for immigrants from two major country-of-origin groups, the UK and Ireland, and compare those same effects for Asian immigrants. These sub-sample panel logit estimtion results are provided in Table 4.

After taking the immigrants' cultural and language backgrounds into consideration, we find that immigrant networks and other socio-economic variables were more influential (stronger average marginal effects) in settlement decisions of recent immigrants from non-English-speaking backgrounds than those with English-speaking backgrounds. Table 4 also shows a significant marginal effect of ethnic network for Asian immigrants (0.038), which represents a much stronger network effect on Asian immigrants' location choices compared with the same effect for UK and Irish immigrants (6.95E-07).

Table 4: Location choices of immigrants by country of origin (selected effects based on Model (2) in Table 3)

	UK and Ireland		**Asia**	
	Odds ratio	***Average marginal effect***	***Odds ratio***	***Average marginal effect***
Ethnic Capital				
Network effect	38.25*** (0.75)	6.95E-07*** (0)	34.83*** (0.54)	0.0384***(0.009)
Selected Socio-economic Variables				
Years since migration	-0.26** (0.11)	-4.66E-09*** (0)	-0.001** (0.004)	-0.0003** (0.0001)
Married	-1.66*** (0.50)	-3.11E-08*** (0)	-2.54*** (0.42)	-0.0043*** (0.0016)
Proficiency in English	/	/	-3.3*** (0.65)	-0.0021*** (0.0006)
Observations	1809		3183	
Log likelihood	-643		-774.77	
Wald Chi(2)	3438.84		5127.12	

Notes: 1. standard errors in parentheses

2. * p<0.10, ** p<0.05, *** p<0.01

3. All other human capital, personal and regional characteristics variables as in Table 3 have been included in the model.

Employment Effects

Immigrants' employment and primary ethnic enclaves

In this section we extend the analysis to examine the effect of ethnic network on immigrants' employment outcomes. We utilise a similar setting to the last section for estimating employment outcomes using binominal logit analysis, and we include a similar set of variables. The results are summarised in Table 5.

Firstly, the coefficient of ethnic network is significantly positive in Table 5, indicating that ethnic networks strongly assist recent immigrants' labour market integration in New Zealand. Education plays an essential role in the employment of immigrants. The higher the level of education, the more likely immigrants are to be employed. Work experience and host country (living) experience (YSM) also have significant positive effects on the employment of immigrants: the longer the work experience, the more likely immigrants are to find a job. Married immigrants have a more stable family and living environment than do unmarried immigrants, and they are also more likely to be employed. The significant positive effect of English proficincy on immigrants' employment is confirmed by the regression results.

Table 5: Immigrant employment outcomes with network effects

	Model (1)		Model (2)	
	Odds ratio	*Average marginal effect*	*Odds ratio*	*Average marginal effect*
Ethnic Capital				
Network effect	/	/	1.4*** (0.16)	0.0180*** (0.0026)
Human Capital				
Proficiency in English	0.58*** (0.11)	0.0084*** (0.0021)	0.53*** (0.1)	0.0085*** (0.0022)
High skilled	0.44*** (0.09)	0.0046*** (0.0009)	0.44*** (0.08)	0.0053*** (0.0010)
Personal Characteristics				
Work experience^	0.29*** (0.01)	0.0033*** (0.0003)	0.28*** (0.01)	0.0037*** (0.0003)
Years since migration^	0.05*** (0.02)	0.0005*** (0.0002)	0.05*** (0.02)	0.0007*** (0.0002)
Married	0.66*** (0.06)	0.0073*** (0.0008)	0.64*** (0.06)	0.0081*** (0.0009)
Children	-0.54*** (0.1)	-0.0066*** (0.0013)	-0.56*** (0.1)	-0.0078*** (0.0015)
Own dwelling	0.21*** (0.1)	0.0023** (0.001)	0.22** (0.1)	0.0027*** (0.0011)
Country of Origin				
UK & Ireland	-0.15*** (0.11)	-0.0017 (0.0014)	-0.022	0.0053* (0.0010)
Asia	-1.55*** (0.11)	-0.0260*** (0.0029)	-1.44*** (0.11)	-0.0266*** (0.0029)
Observations	8020		8020	
Log likelihood	-10651.09		-10620.06	
Wald Chi(2)	965.29		1103.36	
AIC	21326.18		21266.12	

Notes: 1. panel logit estimations
2. standard errors in parentheses
3. * p<0.10, ** p<0.05, *** p<0.01
4. ^work-experience-squared, years-since-migration-squared, and Pacific dummy variables have been included in the model.

Living within or outside of primary ethnic enclave(s)

The results for immigrants living in and outside of their primary ethnic enclaves are presented in this section. (As noted earlier, more than one locality can meet the primary ethnic enclave threshold).

Table 6 presents results for the two sub-samples of immigrants who live in their primary ethnic enclave. Asian immigrants are more dependent on their ethnic network to obtain employment opportunities than are immigrants from traditional source countries.

The results confirm that the immigrant primary ethnic enclave is important for Asian immigrants' labour market success in New Zealand.

For example, the primary ethnic enclave provides a stronger ethnic network to help immigrants from Asian countries to find a job in comparison with the effect of ethnic network on Asian immigrants located in other regions. The results further confirm that within the primary ethnic enclave, Asian immigrants can better transfer their work experience and their experience of living in the host country to find a job.

In addition, when ethnic network is controlled for, the correlation of proficiency in English is not significant in the case of Asian immigrants located in the primary enclave, confirming our earlier hypothesis that immigrants from non-English-speaking countries located in the primary enclave may not rely on proficiency in English to find a job. However, once Asian immigrants move outside of their primary ethnic enclave, proficiency in English plays a vital role in their employability. As a result, the primary ethnic enclave decreases the requirement of learning the host country's language. In addition, it provides an environment for Asian immigrants to more immediately utilise skills and experiences, and it generates a stronger network to assist their employment. This result is confirmed in Table 6.

Asian immigrants may have less knowledge about their new labour market due to cultural and language constraints, and hence they may be more reliant on their ethnic networks to enhance job accessibility. Interestingly, we cannot observe the same significant positive effect of ethnic network on the employment of UK and Irish immigrants. As the UK and New Zealand share similar cultural, linguistic and institutional backgrounds, one can expect that these immigrants are less dependent on their ethnic network to receive information on job opportunities.

Consistent with our expectation, we do not observe the same pattern for recent immigrants from the UK and Ireland as for Asian immigrants. The effects of ethnic network for UK and Irish immigrants are insignificant whether the immigrants are located within or outside of their primary ethnic enclaves. As a result, we find that primary ethnic enclaves are significantly more important for immigrants from non-English-speaking countries than they are for immigrants from English-speaking countries. Ethnic networks apparently provide a more greatly needed and stronger network of socio-economic resources and opportunities for employment for non-English-speaking immigrants.

Table 6: Immigrants' employment outcomes within and outside of primary ethnic enclave(s) (based on model 2 in Table 5)

	General		UK and Ireland		Asia	
	Odds ratio	*Average marginal effect*	*Odds ratio*	*Average marginal effect*	*Odds ratio*	*Average marginal effect*
Located within primary ethnic enclave(s)						
Ethnic capital						
Network effect	2.97*** (0.40)	0.0447*** (0.0085)	-10.69 (10.31)	-0.0130 (0.0133)	7.92*** (0.68)	0.4361*** (0.0484)
Selected socio-economic variables						
High skilled	0.49*** (0.13)	0.0067*** (0.0017)	-1.44*** (0.55)	-0.0022 (0.0016)	0.37*** (0.13)	0.0196*** (0.0070)
Work experience^	0.35*** (0.02)	0.0052*** (0.0006)	-0.13 (0.13)	-0.0002 (0.0002)	0.28*** (0.03)	0.0153*** (0.0016)
Years since migration^	0.17*** (0.03)	0.0025*** (0.0005)	0.10 (0.09)	0.0001 (0.0001)	0.41*** (0.06)	0.0228*** (0.0035)
Proficiency in English	0.31** (0.13)	0.0052*** (0.0024)	/	/	-0.01 (0.15)	-0.0006 (0.0082)
Observations	3867	3867	313	313	1899	1899
Log likelihood	-4925.35	-4925.35	-317.04	-317.04	-2829.88	-2829.88
Wald Chi(2)	646.85	646.85	36.51	36.51	356.18	356.18
Located outside primary ethnic enclave(s)						
Ethnic capital						
Network effect	1.26*** (0.18)	0.0141*** (0.0026)	-0.06 (0.38)	-0.0003 (0.0023)	2.06*** (0.27)	0.0973*** (0.0171)
Selected socio-economic variables						
High skilled	0.42*** (0.11)	0.0044*** (0.0011)	0.10 (0.18)	0.0006 (0.0011)	0.71*** (0.16)	0.0336*** (0.0082)
Work experience	0.21*** (0.02)	0.0023*** (0.0003)	0.08*** (0.04)	0.0005** (0.0002)	0.17*** (0.03)	0.0078*** (0.0016)
Years since migration	-0.02 (0.02)	-0.0002 (0.0003)	0.03 (0.04)	0.0002 (0.0002)	0.11** (0.05)	0.0050** (0.0022)
Proficiency in English	0.92*** (0.20)	0.0161*** (0.0053)	/	/	0.77*** (0.21)	0.0474*** (0.0175)
Observations	4153	153	1496	1496	1284	1284
Log likelihood	-5626.53	-5626.53	-2462.75	-2462.75	-1550.9	-1550.9
Wald Chi(2)	515.22	515.22	196.04	196.04	190.38	190.38

Notes: 1. panel logit estimations
2. * p<0.10, ** p<0.05, *** p<0.01
3. ^work-experience-squared, years-since-migration-squared, and Pacific dummy variables have been controlled.

Conclusion

In this paper, we focus on the importance of networks and resources that are provided by the ethnic enclave(s) for recent immigrants' location choices and employment outcomes in the host country. Since immigrants' location choices correlate to their job opportunities and expected income levels, their settlement choices have a potentially significant impact on their economic assimilation process through employment outcomes. We show results on both location choices and employment outcomes across immigrant groups by country of origin for New Zealand.

The empirical evidence, based on panel logit modelling and individual-level longitudinal data, confirms that ethnic networks play a vital role in immigrants' location choices and their employment outcomes. In addition, the results highlight that through location choices, immigrants enhance their employment opportunities in achieving greater economic opportunities and in transitioning to integration in New Zealand. We find strong evidence that ethnic networks influence immigrants' location choices to concentrate geographically in the host country.

In addition, our analysis shows that cultural and language distance from the host country are key factors for recent immigrants' location decisions. For example, in our analysis of immigrants from the UK and Ireland, who share a similar cultural background to the host country population, the ethnic network effect to locate in a primary ethnic enclave is weak. In contrast, recent immigrants from Asian countries are more likely to locate in their primary ethnic enclave, supporting the hypothesis of stronger returns to spatial networks when cultural and language distance are greater. Our results also verify that for this group of immigrnats, living in their primary ethnic enclave leads to significantly enhanced employment outcomes, whereas for immigrants from the UK and Ireland the employment gain is not present.

Acknowledgements

We would like to express appreciation to Professors Jacques Poot, Terence Hull, James Raymer and Mohammad Jalal Abbasi-Shavazi, and to fellow researchers at the Australian Demographic and Social Research Institute and the Melbourne Institute of Applied Economic and Social Research for providing feedback regarding this paper. We are also appreciative of the

support of Keith McLeod and Sankar Ramasamy (Ministry of Business, Innovation and Employment Labour Group), and John Upfold, Kirsten Nissen and Anne Henderson (Statistics New Zealand), and for the helpful comments by the editors and anonymous referees of this journal.

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 Longitudinal Immigration Survey: New Zealand (LisNZ) data are subject to the specific rule of rounding in accordance with Statistics New Zealand's release policy for LisNZ data. Any views expressed are the sole responsibility of the author(s) and do not purport to represent those of Ministry of Business, Innovation and Employment Labour Group, Statistics New Zealand, or the individuals acknowledged above.

Notes

1 New Zealand regions are: Northland, Auckland, Waikato, Bay of Plenty, Gisborne, Hawke's Bay, Taranaki, Manawatu-Wanganui, Wellington, West Coast, Canterbury, Otago, Southland, Tasman, Nelson, and Marlborough.

2 Furthermore, different regions specialise in different industries. According to Statistics New Zealand (2006b), Auckland focuses on manufacturing, wholesale trade, transport, storage and communication services, while Waikato specialises in agriculture, mining, energy and water supply, education, health and community services.

3 The first wave (Wave 1) interviews are conducted six months after new immigrants settle in New Zealand. The second wave (Wave 2) is conducted 12 months after the Wave 1 survey. The last survey (Wave 3) is conducted in the 36th month after the immigrants have settled in New Zealand. The survey sample was selected from migrants aged 16 years and over who were approved for permanent residence in New Zealand from 1 November 2004 to 31 October 2005.

4 According to the 2006 New Zealand Census (Statistics New Zealand, 2006a), New Zealand has in recent years received more immigrants from Asian countries than before. In our analyses we consider the major ethnic groups from the UK and Ireland, and Asia.

5 We adopt the Panel Logit Model in order to take advantages of the panel data.

6 We have dropped some observations due to missing data issues.

7 In this study, we have focused on the location choices and employment outcomes of Asian, and UK and Irish immigrants as two major language

groups. As such, we have provided additional results based on sub-samples for these two immigrant groups. However, our analyses include all major immigrant ethnic groups, including controls for the Pacific Island immigrant groups in all of our models.

8 Regional characteristics (GDP and unemployment rate) also have been controlled for. We adopt the random-effects setting. The variation across immigrants is treated as random, and the unobserved effect is also assumed to be uncorrelated with the explanatory variables.

9 Our selection of estimation method was based on a full consideration of alternative estimation methods. For example, the fixed-effects method commonly used in panel data settings is not suitable in this case, since beside the effects of ethnic capital it is important to control for the impact of other human capital variables on immigrants' location choices and employment outcomes. In this setting, to avoid endogeneity, the measures of English proficiency, high skills, children, marriage and assets (e.g. own a property) are based on the initial wave interviews, and as such they are time invariant, making fixed-effects estimation inappropriate.

10 Our approach for defining ethnic enclaves is based on ethnicity and location choices. Additional methods for identifying general networks directly may include membership of the same sports club, community, education institution, church or internet community (e.g. LinkedIn).

Appendix A: Descriptive statistics of male immigrants, ages 20–55, by country of origin, LisNZ (Waves1–3)

	Foreign-Born	Asian	UK & Ireland
Age in years (mean)	35.9	34	38.7
Employed (count)	7180	2710	1685
Live in ethnic enclave(s) (count)	3870	1900	315
Number of observations	**8020**	**3183**	**1809**

Source: Statistics New Zealand LisNZ data.

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