Mobility and Community Ties

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"...place is a pause in movement" [1]

1. Introduction

The initial impetus for research on residential mobility was a conviction that transiency depressed the quality of urban life and elevated the prevalence of all sorts of social disorders.[2] Even though mobility and migration research has since recognised movement as normal adjustment to events over the life course there is still a concern over the impacts of transiency in certain contexts. Large numbers of people moving into or out of a community over a short time, it is argued, can disrupt the educational sequence and reduce the effectiveness of local community services.[3] The social capital literature continues to argue that the strength of attachment to communities is a function of the stability of residents.[4] It is still widely believed that individuals who are highly attached to their residential communities are more likely to take action to resolve neighbourhood problems.[5]

Interestingly it was the *externalities* generated by mobility that fostered studies of neighbourhood in the 1920s.[6] Such was the prevailing view that Rossi's 1955 book on *Why Families Move* was largely neglected into the 1970s because he advanced the view that mobility was simply the way families made adjustments over the life course.[7] The community and the role of mobility in low income neighbourhoods became a relatively more important consideration in the 1980s when issues of social exclusion arose on the policy agenda.[8] A literature linking health with neighbourhoods emerged in the late 1990s[9] which also influenced thinking about the way mobility affects poorer communities.[10]

Our aim is to generate an empirical understanding of the relationship between attachment and mobility as it applies in the New Zealand context. More specifically we explore the way in which levels of attachment change with duration of residence, firstly for the population as a whole and then for residents in low and high deprivation areas.

The primary contribution of the paper is to question the long standing assumption that community attachment rises with duration of residence and hence that the stability of an area's population is necessary condition for attachment. On the contrary, we demonstrate empirically that not only is the association between attachment and stability relatively weak, but that in relatively deprived areas, even after we control for characteristics of residents, the relationship between duration and attachment is actually negative. Prescribing greater stability in poor areas as a way of reducing transience may therefore be missing some fundamental issues associated with the residential

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[1] Tuan (1978) cited in McHugh (1995).
[2] Rossi and Shlay (1982:22).
[3] Bolan (1997), Temkin and Rohe (1998).
[4] Durlauf (2004).
[5] Lee and Guest (1983).
[6] Park (1952).
[7] Rossi (1955).
[8] Wilson (1987).
[9] Kawachi and Berkman (2003).
[10] South et al. (2005), Nord et al. (1995), Parkes et al. (2002), South and Crowder (1997), Shefer and Primo (1985), Andersen (2008).

sorting process and we suggest that attachment has more to do with who settles in an area than any subsequent duration of residence therein.

The paper is set out as follows. Section two briefly reviews the literature, while sections three and four address the data set, the dimensions of attachment, the duration of residence, control variables and the method. The model of attachment is estimated separately for five different dimensions of attachment in section five. Section six applies the model to areas experiencing high and low levels of deprivation. Conclusions are drawn in section seven.

2. Literature

Despite the attention residential mobility has received over the years relatively few authors have embedded their enquiry explicitly in the study of the community, notwithstanding more recent attempts at estimating neighbourhood effects[11] and relating stability to social capital.[12] It turns out that the reverse is also true: too few studies of community explicitly address the role of residential mobility.

Kasarda and Janowitz argue on the basis of their British data that stability is of primary importance in understanding community as compared to the attributes of place, most notably urban density as argued in 1939 by Louis Wirth.[13] Since then there have been a range of competing arguments. Buttel et al. for example challenge the duration of residence argument in favour of settlement size and density[14] and Wasserman questions the general applicability of the British evidence noting the less constraining effects of duration found in the more mobile new settler countries.[15]

Kasarda and Janowitz tested two competing models: the *linear model* in which increases in population size and density exogenously influence social behaviour including the local bonding of kinship and friendship. In the alternative *systemic* model community organisation is treated as an essential aspect of mass society. They invoke the notion of a community of 'limited liability' observing, "that in a highly mobile society people may participate extensively in local institutions and develop community attachments yet be prepared to leave these communities if local conditions fail to satisfy their immediate needs or aspirations". Their thesis is that such "residential mobility operates as a barrier to the development of extensive friendship and kinship bonds and widespread local associational ties" and that "once established, … such bonds strengthen community sentiments". [16]

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[11] Clark and Ledwith (2006).
[12] Temkin and Rohe (1998).
[13] Kasarda and Janowitz (1974), Sampson (1988), Wirth (1969).
[14] Buttel et al. (1979).
[15] Wasserman (1982a).
[16] Kasarda and Janowitz (1974:229).

Despite the on-going attention paid to residential stability as an influence on community attachment there has been very little investigation as to *how* duration of residence actually modifies the propensity to move. There still remains a need to disaggregate this black box.[17] While intuitively one might expect the characteristics of local areas to affect residents' life satisfaction,[18] "the idea that context counts, although popular, continues to receive more lip service than careful analysis by students of residential mobility",[19] a point made several decades earlier by Quigley and Weinberg.[20]

Given the way the separate attachment and mobility literatures have evolved maybe it is not surprising that the relationships between the three concepts of *attachment*, *duration of residence* and *community development* remain conceptually as well as empirically unclear. On the few occasions when the three notions have been brought together the results initially seemed surprising and even 'counter intuitive'. Bolan for example showed that new migrants and chronic movers were *just as willing* as other residents to establish cognitive ties and formal attachment to their new environments[21] and Gustafson[22] found that geographical mobility of individuals does not *necessarily* contradict the importance of place attachment, a point that supports the findings of Feldman[23] among others.

Certainly it has been a very long time since issues of residential mobility have been explored in the New Zealand context notwithstanding the contributions of previous work[24], with Keown's work later developed by Heenan.[25] To these we should add the work on Māori migration and the special role which attachment to land plays in that cultural and historical context.[26] This recent work notwithstanding, over most of the country local policy making continue to take place on a very slim evidence base.

3. Data

Our analysis draws on the 2005 New Zealand National Attachment Survey which was assembled using attachment questions previously asked in surveys administered in Australia, the United States and the United Kingdom. The aim was to generate a broad picture of individuals' attachment to their residential location by recording their attitudes *to* as well as their behaviour *within* the local community.

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[17] Clark et al. (1979).
[18] Fernandez and Kulik (1981).
[19] Lee et al. (1994:250).
[20] Quigley and Weinberg (1977).
[21] Bolan (1997).
[22] Gustafson (2001).
[23] Feldman (1990).
[24] Clark and Cadwallader (1973), Kearns and Smith (1994), Poot)1981), Keown (1971), Forrest and Johnston (1973).
[25] Heenan (1999).
[26] Scott and Kearns (2000), Sin and Stillman (2005), Nikora et al. (2004).

The host organisation for this research, the Centre for Research, Evaluation and Social Assessment (CRESA), contracted the telephone interviews of the Attachment Survey to National Research Bureau Ltd (NRB) in early 2005. Stratification was done in proportion to the population within each Regional Council area and led to a representative distribution of respondents across urban and rural New Zealand.[27] No weighting was used.

Upon phone contact with a member of the household the interviewer explained they were undertaking a survey **"to get a picture of how people felt about where they live"**. The interviewer then asked to speak to the male/female or equal main head of household normally living in the house who was at least 18 years or over. The anonymity of the responses was assured. The first formal question established whether the respondent lived in a city, town or rural area and the second asked the name of the area where they lived. For city dwellers this was **"the name of the suburb where you now live"** (Q6). All further questions referred to the specific rural area, town or suburb: **"Why did you move to…?"** and all attachment questions referred to the same area. The externally acquired census data, the deprivation index and the settlement typology were attached to the data file of questionnaire responses based on the respondent's postal address using concordance files linking census area units to residential addresses.

Measuring attachment

Reflections on the meaning of attachment to place go back a long way. One of the best known is Tuan's concept of topophilia,[28] literally love of place or the affective bond between people and place or setting. These are ties which may vary in intensity and mode of expression, and may be manifested by responses to the environment that are aesthetic, tactile, or emotional. Relph elaborated the notion suggesting a continuum of attachments from simple recognition to intense association.[29]

In contrast to these phenomenological accounts, researchers of neighbourhood problems have tended to oversimplify the concept of community attachment when using a single attitudinal variable. In an attempt to capture the broader multidimensional meaning of attachment Woldoff (following Bolan, 1997) develops, "a multiple measure of neighbourhood attachment capturing both attitudes and behavioural attachment through neighbouring, and behavioural attachment through problem-solving,"[30] as have a range of other community studies.[31] We have adopted this multidimensional approach.

The first of our measures are *attitudinal,* describing the attitudes and feelings people have towards their community. The second are *behavioural* measures and refer to the individual's social interaction and formal involvement with the community. The first set of thirteen statements and questions in the National Attachment Survey measure attitudinal attachment and are listed in Table 1. They include statements such

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[27] See Figure 1 in Schroder (2008).
[28] Tuan (1974).
[29] Relph (1976).
[30] Woldoff (2002:88).
[31] Sampson (1988), Stinner et al. (1990), Woolever (1992), Bolan (1997), Woldoff (2002) See also Schroder (2005) for an extensive review.

as Q47, **"I would recommend this as a place to live"** through to Q57, **"Education services are satisfactory here"**. The responses are tabulated on a five point Likert scale ranging from **'strongly disagree'** to **'strongly agree'** on the right most column of Table 1. Q58 was also a Likert item but measured on a five point scale ranging from **'very pleased to leave'** to **'very sorry to leave'**.

Table 1: Attitudinal and behavioural attachment questions ordered by response type

No.	Question	No cases	Response rate %	Strongly disagree %	Disagree %	Neither agree nor disagree %	Agree %	Strongly agree %	Total %
47	I would recommend this as a place to live	999	99.8	0.6	3.1	3.6	58.4	34.3	100
48	Local leaders are doing a good job	924	92.3	4.0	10.0	22.9	55.2	7.9	100
49	I feel safe here	1000	99.9	0.9	3.4	4.1	67.3	24.3	100
50	I have the opportunity to have a real say on local issues that are important to me	955	95.4	5.1	10.3	20.0	57.5	7.1	100
51	People here would help me out in an emergency	976	97.5	0.7	2.1	3.8	62.8	30.6	100
52	There is a strong community spirit here	974	97.3	1.8	7.2	11.9	53.0	26.2	100
53	I am satisfied with the job and business opportunities here	936	93.5	4.0	10.2	21.1	51.5	13.4	100
54	I would be prepared to help out with a community project	976	97.5	1.7	6.7	11.9	65.5	14.2	100
55	I am satisfied with health services here	973	97.2	5.3	12.1	10.0	59.5	13.1	100
56	I am interested in what goes on in this area	1000	99.9	0.4	2.5	4.9	67.8	24.4	100
57	Education services are satisfactory here	890	88.9	3.0	7.2	11.8	58.2	19.8	100
				Very pleased to leave	**Quite pleased to leave**	**Neither pleased nor sorry to leave**	**Quite sorry to leave**	**Very sorry to leave**	
58	How would you feel if you had to move away?	1001	100.0	1.9	3.6	20.9	36.5	37.2	100
	In the last month how many times did you			**N/A**	**No times**	**1-3 times**	**4 or more**		
109	Meet up with or visit with such friends?	1001	100.0	12.6	2.9	22.8	61.7		100
110	Talk on the phone or cellphone, text message or email these friends?	1001	100.0	12.6	5.7	17.9	63.8		100
112	Meet up with or visit with these relatives?	1001	100.0	60.6	1.6	7.4	30.4		100
113	Talk on the phone or cellphone, text message or email these relatives	1001	100.0	60.6	2.0	7.7	29.7		100
				No	**Yes**				
59	Do you feel settled or 'at home' [in this area]	987	98.6	3.9	96.2				100
105	Do you belong to a community organisation, club or group in this area?	999	99.8	51.4	48.7				100
106	In the past year, did you give money to any local community organisation?	977	97.6	37.1	63.0				100
107	Are you involved in any local voluntary work in the area?	999	99.8	70.6	29.4				100
108	Do you have any friends who live in the area?	1001	100.0	12.6	87.4				100
111	Do you have relatives who live in the area?	1001	100.0	60.6	39.4				100
114	Have you spoken with a neighbour in the last week?	1001	100.0	15.7	84.3				100
115	In the last month, have you been to church in the area?	1000	99.9	79.5	20.5				100
116	In the last month, have you been to a Marae in the area?	1001	100.0	96.9	3.1				100

Source: National Attachment Survey, 2005

The next four questions in Table 1 were designed to capture the frequency of informal interactions, Q109 through Q113. Responses included **'Not applicable'**, **'No times'**, **'1–3 times'** and **'4 or more'**. Four questions sought the amount of interaction with friends and relatives (Q109, Q110, Q112 and Q113) and were measured on a four category scale: **'no friends/relatives in the area'**, **'having friends/relatives which were not visited or seen'**, through friends that were **'visited 1 to 3 times a week'**, and **'visited 4 times or more'**. Finally there were a set of nine questions requiring simple yes (1) or no (0) answers: Q59, Q105–Q108, Q111 and Q114–Q116.

The 25 measures of attachment listed in Table 1 may be comprehensive but explanatory models cannot be developed for each one of these items. Two main methods of reducing the large number of attachment items to a leaner set have been used in the literature. One approach is to construct summative scales.[32] While combining several measures into one single representative scale certainly reduces the dimensionality of attachment, some valuable information can be lost in the process. It is partly for this reason that factor analysis has been the preferred alternative, although there are variations in how this has been applied.

We performed principal components factor analysis using the 25 measures in Table 1. In doing so we follow earlier studies such as Riger and Lavrakas[33] whose results were supported by Taylor et al.[34] They both followed a principal components analysis with a varimax rotation and identified three distinct dimensions. Several other studies also adopted this same method of data reduction.[35] Woldoff's approach is typical, invoking confirmatory factor analysis as a "direct test of whether the latent variable 'neighbourhood attachment' is actually composed of various attitudes, neighbouring behaviours, and problem solving behaviour".[36] Variables measured on a variety of different binary and ordinal scales have typically been included.[37]

We have reduced the 25 variables in Table 1 to 23 because the correlations between the three variables measuring friendships networks are high at approximately 0.8, while

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[32] Buttel et al. (1979), Goudy (1982), St. John et al. (1986), Woolever (1992), Liu et al. (1998), Crenshaw and St. John (1989).

[33] Riger and Lavrakas (1981).

[34] Taylor et al. (1985).

[35] Austin and Baba (1990), Beggs et al. (1996), Wasserman (1982b), Brehm et al. (2004), Guest and Lee (1983).

[36] Woldoff (2002:99).

[37] These studies apply the standard parametric model to variables with different levels of measurement, a practice widely adopted by those reducing attachment dimensions but questioned by some. More recently a categorical principal components analysis has been developed and is available in SPSS as CATPCA. This procedure quantifies *categorical* variables using optimal scaling, resulting in optimal principal components for the rescaled variables. The variables can be given mixed optimal scaling levels and no distributional assumptions about the variables are made. There are several theoretical treatments including Young et al. (1978). Also see Korhonen and Siljamaki (1998). In order to explore the way our ordinal and dichotomous variables behaved under different distributional assumptions we inter-correlated them all using several different methods: Pearson, Spearman's rank and Kruscal Wallace each of which yielded remarkably similar results with inter-correlations across the three formulas of well over 98 percent. These and other tests showed that the range of levels of measurement we use in Table 1 are quite resistant to the parametric assumptions of the standard factor analytic model based as it is on the parametric Pearson correlation. Therefore, although applicable, the categorical principal components analysis, CATPCA, has not been applied in our case.

those between the three variables measuring family networks were very close to one, approximately 0.97. As a result the two highly correlated variables relating to friends and relatives living in the area were removed. Submitting the 23 variables in Table 1 to principal components analysis yielded five factors which accounted for 46 percent of the common variance.[38] The factor loadings and consequent labelling are given in Table 2 using the same order of variables as in Table 1.

Table 2: Rotated varimax factor loadings for the five factors from the 23 attachment variables

No.	Question	Sentiment	Friends	Relatives	Participation	Evaluation
1	2	3	4	5	6	7
47	I would recommend this as a place to live	0.544*	0.019	-0.003	-0.013	0.133
48	Local leaders are doing a good job	0.268	0.022	0.012	0.009	0.726*
49	I feel safe here	0.647*	-0.012	-0.026	-0.011	0.198
50	I have the opportunity to have a real say on local issues that are important to me	0.304	0.023	-0.052	0.128	0.671*
51	People here would help me out in an emergency	0.697*	0.177	0.012	0.041	0.039
52	There is a strong sense of community spirit here	0.680*	0.156	0.017	0.048	0.180
53	I am satisfied with the job and business opportunities for me here	0.148	-0.125	0.021	-0.121	0.116
54	I would be prepared to help out with a community project	0.358	0.038	-0.013	0.242	0.090
55	I am satisfied with health services here	-0.254	0.053	0.005	-0.051	0.540*
56	I am interested in what goes on in this area	0.424*	0.076	-0.027	0.233	0.007
57	Education services are satisfactory here	-0.066	-0.018	-0.017	-0.006	0.433*
58	How would you feel if you had to move away?	0.338	0.120	0.042	0.104	0.038
	In the last month did you					
109	Meet up with or visit with such friends?	0.070	0.927*	0.079	0.073	0.012
110	Talk on the phone or cellphone, text message or email these friends?	0.058	0.932*	0.099	0.095	0.022
112	Meet up with or visit with these relatives?	-0.005	0.075	0.986*	0.025	-0.003
113	Talk on the phone or cellphone, text message or email these relatives	0.004	0.073	0.987*	0.026	-0.008
59	Do you feel settled or 'at home' [in this area]	0.129	0.072	-0.019	0.099	-0.010
105	Do you belong to a community organisation, club or group in this area?	0.071	0.194	0.033	0.738*	0.016
106	In the past year, did you give money to any local community organisation, located or working in the area?	0.073	0.090	0.072	0.613*	-0.013
107	Are you involved in any local voluntary work in the area?	0.074	0.130	-0.023	0.641*	-0.039
114	Have you spoken with a neighbour in the last week?	0.078	0.334	-0.025	-0.015	-0.113
115	In the last month, have you been to church in the area?	-0.116	0.018	0.127	0.593*	0.220
116	In the last month, have you been to a Marae in the area?	-0.065	0.012	0.031	0.084	0.004

* $p = 0.05$ *Source: National Attachment Survey 2005*

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[38] Schroder (2008).

Attachment is clearly a *multidimensional* construct for the five factors we have identified: Sentiments, Friends, Relatives, Participation and Satisfaction are very weakly correlated and therefore will be analysed separately.

Measuring mobility

Measures of mobility in cross-sectional surveys are usually limited to duration of residence, and in some cases to previous rates of mobility (e.g. number of times moved within the last n years). There is an important distinction however between duration of residence in the *dwelling* (usual address) and duration of residence in the *area*. Since most people make only short distance moves the later are typically longer than the former. The National Attachment Survey asks the respondent when they most recently moved to the *area* (to the nearest month, Q3) together with a provision for having being born there.

When examining attachment the key distinction is between relatively new arrivals in the area and longer term residents. Sometimes this distribution is entered as a dichotomy as in Kasarda and Janowitz (1974) or as a censored variable as in Sampson (1988) but in more recent studies, including ours, it is entered as a continuous variable.

4. Method

There are four main approaches to the study of attachment: the in-depth interview, the cross-sectional survey, the latter accompanied by follow-ups and the longitudinal panel survey. The last is clearly the most desirable but is currently unavailable in New Zealand. The cross-sectional survey we explore below falls into the second of these categories but with scope to draw on an extensive recording of open ended discussion by respondents on the various reasons for different forms of movement.[39]

The focus of attention in this paper is the statistical relationship between the respondents' level of attachment to their local area and their duration of residence. This model, together with the relevant controls may be written as follows:

(1) $\qquad A^k_i = \alpha + \beta_1 D_i + \beta_2 I_i + \beta_3 P_i + \varepsilon_i$

where A^k_i is the kth derived dimension of attachment k=1,…,5 as it relates to the ith respondent. The variable D is duration of residence in the area in years. The degree to which attachment is affected by how long people have lived in the area is subject to the characteristics of both the resident, the vector I, and the characteristics of the area they live in, the vector P. The assumptions we make about the error term ε_i depends on the method of estimation we use which varies with the level of measurement of each attachment measure k, as outlined below.

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[39] The wider research project of which this study is part also conducted a three year panel study in four separate communities in order to examine the dynamics of adjustment.

Our expectation from the literature was that levels of attachment would rise with duration of residence, i.e. the coefficient β_1 in Equation 1 would be positive. Actually testing this hypothesis using cross-sectional data requires dealing with two changes to the composition of the population that are likely to accompany increasing duration of residence. The first concerns the selection effects that take place over time; other things being equal, those who are less attached to the area are less likely to stay. This results in longer durations of residence being associated with positive feelings about the area.

Such a positive selection bias on β_1 may be countered by two other compositional effects however. Firstly, a proportion of those who do stay in the area may not do so out of choice; they may stay simply because they do not have the resources or information necessary to move and their presence will counter the upward bias.[40] Secondly, newcomers to the area are by definition expressing a positive sentiment which may reduce the negative effect of the estimated coefficient, β_1. It is not impossible, especially in relatively deprived areas, that inward migrants have little choice but to downgrade their area of residence and therefore may not be moving to the area entirely voluntarily. We do not attempt to test for this suite of counterbalances but instead use both the people and place controls available from the survey to reduce the possible influence of both.

Control variables

Table 3 presents the characteristics of the sample under three headings: mobility, people and place effects. The first is measured solely by duration of residence (and its squared term in some cases). The people effects are captured through eight variables: sex, age, household type, ethnicity, employment status, income, tenure and ethnicity. An additional 'people' variable is the reasons for moving to the area.[41]

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[40] This countering effect is likely to be systematically related to the income of respondents and to the area's level of deprivation and therefore the weight of the countering bias is unlikely to be constant over the sample.

[41] Telephone surveys are often biased demographically and a comparison of this survey's age distribution with the (2001) census does reveal an over-representation of older individuals in the survey. Approximately a third of the sample (326 of the 1,001 respondents, 32.6 percent) were over the age of 60 compared to only 21 percent according to the following census (2006). The telephone based sample also under-estimates the younger Māori population.

Table 3: Sample Characteristics from the National Attachment Survey, 2005

Variable	Order	Categories	All	Low NZDep. (<6)	High NZDep. (>5)	Diff
1	2	3	4	5	6	7
MOBILITY						
Duration of Residence	1	Years of residence (excludes Born Here)	17.3	15.6	18.4	2.8
PEOPLE						
Sex	2	Male	49.8	51.2	49.1	-2.1
Age	2	18-29 years	7.9	8.4	7.6	-0.8
		30-39 years	15.7	14.1	16.8	2.7
		40-49 years	24.5	23	25.5	2.5
		50-59 years	19.2	20.7	18.3	-2.4
		60+*	32.6	33.8	31.8	-2.0
Household	2	One person only	19.7	19.9	19.6	-0.3
		Couple with no children	31.4	32.1	31	-1.1
		Couple with children*	36.4	38	35.4	-2.6
		One parent with children	5.3	3.6	6.4	2.8
		Multiple family, multiple adult	4.3	3.3	4.9	1.6
Employment	3	Fulltime or part-time paid work*	65.5	67.9	64	-3.9
		Searching for work	4.3	4.3	4.3	0
		Not available for paid work	30.1	27.8	31.7	3.9
Income	3	Less than $15,000 per annum	23.0	21.6	23.7	2.1
		$15-$25,000	14.5	12.5	15.8	3.3
		$25-$40,000	23.2	25.9	21.5	-4.4
		$40-$70,000*	25.5	26.2	25	-1.2
		$70k +	13.8	13.7	14	0.3
		Refused	6.4	7.6	5.6	-2.0
		Don't know	2.9	3.0	2.8	-0.2
Tenure	3	Owned – with or without mortgage	79.6	79.1	80.1	1.0
Ethnicity	4	NZ European*	81.3	86.5	77.9	-8.6
		NZ Maori	3.7	3.3	3.9	0.6
		NZEuroMaori	4.0	2.8	4.8	2.0
		[NZ Maori + NZ EuroMaori]	7.7	6.1	8.7	2.6
		Other European	4.6	4.3	4.8	0.5
		Other Ethnicity	6.4	3.1	8.6	5.5
Reasons for moving in	8	Physical environment/climate/beauty etc	25.9	25.3	26.4	1.1
		Close to facilities – work, schools, shops	26.8	23.5	29	5.5
		To be nearer to family/friends/good neighbours	11.1	14.5	8.9	-5.6
		Close to activities/recreation locations	2.2	2.0	2.3	0.3
		Early connections to area, born here/grew up here	8.7	8.9	8.6	-0.3
		Good place – safe/quiet/good to bring up kids	1.7	1.8	1.6	-0.2
		Housing related reasons	13.6	8.4	17	8.6
		Lifestyle/stage reasons	5.3	10.2	2.1	-8.1
		Other reasons*	4.6	5.4	4.1	-1.3

PLACE						
Settlement	6	Main urban area*	67.9	46.2	82	35.8
		Satellite urban community	1.7	1.0	2.1	1.1
		Independent urban community	13.4	16	11.5	-4.5
		Rural area with a high urban influence	2.0	4.8	0.2	-4.6
		Rural area with a moderate urban influence	5.3	12.5	1.0	-11.5
		Rural area with a low urban influence	7.0	13.8	2.5	-11.3
		Highly rural/remote area	2.7	5.4	1.0	-4.4
Deprivation Index	7	Very Low: decile 1 & 2	10.7			
		Low: decile 3 & 4	13.3			
		Medium: decile 5 & 6*	15.2			
		High: decile 7 & 8	20.5			
		Very high: decile 9 & 10	40.2			
Sample size			999	392	607	

   * the base category in the regressions that follow   *Source: National Attachment Survey, 2005*

Places are distinguished in this sample according to two features. The first is the type of settlement the respondent lives in its population density and its proximity to the nearest major urban area. The second is the fourfold classification of census area units according to the NZ Deprivation Index. Both are described as the results are interpreted. This index was developed by health researchers from the 2001 quinquennial census of population and dwellings in order to rank areas based on their relative social and material deprivation.[42] The overall index is constructed from eight measures: income, employment, communication, transport, support, qualifications, living space, and home ownership.[43]

Column two of Table 3 presents the stepwise order in which each variable is entered into the regressions that follow. The controls are entered in order of their assumed exogeneity, that is according to the possible influence which the outcome might affect their value. Most of the attributes of individuals can be assumed exogenous in that they are unlikely to be affected by the resident's level of attachment; sex and age are obvious examples. A possible exception is the "reasons offered for moving to the area" which is therefore entered as the very last variable.

Column three presents the categories of each variable. Only the first, the duration of residence, is a covariate, the rest being discrete variables as detailed in Table 1 and are entered as dummy or indicator variables as such. The category selected as the base in variables with more than two responses is marked with an asterisk in each case.

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[42] Crampton et al. (2004).

[43] The index is designed to assign area units in such a way that there is approximately the same percentage of units in each of 10 index categories. The sample drawn depends for this study generated twice the proportion of respondents from the two highest deprivation areas than might have been expected, 40 percent as shown by index membership in Table 1.

Column four of Table 3 records the mean value of each variable for the sample as a whole. For example, the mean duration of residence is 17.3 years, males make up 49.8 percent of respondents and 7.9 percent of the sample was between 18 and 29 years old, and so on. These averages are then recalculated for those living in areas classified in the bottom and top halves of the NZ Deprivation Index as columns five and six. Column seven records the difference in average length of residence of those living in areas with high levels of deprivation (decile 6 and above) – who have lived in the area 2.8 years longer than those in areas with low levels of deprivation. A noteworthy difference in this sample is the much higher concentration of high deprivation area units in the main urban centre and their relative absence from the rural addresses sampled.

Also included in Table 3 are the reasons people gave for moving to the present location. The inclusion of this variable is partly inspired by Bolan who paid special attention to the role of motivation (together with past patterns of mobility) in helping account for differences in levels of attachment.[44] Using the Seattle Community Attachment survey (1978–79) he found that motivations for moving (as well as distance travelled and time involved in the move) had a demonstrable effect on short- and long-term neighbourhood attachment patterns independent of residential stability and investment predictors.

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[44] Bolan (1997).

The other major set of controls is the 'place' variables. We use two measures. The first classifies the area according to its type of settlement (e.g. Main Urban Area, Satellite Urban Community through to Highly Rural/Remote).[45] Such a typology has links back to the structural model associated with Louis Wirth as addressed in Kasarda and Janowitz (1974) and allows us to address the degree to which urban density and position in the urban hierarchy as well as proximity to the nearest metropolitan centre still play a role in accounting for the level of attachment. The second characteristic of place available is the decile rating attributed to the area according to the New Zealand Deprivation Index. The census area unit corresponding to the respondent's usual address is included in the regressions below as one of four dummy variables depending on whether it has a very low level of deprivation (1+2), or a low (3+4), high (7+8) or very high (9+10). The medium category of deprivation (5+6) is the base.[46]

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[45] The conventional rural/urban division is replaced here by the more informative Statistics New Zealand classification in which proximity and employment links to the nearest urban centre are used to generate seven settlement types; see http://www.stats.govt.nz/publications/businessperformanceenergyandagriculture/urban-rural-profile/defining-urban-rural-nz.aspx. Urban areas are divided into three categories: Main Urban Areas, Satellite Urban Community, or Independent Urban Community. Rural areas were broken down into four categories representing their exposure to neighbouring urban areas. Rural Areas with High Urban Influence and typically refer to rural areas located just outside a major centre from which a significant number of residents commute. Rural areas that have some influence from Main Urban Areas but where a considerable portion of residents instead commute to Independent or Satellite Urban Communities for work are classified as Rural Areas with Moderate Urban Influence). Areas with very little connection to urban areas with a strong rural focus where the majority of residents work in a rural area are classified as Rural Areas with Low Urban Influence. Finally, Highly Rural and Remote Areas have little or no reliance on urban areas for employment.

[46] Maps showing the location of areas with high levels of deprivation are available in PDF: http://www.moh.govt.nz/moh.nsf/Files/deprivation-maps/$file/newzealand.pdf. The majority of deprived areas from the National Attachment Survey are to be found in metropolitan centres. In this National Attachment Survey sample 90% or all Very High NZ Deprivation area units are located in Main Urban Areas (almost half in the Auckland Region). Main Urban Areas also contain almost 66 percent of the High NZ Deprivation area units. The location of these areas are more easily identified in the cartograms of the North Island in particular http://www.moh.govt.nz/moh.nsf/Files/deprivation-maps/$file/northislandcartogram.pdf

5. Results by Dimension of Attachment

Estimates of the parameters of the Equation (1) were obtained for the first three measures of attachment, A^1, A^2 and A^3 via OLS regression and the remaining two as logit models.[47] We report each in turn. Duration of residence is entered first in order to assess its singular importance and then categorical controls are introduced either individually or in groups in order to see how their inclusion in the model affects the impact of duration of residence. We begin with the first factor, Sentimental Attachment, whose standard scores are normally distributed.

Sentimental attachment and length of residence

The striking result, apparent in the single variable model 1 in Table 4, is the way in which Sentimental Attachment actually *declines* with time spent in the area. The coefficient on the covariate is negative indicating that the longer the respondent has lived in the area the *less* likely they are to recommend it as a place to live, say they feel safe, help each other in emergencies or report a strong community spirit. At the same time, although the negative relationship is statistically significant, the fall in attachment is *very* slow; the entry in the first column of Table 4 is -0.005, implying that Sentimental Attachment only declines by half a standard score (0.5) over a 100 year period. Note also how the influence of duration of residence is relatively insensitive to the presence of successive controls.

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[47] See Schroder (2008).

Table 4: OLS regression of Sentimental Attachment on Duration of Residence with successive controls

Variable	Model1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Duration of residence								
Duration of residence	-0.005**	-0.006**	-0.006**	-0.006**	-0.007**	-0.005*	-0.004	-0.004
People control variables								
Sex		0.011	0.068	0.134	0.128	0.117	0.113	0.149*
Age 18<29		-0.271*	-0.249	-0.158	-0.115	-0.143	-0.110	-0.094
Age 30<39		-0.089	-0.141	-0.119	-0.070	-0.047	0.175	0.007
Age 40<49		0.144	0.134	0.109	0.175	0.150	0.188	0.177
Age 50<59		0.047	-0.002	-0.060	-0.048	-0.045	-0.014	-0.035
Age 60 and over**								
Couple with no children			0.055	0.047	0.036	0.045	0.060	0.074
One person household			-0.152	-0.225	-0.247	-0.216	-0.206	-0.204
One parent with children			-0.560***	-0.515***	-0.456***	-0.350**	-0.313*	-0.290*
Multiple family, adult			-0.303	-0.230	-0.180	-0.096	-0.067	-0.086
Couple with children**								
Searching for work				-0.126	-0.026	-0.057	-0.062	-0.063
Not available for paid work				-0.086	-0.074	-0.073	-0.054	-0.056
Employed**								
Income <$15,000				-0.038	-0.025	-0.031	-0.028	-0.041
Income $15<$25,000				-0.224*	-0.252*	-0.232*	-0.232*	-0.228*
Income $25<$40,000				-0.024	-0.043	-0.052	-0.054	-0.069
Income $40<$70,000**								
Income $70 and over				-0.022	-0.047	0.003	-0.010	-0.027
Highest income				-0.133	-0.150*	-0.127	-0.134	-0.138
Owner occupier				0.159	0.151	0.155	0.146	0.125
Maori					0.022	0.058	0.091	0.092
European & Maori					-0.604***	-0.619***	-0.566***	-0.546***
Other European					-0.054	-0.004	0.028	0.006
Other ethnicity					-0.448***	-0.315**	-0.268*	-0.278*
European**								
Place control variables								
Urban satellite community						0.035	0.061	0.058
Independent urban community						0.445***	0.423***	0.439***
Rural area with a high urban influence						0.198	0.022	0.005
Rural area with a moderate urban influence						0.452***	0.306*	0.306*
Rural area with a low urban influence						0.532***	0.406***	0.422***
Highly rural/remote area						0.504**	0.388*	0.385*
Main urban area**								
Deprivation very low (1+2)							0.051	0.026
Deprivation low (3+4)							0.223*	0.197
Deprivation medium (5+6)**								
Deprivation high (7+8)							-0.131	-0.156
Deprivation very high (9+10)							-0.191	-0.212*

Reasons for moving into the area								
Physical environment								0.007
Close to facilities								-0.098
Nearer to family & friends								-0.272*
Closer to activities								0.110
Early connection to area								-0.077
Safe, quiet, for raising children								0.058
Housing related reasons								0.029
Life style and stage reasons								0.037
Other reasons**								
Constant	0.091*	0.087	0.128	0.249	0.317	0.869	0.127	0.228
Number of cases	863	862	862	784	784	784	783	783
R-squared	0.005	0.011	0.028	0.034	0.052	0.088	0.100	0.099

*** $p < 0.01$ ** $p < 0.05$ * $p < 0.10$ Source: National Attachment Survey, 2005

In addition to moderating the effect of deprivation the successive impact of the control variables are of interest in their own right. As one might expect, the young show a much weaker Sentimental Attachment compared to those aged 60 years and over. Considerably lower levels of attachment are observed among single parents with children (model 3). Interestingly, home ownership, while positive (model 4) is not statistically significant. Employment status has little effect and while there is only some evidence that lower income reduces attachment, the effect is not monotonic.

In one of the strongest results, there is a negative association with ethnicity outside the dominant European category (model 5). Being of mixed European/Māori and Other ethnicity in particular lowers Sentimental Attachment against the European base.

Both the place variables exert a very strong independent effect on Sentimental Attachment (models 6 and 7) *even after* controlling for the characteristics of individuals themselves. The marginal influence of settlement type introduced in model 6 for example shows that, compared to the metropolitan base, living in Independent Urban Settlements and all Rural areas raises levels of Sentimental Attachment. Such a result is quite consistent with the structural model identified above.

The deprivation categories also behave as expected, with Sentimental Attachment loading negatively in more deprived areas, although note that in general settlement types has a much stronger effect on Sentimental Attachment than does the level of deprivation.

In order to explore this last relationship more fully we regress Sentimental Attachment on duration of residence separately on the sample in low and high deprivation areas. Not only are levels of Sentimental Attachment *lower* in the more highly deprived areas (model 8) but as Figure 1 shows, Sentimental Attachment declines more rapidly (after 20 years) in such areas, in part no doubt because of the inability of some older respondents to move.

Figure 1: The estimated bivariate relationship between Sentimental Attachment and Duration of Residence in the area. All, High and Low Deprivation areas

Source: National Attachment Survey, 2005
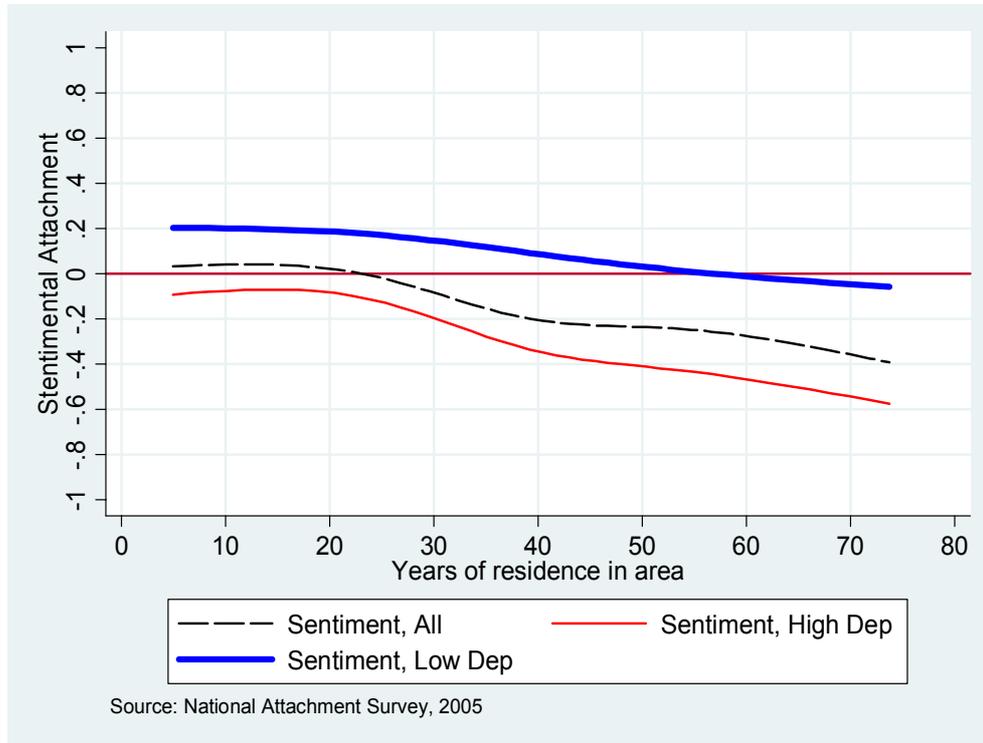
In summary, Sentimental Attachment varies primarily as a result of the demographic and place characteristics of the sample, rather than how long people have lived in their area. Given the attention paid to duration as a 'driver' in the literature, it is worth noting how the broad contrast revealed in Table 4 is between those mainly European New Zealanders in their 40s owning their own home in areas with low levels of deprivation who exhibit relatively strong levels of Sentimental Attachment and those younger families on low incomes in poor quality rented accommodation raising children on their own living in highly deprived parts of Main Urban Areas who show distinctly lower levels of Sentimental Attachment.[48] Ethnicity, income, household structure and settlement type dominate as influences on Sentimental Attachment.

The more control variables entered the less dominant the duration effects appear to have on Sentimental Attachment, an experience also recounted by Kasarda and Janowitz. In our case, however, only some of the reduction in attachment we might otherwise attribute to duration has its roots in the characteristics of residents, their dwellings and neighbourhoods (the variations appearing over successive columns of Table 4 are slight). It is *who* they include and *why* they moved there as well as how long they have lived in the area that matters.

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[48] Levels of Sentimental Attachment continue to rise the more rural the settlement and the further they are from the main urban centres.

With this last result in mind we turn briefly to two behavioural dimensions, participation and evaluation, and then focus the rest of our attention on the role of family and relatives.

Participation and evaluation[49]

The factor labelled Participation in Table 2 reflects a range of formal engagements with the community including belonging to a community organisation, club or group, contributing money to a community organisation and undertaking voluntary work or attending church. The results of our regression of Participation on duration of residence is positive but marginal with the standard score of Participation rising by only 0.39 standard deviations for every 100 years of residency in the area. Unlike the case for Sentimental Attachment, there is also virtually no difference in the influence of duration of residence on Participation between those living in high and low deprivation areas. People are just as likely to participate in club activities in areas with high levels of deprivation as they are in areas characterised by low deprivation.

The third dimension from our principal components analysis we have labelled Evaluation. This factor is so named from the loadings it received from questions on local leadership, being listened to on local issues and reporting levels of satisfaction with health and education services. And here again we find that duration of residence effects are negative but weak. Far more revealing are the results from the separate Friends and Relations regressions to which we now turn.

The influence of friends

The standard scores of the factor we have labelled 'Friends' in Table 2 was markedly bi-modal and therefore unsuitable as a dependent variable in a standard OLS regression. It has been suggested that it is the simply *presence* of friends in an area rather than the frequency of contact which is the key primary with attachment[50] therefore we have chosen to represent the presence of 'Friends' by the binary responses to the question, **"Excluding friends who live in the same house as you, do you have any friends who live [in the area]?"** (Q108). The majority of the 1,001 respondents answered yes to this question with only 126 or 13 percent saying no. Those who did report local friends also appeared to interact regularly with them with over a quarter visiting one to three times each week with a further 70 percent visiting four or more times a week. Similar proportions regularly talked by phone (text, email etc.).

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[49] For space reasons we do not include a table of results for these two variables. The tables are available on request.
[50] Sampson et al. (1997).

The change in the nature of the dependent variable we call Friends, from continuous to binary, required the re-expression of Equation 1 as a logistic regression, viz.:

$$(2) \qquad L = \ln(p/1\text{-}p) = \alpha + \beta_1 D_i + \beta_2 I_i + \beta_3 P_i + \varepsilon_i$$

where p denotes the presence of local friends and 1-p their absence, so p/1-p is the odds in favour of local friends and L is the natural log of the odds ratio, or logit. The coefficient β_1 in Equation 2 may be interpreted as the amount by which the log of the odds ratio, the logit, increases for every additional year of residence. The exponent $e^{\beta 1}$ indicates how much the *odds* in favour of the social connection increases with each year of residence. The results are shown in Table 5 using the same stepwise sequences as Table 4. The purpose is again to assess the influence duration of residence on local Friendship ties controlling for the attributes and location of the respondent as well as their reasons for moving to the area.

Our expectation was that since it takes time to make friends in a new neighbourhood, the longer people lived in a location the more likely they would be expected to have local friends. We were not sure whether this positive relationship with duration of residence would continue to grow or decline with duration, although the latter was observed by Stutz with some surprise.[51] In order to test for the possibility we entered duration in both its linear and quadratic forms.

It is apparent from the results of Table 5 that the presence of local friends does rise with duration but at a decreasing rate and then its influence declines. None of the controls present in Table 5 fundamentally alters this effect. In passing however we do find support for the adage that men have fewer friends in the neighbourhood and that couples with children are more likely to establish friends. Being a home owner makes a *substantial* additional difference however and is a result which becomes increasingly statistically significant with successive controls, i.e. between model 4 and model 8 in Table 5.[52]

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[51] Stutz (1973).
[52] The positive link between home ownership and local friends was also observed by Belot and Ermisch in their study of the relationship between local friendship and mobility (2006).

Table 5: Logistic regression of the presence of local Friends on Duration of Residence with successive controls, estimated coefficients

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Duration of residence								
Duration of residence	0.079***	0.070***	0.066***	0.066***	0.064***	0.071***	0.076***	0.076***
Duration of residence squared (/10)	-0.011***	-0.010***	-0.010***	-0.001***	-0.001***	-0.010***	-0.010***	-0.011***
People control variables								
Sex		0.150	-0.117	-0.330	-0.326	-0.353	-0.333	-0.262
Age 18<29		-0.564	-0.653	-0.504	-0.537	-0.556	-0.517	-0.320
Age 30<39		-0.483	-0.997	-0.784	-0.760	-0.760	-0.766	-0.779
Age 40<49		-0.456	-0.871	-0.867	-0.877	-0.906	-0.873	-0.860
Age 50<59		-0.048	-0.254	-0.357	-0.395	-0.382	-0.370	-0.366
Age 60 and over								
Couple with no children			-0.691	-0.681	-0.696	-0.658	-0.620	-0.668
One person household			-0.860	-0.455	-0.501	-0.411	-0.389	-0.531
One parent with children			-1.020	-0.525	-0.469	-0.270	-0.327	-0.501
Multiple family, adult			-1.100	-0.871	-0.751	-0.691	-0.657	-0.809
Couple with children								
Searching for work				0.406	0.589	0.558	0.711	0.836
Not available for paid work				-0.183	-0.172	-0.149	-0.103	-0.173
Employed								
Income <$15,000				-0.204	-0.213	-0.264	-0.311	-0.199
Income $15<$25,000				0.255	0.210	0.161	0.114	0.173
Income $25<$40,000				-0.034	-0.053	-0.077	-0.134	-0.128
Income $40<$70,000								
Income $70 and over				0.095	0.112	0.223	0.285	0.269
Highest income				0.375	0.303	0.358	0.347	0.315
Owner occupier				0.550	0.569	0.581	0.614	0.711
Maori					1.750	1.900	1.910	1.830
European & Maori					-0.395	-0.431	-0.452	-0.408
Other European					0.137	0.289	0.269	0.285
Other ethnicity					-0.340	-0.103	-0.167	-0.279
European**								
Place control variables								
Urban satellite community						0.482	0.509	0.434
Independent urban community						1.560	1.620	1.730
Rural area with a high urban influence						-0.490	-0.466	-0.383
Rural area with a moderate urban influence						0.186	0.140	0.198
Rural area with a low urban influence						0.408	0.399	0.575
Highly rural/remote area						0.439	0.290	0.370
Main urban area**								
Deprivation very low (1+2)							-0.732	-0.813
Deprivation low (3+4)							-0.974	-1.050
Deprivation medium (5+6)**								
Deprivation high (7+8)							-1.150	-1.270
Deprivation very high (9+10)							-0.587	-0.656

Reasons for moving into the area								
Physical environment								1.020
Close to facilities								0.629
Nearer to family & friends								0.350
Closer to activities								1.610
Early connection to area								-0.111
Safe, quiet, for raising children								0.070
Housing related reasons								-0.412
Life style and stage reasons								1.520
Other reasons**								
Constant	1.19	1.64	2.42	1.46	1.57	1.17	1.86	1.32
Number of cases	863	862	862	784	784	784	783	783
Degrees of freedom	2	7	11	19	23	29	33	41
Pseudo R-squared	0.032	0.039	0.057	0.068	0.078	0.103	0.117	0.146
Log likelihood	-331	-329	-323	-298	-295	-287	-282	-273
Chi squared statistic	22	26.6	38.8	43.4	50	65.9	74.7	93.4

*** $p < 0.01$ ** $p < 0.05$ * $p < 0.10$ *Source: National Attachment Survey, 2005*

When the ethnicity variables are added in Table 5 as model 5 they show Māori being considerably more likely to identify local friends in their area. Interestingly, when settlement controls are added in model 6 the specific effect of being Māori on attachment via friendship becomes *more* important to the point where the odds of Māori having friends in their local area are almost double those of Europeans. None of the Other ethnicity variables feature and, unlike Māori, they all show *less* attachment via friends than Europeans.

Perhaps the most striking result in Table 5, however, has to do with the relationship between local friends and the level of deprivation of the respondent's area. It is not just that each of the deprivation indicators included in model 7 of Table 5 *lowers* the likelihood of friends but that this same result occurs in areas of both high and low deprivation. The base for the deprivation index are the deciles 5 and 6, so that what we see realised in model 7 of Table 5 is the chance of identifying local friends falling to *below half* the base in the areas of highest deprivation. They also fall but to a lesser degree in the lowest deprivation deciles. At the same time, note that these results apply not to the extremes of the NZ Deprivation range but only to those two deciles above and below the middle deciles 5 and 6.

The Relatives dimension

The Relatives dimension extracted from the factor analysis of the attachment variables reported in Table 2 was also bi-modal and inappropriate for OLS regression modelling. We therefore analyse responses to the single question: **"Excluding relatives who live in the same house as you, do you have relatives who live in [the area]?"** (Q18). The proportion of such respondents was noticeably lower than it was for Friends.

The results of applying the presence of Relatives measure of attachment to Equation 1 are shown in Table 6. We expected duration of residence to matter when it came to living close to relatives for it also takes time to accumulate relatives locally.[53] Not surprisingly the results are very similar to those reported for Friends; the presence of local relatives rises at a declining rate and then falls with the number of years lived in the area, a result which endures with the successive introduction of controls.

Table 6: Logistic regression of the presence of local Relatives on duration of residence with successive controls

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Duration of residence								
Duration of residence	0.079**	0.047**	0.045**	0.058**	0.059**	0.068**	0.070**	0.076**
Duration of residence squared (/10)	-0.011**	-0.005**	-0.004**	-0.006**	-0.001**	-0.001**	-0.001**	-0.001**
People control variables								
Sex		0.569***	0.572***	0.615***	0.627***	0.585***	0.600***	0.503
Age 18<29		0.248	0.200	0.187	0.158	0.128	0.210	0.095
Age 30<39		-0.062	-0.334	-0.512	-0.554	-0.457	-0.337	-0.346
Age 40<49		-0.387*	-0.642***	-0.723**	-0.796***	-0.826***	-0.749**	0.751**
Age 50<59		-0.419*	0.556**	-0.703**	-0.782***	-0.723**	-0.658**	-0.599**
Age 60 and over**								
Couple with no children			-0.247	-0.342	-0.332	-0.295	-0.270	-0.379
One person household			-0.511**	-0.697**	-0.708**	-0.600*	-0.583*	-0.702**
One parent with children			0.135	-0.046	0.005	0.237	0.278	-0.008
Multiple family, adult			-0.827*	-1.010**	-0.957*	-0.856*	-0.803	-0.785
Couple with children**								
Searching for work				0.011	0.051	-0.041	-0.074	-0.174
Not available for paid work				-0.144	-0.153	-0.153	-0.125	-0.127
Employed**								
Income <$15,000				-0.035	-0.059	-0.087	-0.087	-0.036
Income $15<$25,000				0.076	0.071	0.091	0.095	0.103
Income $25<$40,000				-0.113	-0.094	-0.106	-0.097	-0.091
Income $40<$70,000**								
Income $70 and over				-0.300	-0.245	-0.136	-0.153	-0.099
Highest income				-0.181	-0.212	-0.162	-0.187	-0.225
Owner occupier				0.034	0.049	0.044	0.078	0.153
Maori					1.120***	1.330***	1.390***	1.450***
European & Maori					0.687*	0.633*	0.759*	0.733*
Other European					-0.109	0.029	0.108	0.256
Other ethnicity					-0.609	-0.361	-0.286	-0.198
European**								
Place control variables								
Urban satellite community						0.548	0.615	0.652
Independent urban community						1.200***	1.140***	1.100***
Rural area with a high urban influence						-0.885	-1.140	-1.050
Rural area with a moderate urban influence						0.722***	0.522	0.577

[53] This would not be the case for those moving into an area where relatives were already present. However, even in this case, if relatives are young it will take time for the family sizes to expand.

Rural area with a low urban influence						0.666***	0.478	0.457
Highly rural/remote area						0.166	-0.091	-0.276
Main urban area**								
Deprivation very low (1+2)							-0.408	-0.350
Deprivation low (3+4)							0.142	0.248
Deprivation medium (5+6)**								
Deprivation high (7+8)							-0.555***	-0.442
Deprivation very high (9+10)							-0.553***	-0.411
Reasons for moving into the area								
Physical environment								0.465
Close to facilities								0.376
Nearer to family & friends								1.520***
Closer to activities								0.315
Early connection to area								1.370***
Safe, quiet, for raising children								0.228
Housing related reasons								0.098
Life style and stage reasons								0.364
Other reasons**								
Constant	1.190***	-1.280***	-0.928***	-0.580	-0.560	-1.070***	-0.818	-1.420***
Number of cases	863	862	862	784	784	783	783	783
Degrees of freedom	2	7	11	19	23	29	33	41
Pseudo R-squared	0.032	0.050	0.056	0.072	0.086	0.116	0.127	0.158
Log likelihood	-331	-537	-534	-479	-471	-455	-449	-433
Chi squared statistic	22	56.1	63.6	73.8	88.5	120	130	163

*** p < 0.01   ** p < 0.05   * p < 0.10   *Source: National Attachment Survey, 2005*

The logit coefficients suggest that women respondents were much more likely to cite the proximity of relatives. Whether this reflects their choice of areas where relatives are already present or the attraction of relatives to where they currently live is unknown. The least likely to be attached via relatives however are those in their 40s possibly because there is less mutual dependence at that age and employment demands are likely to take such households away from where relatives are concentrated.

The interpretation is not watertight however because we also witness in model 3 of Table 6 the positive influence of children and the comparative unimportance of employment or income, albeit after the effects of age have been taken into account. Ethnicity again has a strong influence, being very positive for Māori and negative for other ethnicities against the European base. And once again, living outside the metropolitan centres increases the importance of local kinship in cementing attachment to an area.

Where there is a major difference between Relatives and Friends dimension however is in the role played by home ownership; the variable is positive in the odds of citing local friends but not local relatives. With these results in mind we turn now to the relationship between attachment and areal deprivation.

6. Mobility in Deprived Areas: The Role of Friends and Relatives

While Kasarda and Janowitz[54] and Sampson[55] both analysed British local area data and recognised its considerable variance, there was little attempt to do more than note that deprivation was negatively associated with levels of attachment. There is considerable evidence to suggest that levels of attachment fall as the level of deprivation increases and that while residential stability may be associated with *low* levels of distress, under conditions of poverty the opposite has been observed to be the case.[56]

Although we have presented our logit results in terms of coefficients, our primary interest is not in the log of the odds ratio as such but in the *probability* of identifying local Friends and Relatives. We can obtain this measure of marginal change by substituting the estimates for the logit in model 8 of Table 5 and 6 into $1/(1+e^{-L})$ where L is the log likelihood function. The result of post-estimating the probabilities in this way is summarised in Figure 2 which shows the median splines fitted through the estimated probabilities. The top two splines refer to Friends and the bottom two to Relatives. The solid lines refer to areas exhibiting high levels of deprivation (NZ Dep96 > 5 in this case), and the dashed lines to areas of low deprivation (NZ Dep96 < 6).

Figure 2: Probability of reporting Friends and Relatives by duration of residence in High and Low Deprivation areas

Source: National Attachment Survey, 2005

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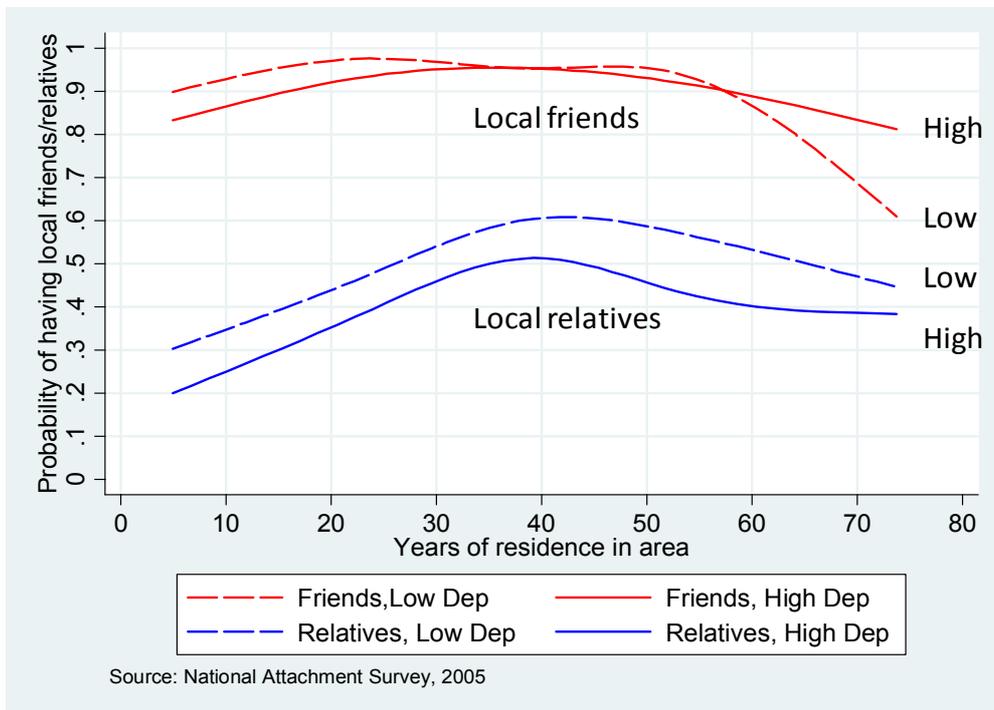
[54] Kasarda and Janowitz (1974).
[55] Sampson (1988).
[56] Ross et al. (2000).

The estimated *probability* of having local Friends and Relatives rises slowly but at a decreasing rate with length of residence in the area, then both decline but at different rates. While those in Low deprivation areas arrive with a slightly higher probability of identifying local friends their rate of growth is slower, their local friendships peak at about 20 years, and they decline more rapidly than those in High deprivation areas. There are potential cohort (of entry) as well as duration effects present here and we acknowledge the caution that must be exercised in drawing sequential or temporal inferences from such cross-sectional data.[57]

The lower two lines plotted in Figure 2 trace the way in which the median probability of identifying local *relatives* (outside the household) changes with duration of residence. Those in Low deprivation areas arrive in the area with a slightly higher probability of having relatives nearby and this gap actually grows slowly with the duration of residence. By contrast, those settling in High deprivation areas arrive with 10 percent lower probability of having relatives nearby and, while this number grows with residence, it tails off early leaving a larger proportion of older residents in high deprivation areas without the presence of local relatives.

In summary, with the exception of a slightly higher likelihood of citing friends among recent dwellers, residents of highly deprived, mainly metropolitan locations are *less* likely to record the presence of local friends or relatives than those living in low deprivation, mainly suburban and semi rural areas, and it is this disparity which increases the longer people stay in such areas.

7. Conclusions

We began this paper by noting the public belief that high rates of residential mobility can lead to diminished educational, health and employment outcomes and that unstable populations might undermine the ties that bind communities. This presumption about the negative role of population turnover motivated the funding of the host project to which this paper reports: *Building Attachment in Communities affected by Transience and Mobility*. Our paper has sought the empirical foundations for a core assumption behind this project, namely that community attachment and population stability are positively related.

In order to explore the relationship between attachment and stability we have drawn on the 2005 New Zealand National Attachment Survey designed by the Centre for Research, Evaluation and Social Assessment (CRESA) Research Team and administered to a randomly selected sample of 1,001 New Zealand residents in 2005. Our analysis yields three results. Firstly, not only is attachment to areas of residence multidimensional but each dimension carries its own individual drivers and the arguments that account for variations in one do not necessarily hold for the other. Residential duration for example bears little statistical relationship to Participation or Evaluation dimensions of attachment, is negatively related to Sentimental Attachment but is positively related to the presence of local Relatives and Friends.

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[57] Those under 30 years for example reside a median of 4.2 and mean of 2.0 years in Low deprivation areas and 4.5 and 7 years in High deprivation areas respectively. Figures for those aged over 40 years are 16.2, 20.4 and 25, 26 respectively.

Secondly, when attachment and stability are related, as in the case of having local Relatives and Friends, the relationship is duration dependent (even with the full suite of control variables present). Rather than rising continuously with time lived in the area, attachment to friends and family rises over the first few years after settlement, peaks, then falls steadily.

Thirdly, Sentimental Attachment and the local presence of Relatives (and initially Friends) is lower in areas experiencing higher levels of deprivation, even after controlling for people and place effects, and their presence tails off earlier and more rapidly with length of residence. In short, not only is the association between attachment and stability relatively weak in general, but once we control for characteristics of the residents in our sample, as well as their settlement type, living in an otherwise deprived area has only tenuous effect.

In general, we find no simple general relationship between attachment and mobility (as measured by duration of residence). Rather we find attachment to residential duration is related in the case of *particular* people and under *specific* conditions. The presence of children, for example, increases the odds of having friends and relatives in the area and also increases the level of attachment through participation, but has no independent effect on residents' sentimental feeling or satisfaction with the community. Relationships which may prevail in one domain may cease to hold or even reverse in another; the influential role of home ownership in relating duration of occupancy to friendship for example did not apply at all when it came to relatives.

While the value of strong communities has received considerable press[58] as has the negative effect of weaker community structures,[59] the role of mobility in the context of building place communities has received less attention. Several authors have already pointed out how, in contrast to its value in middle class communities, stability can play a quite different and even a negative role in poor communities to the point where there is, as two other researchers have found, "Little justification [to be] found for programmes directed at strengthening [such] communities via attachment".[60]

Our own conclusion is that it is the wider migration channels which filter population by age, income and ethnicity into certain locations that play a much more influential role in developing community attachment than what happens following settlement in the area. Place attachment is more likely to reflect the *current* demographic attributes of respondents and the *contemporary* character of places rather than any lived experience in the area. In other words, it is the selective nature of circulation and the highly differentiated means by which certain people develop incentives to reside in particular places which plays a much more influential role than attachment itself. How attached people become to their area in the years following arrival either fails to change (as we've seen for Participation and Evaluation) or actually declines as in the case of Sentimental Attachment. When it does operate

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[58] Putnam (2000), Granovetter (1973).
[59] Wilson, 1987.
[60] Theodori (2001) and Ross et al. (2000). Theodori makes the point that this could be because of lack of evidence for the connection between attachment and (improvements to) subjective well-being. Other students of mobility in deprived areas point to similar dynamics with relatively low mobility rates accompanied by low attachment rates; see for example Shefer and Primo (1985).

positively as in the case of local Friends and Relatives its effect may only be temporary and/or fail to register in areas experiencing high levels of deprivation (*ceteris paribus*). In the relative absence of social contacts through Friends and Relatives, the case for promoting stability in highly deprived areas per se appears to have weak empirical foundations.

The relevant question, we suggest, is not the *relative* importance of place attachment and mobility in sustaining communities but how mobility *interacts* with place attachment to affect the sustainability of family relationships and the personal development of individuals.[61] A fruitful approach therefore is to emphasise the *complementary* nature of attachment and mobility, of roots and routes as Gustafson puts it (2001), and to consider the role of both in providing social services to both immobile as well as highly mobile families.

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[61] For recent discussions of these issues in the UK context see Green et al. (2005), Livingston et al. (2008).

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