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Mobility, Housing Stress and Neighborhood Contexts: Evidence from Los Angeles

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Abstract

This paper examines, in two separate analyses, actual and planned residential moves. Although we now have robust models and substantive empirical analysis of residential mobility, especially of the role of housing consumption and the variables that trigger residential moves, we are less clear about how the model applies to minority households and in diverse ethnic settings. This paper uses data from the Los Angeles Family and Neighborhood Study – a longitudinal study of mobility and neighborhood change in the Los Angeles region to contrast the mobility outcomes for white and Latino households. A separate analysis examines planned mobility and extends the analysis of the role of neighborhood variables in explaining expected mobility. The incorporation of measures of neighborhood satisfaction and dissatisfaction finds, as hypothesized, that low levels of satisfaction and whether or not the neighborhood is perceived as "close-knit" are modest predictors of the likelihood of future moves. However, the additive effect of neighborhood variables, beyond the structural effects of age and housing needs, on intentions is quite small.

Keywords: residential mobility, planned mobility, neighborhood satisfaction

INTRODUCTION

The disequilibrium model of residential mobility places local moves in the context of a household's continuing concern to bring their housing demands into adjustment with the housing available to them. Households with larger families and smaller spaces would like to move to larger units. Aging households with more space than they need, may consider trading down to smaller units. At its essence, the mobility process in local housing markets is about adjusting households to space and is thus about housing consumption (Clark and Dieleman, 1996; Dynarski, 1985; Henderson and Ioannides, 1989). At the same time it is also about the sorting mechanisms whereby households distribute themselves across neighborhoods and communities in cities. At an aggregate level it offers insights into the role that residential mobility plays in concentrating or dispersing neighborhood poverty and compounding household-level disadvantage (Quillan, 1999). The present paper is one in a set of papers designed to examine the residential mobility process in varying urban contexts and across different sample populations.

Much of the work on residential mobility and the role of housing consumption has used national samples and often included only small numbers of non-white households. Does the same process operate for minority households? Do the variable coefficients take on different characteristics for minority households? A second series of questions, also focused on housing consumption, ask how minority and white household intentions vary and what is the role of neighborhood measures of satisfaction. When we unpack the general measure of satisfaction which has been the common measure used with intention to move, do we find better explanations of the likelihood of moving and does this explanation vary for minority and white households? This is an initial investigation of a larger project which will link the relationship between a household's plans to move and whether such plans materialize in actual mobility. This will enable an examination of how dynamic poor neighborhoods in Los Angeles actually are, given the evidence that neighborhoods with a high concentration of poverty are stigmatized and that this creates obstacles for upward social mobility, integration and participation for residents (e.g. Musterd et al. 2003).

THEORY AND CONTEXT OF PREVIOUS WORK

Previous research on residential mobility focused on the decision to move, its association with changes in the life course and related tenure choice and occupational careers (Clark and Dieleman, 1996). The underlying assumption is that the mobility process in local housing markets is about bringing household demand for space into equilibrium with the housing available (Clark and Dieleman, 1996). The earliest work by Hanushek and Quigley (1978) and Quigley and Weinberg (1978), set the residential mobility process within the notions of disequilbrium and related the decision to move to a trade off between current housing and desired housing. That research was elaborated with studies addressing the relationship between tenure (renting versus owning) and the moving process, and the association between changes in the life course and changes in residential choice (Clark and Dieleman, 1996).

Research using the life course paradigm emphasizes that change in one dimension of a household's life course is associated with the complex process of aging, forming households, and seeking and keeping jobs. Thus, an adjustment in housing consumption or tenure is associated with changes in occupation or changes in the formation of the household (Green et al, 1997; Green and Canny, 2003). In many instances, these processes often bring about the decision to move. Within the research on the life course there has been particular attention to the role of such triggers, especially marriage (Odland and Shumway, 1993), the birth of children (Clark, Dieleman and Deurloo, 1984) and divorce (Dieleman and Schow, 1989) in the mobility process. Early research by Myers (1985) established that first time homebuyers delayed child bearing and continued full time employment in order to be able to enter the housing market. As Mulder and Manting (1994) point out, households clearly synchronize their activities with respect to housing market decisions.

The behavioral research on the mobility process, especially on triggers, has been paralleled by research on what is termed the housing career – the path of residences that a household occupies over time (Kendig, 1990). Just as individuals change jobs or careers

over their life course, households change houses in response to their needs for more space and higher quality dwellings. This does not mean that the housing process is characterized by a linear progression with households increasingly attaining higher quality housing. Hamnett (1999) explicitly cautions against thinking of the housing career as a linear process from the first small rental unit to the large suburban house. In reality, many lower income households never make the progress to ownership and other households may experience a reverse in their housing career because of external events such as the loss of a job. Moreover, the most recent research suggests much less change in housing careers than was previously acknowledged. In general, change in the housing career of a household is closely tied to income level and to income growth and long stretches of the housing career are characterized by stability (Clark, Deurloo and Dieleman, 2003).

While the majority of the residential mobility literature deals with actual moves, a small but important literature examines prospective mobility. These studies have sought to relate planned mobility to a variety of demographic and characteristics of the house and satisfaction with the neighborhood (Bach and Smith, 1977; DeJong, 1994; McHugh, 1984; McHugh, Gober and Reid, 1990; and Moore, 1986). A second strand of research specifically examines the link between intentions and outcomes, the extent to which intentions are translated into actual mobility (Lu, 1998; McHugh, 1984; Lee, 1994).

Speare (1984) in his initial work, incorporated residential satisfaction as the key determinant of whether a person moves or stays. Put simply, the more satisfied the more likely a household is to stay. In this model, residential satisfaction mediates the effect of households and locational characteristics on mobility. Although he found empirical evidence to support his conceptualization, numerous authors have questioned the findings, especially the notion that structural variables only influence mobility through changes in satisfaction. Landale and Guest (1985) and others pointed out that individuals may make changes in place and not move despite dissatisfaction (Moore, 1986). Others demonstrate that the importance of residential satisfaction is related to the time frame of the moving intentions and the tenure status of the household (McHugh, Gober and Reid, 1990).

In a seminal paper, Lu (1998) took up these issues in the context of the theory of reasoned action. His empirical analysis documents that residential satisfaction is highly related to mobility intentions, but that the structural variables – age, income, tenure- have an effect over and above that of intentions. Clearly, his findings suggest little support for the notion that residential satisfaction acts as an intervening variable which totally accounts for the effects of structural variables (Lu, 1998: 1485). A separate important part of his analysis, but research which will have to wait until the second wave in the present study, showed that mobility intentions are related to the likelihood of moving but that link is closely related to other structural variables which are in turn closely related to the mobility outcome. That link, in some of the models, renders the intention measure non-significant. The questions which remain from Lu's (1998) analysis relate to the role of neighborhood variables. The variable he employed was only a general neighborhood satisfaction measure and in this paper we explore several dimensions of neighborhood effects on the intention to move and we examine this by ethnicity as well.

The interest in neighborhood effects in a variety of contexts has increased in the past decade. Studies of the potential effects of neighborhoods on behavior and social attainment have a long history in social science (Briggs, 1997). Early community studies (e.g. Whyte, 1943) suggested that social organization, particularly neighborhood settings, influenced social attainment (Briggs, 1997). More recent concerns about the effects of economic restructuring and the creation of a socially and economically isolated "underclass" (Jencks and Mayer, 1990; Gans, 1990; Wilson 1987, 1996) led to more theoretically and methodologically sophisticated studies of how neighborhoods might influence specific outcomes. While much of the work stressed the effects of poverty and low income neighborhoods on life chances and concluded that indeed there are neighborhood effects on such outcomes as childhood achievement (Duncan, Brooks-Gunn, and Klebanov, 1994) and victimization in unsafe neighborhoods (Sampson et al, 1997), only recently have those studies examined mobility in the context of neighborhood effects. How do neighborhoods influence life chances through the likelihood of staying or leaving?

Clearly, the neighborhood is not a one-dimensional context and the effects of the residential environment can be positive and negative (Butler and Robson, 20001; Forrest and Kearns, 2001). For example, a close-knit neighborhood can foster belonging and attachment that provide the necessary support for advances in education and earning opportunities. On the other hand, neighborhoods can also act as traps, with residents wanting to leave their unpleasant surroundings but without the means to do so (Kearns and Parkinson, 2001). Such neighborhoods are economically poor and are often beset with many serious social needs and isolated from opportunity. The process of social mobility is thus embedded in residential relocation, which is influenced by conditions at the neighborhood level. We can ask along with Lu (1998) how does the neighborhood context influence the probability of moving? We also go further by examining the additive effect of neighborhood, after controlling for the effects of structural variables, something that we cannot readily do from the earlier research.

METHODOLOGY AND DATA

To restate our approach, the analysis is conducted in two sections: (1) a retest of the standard discrete time logit model (see Appendix 1) of the probability of moving as a function of age, tenure[1], and the triggers of change in relationship and birth of a child, to test the whether these variables increase the odds of household mobility and (2) an expanded model of the role of neighborhood effects on the intention to move. In both instances we are interested in specific outcomes for low-income minority households.

In the first stage, we expect from previous research that age, tenure, and measures of change (marriage- Odland and Shumway, 1993; divorce-Dieleman and Schow, 1998; and the birth of children -Clark, Dieleman and Deurloo, 1984) will have a significant positive relationship to actual mobility. We cannot test the role of housing consumption in the model as the data that would allow us to calculate a measure of roomstress was not

[1] We include tenure even though it is measured at the time of the interview and not prior to the move. However, the number of tenure changes in the past year in this data set was very small.

collected retrospectively. We construct models for whites and Latinos separately and examine the variation in the coefficients.

The second strand of research specifically examines the role of age, tenure, ethnicity, income and marital status but will also test whether roomstress significantly improves the explanatory power of the model. The measure of roomstress, a measure of the space need by the household was created in a manner similar to that used in the Panel Study of Income Dynamics. It is the difference between actual and required rooms. The required number of rooms is a measure of the minimum number of rooms a family should have in order to avoid space stress. [2] The variable ranges from negative (under-consumption) to positive (over-consumption of space). The variable is created by dividing the actual number of rooms by the required number of rooms and 1 is subtracted from the total. We also, following previous work include measures of age squared and roomstress squared, as the interaction of age and mobility and housing consumption and mobility is hypothesized to be curvilinear. Thus, either too little or too much space can generate residential moves. We expect that there will be a positive relationship between planned mobility and households with high measures of roomstress.

The heart of the second analysis incorporates variables that address the effects of the neighborhood on potential residential mobility. These measures are based on personal assessments of neighborhood attributes and as such, they capture how perceptions of neighborhood can influence plans to move. The first variable measures how safe a person feels in his/her neighborhood, with the assumption that a dangerous neighborhood will be a significant trigger for future mobility and that this will be reflected by plans to move. The second variable examines whether close-knit neighborhoods are a significant determinant of future mobility. In this instance, neighborhoods that are perceived as having low levels of integration (not close-knit) should lead to higher odds of future mobility. The third

2 Two rooms are allocated for each head of household with or without a spouse. Then, one room is added for each additional married couple or single person aged 18 or over; one room is added for every two boys under 18 and one room for every two girls under 18. If the number of children in the household is an odd number, then the numbers are rounded up. If there is an odd number of girls and an odd number of boys, then those under 10 years of age are paired regardless of sex (see Clark, 1992: 1297). We recognize that there are

variable measures overall neighborhood satisfaction. We expect that high levels of dissatisfaction with the neighborhood will be positively correlated with plans to move.

The data used in this analysis is from the first wave of the Los Angeles Family and Neighborhood Survey (LAFANS), a longitudinal study of families in Los Angeles County[3]. The first wave of interviews with approximately 6000 residents in 3500 households was completed in January 2002. The survey encompasses households in 65 neighborhoods distributed across Los Angeles County. Approximately 40 to 50 households were selected from each neighborhood (census tract). Thus, the data set includes a very diverse sample from the 88 cities within Los Angeles County. The LAFANS is a stratified random sample designed to over-sample poor and very poor tracts. Twenty tracts were chosen from the very poor, twenty form the poor strata and 25 tracts to the non-poor stratum. The probability that a tract was included in the LAFANS sample differed across the three strata. The probability of a being included in the LAFANS is the product of the overall rate at which the tracts were sampled (which is given by the ratio of the number of households in LAFANS tracts to the total number of households in Los Angeles County) and the extent to which there was over-or under-sampling of tracts from each of the three strata (the proportion of the households in the 65 sampled tracts that were contained in the stratum divided by the proportion of households in Los Angeles County located in the stratum).

The LAFANS survey had seven modules but in this paper the data is drawn primarily from three modules that examine household composition, housing structure and recent moves. The first module, the roster, includes information for all part-time and full-time residents of the dwelling unit, including relationships among household members and basic characteristics of all household residents (e.g. age, ethnicity, education). The household questionnaire collected information on income of family members from all sources during the preceding calendar year, and on assets of respondent and

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cultural differences in the way households apportion space/bedrooms to children but the general structure used in the PSID appears to reflect actual practice.

[3] This section draws heavily on Sastry et. al. (2003). For a more detailed description of the survey process, including the constructions of weights, their article is available at www.lasurvey.rand.org.

spouse/partner. The adult questionnaire collected information about the family background, educational history, fertility and relationship history, social ties, residential history, employment, welfare, and health status. The Adult questionnaire included a computerized interactive Event History Calendar (EHC), which recorded detailed information for the preceding two-year period on spells of residence, employment and unemployment, program participation, and health insurance. All residential moves within Los Angeles County in the year previous to the interview data were included in the analysis. Long distance moves into or out of Los Angeles County were not included. The Adult questionnaire also collected detailed information on neighborhood definition, neighborhood participation and interaction, perceptions of current neighborhood characteristics, and characteristics of the last neighborhood of residence.

For questions about their neighborhoods, respondents were asked to keep in mind that neighborhood included both the block or street they lived on and several blocks or streets in each direction. One of the questions they were asked was "All things considered, would you say you are very satisfied, satisfied, neutral, dissatisfied or very dissatisfied with your neighborhood as a place to live?" Respondents were also asked whether it was completely safe, somewhat safe, somewhat dangerous or extremely dangerous to walk around alone in their neighborhood after dark. In addition, they were asked whether they strongly agreed, agreed, were unsure, disagreed or strongly disagreed with several statements about relationships within the neighborhood, including "this is a close-knit neighborhood." We included the responses to this statement as a measure of overall neighborhood closeness.

The sample is predominantly Latino and white (Table 1). When the data are weighted the sample is broadly representative of the Los Angeles County population. The sample is diverse as is the County of Los Angeles. The dataset provides an opportunity to consider mobility and planned mobility in a multi-ethnic context and evaluate differences which occur across ethnicities. Unfortunately the data size is not sufficient for models of all ethnic groups and the focus is principally on the Latino sub-sample in contrast to whites. The Latino sample is by and large younger than the white population. As tenure is a critical

variable in the mobility process we provide data on the variation in tenure by ethnicity (Table 2). White households are more likely to be owners than renters but all other groups, consistent with the focus on a low-income sample, are predominantly renters. Asians and Pacific Islanders have nearly equal proportions of owners and renters but African Americans and Latinos are mainly renters.

ANALYSIS AND FINDINGS

Mobility rates and housing consumption in Los Angeles

Mobility rates vary by ethnicity in LAFANS but are consistent with national mobility rates. Overall, less than one fifth of all households changed residences in the year before the interview. The rates are lowest for whites and Asians[4] (a reflection of age and higher levels of homeownership) and highest for Native Americans, followed closely by African Americans. As expected younger households are more likely to move (Table 1).[5] Still, young Latino households have much lower mobility rates than their white, African American or Asian neighbors. The difference in mobility rates can be explained to some extent by income differences. Latino mobility rates are low and in general their incomes are the lowest of all sample respondents. At the same time, young African Americans have the lowest income, yet their mobility is in keeping with that of their White and Asian peers (Table 3). Unfortunately, small sample sizes preclude more in-depth analysis.

Housing consumption varies within a relatively narrow range. Average roomstress is .2, that is, on average households in the sample are consuming slightly more housing than required. Approximately a third of the households in the sample are in equilibrium, with slightly more households above the equilibrium than below (Figure 1). Those average figures obscure wide variations by ethnicity (Figure 2). The break down by ethnicity reveals, as expected, much greater proportions of over consumption by white households

[4] The sample sizes for both Pacific Islanders and Native Americans are too small to make any assertions about the overall mobility of the group.
[5] Weighting the data has little effect on these overall patterns, however, it is worth noting that mobility among African Americans and Asians declines (Appendix 2).

and under consumption by Latino households. These differences are clearly related to family composition. The mean number of persons per Latino household is 4.75, while the mean number in white households is 3.5. Asian households on average are 3.7 persons per household. In terms of their housing consumption they are nearly bi-modal in their outcomes with large numbers of households above and below the equilibrium outcomes. This reflects the wide variation in the economic status of Asian households in the region. For example, Japanese and Chinese households have been economically successful and many are homeowners, while immigrant refugees from Vietnam and Cambodia have often been less economically successful.

Housing consumption varies by income, an expected finding. Nearly all the households with incomes less than $20,000 have roomstress of zero and below – they are either in equilibrium or consuming less housing than they need. Households at the opposite end of the spectrum, those with incomes of $80,000 or more have more rooms than they need based on their household structure (Figure 3). There is a fairly distinct difference between households with $40,000 or less and those households with more than this income, although the range of housing consumption for households with $40-60,000 is quite extensive. Clearly, as we would expect, income matters a great deal in the level of housing consumption. That finding will be a central part of the models of mobility and intended mobility.

Models of mobility

As we noted in our discussion of the methodology, we have constructed a two-step procedure. At this time the data from the first -wave of the survey is available, the second wave will be completed in a year to eighteen months. The completed sample has data on the year before the interview date, including information on mobility in the previous year and changes in household composition. For the date of the interview, we are able to measure housing consumption and thus construct the roomstress variable. Thus, we can model actual mobility, although without the measure of roomstress but with measures of family change, and we can model planned mobility with roomstress and measures of

current family composition and neighborhood satisfaction. A brief outline of the variables being used in the analysis is included (Table 4). We use a discrete time logit model and we use survey logistic regression models to adjust for clustering in the sample but we do not weight the sample. [6] The clustering variable that was used in the survey regression analysis was the census tract since the dataset was collected at this geographic level.

The initial model for moves in the year previous to the current interview includes measures of age, age squared, tenure, and values that capture the effect of triggers in the mobility process– marital status change and birth of a child in the interval previous to the move. The model is consistent with previous estimates of such models of mobility. Age, tenure, and marital change are all related to actual moves and have significant coefficients (Table 5). Births in the previous year are not significant, however a birth is more likely to positively affect the odds of moving. This is consistent with the notions of expanding household size as a trigger for moving, however it is likely that the move will not occur immediately since the birth does not immediately require much more space and imposes its own limitations on any con-current mobility.

We also evaluated actual mobility for Whites and Latinos separately in order to examine differences in mobility patterns among ethnic groups (Table 5). There are some important differences for moves in the previous year. One of the important differences is that among Latinos, age is only marginally significant at the 0.10 level. A possible explanation is the truncated age distribution for Latinos in the sample – the sample is skewed to younger household heads. The remaining variables - tenure, birth of a child and change in marital status retain their relationship to mobility. In contrast to Latino respondents, age is a significant predictor of actual mobility among whites. Tenure and change in marital status are also significant and consistent with national findings. Birth is not significant for either whites or Latinos. That birth is not related to mobility is a change

[6] The unweighted and weighted coefficients differ only marginally for the actual move models but provide results that are inconsistent with all other research for the plan to move models with roomstress. Tests suggest that the weights inconsistently affect the rooomstress variable and we choose to use the unweighted results for all models. The data on the weighted coefficients are available from the authors.

from previous findings and suggests that poorer and minority households may not be able to translate the need for more space into actual mobility because of income constraints.

We test the odds of future mobility using three models. The first is the standard model (i.e. roomstress, age and tenure) including income, marital status and ethnicity. The second model includes neighborhood variables. These are perception variables that address whether neighborhood safety, closeness and overall satisfaction affect the decision making process about future moves. The final model examines the interactions of tenure and income with these neighborhood measures.

In the standard model for planned mobility (Table 6), neither age, nor age squared are significant in predicting future mobility. Unlike the situation for actual mobility where age is a critical factor, the lack of significance in the plan to move prediction suggests that age is subsumed within the other variables and has no independent additive contribution to make to the probability of moving. We might assume that plans to move are not related to age, that both young and old households can plan to move but that in actuality it is only young households who follow through on the desire to change residences. In keeping with our expecations, roomstress and roomstress squared are both significant. Clearly, the amount of space available to the household is an important stimulus to considering relocation. Tenure also plays an important role in the probability of future mobility. This is somewhat intuitive as owners are less likely to move or plan to move than renters. Marital status does not have a significant effect on the probability of moving in the future, although the direction of the relationship suggests that being married reduces the probability of moving in the near future. Ethnicity is also insignificant, which suggests that plans for future mobility are not affected by ethnicity. In contrast, income is highly significant with regard to future mobility, with the odds of future moves increasing as income increases. This is hardly surprising given the fact that moving can be costly and people with lower family earnings may not be in a position to even consider moving in future.

Adding the neighborhood variables to the model does not change the relationship between future mobility and the independent variables. However, it does increase the

percent correctly classified to 71.2% and the pseudo r^2 also increases. Furthermore, the result of a Wald Test was significant (p= 0.000), suggesting that the more complex model is a better representation of the data. This highlights the importance of neighborhood perceptions on the odds of future mobility. Both living in a neighborhood that is perceived as not being close and being dissatisfied with one's current neighborhood increase the probability of moving (as expected). Surprisingly, living in a dangerous neighborhood is not a good predictor of likely future mobility, although, the negative sign is in the correct direction.[7] The less safe the neighborhood the more likely that a household is thinking of moving.

The interaction effects add only marginally to the ability of the model to explain the probability of future mobility. The percent correct classification increases by less than 1 percent and the pseudo r^2 remains static. However, a Wald Test was significant (p=0.045), thus the addition of the interactions should not be dismissed. As in model 1 and 2, roomstress and tenure are significant predictors of plans to move. Income, on the other hand, loses its significance, although the direction of the relationship stays the same. However, the relationship between future mobility and perceived closeness is significantly affected by income. Simply stated, as income increases, the odds of planning to move from a neighborhood that is not viewed as "close-knit" increases. In a similar vein, as income increases among renters, the odds of planning to move increase at non-significant levels.

A plot of the predicted odds of moving (from Model 3) with roomstress for both White and Latino respondents reveals distinct differences with regard to moving intentions (Figure 4). For respondents with negative roomstress (i.e. too little space) the probability of moving is dramatically higher for Whites than for similar Latino respondents. Among respondents with positive roomstress (i.e. too much space), the reverse is true with Latinos being more likely to move in the future than Whites.

Clearly, neighborhood effects while real, are acting only at the margin and do not measurably increase the explanation about mobility planning, which is closely bound up

[7] Adding additional neighborhood measures to the model does not improve the level of prediction.

with housing consumption, ownership and income. Similarly, the interactions between neighborhood perceptions, ownership and tenure add a marginal amount of explanatory power to the model, highlighting the importance of household determinants on the odds of future mobility. Structural variables are the fundamental force in the mobility and the planned mobility process.

CONCLUDING OBSERVATIONS

Planned mobility is subject to the same basic demographic forces as actual mobility. Housing consumption is still the driving force that generates expectations for moving as it does for actual mobility. The proportion of the sample who express a desire to move declines with increases in positive roomstress. Whether a household owns or rents also affects the expectation of moving as it does for actual mobility. However, unlike the basic models of residential mobility which are heavily age dependent there is no clear age relationship to expectations of moving.

With the detailed data on neighborhood characteristics in the Los Angeles FANS sample it is possible to extend the model of expected mobility for links to neighborhood characteristics. Both satisfaction with the neighborhood and whether or not the neighborhood is "close knit" are significant predictors of the desire to move. At the same time, house trumps neighborhood in the planned decision making process. It is the measure of housing consumption and the constraint of income that continue to be the driving force in the mobility process. Clearly housing space matters but the roomstress measure shows considerable variation across ethnic groups. Family size and lower incomes (which constrain the ability to meet housing needs) mean that Latino households in general have greater roomstress than white households.

The research in this paper has extended the classic work on actual mobility by examining it in the context of a multiethnic sample. In addition, the expansion of the housing consumption model with the inclusion of neighborhood effects provides valuable insights into potential mobility. When the second panel of the Los Angeles FANS is

completed, it will be possible to complete a full test of both the basic, planned and actual versus planned mobility.

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APPENDIX 1 – DISCRETE TIME LOGIT MODEL

A discrete time logit model is a basic model that is used to measure the connection between residential moves and a set of independent explanatory variables. As is well established the logit, or log odds, is the ratio of two probabilities for any two mutually exclusive states. For a given probability of an event, P, in this case moving house, the odds are defined as P/(1-P). The logit is derived by using the natural base of the logs, thus ln(P/(1-P)). In the discrete time logit model the assumption is that for any person in the population, the odds of the event occurring (the hazard), at each discrete time t_i (i=1,2….) is proportional to the odds of the event occurring for some specific individuals who represent a set of baseline states of co-variates, such that:

$$\frac{\lambda(t_i;\mathbf{X})}{1-\lambda(t_i;\mathbf{X})} = \frac{\lambda_0(t_i)}{1-\lambda_0(t_i)} \exp\left(\sum_k b_k X_k\right) \qquad (1)$$

Where $\lambda(t_i;\mathbf{X})$ is the conditional probability of having an event at time t_i for a given covariate vector $\boldsymbol{X}= (X_1, \ldots, X_k)$ and the b_k $(k=1, \ldots, K)$ are parameters. The baseline hazard function $\lambda_0(t_i)$ is characterized by conditional probabilities for cases in which the covariant vector $\boldsymbol{X}= \boldsymbol{0}$. The implication of this is that the odds of an event occurring at each discrete point in time are higher by the exponential power of $\sum_k b_k X_k$ for the subjects which are characterized by covariates $\boldsymbol{X}$ in comparison with subjects in the baseline group. With increasingly fine measurements of time, the ratio of the two odds approaches the ratio of the two rates $\left[\lambda(t_i;\mathbf{X})/\lambda_0(t_i)\right]$ and the result is a continuous-time proportional hazards model. In the situation where the conditional probabilities are sufficiently small, the logit model provides an approximation to the continuous-time hazards model. As a logistic regression the relationship in equation (1) becomes

$$\ln\frac{\lambda(t_i;\mathbf{X})}{1-\lambda(t_i;\mathbf{X})} = a_i + \left(\sum_k b_k X_k\right) \qquad (2)$$

$$a_i = \ln\frac{\lambda_0(t_i)}{1-\lambda_0(t_i)}$$

Where a_i is the log odds for the base line group and the parameters can be estimated with a logistic regression.

APPENDIX 2 – MOBILITY RATES BY ETHNICITY AND AGE USING WEIGHTED SAMPLE

	# Move	Sample N	Mobility Rate
(a) Total			
Latino	279	1963	.142
White	194	1232	.157
African American	55	333	.165
Asian	31	396	.078
Pacific Islander	5	53	.094
Native American	14	55	.255
(b) Age			
Latino	99	259	.382
<30	116	489	.237
30 - 44	22	234	.094
45 – 55	9	190	.047
55+			
White	74	150	.493
<30	55	350	.157
30 - 44	28	256	.109
45 – 55	37	476	.078
55+			
African American	13	34	.382
<30	20	118	.169
30 - 44	21	72	.292
45 – 55	1	109	.009
55+ [a]			
Asian			
<30	14	33	.424
30 - 44	11	150	.073
45 – 55	6	94	.064
55+ [a]	0	120	.000
Overall	578	3142 [b]	.184

b. Small sample size

c. Although N = 3142, this sample sums to 4032. This is due to some respondents choosing more than one ethnicity category.

Figure 2: Distribution of Roomstress by Ethnicity

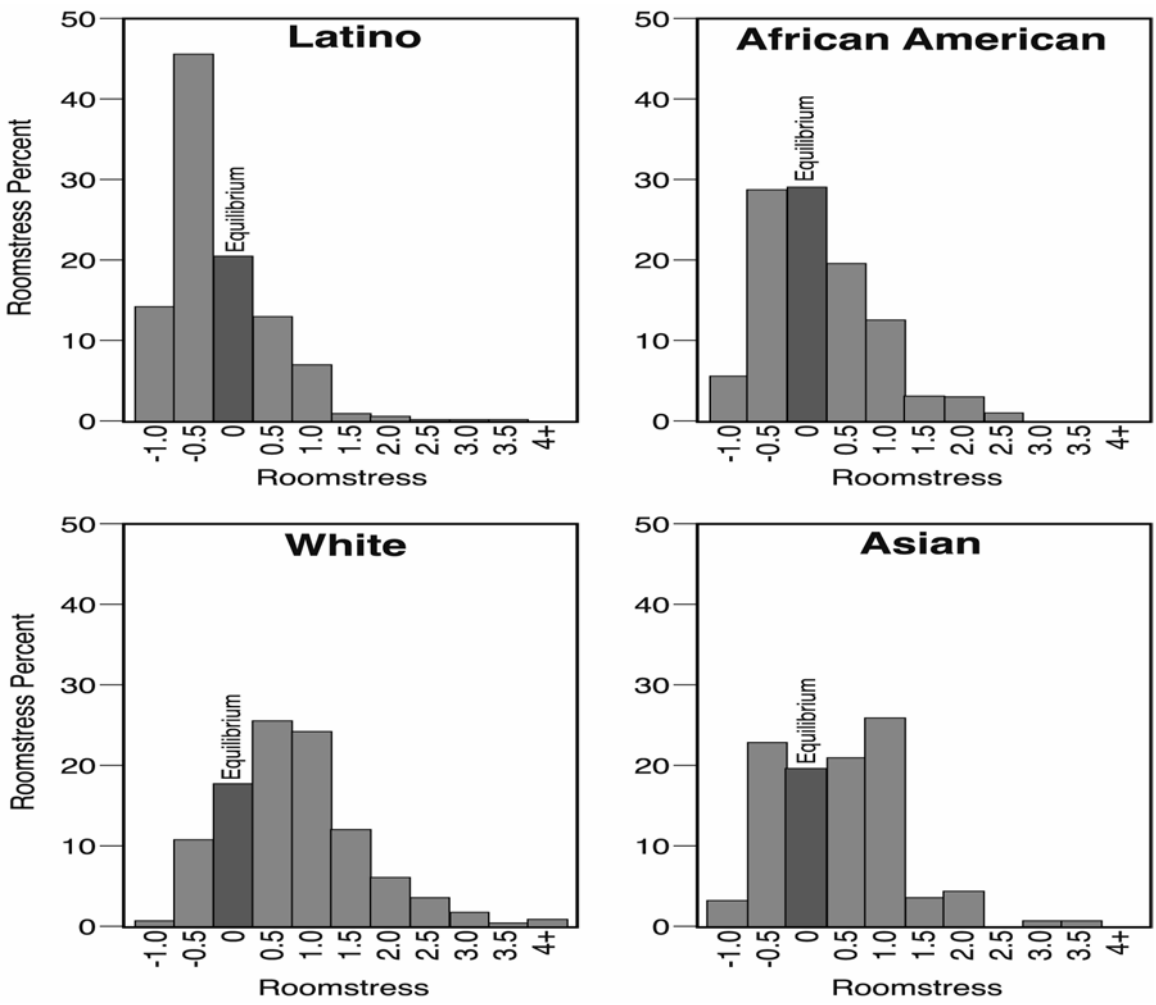


Figure 1. Distribution of Roomstress

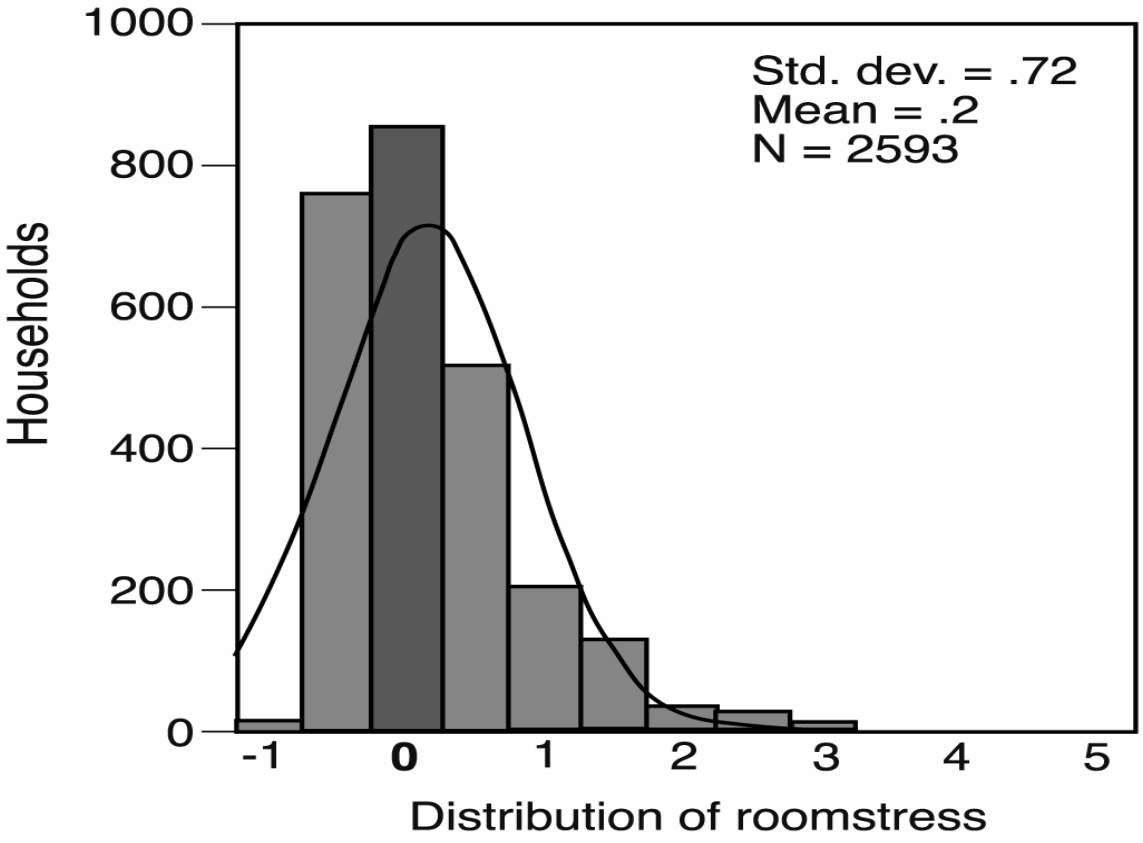
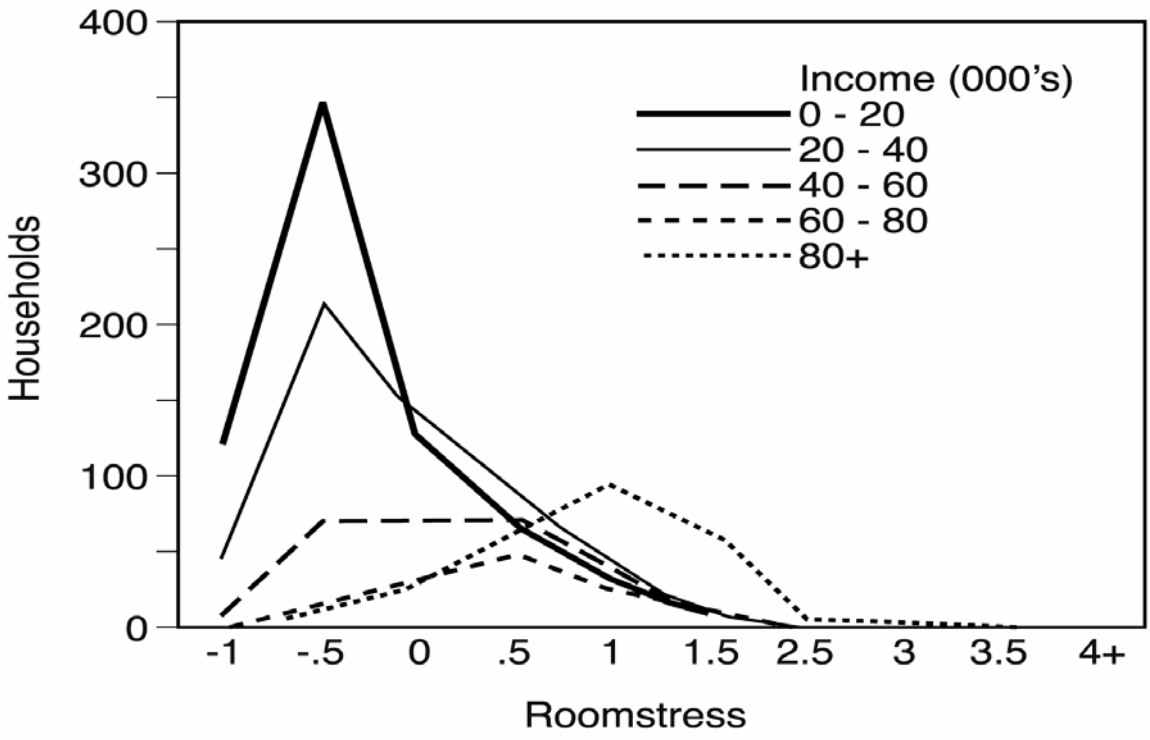

1000
800
600
400
200
0
Households
Std. dev. = .72
Mean = .2
N = 2593
-1
0
1
2
3
4
5
Distribution of roomstress

Figure 3: Roomstress by Income



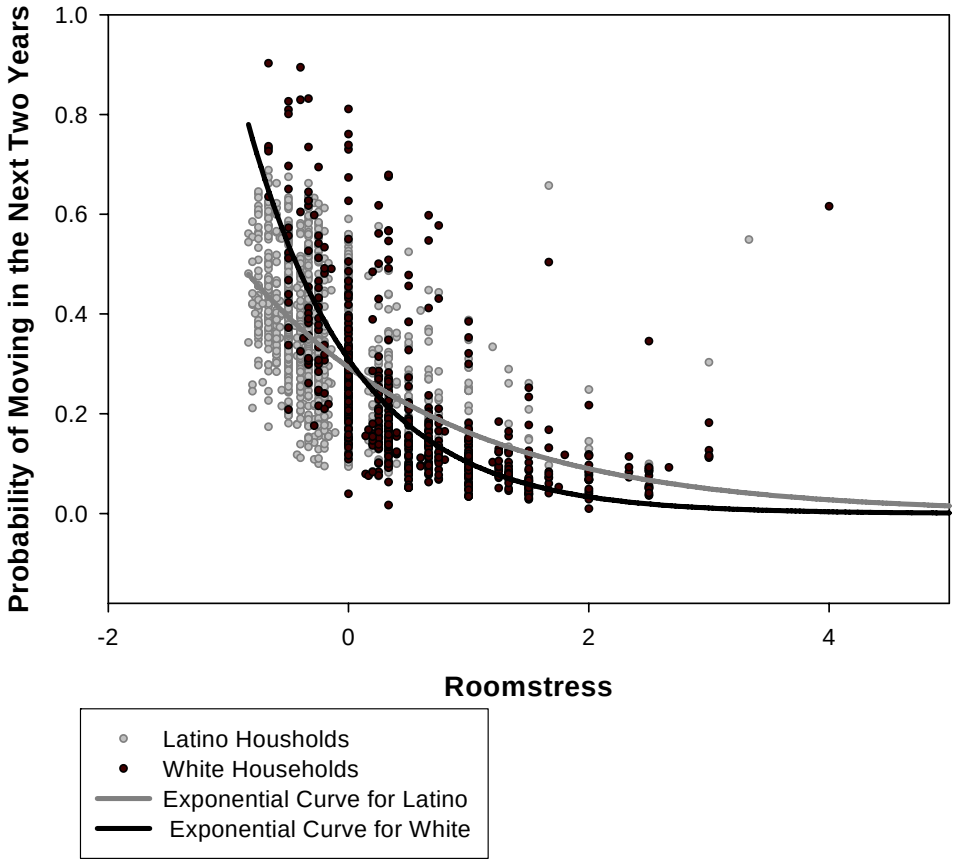


Figure 4: Predicted odds of moving in the next two years.

Table 1: Mobility Rates by Ethnicity and Age[a]

	# Move	Sample N	Mobility Rate
(a) Total			
Latino	290	1514	.153
White	103	706	.146
African American	50	257	.195
Asian	22	181	.122
Pacific Islander	3	28	.107
Native American	5	25	.200
(b) Age			
Latino			
<30	101	324	.312
30 - 44	147	785	.187
45 – 55	30	233	.129
55+	12	167	.072
White			
<30	30	62	.484
30 - 44	43	307	.140
45 – 55	18	167	.108
55+	12	170	.071
African American			
<30	17	36	.472
30 - 44	23	119	.193
45 – 55	8	48	.167
55+[b]	2	53	.038
Asian			
<30	7	16	.438
30 - 44	11	96	.115
45 – 55	3	42	.071
55+[b]	1	27	.037
Overall	473	2644[c]	.179

a. Results using unweighted sample
b. Small sample size
c. Although N = 2644, this sample sums to 2711. This is due to some respondents choosing more than one ethnicity category.

Table 2. Tenure By Ethnicity

TENURE	ETHNICITY					
	Latino	White	Black	Asian	Pac Islander	Native American
Rent	1042	238	156	87	14	15
	73%	36%	64%	47%	52%	63%
Own	384	429	87	99	13	9
	27%	64%	36%	53%	48%	37%
Total	1426	667	243	186	27	24
	100%	100%	100%	100%	100%	100%

Table 3. Average Income of Respondents by Mobility Status, Ethnicity and Age*

	Move		No Move	
	Mean Income ($)	N	Mean Income ($)	N
Latino	**15297**	**257**	**24410**	**1020**
18-29	13372	90	20333	189
30-44	17397	132	28110	539
44-55	13304	25	27247	160
White	**46527**	**89**	**63299**	**491**
18-29	32837	25	31956	27
30-44	51066	39	78267	211
44-55	85314	14	77089	121
African American	**20390**	**41**	**27834**	**171**
18-29	10625	16	21307	15
30-44	22944	18	36978	79
44-55	45000	5	32213	32
Asian	**41774**	**17**	**54761**	**131**
18-29	34527	6	51429	7
30-44	56875	8	56876	69
44-55	18000	2	67731	32

* We omit the category 55+ because sample sizes are too small

Table 4. Definition of variables included in the models.

Variable	Definition
Previous move	Did respondent move in last year? Coded 1 if yes, 0 if no.
Plan to move	Respondent plans to move in the next two years? Coded 1 if yes, 0 if no.
Room stress	Mismatch between actual and required housing [(actual /required)-1]
Room stress^2	Square term of room stress
Age	Age of household head
Age^2	Square term of age
Tenure	Does respondent rent or own? Coded 1 if owner, 0 if renter. Other categories were omitted as the code book for L.A.FANS did not provide details on them.
Marital Status	Coded 1 for married and/or cohabiting, 0 if single
Family Income	Household income reported at time of the interview
Relationship Change In Previous Year	Using marital history in adult module, subtract date of marriage /divorce/break-up/new relationship from interview date. If any of the result are less than or equal to 1, relationship change is equal to 1. Others are coded 0.
Birth	Using birth history in adult module, subtract date of each possible birth from interview date. If result is less than or equal to 1, new birth is equal to 1. Others are coded 0.
Unsafe Neighborhood	"How safe is it to walk around alone?" Coded 1 for extremely dangerous and 0 for all other responses.
Not Close-knit	"This is a close_knit neighborhood." Coded 1 for disagree/strongly disagree and 0 for all other responses
Satisfaction with Neighborhood	"How satisfied are you with your neighborhood?" Coded 1 for dissatisfied/very dissatisfied and zero for all other responses
Poverty	Poor versus non-poor neighborhood (Strata variable)
Tract	Census Tract 2000 (PSU variable)
Weight	Weight variable included in L.A. FANS to correct for sampling bias.

Table 5: Survey Logit Estimates for Residential Mobility

a) Total Sample (n = 2492)

	b	s.e	sig.
Age	-.090	.021	.000
Age^2	.001	.000	.013
Tenure	-.850	.151	.000
Birth	.158	.123	.201
Marital Change[d]	1.15	.170	.000
Constant	1.12	.499	.014

Percent correct classification = 83.1

b) Latino (n = 1413)

	b	s.e	sig.
Age	-.046	.029	.116
Age^2	-.001	.000	.784
Tenure	-1.050	.223	.000
Birth	.108	.152	.481
Marital Change[d]	1.20	.217	.000
Constant	.173	.587	.769

Percent correct classification = 81.1

c) White (n = 674)

	b	s.e	sig.
Age	-.125	.041	.003
Age^2	.001	.000	.012
Tenure	-1.01	.263	.000
Birth	.107	.262	.685
Marital Change[d]	1.56	.434	.001
Constant	2.05	.901	.027

Percent correct classification = 86.2

d. We include all changes in relationships under marital change

Table 6. Survey Logit Estimates for Planned Mobility (n=2378)

	Model 1		Model 2		Model 3	
	b	p	*b*	p	*b*	p
Age	-.016	.465	-.012	.590	-.010	.622
Age^2	.000	.865	.000	.716	.000	.671
Roomstress	-.524	.000	-.464	.001	-.454	.001
$Roomstress^2$	.114	.026	.101	.050	.098	.063
Tenure	-.810	.000	-.718	.000	-.659	.000
Marital Status	-.132	.154	-.129	.163	-.125	.193
Ethnicity (Non-White =1)	.142	.443	.110	.540	.108	.539
Income (000)	.002	.002	.002	.000	.001	.263
Unsafe Neighborhood			-.035	.879	-.074	.837
Close Knit			.377	.000	.311	.007
Satisfied with Neighborhood			.782	.000	.785	.000
Unsafe Neighborhood*Tenure					-.841	.115
Unsafe Neighborhood*Income					.011	.439
Close Knit*Tenure					-.273	.234
Close Knit*Income					.004	.009
Satisfied w/ Neighborhood*Tenure					.538	.090
Satisfied w/ Neighborhood*Income					.004	.313
Constant	.056	.915	-.347	.579	-.330	.541
Percent Correct Classification	68.8		71.2		71.8	
Pseudo R^2	.075		.100		.103	