Urban Unemployment and Residential Location Choice

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The paper examines the influence of the spatial access to jobs and neighborhood quality on household member employment outcomes. The spatial mismatch hypothesis, first proposed by Kain (1968), has spawned innumerable studies that find that job access is positively correlated with employment and/or labor market earnings, see Ihlanfeldt and Sjoquist (2000) for a recent survey. This finding has been especially persistent for minority youths (Ihlanfeldt, 1992; Ihlanfeldt and Sjoquist, 1990). Other studies have found strong correlations between an individual's neighborhood or residential environment and the indiviudal's outcomes in many areas including education or employment (e.g. O'Regan and Quigley, 1998; Case and Katz, 1991; Evans, Oates, and Schwab, 1992; and Cutler and Glaeser, 1997, Bayer, Ross, and Topa, 2004)

Both literatures suggest that the residential segregation of minority and low-income households can further exacerbate existing inequalities leading to areas of concentrated poverty, limited economic opportunity, and blighted neighborhoods. Limited access to jobs may decrease employment and labor force participation because it raises the fixed costs of employment through longer commutes and higher job search costs, see Zenou (2000) for a theoretical development and Zax and Kain (1991) and Ross and Zenou (2004) for empirical evidence on the direct effect of commutes on quits. In fact, this large body of literature provided at least part of the motivation

[1] The authors are grateful to the Department of Housing and Urban Development, Federal Reserve Bank of New York, and the Center for Real Estate and Urban Economic Studies at the University of Connecticut for financial support. The research in this paper was conducted while the authors were Special Sworn Status researchers of the U.S. Census Bureau at the Boston Research Data Center (BRDC). The research results and conclusions expressed are those of the authors and do not necessarily reflect the views of the U.S. Census Bureau, the Department of Housing and Urban Development or any other agency of the U.S. Government. This paper was screened to insure that no confidential data are revealed. Corresponding author: Stephen L. Ross, Department of Economics, University of Connecticut, 341 Mansfield Road U-63, Storrs, CT 06269-1063, 860-486-3533, Stephen.L.Ross@uconn.edu.

behind the recent Moving to Opportunity study that was funded by the Department of Housing and Urban Development, see Ludwig, Duncan, and Pinkston (2000).

This paper addresses a major limitation in the existing literature on spatial mismatch and neighborhood effects; namely, that residential location and labor market outcomes are jointly determined, see Glaeser (1996) for a discussion of this issue. Existing studies either sacrifice tremendous spatial detail by focusing on variation across metropolitan areas, e.g. Cutler and Glaeser, (1997), Ross (1998), and Weinberg (2000), or suffer from a serious sorting bias by treating residential location as fixed when estimating the effect of location on employment outcomes, e.g. Ihlanfeldt (1992), Ihlanfeldt and Sjoquist (1990), and O'Regan and Quigley (1998). In principle, social experiments, such as Moving to Opportunity and the Gautreaux Program (see Katz, Kling, and Liebman (2001) and Popkin, Rosenbaum, and Meaden (1993) respectively), address this problem by use of a control group. Such experiments by design measure the relevant effects for a very select sample over a short time horizon.

This study addresses sorting bias in models of labor market outcomes by directly modeling household residential. Specifically, this paper develops and estimates a simple neighborhood sorting model based on earlier work by Epple and Platt (1998), Epple and Seig (1999), and Bayer and Timmons (In press). The paper explicitly examines the biases in labor market models that are created by household sorting and develops both reduced form and structurally based econometric solutions to these problems. The sorting model and the labor market equations are estimated using the confidential samples of the 1990 Decennial Census for the Boston Metropolitan Statistical Area.

The paper is organized as follows. The second section presents a simple sorting model and examines the resulting biases in cross sectional analyses of household or household member outcomes. The third section presents the methodological strategy for obtaining consistent estimates for the link between neighborhood attributes and household or individual outcomes. The fourth section discusses the data, sample, as well as the specification of variables for describing households and neighborhoods. The fifth section presents the results followed by a short summary and conclusion in the sixth section.

Sorting Bias in Labor Market Models

First, a simple sorting model is presented in order to explicitly illustrate the types of correlations that arise when households sort across neighborhoods. Individuals *i* choose among neighborhoods *j* to maximize utility.

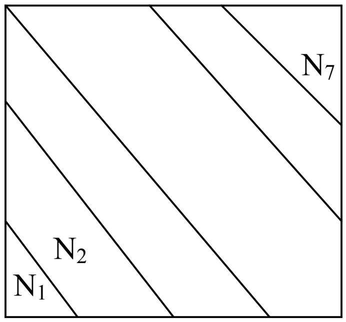
$$U_{i,j} = \underbrace{(\alpha_1 Z_i + \omega_i)}_{\text{taste index}} \bullet \underbrace{(\alpha_2 X_j + \alpha_3 \overline{Z}_j + \xi_j)}_{\text{quality index}} - \underbrace{p_j}_{\text{housing price}} \quad (1)$$

The following assumptions describe the population and market

- Assume $E[Z_i'\omega_i] = 0; \quad E[X_j'\xi_j] = 0;$
- X, ξ are fixed features – i.e., not sorting dependent
- Individuals agree on what defines neighborhood quality but differ in their willingness to pay for it.\
- Prices adjust to clear market

The result of this sorting process can be seen in the simple diagram of Epple-type models (Epple and Platt, 1998; Epple and Seig, 1999) showing how individuals with different $(\beta_1 Z_i, \omega_i)$ pairs are assigned to neighborhoods where $N_j = \alpha_2 X_j + \alpha_3 \overline{Z}_j + \xi_j$ and $N_7 > N_6 > \ldots > N_1$.

$\beta_1 Z_i$



ω_i

Figure 1

Standard results arise out of such sorting models. Households sort over communities based on their preference index, $P_i=\beta_1 Z_i+\omega_i$. The lines dividing communities in the above figure represent iso-preference, or constant P_i, lines, and each community contains an interval of individuals or households on the continuum of P. The ordering of communities by the intervals of P, as well as by housing price, is the same as the ordering of communities by N_j.

A typical equation for describing the employment of an individual in an urban economy might take the following form:

$$y_{ij} = \beta_1 Z_i + \beta_2 X_j + \beta_3 \overline{Z}_j + \omega_i + \xi_j + \varepsilon_{ij} \qquad (2)$$

where $y_{i,j}$ represents the employment (yes/no) of individual i in neighborhood j; Z_i, ω_i capture observed and unobserved individual characteristics; and X_j, $\overline{Z}_j$, ξ_j capture observed and unobserved neighborhood characteristics where some observed neighborhood characteristics are aggregations of the attributes of individual residents

Ordinary Least Squares (OLS) estimation of equation (2) using observed variables is consistent only if a series of assumptions are made.

Standard Exogeneity: $$E(Z_i'\omega_i)=0; E(X_j'\xi_j)=0; \quad (3)$$

No Place-Person Matching: $$E([X_j\overline{Z}_j]'\omega_i)=0; E(Z_i'\xi_j)=0; \quad (4)$$

Exogenous Place Attributes: $$E(\overline{Z}_j'\xi_j)=0; \quad (5)$$

The first two assumptions, strict exogeneity, are standard in any application of OLS to estimate the relationship between an observed outcomes and control variables.

The no place-person matching and exogenous place attributes appear unlikely to hold in a world where individuals are free to choose where they reside. For example, an individual with a low ω_i might rationally compensate for their lower likelihood of employment by selecting into neighborhoods with observable attributes that increase the likelihood of employment (X_j, $\overline{Z}_j$). Alternatively, ω_i might be highly correlated with individual unobservables concerning the preference for employment. Under those circumstances, individuals with high ω_i might rationally selecting into neighborhoods with positive values on X_j and $\overline{Z}_j$. Individuals can similarly be expected to sort over unobservable location attributes (ξ_j) based on their observable attributes (Z_i) that are related to the individual's likelihood of employment and possibly their preference for employment. In addition, as individuals sort over ξ_j based on Z_i an equilibrium correlation will arise between the neighborhood's ξ_j and the composition of the neighborhood's residents over Z_i ($\overline{Z}_j$).

In addition to inconsistency in OLS estimation, this pattern of correlations implies that the inclusion of fixed effects to control for neighborhood unobservables also lead to inconsistent estimates. Consider the following specification

$$y_{ij} = \beta_1 Z_i + \lambda_j + \omega_i + \varepsilon_{ij} \tag{6}$$

$$\lambda_j = \beta_2 X_j + \beta_3 \overline{Z}_j + \xi_j \tag{7}$$

where λ_j in equation (5) is a neighborhood fixed effect that is defined by equation (7).

Drawing on the empirical I/O literature (Berry, Levinsohn, and Pakes, 1995), a standard approach is to estimate equation (5) using OLS under the standard exogeneity assumptions in equation (2) in order to obtain estimates of β_1 and λ_j. Then, the estimated values of λ_j are used as the dependent variables in equation (7), and equation (7) is estimated by Instrumental Variables regression (IV) to address endogeneity of $\overline{Z}_j$, see equation (5).

This approach, however, will not provide consistent estimates due to the sorting of people over places, equation (4). The fixed effect, λ_j, contains X_j and $\overline{Z}_j$, which are both correlated with ω_ι, and also contains ξ_j, which is correlated with Z_i. The correlation of the fixed effect with the unobservable biases the fixed effect estimates, which in turn biases the estimates of β_1 since Z_i is also correlated with the fixed effect. Furthermore, instrumenting for $\overline{Z}_j$ does not assure consistency of the second stage since the bias in the estimated fixed effects depends upon the correlation between ω_ι and X_j. This bias is imbedded in the error term of equation (7) implying that all location attributes must be treated as endogenous not just the neighborhood composition attributes ($\overline{Z}_j$), which dramatically reduces the feasibility of identifying the parameters in equation (7).

Estimation Methodology

The key logic behind our estimation approach is to use information concerning the housing market outcomes in order to identify the effect of causal effect of neighborhood attributes on labor market outcomes. For example, in order to provide a reduced from control for the sorting of individuals over unobserved place attributes, we develop a proxy for a location's unobservable component of a locations quality using a simple hedonic model of housing prices and include this proxy directly in the labor market equation. In the structural specification that uses the vertical sorting model, a direct estimate of unobserved location quality is included in the outcome location, but of course vertical sorting model arrives at this location quality estimate by comparing price to observable components of quality that appear to affect location decisions. Similarly, in the reduced form models, bias due to unobservable individual attributes are obtained by using instruments based on predicted location attributes for observationally similar households, and the vertical sorting model provides an estimate of an individual household's unobservable based on whether they live in comparison to where observationally similar households reside.

Estimation of Labor Market Equations

Our estimation strategy addresses each source of bias sequentially starting with the correlation between ξ_j and Z_i, followed by addressing the correlation between ω_ι and the vectors X_j and $\overline{Z}_j$, and finally addressing the correlation between ξ_j and $\overline{Z}_j$. For each bias, we follow two approaches. The first, more traditional approach uses instrumental variables and control functions. The second, structural approach explicitly uses estimated parameters from the vertical sorting model to identify and consistently estimate the employment model.

In order to control for the correlation between ξ_j and Z_i, a control function is created based on an estimate for ξ_j, which is then incorporated into the employment equation, see Petrin and Train (2002). The traditional approach estimates ξ_j as the average residual for each neighborhood from a simple housing price equation. Specifically,

$$h_{ij} = \delta_1 W_{ij} + \delta_2 X_j + \delta_3 \overline{Z}_j + \xi_j + \mu_{ij} \tag{8}$$

$$y_{ij} = \beta_1 Z_i + \beta_2 X_j + \beta_3 \overline{Z}_j + \hat{\xi}_{1j} + \omega_i + \varepsilon_{ij} \tag{9}$$

where W_{ij} contains housing unit attributes and $\hat{\xi}_{1j}$ is the mean residual from the estimation of equation (8).

Our structural approach involves obtaining estimates for ξ_j from moment conditions in the vertical sorting model.

$$S_j = \int \sum_i \Pr[\underline{P}_j(\underline{\xi}) <= \alpha_1 Z_i + \omega <= \overline{P}_j(\underline{\xi})] f(\omega) d\omega \tag{10}$$

$$y_{ij} = \beta_1 Z_i + \beta_2 X_j + \beta_3 \overline{Z}_j + \hat{\xi}_{2j} + \omega_i + \varepsilon_{ij} \tag{11}$$

where S_j is the neighborhood population, $\underline{P}_j$ and $\overline{P}_j$ form the interval of preferences that lead to an individual residing in community, $\underline{\xi}$ is the vector of location unobservables that satisfy the moment conditions, and $\hat{\xi}_{2j}$ is the value for each location that satisfies the set of moment conditions.

Next, the corrections for the correlation between ω_t and the vectors X_j and $\overline{Z}_j$ are added to the two specifications described by equations (8) through (11). The traditional approach involves developing instruments for X_j and $\overline{Z}_j$. In this case, we use the average values of observed location attributes for individuals with the same observable worker characteristics Z_i as instruments

$$\hat{X}_{1i} = Mean_{i \in \Omega_i}\left(X_j^i\right) \quad , \hat{Z}_{1i} = Mean_{i \in \Omega_i}\left(\overline{Z}_j^i\right) \tag{12}$$

$$y_{ij} = \beta_1 Z_i + \beta_2 \hat{X}_{1j} + \beta_3 \hat{Z}_{1j} + \hat{\xi}_{1j} + \omega_i + \varepsilon_{ij} \tag{13}$$

where Ω_i is the set of all workers with the same observables as worker i. These instruments essentially remove the part of the variation in the locational attributes that a worker is matched with due to idiosyncratic individual preferences, providing a measure of the locational attributes for a worker predicted solely on the basis of worker *i*'s observable characteristics. Moreover, these instruments are unlikely to be collinear with the household characteristics included in the employment regression directly because they are calculated from the actual location pattern of other households.

In the structural approach, the vertical model estimates when combined with the actual residential location of individual *i* identifies an interval in which ω_t must fall. Accordingly, the expected value of ω_t may be written as

$$\hat{\omega}_{1i} = \int_{\underline{P}_j - \alpha_1 Z_i}^{\overline{P}_j - \alpha_1 Z_i} f(\omega) d\omega \tag{14}$$

$$y_{ij} = \beta_1 Z_i + \beta_2 X_j + \beta_3 \overline{Z}_j + \hat{\xi}_{2j} + \hat{\omega}_{1i} + \varepsilon_{ij} \tag{15}$$

The inclusion of predictions for ω_t assures that the remaining error is idiosyncratic.

While it may appear that the two specifications described by equations (12) through (15) insulates the analysis from bias due to the correlation between ξ_j and $\overline{Z}_j$, a closer look reveals that reduced form and vertical model specifications depend upon control functions, $\hat{\xi}_{1j}$ and ($\hat{\xi}_{2j}, \widehat{\omega}_{1j}$), respectively, that are inconsistently estimated due to this correlation. In the traditional approach, OLS estimation of equation (8) is inconsistent and instruments must be found that identify the coefficients on $\overline{Z}_j$. Following an intuition that is similar to the one that was used to develop instruments for the neighborhood composition variables in equation (12), we describe the composition of a neighborhood based on the average composition of neighborhoods with similar attributes.

$$\widehat{Z}_{2j} = Mean_{k \in \Pi_{-j}}(\overline{Z}_k W(X_j, X_k)) \tag{16}$$

$$h_{ij} = \delta_1 W_{ij} + \delta_2 X_j + \delta_3 \widehat{Z}_{2j} + \xi_j + \mu_{ij} \tag{17}$$

$$y_{ij} = \beta_1 Z_i + \beta_2 \hat{X}_{1j} + \beta_3 \hat{Z}_{1j} + \hat{\xi}_{3j} + \omega_i + \varepsilon_{ij} \tag{18}$$

where $\hat{Z}_j$ is a prediction of $\overline{Z}_j$, Π_{-j} is the sample of locations excluding location *j*, W is a weighing function based on the similarity between X_j and X_k, and $\hat{\xi}_{3j}$ is the mean residual in location *j* from equation (8).

In the vertical model, a similar bias arises because the model has been estimated assuming $\overline{Z}_j$ is an exogenous characteristic of location *j*. As will be discussed later, the vertical model is a three-stage model that is estimated iteratively. The third stage involves regressing estimated location fixed effects upon X_j and $\overline{Z}_j$ where the predicted residual from this equation provides an estimate of ξ_j. Naturally, $\overline{Z}_j$ is correlated with the unobservable ξ_j in this equation.

The first two stages of the model, however, provide predictions of $\overline{Z}_j$ for each location that can be used as instruments in this last stage, see Bayer, McMillan and Rueben (2002).

$$\hat{\zeta}_j = \alpha_2 X_j + \alpha_3 \hat{Z}_{3j} + \tilde{\xi}_j \tag{19}$$

$$y_{ij} = \beta_1 Z_i + \beta_2 X_j + \beta_3 \overline{Z}_j + \hat{\xi}_{4j} + \hat{\omega}_i + \varepsilon_{ij} \tag{20}$$

where $\hat{\zeta}_j$ is the estimated location fixed effect, $\hat{Z}_{3j}$ is the predicted neighborhood composition from the vertical model, $\hat{\xi}_{4j}$ is the predicted residual from equation (19) and $\hat{\omega}_i$ is the expected value of ω_i based on equation (14). Note that $\hat{\omega}_i$ is determined simultaneously with the location fixed effects during the first two stages and so is not affected by changes to the third stage.

Estimation of the Vertical Model

A key limitation of the vertical model as specified in equation (7) is that all individuals regardless of race, education or family structure evaluate neighborhood quality in exactly the same manner. This assumption is fairly unrealistic given the pattern of racial segregation in our society, as well as the strong incentive for families with children to locate in neighborhoods with good schools. A generalized vertical model is available

$$U_{i,j} = (\alpha_1 Z_i + \omega_i) \bullet (\alpha_{2i} X_j + \alpha_{3i} \overline{Z}_j + \xi_{ij}) - p_j \tag{21}$$

where $\alpha_{2i} = \gamma_2 Z_i$ and $\alpha_{3i} = \gamma_3 Z_i$. This model is identified by exclusion restrictions that require some elements of Z_i to be excluded from α_2 and α_3. These exclusion restrictions allow the preference index, the first term in equation (20), to contain some source of variation that is not present in the neighborhood quality index. In practice, robust identification requires that the number of non-zero elements in α_2 and α_3 be quite small. Specifically, this analysis will focus on estimating separate parameter vectors for each racial and ethnic category.

The vertical model is estimated using a three-stage estimation approach. The first stage involves generalized method of moments estimation of the following moment conditions

$$S_{ij} = \int \sum_{i \in \Omega_i} \Pr[\underline{P}_j(\underline{\zeta}_i) <= \hat{\alpha}_1 Z_i + \omega <= \overline{P}_j(\underline{\zeta}_i)] f(\omega \mid \hat{\sigma}) d\omega \qquad (22)$$

holding $\hat{\alpha}_1$ and $\hat{\sigma}$ fixed. The probabilities are derived from equation (21) where the second term in that equation has been reduced by substitution of the following equation.

$$\zeta_{ij} = \alpha_{2i} X_j + \alpha_{3i} \hat{Z}_{3j} + \xi_{ij} \qquad (23)$$

As discussed earlier, the classification of individuals described by Ω_i is based on a very small subset of Z_i, such as race and ethnicity.

The second stage involves maximum likelihood estimation of the choice problem described by

$$U_{i,j} = (\alpha_1 Z_i + \omega_i) \bullet (\hat{\zeta}_{ij}) - P_j \qquad (24)$$

holding $\hat{\zeta}_{ij}$ fixed. Iterative estimation of the first two stages provides consistent estimates of $\hat{\alpha}_1$, $\hat{\sigma}$, and $\hat{\zeta}_{ij}$, and these estimates provide sufficient information to calculate the expected values of ω_t for each household from equation (14).

As mentioned earlier, the final stage is estimated for

$$\hat{\zeta}_{ij} = \alpha_{2i} X_j + \alpha_{3i} \overline{Z}_{3j} + \tilde{\xi}_{ij} \tag{25}$$

by either OLS or IV depending upon whether $\overline{Z}_j$ is treated as exogenous or not. This third stage provides estimates for $\hat{\alpha}_{2i}$, $\hat{\alpha}_{3i}$, and $\hat{\xi}_{ij}$.

The simulation analyses are essentially a reversal of the estimation procedure described above. Rather than estimating $\hat{\xi}_{ij}$ from the moment conditions holding equilibrium prices constant, the same moment conditions are now used to estimate equilibrium prices conditional on $\hat{\xi}_{ij}$ and initial guesses concerning equilibrium neighborhood composition. The likelihood function allocates each household probabilistically to specific neighborhoods based on the distribution of ω_t and the minimum and maximum possible values of ω_t derived from the household's actual residential location, and these allocations are used to calculate the equilibrium neighborhood compositions. An iterative application of these techniques yields equilibrium values of neighborhood composition, as well as exposure to exogenous neighborhood attributes, that can be used with the estimated employment equations to predict group employment rates.

Sample, Control Variables, and Geography

The sample of prime age adults will be drawn from confidential data files of the 2000 and 1990 Decennial Census for the Boston Metropolitan Statistical Area (MSA) leading to a sample of approximately 150,000 individuals for the 1990 decennial census, see Bayer, Ross, and Topa (2004) for more details on the sample. Two variables are created to describe labor market outcomes: labor force participation and employment conditional on being a participant in the labor market.

For the purpose of describing employment, adults in the sample are described by series of categorical control variables (Z):

Education Level	No High School Degree High School Graduate- No College Some College - Two years or more, No Degree College Graduate – Four year degree or more
Age Category	25-34 years old 35-44 years old 45-59 years old
Race and Ethnicity	White non-hispanic Black non-hispanic Hispanic Asian-Pacific Islander
Family Structure	Single independent Single living with family members Single parent Married with no kids Married with kids but none pre-school Married with preschool kids
Gender	Male Female
Immigration Status	Native Non-Native Citizen Non-Citizen

The models of labor market outcomes also include key interactions between gender and family structure to address well known aspects of female labor force participation in the United States.

These variables are also used to create categories based on all permutations of the categorical variables where these variables give rise to 1,718 cells. All prime age adults that belong to the same cell (Ω) are used to calculate average neighborhood attributes in equation (12).

A sample of households to which the prime age adults belong will be used for estimating the vertical sorting model. Households are described by a similar set of variables describing the respondent and their spouse if present (Z)

Education Level	Neither respondent nor spouse with High School Degree
	Respondent or spouse High School Graduate- No College
	Both High School Graduates – No College
	Respondent or spouse Some College - No Degree
	Both some College – No Degree
	Respondent or spouse College Graduate
	Both College Graduates
Age Category	Older of Respondent and Spouse 25-34 years old
	Older of Respondent and Spouse 35-44 years old
	Older of Respondent and Spouse 45-59 years old
	Younger in lower age category
Race and Ethnicity	Respondent and Spouse White non-hispanic
	Respondent and Spouse Black non-hispanic
	Respondent and Spouse Hispanic
	Respondent and Spouse Asian-Pacific Islander
	Respondent in mixed race marriage
Family and Gender	Respondent single male independent
	Respondent single male living with family members
	Respondent single male parent
	Respondent single female independent
	Respondent single female living with family members
	Respondent single female parent
	Respondent married with no kids

	Respondent married with kids but none pre-school Respondent married with preschool kids
Immigration Status	Respondent and spouse Native Respondent or spouse Native Respondent and spouse non-Native

Each household resides in a housing unit and the location of that unit is geo-coded to a census tract. The following housing unit and tract attributes are generated to describe the household's unit and neighborhood and are used in various specifications of labor market outcomes, the sorting model, and the hedonic model of housing prices.

Housing Attributes (W)	Owner versus Rental Housing House value or rent Number of bedrooms Age of unit Multi-family small Multi-family large Sewer versus septic Whether lot smaller than 1 acre
Group Composition ($\overline{Z}$)	Racial and ethnic composition Educational composition Average family composition
Group Housing (X)	Percent owner-occupied units Percent large multi-family units Percent 1 bedroom or studio Percent 4 plus bedrooms Average age of housing stock Presence of group quarters Density of housing
Employment Access (X)	Overall employment access Education matched employment access Education-age matched employment access

where employment access estimates are based on the estimated coefficients from a standard gravity model.

Table 1 provides descriptive statistics for the 1990 census sample drawn from the Boston metropolitan area. The sample contains approximately 178,000 individuals aged between 25 and 59 years in over 146,000 households residing in 620 census tracts. The sample exhibits a high levels of labor force attachment; almost 85 percent of individuals are in the labor market and over 80 percent are employed. The sample is primarily white, 88 percent, and well educated with 65 percent having some type of higher education degree and 40 percent having graduated from four year institutions. About half the individuals in the sample are married, and 45 percent of the individuals head households with children (almost 10 percent of the sample are heads of single parent households). Finally, 15 percent of the sample are not native born with about half being naturalized citizens. The means of the neighborhood attributes, such as percent college graduates in the tract, are obviously are quite similar to the means of the associated individual attributes.

Empirical Results

Baseline Models

Tables 2a and 2b present the results for baseline OLS estimations of the relationship between individual and neighborhood attributes and being in the labor market and being employed if in the labor market, respectively. The first column does not include any neighborhood attributes, the second includes just an overall job access measure and the percent college graduates in an individual's census tract, and the third expands the list to include a second job access measure based on an individual's education and age and the percent of individuals who did not graduate from college. The last four columns start with the third specification and add controls for neighborhood race and ethnicity, average household composition, poverty rates, or characteristics of the housing stock, respectively.

The relationship between labor force participation and individual attributes (table 2a) follows intuitive patterns. Being male, younger than 45, white, educated increase labor force participation. Marriage and the presence of children when married increase participation for males and lower it for females especially when young children are present. Non-native citizens have higher participation than native born, but non-citizens have lower participation. In general, the qualitative findings for individual attributes are unaffected by the inclusion of neighborhood attributes. Quantitatively, the largest effects of controlling for neighborhood attributes are on the relationship between race and ethnicity and labor force participation. The negative effect for belonging to groups other than non-Hispanic whites decreases substantially especially in the specification that controls for neighborhood poverty and negative effect of being African-American completely disappears. In addition, the positive effect of education and marriage increases in specifications that control for neighborhood poverty.

The relationship between neighborhood attributes and labor force participation also takes the expected direction. After controlling for individual education level, the tracts with large numbers of high school graduates have higher labor force participation rates with tracts with college graduates having lower rates and with high school drop outs having the lowest (models 2 and 3). While overall employment access leads to lower participation rates, access to jobs that appropriate in terms of age and education leads to higher participation rates. The addition of controls for neighborhood race and ethnicity and family structure have little influence on the coefficients on access and neighborhood human capital (models 4 and 5). On the other hand, the inclusion of a control for neighborhood poverty (model 6) decreases the magnitude of the negative effects of overall employment access, percent college graduates and percent high school drop outs where the influence of high school drop outs in a tract is completely eliminated. Controlling for housing stock variables as a proxy for neighborhood unobservables (model 7) leads to an increase in the coefficient magnitudes for the access variables and a decrease in the negative effect of percent college on participation.

Table 2b shows the parameter estimates for the employment model. In terms of individual attributes, the results for the employment model are qualitatively quite similar to the results for the labor force participation model except for gender. While males have higher labor force participation, they have lower rates of employment conditioning on labor force participation. For the race and ethnicity variables, the effect of controlling for neighborhood attributes on the estimated coefficients is quite similar to the effect for the participation equation. The negative effect is eliminated for blacks and smaller for Hispanics and Asians. On the other hand, including a control for neighborhood poverty actually lowers the positive effect of education and marriage on employment. The pattern of relationships between neighborhood variables and employment closely mirrors the pattern observed for labor force participation and described in the previous paragraph.

Tables 3 provides the estimates for the effect of individuals attributes on participation and employment from a model that incorporates tract fixed effects. The fixed effects results are shown in the second and fourth column while the OLS estimates from the model that does not include any neighborhood attributes are shown in the first and third columns for comparison purposes. The effect of being African-American on labor force participation and employment changes sign becoming positive in the fixed effect models and result is statistically significant for participation. The effect of being Hispanic or Asian is still negative, but smaller in magnitude than in the OLS estimates. Overall, the effect of controlling for neighborhood fixed effects is quite comparable to the effect of controlling for observable neighborhood attributes shown in Tables 2a and 2b.

Table 4a and 4b provides the estimates for the second stage estimation that relates the value of tract fixed effects to observable neighborhood attributes. The effect of both overall employment access and job specific employment access are both substantially smaller in magnitude and often not statistically significant in the second stage models arising from the fixed effects specification. Moreover, the effect of employment access appears quite sensitive to the inclusion of controls for tract racial and ethnic composition, and the coefficient on percent Asian in the tract is positive and statistically significant in the fixed effect specificaiton. The effect of neighborhood human capital variables are also substantially larger in magnitude in the model with controls for neighborhood race and ethnicity. Similar results arise in the second stage models for employment. Overall, the sensitivity of the estimation results to the inclusion of neighborhood race and ethnicity controls and the sensitivity of the direct relationship between race and ethnicity and outcomes suggests that sorting bias may be particularly pronounced when examining the labor force participation and employment outcomes of minorities.

The Inclusion of a Control for Neighborhood Unobservables

Tables 5a and 5b show the estimates from a model that includes the mean tract residual arising from an hedonic price equation as an additional regressor in order to control for neighborhood unobservables. In general, the inclusion of the mean tract residual had little or no effect of the estimated parameters in the participation and employment equations even when the coefficient estimates on the residual were statistically significant. In fact, the estimated coefficient on the mean tract residual is small and statistically insignificant except in two specifications. The first specification identifies a negative relationship between neighborhood quality and employment, which may arise in part do to the negative relationship between residents with college degrees and outcomes as compared to neighborhoods with a large number of high school graduates that have no college degrees.

On the other hand, the second significant relationship between outcomes and the mean tract residual is harder to explain. The specification that controls for neighborhood poverty identifies a negative relationship between neighborhood quality and outcomes (statistically significant for participation). No simple explanation for this counter-intuitive finding exists beyond the obvious fact that neighborhood poverty appears to provide a very powerful control for the overall relationship between outcomes and location. Quite possibly, the location unobservables captured by the mean tract residual are important factors over which households sort. So, when the mean tract residual is incorporated into the regression equation, this residual is highly correlated with individual unobservables and the estimated coefficient is biased. This possibility will be investigated in the next section.

The Use of Instruments for Individual's Neighborhood Attributes

Tables 6a and 6b show the estimates from a model that replaces tract attributes from an individual's actual tract of residence with that individual's predicted tract attributes based on the individuals observable attributes. Many of the estimated parameters exhibit a dramatic increase in magnitude while preserving the basic sign. For example, an improvement in employment access that increased both overall and job specific access by one standard deviation would increase an individuals probability of being a labor force participation by a little less than 5 percentage points on net (16.8 percentage point increase due to job specific access and a 14.1 decrease for overall access) based on model 3 in table 6a while the same change based on the OLS estimates yields a 1.6 increase based on job specific and a 2.0 decrease based on overall access. Similarly, the impacts of neighborhood human capital, race and ethnicity, family structure, and poverty have all increased in magnitude.

A number of possible explanations exist for these findings. First, a self-selection process might cause people with poor prospects to sort into locations with good opportunities leading to substantially smaller effects of neighborhood variables, which is the bias that is the focus of this paper. Second, the use of instrumental variables may eliminate attenuation bias arising from measurement error in the calculation both the employment access and neighborhood composition variables. In terms of the second explanation, we may be able to gain some insight by reducing the amount of noise in our control variables by dropping tracts with very few people or using a non-parametric kernal smoother to improve estimates of neighborhood attributes.

One might reasonably be concerned that these results are driven by a high level of correlation between different neighborhood attributes, especially between overall and job specific employment access, that might have been exacerbated by design of our instruments. Such concerns, however, should be dramatically reduced by the robustness of the estimates obtained. For example, the large estimates on the two employment access variables persist across all specifications that include both variables and only drop off significantly in the poverty specification, which is against consistent with the drop off seen in the earlier models that included tract poverty as a control variable. In addition, the pattern of results for the neighborhood variables are incredibly consistent both in terms of sign and relative magnitude between the estimated coefficients for labor force participation and employment, which would be unlikely to occur if these large values were arising due to unstable parameter estimates.

Finally, the effect of instrumenting for the tract mean residual is quite striking. The relationship reverses sign yielding a robust and substantial positive correlation between an individual's predicted tract mean residual and both labor force participation and employment. The overall magnitude of the parameter estimates are fairly stable across all specification except the first, which contains no controls for observable neighborhood attributes. It is important to note that the coefficients on mean tract residual are still negative and typically insignificant in models that control for an individual's predicted observable neighborhood attributes suggesting that individuals sorting over neighborhood unobservables lead to biased estimates on the mean tract residual.

The Use of Instruments for a Neighborhood's demographic Composition

Tables 7a and 7b include the results for a model that includes instruments from a revised mean tract residual that is calculated based on a housing price hedonic model where neighborhood attributes that are the result of household sorting are replaced with predicted values in order to insulate estimates caused because those neighborhood variables are expected to be correlated with unobserved location attributes. This final specification yields smaller estimates on both overall and job specific employment access; 30-50 percent smaller for the participation equation and dramatically smaller and often insigificant for job specific employment access in the employment equation. The coefficient estimates on other neighborhood attributes were generally unaffected by this specification change.

Summary and Conclusions

This paper presents a neighborhood sorting model and uses this model to develop econometric solutions to the classic problem of sorting bias in models that examine the influence of location on labor market outcomes. Three key sources of sorting biases are identified: correlation between individual observed attributes and unobserved neighborhood attributes, correlation between neighborhood observed attributes and unobserved individual attributes, and correlation between neighborhood observed attributes that are an aggregation of individual attributes and unobserved neighborhood attributes. These paper suggests using information on housing market outcomes to address these biases and provides both a reduced form approach and a structural solution based on the estimation of a vertical model of neighborhood sorting.

This preliminary version of the paper estimates the reduced form models using confidential from the 1990 census. The results suggest that the major source of bias arises from the sorting of households across neighborhoods based on their unobservables (results in the third subsection) rather than due to households sorting based on their observables (second subsection) or the endogeneity of location attributes that are the result of sorting (fourth subsection). The one exception is the impact of employment access on labor market outcomes, which appears to be quite sensitive bias that is caused because observable neighborhood composition is correlated with unobservable neighborhood attributes. It is notable that the results in the paper are quite robust across the two dependent variables considered: labor force participation and employment conditional on labor force participation.

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Table 1: Variable Description and Summary Statistics

Variable	Description	Size	Mean (Std. Error)
In-labor-market	Whether the person is in the labor market or not in full sample.	177,902	0.847 (0.360)
Employed	Whether person is employed or not in the full sample.	177,902	0.803 (0.397)
Employed-labor-mkt	Whether the person is employed or not provided the person is in labor market.	150,677	0.948 (0.221)
Individual Attributes: Sample of Individuals in Age group 25-59 year.			
Male	Whether the person is male or not.	177,902	0.484 (0.499)
Female	Whether the person is female or not.	177,902	0.515 (0.499)
Age25-34	Whether the person is in age group 25-34.	177,902	0.381 (0.485)
Age35-44	Whether the person is in age group 35-44.	177,902	0.316 (0.465)
Age45-59	Whether the person is in age group 45-59	177,902	0.302 (0.459)
White	Whether the person is non-Hispanic White or not.	177,902	0.878 (0.326)
Black	Whether the person is non-Hispanic African-American or not.	177,902	0.051 (0.220)
Hispanic	Whether the person is Hispanic or not.	177,902	0.037 (0.189)
Asian	Whether the person is Asian or not.	177,902	0.032 (0.178)
No-High-School	Whether the person is a high-school drop-out or not.	177,902	0.103 (0.303)
High-School	Whether the person is a high-school graduate or not.	177,902	0.249 (0.433)
Some-College	Whether the person has 2-year college degree or not.	177,902	0.247 (0.431)
College	Whether the person is a college graduate or not.	177,902	0.401 (0.489)
Single-Independent	Whether the person is single independent or not.	177,902	0.230 (0.421)
Single-parent	Whether the person is single parent or not.	177,902	0.094 (0.292)
Single-with-family-members	Whether the person is single and living with family members or not.	177,902	0.053 (0.225)
Married-with-kids	Whether the person is married without kids or not	177,902	0.260 (0.438)
Married-with-17yr-kid	Whether the person is married with 17 year old kid or not.	177,902	0.176 (0.381)
Married-with-0-5yr-kid	Whether the person is married with 0-5 year old kid or not.	177,902	0.184 (0.387)
Married-Female	Whether the person is married female or not.	177,902	0.316 (0.464)
Married-Female-kids	Whether the person is married female with kids or not.	177,902	0.181 (0.385)
Married-Female-0-5-kids	Whether the person is married female with kids aged 0-5 year or not.	177,902	0.091 (0.288)
US-born	Whether the person is US citizen by birth or not.	177,902	0.853 (0.353)
Non-US-born	Whether the person is US citizen by naturalization or not.	177,902	0.071 (0.255)
Non-US-Citizen	Whether the person is non-US citizen or not.	177,902	0.076 (0.266)

Housing Attributes: Household Sample			
room	Number of rooms.	146,496	5.463 (2.106)
bed	Number of bedrooms.	146,496	3.530 (1.203)
House-Value	Value of the housing unit.	81,848	215433.89 (104499.14)
Rent	Monthly rent of the housing unit.	57,135	590.282 (305.204)
Tenure	Whether the housing unit is owner occupied or rented.	134,511	0.598 (0.490)
Age	Age of the housing unit.	144,697	37.852 (18.369)
Units	Number of units in the building.	146,496	3.930 (2.361)
Single-Family	Whether housing unit is occupied by single family.	146,496	0.497 (0.499)
Multi-Family	Whether the housing unit is occupied by multiple family or not.	146,496	0.162 (0.368)
1-bedroom	Whether the housing unit has single bedroom or not.	146,496	0.183 (0.386)
4-bedroom	Whether the housing unit has 4 or more bedroom or not.	146,496	0.199 (0.399)
Group-Quarter	Whether there is presence of group quarters or not.	146,496	0.012 (0.110)
Neighborhood Attributes: Sample of Census Tracts in Boston Metropolitan Area			
Overall-Access	Overall employment access between tracts.	620	1.164 (0.140)
Education-Age-Access	Employment access between tracts based on Education as well as Age.	620	0.693 (0.082)
Percent-Poverty	Percent of households in poverty in a tract.	620	0.071 (0.079)
Percent-Non-High-School	Percent of individuals who are NOT high school graduates in a tract.	620	0.127 (0.115)
Percent-High-School	Percent of individuals who are high school graduates in a tract.	620	0.252 (0.111)
Percent-Some-College	Percent of individuals who has 2-year college degree in a tract.	620	0.239 (0.071)
Percent-College	Percent of individuals who are college graduates in a tract.	620	0.381 (0.209)
Percent-White	Percent of individuals who are non-Hispanic whites in a tract.	620	0.827 (0.246)
Percent-Blacks	Percent of individuals who are non-Hispanic African-Americans in a tract.	620	0.081 (0.187)
Percent-Hispanics	Percent of individuals who are Hispanics in a tract.	620	0.053 (0.094)
Percent-Asian	Percent of individuals who are Asian in a tract.	620	0.037 (0.073)
Percent-Married	Percent of individuals who are married in a tract.	620	0.579 (0.168)
Percent-Parent	Percent of individuals who are parents in a tract.	620	0.334 (0.126)
Percent-Owner-Occupied	Percent of housing units which are owner occupied in a tract.	620	0.562 (0.255)
Percent-Single-Family	Percent of housing units which are occupied by single families in a tract.	620	0.458 (0.322)
Percent-Multi-Family	Percent of housing units which are occupied by multiple families in a tract.	620	0.162 (0.187)
Percent-1-Bedroom	Percent of housing units which have single bedroom in a tract.	620	0.189 (0.160)
Percent-4-Bedroom	Percent of housing units which have 4 or more bedrooms in a tract.	620	0.192 (0.135)
Percent-Group-Quarter	Percent of housing units which group quarters in a tract.	620	0.014 (0.044)
Average-Age	Average Age of the Housing Stock in a tract	620	37.367 (9.014)

Table-2a: OLS: *In-Labor-Market* as dependent variable

Variables	OLS-1: Baseline	OLS-2: Min. Neighborhood	OLS-3: Expanded Neighborhood	OLS-4: Race & Ethnicity	OLS-5: Family	OLS-6: Poverty	OLS-7: Housing Variables
Male	0.012	0.012	0.0122	0.012	0.012	-0.016	0.016
	(2.85)	(2.79)	(2.85)	(2.85)	(2.82)	(-3.6)	(3.96)
Age35-44	0.003	0.003	0.003	0.004	0.004	0.003	0.004
	(1.23)	(1.18)	(1.31)	(1.4)	(1.38)	(0.99)	(1.5)
Age45-59	-0.046	-0.045	-0.045	-0.045	-0.045	-0.039	-0.044
	(-15.3)	(-14.93)	(-15.03)	(-15.04)	(-15.04)	(-12.3)	(-15.97)
Black	-0.012	-0.011	0.002	0.019	0.004	0.004	0.011
	(-1.86)	(-1.56)	(0.28)	(2.62)	(0.67)	(0.57)	(1.55)
Hispanic	-0.048	-0.047	-0.033	-0.028	-0.032	-0.029	-0.028
	(-5.52)	(-5.33)	(-3.72)	(-3.45)	(-3.63)	(-3.35)	(-3.38)
Asian	-0.059	-0.056	-0.051	-0.052	-0.051	-0.032	-0.044
	(-5.87)	(-5.76)	(-4.85)	(-5.69)	(-4.88)	(-3.18)	(-4.49)
No-High-School	-0.106	-0.107	-0.101	-0.101	-0.101	-0.117	-0.099
	(-17.94)	(-18.16)	(-17.77)	(-17.99)	(-17.76)	(-20.77)	(-18.07)
Some-college	0.052	0.054	0.054	0.054	0.054	0.066	0.055
	(19.77)	(20.97)	(20.75)	(20.9)	(20.71)	(23.08)	(21.03)
college	0.073	0.085	0.086	0.087	0.086	0.113	0.087
	(22.85)	()29.23	(29.54)	(29.96)	(29.37)	(35.57)	(29.51)
Single-Independent	-0.070	-0.063	-0.061	-0.061	-0.061	-0.075	-0.058
	(-14.58)	(-13.39)	(-13.01)	(-12.83)	(-13.08)	(-14.87)	(-13.35)
Single-parent	-0.058	-0.056	-0.055	-0.055	-0.055	-0.102	-0.056
	(-15.45)	(-15.04)	(-14.84)	(-14.76)	(-14.59)	(-23.24)	(-15.5)
Single-with-family-members	-0.163	-0.163	-0.159	-0.159	-0.158	-0.190	-0.156
	(-21.43)	(-21.58)	(-21.09)	(-20.9)	(-20.87)	(-25.17)	(-21.74)
Married-with-17yr-kid	0.021	0.019	0.019	0.0191	0.021	0.020	0.019
	(7.8)	(6.91)	(6.75)	(6.82)	(6.82)	(6.05)	(6.94)
Married-with-0-5yr-kid	0.005	0.003	0.003	0.003	0.004	0.007	0.003
	(1.91)	(1.2)	(1.16)	(1.19)	(1.49)	(2.25)	(1.07)
Married-Female	-0.124	-0.123	-0.123	-0.123	-0.123	-0.138	-0.120
	(-23.25)	(-23.43)	(-23.34)	(-23.28)	(-23.33)	(-24.73)	(-23.55)
Married-Female-kids	-0.061	-0.061	-0.061	-0.061	-0.061	-0.061	-0.061
	(-12.37)	(-12.34)	(-12.36)	(-12.34)	(-12.37)	(-11.7)	(-12.33)
Married-Female-0-5-kids	-0.161	-0.161	-0.161	-0.161	-0.161	-0.164	-0.161
	(-27.93)	(-28.08)	(-28.06)	(-28.05)	(-28.06)	(-26.06)	(-28.07)
Non-US-born	0.013	0.017	0.018	0.018	0.018	0.018	0.0152
	(3.17)	(4.14)	(4.47)	(4.51)	(4.48)	(4.09)	(3.77)
Non-US-Citizen	-0.018	-0.012	-0.009	-0.011	-0.011	-0.023	-0.013
	(-2.85)	(-2)	(-1.55)	(-1.69)	(-1.61)	(-3.75)	(-2.26)
Overall-Access		-0.093	-0.142	-0.143	-0.151	-0.091	-0.239
		(-4.78)	(-3.75)	(-3.85)	(-3.77)	(-2.55)	(-7.23)
Education-Age-Access			0.192	0.201	0.198	0.175	0.278
			(3.47)	(3.59)	(3.58)	(3.37)	(6.18)
Percent-Non-High-School			-0.248	-0.211	-0.234	-0.035	-0.195
			(-6.6)	(-3.54)	(-5.62)	(-0.58)	(-5.38)
Percent-College		-0.053	-0.143	-0.142	-0.144	-0.110	-0.074
		(-4.89)	(-9.53)	(-8.63)	(-9.53)	(-6.81)	(-5.21)
Percent-Blacks				-0.051			
				(-2.66)			
Percent-Hispanics				0.025			
				(0.42)			
Percent-Asian				-0.028			
				(-0.53)			
Percent-Married					0.074		
					(1.95)		
Percent-Parent					-0.101		
					(-2.37)		
Percent-Poverty						-0.526	
						(-7.03)	
Percent-Group-Quarter							-0.743
							(-14.07)
Percent-Single-Family							-0.0003
							(-0.03)
Percent-Multi-Family							-0.077
							(-4.11)
Percent-1-Bedroom							0.009
							(0.36)
Percent-4-Bedroom							-0.116
							(-7.21)
Average-Age							0.0005
							(2.15)

Table-2b: OLS with *Employed* as the dependent variable

Variables	OLS-1: Baseline	OLS-2: Min. Neighborhood	OLS-3: Expanded Neighborhood	OLS-4: Race & Ethnicity	OLS-5: Family	OLS-6: Poverty	OLS-7: Housing Variables
Male	-0.016	-0.016	-0.016	-0.016	-0.016	0.013	-0.013
	(-3.74)	(-3.84)	(-3.75)	(-3.75)	(-3.77)	(2.91)	(-3.19)
age35-44	0.003	0.003	0.003	0.003	0.003	0.003	0.003
	(1.18)	(1.01)	(1.15)	(1.23)	(1.17)	(1.17)	(1.34)
age45-59	-0.038	-0.038	-0.038	-0.038	-0.038	-0.046	-0.037
	(-11.86)	(-11.79)	(-11.92)	(-11.89)	(-11.91)	(-15.39)	(-12.26)
Black	-0.031	-0.026	-0.011	0.005	-0.008	0.0153	-0.002
	(-3.83)	(-3.3)	(-1.4)	(0.76)	(-1.02)	(2.32)	(-0.28)
Hispanic	-0.058	-0.055	-0.038	-0.034	-0.037	-0.025	-0.034
	(-6.19)	(-5.9)	(-4.13)	(-3.98)	(-4.04)	(-3)	(-3.77)
Asian	-0.049	-0.045	-0.038	-0.040	-0.039	-0.045	-0.032
	(-4.81)	(-4.61)	(-3.62)	(-4.38)	(-3.65)	(-4.54)	(-3.11)
No-High-School	-0.125	-0.125	-0.117	-0.117	-0.117	-0.101	-0.116
	(-21.17)	(-21.32)	(-20.79)	(-21)	(-20.77)	(-17.77)	(-21.07)
Some-College	0.066	0.067	0.066	0.066	0.066	0.054	0.067
	(22.49)	(23.17)	(23)	(23.15)	(22.95)	(20.79)	(23.22)
College	0.103	0.112	0.113	0.114	0.113	0.086	0.114
	(30.16)	(35.35)	(35.67)	(36.1)	(35.45)	(29.44)	(35.63)
Single-Independent	-0.087	-0.081	-0.078	-0.078	-0.077	-0.058	-0.075
	(-17.52)	(-16.29)	(-15.95)	(-15.81)	(-16.08)	(-11.97)	(-16.39)
Single-Parent	-0.104	-0.102	-0.101	-0.101	-0.101	-0.056	-0.103
	(-23.46)	(-23.05)	(-22.94)	(-22.87)	(-22.72)	(-15.09)	(-23.45)
Single-with-family-members	-0.199	-0.198	-0.194	-0.192	-0.192	-0.156	-0.191
	(-26.05)	(-26.17)	(-25.74)	(-25.49)	(-25.46)	(-20.58)	(-26.36)
Married-with-17yr-kid	0.024	0.021	0.021	0.021	0.022	0.018	0.021
	(7.19)	(6.4)	(6.23)	(6.28)	(6.36)	(6.58)	(6.39)
Married-with-0-5yr-kid	0.010	0.008	0.008	0.008	0.009	0.003	0.007
	(3.13)	(2.5)	(2.46)	(2.49)	(2.71)	(0.96)	(2.32)
Married-Female	-0.140	-0.139	-0.139	-0.139	-0.139	-0.122	-0.136
	(-24.83)	(-24.98)	(-24.92)	(-24.89)	(-24.92)	(-23.11)	(-25)
Married-Female-kids	-0.061	-0.061	-0.061	-0.061	-0.061	-0.061	-0.061
	(-11.72)	(-11.71)	(-11.73)	(-11.72)	(-11.74)	(-12.33)	(-11.7)
Married-Female-0-5-kids	-0.163	-0.164	-0.164	-0.164	-0.164	-0.161	-0.164
	(-25.93)	(-26.06)	(-26.04)	(-26.03)	(-26.03)	(-28.08)	(-26.03)
Non-US-born	0.014	0.018	0.019	0.019	0.019	0.017	0.016
	(3.09)	(4)	(4.37)	(4.4)	(4.38)	(4.18)	(3.7)
Non-US-Citizen	-0.032	-0.026	-0.022	-0.023	-0.022	-0.011	-0.026
	(-4.72)	(-3.95)	(-3.45)	(-3.6)	(-3.48)	(-1.73)	(-4.21)
Overall-Access		-0.107	-0.164	-0.165	-0.167	-0.079	-0.261
		(-5.3)	(-4.31)	(-4.42)	(-4.18)	(-2.25)	(-7.43)
Education-Age-Access			0.228	0.237	0.234	0.147	0.305
			(4.04)	(4.15)	(4.16)	(2.85)	(6.38)
Percent-Non-High-School			-0.297	-0.265	-0.275	-0.024	-0.241
			(-6.93)	(-4.32)	(-5.83)	(-0.41)	(-5.65)
Percent-College		-0.035	-0.142	-0.143	-0.142	-0.116	-0.065
		(-3.09)	(-8.97)	(-8.48)	(-8.91)	(-7.32)	(-4.15)
Percent-Blacks				-0.049			
				(-2.31)			
Percent-Asian				0.034			
				(0.51)			
Percent-Hispanic				-0.025			
				(-0.45)			
Percent-Married					0.092		
					(2.28)		
Percent-Parent					-0.111		
					(-2.53)		
Percent-Poverty						-0.451	
						(-5.98)	

Percent-Group-Quarter	-0.688 (-11.82)
Percent-Single-Family	-0.0000 (-0.01)
Percent-Multi-Family	-0.085 (-3.9)
Percent-1-Bedroom	-0.008 (-0.3)
Percent-4-Bedroom	-0.132 (-7.55)
Average-Age	0.0006 (2.29)

Table 3: First Stage Fixed Effect Models

	***In-Labor-Market* as Dependent variable**		***Employed* as Dependent variable**	
Variable	**OLS-1**	**FE:**	**OLS-1**	**FE:**
Male	0.012 (2.85)	0.015 (3.92)	-0.016 (-3.74)	-0.013 (-3.28)
Age35-44	0.003 (1.23)	0.004 (1.65)	0.003 (1.18)	0.004 (1.42)
Age45-59	-0.046 (-15.3)	-0.043 (-15.99)	-0.038 (-11.86)	-0.036 (-12.27)
Black	-0.012 (-1.86)	0.021 (2.74)	-0.031 (-3.83)	0.006 (0.9)
Hispanic	-0.048 (-5.52)	-0.024 (-3.05)	-0.058 (-6.19)	-0.030 (-3.54)
Asian	-0.059 (-5.87)	-0.047 (-5.23)	-0.049 (-4.81)	-0.035 (-3.86)
No-High-School	-0.106 (-17.94)	-0.101 (-18)	-0.125 (-21.17)	-0.116 (-20.93)
Some-College	0.052 (19.77)	0.054 (20.84)	0.066 (22.49)	0.066 (23)
College	0.074 (22.85)	0.087 (29.65)	0.103 (30.16)	0.114 (35.71)
Single-Independent	-0.070 (-14.58)	-0.059 (-13.36)	-0.087 (-17.52)	-0.075 (-16.39)
Single-Parent	-0.058 (-15.45)	-0.055 (-15.26)	-0.104 (-23.46)	-0.101 (-23.41)
Single-living-with-Family	-0.164 (-21.43)	-0.151 (-21.29)	-0.199 (-26.05)	-0.185 (-25.65)
Married-with-17yr-kid	0.021 (7.8)	0.021 (7.35)	0.024 (7.19)	0.023 (6.82)
Married-with-0-5yr-kid	0.005 (1.91)	0.004 (1.45)	0.010 (3.13)	0.009 (2.76)
Married-Female	-0.124 (-23.25)	-0.119 (-23.46)	-0.140 (-24.83)	-0.136 (-24.97)
Married-Female-Kids	-0.061 (-12.37)	-0.061 (-12.36)	-0.061 (-11.72)	-0.061 (-11.72)
Married-Female-0-5-Kids	-0.161 (-27.93)	-0.161 (-28.15)	-0.163 (-25.93)	-0.164 (-26.1)
Non-US-born	0.013 (3.17)	0.014 (3.35)	0.014 (3.09)	0.014 (3.15)
Non-US-Citizen	-0.018 (-2.85)	-0.016 (-2.84)	-0.032 (-4.72)	-0.029 (-5.04)

Table 4a: Second Stage Fixed Effect Models: *In-Labor-Market* as Dependent Variable

Variables	FE-1	FE-2	FE-3	FE-4	FE-5	FE-6
	-0.157	-0.091	-0.173	-0.061		-0.082
Overall-Access	(-8.07)	(-1.04)	(-1.97)	(-0.67)	*	(-1.16)
		0.063	0.219	0.071		0.071
Education-Age-Access		(0.41)	(1.42)	(0.46)	*	(0.58)
Percent-Non-High-		-0.336	-0.378	-0.284	-0.192	-0.313
School		(-9.69)	(-8.31)	(-7.43)	(-4.49)	(-10.01)
	0.007	-0.132	-0.171	-0.129	-0.123	-0.075
Percent-College	(0.53)	(-6.47)	(-7.91)	(-6.22)	(-5.78)	(-3.89)
			-0.046			
Percent-Blacks			(-2.91)			
			0.048			
Percent-Asian			(1.28)			
			0.154			
Percent-Hispanic			(4.13)			
				0.148		
Percent-Married				(3.19)		
				-0.125		
Percent-Parent				(-2.24)		
					-0.296	
Percent-Poverty					(-5.83)	
						-0.849
Percent-Group-Quarter						(-18.15)
						-0.011
Percent-Single-Family						(-0.69)
						-0.078
Percent-Multi-Family						(-3.79)
						-0.019
Percent-1-Bedroom						(-0.75)
						-0.111
Percent-4-Bedroom						(-3.99)
						0.0007
Average-Age						(2.14)

Table 4b: Second Stage Fixed Effect Models: *Employed* as Dependent Variable

Variable	FE-1	FE-2	FE-3	FE-4	FE-5	FE-6
	-0.181	-0.082	-0.176	-0.039		-0.065
Overall-Access	(-8.84)	(-0.9)	(-1.95)	(-0.43)	*	(-0.85)
		0.031	0.212	0.041		0.022
Education-Age-Access		(0.2)	(1.33)	(0.26)	*	(0.16)
Percent-Non-High-		-0.390	-0.436	-0.319	-0.206	-0.358
School		(-10.82)	(-9.28)	(-8.1)	(-4.71)	(-10.56)

Percent-College	0.037 (2.69)	-0.121 (-5.74)	-0.166 (-7.46)	-0.117 (-5.48)	-0.110 (-5.06)	-0.050 (-2.38)
Percent-Blacks			-0.056 (-3.45)			
Percent-Asian			0.056 (1.45)			
Percent-Hispanic			0.174 (4.51)			
Percent-Married				0.198 (4.15)		
Percent-Parent				-0.166 (-2.89)		
Percent-Poverty					-0.377 (-7.24)	
Percent-Group-Quarter						-0.780 (-15.4)
Percent-Single-Family						-0.010 (-0.65)
Percent-Multi-Family						-0.101 (-4.47)
Percent-1-Bedroom						-0.026 (-0.92)
Percent-4-Bedroom						-0.142 (-4.72)
Average-Age						0.0006 (1.75)

* There was a problem disclosing these parameter estimates, and they will be available upon the next revision of the manuscript.

Table 5a: Housing Stage-2: *In-Labor-Market* as dependent variable

Variable	HS-1	HS-2	HS-3	HS-4	HS-5	HS-6	HS-7
Male	0.012	0.012	0.012	0.012	0.012	0.013	0.014
	(2.93)	(2.78)	(2.86)	(2.86)	(2.84)	(2.97)	(3.49)
Age35-44	0.004	0.003	0.003	0.004	0.004	0.003	0.004
	(1.38)	(1.18)	(1.31)	(1.4)	(1.37)	(1.17)	(1.61)
Age45-59	-0.044	-0.045	-0.045	-0.045	-0.045	-0.046	-0.044
	(-14.52)	(-14.94)	(-14.97)	(-14.95)	(-14.98)	(-15.25)	(-15.11)
Black	-0.019	-0.009	0.002	0.019	0.004	0.014	0.012
	(-2.72)	(-1.35)	(0.29)	(2.62)	(0.64)	(2.19)	(1.82)
Hispanic	-0.052	-0.046	-0.033	-0.028	-0.032	-0.025	-0.028
	(-5.84)	(-5.3)	(-3.73)	(-3.45)	(-3.65)	(-3.01)	(-3.38)
Asian	-0.059	-0.056	-0.050	-0.052	-0.051	-0.045	-0.044
	(-5.94)	(-5.77)	(-4.86)	(-5.71)	(-4.89)	(-4.51)	(-4.33)
No-High-School	-0.108	-0.106	-0.101	-0.101	-0.101	-0.101	-0.099
	(-18.25)	(-17.97)	(-17.74)	(-17.96)	(-17.75)	(-17.78)	(-17.95)
Some-College	0.055	0.054	0.054	0.054	0.054	0.054	0.055
	(20.63)	(20.96)	(20.75)	(20.9)	(20.71)	(20.81)	(20.94)
College	0.081	0.085	0.086	0.087	0.086	0.086	0.087
	(25.24)	(29.31)	(29.53)	(29.91)	(29.39)	(29.44)	(29.51)
Single-Independent	-0.069	-0.063	-0.061	-0.061	-0.061	-0.059	-0.061
	(-14.67)	(-13.26)	(-12.95)	(-12.77)	(-13.19)	(-11.95)	(-13.18)
Single-Parent	-0.058	-0.056	-0.055	-0.055	-0.055	-0.056	-0.056
	(-15.52)	(-15.06)	(-14.86)	(-14.77)	(-14.59)	(-15.08)	(-15.21)
Single-living-with-Family	-0.165	-0.163	-0.159	-0.158	-0.158	-0.156	-0.157
	(-21.58)	(-21.39)	(-21.01)	(-20.85)	(-20.86)	(-20.61)	(-21.06)
Married-with-17yr-kid	0.021	0.0193	0.019	0.019	0.021	0.018	0.019
	(7.63)	(6.91)	(6.74)	(6.81)	(6.85)	(6.55)	(6.99)
Married-with-0-5yr-kid	0.005	0.003	0.003	0.003	0.004	0.002	0.004
	(1.7)	(1.23)	(1.16)	(1.18)	(1.49)	(0.91)	(1.28)
Married-Female	-0.123	-0.123	-0.123	-0.123	-0.123	-0.122	-0.121
	(-23.52)	(-23.52)	(-23.45)	(-23.39)	(-23.44)	(-23.18)	(-23.49)
Married-Female-Kids	-0.061	-0.061	-0.061	-0.061	-0.061	-0.061	-0.061
	(-12.34)	(-12.34)	(-12.36)	(-12.34)	(-12.37)	(-12.32)	(-12.31)
Married-Female-0-5-Kids	-0.161	-0.161	-0.161	-0.161	-0.161	-0.161	-0.161
	(-27.99)	(-28.07)	(-28.06)	(-28.05)	(-28.06)	(-28.09)	(-28.06)
Non-US-born	0.014	0.017	0.018	0.018	0.018	0.017	0.015
	(3.43)	(4.13)	(4.47)	(4.52)	(4.49)	(4.19)	(3.91)
Non-US-Citizen	-0.017	-0.013	-0.009	-0.010	-0.009	-0.009	-0.013
	(-2.58)	(-2.04)	(-1.55)	(-1.67)	(-1.57)	(-1.64)	(-2.19)
Overall-Access		-0.095	-0.142	-0.143	-0.149	-0.074	-0.226
		(-4.95)	(-3.74)	(-3.83)	(-3.74)	(-2.12)	(-5.76)
Education-Age-Access			0.192	0.201	0.197	0.138	0.235
			(3.44)	(3.55)	(3.54)	(2.66)	(4.76)
Percent-Non-High-School			-0.249	-0.211	-0.233	-0.022	-0.237
			(-6.6)	(-3.54)	(-5.58)	(-0.37)	(-6.01)
Percent-College		-0.052	-0.143	-0.142	-0.143	-0.115	-0.069
		(-4.77)	(-9.53)	(-8.66)	(-9.52)	(-7.31)	(-4.25)
Percent-Blacks				-0.051			
				(-2.65)			
Percent-Asian				0.025			
				(0.41)			
Percent-Hispanic				-0.029			
				(-0.54)			
Percent-Married					0.074		
					(1.95)		
Percent-Parent					-0.101		
					(-2.37)		
Percent-Poverty						-0.452	
						(-5.99)	
Percent-Group-Quarter							-0.813
							(-6.79)
Percent-Single-Family							-0.011
							(-0.97)
Percent-Multi-Family							-0.072
							(-3.75)

Percent-1-Bedroom							-0.021 (-0.83)
Percent-4-Bedroom							-0.143 (-6.52)
Average-Age							0.0006 (2.03)
mhres1	-0.043 (-3.73)						
mhres2		0.021 (1.04)					
mhres3			0.001 (0.07)				
mhres4				-0.004 (-0.19)			
mhres5					-0.008 (-0.38)		
mhres6						-0.035 (-1.96)	
mhres7							0.021 (1.29)

Table 5b: Housing Stage-2: *Employed* as dependent variable

	HS-1	HS-2	HS-3	HS-4	HS-5	HS-6	HS-7
Male	-0.016 (-3.73)	-0.016 (-3.88)	-0.016 (-3.78)	-0.016 (-3.77)	-0.016 (-3.79)	-0.015 (-3.58)	-0.014 (-3.4)
Age35-44	0.004 (1.26)	0.003 (1)	0.003 (1.15)	0.003 (1.23)	0.003 (1.17)	0.003 (0.99)	0.004 (1.44)
Age45-59	-0.038 (-11.36)	-0.039 (-11.86)	-0.038 (-11.93)	-0.038 (-11.88)	-0.038 (-11.89)	-0.039 (-12.21)	-0.037 (-11.73)
Black	-0.035 (-4.25)	-0.024 (-3.02)	-0.010 (-1.33)	0.005 (0.76)	-0.008 (-1.01)	0.004 (0.5)	-0.0004 (-0.05)
Hispanic	-0.061 (-6.37)	-0.054 (-5.85)	-0.038 (-4.13)	-0.034 (-3.98)	-0.037 (-4.05)	-0.031 (-3.35)	-0.033 (-3.77)
Asian	-0.049 (-4.84)	-0.045 (-4.59)	-0.038 (-3.62)	-0.040 (-4.39)	-0.038 (-3.65)	-0.032 (-3.16)	-0.031 (-2.97)
No-High-School	-0.126 (-21.4)	-0.125 (-21.07)	-0.117 (-20.74)	-0.117 (-20.96)	-0.117 (-20.74)	-0.117 (-20.77)	-0.117 (-20.92)
Some-College	0.067 (23.13)	0.067 (23.16)	0.066 (23)	0.066 (23.15)	0.066 (22.96)	0.066 (23.09)	0.067 923.21)
College	0.107 (31.99)	0.112 (35.41)	0.113 (35.67)	0.114 (36.07)	0.113 (35.46)	0.113 (35.56)	0.114 (35.63)
Single-Independent	-0.087 (-17.63)	-0.080 (-16.19)	-0.077 (-15.9)	-0.078 (-15.76)	-0.077 (-16.18)	-0.075 (-14.84)	-0.077 (-16.13)
Single-Parent	-0.104 (-23.5)	-0.102 (-23.08)	-0.101 (-22.96)	-0.101 (-22.9)	-0.101 (-22.73)	-0.102 (-23.22)	-0.102 (-23.3)
Single-living-with-Family	-0.201 (-26.16)	-0.198 (-25.97)	-0.193 (-25.64)	-0.192 (-25.44)	-0.192 (-25.44)	-0.190 (-25.2)	-0.191 (-25.73)
Married-with-17yr-kid	0.023 (7.1)	0.021 (6.41)	0.021 (6.23)	0.021 (6.29)	0.021 (6.36)	0.020 (6.03)	0.021 (6.44)
Married-with-0-5yr-kid	0.009 (3.02)	0.008 (2.54)	0.008 (2.47)	0.008 (2.5)	0.009 (2.71)	0.007 (2.21)	0.008 (2.5)
Married-Female	-0.139 (-25.05)	-0.139 (-25.07)	-0.139 (-25.02)	-0.139 (-24.99)	-0.139 (-25.01)	-0.139 (-24.79)	-0.137 (-24.97)
Married-Female-Kids	-0.061 (-11.71)	-0.061 (-11.71)	-0.061 (-11.73)	-0.061 (-11.72)	-0.061 (-11.74)	-0.061 (-11.7)	-0.061 (-11.68)
Married-Female-0-5-Kids	-0.164 (-25.98)	-0.164 (-26.05)	-0.164 (-26.04)	-0.164 (-26.03)	-0.164 (-26.03)	-0.164 (-26.06)	-0.164 (-26.02)
Non-US-born	0.014 (3.24)	0.018 (3.99)	0.019 (4.36)	0.019 (4.4)	0.019 (4.39)	0.018 (4.1)	0.017 (3.79)
Non-US-Citizen	-0.031 (-4.59)	-0.026 (-4.03)	-0.022 (-3.49)	-0.023 (-3.62)	-0.023 (-3.48)	-0.023 (-3.68)	-0.026 (-4.21)
Overall-Access		-0.109 (-5.54)	-0.166 (-4.33)	-0.167 (-4.42)	-0.167 (-4.16)	-0.086 (-2.46)	-0.249 (-6.23)
Education-Age-Access			0.230 (4.05)	0.238 (4.15)	0.235 (4.14)	0.169 (3.21)	0.264 (5.13)
Percent-Non-High-School			0.298 (-6.97)	-0.267 (-4.37)	-0.275 (-5.82)	-0.034 (-0.56)	-0.280 (-6.21)
Percent-College		-0.033 (-2.93)	-0.143 (-8.99)	-0.143 (-8.51)	-0.142 (-8.91)	-0.110 (-6.8)	-0.061 (-3.41)
Percent-Blacks				-0.049 (-2.33)			
Percent-Asian				0.034 (0.52)			
Percent-Hispanic				-0.024 (-0.43)			
Percent-Married					0.092 (2.29)		
Percent-Parent					-0.111 (-2.55)		
Percent-Poverty						-0.527 (-7.03)	

Percent-Group-Quarter							-0.747
							(-6.27)
Percent-Single-Family							-0.012
							(-0.94)
Percent-Multi-Family							-0.077
							(-3.73)
Percent-1-Bedroom							-0.041
							(-1.49)
Percent-4-Bedroom							-0.159
							(-6.81)
Average-Age							0.0007
							(2.18)
mhres1	-0.026						
	(-2.15)						
mhres2		0.037					
		(1.76)					
mhres3			0.014				
			(0.7)				
mhres4				0.009			
				(0.46)			
mhres5					0.003		
					(0.16)		
mhres6						-0.027	
						(-1.49)	
mhres7							0.034
							(2.01)

Table 6a: Housing Stage-3a: *In-Labor-Market* as dependent variable

All 'c' vars	HS-1	HS-2	HS-3	HS-4	HS-5	HS-6	HS-7
Male	0.011	0.004	0.003	0.0016	-0.0000	0.007	0.015
	(2.5)	(1.01)	(0.73)	(0.36)	(-0.02)	(1.72)	(3.54)
Age35-44	0.002	0.006	0.007	0.009	0.009	0.006	0.004
	(0.91)	(2.04)	(2.59)	(3.01)	(3.30)	(1.98)	(1.23)
Age45-59	-0.051	-0.051	-0.047	-0.044	-0.040	-0.050	-0.045
	(-14.98)	(-12.69)	(-11.82)	(-10.75)	(-9.28)	(-12.43)	(-9.6)
Black	0.025	0.046	0.026	0.043	0.025	0.059	0.109
	(2.57)	(3.84)	(1.82)	(1.97)	(1.44)	(3.81)	(6.87)
Hispanic	-0.026	0.0006	-0.001	0.0000	0.003	0.002	0.027
	(-2.82)	(0.05)	(-0.09)	(0.01)	(0.21)	(0.21)	(2.17)
Asian	-0.059	-0.047	-0.049	-0.104	-0.053	-0.027	0.0007
	(-5.79)	(-4.59)	(-4.12)	(-7.21)	(-4.46)	(-2.28)	(0.07)
No-High-School	-0.098	-0.091	-0.091	-0.079	-0.092	-0.104	-0.091
	(-16.86)	(-13.84)	(-13.72)	(-13.17)	(-13.8)	(-16.54)	(-14.89)
Some-College	0.043	0.058	0.059	0.054	0.056	0.061	0.061
	(13.55)	(15.47)	(15.79)	(14.29)	(15.33)	(16.44)	(16.08)
College	0.041	0.093	0.095	0.094	0.093	0.095	0.085
	(6.21)	(11.49)	(12.26)	(12.14)	(12.2)	(12.36)	(11.44)
Single-Independent	-0.076	-0.063	-0.064	-0.064	-0.074	-0.057	-0.061
	(-15.73)	(-8.79)	(-8.89)	(-8.93)	(-9.1)	(-7.49)	(-8.23)
Single-Parent	-0.058	-0.058	-0.057	-0.053	-0.049	-0.063	-0.054
	(-15.33)	(-14.32)	(-13.87)	(-12.52)	(-11.05)	(-15.59)	(-10.64)
Single-living-with-Family	-0.158	-0.151	-0.151	-0.146	-0.151	-0.147	-0.143
	(-20.57)	(-19.1)	(-19.14)	(-18.62)	(-18.04)	(-18.5)	(-18.51)
Married-with-17yr-kid	0.025	0.024	0.023	0.023	0.029	0.021	0.026
	(8.56)	(6.73)	(6.55)	(6.52)	(6.09)	(6.13)	(7.03)
Married-with-0-5yr-kid	0.009	0.011	0.009	0.009	0.017	0.006	0.011
	(3.19)	(3.28)	(2.91)	(2.83)	(3.77)	(1.83)	(3.04)
Married-Female	-0.128	-0.130	-0.131	-0.133	-0.135	-0.128	-0.123
	(-24.39)	(-25.01)	(-24.82)	(-25.01)	(-25.12)	(-24.19)	(-23.31)
Married-Female-Kids	-0.061	-0.061	-0.061	-0.061	-0.061	-0.061	-0.059
	(-12.52)	(-12.43)	(-12.54)	(-12.52)	(-12.45)	(-12.46)	(-11.99)
Married-Female-0-5-Kids	-0.158	-0.161	-0.161	-0.161	-0.161	-0.161	-0.162
	(-27.65)	(-28.05)	(-28.01)	(-28.01)	(-27.96)	(-28.03)	(-28.13)
Non-US-born	0.004	0.005	0.003	0.003	0.004	-0.0008	-0.004
	(0.81)	(1.04)	(0.58)	(0.58)	(0.68)	(-0.17)	(-0.75)
Non-US-Citizen	-0.028	-0.029	-0.031	-0.031	-0.030	-0.034	-0.037
	(-4.73)	(-4.91)	(-4.86)	(-4.99)	(-4.81)	(-5.36)	(-6.01)
Overall-Access		-0.062	-1.005	-1.312	-1.665	-0.387	-2.052
		(-0.83)	(-2.66)	(-3.51)	(-4.33)	(-1.08)	(-5.45)
Education-Age-Access			2.054	2.545	2.371	1.541	1.931
			(3.25)	(4.05)	(3.77)	(2.51)	(3.04)
Percent-Non-High-School			-0.654	-1.268	-0.314	1.158	-0.591
			(-4.27)	(-4.02)	(-1.96)	(4.16)	(-2.88)
Percent-College		-0.085	-0.447	-0.653	-0.359	-0.182	-0.012
		(-1.66)	(-6.18)	(-6.92)	(-5.13)	(-2.22)	(-0.1)
Percent-Blacks				-0.114			
				(-1.62)			
Percent-Asian				0.999			
				(6.38)			
Percent-Hispanic				0.336			
				(1.75)			
Percent-Married					0.788		
					(2.91)		
Percent-Parent					-1.335		
					(-4.1)		
Percent-Poverty						-3.059	
						(-9.19)	
Percent-Group-Quarter							-5.358
							(-8.22)

Percent-Single-Family							-0.189
							(-1.49)
Percent-Multi-Family							-0.672
							(-4.04)
Percent-1-Bedroom							0.547
							(2.41)
Percent-4-Bedroom							-0.137
							(-0.76)
Average-Age							0.012
							(5.25)
Cmhres1	0.211						
	(4.92)						
cmhres2		1.326					
		(12.21)					
cmhres3			1.305				
			(11.31)				
cmhres4				1.193			
				(10.46)			
cmhres5					1.384		
					(11.32)		
cmhres6						0.950	
						(8.06)	
cmhres7							1.086
							(9.93)

Table 6b: Housing Stage-3a: *Employed* as dependent variable

All 'c' vars	HS-1	HS-2	HS-3	HS-4	HS-5	HS-6	HS-7
Male	-0.018 (-4.17)	0.025 (-5.88)	0.026 (-5.79)	0.027 (-6.26)	0.029 (-6.46)	0.021 (-4.68)	0.015 (-3.54)
Age35-44	0.003 (0.88)	0.01 (3)	0.011 (3.69)	0.013 (4.23)	0.013 (4.35)	0.009 (3.09)	0.008 (2.81)
Age45-59	-0.043 (-11.94)	-0.039 (-9.5)	0.035 (-8.34)	0.032 (-7.28)	0.028 (-6.26)	0.038 (-9.02)	0.031 (-6.42)
Black	0.006 (0.55)	0.016 (1.29)	0.003 (0.23)	0.026 (1.11)	0.004 (0.22)	0.038 (2.4)	0.097 (5.87)
Hispanic	0.036 (-3.74)	-0.015 (-1.43)	0.007 (-0.61)	0.014 (-0.97)	0.003 (-0.24)	0.004 (-0.32)	0.019 (1.55)
Asian	0.048 (-4.74)	0.039 (-3.79)	0.036 (-3.04)	-0.098 (-7.09)	0.039 (-3.38)	0.011 (-0.97)	0.003 (0.27)
No-High-School	-0.117 (-19.71)	0.111 (-17.12)	0.108 (-16.13)	0.093 (-14.48)	0.109 (-16.21)	0.122 (-18.75)	0.11 (-17.37)
Some-College	0.056 (16.47)	0.0788 (19.65)	0.079 (20.01)	0.073 (18.24)	0.076 (19.47)	0.081 (20.68)	0.081 (19.71)
College	0.070 (9.99)	0.137 (16.43)	0.141 (17.4)	0.139 (17.2)	0.139 (17.32)	0.142 (17.53)	0.13 (16.6)
Single-Independent	0.093 (-18.53)	0.086 (-12.05)	0.086 (-12.07)	0.086 (-12.12)	0.096 (-11.77)	0.079 (-10.43)	0.082 (-11.18)
Single-Parent	0.104 (-23.34)	0.107 (-22.86)	0.107 (-22.44)	0.102 (-20.85)	0.099 (-19.37)	-0.114 (-24)	0.101 (-17.51)
Single-living-with-Family	-0.194 (-25.2)	0.187 (-23.86)	0.187 (-23.73)	0.180 (-23.03)	-0.186 (-21.96)	0.183 (-22.96)	0.176 (-22.74)
Married-with-17yr-kid	0.026 (7.91)	0.028 (7.27)	0.028 (7.16)	0.028 (7.13)	0.035 (6.75)	0.027 (6.76)	0.032 (7.9)
Married-with-0-5yr-kid	0.013 (4.21)	0.018 (5.03)	0.017 (4.75)	0.017 (4.7)	0.026 (5.15)	0.013 (3.7)	0.020 (5.07)
Married-Female	0.144 (-25.81)	0.146 (-26.39)	0.146 (-26.16)	0.148 (-26.48)	0.150 (-26.44)	0.142 (-25.43)	-0.139 (-24.68)
Married-Female-Kids	0.061 (-11.87)	-0.061 (-11.74)	0.061 (-11.85)	-0.061 (-11.81)	0.061 (-11.75)	0.061 (-11.77)	0.059 (-11.3)
Married-Female-0-5-Kids	0.161 (-25.7)	0.165 (-26.12)	0.165 (-26.1)	0.165 (-26.11)	0.165 (-26.06)	0.165 (-26.14)	0.165 (-26.2)
Non-US-born	0.004 (0.94)	0.001 (0.27)	0.0003 (0.06)	0.00007 (-0.01)	0.0008 (0.15)	0.004 (-0.67)	0.006 (-1.14)
Non-US-Citizen	0.042 (-6.49)	0.048 (-7.56)	0.048 (-7.25)	0.049 (-7.44)	0.048 (-7.2)	-0.051 (-7.79)	0.054 (-8.29)
Overall-Access		0.071 (0.94)	0.694 (-1.81)	-1.09 (-2.87)	-1.364 (-3.41)	-0.025 (-0.07)	-1.676 (-4.21)
Education-Age-Access			1.949 (2.97)	2.608 (3.96)	2.275 (3.45)	1.409 (2.2)	1.747 (2.6)
Percent-Non-High-School			0.963 (-6.1)	-1.805 (-5.73)	0.569 (-3.44)	1.031 (3.59)	0.655 (-2.99)
Percent-College		0.185 (-3.6)	0.654 (-8.3)	0.922 (-9.39)	0.562 (-7.21)	0.366 (-4.17)	0.105 (-0.78)
Percent-Blacks				0.131 (-1.71)			
Percent-Asian				1.181 (7.48)			
Percent-Hispanic				0.526 (2.74)			
Percent-Married					0.968 (3.29)		
Percent-Parent					-1.548 (-4.43)		
Percent-Poverty						-3.382 (-9.46)	
Percent-Group-Quarter							-4.948 (-7.56)

Percent-Single-Family							0.030 (-0.24)
Percent-Multi-Family							0.625 (-3.48)
Percent-1-Bedroom							0.568 (2.36)
Percent-4-Bedroom							0.399 (-2.1)
Average-Age							0.011 (4.51)
Cmhres1	0.210 (4.67)						
Cmhres2		1.593 (14.22)					
Cmhres3			1.519 (12.83)				
Cmhres4				1.391 (11.83)			
Cmhres5					1.601 (12.77)		
Cmhres6						1.138 (9.25)	
Cmhres7							1.361 (11.65)

Table 7a: Final Part Analysis: ***In-Labor-Market*** **as dependent variable**

'c' vars	FP-1	FP-2	FP-3	FP-4	FP-5	FP-6	FP-7
Male	0.010	0.003	0.003	0.0008	-0.0000	0.007	0.015
	(2.43)	(0.73)	(0.68)	(0.19)	(-0.02)	(1.73)	(3.43)
Age35-44	0.002	0.007	0.007	0.009	0.009	0.005	0.003
	(0.87)	(2.16)	(2.51)	(3.03)	(3.21)	(1.86)	(0.93)
Age45-59	-0.051	-0.048	-0.047	-0.044	-0.041	-0.051	-0.045
	(-15.04)	(-12.06)	(-11.61)	(-10.58)	(-9.06)	(-12.41)	(-9.54)
Black	0.027	0.041	0.035	0.046	0.028	0.067	0.111
	(2.83)	(3.45)	(2.4)	(2.09)	(1.59)	(4.37)	(6.92)
Hispanic	-0.023	-0.005	-0.003	0.006	-0.003	0.002	0.024
	(-2.52)	(-0.53)	(-0.28)	(0.44)	(-0.2)	(0.16)	(1.95)
Asian	-0.057	-0.041	-0.041	-0.107	-0.044	-0.020	0.009
	(-5.55)	(-4.03)	(-3.37)	(-7.27)	(-3.7)	(-1.74)	(0.84)
No-High-School	-0.098	-0.091	-0.091	-0.077	-0.091	-0.104	-0.089
	(-16.73)	(-13.85)	(-13.54)	(-12.64)	(-13.64)	(-16.4)	(-14.49)
Some-College	0.042	0.057	0.057	0.053	0.055	0.061	0.061
	(13.3)	(15.15)	(15.53)	(14.14)	(14.95)	(16.37)	(15.74)
College	0.038	0.092	0.094	0.094	0.091	0.094	0.083
	(5.79)	(11.26)	(12.01)	(12.14)	(11.87)	(12.26)	(11.11)
Single-Independent	-0.076	-0.064	-0.064	-0.064	-0.073	-0.056	-0.060
	(-15.84)	(-8.86)	(-8.84)	(-8.88)	(-9.03)	(-7.42)	(-8.23)
Single-Parent	-0.057	-0.057	-0.057	-0.052	-0.049	-0.064	-0.055
	(-15.3)	(-14.09)	(-13.85)	(-12.42)	(-10.86)	(-15.64)	(-10.56)
Single-living-with-Family	-0.158	-0.149	-0.149	-0.143	-0.150	-0.145	-0.142
	(-20.47)	(-18.97)	(-18.89)	(-18.2)	(-17.87)	(-18.3)	(-18.4)
Married-with-17yr-kid	0.025	0.025	0.024	0.024	0.028	0.022	0.025
	(8.67)	(6.9)	(6.77)	(6.83)	(5.94)	(6.31)	(6.98)
Married-with-0-5yr-kid	0.009	0.012	0.010	0.011	0.0166	0.007	0.011
	(3.39)	(3.43)	(3.17)	(3.22)	(3.53)	(1.98)	(3.04)
Married-Female	-0.129	-0.131	-0.131	-0.133	-0.134	-0.127	-0.123
	(-24.51)	(-25.09)	(-24.77)	(-25.01)	(-24.94)	(-24.1)	(-23.37)
Married-Female-Kids	-0.061	-0.061	-0.061	-0.061	-0.061	-0.061	-0.059
	(-12.53)	(-12.43)	(-12.47)	(-12.46)	(-12.43)	(-12.41)	(-11.98)
Married-Female-0-5-Kids	-0.158	-0.161	-0.161	-0.161	-0.161	-0.161	-0.162
	(-27.62)	(-28.1)	(-28.08)	(-28.06)	(-28.02)	(-28.08)	(-28.18)
Non-US-born	0.003	0.004	0.003	0.003	0.004	-0.001	-0.001
	(0.66)	(0.82)	(0.66)	(0.6)	(0.85)	(-0.26)	(-0.22)
Non-US-Citizen	-0.029	-0.031	-0.031	-0.033	-0.031	-0.034	-0.034
	(-4.92)	(-5.11	(-4.88)	(-5.13)	(-4.72)	(-5.49)	(-5.53)
Overall-Access		-0.049	-0.523	-0.783	-1.179	0.028	-1.663
		(-0.65)	(-1.32)	(-2.08)	(-2.9)	(0.07)	(-4.16)
Education-Age-Access			1.267	1.669	1.605	0.865	1.452
			(1.92)	(2.64)	(2.43)	(1.37)	(2.22)
Percent-Non-High-School			-0.722	-1.367	-0.381	1.163	-0.793
			(-4.65)	(-4.29)	(-2.31)	(4.13)	(-3.7)
Percent-College		-0.074	-0.408	-0.635	-0.314	-0.139	-0.061
		(-1.44)	(-5.58)	(-6.7)	(-4.45)	(-1.7)	(-0.47)
Percent-Blacks				-0.086			
				(-1.24)			
Percent-Asian				1.152			
				(7.17)			
Percent-Hispanic				0.269			
				(1.4)			
Percent-Married					0.668		
					(2.34)		
Percent-Parent					-1.162		
					(-3.34)		
Percent-Poverty						-3.133	
						(-9.34)	
Percent-Group-Quarter							-5.364
							(-8.2)

Percent-Single-Family							-0.259
							(-2.03)
Percent-Multi-Family							-0.765
							(-4.5)
Percent-1-Bedroom							0.644
							(2.79)
Percent-4-Bedroom							0.013
							(0.07)
Average-Age							0.011
							(4.49)
lcmhres1	0.221						
	(5.25)						
lcmhres2		1.228					
		(11.79)					
lcmhres3			1.191				
			(10.88)				
lcmhres4				1.143			
				(10.89)			
lcmhres5					1.227		
					(10.73)		
lcmhres6						0.875	
						(7.76)	
lcmhres7							0.891
							(8.35)

Table 7b: Final-Part-Analysis: *Employed* as dependent variable

'c' vars	FP-1	FP-2	FP-3	FP-4	FP-5	FP-6	FP-7
Male	0.018	0.026	0.026	-0.028	0.029	0.021	-0.016
	(-4.24)	(-6.15)	(-5.84)	(-6.43)	(-6.43)	(-4.66)	(-3.71)
Age35-44	0.003	0.010	0.011	0.013	0.013	0.009	0.008
	(0.84)	(3.13)	(3.61)	(4.26)	(4.27)	(2.96)	(2.49)
Age45-59	0.044	0.036	0.034	0.031	0.028	0.038	0.031
	(-12.02)	(-8.81)	(-8.12)	(-7.09)	(-6.01)	(-8.99)	(-6.38)
Black	0.008	0.011	0.013	0.029	0.006	0.047	0.098
	(0.79)	(0.86)	(0.9)	(1.24)	(0.38)	(3.03)	(5.93)
Hispanic	0.033	0.022	0.010	0.006	0.009	0.004	0.016
	(-3.46)	(-2.11)	(-0.83)	(-0.46)	(-0.71)	(-0.35)	(1.29)
Asian	-0.046	0.032	0.025	0.102	0.029	0.004	0.014
	(-4.52)	(-3.12)	(-2.14)	(-7.19)	(-2.48)	(-0.31)	(1.2)
No-High-School	0.116	0.112	-0.107	0.090	0.107	0.121	0.106
	(-19.56)	(-17.11)	(-15.88)	(-13.86)	(-15.95)	(-18.54)	(-16.75)
Some-College	0.055	0.077	0.078	0.072	0.075	0.080	0.078
	(16.24)	(19.27)	(19.73)	(18.11)	(19.1)	(20.61)	(19.34)
College	0.067	0.136	0.140	0.139	0.137	0.140	0.128
	(9.58)	(16.13)	(17.1)	(17.21)	(16.96)	(17.44)	(16.23)
Single-Independent	-0.093	0.087	0.086	-0.086	0.096	0.078	0.082
	(-18.64)	(-12.13)	(-12.01)	(-12.08)	(-11.73)	(-10.37)	(-11.16)
Single-Parent	0.104	0.106	0.108	0.101	0.1	0.115	-0.101
	(-23.31)	(-22.64)	(-22.42)	(-20.76)	(-19.05)	(-24.04)	(-17.2)
Single-living-with-Family	0.194	0.186	0.185	0.177	0.185	0.180	0.176
	(-25.11)	(-23.69)	(-23.41)	(-22.51)	(-21.75)	(-22.7)	(-22.53)
Married-with-17yr-kid	0.0270	0.029	0.029	0.029	0.034	0.028	0.032
	(8.02)	(7.46)	(7.42)	(7.48)	(6.56)	(6.99)	(7.89)
Married-with-0-5yr-kid	0.0144	0.019	0.019	0.019	0.0251	0.015	0.021
	(4.38)	(5.17)	(5.03)	(5.12)	(4.89)	(3.88)	(5.16)
Married-Female	0.145	0.147	0.146	0.148	0.149	-0.142	0.139
	(-25.89)	(-26.48)	(-26.08)	(-26.47)	(-26.23)	(-25.32)	(-24.72)
Married-Female-Kids	0.062	0.061	0.061	0.061	0.061	0.061	0.059
	(-11.88)	(-11.74)	(-11.77)	(-11.75)	(-11.73)	(-11.71)	(-11.3)
Married-Female-0-5-Kids	0.161	-0.165	0.165	0.165	0.165	0.165	-0.165
	(-25.67)	(-26.17)	(-26.17)	(-26.17)	(-26.12)	(-26.18)	(-26.25)
Non-US-born	0.003	0.0001	0.0005	0.0001	0.001	0.004	-0.003
	(0.8)	(0.01)	(0.11)	(-0.02)	(0.27)	(-0.78)	(-0.61)
Non-US-Citizen	0.042	0.049	0.048	0.050	0.047	0.052	0.052
	(-6.67)	(-7.74)	(-7.29)	(-7.59)	(-7.13)	(-7.93)	(-7.78)
Overall-Access		0.088	0.126	-0.477	0.792	0.476	-1.167
		(1.15)	(-0.31)	(-1.23)	(-1.85)	(1.24)	(-2.7)
Education-Age-Access			1.024	1.579	1.378	0.595	1.129
			(1.48)	(2.38)	(1.98)	(0.9)	(1.61)
Percent-Non-High-School			-1.046	-1.922	-0.653	1.032	0.917
			(-6.52)	(-6.06)	(-3.79)	(3.56)	(-3.98)
Percent-College		0.171	0.612	0.902	0.512	0.318	0.172
		(-3.32)	(-7.64)	(-9.14)	(-6.5)	(-3.62)	(-1.26)
Percent-Blacks				0.099			
				(-1.32)			
Percent-Asian				1.359			
				(8.47)			
Percent-Hispanic				0.446			
				(2.31)			
Percent-Married					0.823		
					(2.66)		
Percent-Parent					-1.341		
					(-3.58)		
Percent-Poverty						-3.468	
						(-9.68)	

Percent-Group-Quarter							-4.969
							(-7.57)
Percent-Single-Family							0.123
							(-0.93)
Percent-Multi-Family							0.730
							(-4.01)
Percent-1-Bedroom							0.677
							(2.77)
Percent-4-Bedroom							0.204
							(-1.02)
Average-Age							0.008
							(3.51)
	0.221						
Icmhres1	(4.98)						
		1.470					
Icmhres2		(13.47)					
			1.402				
Icmhres3			(12.35)				
				1.341			
Icmhres4				(12.22)			
					1.445		
Icmhres5					(12.22)		
						1.061	
Icmhres6						(9.08)	
							1.153
Icmhres7							(10.01)