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Dawkins, C., Sanchez, T. and Shen, Q. (2004) *Residential segregation and the persistence of racial differences in unemployment (US)*

Residential Segregation and the Persistence of Racial Differences in Unemployment

**Prepared for the 2004 City Futures Conference
Chicago, Illinois**

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Abstract

This paper examines how racial differences in residential location, or residential segregation, may contribute to persistent racial gaps in employment outcomes. Two competing theories have emerged linking residential segregation to racial inequality. The first explanation links residential segregation to racial disparities in job accessibility. If minority workers reside in locations that are physically distant from the location of employment opportunities, or depend on public transportation that can only reach relatively few potential jobs, they may be less likely to secure gainful employment. The other explanation states that the out-migration of economically-successful African American workers from segregated neighborhoods in recent decades has robbed the remaining residents of access to job information networks and among youths, influence by positive role models and peer groups.

This paper disentangles the relative contribution of job accessibility and neighborhood effects toward racial differences in unemployment durations. To accomplish this task, we rely on a special tabulation of the U.S. Panel Study of Income Dynamics (PSID) that provides data on the census tract of residence for each individual in the sample. Using this data, we estimate continuous time duration models explaining unemployment durations for recently unemployed individuals as a function of existing residential location characteristics (at the time of job termination), personal and household characteristics affecting worker productivity, and measures of job accessibility.

We find that residential segregation affects unemployment durations directly and indirectly by exacerbating racial differences in job accessibility and neighborhood effects. For the average worker in the sample, we find that increased job accessibility and increased shares of high school-educated residents reduce unemployment durations. Furthermore, neighborhood conditions tend to mitigate the impact of auto ownership on unemployment durations. In racially-stratified models, we find significant racial differences in the impact of racial segregation on unemployment durations. If Hispanic workers resided in neighborhoods with the same level of racial segregation as the neighborhoods inhabited by non-Hispanic Whites, Hispanic unemployment durations would decline by 24 percent. Similarly, if African Americans resided in neighborhoods with the same percentage of high school educated residents as the neighborhoods inhabited by non-Hispanic Whites, unemployment durations for African Americans would decline by 18 percent. These results suggest that strategies to improve the neighborhood conditions of minority residents may reduce the persistence of unemployment for minority workers.

Introduction

Recent nationwide statistics point to persistent racial gaps in employment outcomes. African American and Hispanic adults are more than twice as likely as White adults to be unemployed, according to the 2000 Census of Population and Housing (SF3). These racial gaps have remained unchanged over the last several decades, especially for African American workers (Stratton 1993). Not only are African Americans more likely to be out of the labor force, but among those workers who are unemployed, African Americans are more likely to remain unemployed for a longer period of time. According to the 2003 Current Population Survey, the median unemployment duration for African American workers over the age of 16 (12.9 weeks) is several weeks longer than the median unemployment duration for White workers (9.4 weeks). Asian adults experience unemployment durations comparable to those of African Americans (median = 12.3 weeks), while Hispanic workers tend to remain unemployed for a much shorter period of time (median = 8.5 weeks).

As Holzer (1986) and Clark and Summers (1982) suggest, the link between the incidence of unemployment and the duration of unemployment, especially for African Americans, reflects persistent racial barriers to gaining rather than retaining employment, including labor market discrimination and housing market discrimination in areas experiencing job growth. This research provides a much needed perspective on the spatial factors contributing to the racial gap in unemployment durations. In particular, we ask the following question: To what extent can racial differences in the transition out of unemployment be explained by racial differences in residential location, or residential segregation? Our methodological approach improves upon earlier studies in several

ways. First, our research overcomes a problem endemic of many similar studies, namely that household location choice is endogenous. Since a household's employment status may affect their choice of where to live, studies that examine the impact of accessibility on employment outcomes, ignoring the endogeneity of location choice, tend to produce estimated accessibility effects that are biased towards zero. By restricting our sample to those whose location choices were made based on their previous job, we can largely overcome this problem. Second, this is one of the few nationwide studies to examine the relative contribution of a variety of important neighborhood characteristics toward the persistence of racial inequality. Finally, this research is unique in its examination of neighborhood-level influences on racial differences in the duration of unemployment. An emphasis on employment durations is important, because while short-term unemployment is often caused by voluntary job-turnovers, long-term unemployment reflects fundamental structural impediments to obtaining work. Furthermore, the familial impacts of long-term unemployment are often more severe, especially in the wake of recent welfare reform initiatives which limit the duration of welfare assistance payments.

Background

John Kain (1968) was the first to propose that residential segregation may contribute to persistent racial gaps in employment outcomes. Simply put, if households reside in racially-segregated neighborhoods, and the spatial distribution of economic opportunities is heterogeneous across neighborhoods, racial differences in residential location may exacerbate inequalities in labor market outcomes.

Recent evidence on the connection between segregation and racial inequalities is provided by Cutler and Glaeser (1997) and Collins and Margo (2000). Cutler and Glaeser (1997) find that African Americans living in more segregated metropolitan areas have significantly worse outcomes in schooling, employment, and single-parenthood relative to Whites than African Americans living in more integrated metropolitan areas. Collins and Margo (2000) observe that the link between segregation and racial disparities in socioeconomic outcomes is a relatively recent phenomenon that first emerged during the 1970s and grew stronger during the 1980s.

The exact nature of the link between residential segregation and racial differences in employment outcomes is still not well understood, especially as it relates to unemployment durations. Theory suggests two primary ways in which residential segregation may affect racial differences in unemployment durations. First, segregation may create spatial barriers to minority workers' transition out of unemployment. Second, the combination of racial and class segregation may contribute to the formation of a social milieu in low-income minority neighborhoods that deters the economic advancement of the residents.

There are competing arguments as to how residential segregation may cause spatial barriers to employment. One explanation, given by Kain (1968) and many others, is that segregation patterns are correlated with patterns of job opportunities (see Ihlanfeldt and Sjoquist [1998] and Preston and McLafferty [1999] for reviews of studies by this school of thought). If minority households reside in locations that are physically distant from the location of employment opportunities, minority workers may demand higher reservation wages to compensate for their relatively longer commutes. Minority workers

are often constrained from relocating near job-rich areas due to the presence of housing market discrimination. If minorities are unable to reside in areas that are accessible to new job openings, and employers are unwilling to offer sufficient compensation for commutes, minority workers may be less likely to secure gainful employment. Physical isolation also increases job search costs by increasing the physical distance that workers must travel to locate job openings. These arguments form the basis for what is known as the spatial mismatch hypothesis.

An alternative view that has emerged from recent literature is that segregation may be partially responsible for minority workers' relatively low transportation accessibility to job opportunities. A growing number of empirical studies have found that in contemporary U.S. metropolitan areas, accessibility to economic opportunities is determined primarily by transportation mode rather than by residential location (see, for example, Taylor and Ong [1995] and Shen [1998]). In fact, low-income minority workers as a group may not have a residential location disadvantage with respect to economic opportunities because job openings, which consist of primarily vacancies created by turnovers and only secondarily new positions created by employment growth, are still relatively concentrated in central cities (Shen 2001). Yet low-income minority workers may still have a disadvantage in employment accessibility because a disproportionately high percentage of them depend on slow, inflexible, and limited public transit for job search and commuting. Residential segregation may contribute to this high-level transit dependency by increasing the difficulty for residents of minority neighborhoods to finance auto purchase or by raising the insurance and maintenance costs of auto ownership in these neighborhoods. Furthermore, transportation mode and

segregation may interactively affect racial differences in unemployment duration. If segregation is caused by housing market discrimination in job-rich areas, minorities may be relegated to choosing housing in areas with fewer job opportunities. For these workers, the value of automobile ownership is even higher, because jobs far away can only be reached via auto. To date, no studies have examined the simultaneous impact of automobile ownership, job accessibility, and other neighborhood-level characteristics on racial differences in unemployment durations.

Figure 1 illustrates the complex nature of the spatial mismatch phenomenon. Within the last two decades, suburban counties within the Atlanta, Georgia, metropolitan area have seen explosive growth in population and employment that has far-eclipsed growth in the central city. Furthermore, job openings due to job growth have been highly decentralized within the northern suburban counties of the region (Brookings Institution Center on Urban and Metropolitan Policy 2000). In 1990, the share of the region's jobs located in the northern suburbs, southern suburbs, and central city was 52 percent, 19 percent, and 29 percent respectively (Ihlanfeldt 1997). Despite these trends, the central city still remains a core commuting destination, capturing more than a third of all commuter trips (McGuckin and Srinivasan 2003). Note that the neighborhoods that are closest to the center of the region are those which exhibit the lowest concentration of long (25+ minutes) commute times. As one moves outward from the center of the region, the share of the population with long commute times increases. Given that this pattern of commuting represents travel to existing (and not new) jobs, the central city of Atlanta may still be a relatively accessible location for job openings due to turnover, as suggested by Shen (2001).

[Insert Figure 1 about here]

The theory that explains how residential segregation may create undesirable social effects on employment is most eloquently articulated by William Julius Wilson (1987). According to Wilson, the triumph of the civil rights movement made it possible for economically-successful Black workers to live in residential areas previously only open to Whites. The resulting out-migration of Black middle-class households from majority-Black neighborhoods during the 1980s and 1990s has robbed the remaining residents of access to job information networks and among youths, influence by positive role models and peer groups. The social transformation of these neighborhoods has resulted in a disproportionate concentration of the most disadvantaged segments of the urban Black population, creating an environment that perpetuates poverty. This explanation of the relationship between segregation and racial disparities in employment is often described as the neighborhood effects hypothesis.

Generally speaking, empirical evidence on the importance of spatial barriers and neighborhood effects on unemployment probabilities has produced mixed results. Several empirical studies provide support for some version of the spatial mismatch hypothesis (see the reviews by Ihlanfeldt and Sjoquist [1998] and Preston and McLafferty [1999]). Others dismiss the importance of residential location in influencing labor market outcomes (see for example, Ellwood [1986]) or point to the prevailing importance of auto ownership in determining low-income workers' job accessibility and subsequently employment status (see, for example, Ong [1996], Kawabata [2003],

Sanchez et al [forthcoming]). Similarly inconclusive findings about neighborhood effects have been obtained. Jencks and Mayer (1990) review early literature and find little evidence to support the existence of significant neighborhood effects, while a review of more recent evidence finds support for the neighborhood effects argument (Ellen and Turner 1997). Of those studies reviewed by both authors, few examine the impacts of neighborhood on labor market outcomes, and most fail to control for the self-selection of households into particular neighborhoods (Mayer 1996).

Of those studies that have examined the impact of residential location on racial differences in unemployment in U.S. metropolitan areas, only two focus exclusively on unemployment durations. Of these, none examine the impact of the neighborhood effects described by Wilson (1987). Holzer, Ihlanfeldt, and Sjoquist (1994) rely on data from the 1981 and 1982 National Longitudinal Survey of Youth (NLSY) to estimate models explaining the log of unemployment duration for a sample of Black and White youths. The authors find that automobile ownership shortens unemployment durations for a pooled sample of all households and a measure of job decentralization is associated with increased unemployment durations. Transportation mode and decentralization explain approximately one third of the racial difference in unemployment durations.

Furthermore, in racially-stratified models, the authors find that decentralization has a larger impact on the duration of unemployment for Blacks than for Whites. Their examination of unemployment durations does not control for measures of worker characteristics other than transportation mode and does not control for measures of neighborhood effects. Furthermore, the models are estimated using ordinary least squares (OLS), which does not take unique features of the distribution of duration times

into account, including non-negativity, nonlinearities with respect to time, and possible censoring of duration times.

Rogers (1997) relies on unemployment insurance claim data for the Pittsburgh, Pennsylvania, metropolitan area in 1980 through 1986 to examine the impact of job accessibility on unemployment durations. In the equations, she employs measures of job accessibility and local unemployment rates along with other human capital controls. Although maximum likelihood procedures suitable for explaining unemployment durations are employed, the sensitivity of the results to the parameterization of the probability density function of duration times is not examined. Job accessibility is measured using two different employment-based indices that are each weighted by commuting times between the location of a household's residence and the location of jobs. Although access to employment growth is found to reduce unemployment duration, the results are sensitive to the functional form of the accessibility measure. Their MSA-level study does not report results from racially stratified models and does not include controls for the neighborhood effects mentioned by Wilson (1987).

Empirical Strategy

To disentangle the relative contribution of these two separate dimensions of segregation (accessibility and neighborhood effects) towards racial differences in employment outcomes, we rely on continuous time duration models to examine the impact of neighborhood effects and job accessibility on racial differences in the transition to employment among those who have recently been dismissed from a job. To accomplish this task, we employ a unique version of the Panel Study of Income Dynamics (PSID)

that provides information on the census tract of residence for each individual in the sample. The geocodes linking individuals to their census tract of residence were acquired from the Institute for Social Research at the University of Michigan. The final sample consists of approximately 1400 non-Hispanic White, non-Hispanic Black, and Hispanic workers (household heads and spouses of household heads) whose employment was terminated between the years 1990 and 1992 and who resided in metropolitan statistical areas throughout the period under investigation. From the date of initial employment termination, we follow individuals until their date of reemployment and record the length of their initial unemployment duration in months. Only those actively seeking employment were retained in the final sample. Furthermore, since all included in the sample were followed from their initial date of unemployment until their eventual date of reemployment, the final sample includes no cases with censored unemployment duration times (durations where entry into or exit from unemployment was unobserved to the analyst). Characteristics of the individual's residential location from the 1990 Census of Population and Housing were obtained by matching workers to the residential location where the worker resided at the time of job loss.

Using this database, we examine several quantities of interest related to the distribution of unemployment durations. If we define t as a random variable which represents a given individual's unemployment spell, the probability density function of unemployment durations is then defined as $f(t)$. The survival function, $S(t)$, gives the probability that person i is unemployed until at least time t . The hazard rate, $\lambda(t)$, then gives the rate at which persons leave unemployment after time t , given that they were unemployed until time t . The hazard rate is constructed as follows: $f(t) / S(t)$. In the

models that follow, we define $f(t)$ to be a function of a vector of independent variables, (X) and parameters (β) and choose β to maximize the following log likelihood function, $L(\beta)$:

$$L(\mathbf{b}) = \prod_{i=1}^n f(t_i, X\mathbf{b})$$

Several parameterizations of the log likelihood function are examined, including the exponential, Weibull, loglogistic, and gamma models. All models are estimated using the LIMDEP econometrics package.

To explain unemployment durations for the i th individual in the sample, we include race, gender, and other human capital variables which affect worker productivity and earnings potential (age, health status, household income prior to unemployment, education, number of children, marital status, and industry controls). We also include an indicator of vehicle ownership status. This variable was extracted from the 1989 wealth supplement of the PSID, which provides data on the dollar value of various types of assets held by each household in the sample. All households who reported a positive dollar value of vehicle assets in 1989 were identified as auto owners. Finally, we include dummy variables indicating the year in which the unemployment spell began to capture time-changing macroeconomic factors which contribute to unemployment durations.

We also include several variables measured at the census tract level for each worker in the sample. Neighborhood percent non-Hispanic White measures the direct impact of residing in a neighborhood with a high percentage of the majority racial group. In the models below, we examine both the direct impact of this variable, in addition to the

conditional impact of neighborhood racial composition, controlling for other neighborhood-level variables which may affect unemployment durations. Of these, we include a measure of job accessibility (percent of census tract residents with commute times greater than 25 minutes) and two measures of neighborhood effects (percent of census tract residents who are below the poverty line and percent of census tract residents with high school degrees). Our objective is not to estimate a parsimonious structural model of the spatial factors contributing to unemployment but rather to examine how key indicators of neighborhood-level conditions impinge upon one's employment transition. The full set of variables included the estimated models are summarized below.

Individual Characteristics

Black (=1 if Black and 0 otherwise)
Hispanic (=1 if Hispanic and 0 otherwise)
Age
Good health status (=1 if respondent reported that health was "good" or better)
Gender (=1 if female and 0 if male)
Household income prior to employment termination
Education (=1 if attained college degree in 1990 and 0 otherwise)
Number of children in household
Married (=1 if married and 0 otherwise)
Vehicle ownership status (=1 if owned vehicle in 1989 and 0 otherwise)
Industry Controls (=1 if the household was employed in the *i*th industry prior to unemployment and 0 otherwise)
Duration Dummy Variables (=1 if the worker initially became unemployed in year *t* and 0 otherwise)

Neighborhood Characteristics

Job accessibility (measured as the percent of census tract residents with commute times greater than 25 minutes)
Percent white in census tract
Percent of census tract residents who are poor
Percent in census tract with high school education

To determine how neighborhood characteristics affect the racial differential in unemployment durations, we examine the sign and significance of the coefficient on the “Black” and “Hispanic” variables in models with and without neighborhood characteristics to determine how neighborhoods affect the impact of race on unemployment durations. We also examine racially-stratified models to determine if the impact of neighborhood conditions on unemployment durations varies by race.

This empirical approach offers an important innovation upon previous work. Since a household’s employment status may affect their choice of where to live, studies that examine the impact of accessibility on employment outcomes, ignoring the endogeneity of location choice, tend to produce estimated accessibility effects that are biased towards zero. By restricting our sample to those whose location choices were made based on their previous job, and by examining unemployment durations rather than unemployment probabilities at the time a residential location decision was made, we overcome this problem, assuming that we adopt the reasonable assumption that the decision of where to work upon eventual reemployment does not impact one’s previous choice of where to live prior to becoming unemployed. Rogers (1997) was the first study to propose this technique; however, her study examines unemployment durations within a single metropolitan area only and does not include controls for racial composition of the surrounding neighborhood or other variables thought to be correlated with neighborhood effects. Furthermore, her study does not examine the sensitivity of results to the parametric specification of the log likelihood function, which she assumed to take a logit form.

Results

Nonparametric Analysis

We now turn to a nonparametric analysis of unemployment survival functions. Figure 2 plots the probability of remaining unemployed after a given number of months for all workers in the sample, separated into three categories: White non-Hispanic workers (N=533), non-White (Hispanic or Black) workers living in integrated neighborhoods (N=434), and non-White workers living in segregated neighborhoods (N=436). The curves were estimated using the Kaplan-Meier nonparametric approach. For non-White workers, we define integrated (segregated) neighborhoods as those where the percent White for the neighborhood, or census tract, where the worker resides is greater than (less than) the median for all non-White workers in the sample (.09). Notice that until about the third month, there is little difference between the probability of remaining in a state of unemployment across these three groups of workers. After the third month, however, differences emerge between the three groups. Specifically, there is little difference in the probability of remaining unemployed for non-Hispanic White and non-White workers living in integrated neighborhoods. Among non-White workers, however, those living in segregated neighborhoods are much more likely to remain unemployed than either non-Hispanic Whites or non-Whites living in integrated neighborhoods. Although survival rates begin to converge after about one year, the differences between these three groups during the first year of unemployment suggests that racial differences in the residential locations of non-Hispanic White and non-White households may explain at least a portion of the observed racial differences in unemployment durations. We now turn to a parametric regression analysis of survival probabilities to determine if these racial

differences remain once we control for observable household and neighborhood characteristics.

[Insert Figure 2 about here]

Regression Analysis

Descriptive statistics for the variables used in the regression analysis are shown in Table 1. Descriptives are reported for the full sample and for each racial group separately. As this table suggests, the average worker in the sample is unemployed for approximately 4 months, is approximately 36 years of age, is likely to own an automobile, is likely to be married, and is more likely to have earned a high school degree than a college degree. The distribution of workers across industry types is relatively uniform across all industries except the construction industry, with the preponderance of workers employed in the service industry. During the period under investigation, the majority of workers began their unemployment spells in either 1990 or 1991.

[Insert Table 1 about here]

On average, non-Hispanic Whites experience the shortest unemployment durations (3.96 months), followed by Hispanics (4.52 months) and non-Hispanic Blacks (5.01 months). Table 1 also points to significant racial differences in several worker characteristics, including income, health status, automobile ownership status, marital status, education level, and industry composition. Note, in particular, that while 88

percent of non-Hispanic Whites own automobiles, only 57 percent of Black non-Hispanics and 9 percent of Hispanics own autos. Furthermore, non-Hispanic Whites live in neighborhoods where their own race is in the majority, where poverty rates are low, and where education levels are high.

An interesting finding emerges when one compares racial differences in commute duration (measured as the percent of workers who have commute times greater than 25 minutes) with commute distance (measured as the percent of workers who work within their county of residence). Note that, on average, non-Hispanic Whites live in neighborhoods where commutes are relatively shorter in duration but longer in distance. This finding echoes Taylor and Ong's (1995) finding that minority groups tend to have longer commute durations, despite having shorter commutes, due to their reliance on public transit, which tends to be much slower and more inflexible than travel by automobile. This finding is further confirmed in our data by the fact that Black and Hispanic workers live in neighborhoods where the percent of transit commuters is twice that found in non-Hispanic White neighborhoods.

We now turn to an examination of regression models that explain the determinants of unemployment durations for individual workers in the sample. We estimated several different parametric forms of the duration model discussed in the previous section and found the Weibull specification to produce the best-fitting functional form. Since the distribution of duration times is non-negative, possibly increasing with time, and possibly censored, ordinary least squares estimation is not appropriate for models of this type. Specification analysis was conducted by examining the shape of the integrated hazard curve, which is monotonically increasing under an

appropriately specified model. The hazard function for the Weibull model can be written as:

$$I(t) = e^{-b'X} \mathbf{a}(e^{-b'X} t)^{\alpha-1}$$

Where t is time until unemployment exit, β is a vector of estimated coefficients, and X is a vector of independent variables. The parameter α determines the shape of the hazard function, $\lambda(t)$. When $\alpha = 1$, the Weibull distribution reduces to an exponential distribution with a constant baseline hazard function. When $\alpha < 1$, the baseline hazard function monotonically decreases with time, and when $\alpha > 1$, the baseline hazard function monotonically increases with time. This functional form is commonly employed to model the distribution of unemployment durations.

Results from three models relying on this specification are displayed in Table 2 below. The models differ in controls for neighborhood characteristics. Model 1 is a baseline model with no controls for neighborhood characteristics. Model 2 employs controls for neighborhood percent non-Hispanic White racial composition, and Model 3 includes several neighborhood-level controls, including racial composition, poverty concentration, commute length of residents, and college attainment status of residents. Since the partial derivatives of each independent variable with respect to time are nonlinear functions of the β s, the X s, and α , the coefficients from the models cannot be directly interpreted as marginal effects. The sign of the estimated coefficients can be interpreted in the form of an accelerated failure time model, however. In models of this type, positive coefficients indicate that the variable contributes to longer unemployment

durations, while negative coefficients indicate that the variable contributes to shorter unemployment durations.

[Insert Table 2 about here]

Several findings are worth noting from this table. First, in all models, we find evidence of positive duration dependence. This is apparent from the estimated parameter, “sigma,” reported at the bottom of Table 2. In terms of the Weibull model discussed above, sigma is equal to $1/\alpha$. Thus, an estimated sigma of approximately .88 corresponds to an α of approximately 1.14. This suggests that the average, or “baseline,” household is slightly more likely to transition out of unemployment with longer unemployment spells.

Regarding the impact of covariates on unemployment durations, we find that across all models, the age of the worker, the presence of children in the family, and a household’s vehicle ownership status are among the most important personal and household-level characteristics explaining unemployment durations. The importance of age and presence of children is consistent with previous research examining the determinants of employment status (Sanchez et al., forthcoming). The industry where the worker was previously employed also contributes to differences in employment durations. In general, those previously employed in the manufacturing industry were more likely to return to work sooner than those employed in other industries. Furthermore, those who became unemployed during 1991 or 1992 tended to remain unemployed for a longer period of time relative to those who became unemployed in 1990. Controlling for the full set of worker characteristics, we find that a worker’s

previous income does not have a statistically significant impact on his or her eventual duration of unemployment, a finding that is consistent with Rogers (1997).

The differences in the importance of vehicle ownership status across models are particularly interesting. Although owning an automobile contributes to a shorter unemployment duration overall, the pattern of results suggests that neighborhood conditions largely mitigate the impact of vehicle ownership status on unemployment durations. In models with the most extensive set of neighborhood controls, vehicle ownership status is much smaller in magnitude and is not statistically significant. This result suggests that auto ownership is correlated with the neighborhood characteristics of workers.

The importance of neighborhood conditions is readily apparent. In the model that controls for neighborhood racial composition alone, increased exposure to non-Hispanic White households increases one's likelihood of exiting unemployment. When we control for other observable neighborhood characteristics, however, racial composition is no longer significant. Instead, exposure to residents with high school degrees and neighborhood-level accessibility become more important in explaining unemployment duration times. In particular, increased exposure to high school educated residents and reduced commuting times both contribute to shorter unemployment durations. These results provide support for both the neighborhood effects and spatial barriers explanations for the connection between segregation and unemployment duration.

Differences in the race indicator variables across the three models provide evidence on the conditional impact of neighborhood controls on racial differences in unemployment durations. Across all models, only African American workers are more

likely to remain unemployed for a longer period of time. The impact of Hispanic worker status is statistically insignificant. Differences in the magnitude of the racial differential in unemployment durations in models with and without neighborhood controls are particularly interesting. Comparing Model 1 to Model 3, we find that the racial gap in unemployment durations is reduced by about 49 percent once we control for the full set of neighborhood characteristics. Comparing Model 1 to Model 2, the estimated percentage decline is approximately 31 percent with controls for neighborhood percent non-Hispanic White alone.

To determine the sensitivity of these results to the chosen measure of accessibility, we reestimate Model 3 using two other measures of accessibility: (1) percent of local workers who work within their county of residence and (2) percent of workers who rely on public transit for commuting purposes. These results are shown in Table 3 with Model 3 from Table 2 shown for comparative purposes. Examining Model 4, we find that when accessibility is based on an indicator of commuting distance (the percent of local workers who work within their county of residence), we find that increased shares of “local” workers contribute to a reduction in one’s unemployment duration, as suggested by the spatial mismatch hypothesis. When accessibility is defined in terms of percent of commute trips by public transit (Model 5), the accessibility measure is no longer statistically significant. Comparing the magnitudes and significance of the coefficients across Models 3 through 5, we find that the distance-based measure of accessibility has the largest impact on reductions in unemployment durations.

[Insert Table 3 about here]

Unemployment Durations by Race

In this section, we examine racially-stratified estimates of unemployment duration to determine if neighborhood characteristics affect racial groups differently. In the models below, the chosen measure of accessibility is the percent of local workers who work within their county of residence.

[Insert Table 4 about here]

These results largely confirm the results from earlier regressions with a few exceptions. In general, a different set of worker characteristics affects employment durations for non-Whites in the sample. Among non-Hispanic Whites, age, education, number of children, employment in service and manufacturing industries, year of unemployment, and percent of workers who work within their county of residence are all significant predictors of unemployment durations. For non-Hispanic Black workers, unemployment durations are reduced with female status, higher income, automobile ownership, college attainment status, year of unemployment, and exposure to other high school graduates within the neighborhood. For Hispanic workers, age and year of unemployment are the only significant individual and household-level predictors of unemployment duration. Significant neighborhood-level predictors of unemployment duration for Hispanics include neighborhood percent non-Hispanic White and percent of workers who work within their county of residence.

Several of these findings provide information concerning the impact of accessibility and neighborhood conditions on racial differences in unemployment durations. First note that automobile ownership status is statistically significant for Black workers only. If African American workers initially resided in locations that were more distant from employment locations, or relied more heavily on public transportation to reach employment opportunities, automobile ownership would be expected to have the largest impact on employment for these workers, who would stand to benefit most from automobility. However, since the measure of accessibility is not statistically significant for Black workers, and in fact a higher percent of Black workers are employed within their county of residence than are White workers, we cannot rule out the possibility that other factors contribute to racial differences in the impact of auto ownership on unemployment duration. Furthermore, these results may be affected by the relatively smaller sample sizes in the racially-stratified models.

The strong significance of neighborhood-level exposure to high school graduates suggests that for African Americans, neighborhood effects are perhaps the most important location-specific determinant of unemployment duration. For Hispanics, neighborhood-level racial segregation and commuting accessibility are among the most important determinants of unemployment duration. It is interesting to note that exposure to non-Hispanic Whites reduces a Hispanic worker's unemployment duration. This contrasts with the conventional view that immigrant Hispanic workers migrate to majority-Hispanic neighborhoods to take advantage of local culture-based networks which may facilitate job search. Although we do not focus exclusively on Hispanic

immigrant workers, we find that neighborhood-level exposure to the majority racial group contributes to shorter unemployment durations for the average Hispanic worker.

An advantage of relying on racially-stratified models is that the estimated unemployment durations from these models can be used to determine the relative importance of neighborhood racial composition and other observable neighborhood characteristics on the racial gap in unemployment outcomes. In the last column within Models 7 and 8, we examine simulations that answer the following question: “If minority racial groups had observable characteristics that were the same as non-Hispanic Whites, what would be the estimated percentage decline in minority unemployment durations?” To answer this question, we calculate the following quantity:

$$\Delta t = \left[\frac{E(t | X_{M(W)}) - E(t | X_M)}{E(t | X_M)} \right]$$

Δt is a measure of the percentage change in the expected unemployment duration for a given minority (M) racial group resulting from equating the *i*th average characteristic for non-Hispanic Whites with the average of that characteristic for racial group M. Note that positive values indicate that the change to a White characteristic contributes to a percentage increase in minority unemployment durations, while negative values imply percentage declines in unemployment durations. Δt is calculated by first estimating unemployment duration models for each racial group separately. Then, predicted unemployment durations are calculated for each racial group (shown at the bottom of Table 4). Predicted unemployment durations $E(t | X_M)$ are estimated as

$\exp(X\beta)$, where X is the vector of independent variables, and β is the vector of estimated parameters. All independent variables are evaluated at the means for each respective racial group. To calculate $E(t | X_{M(w_i)})$, we replace the i th characteristic for minority group M with the average of that characteristic for non-Hispanic Whites and recalculate the expected duration time. Δt is then an estimate of the percentage change in duration times that would result if each minority worker characteristic were replaced with the average of that characteristic for non-Hispanic Whites, holding all other characteristics constant. This technique is analogous to that proposed by Oaxaca (1973) and Blinder (1973) to examine the determinants of labor market discrimination. Estimates of Δt are displayed in the final column under models 7 and 8 for all characteristics that are statistically significant at the .10 level or better.

As Table 4 indicates, equating the previous incomes of Whites and African Americans would result in large percentage *increases* in unemployment durations for African Americans. This counter-intuitive finding results from the fact that African American workers tend to delay unemployment transition longer with higher earnings in their previous job. An explanation for this finding is that higher previous earnings raise one's reservation wage, and hence, raise the option value of waiting longer for a higher wage job rather than immediately securing lower wage employment. Since non-Hispanic Whites earned more than non-Hispanic Blacks in their previous employment, equating Black and White wages leads to a 14 percent increase in Black unemployment duration.

For African Americans, the largest percentage reduction in unemployment duration occurs with increased exposure to high school-educated neighborhood residents. If African Americans resided in neighborhoods with the same concentration of high

school-educated residents as the neighborhoods inhabited by non-Hispanic Whites, unemployment duration for African Americans would decline by 18 percent. As suggested by Wilson (1987), increased neighborhood-level exposure to educated residents may have both a motivational effect and a network effect. If the peers of an unemployed person are educated and employed, social pressure may motivate the worker to transition out of unemployment sooner. Furthermore, increased contacts with those more likely to be employed may facilitate job search. The magnitude of the neighborhood education effect for African Americans provides strong evidence supporting Wilson's neighborhood effects argument.

The largest percentage declines in unemployment duration for either minority group occur when Hispanics reside in neighborhoods with the same level of segregation as those inhabited by non-Hispanic Whites. We find that this degree of residential integration would result in a 24 percent decline in unemployment duration for Hispanics from approximately 4.5 months to 3.4 months. Since Hispanics reside in locations that are more accessible than any other racial group (measured using percent of workers who work within their county of residence), relocating Hispanic workers to neighborhoods with the accessibility of non-Hispanic Whites would actually increase unemployment durations for Hispanics by 8 percent.

Conclusion

This paper examined the connection between residential segregation by race and racial differences in unemployment durations. Using worker-level data from the Panel Study of Income Dynamics, linked to data on the census tract characteristics of workers

in the sample, we find that residential segregation affects unemployment durations directly and indirectly by exacerbating racial differences in job accessibility and neighborhood effects. For the average individual in the sample, we find that neighborhood conditions tend to mitigate the impact of auto ownership on unemployment durations. The impact of automobility exhibits considerable variation across racial groups, however. For African Americans, vehicle ownership status significantly reduces unemployment durations, but neighborhood accessibility does not have a significant impact. For Hispanic workers on the other hand, automobile ownership status has no impact on unemployment durations, but neighborhood-level accessibility serves to reduce unemployment durations. Since Hispanics, as a group, reside in locations with high levels of accessibility, equating accessibility levels to those of non-Hispanic Whites would actually lengthen unemployment durations.

These findings provide new evidence on suggested policy alternatives for reducing racial gaps in unemployment. Our finding that the level of public transportation usage has an insignificant impact on unemployment duration suggests that policies of expanding transit service will likely be ineffective in improving minority workers' labor market prospects, unless the transit service improvements are so significant as to provide transit riders a much higher level of job accessibility comparable to what is enjoyed by auto commuters. While our evidence suggests that automobile subsidies may be an effective means of increasing the job accessibility of African Americans, the impact of these subsidies will tend to be mitigated by neighborhood conditions if African Americans continue to reside in neighborhoods with few positive role models and few networks to new job sources.

Policies to improve housing opportunities for minorities in job-rich areas are likely to be successful, especially if such initiatives focus on alleviating housing market discrimination. Given our finding that the average worker's previous income does not contribute to his or her eventual unemployment duration, controlling for other correlates of worker productivity, policies which focus solely on affordability are less likely to be as successful as policies designed to remove discriminatory constraints on minority housing choice. Such strategies are likely to be particularly effective for Hispanic workers, who stand to greatly improve employment prospects through moves to more integrated communities. Finally, economic development strategies focusing on education within minority communities are likely to have a significant impact on African American employment rates, both directly through increases in human capital and indirectly through network effects.

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Figure 1

Atlanta, GA (1990 Census Tracts)

% Commuting 25 mins+

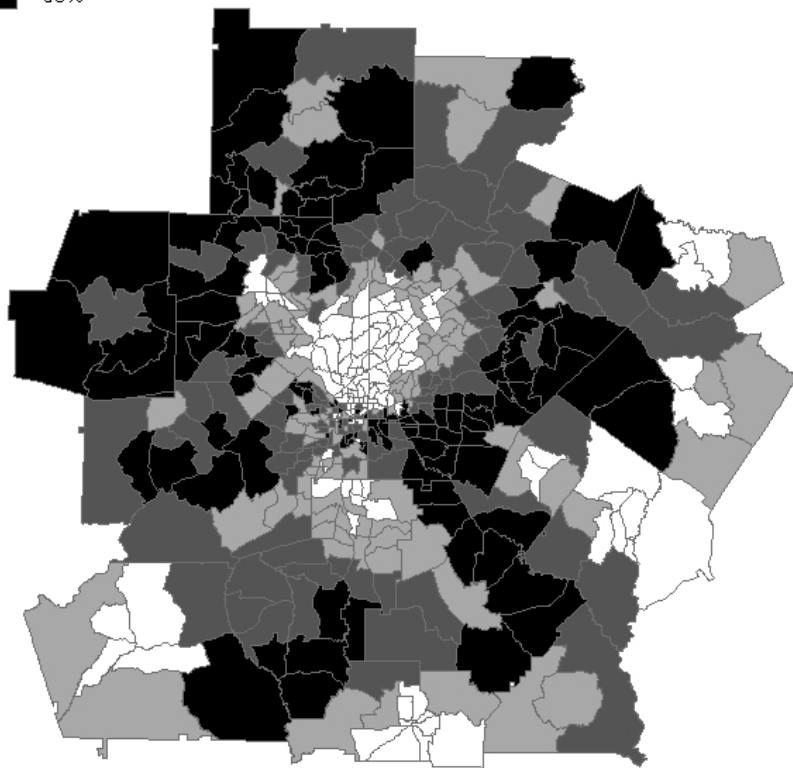
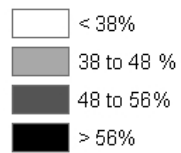


Figure 2

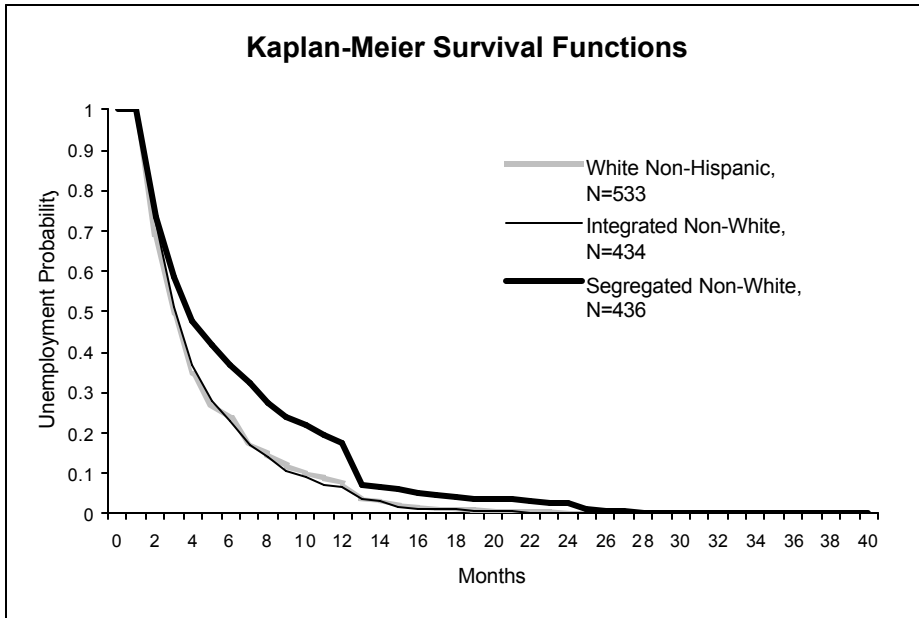


Table 1: Descriptive Statistics

Variable	Full Sample N=1403		White Non-Hispanic N=533		Black Non-Hispanic N=424		Hispanic N=446	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Dependent Variable								
Unemployment Duration	4.46	4.63	3.96	4.09	5.01	4.87	4.52	4.93
Independent Variables: Individual & HH Characteristics								
Black	0.31	0.46	0.00	0.00	1.00	0.00	0.03	0.17
Hispanic	0.32	0.47	0.00	0.00	0.00	0.00	1.00	0.00
Female	0.32	0.47	0.38	0.49	0.22	0.41	0.33	0.47
Family Income, 1989 (\$s)	30611.85	24361.83	41486.10	28035.89	21418.32	19399.02	26356.44	18224.75
Age	36.24	11.01	35.85	10.48	34.72	10.91	38.16	11.47
Good Health	0.25	0.43	0.30	0.46	0.19	0.39	0.26	0.44
Own Automobile	0.54	0.50	0.88	0.32	0.57	0.50	0.09	0.29
Married	0.66	0.47	0.76	0.43	0.44	0.50	0.74	0.44
College Graduate	0.13	0.34	0.21	0.41	0.07	0.25	0.10	0.30
High School Graduate	0.72	0.45	0.89	0.31	0.71	0.45	0.51	0.50
# Children in Family	1.30	1.38	1.04	1.18	1.29	1.44	1.61	1.48
Independent Variables: Industry Controls								
Construction	0.09	0.29	0.09	0.29	0.08	0.27	0.11	0.31
Retail	0.18	0.39	0.20	0.40	0.19	0.39	0.16	0.37
Manufacturing	0.22	0.42	0.22	0.41	0.15	0.36	0.30	0.46
Service	0.24	0.43	0.28	0.45	0.26	0.44	0.17	0.37
Independent Variables: Duration Dummy Variables								
Unemployment Spell Began 1991	0.41	0.49	0.42	0.49	0.43	0.50	0.38	0.49
Unemployment Spell Began 1992	0.23	0.42	0.26	0.44	0.21	0.41	0.22	0.41
Independent Variables: Neighborhood Characteristics								
% White Non-Hispanic	0.39	0.38	0.66	0.38	0.21	0.29	0.22	0.26
% Poor	0.19	0.15	0.09	0.09	0.27	0.17	0.24	0.13
% High School Education	0.71	0.19	0.84	0.13	0.68	0.16	0.57	0.19
% Long Commute Duration	0.39	0.15	0.36	0.15	0.41	0.16	0.40	0.13
% Work Within County	0.82	0.19	0.76	0.20	0.81	0.18	0.89	0.15
% Public Transit	0.10	0.14	0.05	0.10	0.15	0.15	0.10	0.14

Table 2: Weibull Unemployment Duration Models (N = 1403)

Variable	Model 1		Model 2		Model 3	
	Coef.	St. Error	Coef.	St. Error	Coef.	St. Error
<i>Race of Worker</i>						
Constant	1.129	0.107 ***	1.227	0.123 ***	1.333	0.218 ***
Black	0.244	0.058 ***	0.187	0.068 ***	0.164	0.069 **
Hispanic	0.033	0.066	-0.019	0.074	-0.051	0.074
<i>Independent Variables: Individual & HH Characteristics</i>						
Female	-0.034	0.060	-0.036	0.060	-0.044	0.060
Family Income, 1989 (\$s)	-5.8E-07	1.1E-06	-3.2E-07	1.1E-06	-2.7E-07	1.1E-06
Age	0.010	0.002 ***	0.010	0.002 ***	0.009	0.002 ***
Good Health	-0.066	0.053	-0.065	0.053	-0.065	0.053
Own Automobile	-0.141	0.065 **	-0.123	0.065 *	-0.099	0.067
Married	0.016	0.059	0.019	0.059	0.021	0.059
College Graduate	6.3E-05	0.067	0.011	0.066	0.010	0.067
High School Graduate	-0.030	0.053	-0.032	0.053	-0.015	0.053
# Children in Family	-0.037	0.017 **	-0.037	0.017 **	-0.040	0.017 **
<i>Independent Variables: Industry Controls</i>						
Construction	-0.137	0.088	-0.134	0.087	-0.137	0.090
Retail	0.036	0.064	0.036	0.064	0.038	0.065
Manufacturing	-0.153	0.062 **	-0.148	0.062 **	-0.157	0.063 **
Service	-0.058	0.064	-0.053	0.064	-0.048	0.064
<i>Independent Variables: Duration Dummy Variables</i>						
Unemployment Spell Began 1991	0.241	0.053 ***	0.200	0.055 ***	0.206	0.056 ***
Unemployment Spell Began 1992	0.294	0.062 ***	0.293	0.062 ***	0.254	0.063 ***
<i>Independent Variables: Neighborhood Characteristics</i>						
% White Non-Hispanic	--	--	-0.157	0.081 *	-0.033	0.095
% Poor	--	--	--	--	0.057	0.222
% High School Education	--	--	--	--	-0.363	0.196 *
% Long Commute Duration	--	--	--	--	0.316	0.136 **
Sigma	0.876	0.023 ***	0.875	0.023 ***	0.872	0.022 ***
Log-Likelihood	-1936.526		-1934.875		-1930.846	

*** p < .01; ** p < .05; * p < .10

Table 3: Weibull Unemployment Duration Models, Alternative Accessibility Controls (N = 1403)

Variable	Model 3		Model 4		Model 5	
	Coef.	St. Error	Coef.	St. Error	Coef.	St. Error
<i>Race of Worker</i>						
Constant	1.333	0.218 ***	1.843	0.249 ***	1.459	0.212 ***
Black	0.164	0.069 **	0.167	0.070 **	0.167	0.071 **
Hispanic	-0.051	0.074	-0.021	0.074	-0.046	0.075
<i>Independent Variables: Individual & HH Characteristics</i>						
Female	-0.044	0.060	-0.034	0.060	-0.047	0.060
Family Income, 1989 (\$s)	-2.7E-07	1.1E-06	-1.7E-07	1.1E-06	1.4E-08	1.2E-06
Age	0.009	0.002 ***	0.009	0.002 ***	0.009	0.002 ***
Good Health	-0.065	0.053	-0.061	0.053	-0.073	0.054
Own Automobile	-0.099	0.067	-0.109	0.066 *	-0.103	0.066
Married	0.021	0.059	0.009	0.060	0.026	0.059
College Graduate	0.010	0.067	0.014	0.067	0.009	0.067
High School Graduate	-0.015	0.053	-0.002	0.053	-0.023	0.053
# Children in Family	-0.040	0.017 **	-0.041	0.017 **	-0.039	0.017 **
<i>Independent Variables: Industry Controls</i>						
Construction	-0.137	0.090	-0.151	0.092	-0.137	0.090
Retail	0.038	0.065	0.029	0.065	0.041	0.065
Manufacturing	-0.157	0.063 **	-0.161	0.063 **	-0.159	0.063 **
Service	-0.048	0.064	-0.050	0.064	-0.055	0.065
<i>Independent Variables: Duration Dummy Variables</i>						
Unemployment Spell Began 1991	0.206	0.056 ***	0.195	0.056 ***	0.203	0.056 ***
Unemployment Spell Began 1992	0.254	0.063 ***	0.243	0.064 ***	0.262	0.063 ***
<i>Independent Variables: Neighborhood Characteristics</i>						
% White Non-Hispanic	-0.033	0.095	-0.055	0.097	-0.045	0.096
% Poor	0.057	0.222	0.118	0.224	-0.086	0.225
% High School Education	-0.363	0.196 *	-0.437	0.199 **	-0.372	0.197 *
% Long Commute Duration	0.316	0.136 **	--	--	--	--
% Work Within County	--	--	-0.419	0.136 ***	--	--
% Public Transit	--	--	--	--	0.295	0.180
Sigma	0.872	0.022 ***	0.871	0.022 ***	0.873	0.023 ***
Log-Likelihood	-1930.846		-1928.152		-1931.715	

*** p < .01; ** p < .05; * p < .10

Table 4: Racially-Stratified Weibull Unemployment Duration Models

Variable	Model 6: White Non-Hispanic N = 533		Model 7: Black Non-Hispanic N = 424			Model 8: Hispanic N = 446		
	Coef.	St. Error	Coef.	St. Error	? t	Coef.	St. Error	? t
Constant	2.154	0.442 ***	3.061	0.492 ***		1.179	0.448 ***	
<i>Independent Variables: Individual & HH Characteristics</i>								
Female	-0.090	0.091	0.306	0.138 **	5%	-0.051	0.102	
Family Income, 1989 (\$s)	-1.6E-06	1.5E-06	6.5E-06	3.4E-06 *	14%	0.000	0.000	
Age	0.012	0.004 ***	-0.006	0.005		0.016	0.004 ***	-4%
Good Health	-0.133	0.085	0.014	0.117		-0.076	0.107	
Own Automobile	-0.091	0.132	-0.249	0.101 **	-8%	-0.125	0.186	
Married	0.113	0.105	-0.130	0.121		-0.130	0.118	
College Graduate	0.122	0.083	-0.420	0.202 **	-6%	0.115	0.165	
High School Graduate	-0.323	0.127 **	0.059	0.099		0.004	0.095	
# Children in Family	-0.095	0.032 ***	-0.020	0.035		-0.015	0.032	
<i>Independent Variables: Industry Controls</i>								
Construction	-0.108	0.138	-0.061	0.208		-0.276	0.172	
Retail	-0.007	0.108	-0.062	0.120		0.052	0.132	
Manufacturing	-0.188	0.099 *	-0.204	0.141		-0.096	0.114	
Service	-0.197	0.105 *	-0.027	0.108		0.199	0.141	
<i>Independent Variables: Duration</i>								
<i>Dummy Variables</i>								
Unemployment Spell Began 1991	0.129	0.093	0.211	0.106 **	-0.1%	0.198	0.107 *	1%
Unemployment Spell Began 1992	0.378	0.105 ***	0.138	0.119		0.137	0.112	
<i>Independent Variables: Neighborhood Characteristics</i>								
% White Non-Hispanic	0.014	0.132	-0.110	0.177		-0.628	0.267 **	-24%
% Poor	-0.239	0.557	-0.262	0.338		0.636	0.465	
% High School Education	-0.516	0.382	-1.239	0.402 ***	-18%	0.410	0.379	
% Work Within County	-0.361	0.191 **	-0.399	0.259		-0.560	0.301 *	8%
Predicted Duration (Months)	4.0657		5.151			4.538		
Sigma	0.825	0.038 ***	0.822	0.041 ***		0.868	0.043 ***	
Log-Likelihood	-702.001		-566.971			-615.195		

*** p < .01; ** p < .05; * p < .10