Carleton College Department of Economics
Working Paper Series

Residential Segregation and Labor-Market Outcomes: The Importance of Race, Gender, and Marital Status

by Jenny B. Wahl

No. 2008-01

Department of Economics
Carleton College
One North College Street
Northfield, MN 55057
Telephone: (507) 646-4109
Facsimile Number: (507) 646-4044

April 2008

Nine of every ten African-Americans lives in an urban area; the average black city dweller resides in a highly segregated neighborhood.[1] Urban residence and neighborhood segregation may result from discrimination, personal choice, or some combination of the two. Whatever the reason, racial segregation in housing potentially affects employment and wage rates.

My research suggests that any analysis of residential segregation and labor-market outcomes should account for gender and marital status as well as race and age. Correcting for selection bias in wage regressions is also important; neglecting to do so overestimates the racial wage gap. Among adults of all ages, segregation in housing appears to have the most deleterious effect upon single black male heads of household. Among individuals aged 20 to 30, residential segregation has a negative impact upon the wages of black men but a positive one on the wages of black women relative to their white counterparts. Preliminary analysis indicates that more-educated blacks may suffer more from residential segregation.

THEORETICAL FRAMEWORK

Basic Model: Residential Segregation, Race, and Labor Market Outcomes

Consider a simple model of the labor market, where wages are a function of supply and demand factors. Utility-maximizing individuals generate labor supply as a function of preferences and constraints; profit-maximizing firms generate labor demand as a function of relative prices and productivity. In short,

$$w = \alpha_w + \boldsymbol{\beta}_w \mathbf{X} + \varepsilon_w, \qquad (1)$$

where w is typically cast as the natural log of wages and **X** denotes a vector of characteristics that reflect preferences, constraints, and productivity.[2] If w is measured as the natural log of yearly earnings, two "explanatory" factors in **X** include number of weeks worked and number of hours per week worked.

Of particular interest is the effect associated with the interaction of race and residential segregation.[3] Using 1990 census data on individuals aged 20 to 30 years old, Cutler and Glaeser (1997) found that segregation affected blacks negatively but had little effect on outcomes for whites.[4] They concluded that a one-standard-deviation reduction in segregation would eliminate one-third of the gap between whites and blacks.[5]

What could account for this finding? Spatial mismatch between housing and jobs might help provide an answer. If some neighborhoods are located far from attractive, high-paying jobs, residents of these areas may rationally choose lower-paying jobs closer to home, or they may drop out of the labor force entirely (Kain 1968, McLafferty and Preston 1992, Taylor and Ong 1995, Myers and Saunders 1996, Ross 1998, Weinberg 2000, Stoll et al. 2000, Chung et al. 2001, Stoll 2005, Boustan and Margo 2007). Suppose, for example, that blacks and whites live in different neighborhoods and jobs are located primarily in the white neighborhood. Then we might expect whites to earn higher wages and blacks lower wages in this world as compared to one in which jobs are spread about evenly or people of different races live in integrated neighborhoods. This would imply a negative coefficient on an interactive variable "segblack" (equal to the degree of residential segregation times a dummy variable equaling one for black persons). That is, blacks living in a segregated area would earn less relative to whites, all else constant, than blacks living in a more integrated area.

Other influences could also yield a negative coefficient on "segblack." Suppose residential segregation acts as a proxy for labor-market discrimination. Lack of contact between races could lead to statistical discrimination among employers, for example (Neumark 1999, Ihlanfeldt and Scafidi 2002). Or greater residential segregation could imply fewer positive role models for blacks (Coleman 1966, Massey et al. 1991, Massey and Denton 1993, O'Regan 1993, Wilson 19187, 1996, Borjas 1995, Glaeser et al. 1996).

Theory is ambiguous as to the expected sign on "segblack," however. Preferences could generate a positive coefficient on the interactive variable. This might occur if blacks prefer to live in a racially mixed neighborhood but would be willing to accept more segregation if they also receive relatively higher income (Ihlanfeldt and Scafidi 2002, Krysan and Farley 2002, Vigdor 2002, Sethi and Somanathan 2004, Bayer et al. 2004, Adelman 2005, Ananat 2007) . Or neighborhoods and social networks could yield a sense of community, thriving internal markets, or superior job contacts (Glazer and Moynihan 1963, Wilson 1987, Borjas 1995). These effects may differ across races (Moore 1990, Hanson and Pratt 1991, Massey and Shibuya 1995, Fernandez-Kelly 1995, Waldinger 1996, Elliott and Sims 2001, Mouw 2002, Parks 2004, Christie-Mizell 2006). An observed positive coefficient on "segblack" could reflect better availability and use of social networks for blacks relative to whites in more-segregated cities; an observed negative coefficient could indicate the reverse.

In moving from model to estimation, recall that the decision to work at all is the essential pre-requisite to earning wages. As Heckman (1979) pointed out in his seminal research, we can only observe actual wages. Appropriate estimation thus includes a variable λ that captures this selection bias:[6]

$$w = \alpha + \boldsymbol{\beta}\mathbf{X} + \beta_\lambda \lambda + \varepsilon_\lambda \quad (3)$$

Although Cutler and Glaeser (1997) analyze the degree of "idleness" present in different races, but they do not explicitly account for selection issues in their wage analysis. Instead, they simply exclude individuals who earned nothing.

Gender and Marital Status Issues

The selection issue raises an important question: Do gender and marital status matter for labor-force outcomes? Both theory and empirical evidence suggest that the answer is yes (Becker 1981, Lundberg and Pollak 1996, Blau et. al 2000, Hersch and Stratton 2002). Market outcomes may differ for women because they engage in different non-market activities (housework and childcare, for example), have different preferences, encounter different employer attitudes, or use social networks differently. Married people arguably make decisions jointly whereas single persons enjoy more autonomy. What is more, people who are less attractive in the labor market may also be less attractive in the marriage market. These factors suggest that separate empirical analyses by gender and marital status could be fruitful.[7]

DATA

Individual and household data come from the 2000 1 percent census Public Use Micro Samples organized at the Minnesota Population Center. Information on segregation indices (SI), population size, proportion of the population that is black, and degree of urban sprawl comes from separate sources compiled by the U.S. Census Bureau.[8]

I focus my analysis on four groups: single male household heads, married male household heads, single female household heads, and wives of household heads. I therefore exclude one group of potential wage earners with relatively less attachment to the labor force: adult men and women living with their parents or other adults.

The Census Bureau has published SIs by metro area for 2000, which I matched to the samples. Out of 331 areas, 75 of them had SIs greater than 0.6, the threshold often used to denote "highly segregated." Notably, only one-third of these highly segregated cities is in a Southern or border state.[9] The five most segregated U.S. cities are Detroit, Milwaukee, Gary, New York, and Newark. Of the ten most populous areas in the U.S., only Dallas had an SI less than 0.6. For the samples used in this paper, the value of SI ranged from 0.214 to 0.846, with averages between 0.628 and 0.644.

EMPIRICAL FINDINGS

Race-Separate Regressions

Table 1 shows average ages and wages for employed urban residents by sex, race, and marital status.[10] In each sex/marital status category, average ages were fairly similar for blacks and whites. The average single black female household head earned 80 percent as much as the average single white female head, but wives earned virtually the same on average. Comparable figures for males were 74 percent for single heads and 66 percent for married heads. Among individuals aged 20 to 30, the average black earned roughly 80 percent the wages of the average white in all categories except wives: here again, average wages were approximately equal.

Following Oaxaca (1973), decompositions can help determine how much of the respective differences are explicable by diverse underlying characteristics. I therefore ran separate regressions by race for each group.[11] Table 2 lists the independent variables included in each regression; these variables are also used in the race-combined regressions discussed below.[12]

Using the regression for whites as the reference, I estimated the portion of the wage gap attributable to racial differences in the observed characteristics. Over 80 percent of the gap for single female heads is explained by differences in observed characteristics, only about 60 percent is explained for male heads (single or married), and about 65 percent of the tiny difference is explained for wives. These results suggest a reasonable next step: combining the races into a single regression and accounting for interactions, particularly the interaction between race and residential segregation.

Race-Combined Regressions

Table 3 lists race- and segregation-related coefficients from the selection and substantive equations for all ages together. To compare with Cutler's and Glaeser's (1997) results, Table 4 reports coefficients for regressions using only individuals aged 20 to 30 years old.[13] Charts 1 and 2 represent this information graphically. Table 5 offers descriptive statistics.

These tables and charts reveal four key findings: (1) greater residential segregation is associated with lower employment rates of blacks relative to whites; (2) greater residential segregation also corresponds to smaller earnings of blacks relative to whites for single household heads of all ages regardless of gender and for young males

regardless of marital status, but the reverse is true for other groups; (3) black wives have higher employment rates and earnings than comparable white wives; and (4) selection bias matters. The following paragraphs explore these findings.

1. Greater Segregation: Lower Relative Employment Rates for Blacks

The left half of Table 3 and top part of Chart 1 show that an increase in residential segregation corresponds to a reduction in the employment rate of blacks relative to whites, with the most pronounced effect for single males. Although the effect of increased segregation is consistent across groups, the patterns vary. Single black household heads are employed relatively less in all cities, regardless of gender, with segregation exacerbating the effect. Married black male heads have higher employment rates than their white counterparts in less-segregated cities. Once a city reaches about the average SI (0.63), married male heads of both races work at nearly the same rate, ceteris paribus. Thereafter, married black male heads have lower employment rates, with segregation acting to widen the gap. Black wives have higher employment rates than their white counterparts regardless of the degree of segregation. As segregation increases, this gap narrows.

The left half of Table 4 and top part of Chart 2 indicate that an increase in residential segregation also corresponds to a reduction in the employment rate of blacks relative to whites aged 20 to 30. The segregation effect is more pronounced for this age group than for all ages combined. The patterns look similar to those for all ages, except for one: young black single females have somewhat higher relative employment rates at low levels of segregation, ceteris paribus, but lower rates once SI reaches its mean value.

These employment-rate results are consistent with spatial mismatch or discrimination hypotheses. If greater residential segregation implies a longer or more difficult commute for blacks than for whites, we would expect to see black employment rates fall relative to white rates as SI increases.[14] Or, if greater residential segregation acts as a proxy for increased labor-market discrimination, blacks living in more-segregated cities might reasonably opt out of the labor force more easily or encounter more difficulty finding jobs (relative to whites) than those living in less-segregated cities.

Role-model and social-network models might also help explain these patterns. The role-model approach suggests that work patterns may self-perpetuate – whatever the initial reason for low relative employment by blacks in more-segregated neighborhoods, it could imply subsequent low relative employment. Or, if blacks living in more-segregated neighborhoods have weaker social networks relative to whites than blacks in less-segregated neighborhoods, they might have more trouble locating job opportunities.

2. Residential Segregation, Earnings, Gender, Age, and Marital Status

The right half of Table 3 and bottom part of Chart 1 show that black household heads earn less than white household heads, even controlling for selection bias, gender, age, education, occupation, marital status, and other demographic and geographic variables. Greater segregation in housing also corresponds to relatively lower wages for single black male household heads, but the opposite is true for married black male heads. Residential segregation has a negligible effect on the relative wages of single female heads. And increases in residential segregation improve the wage experience of working

black wives relative to their white counterparts; black wives actually earn more than comparable white wives in highly segregated cities.

The right half of Table 4 and bottom part of Chart 2 reveal a negative effect of residential segregation on the relative wages of all young black males, whether married or not. In contrast, greater segregation corresponds to a small positive effect on the relative wages of young black females, both for single heads of households and for wives. All else constant, black wives aged 20 to 30 earn more than comparable white wives at all observed levels of segregation.

These results indicate that, if the relationship between residential segregation and relative wages is causal, only males would benefit from a reduction in segregation.[15] Evaluated at the mean, the racial wage gap due only to residential segregation for comparable single men of all ages is about 6 percent.[16] Reducing the SI by one standard deviation from its mean would eliminate about one-fifth of this gap.

Among young white men, higher segregation corresponds to higher wages, whereas wages for young black men fall as segregation increases, all else constant. The effect of residential segregation is even stronger for young single males than for single males of all ages: the racial wage gap at the mean due to segregation alone is about 9 percent.[17] Young married men exhibit a similar pattern to young single men: the racial wage gap at the mean due to residential segregation is about 11 percent.[18] Again, reducing the SI by one standard deviation from its mean would eliminate one-fifth of the gap. (Note that these figures do not adjust for any changes in the initial decision to work.)

What might account for these patterns? One possibility is that the control variables do not capture all salient differences. Aggregating the data masks important distinctions among cities for which the included variables only partly account.

Omitted or mismeasured variables may be particularly relevant in explaining gender differences among the young. Certainly, men and women spread themselves differently across occupational categories. For instance, among black male household heads aged 20 to 30, 37 percent of married heads and 32 percent of single heads worked as skilled or unskilled laborers; the parallel figures for young black women are 8 percent for wives and 9 percent for single female household heads. Spatial mismatch for men may be more acute than it is for women, particularly among young people, and the occupational categories are too broad to reflect its effects fully.

Discrepancies within occupational categories may also be relevant, chiefly in explaining the patterns for all ages combined. In the "managerial and professional" category, for example, married black male heads working as computer scientists are far better represented (using married white male heads as a control) in highly segregated cities (relative to less-segregated cities) than are single black male heads. Likewise, married black male heads in the "sales and administrative" category have the edge in highly segregated cities (relative to less-segregated cities) among supervisors and retail sales clerks. Married black male heads capture relatively more of the guard and watchman jobs among "service" workers in highly segregated cities (relative to less-segregated cities) whereas single black male heads fall more heavily into janitorial positions.[19]

Why these observed differences occur is a separate issue. Perhaps employers perceive married and single black men differently, or wives influence occupational choice, or marital status differentiates black men more than white men for some reason. Marriage patterns clearly differ by race: over half of whites aged 15 and older were married and living with a spouse in 2006, but only 34.6 percent of black males and only 27.1 percent of black females lived with a spouse.[20]

One hypothesis to connect these patterns is this: Married men may look much like single men when observed at young ages. Racial factors could well swamp any marital-status influences in the labor market. But the diverging patterns observed for men of all ages could indicate that women (particularly black women) select a certain type of man to marry and then stay with, or that men (particularly black men) who stay married are more likely to adopt the labor-market patterns of their spouses.

Discrimination might also account for some of the differences between men and women, especially those aged 20 to 30. One possibility is that discrimination is more of an issue for black men. Whether more-segregated cities mean more-prejudiced employers, or whether they imply less contact between races and lead to more statistical discrimination, perhaps the impact is larger for men. But here is a complication: gender discrimination – whether actual or statistical – may also figure into the mix. As Neumark (1999) noted, simple statistical discrimination is partly responsible for race differences in starting wages but cannot explain the gender gap. If employers discriminate against women of both races but against only black men, finding different patterns for men and women is not surprising.

3. What about Wives?

Turn now to the observations for wives. Particularly noticeable are the greater employment rates and wages for black wives over nearly the entire range of SI, and the larger wage gap at higher levels of segregation. Viewing these patterns alongside those for married male household heads, I speculate that intra-family dynamics may play a role in generating them.

Here is one possible story: Married black men have lower employment rates than comparable whites at high levels of segregation, and they earn less across all values of SI. Young married black men experience an increasing wage gap vis-à-vis similar whites as segregation rises. If comparable black and white families have similar aspirations and desires, a plausible response for black wives is to work and earn more than their white counterparts. Young wives who work more potentially also add more to their human capital, which will pay off at later ages. The wage gap for wives of all ages is thus larger than for young wives in highly segregated cities. These are speculations only; I have not accounted for interracial marriage, nor have I yet analyzed household-level (as opposed to individual-level) data.

4. Selection Bias Matters

The coefficient on λ is significant in all race-combined substantive regressions. Estimating the selection equation first is therefore an essential part of obtaining unbiased coefficients in the substantive regression.

In all regressions but one, the sign of β_λ is negative, indicating that unobservable factors which tend to increase employment rates also tend to decrease wage rates. The

coefficient from the regression for single female heads of all ages is positive, however. For this group, unobservables that increase employment rates also tend to increase wage rates.

Charts 1 and 2 plot relationships between the natural log of wages and SI separately for blacks and whites, both with and without correction for selection bias. At the mean, the uncorrected regression overestimates the wage gap for men by over 20 percent for singles and about 2 percent for married men. Selection does not appear to be a large issue for single females of all ages. The uncorrected regression overestimates the wage gap for wives, but note that, for this group, blacks earn more than comparable whites. At the mean, the gap is about $500 too large.

For young persons aged 20 to 30, the uncorrected regressions overestimate the wage gap for all groups. At the mean, the overestimate is minimal for married men, almost $1,400 for single men, nearly $600 for single female heads, and over $900 for wives. As with wives of all ages, young black wives aged 20 to 30 earned more than their white counterparts, ceteris paribus.

Residential Segregation and the Return to Human Capital Investments: A Preliminary Investigation

Returns to human capital vary across groups in relation to residential segregation. Chart 3 suggests that greater residential segregation improves the position of black women relative to comparable white women across most levels of education. This is also true for men with less than a high-school education and for male high-school graduates.

But the racial wage gap widens with residential segregation for single men once they have attended at least some college and for married men who have a college degree

or post-college training. It widens slightly for single female college graduates as well. The negative relationship between relative wages and residential segregation thus appears concentrated among relatively well-educated men and, less so, among single female college graduates. This may partly be due to actual or perceived differences in the quality of education (and relevant human capital) among highly educated whites and blacks, particularly men, living in more-segregated cities.

Other Potential Urban Influences on Labor-Market Outcomes

Metro areas reflect bundles of interrelated characteristics: more populous cities tend to have greater urbanization, a larger proportion of blacks, and more-segregated neighborhoods. I have focused upon residential segregation in this paper. Although I control for population, urban sprawl, and proportion black, I do not interact these variables with race.

Urban sprawl could influence labor-market outcomes. Yet sprawl by itself would likely not affect blacks differently from whites in a particular metro area. What could matter is if individuals from one racial group tend to live in neighborhoods that are on the losing end of sprawl – because they are located far from jobs, for example.

Likewise, the proportion of the population that is black could affect individual whites and blacks differently. Blacks might flock to a city because it pays higher wages relative to what they could earn elsewhere, but the black-white wage gap could also be larger in areas with greater proportions of blacks. But if cities with higher proportion of blacks also tend to have more segregated neighborhoods, then the underlying reason for a

larger black-white wage gap may have more to do with residential segregation than with the percent of the population that is black.

Emphasizing the interaction of race with residential segregation rather than with other characteristics of a city thus has theoretical appeal. Still, the regressions contained here could attribute racial differences in the labor market to residential segregation when city size, sprawl, or proportion black may also matter. In future work, I plan to take advantage of multiple years of census data so that I can isolate these different effects. If residential segregation varies more between census years than other features of a city, for instance, a fixed-effects model might better isolate the labor-market impact of residential segregation.

CONCLUSIONS

Jacob Vigdor and David Cutler (2001) report that residential segregation fell 5.5 percent on average from 1990 to 2000, bringing it to its lowest level since 1920.[21] Cutler's and Glaeser's (1997) study using 1990 census data proposes that reducing housing segregation could help eliminate the racial wage gap, particularly for young persons. Yet some theoretical models imply that decreased inequality may actually be compatible with greater segregation. Ascertaining the relationship between residential segregation and wages thus requires close empirical investigation.

My work suggests that models, empirical tests, and policy suggestions linking residential segregation to labor-market outcomes should account for gender and marital status as well as race and age. It also indicates that using the Heckman two-step procedure is essential in estimating wage regressions. Using census data from the year

2000, I find that reducing residential segregation could potentially narrow the racial wage gap for single male household heads but could widen it for married male heads. Black wives tend to earn slightly more than comparable white wives, and residential segregation amplifies this effect. Among young people, residential segregation reduces the wages of blacks relative to whites for men regardless of marital status but has the opposite effect for women.

These findings offer some support for the spatial-mismatch hypothesis, particularly for young black men. Another possibility is that residential segregation goes hand-in-hand with labor-market discrimination, again especially for young black men. But the results reported here also reveal that gender and marital status complicate the connections among residential segregation, employment rates, and wages. So does educational level. Discrimination and geographical mismatch of jobs and residences may link outcomes in housing and labor markets, but so may complex preferences, perceived additions to human capital, social networks, and marital relationships.

SOURCES

Adelman, Robert. "The Roles of Race, Class, and Residential Preferences in the Neighborhood Racial Composition of Middle-Class Blacks and Whites." *Social Science Quarterly*, March 2005, 86(1), pp. 209-28.

Amanat, Elizabeth. "The Wrong Side of the Tracks." NBER Working Paper 13343 (August 2007).

Bayer, Patrick, McMillan, Robert, and Rueben, Kim. "Residential Segregation in General Equilibrium." Discussion Paper 885, Economic Growth Center, Yale University, May 2004.

Becker, Gary. *A Treatise on the Family*. Cambridge: Harvard University Press, 1981.

Blau, Francine, Kahn, Lawrence, and Jane Waldfogel. "Understanding Young Women's Marriage Decisions: The Role of Labor Market and Marriage Market Conditions." *Industrial and Labor Relations Review*, July 2000, 53(4), pp. 624-47.

Borjas, George. "Ethnicity, Neighborhoods, and Human Capital Externalities." *American Economic Review*, June 1995, 85(3), pp. 365-90.

Boustan, Leah, and Robert Margo. "Why Did Ghettos 'Go Bad'? Evidence from the U.S. Postal Service." Working Paper (Nov. 2007).

Chung, Chanjin, Samuel Myers, Jr., and Lisa Saunders. "Racial Differences in Transportation Access to Employment in Chicago and Los Angeles, 1980 and 1990." *American Economic Review*, May 2001, 91(2), pp. 174-77.

Collins, William, and Robert Margo. "Residential Segregation and Socioeconomic Outcomes: When Did Ghettos Go Bad?" *Economics Letters*, November 2000, 69(2), pp. 239-243.

Creedy, John, and P.E. Hart. "Age and the Distribution of Earnings." *Economic Journal*, June 1979, 89(354), pp. 280-93.

Cutler, David, and Edward Glaeser. "Are Ghettos Good or Bad?" *Quarterly Journal of Economics*, August 1997, 112(3), pp. 827-71.

Elliott, James, and Mario Sims. "Ghettos and Barrios: The Impact of Neighborhood Poverty and Race on Job Matching among Blacks and Latinos." *Social Problems*, August 2001, 48(3), pp. 341-61.

Fernandez-Kelly, M. Patricia. "Social and Cultural Capital in the Urban Ghetto: Implications for the Economic Sociology of Immigration." In *The Economic Sociology of Immigration: Essays on Networks, Ethnicity, and Entrepreneurship*, ed. Alejandro Portes, New York: Russell Sage Foundation, 1995, pp. 213-47.

Glaeser, Edward, and Matthew Kahn. "Sprawl and Urban Growth." Discussion Paper 2000, Harvard Institute of Economic Research, May 2003, http://econweb.fas.harvard.edu/hier/2003papers/HIER2004.pdf.

Glaeser, Edward, Matthew Kahn, and Jordan Rappaport. "Why Do the Poor Live in Cities?" Discussion Paper 1891, Harvard Institute of Economic Research, April 2000, http://www.economics.harvard.edu/hier/2000papers/HIER1891.pdf.

Glaeser, Edward, B. Sacerdote, and Jose Scheinkman. "Crime and Social Interactions." *Quarterly Journal of Economics*, May1996, 111 (2), pp. 508-48.

Glaeser, Edward, and Jacob Vigdor. "Racial Segregation in the 2000 Census: Promising News." *Center on Urban & Metropolitan Policy, The Brookings Institute Survey Series* (April 2001).

Hanson, Susan, and Pratt, Geraldine. "Job Search and the Occupational Segregation of Women." *Annals of the Association of American Geographers* June 1991, 81 (2), pp. 229-53.

_____. "Dynamic Dependencies: A Geographic Investigation of Local Labor Markets." *Economic Geography*, October 1992, 68 (4), pp. 373-405.

Heckman, James. "Sample Selection Bias as a Specification Error." *Econometrica*, January 1979, 47(1), pp. 53-61.

Hersch, Joni, and Leslie Stratton. "Housework and Wages." *Journal of Human Resources*, Winter 2002, 37(1), pp. 217-29.

Ihlanfeldt, Keith, and Benjamin Scafidi. "Black Self-Segregation as a Cause of Housing Segregation: Evidence from the Multi-City Study of Urban Inequality." *Journal of Urban Economics*, March 2002, 51(2), pp. 366-90.

_____. "The Neighbourhood Contact Hypothesis: Evidence from the Multicity Study of Urban Inequality." *Urban Studies*, April 2002, 39(4), pp. 619-41.

Kain, John. "Housing Segregation, Negro Employment, and Metropolitan Decentralization." *Quarterly Journal of Economics*, May 1968, 82(2), pp. 175-97.

Krysan, Maria, and Reynolds Farley. "The Residential Preferences of Blacks: Do They Explain Persistent Segregation?" *Social Forces*, March 2002, 80(3), pp. 937-980.

Lundberg, Shelly, and Robert Pollak. "Bargaining and Distribution in Marriage." Journal of Economic Perspectives, Autumn 1996, 10(4), pp. 139-58.

Mare, R. D., and Christopher Winship. "Socioeconomic Change and the Decline of Marriage for Blacks and Whites." In C. Jencks & P. E. Peterson (eds.), *The Urban Underclass*. Washington, DC: The Brookings Institution, 1991, pp. 175-95.

McLafferty, Sara, and Valerie Preston. "Spatial Mismatch and Labor Market Segmentation for African-American and Latina Women," *Economic Geography*, October 1992, 68(4), pp. 406-431.

Massey, Douglas, and Denton, Nancy. *American Apartheid: Segregation and the Making of the Underclass.* Cambridge, Mass.: Harvard University Press, 1993.

Massey, Douglas, Gross, Andrew, and Eggers, Mitchell. "Segregation, The Concentration of Poverty, and The Life Chances of Individuals." *Social Science Research*, December 1991, 20 (4), pp. 397-420.

Massey, Douglas., and Shibuya, Kumiko. "Unraveling the Tangle of Pathology: The Effect of Spatially Concentrated Joblessness on the Well-being of African Americans." *Social Science Research*, December 1995, 24 (4), pp. 352-66.

Mincer, Jacob. "Investment in Human Capital and Personal Income Distribution." *Journal of Political Economy*, August 1958, 66(4), 281-302.

Moore, Gwen. "Structural Determinants of Men's and Women's Personal Networks." *American Sociological Review*, October 1990, 55 (5), pp. 726-35.

Mouw, Ted. "Are Black Workers Missing the Connection? The Effect of Spatial Distance and Employee Referrals on Interfirm Racial Segregation." *Demography*, August 2002, 39(3), pp. 507-528.

Neumark, David. "Wage Differentials by Race and Sex: The Roles of Taste Discrimination and Labor Market Information." *Industrial Relations*, July 1999, 38(3), pp. 414-45.

Oaxaca, Ronald. "Male –Female Wage Differentials in Urban Labor Markets." *International Economic Review*, October 1973, 14(3), pp. 693-709.

O'Regan, Katherine. "The Effect of Social Networks and Concentrated Poverty on Black and Hispanic Youth Unemployment." *Annals of Regional Science*, December 1993, 27 (4), pp. 327-42.

Parks, Virginia. "Access to Work: The Effects of Spatial and Social Accessibility on Unemployment for Native-Born Black and Immigrant Women in Los Angeles." *Economic Geography*, April 2004, 80 (2), pp. 141-72.

Pendall, Rolf, and John Carruthers. "Does Density Exacerbate Income Segregation? Evidence from US Metropolitan Areas, 1980 to 2000." *Housing Policy Debate, Fannie Mae Foundation*, 2003, 14(4), pp. 541-590, http://www.fanniemaefoundation.org/programs/hpd/pdf/hpd_1404_pendall.pdf.

Quinn, Lois, and John Pawasarat, "Racial Integration in Urban America: A Block Level Analysis of African American and White Housing Patterns." University of Milwaukee Employment and Training Institute OnLine Publications, 2003, http://www.uwm.edu/Dept/ETI/integration/integration.pdf

Reder, Melvin. "Age and Income." *American Economic Review*, May 1954, 44(2), pp. 661-70.

Ross, Stephen. "Racial Differences in Residential and Job Mobility: Evidence Concerning the Spatial Mismatch Hypothesis." *Journal of Urban Economics*, January 1998, 43(1), PP. 112-135.

Sethi, Rajiv, and Rohini Somanathan. "Inequality and Segregation." *Journal of Political Economy*, December 2004, 112(6), pp. 1296-1322.

Stoll, Michael. "Job Sprawl, Spatial Mismatch, and Black Employment Disadvantage." UCLA California Center for Population Research On-Line Working Paper Series, CCPR-014-05, June 2005, http://www.ccpr.ucla.edu/ccprwpseries/ccpr_014_05.pdf.

Stoll, Michael, Holzer, Harry, and Keith Ihlanfeldt. "Within Cities and Suburbs: Racial Residential Concentration and the Spatial Distribution of Employment Opportunities across Sub-Metropolitan Areas." *Journal of Policy Analysis and Management*, Spring 2000, 19(2), pp. 207-31.

Taylor, Brian, and Paul Ong. "Spatial Mismatch or Automobile Mismatch? An Examination of Race, Residence, and Commuting in US Metropolitan Areas." *Urban Studies*, November 1995, 32(9), pp. 1453-73.

Vigdor, Jacob. "The Pursuit of Opportunity: Explaining Selective Black Migration." *Journal of Urban Economics*, May 2002, 51(3), pp. 391-417.

Waldinger, Roger. *Still the Promised City?* Cambridge: Harvard University Press, 1996.

Weinburg, Bruce. "Black Residential Segregation and the Spatial Mismatch Hypothesis." *Journal of Urban Economics*, July 2000, 48(1), pp. 110-134.

Wilson, William. *The Truly Disadvantaged: The Inner City, the Underclass, and Public Policy*. Chicago: University of Chicago Press, 1987.

_____. *When Work Disappears: The World of the New Urban Poor*. New York: Alfred A. Knopf, 1996.

Table 1: Average Wages and Ages for Employed Urban Household Heads by Race, Sex, and Marital Status in Census Year 2000

ALL AGES

	White	Black	Black as a Proportion of White
SINGLE MALE HEADS			
Wage	$42,422	$31,427	74.1%
Age	39.47	39.59	100.3%
MARRIED MALE HEADS			
Wage	$59,123	$39,221	66.3%
Age	44.86	43.83	97.7%
SINGLE FEMALE HEADS			
Wage	$32,298	$25,885	80.1%
Age	42.98	39.89	92.8%
WIVES			
Wage	$28,148	$28,131	99.9%
Age	42.47	41.83	98.5%

AGES 20-30

SINGLE MALE HEADS			
Wage	$31,343	$24,803	79.1%
Age	25.81	25.81	100.0%
MARRIED MALE HEADS			
Wage	$37,235	$30,353	81.5%
Age	27.11	27.19	100.3%
SINGLE FEMALE HEADS			
Wage	$24,631	$19,295	78.3%
Age	25.6	25.75	100.6%
WIVES			
Wage	$22,275	$21,552	96.8%
Age	26.68	26.79	100.4%

Table 2: Independent Variables for Selection and Substantive Regressions

Variable	Equation
number of kids	selection
presence of grandchildren	selection
in school=1 if currently in school, 0 otherwise	selection
age	both
age squared	both
ln population (lpop)	both
proportion black in population (PropB)	both
segregation index (SI)	both
percent urbanized (urb)	both
D=1 if has work disability, 0 otherwise	both
LTHS=1 if less than high school education, 0 otherwise	both
HSGRAD=1 if high school graduate only, 0 otherwise	both
SOMECLG=1 if some college education, 0 otherwise	both
POSTCLG=1 if post-college work, 0 otherwise	both
LNXINC= ln (income other than head's wages)	both
NE = 1 if lives in Northeast, 0 otherwise	both
MW = 1 if lives in Midwest, 0 otherwise	both
W=1 if lives in West, 0 otherwise	both
B=1 if black, 0 if white	both (race-combined only)
B*SI	both (race-combined only)
NOTCITY=1 if lives outside central city, 0 otherwise	substantive
UNKNCITY=1 if residence area unknown, 0 otherwise	substantive
WW=weeks worked in the last year	substantive
UHW=usual hours worked per week	substantive
ADMIN=1 if administrative occupation, 0 otherwise	substantive
SERVICE=1 if service occupation, 0 otherwise	substantive
FFF=1 if fishing, farming, forestry, 0 otherwise	substantive
SKILLED=1 if skilled occupation, 0 otherwise	substantive
LABORER=1 if unskilled occupation, 0 otherwise	substantive
MILITARY=1 if military occupation, 0 otherwise	substantive
SAMEHOUSE=1 if in same house last 5 years, 0 otherwise	substantive
H=1 if homeowner, 0 otherwise	substantive
LAMBDA (obtained from selection equation)	substantive

Note: The omitted dummy variables are college graduate, Southern residence, and managerial/professional occupation.

Table 3: Key Coefficients, All Ages Together

SELECTION EQUATION		SUBSTANTIVE EQUATION		
			no lambda	lambda
SINGLE MALE HEADS				
SI	-1.142	SI	0.010	0.037
B	-0.010*	B	0.013	0.010
B*SI	-0.760	B*SI	-0.117	-0.093
		λ		-0.143
Nag. R^2	0.477	adj. R^2	0.505	0.505
MARRIED MALE HEADS				
SI	-0.658	SI	0.027	0.040
B	0.454	B	-0.117	-0.124
B*SI	-0.741	B*SI	0.023	0.037
		λ		-0.109
Nag. R^2	0.483	adj. R^2	0.451	0.451
SINGLE FEMALE HEADS				
SI	-1.095	SI	-0.099	-0.204
B	0.063	B	-0.090	-0.017
B*SI	-0.559	B*SI	0.099	-0.015
		λ		0.057
Nag. R^2	0.583	adj. R^2	0.593	0.587
WIVES				
SI	-0.679	SI	-0.116	-0.054
B	0.680	B	-0.118	-0.157
B*SI	-0.433	B*SI	0.290	0.310
		λ		-0.285
Nag. R^2	0.294	adj. R^2	0.630	0.631

*Coefficients are significant at the 95-99 percent level for all except this one.

Note: The graphs correspond to the coefficients from Table 3. The dotted lines are for whites and the solid lines for blacks. The gray lines in the wage charts correspond to the regressions uncorrected for selection bias. The range of SI encompasses 2 standard deviations on either side of the mean.

Chart 1: Employment Rates and Ln Wages as Functions of SI, by Gender, Marital Status, and Race (all ages)

Table 4: Key Coefficients, Ages 20-30

SELECTION EQUATION		SUBSTANTIVE EQUATION		
			no lambda	lambda
		SINGLE MALE HEADS		
SI	-1.389	SI	-0.007*	0.156
B	0.097	B	0.169	0.110
B*SI	-1.013	B*SI	-0.368	-0.144
		λ		-1.070
Nag. R^2	0.076	adj. R^2	0.539	0.542
		MARRIED MALE HEADS		
SI	0.074*	SI	0.143	0.131
B	1.231	B	0.162	0.030
B*SI	-1.936	B*SI	-0.395	-0.177
		λ		-1.072
Nag. R^2	0.064	adj. R^2	0.424	0.426
		SINGLE FEMALE HEADS		
SI	-1.240	SI	-0.087	-0.009*
B	1.004	B	-0.027	-0.076
B*SI	-1.671	B*SI	-0.021	0.112
		λ		-0.718
Nag. R^2	0.190	adj. R^2	0.622	0.626
		WIVES		
SI	-0.639	SI	-0.038	0.002*
B	0.919	B	0.001	-0.029
B*SI	-0.382	B*SI	0.091	0.100
		λ		-0.205
Nag. R^2	0.186	adj. R^2	0.671	0.672

*Coefficients are significant at the 95-99 percent level for all except these four.

Note: The graphs correspond to the coefficients from Table 4. The dotted line is for whites and the solid line for blacks. The gray lines in the wage charts correspond to the regressions uncorrected for selection bias. The range of SI encompasses 2 standard deviations on either side of the mean.

Chart 2: Employment Rates and Ln Wages as Functions of SI, by Gender, Marital Status, and Race (ages 20-30)

Table 5: Descriptive Statistics by Gender and Marital Status, All Ages

	single male heads		married male heads		single female heads		wives	
	μ	σ	μ	σ	μ	σ	μ	σ
lnwages	10.244	0.956	10.596	0.915	9.940	1.031	9.823	1.072
age	39.486	12.554	44.761	11.840	42.128	13.671	42.422	11.129
agesqrd	1716.780	1112.185	2143.762	1136.164	1961.641	1258.406	1923.453	998.386
lpop	14.707	0.853	14.648	0.861	14.727	0.869	14.670	0.869
PropB	0.153	0.088	0.152	0.088	0.162	0.090	0.150	0.087
SI	0.632	0.122	0.630	0.124	0.641	0.121	0.628	0.124
urb	0.864	0.090	0.857	0.093	0.863	0.091	0.860	0.093
disabled	0.133	0.340	0.095	0.293	0.127	0.333	0.085	0.279
lths	0.107	0.309	0.102	0.302	0.102	0.302	0.096	0.294
hsgrad	0.228	0.419	0.220	0.414	0.232	0.422	0.244	0.430
someclg	0.318	0.466	0.303	0.460	0.355	0.478	0.330	0.470
postclg	0.040	0.197	0.056	0.230	0.027	0.163	0.029	0.167
lnxinc	5.401	4.676	9.081	3.089	5.790	4.501	10.715	0.822
northeast	0.175	0.380	0.169	0.375	0.196	0.397	0.168	0.374
midwest	0.245	0.430	0.269	0.443	0.252	0.434	0.261	0.439
west	0.250	0.433	0.225	0.418	0.213	0.410	0.248	0.432
black	0.165	0.371	0.099	0.298	0.276	0.447	0.091	0.288
B*SI	0.110	0.251	0.065	0.199	0.186	0.306	0.060	0.192
notcity	0.181	0.385	0.240	0.427	0.183	0.387	0.240	0.427
unkncity	0.637	0.481	0.658	0.474	0.620	0.485	0.649	0.477
WW	46.917	10.966	48.657	9.112	45.528	12.330	44.707	12.846
UHW	43.097	11.046	44.642	10.856	39.196	10.877	36.615	11.602
admin	0.254	0.435	0.229	0.420	0.415	0.493	0.421	0.494
service	0.113	0.317	0.077	0.266	0.163	0.370	0.125	0.331
fff	0.014	0.119	0.012	0.111	0.004	0.061	0.004	0.065
skilled	0.151	0.358	0.169	0.375	0.021	0.143	0.020	0.139
laborer	0.157	0.363	0.142	0.349	0.058	0.233	0.058	0.233
military	0.002	0.047	0.004	0.060	0.001	0.024	0.000	0.020
samehouse	0.365	0.482	0.559	0.496	0.428	0.495	0.561	0.496
homeowner	0.417	0.493	0.812	0.390	0.457	0.498	0.807	0.395
N	6,457,774		14,549,684		8,648,812		13,021,443	

Table 5 (cont.): Descriptive Statistics by Gender and Marital Status, Ages 20-30

	single male heads		married male heads		single female heads		wives	
	μ	σ	μ	σ	μ	σ	μ	σ
lnwages	10.005	0.901	10.288	0.704	9.698	0.978	9.643	1.020
age	25.811	2.934	27.116	2.509	25.648	2.973	26.696	2.693
agesqrd	674.808	149.468	741.589	131.391	666.652	150.957	719.940	139.482
lpop	14.689	0.844	14.586	0.856	14.693	0.856	14.637	0.862
PropB	0.153	0.089	0.148	0.090	0.162	0.091	0.148	0.089
SI	0.629	0.122	0.614	0.129	0.636	0.120	0.617	0.127
urb	0.859	0.091	0.854	0.094	0.857	0.091	0.858	0.093
disabled	0.113	0.316	0.091	0.288	0.097	0.295	0.074	0.262
lths	0.093	0.290	0.129	0.335	0.093	0.290	0.101	0.301
hsgrad	0.204	0.403	0.232	0.422	0.188	0.391	0.210	0.407
someclg	0.343	0.475	0.340	0.474	0.359	0.480	0.349	0.477
postclg	0.024	0.152	0.020	0.140	0.018	0.133	0.019	0.137
lnxinc	5.626	4.730	8.346	3.487	5.159	4.643	10.412	0.734
northeast	0.164	0.370	0.125	0.331	0.183	0.387	0.127	0.333
midwest	0.253	0.435	0.259	0.438	0.256	0.437	0.257	0.437
west	0.242	0.428	0.257	0.437	0.205	0.404	0.271	0.444
black	0.154	0.361	0.105	0.307	0.306	0.461	0.088	0.283
B*SI	0.101	0.239	0.067	0.200	0.203	0.312	0.057	0.186
notcity	0.163	0.369	0.201	0.401	0.150	0.357	0.211	0.408
unkncity	0.641	0.480	0.693	0.461	0.629	0.483	0.675	0.469
WW	45.830	11.703	48.769	8.442	43.903	13.201	42.879	13.947
UHW	42.711	11.341	44.976	9.981	39.125	10.529	37.324	10.660
admin	0.280	0.449	0.242	0.428	0.420	0.493	0.427	0.495
service	0.122	0.327	0.084	0.277	0.174	0.379	0.148	0.355
fff	0.015	0.121	0.016	0.126	0.003	0.058	0.006	0.076
skilled	0.132	0.338	0.196	0.397	0.018	0.132	0.021	0.143
laborer	0.137	0.343	0.168	0.374	0.046	0.209	0.052	0.223
military	0.004	0.060	0.010	0.102	0.001	0.031	0.001	0.029
samehouse	0.106	0.308	0.126	0.332	0.104	0.306	0.144	0.351
homeowner	0.207	0.405	0.520	0.500	0.159	0.365	0.561	0.496
N	1,777,197		1,634,414		1,975,761		2,028,983	

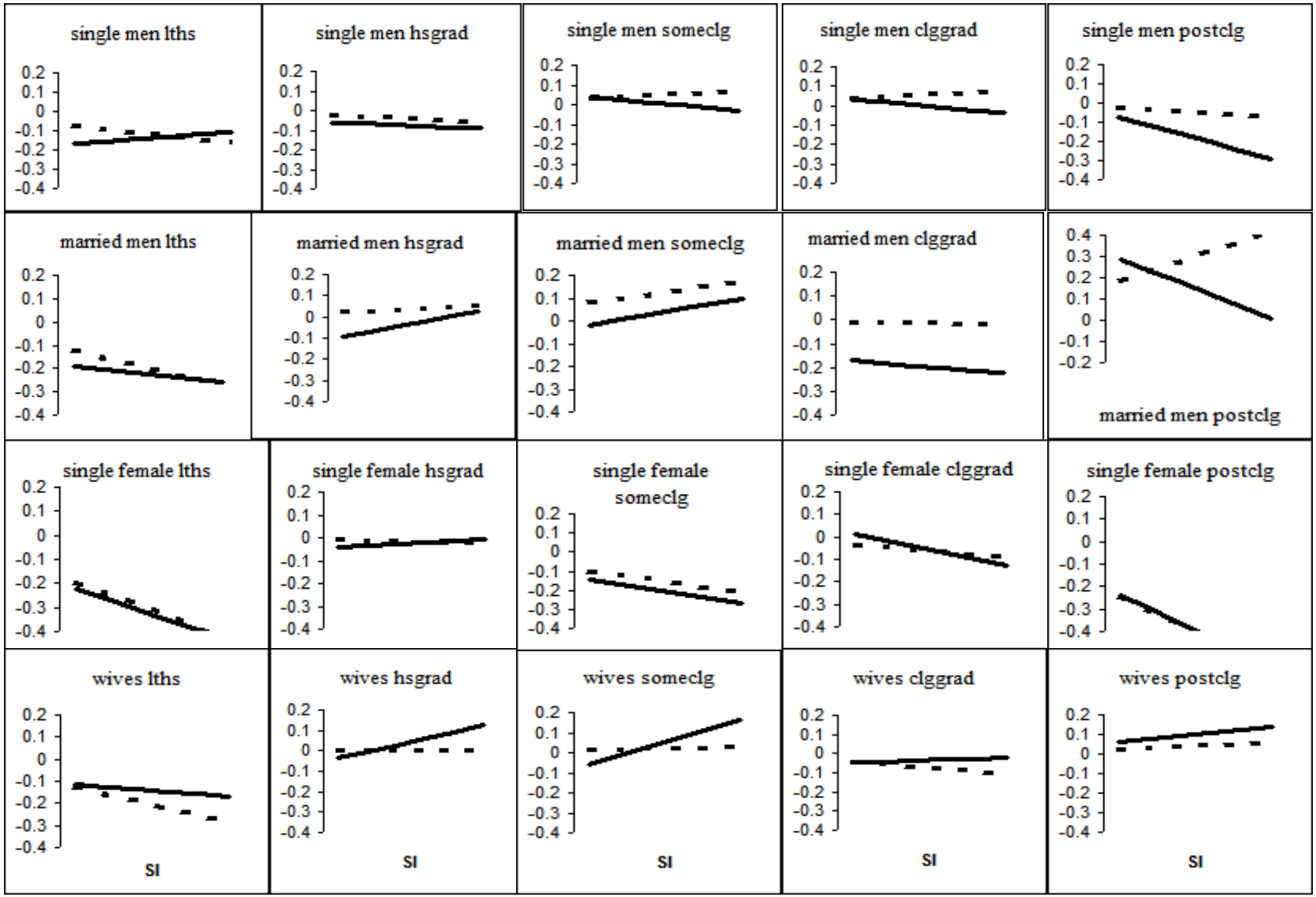

Chart 3: Wage Gap (white dotted, black solid) by Segregation Index, by Gender, Marital Status, and Education Level

ENDNOTES

[1] The U.S. Census Bureau reports an African-American population of just over 36 million in the year 2000. Of these, about 31.5 million live in an area for which the Bureau also reports the dissimilarity index, a measure indicating the proportion of blacks (or non-blacks) that would need to move across census tracts to get a perfectly even proportion of black residents throughout the entire metropolitan area. A dissimilarity index above 0.6 indicates a highly segregated area. The average dissimilarity index for areas with reported indices – weighted by the black population in the area – is 0.625. The weighted average for the data set used in this paper is 0.640. Not everyone agrees with the rankings produced by this measure. See for example Quinn and Pawasarat (2003).

[2] **X** could include, for example, human capital investments (Mincer 1958, Reder 1954), age (Creedy and Hart 1979), non-wage income, occupational categories, region, degree of sprawl, city size, migration status, work disabilities, and home ownership. Dummy variables for race, gender, and marital status could act as proxies for omitted variables related to preferences of workers and employers.

[3] Interrelationships among sprawl, segregation, public transportation, and car ownership can complicate the relationship between residential segregation and race. Glaeser and Kahn (2003) suggest, for instance, that cities with more sprawl may actually have greater integration yet lower well-being for the poor because they cannot afford cars. Stoll et al. (2000) note that large fractions of low-skilled jobs in metropolitan areas simply cannot be reached via public transportation.

[4] To be precise, their OLS estimates suggest that segregation has no effect on whites, but an instrumental-variables approach yields a small positive effect for whites; they do not "feel comfortable drawing strong conclusions about this effect (p. 859)."

[5] Collins and Margo (2000) extend Cutler's and Glaeser's work backward to earlier decades. Although urban residential segregation had a strong adverse impact on labor-market and social outcomes of young African-Americans relative to whites during the 1980s, they find little evidence of such an effect for the period 1940 to 1970.

[6] The Heckman procedure first estimates a probit model of the form $D = \alpha_d + \boldsymbol{\beta_d}\mathbf{Y} + \varepsilon_d$, where D equals 1 for workers and 0 otherwise, and Y includes relevant exogenous variables from (1) plus at least one additional identifying variable. The predicted values from the probit regression can then be used to construct an inverse Mills ratio λ to correct for selection bias in equation (1). The resulting coefficients on X are unbiased, although standard errors must be corrected for heteroskedasticity.

[7] Cutler and Glaeser (1997) control for gender but do not explicitly examine whether segregation could yield different results for married and single persons. Although they do look at the effect of segregation on single motherhood, they do not separate individuals by gender and marital status in earnings regressions.

[8] I use the residential dissimilarity index (SI) between blacks and whites for the metropolitan standard area. The SI data come from http://www.census.gov/hhes/www/housing/housing_patterns/excel, selecting table black2000_metro20003.xls. Other researchers have analyzed different demographic groups, for example MacLafferty and Preston (1992). The data indicating degree of sprawl for each metro area are obtained from http://factfinder.census.gov.

[9] The nation's capital – and the capital of the Union during the Civil War – has an SI of 0.625. By comparison, the SIs in the three Confederate capitals are 0.529 (Montgomery), 0.549 (Richmond), and 0.339 (Danville). The twenty cities with the biggest proportion of blacks in the population are located in the South; only the largest two – Memphis and New Orleans – had SIs greater than 0.6.

[10] All means and regressions are weighted using the person weights given in the Public Use Microsample (PUMS). I originally included observations from non-urban areas in the analysis. Although the results did not differ qualitatively from the findings presented here, I decided to focus on metropolitan areas in part because policy efforts designed to alter housing segregation tend to focus on cities and surrounding suburbs.

[11] These results are available from the author.

[12] One could include occupational variables in the first-stage regression if individuals who were not working reported their usual occupation (if they had one). The coding in the PUMS data typically lists "unreported occupation" for those not working, however. What is more, including the occupational

variables caused the iterations in the first step to exceed the maximum allowed by the software for the size of data sets used. I therefore decided to include occupational categories as right-hand-side variables in the second but not the first stage. Occupation is arguably determined jointly with education and wages, rather than "causing" wages. Essentially, then, I assume that people select the optimal occupation among the choices available to them and I focus on wages as the endogenous variable.

[13] Full regression results are available from the author. Coefficients on other variables have the expected signs and magnitudes.

[14] IPUMS data include some information on commute times and mode of travel to work, but these data are missing for many individuals and tend to clump into broad categories (15 minutes, one hour, and the like) where they do exist. Although I have done some preliminary work with this information, I do not include it here.

[15] If people simply re-sort themselves into ethnic neighborhoods, as in Bayer et al. (2004), individual reactions could foil any policy change directed at altering residential segregation.

[16] Adding the level effect associated with the coefficient on "black" would bring this number to about 5.

[17] Adding the level effect virtually eradicates the gap at the mean.

[18] Adding the level effect would make this figure about 8 percent.

[19] To find this, I constructed an index with the numerator equaling (percent black in detailed occupation)/(percent white in detailed occupation) for highly segregated cities and the denominator equaling the same ratio for all other cities. I then compared these indices for married and single male heads of household.

[20] These figures are from the Current Population Survey for 2006, located at www.census.gov. Mare and Winship (1991) explore several possible explanations for racial differences in marriage patterns, particularly the large drop in marriage rates among African-Americans over the last half-century, but they conclude that census data alone cannot isolate any particular explanation.

[21] This decline is part of a 30-year trend. Before the 1968 Fair Housing Act, residential segregation had been increasing for half a century, in part due to discrimination by realtors, lenders, and white homeowners.