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Commutes, Quits, and Moves*

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This paper analyzes the effects of commuting distance on quit and move propensities. In metropolitan areas with conventional wage and housing price gradients, most workers ordinarily move in order to lengthen commutes and quit in order to shorten them. However, quits and moves by workers whose residential choices are constrained by segregation should be relatively insensitive to commutes. Descriptive statistics and simultaneous probit estimates of move and quit propensities for white and black employees of a single firm confirm these predictions. They demonstrate that long commutes encourage white quits and discourage white moves. Commute increases of one standard deviation would increase white quit propensities and reduce white move propensities by approximately 10%. In contrast, commutes by black employees have no significant effects on their quit and move propensities. © 1991 Academic Press, Inc.

Commutes are a critical element of spatial equilibrium for workers. The out-of-pocket costs of commuting absorb money that could otherwise finance consumption. The time spent in commutes reduces the time available for work or leisure. Inefficient commutes impose excess costs in both currencies.

Moves to more convenient residences, quits to more convenient workplaces, and switches to more efficient modes are the typical remedies for suboptimal commutes. This paper analyzes the first two. Suboptimal commutes can ordinarily be optimized through either a quit or a move, or both. As either is costly, workers typically choose only one or the other. In a metropolitan area with conventional wage and housing price gradients, moves and quits are the most likely remedies for commutes which are too short or too long, respectively.

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The experiences of white employees at a single firm in Detroit demonstrate these relationships. White employees who moved tended to live closer to the workplace, prior to their move, than white employees who did not move. White employees who quit tended to live farther from the workplace in the year of their quit than did workers who remained with the firm. Simultaneous probit estimates of white quit and move propensities confirm that, for these employees, long commutes encourage quits and discourage moves.

Residential segregation imposes suboptimal commutes on workers who suffer from its constraints. It also limits the effectiveness of quits and moves, the principle solutions. Residences of black employees in this firm were restricted by the pattern of residential segregation in metropolitan Detroit. In consequence, black residences were closer to the workplace than white residences, and more concentrated. Probit equations indicate that commutes had no significant effects on the move and quit propensities of black employees.

I. COMMUTES AND UTILITY MAXIMIZATION

Individual utility depends on commutes because commutes are costly, in both money and time. In a static model with costless residence and workplace adjustment, optimal residence and workplace locations depend on the length of commutes. Dynamic adjustments to spatial disequilibrium —moves and quits—are responses to suboptimal commutes. In metropolitan areas with "conventional" negative wage and housing price gradients, commutes of excessive lengths are likely to elicit quits, while those which are too short are likely to generate moves.

A standard, static model of utility maximization for employed consumers demonstrates that optimal residential and workplace locations are determined, in part, by the character of commutes [14]. Utility is a function of housing consumption, h, leisure, L, and an index of consumption for all other goods, x.

Distances from the city center represent residential location, u^h, and workplace location, u^w. Commuting time, c is an increasing function of residential location and a decreasing function of workplace location: $c = c(u^h, u^w)$, with $c_1 > 0$, $c_{11} < 0$, $c_2 < 0$, $c_{22} > 0$. Out-of-pocket commuting costs are p_c per unit commuting time.

Housing prices and wages vary spatially. Prices per unit of housing services fall with distance from the city center [9]:

$$p_h = p_h(u^h),\ p_h' < 0,\ p_h'' > 0.$$

Compensation per unit time at work also falls with distance from the city

center:[1]

$$w = w(u^w), w' < 0, w'' < 0.$$

A model of this type yields the canonical condition for equilibrium residential location, u^h ([9] for example),

$$-p_h' h = (w + p_c)c_1. \tag{1}$$

The marginal costs of increased commutes, holding u^w constant, are $(w + p_c)$. The change in housing prices with u^h is $-p_h'$. At the optimal u^h, increases (decreases) in u^h generate increases (decreases) in commuting costs and savings (increases) in housing costs which are of equal magnitude and opposite sign.

It also yields an analogous condition for the optimal workplace location, u^w,

$$w'e = (w + p_c)c_2. \tag{2}$$

At the optimal u^w, increases (decreases) in u^w generate reductions (increases) in commuting costs and in wages which are of equal magnitude and completely offsetting.

These conditions demonstrate that optimal workplace and residence locations are functions of commute characteristics. This static model does not explicitly predict relationships between commutes and the dynamic adjustments of quitting and moving. However, it implies that residence and workplace locations must be adjusted when commutes are suboptimal. Suboptimal commutes engender moves and quits.

In this model, interactions between commutes, moves, and quits are symmetric. Changes in any of the parameters induce marginal changes in both u^h and u^w, as described by (1) and (2). However, if moves and quits incur fixed costs, utility maximization ordinarily implies that commutes should be optimized through either one or the other, but not both [14]. In these circumstances the interactions between commutes, moves, and quits are asymmetric.

For given workplace and residence, commutes are too "short" if increases would yield sufficiently large reductions in housing prices or increases in wages. Moves are the appropriate remedy if the reduction in housing prices from an increase in u^h would exceed the fixed costs of moving and the increase in commuting costs. Quits are the appropriate

[1]Muth [9] and Straszheim [11] offer theoretical demonstrations of this property. Straszheim [11], Eberts [3], and Madden [7] provide empirical verification.

strategy if the increase in wages from a reduction in u^w would exceed the fixed costs of quitting and the increase in commuting costs.

In these circumstances, the effects of quits and moves on commuting costs differ. Increases in u^h increase only distance. Reductions in u^w increase both in distance and unit commuting costs, $(w(u^w) + p_c)$.

This implies that commuting costs rise more rapidly with reductions in u^w than with increases in u^h. If the fixed costs of moving and quitting are not too different, commutes are more likely to be too short because u^h is too small, rather than u^w too large. Short commutes are more likely to stimulate moves than quits.[2]

Similarly, commutes are too "long" if reductions in u^h reduce commuting costs by more than the fixed costs of moving and the increase in housing costs. They are also too long if increases in u^w reduce commuting costs by more than the fixed costs of quitting and the reduction in wages. In these circumstances, increases in u^w reduce commuting costs by more than reductions in u^h.

Reductions in u^h reduce only distance. Increases in u^w reduce both distance and unit commuting costs. This implies that commutes are more likely to be too long because u^w is too small, rather than u^h too large. Long commutes are more likely to encourage quits than moves.

Workers are not indifferent between moves and quits as strategies to establish spatial equilibrium. The likelihood of a move is greater the shorter are commutes. The likelihood of a quit is greater the longer are commutes. Comparing workers who are otherwise similar, longer commutes should discourage moves and encourage quits.

II. COMMUTES AND RESIDENTIAL SEGREGATION

This characterization of interactions between commutes, quits, and moves presumes that residential choice—and therefore commute distance—is constrained only by prices and incomes. This presumption applies without modification for most white workers, but holds for few if any blacks. Residential segregation exogenously constrains almost all black residences to a limited number of neighborhoods.

Taeuber and Taeuber [12] document the pervasiveness of residential segregation in American cities for 1940, 1950, and 1960. Schnare [10] reports that the average SMSA (Standard Metropolitan Statistical Area) became more segregated between 1960 and 1970. In 1960, the average black lived in a census tract whose population was 33% white. In 1970, that proportion had fallen to 30%.

[2]Life cycle considerations also encourage moves in the direction of increased u^h. Increased housing consumption, and therefore more suburban locations, grow increasingly attractive as incomes and families grow.

Under the exogenous constraint of segregation, (1) and the general analysis of the previous section are valid for only those blacks who would choose residence locations within black ghettos in the absence of segregation. For black workers constrained by segregation, the relationships between commutes, quits, and moves depend upon the specific distortions segregation imposes on housing consumption and workplace location. Black neighborhoods are typically concentrated in older parts of central cities, often near central business districts. This geography prevents blacks from consuming newer housing or the amenities associated with suburban residences.[3]

This geography also inhibits blacks from choosing residences convenient to workplaces. Greytak [4] and Leonard [6] show that black worker commutes are longer than those of similar white workers in metropolitan areas of the United States. McCormick reports the same result for Asian and West Indian workers in Birmingham, England.[4] These results imply that, because of residential segregation, black workers are less likely to move or quit, for a given commute length, than are similar whites.

III. COMMUTES IN DETROIT

The analysis below tests these hypotheses by examining the quit and move behavior of white and black employees in a single firm during the years 1972 through 1978. This firm was located in the Detroit metropolitan area, one of the largest in the United States. The city and its suburbs contained many workplaces and residential neighborhoods. The variety of workplace–residence choices available to white employees was sufficient to ensure that the empirical relationship between the commutes, quits, and moves of these white employees serves as an appropriate test for the predictions in Section I.

In addition, residences in the Detroit metropolitan area have long been segregated. Deskins [2] describes a pattern of segregation beginning in 1880. Taeuber and Taeuber [12] rank Detroit as a city with approximately average levels of segregation in 1940, 1950 and 1960. Darden [1] calculates

[3]White [13] demonstrates that, if black workers had suburban jobs and segregation was absent, suburban locations would offer housing blacks could afford even if black incomes were lower than those of whites. The restriction of blacks to central city residences ensures that the constraint of segregation is relatively unimportant to white workers. If whites are excluded from black neighborhoods, this constraint is binding only for the few whites who would, if unconstrained, choose to consume the low-quality and central city locations of black ghettos.

[4]In a monocentric city with employment restricted to the center, segregation in central city neighborhoods would constrain the commutes of black workers to be shorter than those for similar whites [15]. These results imply that actual geographic employment distributions within metropolitan areas are much more homogeneous.

that segregation in Detroit increased slightly between 1960 and 1970, and decreased only slightly between 1970 and 1980. In 1960, 1970, and 1980, Detroit was the most segregated metropolitan area of the twelve in Michigan for which Darden provides measures.

Deskins [2] demonstrates that, prior to 1900, segregation in Detroit relegated black residents to the then undesirable periphery of the city. With the advent of street railways and then automobiles, suburban living became attractive. Since 1900, segregation in Detroit, as in many other metropolitan areas, has concentrated black workers in a contiguous arc around the central business district (CBD).

Hughes and Madden [8] demonstrate that actual workplace–residence pairs for black workers in Detroit deviate from "optimal" pairs by significantly more than those for whites. In particular, actual workplaces of black workers in Detroit are significantly less well-chosen with respect to their residence locations than are those of whites. These conditions suggest that black residential choices in Detroit were sufficiently constrained to provide a test of the predictions in Section II.

A service firm with approximately 800 employees and located in the Detroit metropolitan area has made available its annual payroll records for eight years, those between 1971 and 1978, inclusive. These records document worker employment status and residential locations at the end of each calendar year. The sample analyzed here is comprised of employee-years, derived from the payroll data, for employees of this company.[5]

The company payroll files record end-of-year addresses and employment status. Employees who separated voluntarily have "quit." Employees whose residences were in different Transportation Analysis Zones in successive years have "moved."[6] With this definition, moves are determinate for only employees with more than one year of tenure, observed during the seven calendar years 1972 through 1978.

The payroll records yield 4783 usable employee years in these seven years. Of these, 25.6% represent black employees. Black employees were,

[5]The authors can provide this data set. Payroll years coincide with calendar years. This firm was located in the Detroit CBD during the years 1971 through 1973. In 1971, it announced that it would relocate to the suburb of Dearborn as of March 1974. The relocation took place as scheduled. Payroll records from 1974 through 1978 pertain to employees at the new location.

[6]The Southeast Michigan Council of Governments (SEMCOG) divides the metropolitan area into approximately 1200 Transportation Analysis Zones. These zones are similar to census tracts in size. Area zip codes contain as few as 1 and as many as 20. SEMCOG provides a matrix of automobile and bus travel times between all zone pairs. Employee end-year addresses identify the zone in which they resided. For the purposes of this study, residential relocations within analysis zones are irrelevant because they do not yield measurable changes in commute time.

TABLE 1
Average Commute Times for White Employees

	No move	Move	No quit	Quit
Commute in Current year	20.5	21.5	20.6	21.1
Commute in Previous year	20.3	19.8	20.2	19.9
Totals	2914	644	3089	469

on average, 30.4 years old, with 4.6 years of tenure and average weekly earnings of approximately $260 in 1980 dollars. White employees were, on average, 34.5 years old, with 7.8 years of tenure and average weekly earnings of approximately $310. The residential locations of the workers in this sample were consistent with segregation.[7] The relationships between commutes, race, quits, and moves for these employee years confirm the predictions above.

Comparisons of automobile commute times between white quitters and nonquitters and between white movers and nonmovers are consistent with the predictions of Section I. The first panel of Table 1 presents average current and previous automobile commutes times for white employees.[8]

In the year of quitting, white quitters lived farther from the workplace than did white nonquitters. This comparison suggests that long commutes encouraged white quits. Moreover, prior to quitting, quitters lived slightly closer to the workplace than did nonquitters. This comparison suggests that increases in commutes encourage white quits as well.

On average, white movers lived closer to the workplace in the year prior to their move than did white nonmovers. This comparison suggests that long commutes discouraged white moves. Furthermore, the effect of moves was to increase commutes, presumably in return for increased housing consumption. White movers lived farther from the workplace following their move than did white nonmovers.

[7]Zax [15] demonstrates that residences of white workers were more suburban than those of black workers with similar income. Furthermore, the distance between residences of white and black workers with similar incomes increased with income.

[8]The correlation between automobile travel times and geographic distance is probably quite high. Previous commutes measure commutes, in the preceding year, between worker residences and the workplace location at the time. Commute times for most workers changed between 1973 and 1974, regardless of whether they moved, because the workplace relocated. In consequence, previous and current commute times in Table 1 differ slightly for those of nonmovers. Comparisons which omit employee-years from 1974 yield the same conclusions, as do separate comparisons for the periods before and after the workplace relocation.

Similar comparisons for black employees yield different results, consistent with the predictions of Section II. They suggest that segregation limited the quit alternatives available to black employees, as well as their commutes.

As with white quitters, automobile commute times of black quitters increased from 14.8 to 15.8 minutes between the year prior to the quit and the year of the quit. In contrast to white quitters, black quitters lived only 15.8 minutes from the workplace in the year of their quit, 1 minute closer to the workplace than black nonquitters. These comparisons suggest that quit determinants uncorrelated with commute distance were relatively more important for blacks than whites.[9]

Segregation complicates the comparisons between black movers and nonmovers. The comparison while the workplace was located in the CBD is similar to the aggregate comparison for white workers. Black nonmovers lived at average automobile commutes of 12.2 minutes. Black movers lived at average automobile commutes of 10.6 minutes in the year prior to their move, and 12.9 minutes in the year of their move.

After the workplace relocated, all black workers reverse-commuted. Black nonmovers lived at average automobile commutes of 17.9 minutes from the suburban location. Black movers again lived closer to the workplace, at average automobile commutes of 17.4 minutes, in the year prior to their move. However, in these circumstances black movers actually lived farther from the CBD. Furthermore, they lived yet closer to the suburban workplace, at 16.8 minutes, and farther from the CBD following their move.[10]

These comparisons suggest that, consistent with the theory of Section I, longer white commutes discourage white moves and encourage white quits. Consistent with the discussion of Section II, segregation appears to constrain these responses among black employees. The following section reiterates these comparisons in a multivariate context.

IV. ECONOMIC ESTIMATES OF COMMUTE EFFECTS

This section presents estimates of the effects of automobile commute times on move and quit propensities, holding constant individual-, neighborhood-, and year-specific characteristics. Moves and quits both depend

[9]These comparisons are also similar before and after the workplace relocation.

[10]The company conducted surveys in 1972 and 1973 to identify employee mode choices. Among white employees, about 90% of white workers commuted by car. Automobile time comparisons for them are appropriate. However, approximately 70% of black employees commuted by bus. Unfortunately, the analysis here cannot explicitly account for mode choice because these surveys were anonymous. Mode choice and automobile availability are unknown for specific individuals. However, all comparisons in this section for automobile commute times to residences of black workers hold for bus times, as well.

on all individual-specific variables recorded in the company payroll tapes —dummy variables for males, blacks, and clerical workers, continuous variables for age, age squared, tenure, tenure squared, and natural logarithms of current and past real earnings.

In addition, move propensities depend upon variables which measure housing quality, neighborhood amenities, neighborhood stability, and mode choice. These are percentages of blacks in the residence census tract population, percentages of high school graduates among tract adults, percentages of tract population aged greater than 5 that had not moved between 1965 and 1970, 1970 percentage of tract housing units vacant, 1970 percentage of tract resident workers commuting to work by bus, 1969 tract median income, and 1970 tract median owner-occupied housing value.[11] Finally, move propensities depend on the previous year's automobile commute time, the variable of interest here.

Quit propensities depend upon characteristics which measure neighborhood income, neighborhood stability, and unemployment levels. These include the percentage of tract population aged greater than five that had not moved between 1965 and 1970, 1969 median tract income, 1970 tract male and female unemployment rates, and annual metropolitan and city unemployment rates by race. Most importantly, quit propensities depend on the previous and the current years' automobile commute times.[12]

Table 2 presents probit estimates of the effects of move and quit determinants for white and black employees, separately.[13] For workers of either race, the effects of conventional variables are unexceptional. Moves are less likely with increased age, more likely with higher current earnings given past earnings, more likely with earnings growth,[14] and less likely in

[11]Move determinants do not include year-specific variables apart form those in the payroll records. Preliminary results demonstrated that dummy variables for year, annual indexes for consumer prices and housing expenditures were not significant in models of move propensities.

[12]Move propensities depend only on the past commute, because the current commute at year-end is endogenous to the choice of moving during the year.

[13]These probit equations actually represent estimates from a simultaneous system of move and quit equations which controls for correlations between random shocks to quit and move propensities [14]. This technique, a discrete analogy to the seemingly unrelated regression technique for continuous variables, yields more efficient estimates than would single probit estimates.

[14]Coefficients on log current and past earnings estimate effects of earnings growth according to the following equation:

$$\beta_w \ln w + \beta_{w-1} \ln w_{-1} = (\beta_w + \beta_{w-1}) \ln w - \beta_{w-1}(\ln w - \ln w_{-1}).$$

The coefficient on log previous earnings, with positive sign, is the implied coefficient on earnings growth. The estimated standard error of this coefficient is valid regardless of whether it is interpreted as the effect of log previous earnings or of earnings growth. Under the reformulation in terms of earnings growth, the coefficient of log current earnings is relatively small and insignificant.

neighborhoods with lower turnover. Quits are less likely with increased age, tenure, and earnings growth.

The first two rows of Table 2 present the effects of commutes on move and quit propensities. Commute effects on both are significant for white employees and insignificant for blacks. Furthermore, they are consistent with the predictions of Sections I and II.

For white employees, longer previous commutes discourage moves, with better than 1% significance. This effect is large and consistent with the prediction of Section I. The standard deviation of previous commutes for white employees is 10.0 minutes. Increasing white automobile commutes by one standard deviation reduces the probability of white moves by 2.0 percentage points.[15] In comparison to the white move frequency of 18.1%, this represents a reduction in move propensities of 11.0%.

Commute effects on white quits are also significant and in the predicted direction. Interpreted in terms of levels, longer current commutes encourage quits, with better than 1% significance. Interpreted in terms of changes, larger year-to-year changes in commutes encourage quits with 10% significance.[16]

In terms of either levels or changes, the effects of commutes on white quit propensities are large. In levels, if current white commutes increase by one standard deviation of 10.4 minutes, white quit propensities increase by 3.9 percentage points. This is a reduction of 29.5%, compared to the white quit frequency of 13.2%. In changes, if the difference between current and previous commutes increase by one standard deviation of 5.8 minutes, the propensity to quit falls by 1.3 percentage points. This is a reduction of 9.8% in the sample frequency.[17]

In contrast, the models for black employees demonstrate that all coefficient estimates for black automobile commute times are insignificant. They are of similar magnitude to those for whites, but this similarity is

[15]This calculation is performed as follows: The propensity to move is given by $1 - \phi(-X\beta)$, where ϕ is the cumulative normal distribution function, X is the row vector of move determinants and β is the column vector of parameter estimates. Choose $-X\beta^*$ such that $-X\beta^* = \phi^{-1}(1 - f)$, where f is the sample move frequency. Then the change in $-X\beta^*$ with a change in commutes, ΔC, is equal to $-\Delta C\beta_C$, where β_C is the coefficient estimate for commutes. The move propensity estimate for the change in commutes, f^*, is equal to $1 - \phi(-X\beta^* - \Delta C\beta_C)$. The change in move propensities is equal to $f - f^*$.

[16]As in footnote 14, the effect of commute changes on quit propensities is given by $-\beta_{C-1} = 0.00990$, according to

$$\beta_C C + \beta_{C-1} C_{-1} = (\beta_C + \beta_{C-1})C - \beta_{C-1}(\ln C - \ln C_{-1}).$$

Under this reformulation, the coefficient of current commutes is small and of marginal significance.

[17]These comparisons follow the method of footnote 15.

TABLE 2
Probit Estimates of Quit and Move Behavior

Explanatory variables	White employees		Black employees	
	Move equation	Quit equation	Move equation	Quit equation
Current commute time	—	0.0161 (3.00)	—	0.0145 (1.15)
Previous commute time	−0.00777 (2.73)	−0.00990 (1.75)	−0.00986 (1.14)	−0.0216 (1.54)
Constant	1.06 (1.53)	5.41 (5.99)	0.501 (0.287)	8.72 (4.49)
Male	−0.227 (2.95)	0.0893 (0.564)	−0.385 (2.06)	0.560 (1.50)
Age	−0.0608 (3.29)	−0.0578 (2.50)	−0.168 (4.08)	−0.0971 (2.28)
Age squared	0.000502 (2.12)	0.000461 (1.61)	0.00201 (3.66)	0.00105 (1.91)
Tenure	−0.00999 (0.773)	−0.104 (4.97)	0.0471 (1.24)	−0.144 (2.59)
Tenure squared	0.0000870 (0.210)	0.00115 (1.22)	−0.00431 (2.18)	0.00368 (0.824)
Clerical	−0.0619 (0.782)	−0.124 (1.09)	−0.171 (0.931)	−0.563 (2.57)
Log earnings	1.87 (4.75)	−11.6 (23.2)	2.29 (3.22)	−9.85 (10.2)
Log previous earnings	−1.77 (4.68)	11.1 (22.7)	−2.00 (3.01)	8.75 (9.78)
% Black	0.00123 (0.468)	—	−0.00632 (3.58)	—
% High school Graduates	0.00415 (1.23)	—	0.0107 (1.45)	—
% in same house, 1965	−0.00693 (2.85)	−0.00375 (1.61)	0.00374 (0.967)	−0.00547 (1.46)
Median income, $1000's	−0.0595 (2.34)	0.0296 (2.09)	0.0181 (0.387)	0.0296 (1.12)
Vacancy rate	0.0189 (2.06)	—	0.0253 (1.47)	—
Median value of housing, $1000's	0.0113 (1.72)	—	−0.00623 (0.585)	—
% Workers commuting by bus	−0.0278 (5.13)	—	−0.00387 (0.462)	—
Tract male unemployment rate	—	0.0220 (1.60)	—	0.00989 (0.620)
Tract female unemployment rate	—	0.00187 (0.0612)	—	−0.0623 (1.22)
SMSA unemployment rate	—	0.103 (2.11)	—	−0.0405 (0.459)
City unemployment rate	—	−0.241 (5.60)	—	−0.107 (1.37)
Observations	3558	3558	1225	1225

Note. Parentheses contain asymptotic t-statistics.

probably attributable to the absence of data for individual mode choice. Probits for black quits and moves, with bus commute times instead of automobile commute times, yield coefficients which are again insignificant, and an order of magnitude smaller than those of Table 2.

The coefficients of the models for black workers therefore indicate that commutes by black workers have small and insignificant effects on their move and quit propensities. The absence of any relationship is consistent with the predictions of Section II. Residential segregation in Detroit imposes irremediable spatial disequilibrium on black workers. In consequence, black workers are insensitive to the equilibrating properties of relationships between commutes, quits, and moves.

V. CONCLUSION

The theory presented in this paper predicts that, for workers whose housing consumption is constrained only by prices and incomes in metropolitan areas with conventional wage and housing price gradients, longer commutes discourage moves and encourage quits. The empirical analysis of this paper confirms these predictions and demonstrates their importance. For white employees in a single firm, increases of one standard deviation in the "appropriate" measure of commutes reduce quit and move propensities by approximately 10% or more.

For workers whose housing consumption is constrained by residential segregation, commutes should have no effects on move and quit propensities. Quits and moves by black employees are statistically unrelated to black commutes. The absence of any relationship suggests that for the black employees of this firm, segregation forces many of them to reside at locations closer to the workplace than they would otherwise choose.

These results suggest that policies which counteract the effects of residential segregation would alter black labor market behavior, as well as black housing consumption. These particular black workers would probably increase their commute distances, and therefore increase their quit rates, if they had access to more residential choices. More generally, black workers would alter their commute, job search, and job turnover behavior if relieved of the segregation constraint.

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