The Spatial Distribution of Black Employment Between the Central City and the Suburbs

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FORWARD

Blacks are known to be underrepresented in suburban jobs and overrepresented in central city jobs. Little is known concerning the factors that account for this employment segregation. This paper utilizes a unique database to document the existence of a spatial mismatch between the locations of unskilled jobs and unskilled workers and to explore the factors that account for the perpetuation of spatial mismatch. The results from estimating a model of the racial composition of the firm's workforce indicates that 40 percent of the difference in black employment share between central city and suburban firms can be attributed to the fact that suburban firms are less frequently served by public transit. Discrimination also plays an important role, accounting for 30 percent of the difference.

Keith Ihlanfeldt is Professor of Economics and Senior Associate in the Policy Research Center. Madelyn Young is Assistant Professor of Economics at Converse College. This paper continues the work of the Policy Research Center on the spatial mismatch issue. See also Job Accessibility and the Employment and School Enrollment of Teenagers, W. E. Upjohn Institute for Employment Research, 1992; and "Intra-Urban Wage Gradients: Evidence by Race, Gender, Occupational Class, and Sector" Journal of Urban Economics, Vol. 32, July 1992, both by Keith Ihlanfeldt.

Roy Bahl
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THE SPATIAL DISTRIBUTION OF BLACK EMPLOYMENT BETWEEN THE CENTRAL CITY AND THE SUBURBS

By

Keith R. Ihlanfeldt and Madelyn Young

EXECUTIVE SUMMARY

This paper addresses the long-standing issue of why blacks are underrepresented in suburban jobs. Possible explanations include (1) there is no incentive to commute to the suburbs because expected earnings are no higher there than within the central city; (2) the distances to jobs in the suburbs may make it too costly to commute to these jobs and/or may mean that blacks have poor information on suburban job opportunities; (3) Becker-type consumer and/or employer discrimination may cause employers to prefer hiring blacks in the central city and/or prefer hiring whites in suburban areas, and (4) fewer suburban jobs are within walking distance of a public transit stop and many central city blacks do not own automobiles.

To investigate these alternative hypotheses, personal interviews were conducted with the managers of 102 fast-food restaurants located in Atlanta, Georgia. Evidence on hourly wage rates, the difficulty of finding employees, and walk-ins per week seeking employment suggests that wages and the probability of employment are both higher in the suburbs than within the central city, which lends support to the spatial mismatch hypothesis. The evidence, therefore, fails to support hypothesis (1). The other three hypotheses are investigated by estimating a model of the racial composition of the restaurant’s workforce. The results indicate that measures of consumer and employer discrimination account for 13 percent and 14 percent of the difference in black employment share between central city and suburban firms, respectively. Miles from the CBD center explains 28 percent of the difference. Perhaps of greatest interest is the finding that 41 percent of the underrepresentation of blacks in suburban jobs can be attributed to the fact that fewer far than near restaurants are within walking distance of public transit.
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I. INTRODUCTION

Blacks are known to be overrepresented in central city jobs and underrepresented in suburban jobs (Kain, 1968; Leonard, 1987). The factors accounting for spatial employment segregation are unknown and have never been studied due to the absence of suitable data. A number of possible factors can be suggested. First, there may be no incentive to commute to the suburbs if wages are no higher or jobs no more available than within the central city. That is, the alleged spatial mismatch that has presumably created a surplus of less-educated workers living in the central city and a shortage of these workers living in the suburbs may fail to obtain. Second, the distances to jobs in the suburbs may make it too costly to commute to these jobs and/or may mean that blacks have poor information on suburban job opportunities. Third, Becker-type consumer and/or employer discrimination may cause employers to prefer hiring blacks in the central city and/or prefer hiring whites in suburban areas.\(^1\) Finally, in comparison to central city jobs, fewer suburban jobs are within walking distance of a public transit stop and many central city blacks do not own automobiles.\(^2\)

From a policy perspective, it is crucial to determine the relative importance of the above explanations for black employment segregation. For example, based upon a belief in the spatial mismatch hypothesis, a number of people have recommended that improved public transportation be provided to reverse commuters (Kasarda, 1989; Orfield, 1985; Hughes, 1989; Skinner, 1989; Wilson, 1992). However, on its own, this strategy may not be particularly effective if blacks encounter greater hiring discrimination outside the central city and/or know little about suburban jobs.
To shed some light on the spatial distribution of black employment between the central city and the suburbs, this paper (1) provides some evidence on whether the central city labor market is tighter or looser than the suburban labor market for less-educated workers, (2) develops and estimates a model which explains the racial composition of firms' workforces, and (3) uses the parameter estimates from this model to investigate the relative importance of the aforementioned factors as explanations for black employment segregation. The data come from a survey which we conducted of the managers of 102 fast-food hamburger restaurants in the Atlanta, Georgia metropolitan area.

The results yield three conclusions. First, expected wages are higher in the suburbs than within the central city, which lends support to the spatial mismatch hypothesis and reinforces the need to understand the underrepresentation of blacks in suburban jobs. Second, measures of employer and consumer discrimination, distance from the CBD, and the proximity of the restaurant to mass transit are all found to have an important influence on the racial composition of the restaurant's crew. Third, approximately 40 percent of the difference in black employment share between central city and suburban restaurants can be attributed to the fact that suburban restaurants are less frequently served by public transit. The results suggest that discrimination also plays an important role, accounting for roughly 30 percent of the difference.

In the next section the data are described. Evidence is presented on the quality and availability of suburban in comparison to central city jobs in Section III. A model of the racial mix of the restaurant's crew is developed in Section IV. The results from estimating this model are discussed in Section VI. Policy implications and suggestions for future research conclude the paper.
II. DATA

Data for this study come from a sample of 102 hamburger fast-food restaurants located in the Atlanta metropolitan area. Fast-food restaurants are an interesting case to consider, since they are (1) an important source of employment for black youth, and (2) growing rapidly in suburban areas (Charner and Fraser, 1984). In addition, the standardized nature of fast-food jobs facilitates comparisons between the central city and suburban labor markets. Observed inter-wage differentials, especially for starting wages, are less likely to reflect differences in the tasks performed or labor quality. The limitation of the data is that care must be taken in generalizing the results of the analysis to other types of firms or other cities.

The managers of the restaurants were interviewed in person in 1989. The sample of restaurants is not representative of all of Atlanta's hamburger establishments. First, not all restaurant chains are included. There are five major chains located in Atlanta: Hardee's, Wendy's, Burger King, Krystal, and McDonald's. No McDonald's restaurants are included in the sample, because the company declined to cooperate. McDonald's are approximately 16 percent of the hamburger restaurants in our study area. Second, for reasons of cost containment, restaurants located in the outer suburbs (i.e., beyond 20 miles from the CBD center) were not sampled and those located in the inner suburbs were undersampled.

The first column of Table 1 shows the spatial distribution of black employment across the sampled restaurants. Restaurants are stratified by their distance (in 5-mile intervals) and, for reasons discussed below, direction (north versus south) from the center of the CBD. The CBD is used as the reference point, because the ghetto includes the CBD as well as the contiguous areas lying to the south and west of the CBD. The first two intervals (0-5 and 5-10 miles)
roughly correspond to the central city, while the two distant intervals (10-15 and 15-20 miles) represent the inner suburbs.\textsuperscript{4}

Regardless of direction, blacks are underrepresented in suburban jobs and overrepresented in central city jobs. Overall, 80 percent of the workers employed by the sampled restaurants are black. However, within the closest distance interval (0-5 miles from the CBD center) on the northside the representative restaurant has a crew that is 97 percent black, while within the greatest distance interval (15 to 20 miles from the CBD center) the typical restaurant is only 55 percent black. Similarly, on the southside, the mean black employment share is 97 percent within the closest interval, while within the farthest interval the mean share is 73 percent. As noted in the Table, these differences in black employment share are statistically significant at the 5-percent level. Since black residences are concentrated within the closest distance interval, this evidence is consistent with the hypothesis that there is a strong link between housing and employment segregation (Kain, 1968).

III. ARE EXPECTED WAGES HIGHER IN THE SUBURBS?

Central city blacks may be underrepresented in suburban jobs because the expected benefits from searching for a job in the suburbs may not exceed the costs. For suburban search to occur, the difference in the expected wage net of commuting costs between the suburbs and the city must exceed suburban search costs.\textsuperscript{5} Formally, if commuting and search costs associated with a central city job are assumed to be trivial in relation to a suburban job, the following inequality must be satisfied for suburban search:

\[ P_s(W_s - T_s) - P_c(W_c) > S, \]  

(1)
where \( P_s, P_c \) = probability of obtaining a suburban and central city job, respectively,
\( W_s, W_c \) = the suburban and central city wage rate, respectively,
\( T_s \) = commuting cost to a suburban job,
\( S \) = suburban search costs.

Rewriting (1),
\[
(P_s W_s - P_c W_c) - P_s T_s > S,
\]
which shows that a necessary (but not sufficient) condition for suburban search is that the expected wage in the suburbs must be greater than the expected wage in the central city. This condition may prevail if there exists a spatial mismatch between the residential locations of less-educated workers and the locations of jobs they are qualified to hold.

Table 1 presents evidence on wage rates, the difficulty of finding employees, and walk-ins per week seeking employment for restaurants located within each of the 5-mile distance intervals from the CBD center. Sample means for these variables are also presented. First, consider the restaurants located north of the CBD. Column (2) gives the starting wage averaged across restaurants within each distance interval. The starting wage is for a worker who has just graduated from high school, has no previous work experience in fast food, and will work over the lunch hour Monday-Friday. This wage increases monotonically with distance. It is $3.79 within the closest interval and climbs 22 percent to $4.61 within the most distant interval. The average crew wage reported by managers (see Column (3)) also increases systematically with distance, with the percentage change associated with movement to a more distant interval comparable to that observed for started wages.\(^6\) The means for both the crew and starting wage rates beyond the closest interval are significantly larger than the means within the closest interval at the 5-percent level.
The probability of employment (P) is equal to job hiring (newly-created employment and
replacement demand) in relation to the number of job seekers. Since this ratio cannot be
calculated directly from the data, two proxies are used. P is high if managers report greater
difficulty in filling their positions and there are fewer walk-ins per time period. As the numbers
in columns (4) and (5) show, both proxies for P suggest that job probability is higher farther from
the center. For example, 82 percent of the managers within the most distant interval reported
having difficulty finding new employees, in comparison to only 38 percent of the managers
within the closest interval. This difference is statistically significant at the 5-percent level. There
is also a dramatic difference in the number of walk-ins per week. The average number of walk-
ins per week was 13 within the closest interval, but only 2.3 within the most distant interval.
Again, this difference is significant. Since both W and P are higher for suburbia in comparison
to the central city, the expected wage is unambiguously higher in the northern suburbs than
within the central city. This evidence is consistent with the spatial mismatch hypothesis and the
necessary condition for suburban search expressed by (2).

The southside of Atlanta is markedly different from the northside. Job growth has been
roughly three times greater on the north in comparison to the southside during the 1980s
(Hartshorn and Ihlanfeldt, 1993). As a result, the suburbanization of jobs has a definite
northward bias. The share of the Atlanta region's jobs located in the northern suburbs grew from
40 percent in 1980 to 52 percent in 1990. The share of jobs located in the southern suburbs
deprecated from 20 percent in 1980 to 19 percent in 1990. Spatial mismatch, therefore, may be
less of a problem on the southside. Indeed, the spatial variation in wage rates is considerably
smaller on the southside in comparison to the northside. On the northside the range across
distance intervals in starting and crew hourly wage rates is 82 and 97 cents, respectively. The numbers for the southside are 13 and 31 cents. Neverthe less, both average starting and crew wage rates are higher beyond the closest distance interval and these differences are generally significant. Moreover, the proxies of P both suggest the probability of obtaining a job is higher in the southern suburbs than within the central city. The difficulty of finding new employees is greater and the number of walk-ins per week is smaller outside the closest distance interval. Once again, these differences tend not to be as large as those observed on the northside of the region. The numbers of Table 1 therefore suggest that the expected wage is higher in the southern suburbs than within the central city, but the city/suburban difference is smaller on the southside in comparison to the northside.

In summary, the evidence presented in Table 1 is consistent with the idea that spatial mismatch has resulted in a relative surplus of workers (shortage of jobs) within the central city in comparison to the suburban ring.\(^7\) Hence, the hypothesis that blacks are underrepresented in suburban jobs because these jobs are no better or no more plentiful than those within the central city can be rejected. The issue, therefore, is why blacks do not spatially adjust their labor supply to equalize expected wages between the central city and the suburbs. As noted above, a number of different factors may account for the perpetuation of spatial mismatch. The remainder of this paper offers some evidence on the relative importance of these factors.
IV. A MODEL OF THE RACIAL COMPOSITION OF THE FIRM'S WORKFORCE

The racial composition of an individual firm is determined by the relative demand for black versus white labor \( (I_D) \) and the relative supply of black versus white labor \( (I_S) \):

\[
I_D = f(PB, x), \tag{3}
\]
\[
I_S = g(PB, y), \tag{4}
\]

where \( I \) (the inverse function) is equal to the black wage divided by the white wage, \( PB \) is the fraction of the firm's workers who are black, and \( x \) and \( y \) are exogenous determinants of relative demand and supply, respectively. The position of the relative demand curve is assumed to depend on the racial prejudice of the employer and the firm's customers, while the position of the relative supply curve is assumed to depend on the relative cost blacks incur in finding out about the firm's openings and in commuting from home to the firm's location.

Since in equilibrium \( I_D = I_S \), the short-run partial equilibrium solution for \( PB \) will depend on \( x \) and \( y \).

\[
PB = h(x, y). \tag{5}
\]

The reduced form is our basic estimating equation, which is alternatively operationalized with a linear and the log-of-odds functional form:

\[
PB = X\beta + Y\alpha + \epsilon; \tag{6}
\]
\[
\log \left( \frac{PB}{1-PB} \right) = X\gamma + Y\delta + \mu. \tag{7}
\]

Table 2 describes each \( Y \) and \( X \) variable and reports sample means and standard deviations. The \( Y \) vector includes two sets of variables. The first set consists of alternative measures of the distance the restaurant is located from the black population. \textit{Ceteris paribus}, the greater the distance between the black population and the restaurant the higher the representative
black's commuting and information costs and therefore, the smaller the black labor supply to the restaurant. MILESCBD is the airline distance between the restaurant and the center of the CBD. As noted earlier, the CBD roughly captures the heart of Atlanta's ghetto. The second measure of distance, BDIST, estimates the average distance between the residential locations of blacks and the restaurant:

\[ BDIST_i = B_i \times d_i + \sum_{j=1}^{275} B_j \times d_{ij} \]  

where \( B_i \) = the fraction of the region's black population living in census tracts \( i \) and \( j \), where \( i \) represents the restaurant's census tract and \( j \) represents the other 275 census tracts located in the Atlanta region,\(^{10}\)

\( d_{ij} \) = linear distance between the centers of tracts \( i \) and \( j \), and

\( d_i \) = average distance between center of tract \( i \) and all points in tract \( i \).\(^{11}\)

While MILESCBD and BDIST are highly correlated (Pearson product-moment correlation = .80), they may yield different results. MILESCBD is the better measure of the distance between the restaurant and Atlanta's poor black population, while BDIST captures the growing dispersal of black residences in Atlanta, beyond the central ghetto.

The second set of variables represented by \( Y \) includes two dummy variables that indicate whether the restaurant is within walking distance of a bus stop (BUS) or a train station (TRAIN). Since the black population of Atlanta is strongly dependent on public transportation (Hartshorn and Ihlanfeldt, 1993), black employment share is expected to be smaller at those restaurants that are not served by public transit. TRAIN may have a stronger effect than BUS, since the train travels faster and waiting times are shorter between train transfers. Since each of the train stations provide bus service, the estimated TRAIN coefficient is the marginal impact of TRAIN \( = 1 \), conditional of BUS \( = 1 \).
The x vector consists of four variables: (1) the percentage of the restaurant's customers who are white, as estimated by the store manager (WCUST%), (2) a dummy variable which equals one if the manager is black (BMGR), (3) a set of dummy variables representing chain affiliation (CHAIN 1, CHAIN 2, CHAIN 3), and (4) a dummy variable which equals one if the restaurant is franchisee-owned as opposed to company-owned (FRAN). If white consumers are prejudiced against black workers and/or vice versa, restaurants with a higher proportion of white customers will have a lower percentage of black workers. Restaurants with black managers will have a larger black employment share if either black or white managers are racially prejudiced. Chain affiliation is included since different chains may have different affirmative action policies. Finally, the type of ownership is included based upon the hypotheses that because of principal agent relationships employees are monitored less closely in company-owned than in franchisee-owned establishments (Krueger, 1991) and that employers use race as a key market of worker productivity (Kirshenman and Neckerman, 1991). Hence, company-owned restaurants are expected to employ a smaller percentage of blacks\textsuperscript{12}

VI. RESULTS

The two alternative functional forms yield similar results. In particular, the PB partial derivatives implied by the log-of-odds estimated coefficients are similar to the estimated coefficients of the linear model. The linear model, however, explains a larger proportion of the variation in black employment share (61 percent) than the log-of-odds model (55 percent). Since the two models yielded similar partial derivatives (and the linear model the better fit), only the results obtained with the linear model are presented in Table 3.\textsuperscript{13}

All of the variables have the anticipated signs and all are statistically significant at the 10-percent level or better, except BDIST.\textsuperscript{14} The magnitudes of the estimated coefficients indicate
that the 10-point increase in the percentage of white customers (WCUST%) would decrease black employment share by 3 percentage points. If the restaurant has a black manager (BMGR), black employment share increases 9 percentage points. Public transportation is found to have a particularly strong effect on the racial composition of the restaurant’s crew. Having a bus stop or train station nearby increases the restaurant’s black employment share by 22 or 25 percentage points, respectively. For each additional mile the restaurant is located from the center of the CBD, black employment share decreases by somewhat less than 1 percentage point. Regarding type of ownership, franchisee-owned establishments have a black employment share that is 11 percent higher than those that are company-owned. Finally, chain affiliation can cause as much as a 17-point difference in black employment share across restaurants.

The third column of Table 3 presents the results from estimating an equation that allows the distance effect to vary between those restaurants served by bus (BMILES), train (TMILES), and no public transit (CMILES). While the replacement of MILESCBD with BMILES, TMILES, and CMILES results in multicollinearity (and therefore imprecision and lower levels of statistical significance on BUS and TRAIN), the point estimates are of considerable interest. The absolute value of the estimated coefficient on BMILES (-1.06) is about twice as large as the estimated CMILES coefficient (-0.51). The estimated coefficient on TMILES has an unexpected positive sign, but a very low t-statistic. Since the time cost of travelling an additional mile is highest for buses and lowest for rapid rail, the relative magnitudes of the BMILES, CMILES, and TMILES coefficients are reasonable and suggest that distance is principally a barrier to those black workers who rely on bus transportation.

As mentioned in Section II, black workers are underrepresented at restaurants located in the farthest distance interval (15 to 20 miles from the CBD center) and overrepresented at
restaurants located within the nearest distance interval (0-5 miles from CBD center). To
determine the importance that each variable plays in explaining this difference, the estimated
coefficients obtained from our basic model were used to predict black employment share for the
average restaurant located in the near (N) and far (F) distance intervals:

\[ P\hat{B}_N = \hat{a} + \tilde{X}_N \hat{\beta} + \tilde{Y}_N \hat{\alpha}; \quad (9) \]

\[ P\hat{B}_F = \hat{a} + \tilde{X}_F \hat{\beta} + \tilde{Y}_F \hat{\alpha}. \quad (10) \]

Predicted and actual values are very close. The model predicts a near restaurant employment
share of 98 percent, while the actual share is 97 percent. The actual and predicted mean
employment shares for the far restaurants are 59 and 61 percent, respectively.

The subtraction of (10) from (9) yields:

\[ P\hat{B}_N - P\hat{B}_F = (\tilde{X}_N - \tilde{X}_F) \hat{\beta} + (\tilde{Y}_N - \tilde{Y}_F) \hat{\alpha}, \quad (11) \]

which reveals the contribution that each X and Y variable makes in explaining the difference in
predicted black employment shares. These results are reported in Table 4.

The variables measuring consumer and employer discrimination, the type of ownership,
miles from the CBD center, and public transportation all play an important role in explaining the
difference in black employment share between near and far restaurants. The measures of
consumer and employer discrimination account for 13 percent and 14 percent of this difference,
respectively. The tendency for company-owned restaurants to be located farther out explains 8
percent. The miles from the CBD center explains 28 percent. Perhaps of greatest interest is that
41 percent of the difference in black employment share (i.e., the sum of the contribution made
by BUS and TRAIN) can be attributed to the fact that fewer far than near restaurants are within
walking distance of public transit.
VII. CONCLUSIONS

This paper has addressed the long-standing issue of why blacks are underrepresented in suburban jobs. Expected wage rates for fast-food restaurant workers are found to be higher in the suburbs than within the central city, which is consistent with the spatial mismatch hypothesis. A model of the racial composition of the restaurant's crew was estimated to investigate the factors that underlie the perpetuation of spatial mismatch. Measures of employer and consumer prejudice, the restaurant's distance from the CBD center, and the proximity of the restaurant to public transit are all found to be important in explaining the underrepresentation of blacks in suburban jobs.

From a policy perspective, the results of this paper provide the first hard evidence in support of the popular position that better public transportation should be provided to reverse commuters. Given the dispersed nature of job opportunities in suburban areas, traditional fixed-route bus or rail transportation is not the solution. Paratransit, such as jitneys or van-pools, operating from either the ghetto or suburban transit stops, holds more promise as a policy option. In the previous work, we have found that restaurants on the MARTA bus or rail line are able to reduce the average wage they pay by about 4 percent (Ihlanelfdt and Young, 1992). Hence, restaurants and other firms relying on low-skilled labor may have incentive to at least partially finance improved transportation for reverse commuters. In fact, anecdotal evidence is accumulating that suburban employers are dealing with labor shortages by subsidizing the transit costs of reverse commuters (Peirce, 1988; Brownstein, 1989; Greene and Carton, 1986; Foderaro, 1990; Roberts, 1990; McCosh, 1990; Davidson, 1989; Beasley, 1990).

The results of this study also suggest that blacks are treated differently by suburban and central city employers in the hiring process. This differential treatment may be the result of
black prejudice against whites, white prejudice against blacks, or a combination of both. The
data did not permit the resolution of this issue. Nevertheless, the results are consistent with
recent hiring audits which show that blacks encounter greater hiring discrimination for entry-level
jobs in the suburbs than they do within the central city (Bendick, et al., 1993). Stronger
enforcement of employment discrimination protection in the suburbs should accompany improved
transportation for reverse commuters.

Finally, the fact that distance from the CBD center is found to have an independent effect
on black employment share suggests that either the additional time involved in commuting to a
suburban job and/or information costs act as impediments to suburban employment on the part
of central city blacks. Future research that would help disentangle the relative importance of
information and commuting costs is warranted. However, regardless of the cause of the distance
effect, our results suggest that it can be mitigated by reducing the time costs of travel.16

This study has taken only the first step in analyzing the spatial distribution of black
employment within metropolitan areas. It is obviously important to study other metropolitan
areas besides Atlanta and other occupations besides fast-food workers. However, such analysis
will require the compilation of original data for individual firms, analogous to those employed
in the present study.
ENDNOTES

1. In a previous paper (Ihlanfeldt and Young, 1992), we investigated whether blacks working at fast-food restaurants in Atlanta encounter greater wage discrimination in the suburbs than within the central city. The results suggested that blacks are paid less at restaurants that have a higher percentage of white customers, which implies that blacks earn less in the suburbs. The magnitude of the effect, however, was found to be small. A 10-percentage point increase in percent white customers is found to decrease black wage rates by less than 1 percent. The present paper focuses on employment discrimination rather than wage discrimination.

2. This has been documented by Kasarda, 1985. Using data from the 1980 Census of Housing he found that more than one-half of the minority households in Philadelphia and Boston are without a means of personal transportation. In New York the proportions are even higher, with only 3 out of 10 black or Hispanic households having a vehicle available. According to the 1990 Census of Population and Housing, STF 3A, 39 percent of the black households living in the City of Atlanta have no automobile, van, or truck at home for use by household members.

3. All of the manager interviews were conducted by Madelyn Young.

4. On the southside of the City a few firms located 6 miles from the CBD center are included in the closest interval, so that each interval would have at least 5 restaurants.

5. Since we have no data on expected future wages, we assume a one-period time frame. Our results remain valid if either workers have short planning horizons or current wage differentials between the City and the suburbs are expected to persist over the horizon.

6. Rather than reflecting market differences between the city and the suburbs, average crew wage rates may be higher in the suburbs because more productive workers choose to work in the suburbs and not the central city. We investigated this hypothesis using data from questionnaires that were filled out by the employees at each of the restaurants included in our sample. Wage equations were estimated separately for white and black workers that included education, age, months of experience as a fast-food worker, other controls, and work distance from the CBD center. For both racial groups wages were found to be higher in the suburbs. (Ihlanfeldt and Young, 1992). Nevertheless, unmeasured labor quality may be higher in the suburbs. Tests for selectivity bias using the two-step procedure outlined by Heckman (1976) suggest that the possibility that workers with higher unobserved productivity self-select suburban in comparison to central city work locations is an unimportant phenomenon (Ihlanfeldt, 1988).

7. It should be noted that our survey occurred prior to the April 1990 and 1991 increases in the minimum wage. At the time of the survey the minimum wage was $3.35. The numbers in Table 1 suggest that our results are not affected by a binding minimum wage. The latter would probably result in less spatial variation in W and greater variation in P than observed in Table 1.

8. Both linear and log-of-odds results are generated because we have no a priori expectation regarding which functional form is more nearly correct. The fit obtained with each alternative
functional form is compared using an $R^2$ statistic that accounts for the transformation of PB in the log-of-odds equation.

9. While it would have been preferable to separate commuting and information cost estimates, the requisite data for constructing such variables are not available.

10. The Atlanta region is defined as the five counties containing the City of Atlanta and the inner suburbs; namely, Fulton, DeKalb, Cobb, Clayton, and Gwinnett counties.

11. Tract centers were determined using the A-CONFORMOLINES procedure of SYMAP, a computer mapping program on a digitized map of census tracts in the Atlanta region. The average distance between the center of the tract and all points within the tract was found by computing the average distance between the center of a circle with the same area as the tract and all points within that circle. This distance was determined to be the radius divided by the square root of two.

12. One might argue instead that franchisee owners have more discretion and might discriminate more to satisfy their utility at the expense of profits. Perhaps black managed (owned) franchisee-owned restaurants hire more blacks, and white managed (owned) franchisee-owned do not. We tested this in the regression analysis by interacting FRAN and BMGR. The interaction term is not statistically significant at even the 10-percent level, which fails to support this alternative hypothesis.

13. A Breusch-Pagan test rejected the null hypothesis of homoskedasticity in the linear model. Corrected standard errors were obtained via White's (1980) heteroskedasticity-consistent estimator of the variance-covariance matrix. The t-statistics reported in Table 3 are based on these corrected standard errors.

14. Since we have a sign hypothesis for $WCUST\%$, BMGR, BUS, TRAIN, BDIST, MILESCBD, and FRAN, we employ one-tail tests of significance for these variables. For the chain dummies, two-tail tests are used.

15. There are a number of possible reasons that might explain why company-owned restaurants are on average located farther from the CBD center than those that are franchisee-owned. First, older restaurants tend to be franchisee-owned because franchisors are capital-constrained in their early stages and sell franchises to raise capital (see Krueger, 1991). Second, franchisors may perceive suburban restaurants as having greater profitability and therefore prefer to have the company own them. Third, franchisors may have an incentive to locate company-owned units in suburbia to economize on transaction costs, if regional managers prefer a suburban residence.

16. This is also demonstrated by Holzer, et al. (forthcoming), who develop and test a theoretical model that posits work and search distance are inverse functions of travel time cost per mile.
REFERENCES


<table>
<thead>
<tr>
<th>Miles From Center</th>
<th>(1) Mean Percent Black Workers</th>
<th>(2) Mean Starting Wage$^1$ ($)</th>
<th>(3) Mean Crew Wage$^2$ ($)</th>
<th>(4) Difficulty Finding Employees$^3$ (%)</th>
<th>(5) Walk-ins Per Week$^4$</th>
<th>(6) Number of Restaurants</th>
</tr>
</thead>
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<tr>
<td>North</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-5</td>
<td>97.4</td>
<td>3.79</td>
<td>4.18</td>
<td>38</td>
<td>13.0</td>
<td>13</td>
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<tr>
<td>5-10</td>
<td>92.6$^*$</td>
<td>3.91$^{**}$</td>
<td>4.38$^*$</td>
<td>32</td>
<td>9.9</td>
<td>22</td>
</tr>
<tr>
<td>10-15</td>
<td>77.9$^*$</td>
<td>4.35$^*$</td>
<td>4.84$^*$</td>
<td>37</td>
<td>7.3</td>
<td>19</td>
</tr>
<tr>
<td>15-20</td>
<td>55.4$^*$</td>
<td>4.61$^*$</td>
<td>5.15$^*$</td>
<td>82$^*$</td>
<td>2.3</td>
<td>11</td>
</tr>
<tr>
<td>South</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-5</td>
<td>97.0</td>
<td>3.73</td>
<td>3.88</td>
<td>14</td>
<td>15.7</td>
<td>7</td>
</tr>
<tr>
<td>5-10</td>
<td>83.5$^*$</td>
<td>3.75$^*$</td>
<td>4.13$^*$</td>
<td>18</td>
<td>8.2</td>
<td>11</td>
</tr>
<tr>
<td>10-15</td>
<td>61.9$^*$</td>
<td>3.86$^*$</td>
<td>4.19$^*$</td>
<td>40$^{**}$</td>
<td>9.2</td>
<td>15</td>
</tr>
<tr>
<td>15-20</td>
<td>72.6$^*$</td>
<td>3.81$^*$</td>
<td>4.13$^*$</td>
<td>40$^*$</td>
<td>5.6</td>
<td>5</td>
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<tr>
<td>Sample Means</td>
<td>80.4</td>
<td>4.01</td>
<td>4.42</td>
<td>38</td>
<td>8.8</td>
<td>102</td>
</tr>
</tbody>
</table>

$^1$Mean starting wage is the average of managers’ answers to the following question: A new employee has just graduated from high school, has no previous work experience in fast food, and will work over the lunch hour Monday-Friday. What is the starting wage this new employee receives?

$^2$Mean crew wage is the average of managers’ answers to the question: What is your average crew wage?

$^3$Percentage of managers who indicated that it was somewhat or very difficult to find new employees.

$^4$This is the average of managers’ answers to the question: In an average week, if you did not advertise for help in any way (such as putting up a sign in the store window or asking current employees to recruit friends), how many walk-ins would normally come into the restaurant asking about a job?

$^*$Indicates that the mean is significantly different from the mean within the 0-5 mile interval at the 5-percent level. $^{**}$Indicates significance at the 10-percent level.
TABLE 2

Variable Definitions, Means, and Standard Deviations

<table>
<thead>
<tr>
<th>Definition</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>WCUST%</td>
<td>58.70</td>
<td>20.63</td>
</tr>
<tr>
<td>Manager's estimate of the percentage of the restaurant's customers who are white.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BMGR</td>
<td>.54</td>
<td>.50</td>
</tr>
<tr>
<td>Manager is black, yes = 1.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BUS</td>
<td>.51</td>
<td>.50</td>
</tr>
<tr>
<td>Equals one if the restaurant is within two blocks of a MARTA bus stop, zero otherwise.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TRAIN</td>
<td>.24</td>
<td>.43</td>
</tr>
<tr>
<td>Equals one if the restaurant is within two blocks of a MARTA train station, zero otherwise.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MILESCBD</td>
<td>10.10</td>
<td>4.96</td>
</tr>
<tr>
<td>Airline distance between the restaurant and the center of the CBD.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BMILES</td>
<td>5.31</td>
<td>5.94</td>
</tr>
<tr>
<td>Airline distance between the restaurant and CBD center if BUS = 1, otherwise, 0.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TMILES</td>
<td>1.05</td>
<td>2.39</td>
</tr>
<tr>
<td>Airline distance between the restaurant and CBD center if TRAIN = 1, otherwise, 0.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CMILES</td>
<td>3.74</td>
<td>6.55</td>
</tr>
<tr>
<td>Airline distance between the restaurant and CBD center if TRAIN = 0 and BUS = 0, otherwise 0.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BDIST</td>
<td>8.35</td>
<td>2.56</td>
</tr>
<tr>
<td>Average distance between black population and the restaurant.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FRAN</td>
<td>.21</td>
<td>.41</td>
</tr>
<tr>
<td>Equals one if restaurant is franchisee-owned, zero if company-owned.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHAIN1</td>
<td>.25</td>
<td>.44</td>
</tr>
<tr>
<td>Dummy variable representing chain affiliation.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHAIN2</td>
<td>.42</td>
<td>.50</td>
</tr>
<tr>
<td>Dummy variable representing chain affiliation.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHAIN3</td>
<td>.21</td>
<td>.41</td>
</tr>
<tr>
<td>Dummy variable representing chain affiliation.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
TABLE 3

Estimated Equations Explaining the Racial Composition of the Restaurant's Crew

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>-0.282</th>
<th>-0.301</th>
<th>-0.284</th>
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<tr>
<td>WCUST%</td>
<td>(4.13)</td>
<td>(4.05)</td>
<td>(4.21)</td>
</tr>
<tr>
<td>BMGR</td>
<td>8.762</td>
<td>9.684</td>
<td>8.113</td>
</tr>
<tr>
<td></td>
<td>(2.55)</td>
<td>(2.94)</td>
<td>(3.42)</td>
</tr>
<tr>
<td>BUS</td>
<td>21.727</td>
<td>23.340</td>
<td>28.409</td>
</tr>
<tr>
<td></td>
<td>(4.47)</td>
<td>(6.24)</td>
<td>(1.37)</td>
</tr>
<tr>
<td>TRAIN</td>
<td>24.536</td>
<td>28.853</td>
<td>23.401</td>
</tr>
<tr>
<td></td>
<td>(3.63)</td>
<td>(5.73)</td>
<td>(1.19)</td>
</tr>
<tr>
<td>MILESCBD</td>
<td>-0.719</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>(1.55)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BMILES</td>
<td>-1.057</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(1.58)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TMILES</td>
<td>0.263</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.58)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CMILES</td>
<td>-0.51</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(1.23)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BDIST</td>
<td>-0.535</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.85)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FRAN</td>
<td>10.640</td>
<td>11.163</td>
<td>11.854</td>
</tr>
<tr>
<td></td>
<td>(2.51)</td>
<td>(2.64)</td>
<td>(2.65)</td>
</tr>
<tr>
<td>CHAIN1</td>
<td>10.798</td>
<td>10.037</td>
<td>11.997</td>
</tr>
<tr>
<td></td>
<td>(1.84)</td>
<td>(1.68)</td>
<td>(2.01)</td>
</tr>
<tr>
<td>CHAIN2</td>
<td>16.725</td>
<td>16.707</td>
<td>17.961</td>
</tr>
<tr>
<td></td>
<td>(3.00)</td>
<td>(3.02)</td>
<td>(3.15)</td>
</tr>
<tr>
<td>CHAIN3</td>
<td>11.818</td>
<td>12.025</td>
<td>13.094</td>
</tr>
<tr>
<td></td>
<td>(1.97)</td>
<td>(2.01)</td>
<td>(2.11)</td>
</tr>
<tr>
<td>CONSTANT</td>
<td>68.617</td>
<td>64.694</td>
<td>64.618</td>
</tr>
<tr>
<td></td>
<td>(7.85)</td>
<td>(7.78)</td>
<td>(3.38)</td>
</tr>
<tr>
<td>R^2</td>
<td>0.613</td>
<td>0.605</td>
<td>0.618</td>
</tr>
</tbody>
</table>

NOTE: Numbers in parentheses are the absolute values of t-statistics. All Coefficients are multiplied by 100. The number of observations = 102.
<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean Near</th>
<th>Mean Far</th>
<th>Contribution to Difference</th>
<th>Percent of Difference Explained</th>
</tr>
</thead>
<tbody>
<tr>
<td>WCUST%</td>
<td>56.25</td>
<td>74.06</td>
<td>5.02</td>
<td>12.7</td>
</tr>
<tr>
<td>BMGR</td>
<td>0.75</td>
<td>0.13</td>
<td>5.48</td>
<td>13.9</td>
</tr>
<tr>
<td>BUS</td>
<td>0.06</td>
<td>0.38</td>
<td>-6.78</td>
<td>-17.2</td>
</tr>
<tr>
<td>TRAIN</td>
<td>0.94</td>
<td>0.0</td>
<td>22.97</td>
<td>58.2</td>
</tr>
<tr>
<td>MILESCBD</td>
<td>2.69</td>
<td>17.94</td>
<td>10.97</td>
<td>27.8</td>
</tr>
<tr>
<td>FRAN</td>
<td>0.38</td>
<td>0.06</td>
<td>3.30</td>
<td>8.4</td>
</tr>
<tr>
<td>CHAIN1</td>
<td>0.06</td>
<td>0.44</td>
<td>-4.05</td>
<td>-10.3</td>
</tr>
<tr>
<td>CHAIN2</td>
<td>0.56</td>
<td>0.50</td>
<td>1.05</td>
<td>2.6</td>
</tr>
<tr>
<td>CHAIN3</td>
<td>0.19</td>
<td>0.06</td>
<td>1.47</td>
<td>3.7</td>
</tr>
</tbody>
</table>

**NOTE:** The difference in predicted black employment share between near and far restaurants is 39.5 percentage points.
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<td>August 1989</td>
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<td>3</td>
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