Spatial Mismatch and the Formation of Bad Ghettos: New Evidence from the US Postal Service

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Abstract: Today, residential segregation is associated with poor economic outcomes for African-Americans but, in the mid-twentieth century, the opposite was true. What changed? One explanation emphasizes the relative loss of jobs in the central city. We focus on black employment at the US Postal Service, which has remained centralized for largely exogenous reasons. If job access matters, we should see African-Americans substituting toward postal employment over time, particularly in cities whose black neighborhoods are clustered downtown. From 1960 onward, blacks in segregated cities have been more likely than whites to work for the postal service. This relationship did not exist in 1940 or 1950, when private sector jobs near black enclaves were plentiful. Furthermore, this pattern does not hold for mail carriers whose work is distributed throughout the metropolitan area. As blacks gained access to the suburbs, the magnitude of this relationship has declined. Black occupational choices suggest that spatial mismatch was potent in the 1950s and 1960s, when firms began to suburbanize but black households were unable to follow, but is less important today.

I. Introduction

In 1940, blacks who lived in segregated cities had higher earnings and stronger labor force attachment than blacks in cities whose neighborhoods were integrated by race (Collins and Margo, 2000). In contrast, segregation is now associated with an array of negative economic outcomes for African-Americans (Cutler and Glaeser, 1997; Ananat, 2007; Card and Rothstein, 2007). Why did residential segregation become an impediment to black economic advancement? One classic explanation invokes "spatial mismatch" between black neighborhoods and job openings. Historically, manufacturing plants (and related low-to mid-skilled jobs) were located near central business districts. In the first half of the twentieth century, black migrants to urban areas settled in residential enclaves close to these employment opportunities (Taeuber and Taeuber, 1965; Farley, 1968).

From the 1950s onward, firms began relocating from central cities to the suburban ring (Glaeser and Kahn, 2001). Initially, white hostility deterred black households from moving to the suburbs and low rates of car ownership prevented black workers from undertaking a reverse commute. Segregation became increasingly synonymous with the centralization of black neighborhoods in otherwise decentralized metropolitan areas. In a famous paper, Kain (1968) argued that this "spatial mismatch" reduced the demand for African-American labor, thereby harming the prospects for black employment.

Tests of the spatial mismatch hypothesis typically investigate the relationship between job accessibility and black employment rates. We believe that distance from job opportunities should affect not only the employment decision (the extensive margin), but also one's choice of occupation (the intensive margin). If job accessibility matters, we expect blacks to substitute towards occupations and industries that remain downtown as other jobs leave the central city.

We concentrate on one such employer, the United States Postal Service (USPS). Early in the twentieth century, postal processing and distribution facilities were built in central cities in close proximity to rail depots. These locations were determined prior to substantial black migration to urban areas. Mail sorting has remained remarkably centralized over the century, due to a combination of political, union and regulatory pressure against the relocation of main facilities. As a result, we expect that African-Americans substituted towards postal work over time as other employers moved to the suburbs, and that this effect was strongest in cities whose black population was highly segregated.

Our empirical strategy takes the form of a "difference-in-differences" analysis. Specifically, we investigate whether black postal employment is higher in segregated versus integrated cities, and whether this relationship has intensified over time as other job opportunities moved to the suburbs. We also treat whites as a control group to adjust for any feature of segregation that might increase postal employment for all residents (for example, segregation may lead to the inefficient duplication of public infrastructure).

We find that segregation is unrelated to the relative odds of black postal employment in 1940 or 1950, when "good" private sector jobs were concentrated in downtown areas. A large positive correlation between segregation and black postal employment emerges in 1960 and 1970, as jobs moved out to the suburbs but black households were unable to follow. Consistent with this time series pattern, we show that, in the cross-section, the effect of segregation on the probability of black postal work increases with the share of area employment located outside of the central city.

With the passage of fair housing legislation in 1968, the spatial match between black residential locations and employment opportunities slowly improved. Correspondingly the

relationship between segregation and black postal work attenuates after 1970. However, the correlation never disappears, remaining positive and statistically significant in 2000. The results suggest that the departure of jobs from the central city was an important factor in the economic decline of black enclaves circa 1970, but that job accessibility has become less important over time.

While we treat postal work as a prototypical example of a centrally-located job, we find a similar relationship between segregation and black employment in other highly centralized public sector occupations. We also exploit variation within the postal service in work location by occupation. Postal clerks – particularly those involved in processing and distribution – disproportionately work downtown, while mail carriers work throughout the metropolitan area. Underscoring our emphasis on job accessibility, we find that segregation only increases the likelihood of black employment as a postal clerk. This within-postal sector comparison also helps us to discount alternative explanations based on general racism in either the postal or the private sector.

This paper introduces two innovations to the spatial mismatch literature. The first is its historical perspective. Existing tests of the spatial mismatch hypothesis usually rely on data from a single cross-section or short period of time. We compile data from 1940 to 2000 to observe *changes* in black occupational choices as job accessibility changed over time. Our second contribution is the focus on occupational choice, rather than the employment decision itself. Most studies focus on the black unemployment rate, which introduces a well-recognized omitted variables problem (Ellwood, 1986; Ilhanfeldt and Sjoquist, 1990; Rogers, 1997; Raphael, 1998; Hellerstein, Neumark and McInerney, 2007).[1] Within metropolitan areas, residents who are, for

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[1] Exceptions include Ross (1998), who considers residential mobility and Taylor and Ong (1995) and Gabriel and Rosenthal (1996) who investigate commuting times.

unobservable reasons, less attached to the labor force might sort into neighborhoods that are farther from job opportunities. One solution to this problem has been to use variation across metropolitan areas, which minimizes (but does not eliminate) the possibility of sorting (Ihlanfeldt and Sjoquist, 1989; Weinberg, 2000; Weinberg, 2004). We propose another solution: identify an outcome that is associated with spatial mismatch, but is otherwise unlikely to be correlated with the propensity to live in isolated neighborhoods. We argue that working for the postal service, a well-paid, civil service job that happens to be concentrated in downtown areas, is an excellent candidate.

II. Residential Segregation in Historical Context

Prevailing wisdom about the relationship between residential segregation and African-American economic outcomes has changed over time. In the early part of the century, scholars argued that residential segregation provided a protected market for African-American professionals and shop owners who served an overwhelmingly black clientele (W.E.B. Dubois, 1967 [1899]; E. Franklin Frazier, 1957; Abram Harris, 1936; Gunnar Myrdal, 1944; Carter Woodson, 1934). As late as the 1960s, after a wave of urban riots, policymakers and community leaders continued to actively debate the relative benefits of segregation versus integration (Downs, 1968; Kain and Persky, 1969; Levine, 1972). By contrast today, residential segregation, which isolates black neighborhoods from job opportunities and mainstream social norms, is frequently blamed for the persistence of black poverty (Massey and Denton, 1993).

This shift in scholarship mirrors the changing empirical association between segregation and economic outcomes for African-Americans. In Table 1, we report regressions of annual earnings and employment on residential segregation at the metropolitan level, a race indicator,

and the interaction of the two.[2] In 1940, black men who lived in segregated areas earned more relative to local whites than did their counterparts in integrated areas. This earnings premium declined steadily over the century, becoming a penalty by 2000. In contrast, the already negative (but small) relationship between segregation and black employment rates increased over the century, becoming large and significant in 2000.[3] To appreciate the magnitude of these relationships, consider a one standard deviation increase in our measure of segregation (around 0.12). In 1940, this increase would have been associated with a 4.8 percent earnings premium for black men, while, in 2000, it was associated with a 2.2 percent earnings penalty.

The timing of this reversal broadly coincides with the departure of many large employers from central cities. During the first half of the century, employment remained heavily concentrated in the central business district even as population began to disperse to early street car suburbs and, later, to bedroom communities accessible by car (Warner, 1978; Jackson, 1985). Evidence from particular cities suggests that the exodus of firms to the suburban ring began as early as the 1950s (Fogelson, 2001, pp. 381-394). The Census Bureau has gathered data on work locations since 1960. The share of metropolitan area residents who worked in the center city fell perceptibly over the next decade from 59.3 percent in 1960 to 51.7 percent in 1970.[4] By 2000, only 42.3 percent of the metropolitan workforce remained in the center city.

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[2] Regressions also include a set of individual characteristics and a vector of metropolitan area dummy variables. Segregation is measured using a dissimilarity index, which is described, along with the sample construction, in Section V.

[3] While this pattern is consistent with Collins and Margo (2000), our estimates are somewhat different. We include metropolitan area fixed effects, which absorb any local attribute that is correlated with segregation. In addition, our sample includes individuals aged 18-64, while Collins and Margo focus only on young adults (aged 20-30).

[4] Baum-Snow (2007) calculates that, in 1950, 64 percent of employment in manufacturing, retail and wholesale trade, and business/repair services was located in central cities. By 1960, only 61.8 percent of employees in these sectors worked in the central city, confirming that decentralization was already underway in the 1950s. Moreover, central cities expanded in land area over the decade via annexation. Thus, the measured decentralization in 1960 would likely have been *even larger* if the 1950 boundaries had remained in place in that year.

Before 1970, few African-American households lived in the suburbs, even if they could afford to do so. Historically, racial restrictive covenants, which prevented the transfer of property to African-Americans and members of other groups, were extensively used in the suburbs (Brooks, 2002). Even after the legal enforceability of such covenants was struck down by the Supreme Court in the late 1940s, black suburbanization was slowed by the intimidation and violence of white residents and by the discriminatory behavior of realtors and financial institutions (Sugrue, 1996; Ross and Yinger, 2002; Stuart, 2003). Early state-level fair-housing laws were largely ineffective in combating these tactics (Collins, 2004).

During this period, low car ownership rates further prevented African-Americans from undertaking city-to-suburb commutes. In 1960, only 44.8 percent of blacks who lived in central cities commuted by car, compared to 64.5 percent of city whites. In a detailed study of one company's relocation from Detroit to suburban Dearborn, Zax and Kain (1996) report that black workers whose commutes lengthened as a result of the move were far more likely to quit relative to white workers in the same position.

Blacks began to move to the suburbs in earnest after the passage of federal fair housing legislation in 1968. In 1960, 84.8 of African-Americans in metropolitan areas lived in the central city; this share fell to 68.1 by 1980. As a result, we expect the problem of spatial mismatch to be maximized in the 1950s and 1960s, when employment had started to decentralize, but black households had yet to follow.

III. Postal Employment as a Bellwether of Urban Trends

A. The growth in postal employment over the twentieth century

The US Postal Service is one of the nation's largest civilian employers (Bureau of Labor Statistics, 2007). At its peak in 1970, 1.2 percent of white men and 2.5 percent of black men in the labor force worked for the postal service. Figure 1 portrays the share of men engaged in postal work over the century. For comparison, we also show the share of men who worked in the remainder of the one-digit industry "public administration."[5] Around one percent of the white male labor force was employed in the postal service throughout the century. In contrast, black postal employment increased dramatically from one percent in 1940 to 2.5 percent in 1970, a rate faster than the general growth in public employment.

From 1970 onward, the odds of postal employment have been falling for all men. This drop may reflect the introduction of zip codes in 1963. The resulting automation of mail processing allowed substantial substitution of capital for labor. Private sector substitutes for the postal service (for example, Federal Express and UPS) and the rise of various forms of electronic communication, such as email and cell phones, may have also contributed to this decline in recent years.

Nationwide, blacks were twice as likely as whites to work for than postal service in 1970; in some cities, this disparity was two or three times larger. Figure 2 presents the share of black and whites in the full-time, full-year labor force who were employed at the USPS by metropolitan area in 1970. The white share fluctuates between one and two percent across the country. By contrast, in some cities – with San Francisco, Chicago, and Indianapolis most

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[5] This industry code does not capture all public employees, but rather those whose occupations were considered by the Census Bureau to be "intrinsic" to the public sector. Thus, for example, public school teachers are classified as working in educational services rather than public administration because teachers can work for either a public or a private school. From 1940 onward, the Census identified all public sector workers regardless of their specific occupation. Appendix Table 1 presents the number of men by race employed in the *entire* public sector from 1940-2000, along with the numbers underlying Figure 1. Intrinsic public employees make up around 40 percent of the total public sector, and their growth mirrors that of the sector as a whole.

prominent among them – the share of blacks working for the post office was as high as 7.5

percent, an extraordinary large (and, to our knowledge, previously unnoticed) racial disparity.

B. The concentration of postal employment in the central city

The over-representation of African-Americans in postal employment may be due to the

fact that much mail processing has remained in downtown areas, near black neighborhoods, even

as similar warehousing and wholesale operations have moved to the suburbs. The centralization

of mail processing dates from the early twentieth century when the bulk of intercity mail was

transported by rail.[6] Main rail terminals were located in the heart of the central business district.

Intercity mail was collected at a central facility, loaded on the train, and sorted en route (into

cubbyholes) by highly trained railway mail clerks.

Railway mail peaked in the 1920s. Some of its demise over the next fifty years can be

attributed to advances in trucking and air transportation which ultimately proved a less expensive

way of transporting the mail between cities, particularly after the completion of the federal

interstate highway system in the late 1950s. The last rail route between New York City and

Washington, DC ceased operations in 1977.

Given that population and businesses – that is, the demanders and suppliers of mail

delivery – have moved to the suburbs and that the mail itself no longer travels by rail, it would

seem economically sensible that mail processing and distribution, too, would move out of the

central city. However, the post office faces a number of impediments to the relocation of its main

facilities. The National Environmental Policy Act (1969) requires that federal agencies prepare

an environmental impact statement, including a consideration of local job loss, before

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[6] Our discussion in this section of the history of mail processing and distribution is based on United States Postal Service (2003).

undertaking a "major federal action."[7] Local politicians and the postal unions also routinely

oppose site relocation.

As a result, mail processing and distribution has continued apace in central cities. Table 2

provides evidence on the geographic location of postal jobs. The first panel of Table 2 uses place

of work data from the 1970 Census to compare the job locations of postal employees with the

rest of the workforce. 53 and 56 percent of workers in the private and (non-postal) public sectors

respectively remained in the center city in that year. Mail carriers were similarly distributed

between the city and the suburbs. By contrast, 71 percent of other postal workers worked in the

city.[8] Indeed, nearly one in five such postal employees worked in the central business district,

compared to one in twelve private sector employees.[9]

The Census does not separate workers at processing facilities from those at branch

offices. To further document the location of mail processing activities, we mapped the (ca. 2000)

street addresses of as many processing and distribution centers as we could find in the public

record.[10] There are 318 of such centers nationwide, of which we have located exact street

addresses for 145 to date.[11] The second panel of Table 2 displays characteristics of the

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[7] The case precedent on postal P&DCs was established in *City of Rochester v. U.S. Postal Service, 541 F.2d967*. In the early 1970s, the city of Rochester sued the postal service over its plan to shutter its downtown facility. The court found that closing the Rochester postal facility constituted a "major federal action," and further added that the "environmental impact" of an action would include any socioeconomic consequences – for example, job loss – that might ensue. Despite these findings, the court ruled against the city on technical grounds, and the Rochester P&DC was relocated to the suburbs.

[8] Over two-thirds of non-mail carrier postal employees are classified as "clerical, n.e.c."; these include workers at both retail post offices and at processing and distribution facilities. The other large occupation groups include postmasters, laborers, janitors, and truck drivers.

[9] Despite overall decentralization, this disparity in job locations was still present in 2000. 54 percent of other postal employees worked in the central city, compared to 38 percent of mail carriers and 42 percent of all private sector workers.

[10] The US Postal Service headquarters would not release a comprehensive list of processing centers to us. Instead, we found a partial list of addresses in documents from a variety of websites (details are available from the authors on request). The facility neighborhood is defined as its own Census tract and all adjacent tracts. Addresses were mapped using www.socialexplorer.com.

[11] In addition to the 318 processing and distribution facilities, the postal service has 78 Air Mail Centers, 21 Bulk Mail Centers, 12 Processing centers for priority mail, and 37,159 Destination Delivery Units, many of which are retail post offices.

neighborhoods in which these facilities are located. Eighty percent of the metropolitan centers

are in the central city. On average, the black population share in a facility neighborhood is 38

percent, compared with 28 percent in the county in which the facility tract is located.[12] Even

more striking is the fact that the typical facility is located in a neighborhood that is physically

adjacent to at least one census tract that is majority black. For the average neighborhood

containing a P&DC, the maximum black population share in an included census tract is 62

percent.

Unlike some centrally-located jobs available to African-Americans with relatively

modest skills, postal work offers high salaries and good benefits. Gosnell (1935, p. 305) reported

that, in the late 1920s, black postal workers were "among the best livers [on] Chicago's south

side." This rosy picture is consistent with nationally representative Census data, which are

available from 1940 onward. Table 3 reports the average weekly wage for black postal workers

and where it fell in the wage distributions of all blacks and all non-blacks in 1940, 1970 and

2000.[13] In 1940, postal workers were in the top five percent of the black wage distribution and

the 70th percentile of the non-black distribution. By 2000, the mean black postal worker

remained in the top 25 percent of black earners and above the median for the nation as a whole.

Job location is one important factor governing the decision to work for the postal service.

The next section lays out a simple model characterizing an individual's choice of sector. The

framework helps to illustrate the conditions under which we would expect the probability of

postal employment to increase with residential segregation for black workers.

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[12] These means are weighted by the black population share in the county.
[13] The method of pay setting in the postal sector changed from 1940 to 1970. At mid-century, wages in the postal service were set by Congressional legislation. In the early 1960s, all federal agencies were opened by executive order to unionization, at which point postal unions became official bargaining agents.

IV. Choosing to Work for the Post Office: A Theoretical Framework

Acquiring a position with the postal service differs in important ways from searching for a job in the private sector. To be considered for employment, one must first sit for an exam.[14] Because wages are set at the federal level, they do not adjust to clear the market in any particular metropolitan area. Rather, test-takers are put into a queue until a job becomes available.[15] As with all federal civil service positions, open slots in the postal service are allocated by the "Rule of Three." Hiring officials select at will from among the top three scorers in the queue, subject to certain restrictions (for example, they may not pass over a veteran for an individual with a lower score).

Building on these features, we consider a worker who, for an application fee *F*, can put her name in the postal queue.[16] Until her name is called, she can continue to work for the private sector. Test-takers face a probability *p(s)* of being offered a postal position. We model the probability as a function of an individual's skill level. Higher skill levels are associated with higher scores on the exam, which increases the likelihood of placement in the postal sector. Once offered a job, workers can remain in the postal sector for the rest of their career. Those who secure a postal job will earn a common wage w_p. In contrast, the private sector pays w(*s*), which is increasing in skill.

An individual's choice of sector is readily understood in a two period model. Let the worker has a discount rate β<1 and define *g* as the net wage gain associated with the postal sector ($g = w_p - [w(s) - c]$). The parameter *c* is the relative per-period commuting cost associated

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[14] Current versions of the exam can be found at: http://www.usps.com/employment/maildeliveryjobs.htm. Copies of exams given ca. 1940 can be found in O'Brien and Marenberg (1940). The pre-war exams emphasize accuracy in reading, spelling, sorting, and simple arithmetic.
[15] We abstract from the fact that individuals are typically hired into substitute carrier or clerical positions before being called for regular employment.
[16] While sitting for the exam is free in monetary terms, individuals still incur the time cost of practicing for and taking the test.

with working in the private sector; *c* will be positive if the modal private sector job requires a longer commute than the modal postal job. Workers will take the postal exam if:

$$p(g + \beta g) + (1-p)p(\beta g) > F \qquad \textbf{(1)}$$

A worker who enters the queue faces three possible outcomes. With probability *p*, he receives a postal job in the first period and reaps the postal wage premium for two periods (term one). Of the (*1-p*) individuals not called in the first period, the proportion *p* is called in the second period for a gain of βg (term two). The remaining proportion, $(1-p)^2$, is not called in either period, and receives no gain. The left-hand side of equation one represents the expected present discounted value of entering the pool. Workers will enter only if this total is equal to or greater than the fixed cost of taking the exam.

The predictions that arise from this framework are intuitive. Workers are more likely to join the postal queue as either the probability of being offered a job or the postal wage premium increase. The postal wage premium will increase as the postal pay scale (w_p) is revised upward, the private sector wage distribution [w(.)] is shifted to the left, or the relative commuting cost (*c*) increases. An increase in worker skill (*s*) has an ambiguous effect on the decision to join the postal queue. Skill increases the probability of securing a postal job but decreases the gain to postal work relative to the private sector. Workers with a sufficiently high level of skill will not join the queue because their net private sector wage will always be higher than the common postal wage. Neither will workers with a sufficiently low level of skill because their small probability of being hired does not justify the application fee. The queue will be composed of workers in an intermediate skill range.

In terms of the model, spatial mismatch operates through the relative commuting cost (*c*). As private sector jobs leave the city, some blacks will join the postal queue rather than face the reverse commute. This option is more likely to occur in segregated cities, where a greater share of the black population is concentrated in the central city. Eventually, as the suburbs open to black residents, this gap may dissipate. Thus, we might expect the largest gap between segregated and integrated cities in the 1950s and 1960s when firms were leaving cities but black households had yet to follow.

V. Data and Estimation Strategy

We examine the relationship between segregation and postal employment by pooling Census data from 1940 to 2000 and estimating:

$$\text{Postal}_{ijt} = \alpha + \Sigma_t\,\beta_t(\text{Black})_{ijt} + \Sigma_t\,\delta_t(\text{Segregation}_{jt}) + \Sigma\gamma_t\,(\text{Black}_{ijt} \cdot \text{Segregation}_{jt}) + \Pi_j + \Phi_t + \Omega X_{ijt} + \varepsilon_{ijt} \quad \textbf{(2)}$$

where *i* and *j* index individuals and metropolitan areas, respectively, and *t* indexes Census year. Postal_{ijt} is an indicator equal to one for postal employees. β_t, the coefficients on the year-specific black dummy variables, captures the fact that, nationwide, African-Americans were more likely to work for the postal service throughout this period (Figure 1).[17] A metropolitan area-specific intercept (Π_j) allows the probability of engaging in postal work to vary by place – for example, due to differences in mail volume in small and large cities. The vector of coefficients δ_t measure any (time-varying) effects of segregation on postal employment that are common to all area

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[17] In addition to the race dummy, the full vector of individual controls (X_{ij}) contains a fourth degree polynomial in age, and a series of dummies equal to one if the individual is female, married, a veteran or foreign born. Educational attainment is measured as highest grade completed; in 1990 and 2000, we use the IPUMS education recode. We include dummies for the following categories of completed schooling: 0-8, 9-11, 12, 13-15, and 16 or more years. All personal characteristics are interacted with the race dummy. The 1950 regression includes only sample line individuals.

residents. Standard errors are clustered to allow for correlated errors at the metropolitan area level.

The coefficients of interest (γ_t) are the year-specific interactions between a metropolitan area's level of segregation and the individual race dummy. If γ_t is positive, blacks in segregated areas are more likely to work for the post office, relative to their white counterparts. Under the spatial mismatch hypothesis, we expect γ_t to be close to zero in 1940 and 1950, before other employment left the city, and to be positive from 1960 onward as the post office becomes, in many cases, the only good job in proximity to black neighborhoods. As the rate of car ownership and suburban residence among black households increase, the differential propensity for postal work may decline.

The micro-Census data are taken from the Integrated Public Use Microdata Series (IPUMS) (Ruggles, et al., 2004). We construct a sample of men and women between the ages of 18-64 who worked full time for the full year in the non-farm economy.[18] Later, we demonstrate that the results are robust to including part-time workers and the unemployed.

We measure residential segregation using the dissimilarity index, which is defined as:

$$\tfrac{1}{2}\, \Sigma_n \mid [(\text{black}_n\,/\text{black}_{total}) - (\text{non-black}_n\,/\text{non-black}_{total})] \mid . \qquad\qquad \textbf{(3)}$$

Black$_{total}$ is the count of black residents in the entire metropolitan area, while black$_n$ counts the number of black residents in a given Census tract (neighborhood).[19] The index takes on a value of zero when each neighborhood mirrors the racial composition of the area as a whole and a value of one in a perfectly segregated city. The dissimilarity index does not explicitly measure

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[18] Full-time, full-year workers are individuals who work both 40 hours a week and 40 weeks during the year. We exclude those who are currently enrolled in school, living in group quarters, or in the armed services.
[19] In 1940 and 1950, the index reflects segregation within the central city, while the indices for 1960-2000 are calculated at the metropolitan area level. For comparison, we construct a city-level segregation index for 1970 (Section VI.E).

black residential centralization. In theory, a segregated city could be divided down the middle, with blacks living on one side of the central business district and whites living on the other, though this scenario is highly at odds with the history of American urban development. We demonstrate below that black postal employment is also related to direct measures of centralization.

The number of metropolitan areas that can be identified in the micro data and for which the data exist to calculate a segregation index varies from 45 in 1940 to 243 in 2000. We present our main results for a complete set of metropolitan areas, as well as for the 45 areas that can be identified in every year. The one exception is 1960, in which an individual's metropolitan area of residence cannot be identified in the micro data. We conduct a comparable state-level analysis in this year. Summary statistics for the individual and metropolitan area level variables are presented in Appendix Table 2.

VI. The Effect of Residential Segregation on Black Occupational Choice

A. Segregation and Postal Employment

Table 4 reports estimates of γ_t, the differential effect for African-Americans of living in a segregated area on the probability of working for the postal service for various specifications. The regressions underlying the first two panels include all metropolitan areas available in a given year. The specification in Panel A contains a single area fixed effect for all years, which allows us to estimate the main effect of segregation on postal employment (equation 2). Panel B estimates a separate fixed effect by metropolitan area in each year, which only allows us to identify the interaction between segregation and race. In both cases, we find no meaningful relationship between segregation and the relative probability of black postal employment in 1940

or 1950 (columns 1 and 2).[20] The coefficients are positive, but are small and statistically

insignificant. In these years, when most employment still remained in the central city, living in a

segregated area did not encourage blacks to pursue postal work.

In contrast, by 1970, blacks in segregated area were more likely to be employed in the

postal service (columns 3 and 4). A one standard deviation increase in the metropolitan

dissimilarity index is associated with a 1.4 point increase in the probability of black postal

employment (= 0.12 · 0.118), which translates into two-thirds of a standard deviation. From

1980-2000, the magnitude of this relationship falls by half, but remains statistically and

economically significant (columns 5-7).

The number of metropolitan areas that qualify for inclusion in the analysis increased

more than four-fold from 1940 to 2000. We are concerned that changes to the sample

composition may contribute to fluctuations in the point estimates over time. Panel C conducts a

parallel analysis for the 45 metropolitan areas that can be consistently identified in each decade.

The basic relationship between segregation and postal employment is virtually unchanged. While

the coefficients are around 15 percent smaller in the consistent sample, they remain statistically

significant (with the exception of 1980).

Given the similarity of the results in the full and reduced samples, we verify that the

relationship between segregation and postal work is not being driven by a few outliers. Figure 3

plots the differential probability of postal employment (black versus white) against residential

segregation in 1970. The postal probabilities are regression-adjusted for the full set of individual

characteristics. The figure suggests that the positive relationship between segregation and black

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[20] In 1940, neighborhood population counts were conducted at both the tract- and the ward-level. Ward level data is available for 82 metropolitan areas. We find a similar relationship between segregation and postal work when using ward-level geography (coeff. = 0.011; s.e. = 0.011).

postal employment is a general phenomenon, rather than being driven by a single city like

Chicago that is both highly segregated and has a large concentration of black postal workers.

We cannot include 1960 in the metropolitan area regressions due to missing information

on place of residence. We are concerned that specific events that occurred during the 1960s –

including urban riots, the return of veterans from Vietnam, and a large reorganization of the

postal service – could be responsible for the dramatic change in the coefficient of interest

between 1950 and 1970. Finding a similar relationship in 1960 would cast doubt on these

decade-specific alternatives. Table 5 pools data from 1950, 1960 and 1970 and conducts a state-

level regression analogous to equation 2. A state's segregation index is defined as the

population-weighted dissimilarity indices of cities with available information in that state. As in

the metropolitan area regression, segregation has no effect on black postal employment in 1950,

but strongly increases the probability of working for the postal service in 1970. In the state

regression, we can see that this relationship first emerges in 1960; in fact, the coefficients in

1960 and 1970 are not statistically distinguishable from each other. Because firms began leaving

the central city in earnest in the 1950s, this timing is consistent with the spatial mismatch

hypothesis.

B. Direct Measures of Job Access and Employment Decentralization

Because the dissimilarity index is highly correlated with black residential centralization,

we suspect that blacks in segregated areas experience greater spatial mismatch as jobs leave the

central city. Table 6 replaces the segregation index with a few direct indicators of black

residential centralization. Panel A uses the centralization index, which measures the cumulative

proportion of blacks relative to whites who live within concentric bands around the central

business district.[21] The more tightly concentrated is the black community around the central

business district, the more likely are its members to work for the postal service (column 1). The

centralization and dissimilarity indices are highly correlated; when we include both measures in

the third column, the coefficient on the centralization index falls to zero.

The centralization index is based solely on residential location. Another approach is to

compare the distribution of black residence to the distribution of employment in a metropolitan

area. We do so in 1980, the year with the most complete place of work and residence data in the

IPUMS. Panel B shows that the more concentrated is black residence in the central city relative

to area employment the more likely are blacks to work for the postal service (column 1). If we

examine each component of the residence-to-employment differential separately, the

centralization of the black population *increases* the probability of black postal employment,

while the availability of other centrally-located jobs *decreases* it (column 2). As with the

centralization index, the relative residence variable is highly correlated with our main

segregation measure. On the whole, the dissimilarity index seems to be a reasonable proxy for

black residential centralization.

Based on this time series pattern in Tables 4 and 5, we have argued that segregation only

begins to constrain black occupational choices as jobs leave central cities. If this hypothesis is

correct, we should see a similar pattern in a cross-section of metropolitan areas. That is,

segregation should have a stronger effect on black postal employment in places where a smaller

share of area employment is located in the central city. In the specification reported in the fourth

column, we introduce interaction terms between residential segregation and the share of

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[21] The index was calculated for 1990 by Cutler, Glaeser and Vigdor (1999). See Galster (1984) for a comparison of this index to other measures of centralization.

employment in the central city. Indeed, the coefficient on the interaction term is negative and statistically significant.

To interpret the magnitude of this interaction, consider the mean metropolitan area in 1980, in which 55 percent of area jobs are located in the central city. In this case, complete segregation (dissimilarity equal to one) would have a large positive impact on black postal employment (coeff. = 0.051). A one standard deviation increase in the share of employment located downtown (to 71 percent) would reduce the impact of segregation on black postal employment considerably (coeff. = 0.016). This finding is consistent with our reading of the time series pattern. Residential segregation only encourages blacks to substitute towards postal employment when other centrally-located jobs are scarce.

C. The Job Access Channel: Comparing Postal Clerks and Mail Carriers

Within the postal service, it is only postal clerks who tend to work downtown, while mail carriers are distributed throughout the metropolitan area (Table 2). If segregation increases the probability of postal employment through its effect on job access, we expect this relationship to be much stronger for postal clerks than for mail carriers. Likewise, we expect segregation to increase black employment in other public sector occupations that tend to be concentrated in central cities.

Table 7 presents results from seemingly unrelated regressions in which the dependent variables are indicators for working as a mail carrier, as another type of postal employee, or as a public employee in an occupation whose members are more/less likely to work in the central city. We divide occupations in the public sector into those that are above and below the (employee-weighted) median in the share of workers employed in the central city. Bus drivers

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and subway conductors are the most centralized occupations, while teachers are among the most decentralized.[22]

We present the main coefficient of interest (the interaction between segregation and a race dummy) for three decades that span the period. In 1940, living in a segregated city does not increase the probability of a black resident working for the postal service in any capacity. In contrast, by 1970, segregation becomes positively associated with postal work, but *only* for the non-carriers, who tend to work in the central city. The probability of working as a mail carrier, a job that is evenly distributed between city and suburb, has no economically (or statistically) significant relationship with segregation in any year. Other public occupations follow a similar pattern. Segregation increases the share of African-Americans that work in centralized public occupations and decreases the share who work in decentralized occupations.

Our comparison of occupations within the postal sector rules out alternative explanations that are based on uniform changes to the postal service – including the formal recognition by the federal government of postal unions in the early 1960s and the effect of the Civil Rights movement on government employment. There is no reason to believe that these changes should have differentially affected particular occupations within the postal service.

Furthermore, the distinction between mail carriers and other postal employees challenges explanations based on private sector racism. Suppose that a city's level of residential segregation were correlated with the propensity of its employers to discriminate on the basis of race.[23] In this case, employers in segregated cities may underpay their black workers, either to serve their own tastes or those of their customers (Becker, 1971). However, the unobserved racism hypothesis

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[22] In 1970, 62 percent of employees in above-median public occupations worked in the central city. This share is somewhat lower than postal clerks (71 percent) but provides a reasonable comparison group.

[23] If the correlation between segregation and local racism is a long-standing one, this story would not be consistent with the fact that blacks earned *more* in segregated cities in 1940 and 1950. One could imagine, however, that racism was widespread at mid-century and has been slowest to decline in segregated areas.

predicts a positive relationship between segregation and all forms of postal employment –

indeed, all forms of public employment. Instead, we find that segregation is only correlated with

forms of public employment that tend to be concentrated in the central city.

D. The Social Networks Channel

We have emphasized one feature of segregated metropolitan areas – namely, the physical

isolation of central city black neighborhoods from employment opportunities. Segregation also

isolates black residents socially from white neighbors. Wilson (1987) and others have argued

that, as a byproduct of this social isolation, black neighborhoods formed into tight-knit enclaves

that were internally integrated by class. Living in close proximity to the black middle class

provided poor African-Americans with role models and social networks that could be drawn

upon to secure a job. At mid-century, postal work was a particularly common occupation among

the black middle class. In 1940, 14 percent of all blacks earning above the national median

worked for the postal service (Table 3).[24] Qualitative evidence points to the importance of social

networks in generating black postal employment (Gosnell 1928, p. 305; Spear, 1967, p. 109;

Rubio, 2006).[25]

Can the social networks that were fostered by residential segregation explain some

portion of the relationship between segregation and black postal employment? At first glance, it

would appear that the answer is "no." Living in a segregated city was not associated with black

postal work in 1940 or 1950 when these networks were most active. However, we should keep in

mind that social networks were useful beyond the post office. At mid-century, when many

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[24] In 1940, black postal workers had disproportionately high levels of education. 28.1 percent of black postal
workers had at least some college education, compared to 4.9 percent of the black population as a whole.
[25] Before the Postal Reorganization Act of 1970, job patronage also played a role in allocating postal jobs (Tierney,
1981). Black applicants were not above asking their alderman to make a phone call to the local postmaster.
Assuming that the candidate had scored well enough on the civil service exam, this strategy could be effective.

employers still remained in central cities, social networks may have increased employment

across the board, rather than tilting blacks toward particular jobs. As other employers left for the

suburbs, social networks may have been increasingly valuable (in relative terms) in the postal

sector.

By 1980, though, these networks began to fray as middle class black households moved

to the suburbs.[26] The loss of this conduit into postal employment could explain the dwindling

relationship between segregation and black postal work from 1970 onward. We proxy for the

strength of black networks at the post office by measuring the share of black residents in a

metropolitan area between 1900 and 1930 who were engaged in postal work. Urban employment

options during this period were substantially different from those available later in the century,

mitigating concerns about serial correlation.[27] In 1970, living in a metropolitan area with a large

black postal network increases black postal employment (Table 8, column 4). A one standard

deviation increase in network size translates into a 0.15 standard deviation increase in current

employment. Job networks appear to be stronger in segregated areas; adding the network

variable to the regression reduces the segregation coefficient by 30 percent. Network strength (at

least at the post office) appears to diminish over time. By 1980, the network effect halves in size

and in 1990 it halves again and is no longer a significant determinant of current postal

employment (not shown).[28] Our estimates suggest that the loss of social networks can explain

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[26] In 1960, blacks with at least a high school degree were just as likely as any other black metropolitan resident to live in a center city (85.2 percent versus 84.6 percent). By 1980, the share of metropolitan blacks living in the center city fell to 68.1 percent overall and to 61.5 percent for those with at least a high school degree.
[27] Correlations between past and present postal employment cannot be driven by sample overlap. We drop individuals who were 18-24 in 1930 from the network measure. Any other individuals would have been too old to remain in the sample by 1970.
[28] The decline in the network effect is not due to the fact that we measure the size of the network during a period temporally closer to 1970. If we redefine network size based on the share of blacks working for the postal service in 1940 alone, the diminished effect for 1980 remains.

around 50 percent of the decline in the relationship between segregation and black postal employment from 1970 to 2000.[29]

E. Robustness Checks and Heterogeneity by Age and Education Level

A number of measurement issues remain and we address these in Table 8. First, because we use individual level data, our regressions are, in effect, weighted by the population size of each metropolitan area. Results are qualitatively similar if we instead weight each metropolitan area equally (column 2). Secondly, our measure of segregation is based on population counts by Census tract. In 1940 and 1950, tracts were only defined within central cities. Thus, the early segregation indices are calculated at the city-level, while, from 1960 onward, segregation reflects residential location in the metropolitan area as a whole. This measurement difference could account for the sharp increase in the relationship between segregation and black postal employment between 1950 and 1960. We calculate a new dissimilarity index for 1970 using only central city tracts. The city- and metropolitan area-level indices are highly correlated in this year (corr. = 0.78). However, the relationship between black postal employment and city-level segregation is only half as large as the baseline estimate (column 3). Black postal employment appears to be particularly affected by segregation between the city and its suburbs. As a result, we do not want to construct a consistent, city-based segregation measure to use in all years, but prefer to use the metropolitan measure when it is available. For an accurate over-time comparison, we imagine "inflating" the 1940 and 1950 coefficients according the ratio between metropolitan- and city-level estimates in 1970 (1.857 = 0.117/0.063; Table 8, columns 1 and 3).

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[29] In Table 4, the coefficient on the segregation interaction declines from 0.118 in 1970 to 0.056 in 1980. Accurately accounting for social networks reduces the 1970 coefficient to 0.086. This 0.032 point decline represents half of the overall drop of 0.062 over the decade.

The resulting coefficients still imply a sizeable jump in the relationship between segregation and black postal employment between 1950 and 1960.[30]

The first panel of Table 4 shows that the higher black postal employment in segregated areas is partially offset with lower postal employment among non-blacks. One explanation for this pattern is simply that labor demand at the post office is inelastic, in which case blacks in segregated cities may simply have outbid whites for available jobs. Alternatively, segregation may have deterred whites from applying for centrally-located postal work, particularly if changes in segregation were driven by white suburbanization. Column 5 separates the 1970 segregation level into the city's initial segregation level in 1940 and changes to that level between 1940 and 1970. Because the growth of the suburbs was, for the most part, a postwar phenomenon, the initial level of segregation is less likely to be determined by white suburbanization. We find that both components of segregation have equally large effects on the probability of black postal employment in 1970, casting doubt on explanations based on white residential location alone.

Finally, the dissimilarity index mechanically increases with a metropolitan area's black population share (Duncan and Duncan, 1955). We add this share as an additional regressor in column 6. The size of an area's black community does increase black postal employment, but does not explain the relationship between segregation and postal work.

All results thus far have been estimated using a sample of full-time, full-year employees. The relationship between segregation and black postal employment may be attenuated in a sample that includes part-time workers and the unemployed. The share of all adults engaged in postal work can be expressed as $\{pr(employed) \cdot pr(postal \mid employed)\}$. Table 1 demonstrates that segregation is associated with low black employment rates, which will decrease the first

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[30] The implied coefficients are 0.023 in 1940 (=0.012 · 1.857; Table 4, column 1) and 0.046 in 1950 (=0.025 · 1.857; Table 4, column 2).

term in the postal share and potentially obscure the relationship of interest. Appendix Table 3 demonstrates that the relationship between segregation and postal employment is robust to this concern. The regressions in the first row contain all adults. The coefficients are 25 percent smaller than for the full-time, full-year employed, but remain significant and large. Reading down the rows, the table adds incremental employment restrictions to the sample. The relationship between segregation and postal employment slowly grows to match the preferred sample in the last row.

Ananat (2007) has suggested that self-selection can explain some of the low earnings of African-Americans in segregated areas. If skilled blacks prefer to live in integrated areas, blacks remaining in segregated cities may be (unobservably) less productive. If the decline in skill in segregated cities becomes sufficiently large, blacks would not score high enough on the civil service exam to secure employment with the post service. In this case, selective out-migration could explain the declining relationship between segregation and postal employment from 1970-2000.

We re-run the main regression in the first panel of Table 9 for a sample of young adults (age 18-30) whose location is most likely to be exogenously determined by their city of birth and for a comparison group of adults 31 and older (O'Regan and Quigley, 1996). Although the magnitudes are somewhat different, we find the same time series pattern in both sets of coefficients: no relationship between segregation and postal employment in 1940, a large positive effect in 1970, and a smaller but still positive effect in 2000. The decline between 1970 and 2000 is similar in percentage terms for both young and older adults, which does not support the sorting hypothesis.

The lack of jobs within close proximity to one's neighborhood may be a larger barrier to employment among the less educated. Better educated individuals are more likely to own a car and may be more adept at gathering information about job openings. Panel B divides the sample into high school dropouts and adults with at least a high school degree. Among blacks, the better educated group is four times more likely to work for the post office. However, relative to the mean, the positive effect of segregation on postal employment is twice as strong for the less educated group in 1970. By 2000, not only had the effect of segregation on postal employment declined for both groups, but the gap between the two disappeared. We see this as further evidence that the importance of job access has declined over time.

VI. Conclusions

Over the past forty years, segregation has become associated with a series of negative outcomes for African-Americans. The spatial mismatch hypothesis provides one explanation for the emergence of bad ghettos. As firms relocated to the suburbs, black neighborhoods grew increasingly isolated from job opportunities. This paper focuses on one large employer that has remained in downtown areas – the U.S. Postal Service. A significant fraction of postal facilities were located in central cities during the era of railroad mail delivery and, for largely bureaucratic reasons, remain in place today. If job accessibility matters, we should see blacks substituting towards postal work as other employment opportunities leave the city. This response should be particularly strong in segregated areas, where black neighborhoods tend to be clustered near the central business district.

We find that, relative to whites, black postal employment is an increasing function of segregation, but only from 1960 onward. Black employment shifted towards the post office

precisely at the time when other "good jobs," such as those in manufacturing, were leaving central cities, but before fair housing laws opened up the suburbs to middle class black residents. In addition, this pattern is observed only for postal clerks, most of whom work in downtown areas, not for letter carriers, who are distributed more evenly around the metropolitan area. More recently, the relationship between black postal employment and segregation has been declining, but has not entirely disappeared. This timing suggests that spatial mismatch has an economic history; that is, spatial mismatch was a factor in the origins of bad ghettos but has become less important over time.

This paper has concentrated on the effect of segregation on black occupational choice. It would also be of interest to determine if the continued presence of postal processing and distribution centers in the vicinity of black neighborhoods has spillover effects on other types of employment, or perhaps has kept (some) African-Americans, who otherwise would have moved to the suburbs, in downtown areas. We have also presumed in this paper that the centralized nature of mail processing and distribution is largely exogenous (in the sense of being pre-determined by the prior history of railway mail) but it is clear that political economy considerations play an important role in keeping facilities centralized. Analysis of the political economy of these location decisions may shed further light on the perceived benefits (and costs) to African-American enclaves.

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**Figure 1: The growth of postal and other public employment by race, 1900-2000**
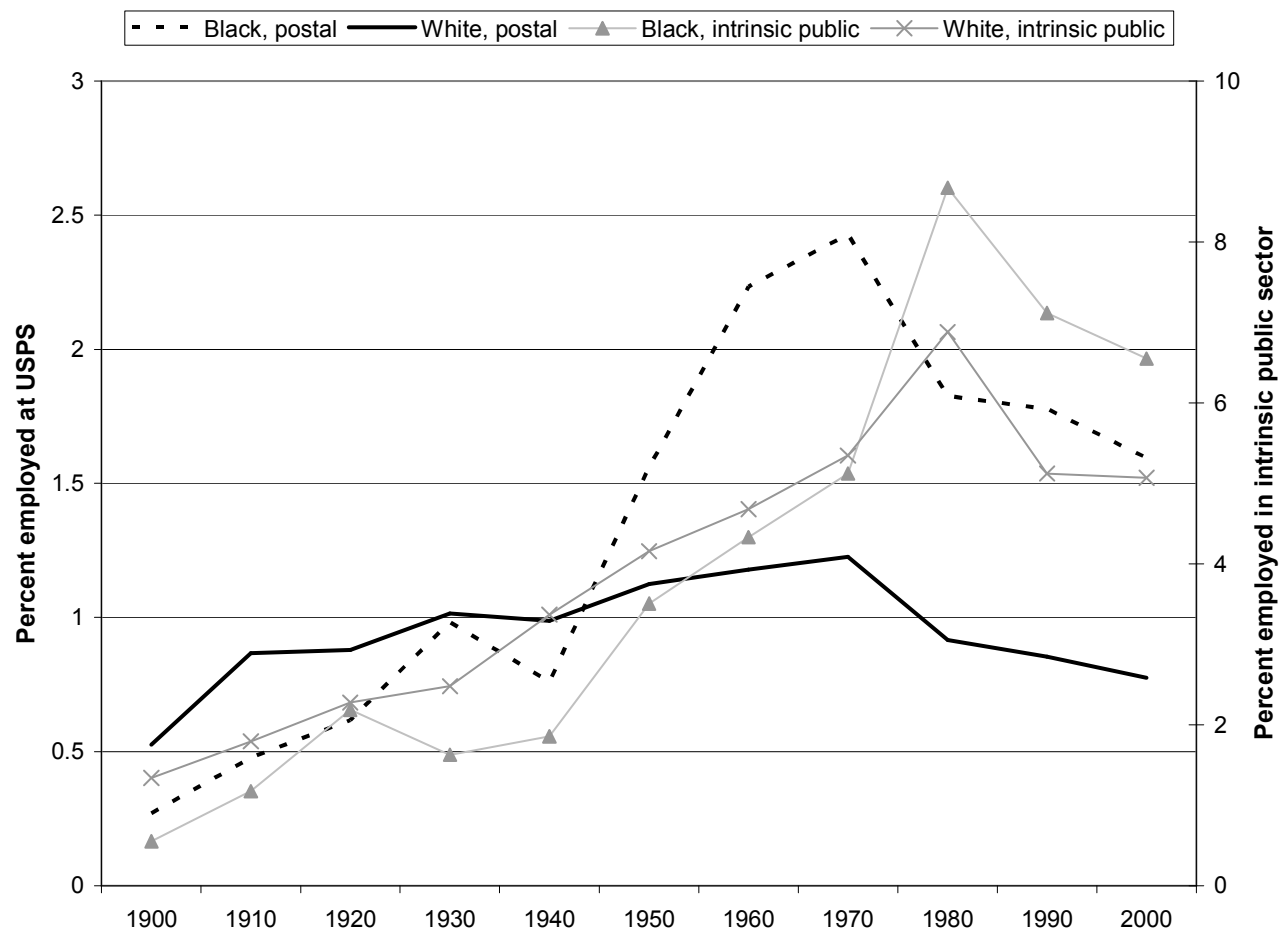
Notes: The data underlying this figure is presented in Appendix Table 1 and is described in its notes.

Figure 2: The share of the labor force employed by the postal service by metropolitan area and race, 1970
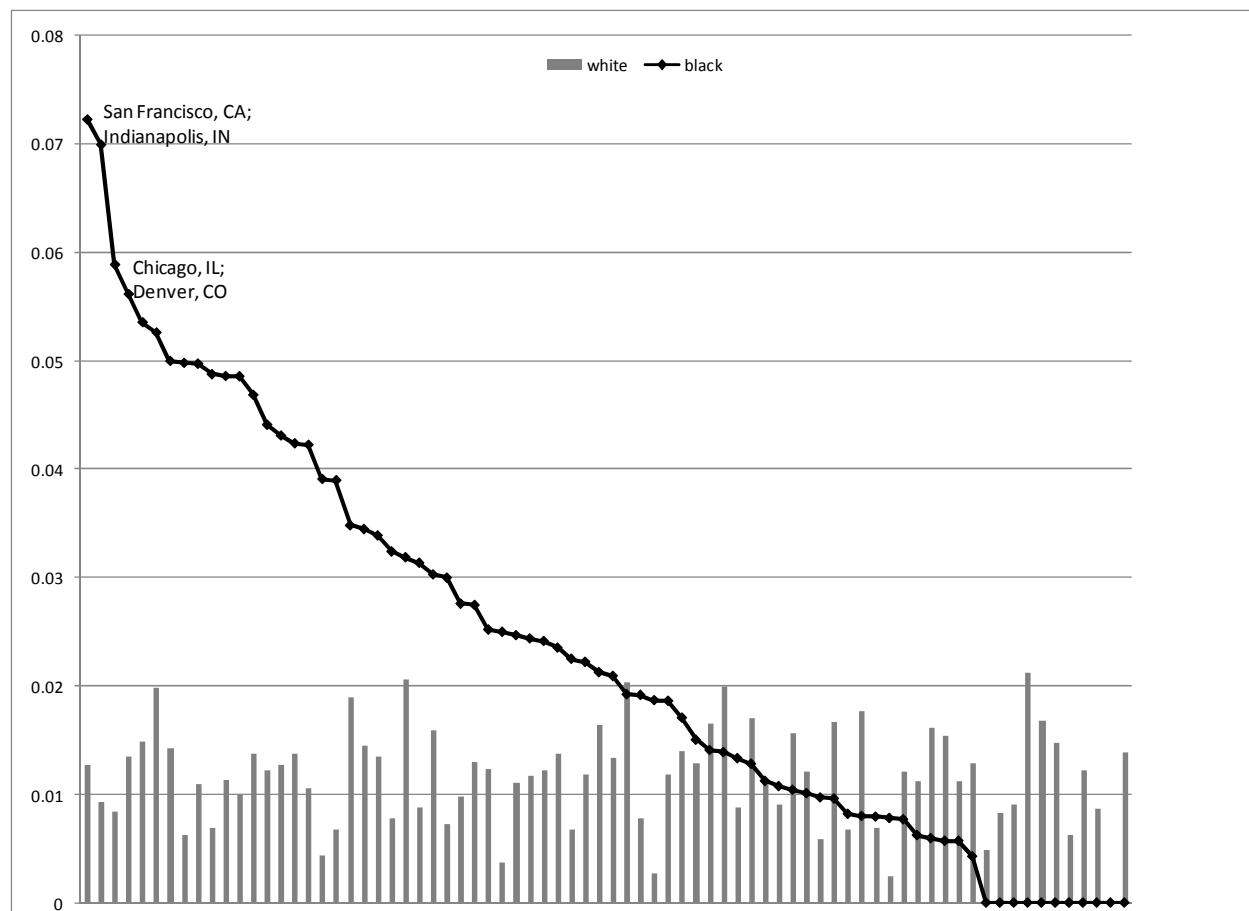
Notes: The postal shares are calculated from the Census micro data for the sample of full-time, full-year employees. The figure contains the 76 metropolitan areas that have at least 50 black observations in the sample in 1970. Metropolitan areas are arrayed from highest black postal share to lowest.

Figure 3: Racial segregation and the differential probability of being employed in the postal service, 1970

Regression-adjusted means
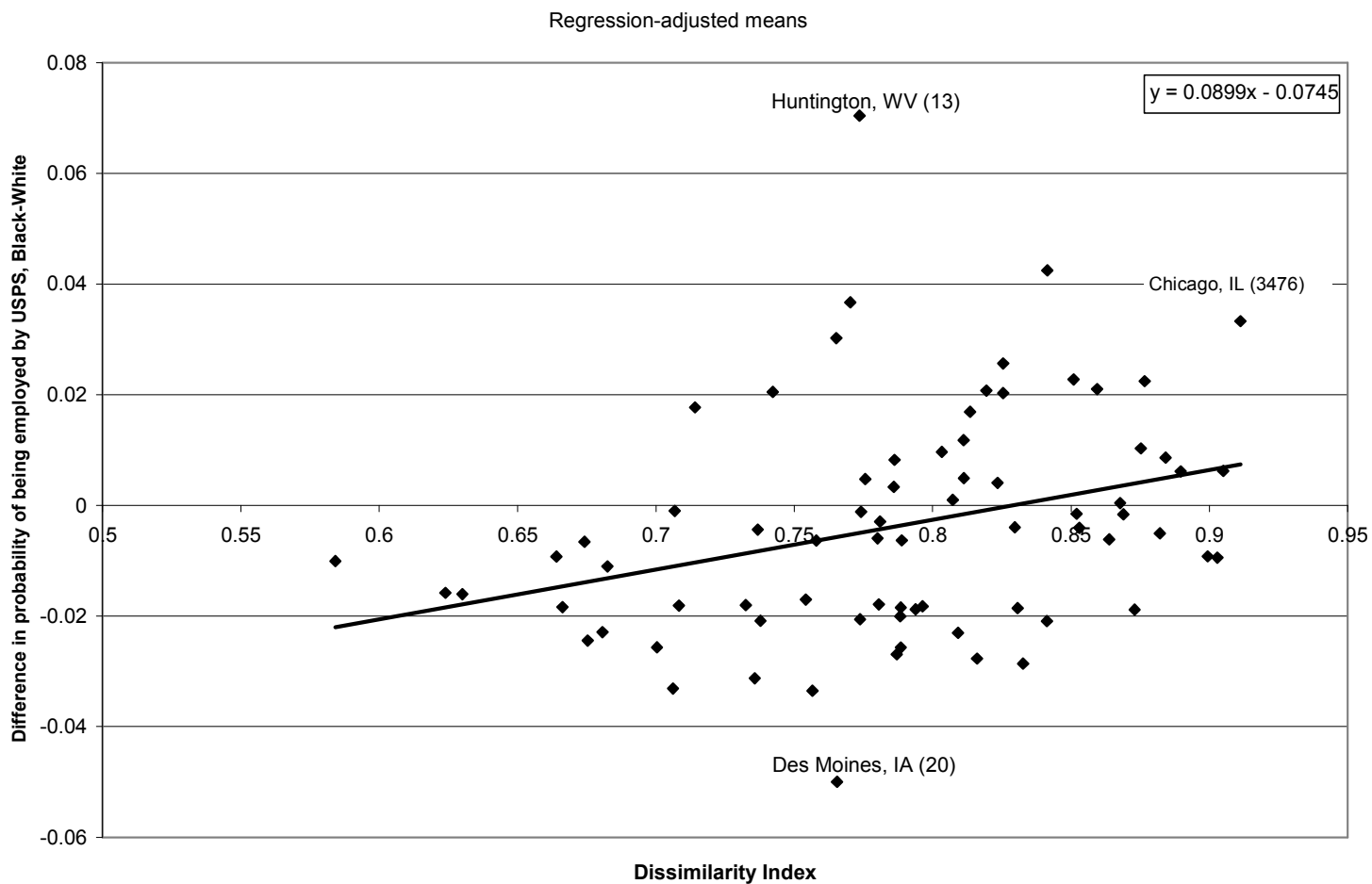
Notes: The regression on which this figure is based is described in the notes to Table 4.

Table 1: Residential segregation and economic outcomes of black men, 1940-2000

Coefficients are from the interaction of black · segregation index

Dependent variable	1940	1970	2000
All available areas			
ln(annual earnings)	0.409	0.392	-0.182
	(0.174)	(0.186)	(0.034)
=1 if employed or in school	-0.061	-0.094	-0.157
	(0.087)	(0.035)	(0.021)
N(individuals)	109,765/160,006	191,581/236,472	1,817,133/2,564,785
N (SMSA)	47	75	268
Constant set of areas			
ln(annual earnings)	0.397	0.191	-0.076
	(0.175)	(0.197)	(0.103)
=1 if employed or in school	-0.059	-0.100	-0.179
	(0.088)	(0.043)	(0.036)
N(individuals)	109,282/159,261	167,707/207,251	939,654/1,324,672
N (SMSA)	45	45	45

Notes:

(1) Standard errors are reported in parentheses and are clustered by metropolitan area. N(individuals) reports the number of men included in the annual earnings and employment regressions, respectively. In both cases, the sample is limited to men between the ages of 18 and 64 who are not living in group quarters, in the armed services, or in an agricultural industry. In addition, the annual earnings regressions exclude men who are self-employed, unemployed, out of the labor force, or in school.

(2) Regressions include a vector of metropolitan area dummy variables, a fourth-order polynomial in age, and dummies equal to one if the individual is black, married, a veteran, or foreign born. We include five dummy variables for highest grade completed (using the IPUMS recode in 2000): 0-8, 9-11, 12, 13-15, and 16 years of schooling. All personal characteristics are interacted with the variable "black." When appropriate, regressions are weighted by the IPUMS person weight.

Table 2: The location of the typical postal job, 1970 and 2000

A. Place of work, 1970 Census		B. P&DC location, 2000	
Occupation	% in center city		
Postal work, non-carrier	70.87	Share in center city	80.00
Mail carrier	55.56	Average % black in neighborhood	37.83
		(County, % black)	(27.85)
Other, public sector	56.23		
		Highest % black in neighborhood	61.74
Private sector	53.34		

Panel A: Means are calculated for all metropolitan areas identified in the 1970 IPUMS. Mail carriers are classified using the 1950 occupation codes (=335). Public sector employees are identified using the class of worker variable. Panel B: The figures are based on 145 processing and distribution centers (P&DC) whose current addresses were located from a variety of government sources. The facility's neighborhood includes its own Census tract and all adjacent tracts. Means are weighted by the black population share in the county.

Table 3: Black postal workers and the earnings distribution, 1940-2000

	Mean weekly wage, black postal workers (in $1999)	Share of middle class blacks who work for USPS	Where does mean black postal worker fall in wage distribution of…	
			All blacks	Non-blacks
1940	388.38	13.88	96.7	69.3
1970	641.62	4.78	74.3	46.0
2000	735.10	2.83	75.5	58.5

Notes: Black postal workers are compared to all full-time, full-year employees who are between the ages of 18-64 and are not currently enrolled in school, living in group quarters, in the armed services or in an agricultural industry. Full-time, full-year is defined as working at least 40 hours a week and 40 weeks a year. These sample restrictions underlie the remaining tables in the paper. The black middle class is defined as blacks who earn above the non-black median wage.

Table 5: State-level racial segregation and employment in the postal service, 1940-2000

Dependent variable = 1 if employed at USPS

Sample	1950	1960	1970
All available states			
Segregation	0.006	-0.013	-0.017
	(0.007)	(0.009)	(0.010)
Segregation · black	-0.009	0.116	0.129
	(0.021)	(0.033)	(0.029)
N (individuals)	71,856	299,012	320,886
N (states)	31	40	41
Consistent set of states			
Segregation	0.006	-0.015	-0.018
	(0.007)	(0.011)	(0.012)
Segregation · black	-0.009	0.128	0.139
	(0.021)	(0.038)	(0.033)
N (individuals)	71,856	276,644	300,386
N (SMSA)	31	31	31

Notes: Standard errors are in parentheses and are clustered by metropolitan area. Sample restrictions are described in the notes to Table 3. Additional control variables are listed in the second note to Table 1.

Table 6: Residential Centralization, job access and employment in the postal service, 1980-1990

Dependent variable =1 if employed at USPS
Coefficients are from the interaction of black · metropolitan area characteristic

	(1)	(2)	(3)	(4)
Panel A; 1990 (N = 238)				
Centralization index	0.019		0.003	
	(0.006)		(0.008)	
Segregation index			0.043	
			(0.014)	
Panel B: 1980 (N = 128)				
% blacks live in city - % employment in city	0.024		0.014	
	(0.010)		(0.011)	
% blacks live in city		0.024		
		(0.010)		
% employment in city		-0.024		0.162
		(0.014)		(0.090)
Segregation index			0.042	0.174
			(0.032)	(0.065)
Interaction: Segregation · % employment				-0.223
				(0.128)

Notes: Standard errors are in parentheses and are clustered by metropolitan area. Sample restrictions are described in the notes to Table 3. Regressions include all control variables listed in the second note to Table 1.
Panel A: The centralization index was taken from Cutler, Glaeser and Vigdor (1999).
Panel B: The shares of population and employment that are located in the center city are calculated from the 'metro' and 'place of work' variables in the 1980 IPUMS. Central city status is not reported for residents of small metropolitan areas.

Table 7: Racial segregation and public employment by job location, Seemingly unrelated regressions, 1940-2000

Coefficients are from the interaction of black · segregation index

Dependent variables	1940	1970	1990
Center city			
Postal, non-carrier	0.019	0.101	0.050
	(0.013)	(0.010)	(0.005)
Other public, above median	---	0.100	0.079
		(0.027)	(0.015)
Suburbs			
Postal, mail carrier	-0.009	0.012	-0.001
	(0.009)	(0.007)	(0.004)
Other public, below median	---	-0.095	-0.056
		(0.025)	(0.014)

Notes: Standard errors are in parentheses. Sample restrictions are described in the notes to Table 3. Regressions include all control variables listed in the second note to Table 1. Public sector occupations are classified according to the share of their members who work in a central city. In the median occupation, the share of public employees who worked in the center city was 37.8 in 1970 and 33.6 in 1990. The "other public" results are not available in 1940 because place of work information is not available in the 1940 Census.

Table 8: Assessing the robustness of the relationship between segregation and postal employment, 1970

Dependent variable =1 if employed at USPS
Coefficients are from the interaction of black · metropolitan area characteristic

	(1)	(2)	(3)	(4)	(5)	(6)
Segregation	0.117 (0.034)	0.104 (0.017)	0.063 (0.023)	0.086 (0.027)		0.116 (0.033)
Segregation, 1940					0.100 (0.041)	
Δ seg, 1970-1940					0.092 (0.032)	
Postal network				1.080 (0.245)		
Share black						0.018 (0.009)

Notes: Standard errors are in parentheses and are clustered by metropolitan area. Sample restrictions are described in the notes to Table 3. Additional control variables are listed in the second note to Table 1.
Column 1: Base specification equivalent to Table 4.
Column 2: Weight by inverse of number of observations by metropolitan area. Each area weighted equally.
Column 3: Measure dissimilarity among Census tracts in the central city rather than in the whole metropolitan area. This index is equivalent to those used in 1940 and 1950.
Column 4: Network measure is share of black workers in metropolitan area employed in postal service between 1900 and 1930.
Column 5: Includes only the 45 metropolitan areas that have available segregation data in 1940 and 1970.
Column 6: Share black is calculated from county data aggregated to the metropolitan area level.

Table 9: Segregation and postal employment by age and education, 1940-2000

Dependent variable =1 if employed at USPS
Coefficients are from the interaction of black · metropolitan area characteristic

		1940	1970	2000
Age				
<=30 years	Coeff:	-0.018	0.067	0.029
		(0.011)	(0.047)	(0.007)
	Mean:	*0.004*	*0.022*	*0.010*
>=31 years	Coeff:	0.020	0.133	0.044
		(0.016)	(0.032)	(0.012)
	Mean:	*0.021*	*0.027*	*0.024*
Education				
<=11 years	Coeff:	0.014	0.073	0.008
		(0.014)	(0.017)	(0.007)
	Mean:	*0.010*	*0.012*	*0.005*
>=12 years	Coeff:	0.000	0.165	0.042
		(0.046)	(0.060)	(0.012)
	Mean:	*0.047*	*0.042*	*0.022*

Notes: Standard errors are in parentheses and are clustered by metropolitan area. Sample restrictions are described in the notes to Table 3. Additional control variables are listed in the second note to Table 1. Sample means of dependent variables are reported for blacks only.

Appendix Table 1: The growth of postal and other public employment by race, 1900-2000

| | Black | | | White | | |
	All public	Intrinsic public	Postal	All public	Intrinsic public	Postal
1900		5.83	2.70		14.22	5.26
1910		12.15	4.78		18.85	8.66
1920		21.87	6.17		22.76	8.79
1930		16.95	9.83		25.94	10.14
1940	177.39	18.56	7.60	140.43	33.68	9.87
1950	106.63	35.05	15.60	96.44	41.55	11.24
1960	139.61	43.31	22.34	113.03	46.79	11.78
1970	190.24	51.21	24.29	138.49	53.46	12.27
1980	232.56	86.73	18.26	148.52	68.80	9.16
1990	200.02	71.18	17.78	127.26	51.22	8.54
2000	175.46	65.50	15.95	118.16	50.67	7.75

Notes: The sample includes individuals between the ages of 18-64 who are not currently enrolled in school, living in group quarters, in the armed services or in an agricultural industry. Individuals must also be in the labor force. Between 1900-30, labor force participation is determined by holding a gainful occupation. Between 1940-2000, labor force participation is determined by employment status (at work or looking for work) during the census week. 'All public' includes anyone who is classified as working for the government in the 'class of worker' variable; this designation is available from 1940-2000. The intrinsic public sector includes only those workers whose industry is reported as: 906 (postal), 916 (federal, non-postal), 926 (state), 936 (local). In some years, SIC code 946 (level of government not identified) is reported, and is included in total intrinsic figure.

Appendix Table 2: Summary statistics for representative years

Means and standard deviations (in parentheses)

Variable	1940	1970	1980	1990
Segregation index	0.741	0.788		0.570
	(0.093)	(0.072)		(0.124)
Black population share	0.126	0.151		0.111
	(0.117)	(0.140)		(0.096)
Centralization index	---	---		0.761
				(0.222)
% postal	0.012	0.013		0.010
	(0.005)	(0.004)		(0.005)
% mail carrier	0.005	0.005		0.004
	(0.002)	(0.002)		(0.003)
% postal, non-carrier	0.007	0.008		0.006
	(0.004)	(0.004)		(0.004)
% public, all	0.100	0.154		0.176
	(0.043)	(0.068)		(0.077)
Weekly wages, men only, $2000	396.91	845.15		834.14
	(60.36)	(78.16)		(142.58)
=1 if idle, men only	0.056	0.042		0.061
	(0.017)	(0.012)		(0.017)
% blacks live in city			0.624	
			(0.292)	
% whites live in city			0.324	
			(0.202)	
% employment in city			0.553	
			(0.159)	

Notes: The figures reported for weekly wages and idleness are means of metropolitan area-level averages.

Appendix Table 3: Racial segregation and the differential probability of being employed in the postal service in different samples

Dependent variable = 1 if employed at USPS
Coefficients are from the interaction of black · segregation index

	1970	1990
1. All adults	0.090	0.039
	(0.034)	(0.010)
1a. Men only	0.077	0.031
	(0.033)	(0.010)
2. + in labor force	0.090	0.039
	(0.034)	(0.010)
3. + work during year	0.097	0.038
	(0.033)	(0.010)
4. + work full year	0.104	0.038
	(0.035)	(0.010)
5. + work full year	0.113	0.043
	(0.035)	(0.012)

Notes: Standard errors are in parentheses and are clustered by metropolitan area. Regressions include all control variables listed in the second note to Table 1. All rows include only individuals between the ages of 18-64 who are not currently enrolled in school, living in group quarters, in the armed services or in an agricultural industry. The additional sample restrictions are described in the first column and are cumulative. Full-time is defined as working at least 40 hours a week and full year is defined as working at least 40 weeks a year.