

Preliminary
Comments Welcome
Do Not Cite

The Labor Market Effects of the 1960s Riots: Preliminary Findings

William J. Collins
Robert A. Margo

September 2003
Prepared for the Brookings-Wharton Conference on Urban Affairs

Contact: Department of Economics, Box 351819-B, Vanderbilt University, Nashville, TN 37235;
william.collins@vanderbilt.edu; robert.a.margo@vanderbilt.edu.

Collins is Assistant Professor of Economics at Vanderbilt University, Faculty Research Fellow at the National Bureau of Economic Research (NBER), and Model-Okun Fellow in Economic Studies at the Brookings Institution (2003-2004). Margo is Visiting Professor of Economics at Harvard University (Fall 2003), Professor of Economics and of History at Vanderbilt University, and a Research Associate at the NBER. The authors thank Gregg Carter for sharing his data on the riots with us. Brett Austin, Hannah Moon, and Dustin Worley provided excellent research assistance. Portions of this research are supported by the National Science Foundation. Comments from seminar participants at the NBER Summer Institute are gratefully acknowledged. The views expressed herein are those of the authors and not necessarily those of Vanderbilt University, the National Bureau of Economic Research, the Brookings Institution, or the National Science Foundation.

1. Introduction

Although the United States has experienced race-related civil disturbances throughout its history, those that occurred in the 1960s were unprecedented in their frequency and scope. Between 1964 and 1971, hundreds of riots erupted in American cities, resulting in large numbers of injuries, deaths, and arrests, as well as in considerable property damage that was concentrated in predominantly black neighborhoods. Ending the riots required extraordinary law enforcement efforts, sometimes including the mobilization of National Guard units. In retrospect, the riots marked a turning point in American racial politics, as the carefully orchestrated demonstrations of the early Civil Rights Movement gave way to violent, chaotic civil disturbances.

At the time of their occurrence, the riots prompted congressional investigations into their proximate and underlying causes and into their immediate consequences in the form of looting, property damage, arrests, injuries, and deaths (U.S. Senate 1968). Subsequently, a large sociology literature developed that attempted to identify city-level correlates of the occurrence and severity of riots (see, *inter alia*, Wanderer 1969, Spilerman 1971, Lieske 1978, Carter 1986, and Myers 1997). But there have been comparatively few studies of a systematic, econometric nature that examine the impact of the riots on the relative economic status of African Americans, or on the neighborhoods in which the riots took place (Aldrich and Reiss 1970, Frey 1979, Kelly and Snyder 1980, King 2001).¹

In this paper we study the impact of the 1960s riots in the context of long-term racial disparities in labor market outcomes. Among full-time male workers, the racial gap in earnings narrowed in the aggregate up to 1975, with periods of sharp convergence (e.g., the 1940s) alternating with periods of relative stasis (e.g., the 1950s and early 1960s). Since 1970, racial convergence in earnings has slowed markedly, and a

¹ Aldrich and Reiss (1970) examined the impact of riots in Boston, Chicago, and Washington, DC on small businesses, primarily retail establishments. They find a direct negative impact of the riots through property damage and an indirect effect through higher insurance rates, which created incentives to move or close up shop. Frey (1979) examined the causes of “white flight” in the 1960s in a sample of 39 metropolitan areas. He used the number of riots per 100,000 central city population as an explanatory variable for the city-to-suburb net mobility rate; the estimated effects are positive but weak. Kelly and Snyder (1980) is closest in spirit to our paper. Using city level data, they regress nonwhite family income in 1970 on income in 1960, measures of riot frequency and severity, and other controls. The results are small and statistically insignificant.

substantial part of the observed convergence has been driven by the selection of low-income black males out of the full-time labor force (Brown 1984, Chandra 2000). Over the same period, the proportion of blacks living in “high poverty” neighborhoods increased sharply (Wilson 1987), and black ghettos turned increasingly “bad” in the sense that residential segregation led to increasingly poor socioeconomic outcomes among young blacks (Cutler and Glaeser 1997, Collins and Margo 2000).

The post-1970 rise in concentrated poverty in black central-city neighborhoods has received a great deal of scholarly attention (see, *inter alia*, Murray 1984, Wilson 1987, Jencks 1992, Massey and Denton 1993, Sugrue 1996). One prominent view, associated with the work of William Julius Wilson (1987), is that the cause of this adverse trend is essentially macroeconomic in nature. Technological change and the relative decline of manufacturing employment may have reduced relatively high-wage job openings for urban, unskilled workers. The geographic concentration of poverty was then reinforced by the movement of relatively well-off blacks from central-city neighborhoods to suburbs and the proliferation of single-parent households. Another prominent view, associated primarily with the work of Massey and Denton (1993), emphasizes that the pre-existing racial segregation and ongoing racial discrimination in housing allowed for the potent endogenous magnification of adverse economic shocks. This feedback between residential segregation, macroeconomic forces, and social norms may have pushed entire neighborhoods into a downward socioeconomic spiral. In the context of the literature on the concentration of black poverty, the hypothesis we are pursuing is that the riots may be examples of such negative shocks.

Section 2 of the paper briefly surveys the history of race-related civil disturbances in the United States, with the aim of placing the 1960s riots in perspective. Following this survey, we present a heuristic model of the effects of riots in section 3. These effects, we argue, may be similar in nature to those of a natural disaster with a concentrated direct effect but with more diffuse (and potentially large) indirect effects. Even at their most severe, the direct effects of the 1960s riots were never large when scaled by city-level stocks of human or physical capital, either in total or black-specific terms. Consequently, if the riots did have economically significant negative effects at the city or SMSA level, the indirect effects must have been relatively large.

In section 4, we present two preliminary empirical analyses of the effects of the riots on the labor market outcomes of African Americans. The first of these uses aggregate, city-level data on income and unemployment from the federal population censuses.² The second analysis makes use of the integrated public use micro-data samples (IPUMS) of the 1950, 1970 and 1980 censuses. The sociology literature suggests that, conditional on region and black population size, most (if not all) of the variation in riot occurrence and severity was random (or at least exogenous to economic conditions). If so, then measuring treatment effects is fairly straightforward. Alternatively, we also pursue instrumental variable estimates that rely on variation in weather and city government structures to isolate exogenous variation in riot severity. Taken in concert, we view the findings as suggestive and certainly worthy of further investigation. There is some evidence that the riots had negative effects on the economic status of African Americans, but these effects are not easy to detect at the city level. Much further work is necessary to determine if our preliminary findings hold up under additional scrutiny.

2. A Brief Characterization of Race-Related Riots in the 1960s

1960s Riots in Historical Perspective

The United States has a long and terrible history of race-related riots. Gilje (1996) documents scores of riots including ante-bellum white-on-black attacks, Civil War draft riots that targeted northern blacks, Reconstruction and post-Reconstruction collective violence against southern blacks, and inner-city eruptions during World War I, the Depression, and World War II when blacks competed with whites for jobs and housing.

The riots of the summer of 1943 provide the closest parallel to those of the 1960s. There were close to 50 riots in that year, including one in Detroit in which 34 people were killed (25 of them black). Harlem also erupted in violence. In terms of fatalities, Harlem's riot was not as severe as Detroit's, but looting and property destruction occurred on a large, and possibly unprecedented, scale: 1,500 stores were

² To use 1960 as a starting point, we have to proceed at the city-level because the 1960 public use micro data samples do not identify city of residence.

looted or damaged, virtually all in predominantly black neighborhoods (Gilje 1996, p. 158).

The riots during the 1960s were not unprecedented in their individual severity (measured in terms of lives lost), but as a group, their high frequency, wide geographic distribution, and level of destructiveness were unique. The 1960s riots were also historically unusual in that they were characterized by what sociologists termed “black aggression” (though the aggression was rarely directed towards physically harming white civilians), in contrast to most previous significant race-related riots which were characterized by whites attacking blacks.³

Measuring the incidence and severity of “race-related riots” requires that one define such an event. Spilerman (1970, 1971) posited an operational definition that has stood as the literature’s standard for years. To enter his sample, a riot had to involve at least 30 participants, some of whom were African-Americans engaged in “aggressive” behavior (for instance, looting or property damage); had to result in property damage or violence; had to occur outside a school setting; and had to be “spontaneous” in the sense that it was not the adjunct of a organized civil rights protest. Because Spilerman’s intention was to examine the “major” riots, he also restricted his analysis to cities with a least 25,000 residents in 1960. Spilerman drew on the Congressional Quarterly’s *Civil Disorder Chronology* (1967), the Kerner Commission report (National Advisory Commission on Civil Disorders, 1968), an index prepared by the *New York Times*, and the “Riot Data Review” prepared by the Lemberg Center for the Study of Violence at Brandeis University.⁴ Each of these primary sources used somewhat different definitions of a riot, collected different dimensions

³ There were, of course, instances of violence against white bystanders, police, and shop owners. Nonetheless, the Kerner Commission report asserts: “While the civil disorders of 1967 were racial in character, they were not interracial. The 1967 disorders, as well as earlier disorders of the recent period, involved action within Negro neighborhoods against symbols of white American society – authority and property – rather than against white persons” (1968, p. 110).

⁴ The Kerner commission report was preceded by hearings before the Senate’s Permanent Subcommittee on Investigations headed by John L. McClellan (U.S. Senate 1967). The Subcommittee’s staff identified cities that had experienced riots and then surveyed the mayors of those cities seeking information about the proximate causes and severity of the event. The McClellan data cover the years 1965 to 1967; and, therefore, do not include riots occurring in 1968 (such as those following the assassination of Martin Luther King). It is not clear from the testimony of Robert Emmet Dunne and Crichton Jones, who collected and organized the Subcommittee’s statistics, exactly how the cities were identified, or what criteria were used to determine whether the disturbance was “major” and therefore worthy of inclusion in the study. See Part 1 of the hearings for the testimony, the data, and the survey instrument sent to the mayors.

of data, and covered different time frames.⁵ However, with some margin of error, these sources can be combined to document the date and location of each disturbance, as well as its duration and some aspects of its severity.

Carter (1986) extended the Spilerman data to 1971, cross-checked the data with other sources, added new information, and in general, refined the database for subsequent studies. We use the Carter sample in our analysis here. For 1964 to 1971, the data include the dates and location of each riot, as well as the number of arrests, injuries, occurrences of arson, and deaths.

Table 1 summarizes each component of the data by year. It also reports a composite index of severity, arranged by year and census region. Each riot is assigned a value $S = \sum X_i / X_T$ where X_i is a component of severity (days of rioting, injuries, arrests, deaths, and arsons) and X_T is the sum of X_i across all riots. For example, it is the proportion of all deaths that occurred during a particular event, plus the proportion of all arrests, plus the proportion of all injuries, and so on. Summed over all riots there are five total index points (a reflection of the five components that enter the index). The most obvious characteristic of the data in table 1 is the strong concentration of riot activity in 1967 and 1968, which together account for 3.3 out of the 5.0 total index points.

When the index numbers are arrayed by census region, there appears to be a comparatively even geographic spread of riot activity, with the Midwest (1.57) and South (1.53) outpacing the Northeast (1.11) and West (0.79).⁶ This impression is true in the sense that major riots occurred in every region, but it is misleading because the “severity” was heavily concentrated in a relatively small number of events (and cities), not spread evenly over them. For example, no deaths occurred in 91 percent of the 752 riots included in table 1, and just six riots account for nearly 60 percent of the total number of fatalities (228).

⁵ The McClellan report (see the previous footnote) appears to use the most stringent criteria, with an emphasis on high levels of violence (number of deaths), involvement of law enforcement (number of arrests), and destruction of physical property (looting, arson), while the Lemberg Center used the loosest criteria. Unfortunately, the data collected by the Lemberg Center do not overlap (in terms of timing) those collected by McClellan or Kerner, since they start in 1968 and end in 1971. The *Times* index essentially replicates the material found in the other sources.

⁶ Washington DC and Baltimore, which had sizable riots, are counted in the census South. Index numbers that are adjusted for city size are discussed later in the paper.

By far, the most deadly riots were in Detroit in July 1967 (43 deaths); Los Angeles in August 1965 (34 deaths); and Newark in July 1967 (24 deaths).⁷ Using the index as a broader measure of severity, the post-King assassination riot in Washington DC ($S = 0.34$) would join Los Angeles in 1965 (0.48), Detroit in 1967 (0.44), and Newark in 1967 (0.23) as the most severe events on record. Fully 90 percent of the riots receive index values of less than 0.01. As discussed in detail below, the inter-city variation in riot severity will play a key role in our empirical strategy for measuring the riots' effects on labor markets.

Causes of the Riots

Although post-riot government reports and journalistic accounts are replete with speculation and anecdotal evidence, the causes of the 1960s riots became a major research topic in sociology in the early 1970s. The point of departure for nearly all subsequent academic work was a series of papers by Spilerman (1970, 1971, 1976) which estimated multivariate models of riot incidence and severity. In this work, the unit of observation was the city, and the independent variables were drawn from the 1950 and 1960 federal censuses and related government documents. Spilerman's principal finding was simple: the absolute size of the black population (positively correlated with riots) and southern location (negatively correlated with riots) were the best predictors (in a statistical sense) of the incidence and severity of the riots. He found little support for a range of other seemingly plausible explanatory factors, including a variety of indicators of blacks' absolute and relative (to whites) economic status.

Thus, taken literally, Spilerman found that conditional on black population size and region, severe riots were essentially idiosyncratic events. The chronologies of specific riots suggest this is not as far-fetched an interpretation as it might at first sound. In many (perhaps most) cases, there were identifiable, idiosyncratic "sparks" that, through a series of unforeseen complications, turned a minor altercation into a full-blown riot. The spark might be an encounter gone wrong between a black motorist and the police (as in Watts), or an impromptu, incendiary speech by activist H. Rap Brown (as noted in a congressional report on

⁷ The other three were in Washington, DC in April 1968 (11 deaths); Cleveland, July 1968 (10 deaths); and Chicago, April 1968 (9 deaths).

the subject).⁸ The most incendiary event was surely the assassination of Martin Luther King in April 1968, after which more than 100 cities erupted in violence.⁹

Subsequent research has modified Spilerman's work by improving the quality of the riot data, by using event history analysis, by introducing co-variates that were not available to (or not considered by) Spilerman, and by extending the time frame under study (Lieske 1978; Carter 1986, 1990; Olzak et al. 1996; Myers 1997, 2000; DiPasquale and Glaeser 1998). But nearly all of the "second generation" studies confirm Spilerman's original findings that black population size and region are the most consistent and quantitatively important explanatory variables for riot incidence and severity in the 1960s.¹⁰

Most recently, Myers (1997, 2000) has found that contagion played a role in the determining patterns of rioting. Riots were given extensive television news coverage, suggesting one mechanism (not the only one) by which an outbreak of violence in one city might spill over to another, especially if they shared the same media outlets. This contagion effect appears to have waned quickly over time. The occurrence of a second (or higher order) riot also appears to have been more likely following an initial disturbance, though within cities, riots declined in severity over time (Spilerman 1976). The sociological studies do not rule out the possibility of underlying city-specific causes, but it is clear that matching the events to observable city-level correlates, beyond location, black population size, and proximity to other riots, is extremely difficult. Moreover, the cross-city variation in the intensity of rioting (as opposed to their mere occurrence) appears to dwarf variation in African-Americans' observable socioeconomic status.

3. How Might Riots Affect Labor Markets?

In this section we sketch a simple framework describing the potential labor-market effects of a riot. Our model supposes that people and businesses choose locations that maximize utility and profits

⁸ The Senate hearings on Riots, Civil, and Criminal Disorders (1967, part 1) includes a table describing "major riots", including their "triggering incident".

⁹ The Carter dataset includes 138 riots in April of 1968.

¹⁰ As we point out in section 4, the form of local government may have mattered in determining the occurrence and severity of riots, along with weather. Spilerman considered the former, finding some evidence of effects, but did not consider the latter, at least not in his published work.

respectively. Household utility is a function of the benefits and costs associated with inhabiting a particular space. The benefits come in many forms: access to local public goods (schools, churches, entertainment, and so on), proximity to one's place of work, and proximity to one's friends and family. The costs include rent or mortgage interest payments, property upkeep and insurance, and taxes. For businesses, the benefits derive from the flow of revenue associated with the location, which in turn might depend on demand from local residents or on proximity to other businesses. The costs derive from rent or mortgage interest payments, labor costs, property upkeep and insurance, and taxes. We suppose that in the short run, movement is inhibited by fixed costs associated with "starting over" in new locations.

We think of a riot as a type of "natural disaster" with both direct and indirect effects on the level and location of economic activity. The direct effects are experienced by individuals whose connection to the riot is immediate: an injured rioter, a resident whose home is in the line of fire, a businessman whose establishment is torched or looted, and so on. For some individuals, the direct effects are irreversible (obviously, for anyone who is killed), but for others, the effect may be transitory, depending on subsequent decisions made in light of changed perceptions of the economic environment.

Consider, for example, a business owner whose establishment is damaged or looted and, therefore, is temporarily shut down. Whether or not the business reopens depends on the expected benefits and costs of doing so at that particular location relative to all others (and relative to staying permanently closed and putting the remaining capital to some other use).¹¹ For some, the costs of rebuilding or restocking may be covered by insurance or public subsidies, but others may be uninsured or ineligible for assistance. Looking forward, the expected costs of operation in that location may increase after the riots. There may be higher insurance costs (see Aldrich and Reiss 1970, Bean 2000), expenses from the installation of additional security features (fire and burglar alarms), higher interest rates on small business loans, and higher taxes to

¹¹ A business may be viable in the short run – that is, with its capital stock fixed – but only because it can cover variable costs, not because the rate of profit is "normal" in the long run. Even if the costs of rebuilding are covered by insurance or other means and the costs of operation do not rise, it may not pay to re-open if, prior to the riot, the business was not economically viable in the long-run sense. Some such owners may relocate elsewhere in the city, but others may leave entirely, taking whatever capital remains with them.

pay for redistribution programs or an increased police presence.¹² At the same time, the expected benefits of being in that location might fall, especially if the firm's revenue depends heavily on business from nearby firms or residents.

If only "direct effects" come into play, the labor market implications of a riot might be small and short-lived, especially when viewed at the city level. Even at their worst, the 1960s riots never directly involved vast numbers of people or vast amounts of capital. For example, total property damage during the Detroit riot in July 1967 was approximately \$50 million dollars, a small share of total property value in the city. The great majority of Detroit's 500,000 black residents at the time had no direct involvement in the riot (Widick 1989, p. 167). The worst of the direct effects were borne by the residents and businesses located in the vicinity of 12th Street, where the riot originated after a police raid on a "blind pig" (an after-hours drinking establishment).

However, even if the direct effects are limited, a riot's ultimate economic impact may be magnified through endogenously propagated indirect effects that unfold over a longer period of time. After a riot, firms and residents might revise their expectations of the benefits, costs, and risks of locating in or near a particular central-city neighborhood even if they were not directly affected by the riot. If some residents leave and firms close due to the initial shock (and are not replaced instantaneously), local economic activity and employment may slacken. The web of potential knock-on effects is extensive: personal income and local business revenues may fall; local sources of tax revenue may diminish; the area may experience a decline in publicly provided services and a rise in crime; and declining rents and property values (and perhaps the out-migration of the relatively well-off) may exacerbate the concentration of poverty in inner city neighborhoods. Along the lines of Wilson (1987) and Massey and Denton (1993), the idea here is that a process of negative decline may reinforce itself and may be concentrated in predominantly black

¹² There were reasonable grounds for expectations of higher state and local taxes for redistribution and police. For example, the Governor's Commission Report on the Watts riot made three "high priority" recommendations: 1) "cooperative programs" with businesses for the training and employment of blacks; 2) "a new and costly approach to educating the Negro child"; and 3) increased police efforts regarding crime prevention and community relations (1965, p. 8). Systematic evidence on the extent to which such programs were actually undertaken is scarce. See Hahn (1970) for some discussion of the issue.

neighborhoods.

The downward spiral could continue, in theory, until the location is entirely abandoned, with all workers and capital relocating elsewhere. In practice, due to the large stock of immobile residential capital (Glaeser and Gyourko 2001), nontrivial relocation costs, and perhaps government efforts at revitalization, the spiral may eventually arrest itself. But the new labor market equilibrium may differ significantly from the initial equilibrium. The central city may have fewer employed workers who earn lower wages than before (essentially reflecting a leftward shift of labor demand), and it may have fewer high human-capital residents (who have relocated to the suburbs or other cities).¹³ Relatively poor central-city blacks may be especially unlikely to relocate from adversely affected areas due to a variety of labor, housing, and credit market imperfections, including, but not limited to, racial discrimination.

In sum, a riot could lead to a decline in economic activity due to the destruction of physical capital, a rise in costs of production, and a decline in perceived security. Because the riots were concentrated in central-city black neighborhoods, it is reasonable to hypothesize that the labor market effects, if any, were felt mostly by central-city black residents. Among blacks, it is reasonable to suppose that those with the most capital at stake and those facing the highest potential tax burdens would have the greatest incentive (and ability) to relocate. White central-city neighborhoods might lose residents and businesses as well, not because of direct physical destruction of property, but because of changes in expected taxes, security costs, and public services. Again, those with the most capital at stake and those with the most taxable resources may have the greatest incentive to depart for the suburbs or, perhaps, other cities.

¹³ With perfectly mobile labor, a leftward demand shift in the central city would be followed immediately by out-migration such that wages would equalize across locations. With imperfectly mobile labor, any such response would take time, and wages would be depressed during the period of adjustment. If the skill mix of the central city changes (due to selective out-migration), observed wages will be lower in the new equilibrium. Blanchard and Katz (1992) explore the dynamics of adjustments to labor demand shocks at the state-level in the 1978-1990 period. In their model, a decline in wages in one location (relative to wages elsewhere) attracts firms seeking to minimize labor costs. If so, wages and employment tend to move back toward their initial levels. Empirically, they find that this job-creation mechanism is not strong and that out-migration plays a key role in adjusting to the shock.

4. Empirical Framework

We use variation across cities in the severity of the riots to estimate their impact on African-Americans' labor market outcomes. The validity of this strategy depends on two assumptions. First, we assume that the riots' effects were concentrated in the cities that actually experienced riots. In theory, however, it is possible that very well integrated labor markets could dissipate adverse shocks quickly, leaving no trace of an effect on wages or unemployment rates in cross-city comparisons (though possibly leaving evidence of migration). Also, if the riots had strong inter-city spillover effects on perceptions of the benefits and costs associated with central-city locations, then cross-city comparisons would understate the riots' impact. The second major assumption is that the geographic distribution of riots was exogenous to blacks' economic status. We have already discussed the sociology literature's findings in this regard. Later in this section, we offer estimates for a limited sample that controls directly for pre-1960 trends. We also relax the exogeneity assumption when pursuing instrumental variable estimates.

For each city, we summed the index values for each riot (as defined above) that occurred between 1964 and 1971. In the regressions below, the index is entered in quadratic form as an explanatory variable for changes in black labor market outcomes. Then, to simplify the analysis, we split cities into two groups, "severe" and "not severe", on the basis of the index values. A relatively small number of cities fall into the "severe" group, but they account for the overwhelming majority of deaths, injuries, arrests, and arsons in the sample. For example, 77 percent of the deaths in the base sample occurred in the "severe" riot cities. On the basis of the "absolute" index, the severe riot cities are: Los Angeles, Detroit, Washington DC, Newark, Baltimore, Chicago, Cleveland, New York, Mobile, and San Francisco.

We focus our analysis on two sources of useful census information on variation in labor market outcomes across cities: city-level data (from published volumes) and individual-level data (from the IPUMS, Ruggles and Sobek 1997).¹⁴ The published census data are particularly useful in this case because the

¹⁴ In future work, we intend to examine the CPS samples, which contain data on an annual basis, though for a comparatively small set of cities. We also have matched maps of the riot areas and maps of census tracts for a handful of cities, which will allow us to follow specific neighborhoods over time.

public use individual-level sample for 1960 does not identify cities and because in other years metropolitan area or central-city status is undisclosed for some households. We focus on cities with total populations of at least 100,000 and black populations of at least 1,000 in 1960, providing a base sample of 130 cities. We also exclude cities that have large changes in boundaries during the period under study. For now, we restrict our attention to changes in income, unemployment, and the racial composition of city populations.

City-Level Approach

Letting y stand for an economic outcome and S stand for the severity of the 1960s riots ($S = 1$ if riots were “severe”), consider the following two regression equations:

$$\{\text{eq. 1}\}: \Delta y_{1970-1960} = X\beta + \gamma S + e$$

$$\{\text{eq. 2}\}: \Delta y_{1980-1960} = X\beta + \gamma S + e$$

The X vector includes a set of city-level characteristics such as region indicators, the manufacturing proportion of employment in 1960, black population size in 1960, and total population size in 1960. In equation 1, γ is a rough measure of the “short-run” impact of the riot; that is, the effect (if any) in the census closest in time to the period of the riots (1970) relative to the “pre-riot” census (1960). Equation 2 measures the “long-run” impact.

The “treatment group” consists of blacks living in cities for which $S = 1$ and the control group consists of blacks living in cities for which $S = 0$.¹⁵ Essentially, this is a difference-in-difference (DD) estimator in which time-invariant city-specific effects and city-invariant period-specific effects are differenced out, and identification comes from differences in changes in y across the two groups of cities (conditional on X).¹⁶ We report similar regressions that use the raw index numbers (in quadratic form) in

¹⁵ Data are not reported for black income and unemployment for 1960. Rather, the data pertain to the non-white population. For most cities, the black and nonwhite proportions of the population in 1960 are very similar. The results are similar if we exclude cities with substantial fractions of nonblack nonwhites.

¹⁶ In principle, using white outcomes as an additional level of control, one could pursue a difference-in-difference-in-difference (DDD) estimator. One might hope that this third level of differencing would help eliminate race-invariant city-specific shocks and trends, but because it is highly plausible that whites in riot-cities responded in some way to the “treatment” event, it is difficult to justify their use as an additional control group. Moreover, the 1960 census volumes do not report white-specific outcomes at the

place of the severe dummy. The results are generally very similar.

For income and unemployment outcomes, we estimate the effects using both a “broad” and a “narrow” sample. The broad sample includes all available cities for comparison. The narrow sample uses a smaller set of comparison cities for which the 1950 IPUMS can be used to establish a pre-1960 trend in nonwhite outcomes.

In general, unobserved trends and shocks that are correlated with the occurrence of “treatment” threaten the credibility of difference-in-difference estimators. Controlling for observable economic characteristics, perhaps including the 1950 to 1960 trend in labor market outcomes, may reduce the scope for bias from unobserved shocks and trends – the idea being that cities similar on observables may be similar on unobservables as well. Alternatively, instrumental variables may help isolate variation in riot severity that is exogenous to unobserved labor market shocks and trends.

One possible set of instrumental variables derives from differences in city government structure. The sociology literature suggests that differences in governmental form may have implied differences in responsiveness to the political interests of the local black population and therefore differences in the likelihood and severity of riots (see Lieberman and Silverman 1965; Spilerman 1971, 1976). Along these lines, many riots were preceded by a series of racial incidents spread over a period of weeks, and it is possible that some governmental forms responded more effectively to alleviate the building tension. We use a dummy variable indicating the presence of a city manager to help predict the incidence of riots even after controlling for black population size and region.¹⁷ We take the position that the government’s structure is unlikely to affect black economic outcomes directly (and thus, is a legitimate instrument), but we acknowledge that, in the absence of hard evidence, this position is debatable.

Our second instrumental variable strategy is to make use of weather data for April of 1968. The

city-level. We can measure black outcomes relative to the overall city outcomes, but this is highly imperfect because blacks were a substantial proportion of many cities’ populations. Backing out figures for whites would be possible if (for example) city-wide and nonwhite average incomes were reported, but in fact, the tables report medians. Some DDD estimators are reported using the IPUMS data in the next section.

¹⁷ Additional governmental characteristics such as the use of non-partisan elections and the proportion of the city council that is elected at large made little contribution in the implicit first stage of the instrumental variable procedure.

idea is that a specific, identifiable event – the assassination of Martin Luther King – greatly increased the likelihood of a riot during the month. However, in places where the weather was unfavorable, and in particular in places where it rained, riots may have been less likely or less severe.¹⁸ Although, as far as we know, rainfall has not been considered in the sociology literature on the 1960s riots, there is anecdotal evidence that rain has dampened or precluded political protests and civil disturbances at various times and places. For example, in his discussion of “the riot that didn’t happen,” Sidney Fine notes that rainfall played a key role in defusing an emerging riot in Detroit in August 1966 (1989, p. 140). Most recently, after two nights of riots, a CNN.com headline on June 19, 2003 read “Rain, curfew help bring quiet night to Benton Harbor”.¹⁹ The instrument holds up well in the implicit first stage of our two-stage least squares estimates: more rainfall in April of 1968 is consistently associated with a lower value of S .²⁰

City-level Results

Table 2A reports estimates of the riots’ effect on the change in median black family income between 1960 and 1970. The first three columns all use the raw index numbers for severity (in quadratic form), whereas the last six columns use a dummy variable for severe riot cities. The last three columns are two-stage least square estimates of the riot impact, relying on the instrumental variables discussed above. Columns 3, 6, and 9 all include controls for the 1950-1960 trend in black family incomes for a reduced set of cities. To help distinguish the influence of changing sample composition from that of changing specification, columns 2, 5, and 8 exclude the trend variable but use the reduced sample of cities.

¹⁸ The Kerner Commission did note that several cities with substantial riots in 1967 appeared to have relatively high temperatures around the time of the riots (1968, p. 123). This observation has been supported in statistical analyses by Baron and Ransberger (1978) and Carlsmith and Anderson (1979). There is a more general criminology literature that links temperature and violent crime (e.g., see Field 1992). We may attempt to use temperature variation as a second weather instrument in future work.

¹⁹ (<http://www.cnni.co.uk/2003/US/Midwest/06/18/michigan.unrest/>).

²⁰ In the implicit first stage of IV estimates below (with 102 cities), the April 1968 rainfall coefficient is -0.033 (t-stat = 2.35), and the city manager coefficient is -0.12 (t-stat = 2.13). The regression also includes region dummies, black population size, total population size, and manufacturing proportion of employment 1960. Regressing the raw index (rather than severe dummy) on the same set of variables returns a coefficient on rainfall of -0.0091 (t-stat = 2.44) and on city manager of -0.026 (t-stat = 1.57).

Column 1's results indicate that riots were associated with slower income growth for blacks through the relevant range of the riot index (0 to 0.5). The coefficients suggest a maximum negative impact around a riot index value of 0.3 (approximately the center of the “severe” riot range). At that point, the estimated negative riot effect on median black family income is over 12 percent. Moving to the smaller sample (column 2) and adding the 1950-1960 trend (column 3) has a small impact on the estimated riot effect – the profile becomes steeper but still reaches a maximum impact around 0.3, at which point the riot effect on income is almost negative 16 percent. The regression results also reflect that blacks’ income in the South converged on blacks’ income elsewhere during the 1960s.

Qualitatively, the results are similar in columns 4 to 6 which replace the quadratic severity index with a simple dummy variable for cities that had the most severe riot experiences. In each column, the estimated riot effect on black income is about -0.09 and statistically significant. The 2SLS point estimates for the riot effect (columns 7 to 9) are larger in magnitude and somewhat weaker in terms of statistical significance (though still significant at the 10 percent level at least). All of the results in table 2A are consistent with a non-trivial negative effect of riots on black income.

Table 2B reports results for similar regressions, run for the 1960 to 1980 period. The results suggest that the riots’ effects were not transitory – cities that experienced riot-associated relative declines in income during the 1960s did not catch up during the 1970s. The coefficients in columns 1 to 6 are roughly similar in magnitude to those from table 2A, but the estimated riot-effect profile is somewhat steeper in the quadratic specifications of columns 1 to 3 (reaching an impact of -0.22 in column 1 at a riot index value of 0.3). Likewise, column 4 estimates an average “severe riot city” effect of nearly 12 percent (compared to 9 percent in table 2A), and the 2SLS coefficients increase in magnitude as well (as do the associated standard errors).

The true nature of these apparent relative income declines is difficult to discern from the city-level data. Two distinct, but not necessarily exclusive, hypotheses suggest themselves. First, the riots could have negatively affected the labor market outcomes of people residing in the riot cities throughout the 1960s and 1970s. Second, relatively high income blacks could have moved out of riot cities after their occurrence,

leading to a decline in average income of those remaining (a compositional change). Though imperfect, we can use measures of average schooling levels for adult black (or nonwhite) males in 1960 and 1970 to see if a compositional change drives the observed results. Adding this change in average schooling to the regressions of columns 1 or 4 in table 2A (not shown) does not undercut the estimated riot effect, though it does have a positive, independent relation to income changes. Regressing the change in average education on measures of riots severity, region dummies, and so on, suggests that there was no significant difference in the change in education levels between the severe riot and other cities. Thus, the compositional story does not appear to drive the negative income results, at least for the 1960s. A third potential avenue would be for family units (over which median income is measured) to disintegrate faster in the riot cities than elsewhere; in particular, a relative increase in the proportion of female headed households could drive a relative decline in the census measure of median family income. We will continue to explore these hypotheses in future research.

Tables 3A and 3B are set up much like tables 2A and 2B, and report estimates of the effect of riots on male unemployment rates.²¹ There is no strong evidence that riot severity affected black male unemployment rates, and in fact most of the point estimates suggest a relative decline in measured unemployment rates (though not statistically significant). Evidence from the IPUMS samples in the next section sheds additional light on the issues of the labor force participation and employment status of black men.

Tables 4A reports estimates of the riots's impact on the black share of total city population during the 1960s. Controlling only for region (columns 1, 4, and 7), it is clear that cities that had riots had comparatively large increases in the share of the city population that was black. The differences are large and statistically significant, reaching a maximum impact of about 0.11 in column 1 and an average "severe riot city" effect of 0.07 in column 4. As more variables are added to the regressions, however, the estimated riot effects diminish in magnitude: the maximum impact suggested by column 3 (after accounting

²¹ We would like to estimate the effect on employment rates calculated over the adult population (rather than unemployment rates calculated over the labor force), but the published city-level data do not facilitate that approach.

for 1950-1960 trend) is only about 0.03, and in column 6 is smaller yet. After accounting for the 1950-1960 trend in black population share, the 2SLS estimate in column 9 yields a very small (and imprecise) point estimate. Qualitatively, the results from table 4B, which cover 1960 to 1980, are quite similar to those in 4A – severe riots were strongly positively correlated with increases in black population share, but those increases were apparently well underway before the riots.

Micro-Level IPUMS Data

Our second empirical analysis uses individual-level data for men living in metropolitan areas from the 1950, 1970, and 1980 IPUMS. Unfortunately, metropolitan areas are not disclosed in the 1960 sample, and it is not possible to observe both metropolitan area and center-city status simultaneously in the available 1970 samples. Together, these limitations imply that we cannot make micro-level comparisons between 1960 and other years, and we cannot limit the scope of observation to central-city black residents. Despite several differences between this second analysis and that of the previous section, the basic identification strategy is the same: to compare changes in labor market outcomes in areas that had severe riots with areas that did not.

The regressions take the following basic form, where Y is a labor market outcome (income or employment) for an individual in the sample:

$$\{\text{eq. 3}\}: Y = \alpha + \beta_1 X + \beta_2 S + \beta_3 \text{Year} + \beta_4 (S \times \text{Year}).$$

In this specification, β_4 measures the average change in Y for black workers in the severe riot cities relative to blacks in non-severe riot cities, after controlling for X characteristics. The X variables include age (quartic), education (quadratic), marital status, migrant status (dummy for those residing in state that is different from birth state, dummy for foreign born), region or residence (four regions), and region interacted with the year dummy (allowing region-specific trends). We compare 1950 with 1970 in one set of regressions, and we compare 1970 and 1980 in a second set (Year = 1 in the later year of the comparison). It is possible to include metro-area fixed effects. Doing so makes it impossible to identify coefficients on any time-invariant city characteristics, but β_4 is still identifiable.

We also report difference-in-difference-in-difference (DDD) estimates which use white workers to provide another layer of comparison. We do not rely heavily on the DDD estimates because whites might not form an effective control group to the extent that they too were affected by or responded to the riots, but the perspective is nevertheless still of interest. The DDD estimates indicate whether blacks in severe riot cities fared worse relative to whites in riot cities than blacks in non-severe riot cities fared relative to whites in non-riot cities.

Panel A of table 5 reports results for log annual income among male workers who were between 18 and 64 years of age, were not in school, and worked at least 40 weeks in the relevant year. Column 1 suggests that blacks in severe riot cities lost some ground (about two percent) relative to blacks living in other cities between 1950 and 1970, though the decline is not statistically significant. The addition of city fixed effects in column 2 has little impact on the coefficient, indicating that unobserved city-specific fixed factors did not drive the result. The estimates in columns 3 and 4, using a DDD approach, are nearly identical to those in columns 1 and 2, suggesting that the relative decline of blacks in severe riot cities (relative to blacks elsewhere) was not matched by a similar decline among whites (relative to whites elsewhere). The point estimates for the 1970s (columns 5 and 6) are similar in magnitude, but more precisely estimated, suggesting a relative decline of 2.5 to 3.0 percent in blacks' annual income in the riot cities. These losses are smaller, but still negative, when differenced by white income trends in columns 7 and 8.

Conditioning the sample on those who worked at least 40 weeks makes a significant difference to the magnitude of the estimates for income changes in the 1970s.²² Removing the “working” condition entirely and re-running the regression in column 5 results in a severe-riot coefficient of -0.085 (t-stat = 5.12). Including only men who were in the labor force (regardless of weeks worked) results in a severe-riot coefficient estimate of -0.065 (t-stat = 4.04). (Regressions are not in table.) These findings suggest that there were relatively poor employment prospects in severe-riots during the 1970s, and we explore this

²² The condition does not appear to make a significant difference for the 1950 to 1970 income results.

possibility directly in panel B of table 5.

The employment regressions show no decline in the likelihood of employment for black men between 1950 and 1970 in severe riot states; if anything, the likelihood appears to have risen. There is evidence, however, of a 3 to 4 percentage point decline in the employment rate of black men in severe riot cities during the 1970s. This decline is consistent and statistically significant across columns 5 through 8. Moreover, the decline appears to be stronger among younger black workers: the coefficient in columns 5 increases in magnitude to 4.5 percent when the sample is limited to men under 40 years of age, and to 6 percent when limited to men under 30.

The declining employment rate reflects both a decline in labor force participation and a rise in unemployment relative to blacks elsewhere. Regressing labor force participation (=1 if in labor force) on the same set of variables as in column 5 returns a riot coefficient of -0.021 (t-stat = 2.83). Limiting the sample to those in the labor force using unemployed (=1 if unemployed) as the dependent variable yields a coefficient of 0.022 (t-stat = 2.69).

5. Conclusion

In the 1960s, the United States experienced a large number of race-related civil disturbances. Although social scientists have long been interested in the causes of the 1960s riots, their consequences have received much less attention. The riots were concentrated in neighborhoods that were predominantly African-American, and in theory, they may have depressed the relative economic status of African Americans in those cities through a downward spiral in neighborhood employment opportunities, property values, and peer quality. Measuring such effects is difficult, in large part because the riots may have been responses to unobserved forces that also simultaneously influenced labor markets. Nonetheless, given Spilerman's contention that the distribution of riots and the degree of their severity were essentially random (conditional on black population size and region), and alternatively, given the scope for instrumental variable approaches to isolating exogenous variation in riots, we believe that a solid measurement of riot treatment effects is within reach.

Thus far, the empirical evidence on the riots' effects on African Americans' labor market outcomes is mixed, but highly suggestive and worthy of further exploration. Our examination of data from the published census volumes and the IPUMS samples, in conjunction with data on the incidence and severity of the riots, yields findings that suggest the existence of adverse effects on family income and the employment status of men. For example, controlling for region and city characteristics, median family income declined significantly after 1960 in the cities that had severe riots relative to those that did not. A relative decline in annual income for males is also apparent in the micro-level data spanning the 1970s, especially when the sample includes men who worked relatively few weeks. The micro-level data also reveal a relative decline in the likelihood of male employment and labor force participation during the 1970s in the riot cities. Nonetheless, at this stage, our empirical results should be viewed as highly tentative.

In addition to considerable refinement to the data and analysis presented in this paper, we plan to extend our analysis to other economic outcomes, especially those related to housing markets, such as housing values and residential segregation (see Collins and Margo 2003). We also intend to explore other sources of data. In particular, the analysis in this paper has looked for effects using city-level measures of riot severity on rather widely spaced (in a temporal sense) data. It seems clear from our preliminary analysis that such effects may exist, but they are difficult to tease out of the data. In this regard, one extension would be to use the public use samples from the March Current Population Survey, which are available beginning in the mid 1960s. These have the advantage of being available on an annual basis. While they do not identify the city of residence for all individuals, they do identify the major cities, some of which had severe riots. Another strategy is to look for effects at a smaller geographic scale. We are in the process of matching maps of riot activity within cities with census tract maps to facilitate an "up close" look at the neighborhoods in which the riots occurred. Further work with the CPS and census tract data may provide a better sense of where and when the effects of riots took hold.

References

- Aldrich, Howard and Albert J. Reiss. 1970. "The Effect of Civil Disorders on Small Business in the Inner City." Journal of Social Issues 26: 187-206.
- Aiken, Michael and Robert Alford. 1998. Governmental Units Analysis Data. Inter-University Consortium for Political Research Study 0028.
- Baron, Robert A. and Victoria A. Ransberger. 1978. "Ambient Temperature and the Occurrence of Collective Violence: The "Long Hot Summer" Revisited." Journal of Personality and Social Psychology 36: 351-360.
- Bean, Jonathan J. 2000. "'Burn, Baby, Burn'": Small Business in the Urban Riots of the 1960s," The Independent Review 5: 165-187.
- Blanchard, Olivier Jean and Lawrence F. Katz. 1992. "Regional Evolutions." Brookings Papers on Economic Activity 1: 1-75.
- Brown, Charles. 1984. "Black-White Earnings Ratios since the Civil Rights Act of 1964: The Importance of Labor Market Dropouts." Quarterly Journal of Economics 91: 31-44.
- Carlsmith, J. Merrill and Craig A. Anderson. 1979. "Ambient Temperature and the Occurrence of Collective Violence: A New Analysis." Journal of Personality and Social Psychology 37: 337-344.
- Carter, Gregg Lee. 1986. "The 1960s Black Riots Revisited: City Level Explanations of Their Severity." Sociological Inquiry 56: 210-228.
- Carter, Gregg Lee. 1990. "Collective Violence and the Problem of Group Size in Aggregate-Level Studies." Sociological Focus 23: 287-300.
- Chandra, Amitabh. 2000. "Labor Market Dropouts and the Racial Wage Gap: 1940-1990." American Economic Review 107: 333-338.
- Collins, William J. and Robert A. Margo. 2000. "Residential Segregation and Socioeconomic Outcomes: When Did Ghettos Go Bad?" Economics Letters 69: 239-243.
- Collins, William J. and Robert A. Margo. 2003. "Race and the Value of Owner-Occupied Housing, 1940-1990." Regional Science and Urban Economics 33: 255-286.
- Congressional Quarterly Service. 1967. Urban Problems and Civil Disorder: Special Report No. 36. Washington DC.
- Cutler, David M. and Glaeser, Edward L. 1997. "Are Ghettos Good or Bad?" Quarterly Journal of Economics 112: 827-72.
- DiPasquale, Denise and Edward L. Glaeser. 1998. "The Los Angeles Riot and the Economics of Urban Unrest." Journal of Urban Economics 43: 52-78.
- Field, Simon. 1992. "The Effect of Temperature on Crime." British Journal of Criminology 32: 340-351.
- Fine, Sidney. 1989. Violence in the Model City: The Cavanagh Administration, Race Relations, and the Detroit Riot of 1967. Ann Arbor: University of Michigan Press.

- Frey, William H. 1979. "Central City White Flight: Racial and Nonracial Causes," American Sociological Review 44: 425-448.
- Gilje, Paul. 1996. Rioting in America. Bloomington, IN: Indiana University Press.
- Glaeser, Edward L. and Joseph Gyourko. 2001. "Urban Decline and Durable Housing," NBER Working Paper 8598.
- Governor's Commission on the Los Angeles Riots. 1965. Violence in the City: An End or a Beginning? Los Angeles.
- Hahn, Harlan. 1970. Civic Responses to Riots: A Reappraisal of Kerner Commission Data. Public Opinion Quarterly 34: 101-107.
- Jencks, Christopher. Rethinking Social Policy: Race, Poverty, and the Underclass. Cambridge, MA: Harvard University Press.
- Kelly, William R. and David Snyder. 1980. "Racial Violence and Socioeconomic Changes among Blacks in the United States." Social Forces 58: 739-760.
- Kerner, Otto, et al. 1968. Report of the National Advisory Commission on Civil Disorders. New York: New York Times Company.
- King, Mary C. 2001. "'Race Riots' and Black Economic Progress." Portland State University, Economics Department, working paper.
- Liebersohn, Stanley, and Arnold R. Silverman. 1965. "The Precipitants and Underlying Conditions of Race Riots." American Sociological Review 30: 887-898.
- Lieske, Joel A. 1978. "The Conditions of Racial Violence in American Cities." American Political Science Review 72: 1324-1340.
- Massey, Douglas S. and Nancy A. Denton. 1993. American Apartheid: Segregation and the Making of the Underclass. Cambridge, MA: Harvard University Press.
- Murray, Charles A. 1984. Losing Ground: American Social Policy, 1950-1980. New York: Basic Books.
- Myers, Daniel J. 1997. "Racial Rioting in the 1960s: An Event History Analysis of Local Conditions," American Sociological Review 64: 94-112.
- Myers, Daniel J. 2000. "The Diffusion of Collective Violence: Infectiousness, Susceptibility, and Mass Media Networks." American Journal of Sociology 106: 173-208.
- Olzak, Susan, Suzanne Shanahan, and Elizabeth H. McEneaney. 1996. "Poverty, Segregation, and Race Riots: 1960 to 1993," American Sociological Review 61: 590-613.
- Ruggles, Steven, Matthew Sobek, et. al. 1997. Integrated Public Use Microdata Series: Version 2.0. Minneapolis: Historical Census Projects, University of Minnesota.
- Spilerman, Seymour. 1970. "The Causes of Racial Disturbances: A Comparison of Alternative Explanations," American Sociological Review 35: 627-649.

- Spilerman, Seymour. 1971. "The Causes of Racial Disturbances: Test of an Explanation," American Sociological Review 36: 427-442.
- Spilerman, Seymour. 1976. "Structural Characteristics of Cities and the Severity of Racial Disorders." American Sociological Review 41: 771-793.
- Sugrue, Thomas J. The Origins of the Urban Crisis: Race and Inequality in Postwar Detroit. Princeton: Princeton University Press.
- U.S. Senate, Committee on Government Operations, Permanent Subcommittee on Investigations. 1967. Riots, Civil, and Criminal Disorders. 90th Congress, First Session, Part 1.
- Wanderer, Jules J. 1969. "An Index of Riot Severity and Some Correlates." American Journal of Sociology 74: 500-505.
- Widick, B.J. 1989. Detroit: City of Race and Class Violence. Detroit: Wayne State University Press.
- Wilson, William Julius. 1987. The Truly Disadvantaged: The Inner City, The Underclass, and Public Policy. Chicago: University of Chicago Press.

Table 1: The Riots of the 1960s, Frequency and Severity

	1964	1965	1966	1967	1968	1969	1970	1971	Total
Riots	11	11	53	158	289	124	68	38	752
Days of Riots	34	20	109	408	739	284	126	82	1,802
Killed	2	35	11	83	66	13	13	5	228
Injured	996	1,132	525	2,801	5,302	861	710	414	12,741
Arrested	2,917	4,219	5,107	17,011	31,680	4,730	2,027	1,408	69,099
Occurrences of Arson	238	3,006	812	4,627	6,041	369	283	459	15,835
Index Value	0.163	0.504	0.275	1.349	1.956	0.374	0.230	0.149	5.000
Northeast	0.145	0.003	0.027	0.419	0.288	0.125	0.078	0.023	1.532
Midwest	0.008	0.011	0.180	0.750	0.501	0.079	0.042	0.004	1.107
South	0.010	0.001	0.019	0.107	1.055	0.115	0.104	0.121	0.786
West	0.000	0.489	0.050	0.073	0.112	0.056	0.006	0.001	1.574

Notes: See text for definition of a riot. Each riot is assigned a value $S = \sum X_i / X_T$ where X_i is a component of severity (days of rioting, injuries, arrests, deaths, and arsons) and X_T is the sum of X_i across all riots. Summed over all riots in the dataset, there are five total index points (a reflection of the five components that enter the index).

Source: Carter (1986).

Table 2A: Riots and Change in Log Median Family Income for Blacks, 1960-1970

	1: OLS	2: OLS	3: OLS	4: OLS	5: OLS	6: OLS	7: 2SLS	8: 2SLS	9: 2SLS
Riot Index	-0.8330 (3.17)	-1.179 (3.07)	-1.121 (2.67)	-----	-----	-----	-----	-----	-----
Riot Index ²	1.391 (2.41)	2.101 (2.92)	1.983 (2.63)	-----	-----	-----	-----	-----	-----
Severe Riot	-----	-----	-----	-0.09168 (4.27)	-0.08522 (2.78)	-0.08560 (2.51)	-0.2688 (1.96)	-0.1792 (1.80)	-0.1878 (1.76)
Black 60	4.28 e-07 (2.75)	4.44 e-07 (2.39)	4.29 e-07 (2.22)	3.62 e-07 (2.66)	3.33 e-07 (2.15)	3.28 e-07 (2.07)	7.09 e-07 (2.14)	5.18 e-07 (1.88)	5.29 e-07 (1.83)
Pop 60	-5.33 e-08 (2.43)	-5.22 e-08 (2.13)	-5.08 e-08 (2.02)	-3.99 e-08 (2.04)	-3.30 e-08 (1.61)	-3.26 e-08 (1.61)	-6.33 e-08 (1.87)	-4.49 e-08 (1.56)	-4.54 e-08 (1.55)
Prop. Manu. 60	0.002458 (2.53)	0.001699 (1.00)	0.001516 (0.97)	0.002419 (2.55)	0.001917 (1.18)	0.001650 (1.16)	0.002578 (2.50)	0.002104 (1.23)	0.001851 (1.16)
Trend 1950-60	-----	-----	-0.07050 (1.25)	-----	-----	-0.09621 (1.72)	-----	-----	-0.09741 (1.58)
Midwest	0.05313 (2.47)	0.5390 (1.86)	0.05653 (2.18)	0.05888 (2.71)	0.06525 (2.21)	0.06884 (2.59)	0.06180 (2.51)	0.08305 (2.16)	0.08823 (2.44)
South	0.1089 (4.30)	0.1147 (3.16)	0.1058 (2.93)	0.1193 (4.74)	0.1450 (4.12)	0.1316 (3.86)	0.1192 (4.11)	0.1635 (3.79)	0.1515 (3.49)
West	0.007036 (0.21)	-0.02873 (0.70)	-0.03629 (0.88)	0.01943 (0.59)	0.01124 (0.31)	0.0002322 (0.01)	0.04133 (1.01)	0.07007 (0.93)	0.06403 (0.77)
Constant	0.4048 (11.96)	0.4345 (7.07)	0.4843 (6.79)	0.3889 (11.69)	0.3856 (6.67)	0.4561 (7.14)	0.3804 (9.97)	0.3609 (5.12)	0.4301 (5.52)
N	102	41	41	102	41	41	102	41	41
R ²	0.28	0.53	0.54	0.31	0.48	0.51	0.16	0.40	0.41
Mean Change	0.5103	0.5327	0.5327	0.5103	0.5327	0.5327	0.5103	0.5327	0.5327

Notes: t-statistics are in parentheses. Median family income figures for 1960 and 1970 are from the published census volumes. A family income measure for 1950 is constructed using the IPUMS (excluding households of one person). Regional designations follow census convention.

Sources: Manufacturing and population variables are from issues of the City and County Data Book (tabulated in ICPSR 7735). The city manager instrumental variable is from the Governmental Units Analysis Data (Aiken and Alford 1998; ICPSR 28). Rainfall data are from the National Climatic Data Center website (www.ncdc.noaa.gov). See table 1 and text for discussion of riot severity data.

Table 2B: Riots and Change in Log Median Family Income for Blacks 1960-1980

	1: OLS	2: OLS	3: OLS	4: OLS	5: OLS	6: OLS	7: 2SLS	8: 2SLS	9: 2SLS
Riot Index	-1.415 (3.12)	-1.626 (2.83)	-1.333 (3.15)	-----	-----	-----	-----	-----	-----
Riot Index ²	2.290 (2.42)	2.853 (2.55)	2.160 (2.70)	-----	-----	-----	-----	-----	-----
Severe Riot	-----	-----	-----	-0.1178 (2.42)	-0.07175 (1.19)	-0.08307 (2.07)	-0.5133 (1.91)	-0.3641 (1.22)	-0.3916 (1.49)
Black 60	3.54 e-07 (1.68)	4.23 e-07 (1.95)	5.13 e-07 (2.56)	1.50 e-07 (0.83)	2.00 e-07 (0.98)	3.38 e-07 (2.01)	9.25 e-07 (1.46)	7.65 e-07 (1.07)	9.49 e-07 (1.48)
Pop 60	-4.08 e-08 (1.25)	-5.05 e-08 (1.69)	-6.33 e-08 (2.32)	-1.12 e-08 (0.37)	-2.16 e-08 (0.71)	-3.83 e-08 (1.48)	-6.30 e-08 (1.00)	-5.69 e-08 (0.84)	-7.74 e-08 (1.21)
Prop. Manu. 60	0.001467 (0.85)	-0.0007769 (0.35)	0.0006385 (0.21)	0.001343 (0.78)	-0.0002467 (0.09)	0.001092 (0.34)	0.001749 (0.93)	0.0009615 (0.23)	0.002528 (0.54)
Trend 1950-60	-----	-----	-0.3520 (1.89)	-----	-----	-0.4104 (2.30)	-----	-----	-0.4614 (2.01)
Midwest	0.1460 (4.16)	0.06738 (1.32)	0.0440 (0.63)	0.1544 (4.31)	0.06816 (1.30)	0.04231 (0.58)	0.1622 (3.78)	0.1230 (1.32)	0.09676 (0.92)
South	0.2714 (5.50)	0.2131 (3.07)	0.1931 (2.94)	0.2866 (5.74)	0.2413 (3.24)	0.2126 (3.23)	0.2976 (4.80)	0.3178 (2.61)	0.2894 (2.73)
West	0.1239 (1.95)	0.03368 (0.37)	0.06182 (0.82)	0.1399 (2.20)	0.06199 (0.66)	0.08159 (1.19)	0.1961 (2.48)	0.2903 (1.13)	0.3239 (1.37)
Constant	0.9780 (15.31)	1.085 (11.76)	1.246 (10.19)	0.9538 (14.94)	1.019 (10.44)	1.227 (9.80)	0.9325 (12.79)	0.9217 (5.02)	1.1505 (5.25)
N	85	31	31	85	31	31	85	31	31
R ²	0.39	0.61	0.69	0.37	0.53	0.65	0.07	0.15	0.23
Mean Change	1.119	1.138	1.138	1.119	1.138	1.138	1.119	1.138	1.138

Notes and sources: t-statistics are in parentheses. See table 2A for discussion of variables.

Table 3A: Riots and Change in Black Male Unemployment Rate, 1960-1970

	1: OLS	2: OLS	3: OLS	4: OLS	5: OLS	6: OLS	7: 2SLS	8: 2SLS	9: 2SLS
Riot Index	-0.08986 (0.86)	-0.1183 (1.18)	-0.1554 (1.61)	-----	-----	-----	-----	-----	-----
Riot Index ²	0.1471 (0.65)	0.1355 (0.68)	0.2085 (1.13)	-----	-----	-----	-----	-----	-----
Severe Riot	-----	-----	-----	0.0008719 (0.10)	-0.009758 (1.32)	-0.01609 (2.29)	0.03992 (0.88)	0.005638 (0.20)	-0.008468 (0.26)
Black 60	-5.63 e-08 (1.32)	-1.61 e-10 (0.004)	9.33 e-09 (0.24)	-8.54 e-08 (2.20)	-3.13 e-08 (1.02)	-1.59 e-08 (0.52)	-1.62 e-07 (1.54)	-6.19 e-08 (0.91)	-3.12 e-08 (0.43)
Pop 60	1.02 e-08 (1.66)	3.83 e-09 (0.71)	2.01 e-09 (0.37)	1.31 e-08 (2.37)	8.23 e-09 (1.81)	6.21 e-09 (1.36)	1.83 e-08 (1.89)	1.03 e-09 (1.62)	7.31 e-09 (1.14)
Prop. Manu. 60	-0.0009545 (2.93)	-0.001127 (2.61)	-0.0007493 (1.89)	-0.0009692 (2.99)	-0.001194 (2.80)	-0.0008000 (2.10)	-0.001004 (3.01)	-0.001158 (2.90)	-0.0008105 (2.18)
Trend 1950-60	-----	-----	-0.1931 (3.78)	-----	-----	-0.2114 (3.62)	-----	-----	-0.1965 (2.52)
Midwest	0.01399 (1.65)	0.01342 (1.11)	0.02068 (1.89)	0.01441 (1.68)	0.01447 (1.11)	0.02374 (1.98)	0.01376 (1.54)	0.01189 (0.89)	0.02188 (1.62)
South	0.002385 (0.27)	0.0009553 (0.09)	0.007883 (0.86)	0.003520 (0.40)	0.003053 (0.27)	0.01191 (1.17)	0.003536 (0.39)	0.001565 (0.13)	0.01059 (0.84)
West	0.01877 (1.80)	0.04254 (3.38)	0.04691 (4.97)	0.01870 (1.82)	0.04049 (3.33)	0.04854 (5.17)	0.01387 (1.15)	0.03331 (1.76)	0.04463 (2.27)
Constant	-0.003111 (0.25)	-0.005933 (0.37)	-0.01742 (1.29)	-0.004265 (0.34)	-0.007498 (0.46)	-0.02167 (1.55)	-0.002376 (0.18)	-0.006236 (0.38)	-0.02008 (1.25)
N	102	44	44	102	44	44	102	44	44
R ²	0.26	0.52	0.60	0.25	0.49	0.58	0.18	0.46	0.58
Mean Change	-0.02288	-0.02851	-0.02851	-0.02288	-0.02851	-0.02851	-0.02288	-0.02851	-0.02851

Notes and sources: t-statistics are in parentheses. See table 2A for discussion of variables.

Table 3B: Riots and Change in Black Male Unemployment Rate, 1960-1980

	1: OLS	2: OLS	3: OLS	4: OLS	5: OLS	6: OLS	7: 2SLS	8: 2SLS	9: 2SLS
Riot Index	-0.09170 (0.78)	-0.2480 (1.29)	-0.2867 (1.61)	-----	-----	-----	-----	-----	-----
Riot Index ²	0.1707 (0.79)	0.4578 (1.33)	0.5261 (1.70)	-----	-----	-----	-----	-----	-----
Severe Riot	-----	-----	-----	-0.006344 (0.64)	-0.004887 (0.30)	-0.01242 (0.74)	0.05815 (1.27)	0.04776 (1.06)	0.03848 (0.71)
Black 60	8.55 e-08 (1.65)	8.53 e-08 (1.37)	1.00 e-07 (1.56)	7.56 e-08 (1.75)	4.48 e-08 (0.82)	6.54 e-08 (1.01)	-5.07 e-08 (0.47)	-5.52 e-08 (-0.47)	-3.59 e-08 (0.26)
Pop 60	-1.18 e-08 (1.55)	-1.06 e-08 (1.17)	-1.34 e-08 (1.36)	-1.04 e-08 (1.55)	-5.97 e-09 (0.73)	-8.66 e-09 (0.90)	-1.92 e-09 (0.17)	4.32 e-10 (0.04)	-1.16 e-09 (0.08)
Prop. Manu. 60	0.000463 (1.01)	0.001533 (1.82)	0.002174 (2.46)	0.0004608 (1.02)	0.001509 (1.85)	0.002122 (2.70)	0.0003946 (0.83)	0.001645 (2.00)	0.001786 (1.91)
Trend 1950-60	-----	-----	-0.2179 (1.67)	-----	-----	-0.2159 (1.49)	-----	-----	-0.05649 (0.27)
Midwest	0.01948 (1.71)	0.01807 (1.21)	0.02339 (1.64)	0.02009 (1.79)	0.01928 (1.13)	0.02597 (1.49)	0.01882 (1.55)	0.009495 (0.52)	0.01260 (0.65)
South	-0.01893 (1.51)	-0.01129 (0.71)	-0.001633 (0.11)	-0.01799 (1.47)	-0.008411 (0.51)	0.002462 (0.16)	-0.01977 (1.48)	-0.01530 (0.90)	-0.01150 (0.52)
West	-0.01607 (1.16)	-0.02055 (0.97)	-0.01034 (0.55)	-0.01461 (1.08)	-0.01870 (0.94)	-0.004935 (0.25)	-0.02376 (1.57)	-0.04691 (1.66)	-0.03939 (1.02)
Constant	0.03450 (1.95)	0.01128 (0.41)	-0.007859 (0.29)	0.03271 (1.92)	0.004335 (0.16)	-0.01611 (0.63)	0.03617 (2.02)	0.008256 (0.31)	0.002364 (0.07)
N	85	35	35	85	35	35	85	35	35
R ²	0.25	0.55	0.59	0.25	0.52	0.55	0.10	0.35	0.40
Mean Change	0.04516	0.04629	0.04629	0.04516	0.04629	0.04629	0.04516	0.04629	0.04629

Notes and sources: t-statistics are in parentheses. See table 2A for discussion of variables.

Table 4A: Change in Black Proportion of City Population, 1960-1970

	1: OLS	2: OLS	3: OLS	4: OLS	5: OLS	6: OLS	7: 2SLS	8: 2SLS	9: 2SLS
Riot Index	0.6673 (5.59)	0.4520 (2.85)	0.1732 (1.30)	-----	-----	-----	-----	-----	-----
Riot Index ²	-0.9851 (3.45)	-0.6946 (2.65)	-0.2674 (1.18)	-----	-----	-----	-----	-----	-----
Severe Riot	-----	-----	-----	0.06668 (3.86)	0.03457 (1.69)	0.01156 (0.75)	0.09825 (3.92)	0.05277 (0.91)	-0.005251 (0.09)
Black 60	-----	2.65 e-07 (2.58)	1.16 e-07 (1.44)	-----	3.46 (3.71)	1.38 (1.79)	-----	3.10 e-07 (2.26)	1.59 e-07 (1.48)
Pop 60	-----	-4.36 e-08 (3.16)	-1.86 e-08 (1.66)	-----	-5.46 (4.51)	-2.13 (2.03)	-----	-5.22 e-08 (3.90)	-2.19 e-08 (1.95)
Prop. Manu. 60	-----	0.0006529 (1.50)	0.0004573 (1.41)	-----	0.0007046 (1.58)	0.000466 (1.45)	-----	0.0006883 (1.52)	0.0004693 (1.49)
Trend 1950-60	-----	-----	0.5559 (4.24)	-----	-----	0.5835 (4.61)	-----	-----	0.6100 (3.68)
Midwest	-0.01795 (1.72)	-0.02271 (2.21)	-0.01622 (2.37)	-0.01968 (1.72)	-0.02529 (2.31)	-0.01681 (2.45)	-0.02113 (1.81)	-0.02560 (2.37)	-0.01616 (2.20)
South	-0.03787 (3.46)	-0.03939 (2.69)	-0.01464 (1.08)	-0.04360 (3.62)	-0.04509 (2.95)	-0.01543 (1.13)	-0.04422 (3.66)	-0.04509 (3.02)	-0.01409 (0.95)
West	-0.03436 (3.17)	-0.01947 (1.68)	-0.01791 (2.27)	-0.04406 (3.77)	-0.02288 (1.86)	-0.01899 (2.37)	-0.04523 (3.55)	-0.02513 (1.74)	-0.01686 (1.62)
Constant	0.04905 (5.81)	0.03448 (2.14)	0.01787 (1.44)	0.06232 (6.97)	0.04165 (2.42)	0.01955 (1.56)	0.05998 (6.70)	0.04253 (2.44)	0.01779 (1.31)
N	102	102	102	102	102	102	102	102	102
R ²	0.41	0.50	0.64	0.31	0.47	0.63	0.27	0.47	0.63
Mean Change	0.04258	0.04258	0.04258	0.04258	0.04258	0.04258	0.04258	0.04258	0.04258

Notes and sources: t-statistics are in parentheses. See table 2A for discussion of variables.

Table 4B: Change in Black Proportion of City Population, 1960-1980

	1: OLS	2: OLS	3: OLS	4: OLS	5: OLS	6: OLS	7: 2SLS	8: 2SLS	9: 2SLS
Riot Index	0.8514 (2.86)	0.3560 (1.08)	-0.08810 (0.27)	-----	-----	-----	-----	-----	-----
Riot Index ²	-1.212 (1.58)	-0.5559 (0.86)	0.1366 (0.21)	-----	-----	-----	-----	-----	-----
Severe Riot	-----	-----	-----	0.08079 (2.36)	0.01222 (0.32)	-0.02119 (0.66)	0.1442 (3.30)	0.04331 (0.48)	0.003883 (0.05)
Black 60	-----	5.46 e-07 (2.60)	2.96 e-07 (1.65)	-----	6.36 e-07 (3.20)	3.05 e-07 (1.62)	-----	5.75 e-07 (2.43)	2.74 e-07 (1.44)
Pop 60	-----	-8.28 e-08 (2.89)	-4.06 e-08 (1.57)	-----	-9.31 e-08 (3.57)	-3.98 e-08 (1.48)	-----	-8.90 e-08 (3.38)	-3.92 e-08 (1.53)
Prop. Manu. 60	-----	0.001985 (2.03)	0.001720 (1.98)	-----	0.002041 (2.13)	0.001721 (2.02)	-----	0.002009 (2.08)	0.001711 (1.98)
Trend 1950-60	-----	-----	0.8758 (3.39)	-----	-----	0.8854 (3.63)	-----	-----	0.8444 (3.08)
Midwest	-0.01195 (0.61)	-0.02289 (1.16)	-0.01255 (0.76)	-0.01291 (0.61)	-0.02457 (1.21)	-0.01164 (0.70)	-0.01649 (0.77)	-0.02518 (1.25)	-0.01271 (0.73)
South	-0.01598 (0.71)	-0.009839 (0.36)	0.03133 (1.18)	-0.01980 (0.84)	-0.01319 (0.49)	0.03316 (1.23)	-0.02462 (1.00)	-0.01405 (0.53)	0.03036 (1.07)
West	-0.06028 (2.64)	-0.01888 (0.78)	-0.01829 (0.91)	-0.07225 (3.22)	-0.01990 (0.84)	-0.01549 (0.82)	-0.07601 (2.97)	-0.02431 (0.86)	-0.01903 (0.78)
Constant	0.09028 (5.98)	0.03519 (1.07)	0.007285 (0.24)	0.1077 (7.69)	0.04009 (1.22)	0.004749 (0.16)	0.1030 (7.28)	0.04176 (1.26)	0.007651 (0.24)
N	85	85	85	85	85	85	85	85	85
R ²	0.27	0.42	0.54	0.18	0.41	0.54	0.12	0.40	0.54
Mean Change	0.09631	0.09631	0.09631	0.09631	0.09631	0.09631	0.09631	0.09631	0.09631

Notes and sources: t-statistics are in parentheses. See table 2A for discussion of variables.

Table 5: Riots, Income, and Employment in the IPUMS Data

	1950-1970 DD Black Only	1950-1970 DD Black Only	1950-1970 DDD Black & White	1950-1970 DDD Black & White	1970-1980 DD Black Only	1970-1980 DD Black Only	1970-1980 DDD Black & White	1970-1980 DDD Black & White
Panel A: Annual Income								
Severe × 1970	-0.02309 (0.97)	-0.02175 (0.96)	-----	-----	-0.02539 (1.97)	-0.02983 (2.23)	-----	-----
Severe × 1970 × Black	-----	-----	-0.02830 (0.81)	-0.02228 (1.05)	-----	-----	-0.01537 (1.15)	-0.01741 (1.41)
N	24,245	24,245	258,131	258,131	48,194	48,194	501,620	501,620
MSA Fixed Effects	No	Yes	No	Yes	No	Yes	No	Yes
Panel B: Employment								
Severe × 1970	0.02698 (1.56)	0.03352 (2.95)	-----	-----	-0.03514 (3.15)	-0.03327 (4.88)	-----	-----
Severe × 1970 × Black	-----	-----	0.03073 (1.71)	0.03380 (3.65)	-----	-----	-0.03844 (4.15)	-0.03896 (6.91)
N	33,057	33,057	311,477	311,477	71,291	71,291	619,716	619,716
MSA Fixed Effects	No	Yes	No	Yes	No	Yes	No	Yes

Notes: Each coefficient is from a separate regression. t-statistics are in parentheses. All regressions include males, ages 18 to 64, who are not in school. The income regressions only include those employed for at least 40 weeks in the preceding year. All regressions control for age (quartic), education level (quadratic), marital status, migrant status (dummies for foreign born and those born in a state different from residence), region of residence, year dummy, interactions of region and year dummies, dummy for severe riot areas, interaction of severe riot area and year dummies. All of these control variables are interacted with a black dummy variable in the DDD regressions.

Sources: Micro-data are from Ruggles and Sobek (1997). Riot data are from Carter (1986) and discussed in table 1.