Deindustrialization, Economic Distress, and Homicide Rates in Midsized Rustbelt Cities

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Over the past several years, the United States has experienced a significant decline in homicide rates. For the most part, analyses of this decline have focused on homicide trends in large cities and metropolitan areas. Unfortunately, few people have noticed that smaller cities have not seen a comparable decline in homicide rates. This article examines the relationship between deteriorated economic conditions and homicide rates in 85 midsized cities in the industrial Northeast and Midwest, or “Rustbelt” region of the United States. The authors find that unemployment, inelasticity (i.e., population density), and population change are either directly or indirectly (via socioeconomic deprivation) associated with homicide rates in these cities. Implications for homicide studies of urban locales are discussed.

The early 1990s marked the beginning of an important downward shift in the national homicide rate, with the most recent rate at the lowest level this country has seen in three decades. This significant decline has not gone unnoticed. In the past few years, homicide rates in the United States have captured the attention of politicians, the media, and the public. Although soaring homicide rates have always taken center stage in public discourse, today it is difficult to find a newspaper or magazine without a story about the U.S.’s declining homicide rate (“Cracking Down on Crime,”

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1997; Gergen, 1997; Gest, 1997; Léo, 1996; Miller, 1998; Morganthau, 1995; Morganthau & Miller, 1997; Whitman, 1996). Most of the attention has been trained on the drop in big-city homicides:

From 1993 to 1996 the number of murders dropped by 20 percent—from 24,526 (a rate of 9.5 per 100,000 residents) to 19,645 (a rate of 7.4 per 100,000)—and the preliminary FBI numbers indicate an additional 9 percent murder reduction in 1997. The 590 murders in Los Angeles in 1997 were the fewest in 20 years. Boston had 43 murders in 1997, a 36-year low. In March, for the first time since the 1960s, Brooklyn went a full week without a single murder; a decade ago Brooklyn was suffering 13 to 15 killings weekly. It’s hard to think of a social trend of greater significance. (Witkin, 1998, p. 28)

The general tone of these articles might give the impression that homicides are declining everywhere. Unfortunately, this is not the case. Although many cities are experiencing dramatic declines in their homicide rates, others have not been so fortunate. Whereas it is true that the majority of all homicides in the United States occur in the largest metropolitan areas, several midsized cities (i.e., less than 150,000 residents) have very high homicide rates when compared with either the nation as a whole or large metropolitan areas.

Criminologists seem to have fallen in with the media’s focus on big cities and large metropolitan areas. Many recent homicide studies that have used cities as their units of analysis have been exclusively concerned with murder rates and their covariates across the largest U.S. cities (Barnett & Schwartz, 1989; Crutchfield, Glusker, & Bridges, 1999; DeFronzo, 1997; Farley, 1987; Kovandzic, Vieraitis, & Yeisley, 1998). Few studies have specifically examined homicide patterns in midsized (or smaller) cities (cf. Mosher, Rotolo, & Phillips, 1999).

The present study therefore is atypical in that we explore the social ecology of homicide among small(er) U.S. cities. Criminologists have long suggested that deteriorated economic conditions serve as a breeding ground for homicides or property and drug crimes that are likely to result in homicide (Bonger, 1916; Currie, 1985, 1993, 1998; Merton, 1938; Sampson & Wilson, 1995; Shaw & McKay, 1942; Wilson, 1987, 1996). Although these conditions plagued many of the nation’s largest cities during the 1980s, they have lessened to a degree in the 1990s, based largely on their ability to create and attract new jobs after the industrial restructuring.
of the 1980s. At the same time, however, many small and midsized cities, which were more dependent on one or two key manufacturing industries, were not able to buffer themselves from this restructuring (Perry, 1987). Accordingly and as we reveal in our analysis, many of these cities have not experienced the sharp declines in violent crime enjoyed by their large metropolitan counterparts.¹

In this study, we examine homicides that occurred from 1980 to 1995 in midsized cities in the “Rustbelt” region of the United States. We focus on Rustbelt cities because they have arguably been the hardest hit by industrial restructuring and deindustrialization. Bringing together arguments drawn from macroscopic inequality and deprivation research in criminology as well as work in the areas of political economy and urban sociology, we focus on four structural characteristics proximate to deindustrialization that we expect are associated with homicide: unemployment, lack of elasticity, changes in resident population over time, and socioeconomic deprivation.

CRIMINOLOGICAL THEORY, ECONOMIC DISTRESS, AND CRIME

A number of otherwise competing criminological theories suggest that as economic conditions deteriorate, crime will increase. Theories suggesting a positive relationship between crime and economic distress range from more mainstream theories such as social disorganization and social strain theory to more radical approaches such as Marxian and conflict theories. Despite their divergent assumptions and policy implications, all of them have, at times, examined the link between economic distress and crime. In fact, each of them shares the assumption that there is a positive relationship between economic distress and crime.

Social disorganization theorists have argued that crimes such as homicide are most likely in decaying inner cities. William Julius Wilson (1987, 1996) has documented the effects of macroeconomic processes on individual communities in Chicago. He argues that crime and subsequent social problems within these communities can only be understood within a broader context of declining jobs, wages, and opportunities. Sampson and Wilson (1995) maintain
that residents within inner cities have been particularly vulnerable to structural economic changes. This body of research suggests that as economic conditions deteriorate in socially disorganized communities, crime rates, including homicide, will increase (Anderson, 1990; Bernard, 1990; Krivo & Peterson, 1996).

Merton's (1938) strain theory also suggests that there will be a positive relationship between economic distress and crime. The dissonance between culturally ascribed goals and avenues for achieving them, in Merton's terms, gives rise to a different kind of social disorganization: anomie. He claimed that the institutionalized means of obtaining culturally prescribed goals are not equally available to all members of society, asserting that the structural inconsistencies between the material goals in society and the opportunities for achieving them could lead to a number of behavioral responses. One such response was innovation, where the goals of society are accepted but the institutional means for achieving them are not. Thus, "innovators" are likely to engage in law-breaking or deviant behavior to achieve culturally prescribed goals (e.g., wealth, success). Applying strain theory to the context of deteriorating economic conditions would lead one to predict a disproportionate number of innovators in economically deprived areas, thus leading to higher crime rates.

Aside from social disorganization and anomie theories, many criminologists, including Chambliss (1975, 1988, 1993), Chambliss and Seidman (1971), Quinney (1973, 1977), Spitzer (1975), and Taylor, Walton, and Young (1973), took up the task of developing a Marxist perspective that examined the relationship between economic conditions and crime. Young (1997), for example, has argued that the social and economic conditions favorable to street crime include such things as high unemployment rates and an individualistic ethos for righting perceived social injustices. Currie (1985, 1993) notes that unemployment, subemployment, and the lack of meaningful job opportunities lead to despair and hopelessness among many in the labor market. "Disinvestment" from the labor market that resulted from deindustrialization contributed greatly to the criminogenic environment in the inner cities.

Recently, however, Currie (1997) has expanded his work and points more forcefully in the direction of the political economy as a criminogenic factor. He writes,
In market society, all other principles of social organization become subordinated to the over-arching one of private gain. Alternative sources of livelihood, social support, and cultural value—even personal identity—become increasingly eroded or obliterated. And as a result, individuals, families, and communities are increasingly dependent on what we somewhat misleadingly call the "free" market to provide for their human needs—not only material needs but cultural, symbolic, and psychic needs as well. (p. 37)

From this, Currie (1997) goes on to argue that market society is criminogenic because it increases inequality, destroys the autonomy of local communities, fragments the family, and magnifies a culture of Darwinian competition by urging levels of consumption that cannot be supported.

Theoretical Common Ground and Beyond

Social disorganization, anomie, and Marxian/critical theories all suggest that as economic conditions deteriorate, crimes will increase. Implicit in them is a rational-choice model of behavior in which adverse economic conditions increase the propensity of individuals to better themselves economically, either because of the cultural overemphasis on material wealth or an economic hardship imposed on the individual or both.

However, they do offer us considerable insight into violent crime as well. Most violent crimes (except robberies and assaults or homicides related to drug trafficking) do not have economic gain as their motivation. Thus, many have suggested that violent crimes are not economically motivated and therefore violence is a nonrational response to affective states (viz., anger, frustration, and the need for dominance) best understood as learned in the context of the family (Widom, 1996) or wider culture (Pepinsky, 1991; Tifft, 1993).

Although it is true that interpersonal acts may not best be understood as economically motivated, Blau and Blau (1982) have noted that the high levels of frustration caused by structured inequality may lead to affective states that cause (expressive) violence as well. Severely deteriorated economic conditions (absolute deprivation) may serve to increase instrumental violence as well. As Kovandzic et al. (1998) stated, "rising inequality may motivate some individuals to take part in the illegal drug trade,
which is associated with high rates of violent crime, particularly when high participation rates increase competition for territory” (p. 571).

Most criminologists would point out that not everyone feeling the pains of economic distress commits violent crime, whether the act be instrumental or expressive. However, many have pointed out that violent crimes—including homicide—are more concentrated in urban areas that are economically disadvantaged (see Currie, 1985, 1993; Messner, 1989; Wilson, 1987, 1996).

Deindustrialization: A Prelude to Economic Distress and Increased Crime Rates

Over the past 25 years, there have been major structural changes in the U.S. economy and the manner in which U.S.-based corporations do business. Some have described this trend as the globalization of capital, the deindustrialization of America, or the second industrial revolution (Niemark, 1992).

As Rodwin (1989) suggests, the corporate practice of closing plants and shifting capital from one region to another has been a long-accepted strategy for dealing with market swings. Businesses and capital have always moved both interregionally and intraregionally, dating all the way back to the early 19th century. However, according to Bluestone (1987a), the recent economic “turbulence” of shifting the locus of production went far beyond the ordinary shifting of our market system. What alarmed Bluestone and others was the accelerating pace of these changes and that workers who were being displaced in the auto, aircraft, and steel industries were suffering permanent income losses over time (i.e., high-paying jobs were lost and not replaced). Whereas many displaced workers were unable to find high-paying jobs lost to deindustrialization, other workers were sporadically employed as overall unemployment rates continued to rise during the late 1970s and through the 1980s. Thus, Perrucci, Perrucci, Targ, and Targ (1988) argue that deindustrialization caused structural unemployment rates to increase.

Shifting capital and resources from one region to another has had a greater negative impact on declining regions such as the Northeast and Midwest (Rodwin, 1989). The arguments set forth by Bluestone and Harrison (1982), Perry (1987), and Rodwin
(1989) all suggest that whereas deindustrialization posed social and economic problems for the nation as a whole, the effects were much greater in the Rustbelt. For example, Markusen and Carlson (1989) note that although the rest of the nation’s manufacturing industries recovered somewhat from the recession of the early 1980s, the Midwest did not. Between 1979 and 1986, the nation’s manufacturing employment had decreased by 10%, whereas the Midwest’s declined by more than 17% (Markusen & Carlson, 1989). Furthermore, Bluestone’s (1987a) analysis demonstrates that Michigan had lost 22.8% of its transportation manufacturing employment by the mid-1980s. Whereas some major cities were relatively insulated from this trend because their economies were more diversified, some large cities such as Detroit and Chicago are only now beginning to recover from the loss of core manufacturing jobs during the 1980s. Midsized cities, such as Flint, Michigan, and Youngstown, Ohio, may be less likely to recover from their loss of manufacturing employment.

Deindustrialization and Homicide

There have been few studies concerned with the link between deindustrialization and homicide, and the few that exist have focused exclusively on large cities (i.e., cities with at least 100,000 residents). White (1999) examined the effects of deindustrialization on crime rates in the 100 largest U.S. cities. He found that the decline in manufacturing jobs and rising unemployment from 1970 to 1990 were positively associated with burglary and robbery rates but not homicide. However, Shihadeh and Ousey (1998) were able to identify an indirect link between the availability of low-skill jobs (including manufacturing jobs) and urban homicide via economic deprivation.

Deindustrialization and the structural economic downturns of the 1970s (i.e., inflation, the recessions of the early 1980s, and wage stagnation) created a context where many previously stable communities began a downward spiral. Thus, based on the theoretical arguments above, we would expect the severe economic distress experienced by Rustbelt cities resulting from deindustrialization would create a context in which crime—particularly homicide—is more likely. The social problems stemming from deindustrialization have been well documented in the literature and include
increased unemployment (Bluestone, 1987b; Bluestone & Harrison, 1982; Rodwin, 1989; Wilson, 1987, 1996), out-migration and net population declines (Ferry, 1987), and increases in concentrated poverty (Sampson & Wilson, 1995; Wilson, 1996). We turn to four factors in particular—unemployment, population decline, elasticity, and deprivation—for further specification of the relationship between deindustrialization and homicide.

Unemployment. One of the most important indicators of economic distress is unemployment. The attempt to link increasing homicide and other crime rates to high unemployment rates has a fairly long history in the criminological literature. One of the most frequently cited studies is that of Brenner (1976), who found that a 1% increase in national unemployment rates during a 6-year period caused an additional 648 homicides and 3,300 additional state prison admissions.

Cantor and Land (1985) examined the unemployment-crime (hereafter U-C) relationship between 1946 and 1982 using annual national-level unemployment and crime data. Theorizing that criminal motivation and criminal opportunity may be countervailing forces, Cantor and Land found a small but significant partial negative effect of unemployment on five of the seven index crimes they studied, including homicide. Devine, Sheley, and Smith (1988) examined annual time-series data from 1948 to 1985. Using national-level unemployment data and crime rates in their analysis, they found a positive U-C relationship for the crimes of robbery and homicide. Conversely, Corman and Joyce (1990) found that unemployment rates had no statistically significant effects on the crime rates in their study, including homicide. As Chiricos (1987) noted, the U-C relationship is essentially positive, except for assault . . . and produces substantially more significant/positive results than significant/negative. In general the relative frequency of positive and significant findings is highest for property crimes, particularly burglary and larceny. It is lowest for assault and murder. (p. 193)

Nevertheless, given the time period we examine in this study and the economic portrait of the Rustbelt region painted by observers, we expect to find that unemployment rates will be positively asso-
associated with homicide for the reasons described in the theoretical background.

Population decline. A second factor that characterizes the impact of deindustrialization on U.S. cities is population turnover, particularly the net loss of residents. Stemming from social disorganization theory, the argument goes that residential mobility in a community will have a destabilizing effect on the ability of a community to organize. Thus, the power of informal social controls to inhibit crime in that community is diminished (Shaw & McKay, 1942). In the years since Shaw and McKay’s work, mobility has come to be operationalized as population turnover, or in-migration to and out-migration from communities (Bursik & Webb, 1982). Communities, particularly urban neighborhoods, with high residential turnover are expected to have higher rates of crime and delinquency.2

Beyond the neighborhood level, there has been very little research attention paid to the possible effects of population turnover on homicide or any other type of crime. Furthermore, much of the attention to this topic has been trained on the statistically positive effects of in-migration on crime rates (e.g., Crutchfield, Geerken, & Gove, 1982). One study by South (1987) addressed the effects of both population in- and out-migration on violent crime in general as well as other social problems in 292 U.S. metropolitan areas. Comparing out- to in-migration, South (1987) reasoned that “it is equally plausible . . . that rapid out-migration also reduces the degree of urban social integration, insofar as out-migrants withdraw from existing networks in the community of origin” (p. 6). Despite this reasoning, he found that (a) in-migration, and not out-migration, was a significant (and positive) predictor of violent crime rates and (b) neither in-migration nor out-migration were significantly associated with homicide and motor vehicle theft (South, 1987, footnote 4).

Given that no studies have examined the effects of population turnover on crime using cities as units of analysis and the general paucity of research in this area, we argue that population change—specifically, population decline from 1980 to 1995—will be positively associated with homicide rates in these cities.
Elasticity. Yet another problem arising from deindustrialization, also related to the concentration of poverty in Rustbelt cities, has to do with what Rusk (1993) calls a city’s elasticity. Elasticity refers to the ability of a core city to successfully expand (i.e., create suburbs) either through annexation or consolidation. Inelastic cities are those that have become unable to sustain geographic growth. They experienced little or no growth (between 1950 and 1990) and are highly dense in population. They also tend to be older cities with highly concentrated poverty, declining population (although population may be increasing in the metropolitan area), severe racial segregation, and a chasm between the per capita incomes of those living in the core city and those living in the suburbs. Rusk argues that some of these cities have passed the point of “no return,” where they are no longer seen as a viable place for either investment or job creation (interestingly, all but one of these cities is located in the Rustbelt region). These no-return cities, in short, lose out to their suburbs economically. Parallel to Wilson’s (1987) argument, Rusk (1993) claims that the concentrations of minority poverty in these core cities arise from both the loss of high-paying manufacturing jobs and White and minority middle-class flight to the suburbs and other areas.

Clearly, a characteristic related to deindustrialization, elasticity has not yet been operationalized in the criminological literature. However, a closely related variable, population density, has been found to be positively related to homicide at the city (McCarthy, Galle, & Zimmerman, 1975) and county level (Kposowa, Breault, & Harrison, 1995). Therefore, we expect that a city’s elasticity level will vary inversely with homicide.

Deprivation. Although there is strong theoretical reason to believe the three previously mentioned factors would cause homicide rates to increase (particularly in places further distressed by deindustrialization), it is not clear whether these effects would be direct or mediated by another important structural covariate of homicide: deprivation. Others have found a measure of resource deprivation/affluence to have a statistically significant and positive effect on homicide rates at the city, standard metropolitan statistical area (MSA), and state level (Land, McCall, & Cohen, 1990). Deprivation is typically measured as an index composed of the proportion of residents living in poverty, the proportion of Black
residents, and some measure of family structure (e.g., the proportion of female-headed households). Theoretically, it is likely that the total effects of unemployment, population change, and inelasticity on homicide are both direct and partially mediated by deprivation. As noted above, research by Shihadeh and Ousey (1998) found an indirect link between the availability of low-skill and blue-collar jobs and homicide rates through economic deprivation. Having already discussed the previous research on the effects of unemployment rates, population change, and inelasticity on homicide, we focus here on how these effects may be mediated by deprivation.

The beginning point for any discussion of the ways in which unemployment, population change, inelasticity, and deprivation are theoretically likely to increase homicide rates in deindustrialized cities is Wilson (1987, 1996). Wilson has documented how the loss of inner-city industrial jobs has been particularly hard on African Americans; as industry has moved from one region to another, African Americans have been disproportionately left behind in the exodus of working-class and middle-class minorities and Whites. Wilson (1987) noted that the populations of the five largest cities in the United States (i.e., New York, Chicago, Los Angeles, Philadelphia, and Detroit) decreased by 9% between 1970 and 1980. However, although the populations of these cities decreased, the poverty population increased 22%. As Wilson’s (1996) most recent work demonstrates, this trend has continued; he noted that “Chicago had a 61.5% increase in the number of ghetto census tracts from 1980 to 1990 even though the number of poor residing in those areas increased only slightly” (p. 14).

It is not only that the number of poverty census tracts has increased that is cause for alarm. The problem, as Wilson (1996) sees it, has to do with the transformation of previously mixed-income areas to poverty census tracts, the net effect of which is a growing concentration of impoverished minorities in inner-city areas. These concentration effects are, according to Sampson and Wilson (1995),

reflected in a range of outcomes from degree of labor force attachments to social deviance, [and] are created by the constraints and opportunities that the residents of inner-city neighborhoods face in terms of access to jobs and job networks, involvement in quality
schools, availability of marriageable partners and exposure to conventional role models. (p. 43)

In sum, then, it is likely that unemployment, population change, and elasticity may well affect homicide rates through deprivation. Figure 1 is a path model that represents the theoretical relationships of the structural covariates in our study. Given the prior research in this area as well as the theoretical work of others, we propose that the high unemployment rates, zero or low elasticity, and population loss experienced by deindustrialized cities are likely to have both direct and indirect effects on homicide rates. As we noted earlier, some prior research has demonstrated that unemployment rates may cause homicide rates to increase. At the same time, however, there is sound reason to believe that chronic unemployment rates—particularly those caused by deindustrialization—are likely to not only increase homicide rates directly but also to exacerbate the problems of deprivation (which would, in turn, also have an effect on homicide rates). Frictional or short-term unemployment is probably less likely to increase deprivation or to increase the "concentration effects" of economic distress; however, as Wilson (1996) has observed, deindustrialization has caused chronic unemployment rates in some cities, which in turn has greatly increased deprivation. Building on Wilson's (1987, 1996) work, we contend that such indirect effects are likely in the cities in the present study.

DATA AND METHOD

City Selection and Variables

Our study focuses on midsized cities in the Rustbelt region of the United States and the general effects of deindustrialization on homicide rates in the 1980s and 1990s. We identified all central cities in the Northeastern and Midwestern regions of the United States that were categorized by Rusk (1993, Tables A-2 and A-3) by their elasticity scores. We excluded all cities with 1990 populations of more than 150,000 or less than 25,000, which resulted in a total of 131 cities. The upper bound distinguishes midsized cities from large and very large places; the lower bound of 25,000
is used, first, to exclude small cities and, second, because some data are not available for cities with populations below 25,000. We chose to examine four time points over this period—1980, 1985, 1990, and 1995—primarily based on the availability of data for these years.

We obtained our measurement of the outcome variable, homicide, from offense statistics in the Uniform Crime Reports (Federal Bureau of Investigation, 1980, 1981, 1982, 1985, 1986, 1987, 1990, 1991, 1992, 1995, 1996, 1997). For each of our four time points, we constructed rates (per 100,000) for the year and its two adjacent years (e.g., 1979 and 1981 for 1980) and then averaged the rates to control for year-to-year fluctuations in murder counts (e.g., Shihadeh & Maume, 1997). Including these adjacent time points also helps to offset the lag between measurement points. We continued our filtering by dropping from our study city-years missing data on homicide for more than 2 years out of any 3-year series as well as the other time points for that city. This resulted in a remainder of 86 cities, or 344 city-years.4

Four key variables in our analysis are associated with the distressing effects of deindustrialization discussed above. The first is socioeconomic deprivation, which we employ as an operationalization of economic distress. We measure deprivation with an
index composed of several highly intercorrelated indicators (see Appendix A). The first, poverty, is the percentage of city residents whose income is below the federal poverty level. We also included the percentages of Black residents and single female–headed households in the index. Because these structural measures were necessary to adequately measure deprivation and were available from decennial census data only, we chose to impute 1980 data for 1985, and 1990 data for 1995, to retain the data set for our pooled analysis (described below). Our index is quite similar to the resource-deprivation/affluence component identified by Land et al. (1990) as a significant predictor of homicide rates at the city level of analysis. Similar to Land and colleagues, we determined through a preliminary principal components analysis that neither the unemployment nor the divorce rate (described below) empirically “hung together” with the three present index components. For the sake of clarity, we decided to retain the conventional index (the mean of the three measures) rather than employ the factor-score index (Cronbach’s $\alpha = .71$).

Our other three key variables are employed as predictors of both deprivation and homicide. Unemployment is a measure of the percentage of the labor force that was unemployed for each of the time points. Our source for unemployment rates is the county and city data books published by the U.S. Bureau of the Census.\textsuperscript{5} The status of elasticity among our cities is based on Rusk’s (1993) scale, which is a composite of city expansion (or lack of expansion) between 1950 and 1990 and population density (population per square mile). Rusk’s scale is relative in that a city’s elasticity score is based on a ranking compared with other U.S. central cities. Although elasticity may range from zero (1) to hyper (5), we found that, with the exception of a few cities, all of our Rustbelt cities were calculated as having zero (46%), low (29%), or medium (25%) elasticity. To track changes in population in severely distressed cities, we measured raw population change by subtracting each city’s estimated 1995 population from its 1980 population. Thus, large values for this measure indicate a greater gross decline in population during the 16-year study period.\textsuperscript{6}

We control for a number of variables proven to be significant in the structural homicide literature (Land et al., 1990; Parker, McCall, & Land, 1999). We obtained the 1990 population of each
central city’s corresponding MSA. These numbers were then collapsed into a dummy variable indicating 1 if the city was located within a large MSA (greater than 200,000 residents) in 1990 and 0 if in a smaller MSA. Almost 80% of the cities were located in a large MSA in 1990. We also measured each city’s population for all four time points. Finally, we controlled for divorced residents for each city (using the imputation described above for 1985 and 1995). After dropping one city due to missing unemployment data, 85 cities remained for the analysis below (see Appendix B).

Analytical Strategy

Our analysis proceeds from a descriptive analysis of homicide trends to a multivariate analysis of homicide rates, for which we pooled our data set of Rustbelt cities across time ($N = 85 \times 4$ time points, or 340 city-years). For the multivariate analysis, we employed a type of pooled time-series analysis called least squares dummy variable (LSDV) regression, which is useful in explicitly modeling time effects along with relevant theoretical covariates. Whereas other time-series models require a large number of time points, LSDV is useful when, as is the present case, interest is focused on a period covering relatively few time points (Sayrs, 1989). We estimate indirect effects in these models following the method used by Shihadeh and Ousey (1998), who used the following formula:

$$\lambda_{xy} = (\beta_{xz} \times \beta_{zy})$$

where $\lambda_{xy}$ is the indirect effect of an independent variable $x$ on an endogenous variable $y$ (in this case, homicide). This effect is a product of the standardized regression coefficients produced among $x$, $y$, and a potential mediator variable, $z$. $\beta_{xz}$ is the standardized parameter estimate in a model where exogenous variable $x$ (e.g., unemployment) predicts an endogenous variable $z$ (deprivation), with relevant controls. $\beta_{zy}$ is the standardized parameter estimate in a final model where endogenous variable $z$ (deprivation) predicts $y$ (homicide), again with relevant controls. The formula used to derive $t$ ratios for indirect effects (for significance testing) is described elsewhere (most recently in Raudenbush and Sampson, 1999).
FINDINGS

The first task in our analysis was to chart the trend in homicide rates for our cities over the time period of interest. For purposes of comparison, we gathered homicide data for the same time period on the 20 largest cities in the United States in 1990 and the nation. As expected, the homicide rate trends for the nation as a whole and the 20 largest cities, although not the rates themselves, are fairly similar. As Figure 2 indicates, both the 20 largest cities and the nation as a whole saw homicide rates decline between 1980 and 1985, with a marked increase between 1985 and 1990. Between 1990 and 1995, the average homicide rate in the 20 largest cities dropped from 27.7 (offenses per 100,000) to 23.3 or 16%, and the U.S. homicide rate of 9.4 in 1990 dropped to 8.2 in 1995—a decline of about 13%.

The homicide rates in Rustbelt cities, however, show a pattern that is different from both the largest cities and the nation as a whole. Looking again at Figure 2, two findings are discernable. First, the average homicide rate among Rustbelt cities rose above the national average between 1985 and 1990 and remained higher than the country from 1990 to 1995. Second and more relevant to the arguments made in this article, the mean homicide rate for Rustbelt cities does not decline as sharply compared with the United States or the 20 largest cities. In fact, the trend line for distressed cities between 1990 and 1995 is fairly flat, showing only a 4.3% increase (9.4 to 9.8).

The homicide data presented in Table 1 shed some additional light on this trend. Specifically, it is significant that in all years, the standard deviations for these cities’ homicide rates are greater than the mean rates themselves, especially in 1995. Combining data for all four time points results in an average rate of 8.52 and a standard deviation of 10.57. This demonstrates the great deal of variation among these cities in the murder rate. For instance, in 1995, East Lansing, Michigan, Leominster, Massachusetts, and six other cities had no murders, whereas at the other end of the distribution, Gary, Indiana, skewed the mean with almost 90 murders per 100,000 population. In fact, ignoring our 3-year averages momentarily, we find that Gary topped the 20 largest cities in the single year of 1995 with its homicide rate of 112 per 100,000 (for comparison, Washington, D.C.’s rate was 69.4).
Turning to population, there was a modest average gross decline in residents of these cities from 1980 (68,100 people) to 1995 (66,800 people). Looking at the measure of population change, the raw difference in population between 1980 and 1995
shows that the average loss of residents in these cities was 1,360. But the standard deviation of more than 7,000 indicates a great deal of variation among severely distressed cities. At the positive end of the distribution, Bloomington, Indiana, experienced a gross increase of 11,247 residents during the period; at the negative end, Gary, Indiana, had a gross loss of 36,856 in the 16-year period—almost one quarter of its 1980 population.

Unemployment rates during the study period, starting at a high of 8.5% in 1980, drop to a low of 7% in 1990 and then increase only slightly to 7.1% in 1995. As in Figure 2, Figure 3 compares trend lines among severely distressed cities, the national average, and the 20 largest cities in 1990, with the focus here on unemployment rates. As Figure 3 shows, unemployment rates for all three aggregates decrease through the 1980s, but the rate for Rustbelt cities stays well above both the rates for the largest cities and the United States as a whole. Interestingly, the slight upturn in unemployment from 1990 to 1995 observed for Rustbelt cities is inflated in the 20 largest cities.

One point to keep in mind in observing these trends is that the unemployment rate measures the percentage of workers in the labor force who are unemployed but are actively looking for
work. Missing from these data are "discouraged workers" who for various reasons are no longer an active part of the labor force. Thus, the unemployment rate is actually a conservative estimate of true unemployment in a market society such as the United States. To the extent that individuals are disinvested to a greater degree from the job-seeking process due to deindustrialization, the standard measure of unemployment may be an especially restrained estimate in severely distressed communities (Currie, 1993). In other words, the gap between average unemployment in Rustbelt cities and the United States as a whole may be even greater than that displayed in Figure 3.

A final look at the descriptive statistics in Table 1 reveals the mean levels of deprivation and its components in 1980 and 1990 (recall that these respective values are imputed for 1985 and 1995). We thought it important to include the component indicators of deprivation because one observes increases in both the percentages of Black residents and poor residents in the 85 cities between 1980 and 1990; but over that same time, we see a decline in the percentage of single female-headed households.

Table 2 presents the results of the pooled regression models linking deindustrialization to homicide rates in Rustbelt cities. The coefficients on the left side of the table are those estimated from a model regressing the deprivation index on all exogenous variables; the right side of the table presents estimates for the regression model predicting homicide, which includes all of the variables in the study. We report standardized and unstandardized estimates and variance inflation factors. These latter coefficients indicate that there is no multicollinearity among the independent measures.

Looking first at the estimates for deprivation, it is not surprising to find that the strongest predictor of economic distress in these cities is unemployment ($\beta = .291, p < .001$). The other two key variables in our study—elasticity and population change—are also significantly related to deprivation. Thus, it appears that Rustbelt cities that are less elastic and experienced population loss from 1980 to 1995 are more likely to have been characterized by deprivation over this time period.

Our remaining task in the analysis is to extend the hypothesized model to homicide rates. Due to the positive skew in the distribution of homicide among these cities, we added a constant and
TABLE 2

<table>
<thead>
<tr>
<th></th>
<th>Deprivation Index</th>
<th>Homicide</th>
<th>Indirect Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>b</td>
<td>Beta</td>
<td>VIF</td>
</tr>
<tr>
<td>Elasticity (ref. = Zero)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>-.3358</td>
<td>-.205**</td>
<td>1.23</td>
</tr>
<tr>
<td>Medium</td>
<td>-.3409</td>
<td>-.196**</td>
<td>1.28</td>
</tr>
<tr>
<td>Large MSA</td>
<td>.530</td>
<td>.030</td>
<td>1.29</td>
</tr>
<tr>
<td>Population</td>
<td>4.78E-05</td>
<td>.203**</td>
<td>1.21</td>
</tr>
<tr>
<td>Population change</td>
<td>2.208E-04</td>
<td>.209**</td>
<td>1.84</td>
</tr>
<tr>
<td>Unemployment</td>
<td>.715</td>
<td>.291**</td>
<td>1.63</td>
</tr>
<tr>
<td>Divorce</td>
<td>.859</td>
<td>.264**</td>
<td>1.78</td>
</tr>
<tr>
<td>Deprivation Index Year (ref. = 1995)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1980</td>
<td>1.141</td>
<td>.066</td>
<td>2.01</td>
</tr>
<tr>
<td>1985</td>
<td>1.448</td>
<td>.084</td>
<td>1.91</td>
</tr>
<tr>
<td>1990</td>
<td>.035</td>
<td>.002</td>
<td>1.49</td>
</tr>
<tr>
<td>Constant</td>
<td>-2.07</td>
<td></td>
<td>-0.57</td>
</tr>
<tr>
<td>Adjusted R²</td>
<td>.51</td>
<td></td>
<td>.72</td>
</tr>
</tbody>
</table>

MSA = Metropolitan statistical area. VIF = variance inflation factor. *p ≤ .05. **p ≤ .01.

logged the rates before modeling them. Overall, the model explains 72% of the variation in homicide rates during the 16-year time period.⁸

Looking first at elasticity, it appears that cities with zero elasticity produce higher homicide rates than do their low- or medium-elasticity counterparts. This finding represents a proxy for the positive effects of population density on homicides given the relatively higher density of population in cities characterized by zero elasticity. In addition, location in a large MSA also has a positive statistical impact on central-city homicides.⁹ There does not appear to be any significant effect on homicide rates due to gross population change; however, as expected, larger cities are more likely to be inflicted with relatively high murder rates than are smaller ones. This latter finding supports theoretical arguments involving the opportunities that exist for crime in large urban areas versus smaller areas (e.g., Cohen & Felson, 1979).

Skipping down Table 2 a bit, it is clearly apparent that the deprivation index is the strongest predictor in the model (β = .500, p <
.001). Although a reduced model without deprivation explained a respectable 61% of the variation in homicide, it is obvious that deprivation is both an empirically and theoretically crucial structural correlate of homicide. In addition, as we expected, deprivation either partially or fully mediates the direct effects of our other key variables in the model. For example, although unemployment shows a moderate standardized direct effect on homicide ($\beta = .101, p < .01$), the standardized indirect effect of unemployment on homicide (via deprivation) is slightly greater than its direct effect [$\lambda_{y} = \beta_{xz} (.291) \times \beta_{zy} (.500) = .146$]. More noticeable is population change, whose lack of impact on homicide is fully due to deprivation.

**DISCUSSION AND CONCLUSION**

The purpose of this study was to examine the effects of deindustrialization on small and midsized cities in the industrial Midwest and Northeast. We suggested that the adverse effects of deindustrialization on the economies of these cities would create an environment conducive to high levels of homicide rates, a general proposition supported by many otherwise competing criminological theories (i.e., strain, anomie, critical, and Marxist). Along the lines of industrial restructuring and deindustrialization theory (i.e., Bluestone, 1987a; Bluestone & Harrison, 1982; Perry, 1987), we also argued that these cities were ill equipped to buffer themselves from these larger global processes. The findings of this study generally support theoretical propositions concerning the relationships between deindustrialization, economic distress, and homicide rates in that these cities tended to experience not only more economic distress between 1980 and 1995 than other areas of the country or the nation as a whole (e.g., Bluestone, 1987a; Markusen & Carlson, 1989) but also higher homicide rates.

High unemployment rates, declining populations, and geographic location—coupled with low or zero elasticity—are all theoretically relevant proximal measures of the effects of deindustrialization. As was noted earlier, the cities in the present study had relatively high unemployment rates (compared with the nation as a whole) and experienced gross population declines
over the entire study period. For example, whereas the populations in cities such as Youngstown, Ohio, declined at alarming rates (upwards of 25%) during the study period, the population for the nation as a whole increased 17% (U.S. Department of Housing and Urban Development, 1999).

In addition, although the homicide rates for the nation as a whole and the 20 largest cities in the United States declined from 1990 to 1995, they remained relatively stable (and high compared with the national average) in Rustbelt cities. Although some studies have failed to support the contention that increases in unemployment cause homicide rates to rise, the present study suggests that this relationship exists in Rustbelt cities, both directly and through deprivation.

Although large central cities experience economic difficulties, they appear to be significantly better off than their small and midsized counterparts (U.S. Department of Housing and Urban Development, 1999). In addition, many of the most distressed cities are not large metropolitan areas. In many cases, large cities are better able to buffer themselves from changes in the larger economy than are small and midsized cities, which is reflected in unemployment and poverty rates that are lower than their small and midsized counterparts (U.S. Department of Housing and Urban Development, 1999).

We would also note that the significant effects of unemployment and deprivation in the present study may be due to historical contingency. As Chiricos (1987) and Carlson and Michalowski (1997) have noted, empirical tests of the U-C relationship are more likely to be significant and positive during different times. Carlson and Michalowski (1997) suggest that

accumulated research evidence regarding the U-C relationship suggests that it is sensitive to the time frame analyzed. Second, if the U-C relationship is indeed historically contingent, that fact might explain the contradictions in current findings by showing how this relationship could be positive, negative, or null, depending on the time period measured [italics added]. Third, and most important, developments in political economic theory regarding social structures of accumulation (SSAs) point to the possibility that the relationship between unemployment and crime is affected by distinct but transitory configurations of social institutions characteristic of different stages of economic development [italics added]. (p. 212)
We would stress that the time period of our study coincides with a rapidly changing economic environment marked by deindustrialization, high inflation, stagnating wages, and increased poverty. It may well be the case that because the cities in the present study were more devastated by the process of deindustrialization during the 1980s, the relationship between unemployment (both directly and through deprivation) and homicide is positive and statistically significant.

Turning to population, the small and midsized cities in the present study experienced much greater losses in gross population than the largest cities. Rapid and steady population decline creates many potential problems for cities, including decreasing property values (Rodwin, 1989), income inequality between the central city and suburbs (Rusk, 1993), and increased social disorganization (Shaw & McKay, 1942). In short, population loss is likely to increase a myriad of other social problems or “concentration effects” (Wilson, 1987). Although the findings in the present study do not coincide with those of South (1987), it may well be that the relationship between gross population decline and economic distress is reciprocal (i.e., population decline is both a cause of and symptom of economic distress). In other words, it may be that rapid population decline only exacerbates and creates new forms of economic distress for those residents of severely distressed cities who are left behind (e.g., high levels of structural unemployment and increased deprivation).

Although the findings of this study support many theoretical linkages between economic distress and homicide in the criminological literature, it is difficult to parcel out the effects on entire cities versus particular areas within them that may have even more problems. Much of the theorizing in social disorganization, for example, would suggest that the effects of economic distress on homicides are potentially higher in certain neighborhoods within these distressed cities (e.g., Krivo & Peterson, 1996; Shaw & McKay, 1942). Unfortunately, the data used in the present study do not allow us to examine this relationship.

In addition, we would caution that our comparisons of the similarities and differences in the mechanisms producing homicide rates in small and midsized versus large cities are only suggestive. Further research should be conducted to more fully test the present model among a wide range of cities affected by deindustriali-
zation. In the future, researchers examining the relationships between various forms of economic distress (e.g., unemployment and deprivation) and homicide must also be cognizant of the potential effects of larger economic processes on different geographic areas. For example, although deindustrialization created various social problems in the Rustbelt region (e.g., population change, high rates of homicide), what has not been examined is whether other regions such as the West have been affected in the same manner by deindustrialization. Finally, as we have shown in the present study, much is lost when only focusing on the largest cities that may be qualitatively and quantitatively different from their smaller counterparts.

**APPENDIX A**

Zero-Order Correlations for Selected Variables in the Study

<table>
<thead>
<tr>
<th></th>
<th>Homicide</th>
<th>Population</th>
<th>Unemployment</th>
<th>Divorce</th>
<th>Poverty</th>
<th>Blacks</th>
<th>Female Households</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homicide</td>
<td>—</td>
<td>.50</td>
<td>.60</td>
<td>.42</td>
<td>.66</td>
<td>.90</td>
<td>.81</td>
</tr>
<tr>
<td>Population</td>
<td>.37</td>
<td>—</td>
<td>.16</td>
<td>.17</td>
<td>.26</td>
<td>.45</td>
<td>.40</td>
</tr>
<tr>
<td>Unemployment</td>
<td>.56</td>
<td>.27</td>
<td>—</td>
<td>.44</td>
<td>.59</td>
<td>.54</td>
<td>.62</td>
</tr>
<tr>
<td>Divorce</td>
<td>.32</td>
<td>.03</td>
<td>.37</td>
<td>—</td>
<td>.15</td>
<td>.39</td>
<td>.71</td>
</tr>
<tr>
<td>Poverty</td>
<td>.67</td>
<td>.22</td>
<td>.57</td>
<td>.37</td>
<td>—</td>
<td>.71</td>
<td>.83</td>
</tr>
<tr>
<td>Blacks</td>
<td>.85</td>
<td>.39</td>
<td>.50</td>
<td>.31</td>
<td>.67</td>
<td>—</td>
<td>.85</td>
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<tr>
<td>Female households</td>
<td>.79</td>
<td>.33</td>
<td>.67</td>
<td>.48</td>
<td>.82</td>
<td>.81</td>
<td>—</td>
</tr>
</tbody>
</table>


**APPENDIX B**

Cities Represented in the Study

<table>
<thead>
<tr>
<th>City</th>
<th>Elasticity</th>
<th>City</th>
<th>Elasticity</th>
</tr>
</thead>
<tbody>
<tr>
<td>85 Rustbelt Cities</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Bridgeport, CT</td>
<td>Zero</td>
<td>Muskegon, MI</td>
<td>Zero</td>
</tr>
<tr>
<td>Bristol, CT</td>
<td>Low</td>
<td>Port Huron, MI</td>
<td>Low</td>
</tr>
<tr>
<td>Danbury, CT</td>
<td>Medium</td>
<td>Saginaw, MI</td>
<td>Zero</td>
</tr>
<tr>
<td>Hartford, CT</td>
<td>Zero</td>
<td>Atlantic City, NJ</td>
<td>Zero</td>
</tr>
</tbody>
</table>
APPENDIX B Continued

<table>
<thead>
<tr>
<th>City</th>
<th>Elasticity</th>
<th>City</th>
<th>Elasticity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meriden, CT</td>
<td>Low</td>
<td>Camden, NJ</td>
<td>Zero</td>
</tr>
<tr>
<td>Middletown, CT</td>
<td>Low</td>
<td>Hoboken, NJ</td>
<td>Zero</td>
</tr>
<tr>
<td>Milford, CT</td>
<td>Zero</td>
<td>New Brunswick, NJ</td>
<td>Zero</td>
</tr>
<tr>
<td>New Haven, CT</td>
<td>Zero</td>
<td>Paterson, NJ</td>
<td>Zero</td>
</tr>
<tr>
<td>New London, CT</td>
<td>Zero</td>
<td>Perth Amboy, NJ</td>
<td>Zero</td>
</tr>
<tr>
<td>Norwalk, CT</td>
<td>Zero</td>
<td>Trenton, NJ</td>
<td>Zero</td>
</tr>
<tr>
<td>Norwich, CT</td>
<td>Zero</td>
<td>Vineland, NJ</td>
<td>Medium</td>
</tr>
<tr>
<td>Stamford, CT</td>
<td>Low</td>
<td>Jamestown, NY</td>
<td>Zero</td>
</tr>
<tr>
<td>Waterbury, CT</td>
<td>Low</td>
<td>Niagara Falls, NY</td>
<td>Zero</td>
</tr>
<tr>
<td>Elgin, IL</td>
<td>Medium</td>
<td>Poughkeepsie, NY</td>
<td>Zero</td>
</tr>
<tr>
<td>Rockford, IL</td>
<td>Medium</td>
<td>Rome, NY</td>
<td>Low</td>
</tr>
<tr>
<td>Springfield, IL</td>
<td>Medium</td>
<td>Schenectady, NY</td>
<td>Zero</td>
</tr>
<tr>
<td>Bloomington, IN</td>
<td>Zero</td>
<td>Troy, NY</td>
<td>Zero</td>
</tr>
<tr>
<td>Elkhart, IN</td>
<td>Medium</td>
<td>Utica, NY</td>
<td>Zero</td>
</tr>
<tr>
<td>Gary, IN</td>
<td>Medium</td>
<td>White Plains, NY</td>
<td>Low</td>
</tr>
<tr>
<td>Hammond, IN</td>
<td>Zero</td>
<td>Barberton, OH</td>
<td>Low</td>
</tr>
<tr>
<td>Kokomo, IN</td>
<td>Low</td>
<td>Canton, OH</td>
<td>Zero</td>
</tr>
<tr>
<td>Lafayette, IN</td>
<td>Low</td>
<td>Hamilton, OH</td>
<td>Low</td>
</tr>
<tr>
<td>Mishawaka, IN</td>
<td>Medium</td>
<td>Lima, OH</td>
<td>Zero</td>
</tr>
<tr>
<td>New Albany, IN</td>
<td>Medium</td>
<td>Lorain, OH</td>
<td>Medium</td>
</tr>
<tr>
<td>South Bend, IN</td>
<td>Medium</td>
<td>Mansfield, OH</td>
<td>Low</td>
</tr>
<tr>
<td>Terre Haute, IN</td>
<td>Medium</td>
<td>Massillon, OH</td>
<td>Medium</td>
</tr>
<tr>
<td>Cambridge, MA</td>
<td>Zero</td>
<td>Springfield, OH</td>
<td>Low</td>
</tr>
<tr>
<td>Fall River, MA</td>
<td>Zero</td>
<td>Youngstown, OH</td>
<td>Zero</td>
</tr>
<tr>
<td>Fitchburg, MA</td>
<td>Low</td>
<td>Allentown, PA</td>
<td>Low</td>
</tr>
<tr>
<td>Gloucester, MA</td>
<td>Medium</td>
<td>Bethlehem, PA</td>
<td>Low</td>
</tr>
<tr>
<td>Leominster, MA</td>
<td>Low</td>
<td>Erie, PA</td>
<td>Low</td>
</tr>
<tr>
<td>New Bedford, MA</td>
<td>Zero</td>
<td>Harrisburg, PA</td>
<td>Zero</td>
</tr>
<tr>
<td>Northampton, MA</td>
<td>Medium</td>
<td>Pawtucket, RI</td>
<td>Zero</td>
</tr>
<tr>
<td>Waltham, MA</td>
<td>Low</td>
<td>Reading, PA</td>
<td>Zero</td>
</tr>
<tr>
<td>Westfield, MA</td>
<td>Medium</td>
<td>York, PA</td>
<td>Zero</td>
</tr>
<tr>
<td>Ann Arbor, MI</td>
<td>Medium</td>
<td>Beloit, WI</td>
<td>Low</td>
</tr>
<tr>
<td>Bay City, MI</td>
<td>Zero</td>
<td>Eau Claire, WI</td>
<td>Medium</td>
</tr>
<tr>
<td>Dearborn, MI</td>
<td>Zero</td>
<td>Kenosha, WI</td>
<td>Zero</td>
</tr>
<tr>
<td>East Lansing, MI</td>
<td>Low</td>
<td>La Crosse, WI</td>
<td>Medium</td>
</tr>
<tr>
<td>Flint, MI</td>
<td>Low</td>
<td>Racine, WI</td>
<td>Low</td>
</tr>
<tr>
<td>Jackson, MI</td>
<td>Zero</td>
<td>Sheboygan, WI</td>
<td>Low</td>
</tr>
<tr>
<td>Kalamazoo, MI</td>
<td>Zero</td>
<td>Wausau, WI</td>
<td>Medium</td>
</tr>
<tr>
<td>Lansing, MI</td>
<td>Medium</td>
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<td></td>
</tr>
</tbody>
</table>

20 Largest U.S. Cities

<table>
<thead>
<tr>
<th>City</th>
<th>Elasticity</th>
<th>City</th>
<th>Elasticity</th>
</tr>
</thead>
<tbody>
<tr>
<td>New York, NY</td>
<td>Zero</td>
<td>San Jose, CA</td>
<td>High</td>
</tr>
<tr>
<td>Los Angeles, CA</td>
<td>Low</td>
<td>Baltimore, MD</td>
<td>Zero</td>
</tr>
<tr>
<td>Chicago, IL</td>
<td>Zero</td>
<td>San Francisco, CA</td>
<td>Zero</td>
</tr>
</tbody>
</table>

(continued)
## APPENDIX B Continued

<table>
<thead>
<tr>
<th>City</th>
<th>Elasticity</th>
<th>City</th>
<th>Elasticity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Houston, TX</td>
<td>Hyper</td>
<td>Jacksonville, FL</td>
<td>High</td>
</tr>
<tr>
<td>Philadelphia, PA</td>
<td>Zero</td>
<td>Columbus, OH</td>
<td>Low</td>
</tr>
<tr>
<td>San Diego, CA</td>
<td>Hyper</td>
<td>Milwaukee, WI</td>
<td>Zero</td>
</tr>
<tr>
<td>Detroit, MI</td>
<td>Zero</td>
<td>Memphis, TN</td>
<td>High</td>
</tr>
<tr>
<td>Dallas, TX</td>
<td>High</td>
<td>Washington, DC</td>
<td>Zero</td>
</tr>
<tr>
<td>Phoenix, AZ</td>
<td>High</td>
<td>Boston, MA</td>
<td>Zero</td>
</tr>
<tr>
<td>San Antonio, TX</td>
<td>High</td>
<td>Indianapolis, IN</td>
<td>Medium</td>
</tr>
</tbody>
</table>

### NOTES

1. Blumstein and Rosenfeld (1998) have argued that the processes influencing homicide rates in large cities and smaller ones are numerous and complex. At the same time, however, they speculated that a single factor—the influence of “crack markets”—may explain the lagged differences between homicide rates in large and small cities. They argued that “since crack markets generally emerged first in the largest cities, and may have diffused to smaller cities at a later time, [this] could possibly account for these lagged effects. Indeed, news reports in 1997 and 1998 chronicled the escalating homicide rates in some mid-sized cities and speculated that these increases could be associated with the later emergence of crack markets and associated drug-related violence” (p. 1206). Blumstein and Rosenfeld went on to note that “subsequent data from the smaller cities over the next few years will be available to test this speculation” (p. 1207). Blumstein and Rosenfeld’s analysis found that in 1995, the homicide rates for the small cities in their study (i.e., populations 100,000 to 250,000) had started to decline. However, their analysis is unlikely to include the cities used in the present study, because only 15 of the 85 cities used in our analysis had populations above 100,000 in 1990. Nevertheless, we calculated homicide rates for the cities in the present study through 1997 and found a slight decrease beginning in 1996 and continuing in 1997. We agree with Blumstein and Rosenfeld that the influence of crack markets and its potential lagged effects on homicide rates in mid- and small-sized cities should be researched in future studies when the data are available. Manipulation of these data should allow homicide researchers to assess whether these recent declines are in fact the beginnings of a longer term trend that parallels what has happened in larger cities over the past 8 years.

2. Our review of the literature revealed an interesting line of research dealing with the effects of crime on residential turnover in neighborhoods (Bursik, 1986; Morenoff & Sampson, 1998) and central cities (Sampson & Woolard, 1986), citing crime as a “push” factor for residents to move for reasons relating to fear of victimization and weakened social integration. Although this is an avenue not followed in the analysis below, we find among our cities that the lagged effect of population change on homicide is more significant than the lagged effect of homicide on population change.

3. Prior research by Brewer and Smith (1995) has “noted the potential controversy surrounding this measure in that it combines three variables seeming to have little specific theoretical linkage” (p. 188). Like Brewer and Smith, we argue that the three factors instead...
comprise "inextricably linked conditions found to reflect the overall economic health of urban areas" (p. 188). Furthermore, these effects are intertwined with what Wilson (1987) has described as "concentration effects" (see below). In addition, the high collinearity among the measures of these variables supports the use of data reduction techniques (i.e., an additive index) in estimating our multivariate models.

4. The loss of so many cities was definitely a cause for concern and prompted us to investigate further the nature of the problem. By far, the primary reason for such a high number of missing cases was due to incomplete 1995 Uniform Crime Report data, particularly for cities in Illinois (10 out of the 17 missing in that year). In t tests comparing mean differences on all the key variables between included and excluded cities, we detected significant differences for three variables only. First, excluded cities were more likely than included cities to reside in a large MSA (94% vs. 78%). On the other hand, excluded cities were significantly smaller by an average of 13,000 residents and were more elastic. Given that no other differences were found, on the basis of our regression models below we conclude that the exclusion of these cities would not appear to compromise the conclusions of this article.

5. Data for unemployment rates in these cities were not available for 1985. For this year, we used instead the 1986 unemployment rates published in the County and City Data Book (U.S. Bureau of the Census, 1988).

6. Unfortunately, net migration data are not available at the city level. Therefore, we have no direct method for measuring out-migration (i.e., taking account of births and deaths over the 16-year period). Arguably, changing birth and death rates affect the declines in these cities. We would argue, however, that population changes in these cities are not due to such factors as higher death rates by the elderly. First, we would note that the U.S. population and the populations of most states increased during this time, which were effects of both immigration and increased longevity. Second, there is little reason to believe the cities in our study have dying populations with few births. Whatever the case may be, we would suggest, in agreement with Wilson (1996) and others, that the important theoretical point is that the populations changed over the study period, in many cases decreasing dramatically. Any rapid population decline, no matter the cause, is still likely to have depleting effects on the tax base, labor market, and the ability of communities to sustain social control.

7. We also estimated the path model depicted in Figure 1 with a structural equation model employing maximum likelihood parameter estimates (using Amos 4.0 software). Our direct and indirect effects were virtually identical to the Least Squares Dummy Variable estimates presented below, and so we decided to retain our original findings using the latter method of estimation.

8. Regression diagnostics on earlier models for deprivation and homicide revealed no significant inflationary cases (according to Cook's D coefficients); however, two city-years—New London, Connecticut-1980 and Westfield, Massachusetts-1990—were identified as outliers in an examination of the standardized residuals for the homicide model, and one outlier—Camden, New Jersey-1985—was identified in the deprivation model. Therefore, these cases are not included in the final models presented in Table 2.

9. The careful reader may have noted that the inclusion of both the metropolitan statistical area (MSA) size indicator and population is similar in some respects to the measure of city boundedness (percentage of the MSA population residing in the central city) used by Farley (1987). Based on the suggestion of a reviewer, we substituted this latter measure of boundedness for elasticity in an earlier model and found that it was not significant. Indeed, we realized that boundedness was no doubt partialed out by the former two variables. Thus, we believe that MSA size and population are an important complement to Rusk's (1993) somewhat static measure of elasticity.
REFERENCES


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