Lifting Boats Without Closing Gaps: Child Health Outcomes in Distressed US Cities From 1992–2002

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Objectives. We compared cause-specific mortality and birth rates for children and youths aged younger than 18 years in 100 US cities from 1992 through 2002.

Methods. We used 5 census indicators to categorize the 100 most populous US cities in 1990 as economically distressed or nondistressed. We used Poisson regression to calculate rate ratios for cause-specific mortality and birth rates, comparing distressed cities to nondistressed cities overall and by race/ethnicity from 1992 through 2002. We also calculated rates of change in these variables within each city over this period.

Results. Despite improvements in health for the study population in all cities, disparities between city groups held steady or widened over the study period. Gaps in outcomes between Whites and Blacks persisted across all cities. Living in a distressed city compounded the disparities in poor outcomes for Black children and youths.

Conclusions. A strong national economy during the study period may have facilitated improvements in health outcomes for children and youths in US cities, but these benefits did not close gaps between distressed and nondistressed cities. (*Am J Public Health.* 2011;101:278–284. doi:10.2105/AJPH.2010.194761)

Substantial evidence has demonstrated that city residence in the late 19th and early to mid-20th centuries was associated with high rates of injury and infectious diseases.[1–6] Researchers have noted that cities have continued to impose a health penalty on their residents, with poorer outcomes among children and youth in cities than in the rest of the United States.[7–11]

Some have argued that this penalty was associated with the period of urban decline after 1970, during which physical infrastructures deteriorated and city government services shrank. Yet a number of scholars have noted that the decline from 1970 to 1990 set cities on different demographic and economic trajectories.[12–17] In this formulation, some cities suffered substantively different qualities of economic distress. One group of cities endured ongoing "White flight," increasing crime rates, poorly performing schools, shrinking populations, an eroding tax base, and greater demand for health and social services.[18–22] A second group of cities experienced the same ills but less severely, and they were buoyed by new immigration.[23,24] These trajectories may have positioned cities differently to benefit from the economic prosperity that the United States experienced from 1992 through 2001.

Surprisingly, even within the field of urban health, little attention has been paid to the ways in which economic and population differences among cities may be associated with poorer health outcomes and racial/ethnic health disparities among cities. To be sure, investigators have extensively studied the racial/ethnic disparities that persist despite overall gains in life expectancy and in specific health indicators in the last 15 years.[25–29] However, to our knowledge, health scholars have not investigated the different trajectories of city distress as a factor explaining health disparities and urban health. Several influential studies have demonstrated that health disparities exist between Blacks and Whites within cities,[30–32] and that the health of Blacks in cities is worse than that of Blacks in rural areas.[33,34] Much recent scholarship has demonstrated that neighborhoods of concentrated poverty in cities impose an additional health disadvantage beyond that explained by a resident's individual poverty level.[35–39] The independent effects of neighborhood residence in urban areas have been documented across educational and social outcomes as well.[40–44]

We investigated the impact of different patterns of urban distress on selected mortality and birth outcomes for children and youths from 1992 through 2002. First, we assessed whether there were differences in health outcomes for children and youths in economically distressed versus nondistressed cities at the beginning of this period and whether there were racial disparities for these outcomes between different groups of cities in 1992. Next we asked whether, as the period of economic prosperity ended, all boats had risen to the same degree. That is, did improvements in health over this period narrow differences between economically distressed and nondistressed cities? Further, did disparities in health outcomes between Black and White children and youths residing in these 2 groups of cities decrease during this period? To address these questions, we investigated selected causes of mortality and birth rates for children and youths in 1992 and 2002 in 100 US cities. We also compared mortality and birth rates for Whites and Blacks in economically distressed cities versus nondistressed cities, to assess differences across this time period.

METHODS

To operationalize the construct of municipal distress, we performed a principal-components analysis using 5 census measures for each of the 100 most populous US cities in 1990[45–46]: median household income, percentage of individuals in poverty, percentage of the civilian population aged older than 16 years in the labor force, percentage of households with annual incomes greater than $75 000, and percentage of city residents who were Black and non-Hispanic. Median incomes were adjusted for the city's cost of living using 1989 ACCRA cost of living indices.[47] Missing cost-of-living indices were imputed by regressing cost of living on census measures of population size, unemployment rate,

percentage White residents, percentage college graduates, median monthly rent, median housing value, and dummies for geographic region. No adjustments were made to the measure of individuals in poverty.

We decided to include the labor force participation rate rather than the unemployment rate so we could capture the impact of discouraged workers, who are not looking for work and thus not included in unemployment-rate calculations. We also included the share of households with incomes greater than $75 000, because higher-income households provide a robust city tax base that can help address municipal problems, and they are important sources of electoral and political influence that can help secure additional funding at the state level. Finally, we included the percentage of city residents who were Black because historical discrimination against Blacks has often resulted in concentrated disadvantage in Black communities, which can in turn produce a greater need for city services. This strategy closely mirrors that of other investigators, who have constructed indices of municipal distress on the basis of similar lists of economic and demographic indicators.[14,15,47]

We used the first extracted principal component as the indicator of economic distress, which accounted for 72% of the total variance among the 5 city-level measures. City rankings ranged from Detroit, MI, as the most distressed city to Huntington Beach, CA, as the least distressed. We defined a city as "economically distressed" if it had 1 of the 30 lowest scores, and "not economically distressed" otherwise. Rankings of these cities appear in the box on this page. We also repeated the principal-components analysis using 2002 data[48,49] to test the extent to which cities had changed rankings in the 10 years from 1992 through 2002.

Numerators for mortality and birth statistics were taken from 1992 and 2002 national birth and death records.[50–53] Denominators were taken from 1990 and 2000 census data. We used direct standardization methods to construct city-specific mortality rates for children and youths aged 17 years and younger in the following categories: homicides, crash-related motor-vehicle deaths, deaths from other unintentional injuries (including fire, poisonings, drownings, and other causes), and infant mortality. These selected causes of death accounted for 84% of all deaths among children and youths aged 0 to 17 years in 1992. We also calculated birth rates for girls aged 10 to 14 years and 15 to 17 years. This age grouping is consistent with other research on adolescent pregnancy.[54,55] We calculated these cause-specific mortality and birth rates for all races and ethnicities.

Because our unit of analysis was the city, unweighted city-specific rates were averaged within city groups to compute overall distressed city rates and nondistressed city rates. We limited our analyses to a comparison of outcomes between Whites and Blacks because changes in racial/ethnic categorizations for Hispanics between the 1990 and 2000 censuses hampered our ability to make appropriate comparisons. Additionally, few cities had significant concentrations of other racial/ethnic groups in 1990.

We used Poisson regression to calculate rate ratios (RRs) and 95% confidence intervals (CIs) for cause-specific mortality and age-specific birth rates. To test for differences between city groups within a year, differences between years within city groups, and differences in rates of change between 1992 and 2002 within city groups, we employed a dummy variable for year (2002=1) and for city group (distressed=1) and for the interaction of year and city group. Analyses were performed using Stata version 10 (StataCorp LP, College Station, TX).

RESULTS

We first assessed each city's economic characteristics and health outcomes in 1992 to establish a baseline for determining changes, and rates of change, over the study period.

City Characteristics and Outcomes in 1992

There were statistically significant economic disparities among the 100 largest US cities in 1992. The poverty rate in the 30 most economically distressed cities was almost 24% on average, two thirds higher than the average poverty rate in nondistressed cities (RR=1.67; 95% CI=1.52, 1.84; Table 1). Similarly, median incomes were 26% lower, labor force participation was 12% lower, and the percentage of households with annual incomes above $75 000 was 43% lower in economically distressed cities than in nondistressed cities. The racial compositions of these 2 city groups were also dramatically different. On average, the proportion of Blacks in economically distressed cities was 2.8 times greater than in economically healthier cities (40% vs 14%; RR=2.80; 95% CI=2.57, 3.04).

For most health outcomes we examined, children and youths were significantly worse off in economically distressed cities than in nondistressed cities. Children and youths in distressed cities experienced much higher rates of homicide (12.04 vs 7.60 per 100 000; RR=1.59; 95% CI=1.39, 1.82); deaths attributable to unintentional injury, excluding motor

30 Most Economically Distressed Cities of the 100 Most Populous Cities, by Rank: United States, 1990

1.Detroit, MI
2.New Orleans, LA
3.Newark, NJ
4.Cleveland, OH
5.Birmingham, AL
6.Miami Beach, FL
7.Atlanta, GA
8.Dayton, OH
9.St. Louis, MO
10.Buffalo, NY
11.Baltimore, MD
12.Shreveport, LA
13.Philadelphia, PA
14.Cincinnati, OH
15.Richmond, VA
16.Memphis, TN
17.Baton Rouge, LA
18.Jackson, MS
19.Pittsburgh, PA
20.El Paso, TX
21.Louisville, KY
22.Rochester, NY
23.Oakland, CA
24.Mobile, AL
25.Chicago, IL
26.Milwaukee, WI
27.Norfolk, VA
28.Fresno, CA
29.Hialeah, FL
30.Stockton, CA

TABLE 1—Demographic Characteristics and Selected Mortality and Birth Rates for the Population Aged 17 Years and Younger: 100 Most Populous US Cities, 1992–2002

Demographic Characteristics	1992			2002			Change, 1992–2002, RR (95% CI)		
	Nondistressed Cities (n = 70)	Distressed Cities (n = 30)	RR (95% CI)	Nondistressed Cities (n = 70)	Distressed Cities (n = 30)	RR (95% CI)	Nondistressed Cities	Distressed Cities	Distressed vs Nondistressed
Median household income	$28 046.05	$20 783.65	0.74 (0.74, 0.74)	$38 829.18	$29 389.74	0.76 (0.76 0.76)	1.38 (1.38, 1.39)	1.41 (1.41, 1.42)	1.02 (1.02, 1.03)
Individuals in poverty, %	14.31	23.95	1.67 (1.52, 1.84)	14.35	23.10	1.61 (1.46 1.77)	1.00 (0.92, 1.09)	0.96 (0.87, 1.07)	0.96 (0.84, 1.10)
Adults in labor force, %	68.22	60.05	0.88 (0.83, 0.93)	65.87	59.75	0.91 (0.86 0.96)	0.97 (0.93, 1.01)	1.00 (0.93, 1.06)	1.03 (0.95, 1.11)
Household income > $75 000, %	9.42	5.41	0.57 (0.48, 0.68)	21.82	13.46	0.62 (0.55, 0.69)	2.32 (2.11, 2.54)	2.49 (2.07, 2.98)	1.07 (0.88, 1.32)
Black, non-Hispanic, %	14.46	40.42	2.80 (2.57, 3.04)	14.90	44.21	2.97 (2.74, 3.22)	1.03 (0.95, 1.12)	1.09 (1.01, 1.18)	1.06 (0.94, 1.19)
Mortality rate									
Homicide, per 100 000	7.57	12.04	1.59 (1.39, 1.82)	3.85	8.50	2.21 (1.86, 2.62)	0.51 (0.44, 0.59)	0.71 (0.60, 0.83)	1.39 (1.12, 1.72)
Motor vehicle–related, per 100 000	7.07	6.56	0.93 (0.79, 1.09)	5.27	6.42	1.22 (1.02, 1.45)	0.75 (0.65, 0.85)	0.98 (0.80, 1.20)	1.32 (1.03,1.67)
All other accidents, per 100 000	7.51	9.90	1.32 (1.14, 1.52)	4.68	8.21	1.75(1.49, 2.07)	0.62 (0.54, 0.72)	0.83 (0.70, 0.98)	1.33 (1.07,1.65)
Infant, per 1000	8.85	12.81	1.45 (1.27, 1.64)	6.85	10.81	1.58 (1.37, 1.82)	0.77 (0.69, 0.87)	0.84 (0.73, 0.98)	1.09 (0.90, 1.32)
Birth rate, per 1000									
Aged 10–14 y	2.29	4.47	1.95 (1.55, 2.46)	1.14	2.16	1.89 (1.36, 2.62)	0.50 (0.38, 0.65)	0.48 (0.36, 0.65)	0.97 (0.65,1.44)
Aged 15–17 y	57.12	83.59	1.46 (1.39, 1.54)	34.77	48.70	1.40 (1.31, 1.49)	0.61 (0.58, 0.64)	0.58 (0.55, 0.62)	0.96 (0.88,1.04)

Note. CI = confidence interval; RR = rate ratio.

vehicle crash–related deaths (9.90 vs 7.51 per 100 000; RR=1.31; 95% CI=1.14, 1.52); and infant mortality (12.81 vs 8.85 per 1000 live births; RR=1.45; 95% CI=1.27, 1.64). Rates of death caused by motor-vehicle crashes were similar across city groups (6.56 vs 7.07 per 100 000; RR=0.93; 95% CI=0.79, 1.09).

The health hazards for children and youths residing in economically distressed cities in 1992 were also evident in elevated rates of adolescent pregnancy. The birth rate for girls aged 10 to 14 years in distressed cities was nearly double that of nondistressed cities (4.47 vs 2.29 per 1000 live births; RR=1.95; 95% CI=1.55, 2.46), and birth rates for girls aged 15 to 17 years were nearly one and a half times as high in distressed cities (83.59 vs 57.12 per 1000 live births; RR=1.46; 95% CI=1.39, 1.54).

Racial disparities are evident in these data as well. Overall, Black infants were more likely to die in their first year of life than were White infants, and Black children and youths had higher rates of death from homicide and unintentional injury (excluding motor-vehicle crashes) than did White children and youths in both economically distressed and nondistressed cities in 1992. Black adolescents in both age groups also had higher rates of adolescent births than did their White counterparts in both distressed and nondistressed cities (Table 2).

At the same time, we found mixed evidence of racial disparities by place. Both Black (RR=1.20; 95% CI=1.08, 1.32) and White (RR=1.18; 95% CI=1.01, 1.38) children and youths experienced higher levels of infant mortality in economically distressed cities than did their racial counterparts in economically nondistressed cities. Further, births to Black girls aged 10 to 14 years (6.98 vs 4.37 per 1000 live births; RR=1.60; 95% CI=1.34, 1.91) and to Black girls aged 15 to 17 years (115.81 vs 91.23 per 1000 births; RR=1.27; 95% CI=1.22, 1.23) were significantly higher in distressed cities than in nondistressed cities. White children and youths in economically distressed cities were more likely to die from homicide than were White children and youths in nondistressed cities (RR=1.32; 95% CI=1.05, 1.65). However, the homicide rate among Black children and youths living in economically distressed cities was not significantly different from the rate among Black children and youths in economically nondistressed cities. Both Black and White children and youths faced a risk of deaths attributable to motor-vehicle crashes and other unintentional injuries similar to that of their counterparts in economically nondistressed cities.

City Characteristics and Outcomes 1992–2002

The dramatic economic and demographic disparities between distressed and nondistressed US cities in 1992 were virtually unchanged by the early 2000s. Average rates of poverty and labor force participation (as defined by levels of economic distress in 1992) were not substantively different in 2002 as compared with 1992 for both economically distressed and economically nondistressed cities. Inflation guaranteed that both median income and the percentage of households making more than $75 000 per year increased substantially in both economically distressed and nondistressed cities, but there was no statistically significant change in the disparity between these groups of cities. In 2002, the median household income in distressed cities was 24% lower than that of nondistressed cities, and the percentage of higher-income households in distressed cities was 38% lower than in nondistressed cities (Table 1). These proportional factors were approximately the same in 1992.

The persistent disparities between economically distressed and nondistressed cities as

TABLE 2—Mortality Rates by Selected Causes, Birth Rates, and Risk Ratios for the Population Aged 17 Years and Younger: 100 Most Populous US Cities, 1992–2002

	1992			2002			Change, 1992–2002, RR (95% CI)		
	Nondistressed Cities	Distressed Cities	RR (95% CI)	Nondistressed Cities	Distressed Cities	RR (95% CI)	Nondistressed Cities	Distressed Cities	Distressed vs Nondistressed
Whites									
Mortality rate									
Homicide, per 100 000	2.90	3.81	1.32 (1.05,1.65)	1.85	2.61	1.41 (1.06, 1.84)	0.64 (0.51, 0.80)	0.69 (0.51, 0.91)	1.07 (0.75, 1.54)
Motor vehicle–related, per 100 000	6.38	5.36	0.84 (7.9, 1.00)	5.30	6.52	1.23 (1.03, 1.46)	0.83 (0.72, 0.95)	1.22 (0.99, 1.50)	1.46 (1.14,1.88)
All other accidents, per 100 000	5.92	6.97	1.18 (1.00,1.39)	4.50	5.00	1.11 (0.92,1.35)	0.76 (0.66, 0.88)	0.72 (0.58, 0.88)	0.94 (0.73, 1.21)
Infant mortality, per 1000	6.69	7.88	1.18 (1.01,1.38)	5.37	6.33	1.18 (0.98, 1.40)	0.80 (0.70, 0.92)	0.80 (0.66, 0.97)	1.00(0.79,1.26)
Birth rate, per 1000									
Aged 10–14 y	0.70	0.91	1.30 (0.81,2.07)	0.29	0.52	1.80 (0.93, 3.50)	0.41 (0.24, 0.69)	0.57 (0.30, 1.06)	1.39 (0.62, 3.13)
Aged 15–17 y	30.41	38.89	1.28 (1.19, 1.37)	15.64	24.73	1.58 (1.44, 1.74)	0.51 (0.48, 0.55)	0.64 (0.58,0.70)	1.24 (1.10, 1.40)
Blacks									
Mortality rate									
Homicides, per 100 000	17.48	18.92	1.08 (0.98,1.2)	7.34	13.34	1.82 (1.60, 2.07)	0.42 (0.38, 0.47)	0.71 (0.62, 0.80)	1.68 (1.43, 1.98)
Motor vehicle–related, per 100 000	6.60	7.70	1.67 (1.00,1.34)	6.03	6.67	1.11 (0.93, 1.31)	0.91 (0.80, 1.04)	0.87 (0.72, 1.05)	0.95 (0.75,1.19)
All other accidents, per 100 000	10.99	11.67	1.06 (0.94, 1.20)	7.25	10.12	1.40 (1.21, 1.61)	0.66 (0.59, 0.74)	0.87 (0.74, 1.01)	1.31 (1.09,1.59)
Infant mortality, per 1000	15.48	18.51	1.20 (1.08,1.32)	14.24	15.13	1.06 (0.95, 1.19)	0.92 (0.84,1.00)	0.82 (0.72, 0.93)	0.89 (0.76,1.03)
Birth rate, per 1000									
Aged 10–14 y	4.37	6.98	1.60 (1.34,1.91)	1.91	2.95	1.55 (1.18, 2.03)	0.44 (0.36, 0.53)	0.42 (0.33, 0.54)	0.97 (0.70,1.34)
Aged 15–17 y	91.23	115.81	1.27 (1.22,1.32)	45.75	60.91	1.33 (1.26, 1.41)	0.50 (0.48, 0.52)	0.53 (0.50, 0.56)	1.05 (0.98,1.13)

Note. CI = confidence interval; RR = rate ratio.

defined in 1992 suggest that there was very little change in cities' relative rankings from 1992 through 2002. Indeed, the principal-components analysis of 2002 economic measures demonstrated that group membership and relative ranking of economically distressed and nondistressed cities remained remarkably stable between 1992 and 2002. Only 3 cities in each group (i.e., distressed vs nondistressed) switched group membership over the decade, and each of these cities was within a few rank positions of the distressed versus nondistressed cut point in both 1992 and 2002.

At the same time, most child outcomes examined here significantly improved from 1992 to 2002 in both economically distressed and nondistressed cities (Table 1). By 2002, homicide rates among children and youths had fallen by almost a third in economically distressed cities (RR=0.71; 95% CI=0.60, 0.83) and by almost half in economically nondistressed cities (RR=0.51; 95% CI=0.44, 0.59). Rates of deaths caused by unintentional injury other than motor-vehicle crashes decreased by 17% in distressed cities (RR=0.83; 95% CI=0.70, 0.98) and by 38% in nondistressed cities (RR=0.62; 95% CI=0.54, 0.72). Infant mortality fell by 16% in distressed cities (RR=0.84; 95% CI=0.73, 0.98) and 23% in nondistressed cities (RR=0.77; 95% CI=0.69, 0.87). Similarly, birth rates to younger adolescents aged 10 to 14 years fell by 52% in nondistressed cities and 50% in distressed cities; for older adolescents aged 15 to 17 years, birth rates fell by 42% in nondistressed cities and 39% in distressed cities. Motor vehicle crash–related deaths declined in nondistressed cities only (RR=0.75; 95% CI=0.65, 0.85); the rate of these deaths remained flat in distressed cities.

Despite improvements in the health of young people in urban America over this decade, disparities between economically distressed and nondistressed cities with regard to mortality rates and adolescent births were evident in 2002 (Table 1). Homicide rates in distressed cities were more than twice those in nondistressed cities (RR=2.21; 95% CI=1.86, 2.62); deaths from unintentional injury (excluding motor-vehicle crashes) were 75% higher (RR=1.75; 95% CI=1.49, 2.07); and infant mortality was nearly 60% higher (RR=1.58; 95% CI=1.37, 1.82). Similar patterns can be seen for deaths from motor vehicle–related crashes and for adolescent birth rates for both age groups.

Absolute improvements in the health outcomes examined for Black and White children and youths over this period were also found, with the exception of a small increase in the rate of motor vehicle crash–related deaths for Whites in distressed cities. However, despite improvements across outcomes, racial disparities persisted (Table 2). As in 2002, Black infants were more likely to die in their first year of life in these cities than were White infants, and Black children and youths suffered much higher rates of deaths caused by homicide and unintentional injury (excluding motor vehicle–related crashes). Despite absolute improvements in the adolescent birth rate, Blacks still had substantially higher rates of adolescent births in both age groups than did Whites in 2002. Further, disparities in health outcomes in nondistressed cities versus distressed cities

for racial groups were evident for some mortality and birth outcomes in 2002. Homicide rates for Black children and youths were 82% higher in distressed cities as compared with nondistressed cities (RR=1.82; 95% CI=1.60, 2.07), and deaths from unintentional injury (excluding motor vehicle–related crashes) were 40% higher (RR=1.40; 95% CI=1.21, 1.61). For adolescents aged 15 to 17 years, both Blacks (RR=1.33; 95% CI=1.26, 1.41) and Whites (RR=1.58; 95% CI=1.44, 1.74) had higher birth rates in distressed cities than in nondistressed cities.

Moreover, the magnitude of disparities in child mortality rates between economically distressed and nondistressed cities widened or stayed essentially the same size between 1992 and 2002. For homicides (RR=1.39; 95% CI=1.12, 1.72), deaths attributable to motor vehicle–related crashes (RR=1.32, 95% CI=1.03, 1.67), and deaths attributable to other unintentional injuries (RR=1.33; 95% CI=1.07, 1.65), economically distressed cities failed to keep pace with the improvements seen in nondistressed cities. For infant mortality (RR=1.09; 95% CI=0.90, 1.32) and births to adolescents aged 10 to 14 years (RR=0.97; CI=0.65, 1.44) and 15 to 17 years (RR=0.96; 95% CI=0.88, 1.04), the gaps observed between those in distressed cities versus those in nondistressed cities did not narrow significantly.

This pattern of a preserved or widening disparity between distressed and nondistressed cities from 1992 through 2002 is also evident when examining outcomes by racial groups (Table 2). For instance, although homicide rates came down in both distressed and nondistressed cities for Black children and youths, the steeper rate of decline in nondistressed cities resulted in a significant disparity between rates for these city groups by 2002. Gaps widened for Black children and youths in distressed versus nondistressed cities for homicide (RR=1.68; 95% CI=1.43, 1.98) and for deaths caused by unintentional injury not attributable to motor-vehicle crashes (RR=1.31; 95% CI=1.09, 1.59). For White children and youths, gaps between distressed and nondistressed cities were evident in deaths caused by motor vehicles between 1992 and 2002 (RR=1.46; 95% CI=1.14, 1.88) and in births to adolescents aged 15 to 17 years (RR=1.24; 95% CI=1.10, 1.40). For all other outcomes, across racial groups, gaps in outcomes between distressed cities and nondistressed cities persisted throughout the period.

DISCUSSION

For each of our selected mortality and birth outcomes, children and youths fared worse in distressed cities than in nondistressed cities in 1992, with the exception of deaths from motor vehicle–related crashes. By 2002, absolute improvements in all outcomes were seen, but those in distressed cities continued to suffer higher rates of poor outcomes than their counterparts in nondistressed cities. Over the decade, despite improvements overall, disparities between those in distressed and nondistressed cities persisted and in some cases widened.

Black children and youths in both groups of cities suffered poorer outcomes than did White children and youths during this period. However, our analyses suggest that these gaps are not simply the result of greater concentrations of Blacks in distressed cities. Although gaps in outcomes between Whites and Blacks persisted across all cities, disparities between Blacks in distressed versus nondistressed cities grew for homicides and deaths caused by unintentional injuries (excluding those related to motor-vehicle crashes). Living in a distressed city compounded the disparities Black children and youths already faced.

Thus, although the tide of prosperity lifted all boats, it failed to close the gaps between distressed and nondistressed cities that were evident in 1990. Greater prosperity resulted in greater improvements in all cities, but the more advantaged the city, the greater the improvement. Many of these poor outcomes may be remediable by provision of services[56–61]; however, despite a vibrant national economy during this period, an opportunity to eliminate disparities between cities was missed.

Our study has several limitations. We used 2-year–lagged denominators to calculate our outcome statistics, which introduced some amount of measurement error. However, we believe a lag of only 2 years introduces relatively little error, and we consider this strategy preferable to assuming that interpolated or extrapolated denominators using 1990 and 2000 census data would capture accurate point-in-time population totals. Note, for example, that many cities experienced population declines in the early 1990s and then a resurgence of population with the economic upturn in the late 1990s.

In addition, our data exclude deaths caused by cancer, congenital abnormalities, genetic disorders, and suicide; nor do we include data on risk behaviors such as drug use. Nevertheless, the mortality outcomes we selected represented the vast majority of causes of death in this age group. Our selection of outcomes was driven by the availability of national data, and these outcomes may well be less measures of the central tendency in child health than they are indicators of conditions among the most vulnerable and at-risk children and youths. However, monitoring outcomes among vulnerable populations serves an important public health function, and such outcomes may indicate the prevalence of health-threatening conditions among the broader population of children and youths.

Many children and youths are affected by services funded and administered to greater and lesser degrees at the municipal level. Cities that have experienced the greatest distress may be substantially less able to take advantage of new technologies, implement new advances in service delivery, or develop strong bonds with the private sector to improve physical infrastructure. Stronger federal and state leadership may be needed to eliminate disparities between distressed and nondistressed jurisdictions in health outcomes for children and youths, because even in the best of economic times, these disparities did not lessen. Mayors and other municipal officials in distressed cities cannot address these gaps on their own.

In addition, further research is needed to understand the relationship between city economic distress and poor outcomes. Our findings suggest that gaps between "richer" and "poorer" cities increased for some health outcomes, even as the economic fortune of the nation as a whole improved. Remarkably little is known about the dynamics and causes that may underlie these disparities, and this is an important area for further research. The contribution of political jurisdiction to health outcomes is a neglected topic in place-based scholarship, much of which has focused on the

effect of concentrated neighborhood poverty on health. The focus on neighborhood processes may obscure the deleterious and magnifying effect of weakened city infrastructures on health. Certainly, a greater understanding of the contribution of city conditions to health outcomes is needed. ■

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Contributors

D. Silver conceptualized and oversaw the study. T. Mijanovich supervised data analysis and interpretation of results. J. Uyei conducted the analyses. F. Kapadia provided consultation regarding analyses and interpretation of findings, and edited the article. B.C. Weitzman provided conceptual guidance for the study.

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Human Participant Protection

New York University's committee on human subjects approved this study protocol.

References

1. Glaser AC, Kopp JW, Davisson ML. History of drinking water in the city of St. Louis. In: Criss RE, Wilson DA, eds. *At the Confluence: Rivers, Floods, and Water Quality in the St. Louis Region.* St. Louis, MO: Missouri Botanical Garden Press; 2003:62–73.

2. Dubos R, Dubos J. *The White Plague: Tuberculosis, Man and Society.* New Brunswick, NJ: Rutgers University Press; 1987.

3. Bienen LB, Brandon R. Learning from the past, living in the present: understanding homicide in Chicago, 1870–1930. *J Crim Law Criminol.* 2002;92(3/4):437–554.

4. Rosner D. Public health in the city: a historical perspective. In: Freudenberg NGS, Vlahov D, eds. *Cities and the Health of the Public.* Nashville, TN: Vanderbilt University Press; 2006.

5. Grineski SE, Bolin B, Agadjanian V. Tuberculosis and urban growth: class, race and disease in early Phoenix, Arizona, USA. *Health Place.* 2006;12(4):603–616.

6. Markel H. "Knocking out the cholera": cholera, class, and quarantines in New York City, 1892. *Bull Hist Med.* 1995;69(3):420–457.

7. Leviton LC, Snell E, McGinnis M. Urban issues in health promotion strategies. *Am J Public Health.* 2000; 90(6):863–866.

8. Freudenberg N, Galea S, Vlahov D. Beyond urban penalty and urban sprawl: back to living conditions as the focus of urban health. *J Community Health.* 2005;30(1): 1–11.

9. Benbow N, Wang Y, Whitman S. The Big Cities Health Inventory, 1997. *J Community Health.* 1998; 23(6):471–489.

10. Geronimus AT, Bound J, Waidmann TA. Poverty, time, and place: variation in excess mortality across selected US populations, 1980–1990. *J Epidemiol Community Health.* 1999;53(6):325–334.

11. Cohen D, Spear S, Scribner R, Kissinger P, Mason K, Wildgen J. "Broken windows" and the risk of gonorrhea. *Am J Public Health.* 2000;90(2):230–236.

12. Bunce HL, Neal SG. Trends in city conditions during the 1970s: a survey of demographic and socioeconomic changes. *Publius.* 1984;14(2):7–19.

13. US Dept of Housing and Urban Development. *Now Is the Time: Places Left Behind in the New Economy.* Washington, DC: US Dept of Housing and Urban Development; 1999.

14. Furdell K, Wolman H, Hill EW. Did central cities come back? Which ones, how far, and why? *J Urban Aff.* 2005;27(3):283–305.

15. Montiel L, Nathan RP, Wright DJ. *An Update on Urban Hardship.* Albany, NY: Nelson A. Rockefeller Institute of Government; 2004.

16. Nelson AL, Schwirian KP, Schwirian PM. Social and economic distress in large cities, 1970–1990: a test of the urban crisis thesis. *Soc Sci Res.* 1998;27(4):410–431.

17. Nathan RP, Adams CF. Four perspectives on urban hardship. *Polit Sci Q.* 1989;104(3):483–508.

18. Downs A. Some realities about sprawl and urban decline. *Housing Policy Debate.* 1999;10(4):955–974.

19. Drier PMJ, Swanstrom T. *Place Matters: Metropolitics for the Twenty-First Century.* Lawrence, KS: University of Kansas Press; 2001.

20. Kasarda JD, Appold SJ, Sweeney SH, Sieff E. Central-city and suburban migration patterns: is a turnaround on the horizon? *Housing Policy Debate.* 1997;8(2):307–358.

21. Kasarda JD, Ting KF. Joblessness and poverty in America's central cities: causes and policy prescriptions. *Housing Policy Debate.* 1996;7(2):387–419.

22. Beauregard RA. Federal policy and postwar urban decline: a case of government complicity? *Housing Policy Debate.* 2001;12(1):129–151.

23. Gittell R. Review of: Partridge MD, Rickman DS. *The Geography of American Poverty: Is There a Need for Place-Based Policies? Econ Dev Q.* 2008;22(4):365–366.

24. Gittell R, Tebaldi E. Did a strong economy in the 1990s affect poverty in US metro areas? Exploring changes in poverty in metropolitan areas over the last US business cycle, 1992–2003. *Econ Dev Q.* 2007;21(4): 354–368.

25. Franks P, Muennig P, Lubetkin E, Jia HM. The burden of disease associated with being African-American in the United States and the contribution of socioeconomic status. *Soc Sci Med.* 2006;62(10):2469–2478.

26. Macinko J, Elo IT. Black-White differences in avoidable mortality in the USA, 1980–2005. *J Epidemiol Community Health.* 2009;63(9):715–721.

27. Harper S, Lynch J, Burris S, Smith GD. Trends in the Black-White life expectancy gap in the United States, 1983–2003. *JAMA.* 2007;297(11):1224–1232.

28. Tuteja R, Keppel K, Klein RJ. Measuring progress and racial/ethnic and income disparities in select *Healthy People 2010* cancer objectives. *Am J Epidemiol.* 2009; 169(suppl 11):S52.

29. Levine RS, Foster JE, Fullilove RE, et al. Black-White inequalities in mortality and life expectancy, 1933–1999: implications for *Healthy People 2010. Public Health Rep.* 2001;116(5):474–483.

30. Grady SC, Ramírez IJ. Mediating medical risk factors in the residential segregation and low birthweight relationship by race in New York City. *Health Place.* 2008; 14(4):661–677.

31. Palazzo L, Guest A, Almgren G. Economic distress and cause-of-death patterns for Black and non-Black men in Chicago: reconsidering the relevance of classic epidemiological transition theory. *Soc Biol.* 2003;50(1–2): 102–126.

32. McCord C, Freeman HP. Excess mortality in Harlem. *N Engl J Med.* 1990;322(3):173–177.

33. Geronimus AT, Colen CG, Shochet T, Ingber LB, James SA. Urban-rural differences in excess mortality among high-poverty populations: evidence from the Harlem Household Survey and the Pitt County, North Carolina Study of African American Health. *J Health Care Poor Underserved.* 2006;17(3):532–558.

34. Geronimus AT, Bound J, Waidmann TA, Colen CG, Steffick D. Inequality in life expectancy, functional status, and active life expectancy across selected Black and White populations in the United States. *Demography.* 2001;38(2):227–251.

35. Do DP, Finch BK, Basurto-Davila R, Bird C, Escarce J, Lurie N. Does place explain racial health disparities? Quantifying the contribution of residential context to the Black/White health gap in the United States. *Soc Sci Med.* 2008;67(8):1258–1268.

36. Ellen IG, Mijanovich T, Dillman KN. Neighborhood effects on health: exploring the links and assessing the evidence. *J Urban Aff.* 2001;23(3–4):391–408.

37. Cohen DA, Mason K, Bedimo A, Scribner R, Basolo V, Farley TA. Neighborhood physical conditions and health. *Am J Public Health.* 2003;93(3):467–471.

38. Kramer MR, Hogue CR. Is segregation bad for your health? *Epidemiol Rev.* 2009;31(1):178–194.

39. Grady SC. Racial disparities in low birthweight and the contribution of residential segregation: a multilevel analysis. *Soc Sci Med.* 2006;63(12):3013–3029.

40. South SJ, Baumer EP, Lutz A. Interpreting community effects on youth educational attainment. *Youth Soc.* 2003;35(1):3–36.

41. Casciano R, Massey DS. Neighborhoods, employment, and welfare use: assessing the influence of neighborhood socioeconomic composition. *Soc Sci Res.* 2008; 37(2):544–558.

42. Blank R. Poverty, policy and place: how poverty and policies to alleviate poverty are shaped by local characteristics. *Int Reg Sci Rev.* 2005;28(4):441–464.

43. Mendenhall R, DeLuca S, Duncan G. Neighborhood resources, racial segregation, and economic mobility:

results from the Gautreaux program. *Soc Sci Res.* 2006; 35(4):892–923.

44. Jackson AP. The effects of family and neighborhood characteristics on the behavioral and cognitive development of poor Black children: a longitudinal study. *Am J Community Psychol.* 2003;32(1/2):175–186.

45. US Census Bureau. *Census 1990 Summary Tape File 1.* Washington, DC: US Census Bureau; 1990.

46. US Census Bureau. *Census 1990 Summary Tape File 3.* Washington, DC: US Census Bureau; 1990.

47. Curran LB, Wolman H, Hill EW, Furdell K. Economic wellbeing and where we live: accounting for geographical cost-of-living differences in the US. *Urban Stud.* 2006;43(13):2443–2466.

48. US Census Bureau. *Census 2000 Summary File 1 (SF-1) 100-Percent Data.* Washington, DC: US Census Bureau; 2000.

49. US Census Bureau. *Census 2000 Summary File 3 (SF-3) 100-Percent Data.* Washington, DC: US Census Bureau; 2000.

50. National Center for Health Statistics. *Natality Public-Use Data File, 1992.* Atlanta, GA: National Center for Health Statistics; 1992.

51. National Center for Health Statistics. *Natality Public-Use Data File, 2002.* Atlanta, GA: National Center for Health Statistics; 2002.

52. National Center for Health Statistics. *Mortality Data, Multiple-Cause-of-Death Public-Use Data File, 1992.* Atlanta, GA: National Center for Health Statistics; 1992.

53. National Center for Health Statistics. *Mortality Data, Multiple-Cause-of-Death Public-Use Data File, 2002.* Atlanta, GA: National Center for Health Statistics; 2002.

54. Guttmacher Institute. *US Teenage Pregnancies, Births and Abortions: National and State Trends and Trends by Race and Ethnicity.* New York, NY: Guttmacher Institute; 2010.

55. Finkel ML, Elkin E. Trends in birth rates: New York City 1970–1995. *J Community Health.* 2001;26(6): 407–421.

56. Cerdá M, Tracy M, Messner SF, Vlahov D, Tardiff K, Galea S. Misdemeanor policing, physical disorder, and gun-related homicide: a spatial analytic test of "broken-windows" theory. *Epidemiology.* 2009;20(4):533–541.

57. Black MM, Bentley ME, Papas MA, et al. Delaying second births among adolescent mothers: a randomized, controlled trial of a home-based mentoring program. *Pediatrics.* 2006;118(4):E1087–E1099.

58. Braga AA, Kennedy DM, Waring EJ, Piehl AM. Problem-oriented policing, deterrence, and youth violence: an evaluation of Boston's Operation Ceasefire. *J Res Crime Delinq.* 2001;38(3):195–225.

59. Khanani I, Elam J, Hearn R, Jones C, Maseru N. The impact of prenatal WIC participation on infant mortality and racial disparities. *Am J Public Health.* 2010;100(suppl 1):S204–S209.

60. Sleet DA, Ballesteros MF, Borse NN. A review of unintentional injuries in adolescents. *Annu Rev Public Health.* 2010;31:195–212.

61. Messner SF, Galea S, Tardiff KJ, et al. Policing, drugs, and the homicide decline in New York City in the 1990s. *Criminology.* 2007;45(2):385–414.