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Persistent Inequalities in Health and Access to Health Services: Evidence From New York City

Michael K. Gusmano, Victor G. Rodwin, and Daniel Weisz

In Manhattan, the rate of hospital discharges for avoidable hospital conditions (AHC), a measure of access to timely and effective ambulatory care, fell by nearly 50 percent between 1999 and 2013. Despite this remarkable improvement, there has been virtually no change in racial, ethnic, or neighborhood-level differences in rates of AHC. This is surprising given New York City's emphasis on public health and its efforts to reduce health and health-care inequalities. We discuss the policy implications of these findings and argue that growing income and wealth inequalities have limited the ability of New York City to address inequalities in population health and health-care access. Unless there are substantial changes in federal and state policy, designed to reduce economic inequalities, it will be difficult to achieve the goal of eliminating health and health-care inequalities.

KEY WORDS: New York City, health inequalities, avoidable hospital conditions

Introduction

Since 2000, New York City (NYC) has made remarkable gains in its population health status and access to health-care services. Despite increases in the prevalence of obesity, high blood pressure, diabetes, and asthma, and poorer self-reported health status—life expectancy at birth has increased, infant mortality has declined and the percentage of people who report having a regular source of care has increased (Table 1) (NYC Health, 2014; Roberts, 2013).

These improvements reflect, in part, what Thorstein Veblen called the "advantages of backwardness," for in comparison to other global cities—Paris and London for example—life expectancy at birth for NYC's population was significantly lower in the early 2000 period and access to primary care was far worse (Gusmano, Rodwin, & Weisz, 2010). Since then, the administration of former Mayor Bloomberg emphasized the importance of improving NYC's population health status and reducing disparities in access to health services; his successor, Mayor De Blasio, continues this focus. In spite of these efforts, racial, ethnic, and neighborhood-level inequalities in health and access to health-care services persist within the city.

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Table 1. Changes in Health and Access to Care: NYC, 2002–10

Self-reported health status (% reporting fair or poor health)	19.5%	20.9%
Life expectancy at birth	77.9 (2001)	80.9 (2010)
Infant mortality	5.83/1,000 live births	4.48/1,000 live births (2012)
Do you have one person or more than one person you think of as your personal doctor or health-care provider?	73.6%	83.7% (2014)
Obesity (CI)	18.2% (17.2–19.2)	24.2% (22.8–25.5)
High blood pressure ever	25.9% (24.9–26.9)	27.8% (26.6–29.0)
Diabetes ever	8.0% (7.4–8.7)	10.7% (9.9–11.9)
Asthma ever	12.1% (11.3–12.9)	12.5% (11.5–13.7)

Sources: Life expectancy: New York City Department of Health and Mental Hygiene; Infant mortality: Wang, Schoen, & Melnik (2013); Personal doctor or health-care provider: NYC Community Health Survey, 2002 and 2014.

These persistent inequalities are acknowledged by the NYC Department of Health and Mental Hygiene (DOHMH) and reducing them remains a goal of the city's recently published *Take Care New York 2020* report (NYC Health, 2016). In this paper, we update an analysis of Manhattan, in 2000, with respect to an important dimension of health system performance—access to community-based ambulatory care as measured by hospital discharge rates for avoidable hospital conditions (AHC), to which we refer henceforth as AHC rates. Over the 2000–12 period, we find that overall AHC rates fell by nearly 50 percent; yet racial, ethnic, and neighborhood-level inequalities hardly declined. Our analysis highlights the challenge of addressing health-care inequalities at the local level in the context of large and growing income and wealth inequalities shaped by national policies.

Racial, Ethnic, and Spatial Inequalities in Health and Health Care

The existence of racial, ethnic, and neighborhood-level inequalities in health and health care are a long-standing problem in the United States. They are not unique to New York City. Racial differences in health status, for example, were documented in the earliest records of U.S. vital statistics (Williams & Sternthal, 2010). Scientific studies and government reports document racial, ethnic, and neighborhood-level differences in mortality, in the incidence of acute and chronic illness, and access to health care (CDC, 2011). *Healthy People 2020*, a set of objectives with 10-year targets, produced by an advisory committee to the U.S. Department of Health and Human Services (HHS), calls for the elimination of these, and other health disparities (US DHHS, 2011). Despite these goals set forth by the federal government, as Deborah Stone (2006) noted over a decade ago, "no policy reforms have significantly reduced disparities."

What accounts for racial and ethnic health disparities? Some analysts focus on biological and genetic factors, but they account for less than 1 percent of excess deaths in the Black population in the United States (Cooper & David, 1986). More complete accounts invoke the concept of intersectionality and examine the complex interactions among class, ethnicity, gender, and race

(Bedolla, 2007; Clarke & McCall, 2013; Jackson, 2005). Many studies suggest that the correlation between race, ethnicity, and health is primarily a function of socioeconomic status (SES), including income and education (Lawrence, 2002). Controlling for SES usually weakens the correlation between race and health.

Williams and Collins (1995) argue that common measures of SES fail to account, fully, for racial differences in health status because they are incomplete. Most studies use income as a proxy for SES and fail to capture differences in wealth, which are larger and more difficult to measure. In addition, studies relying on SES rarely attempt to measure the effects of racism. Racism can "transform social status such that SES indicators are not equivalent across race" (Williams & Collins, 1995). For example, some studies indicate that non-Hispanic Whites earn higher income than non-Hispanic Blacks and Hispanics for a given level of education. Racism may also "restrict access to the quantity and quality of health-related desirable services such as public education, health care, housing, and recreational facilities." Finally, racism may "induce psychological distress that may adversely affect physical and mental health status."

Blustein (2008) notes the "de facto racial segregation" patterns of health care delivery. For example, a study of Medicare beneficiaries hospitalized with myocardial infarction (MI) indicates that 85 percent of all Black MI patients were admitted to only 1,000 of 4,690 acute care hospitals in the nation (Barnato, Lucas, Staiger, Wenneber, & Chandra, 2005). Likewise, a study by Bach, Pham, Schrag, Tate, and Hargraves (2004) found that 80 percent of all primary care visits by Black Medicare beneficiaries are made to only 22 percent of physicians while physicians serving Black patients serve few Whites. Since minority patients are more likely to be uninsured or Medicaid beneficiaries than White patients, Blustein argues that this "racial payer gap" puts providers serving minorities at a "financial disadvantage, on average."

At the neighborhood level, race-based residential segregation and the geographic concentration of poverty among Blacks and Hispanics (Sandel et al., 2016; Schulz, Williams, Israel, & Lempert, 2002) sustains segregated racial patterns of health-care delivery. African Americans live, disproportionately, in "urban residential areas where living conditions are hostile to life and health." Unlike the White urban poor who are dispersed throughout the city, with many residing in relatively safe and comfortable neighborhoods, the Black poor are concentrated in depressed central-city neighborhoods (Wilson, 1987) where the stress of poor urban environments can lead to illness (Williams & Collins, 1995).

Neighborhood characteristics also influence the health of their residents (Polednak, 1991; Schaff et al., 2013; Yen & Syme, 1999). Although there is long-standing debate about whether the relationship is causal (Arcaya, Greif, Waters, & Subramanian, 2016; Jokela, 2014; Kawachi & Blakely, 2001; Milyo & Mellor, 2003; Pickett & Wilkinson, 2015), community SES measured as median household income is strongly associated with poor health, even controlling for individual income. Similarly, neighborhood-level inequality is associated with health, violence, and "collective efficacy" (Morenoff, Sampson, & Raudenbush, 2001).

At the individual level, a recent study finds that life expectancy of men at 40 years in the poorest 1 percent of the income distribution is 14.6 years shorter than for men in the wealthiest 1 percent; for women the difference is 10.1 years (Chetty et al., 2016). Poverty makes it more difficult for patients to manage chronic illness, adhere to treatment, and avoid hospitalizations for conditions that can be managed on an outpatient basis. This is illustrated by a recent study based on in-depth interviews with patients who were hospitalized for "potentially preventable" conditions (Sentell et al., 2016). As one interviewee who had been hospitalized for diabetes explained, "I look at my medications, says: take with food, do not take on an empty stomach … I never have money. I never have food. I could not buy me food …" (Sentell et al., 2016).

In our analysis of population health and access to health care in Manhattan, noted earlier (Gusmano et al., 2010), there was strong evidence that neighborhood of residence is significantly correlated with infant mortality and "amenable mortality"—deaths that could be avoided assuming access to care is assured. Based on both measures, people living in the lowest income neighborhoods of Manhattan have significantly higher mortality rates than the rest of the borough (Gusmano et al., 2010; Rodwin and Neuberg, 2005; Weisz, Gusmano, Rodwin, & Neuberg, 2008). Likewise, similar relationships among neighborhood income and amenable or infant mortality were not found in other global cities among wealthy nations, including Hong Kong, London, Paris, and Tokyo (Chau, Woo, Chan, Weisz, & Gusmano, 2011; Gusmano et al., 2010).

We also found significant neighborhood effects on access to heart disease treatment (Gusmano et al., 2010; Weisz, Gusmano, & Rodwin, 2004), lower extremity joint replacement, treatment of breast cancer and, as we elaborate below, access to community-based ambulatory care. These differences among Manhattan and other global cities remain even after controlling for patient age, co-morbidities, gender, and insurance status (Gusmano et al., 2010; Gusmano, Rodwin, & Weisz, 2006). Finally, comparison of Manhattan with other global cities suggests that neighborhood has an independent effect on access to health-care services.

Based on data from the 1999–2001 period, AHC rates in Manhattan (20.1 per 1,000) were close to three times higher than those in Paris (7 per 1,000) (Gusmano et al., 2006). In addition, the difference in AHC rates among above- and below-median income neighborhoods of Manhattan was 56 percent higher than among comparable neighborhoods in Paris.

NYC Efforts to Improve Public Health

Long before Michael Bloomberg's mayoralty (2002 until 2013), NYC was known for its municipal health department and its public hospital system (Rodwin, Brecher, Jolly, & Baxter, 1992). The NYC DOHMH is the oldest, largest, and among the strongest health departments in the nation. The NYC Health + Hospitals (H + H) operates 11 of the city's roughly 60 acute-care, hospitals (the other 49 acute-care hospitals in the city are private, not-for-profit) and is

responsible for almost 20 percent of all admissions to acute hospital beds. H + H also provides primary care, as well as specialist services, in its outpatient departments, emergency rooms, and a network of health-care centers.

Together with DOHMH and H + H (known by its previous name, Health and Hospitals Corporation), Mayor Bloomberg emphasized improving public health during his tenure. Just before leaving office, he summarized the importance his administration placed on health:

> New York City is at its best when it values—and has the courage to defend—public health and safety. In the 19th century, New York was the first major city to create a Board of Health to battle disease. And in the early 20th century, we became the first major city to create a public health laboratory. Our administration has upheld that tradition—and extended it into the 21st century. From banning smoking and trans fats, to adopting calorie counts and battling obesity, no city in the world has done more to improve public health than we have—and the proof is in the fact that today New Yorkers are living longer and healthier lives. (Association for a Better New York, Brooklyn Marriot, December 5, 2013)

Mayor Bloomberg's most well-known and controversial efforts to improve public health include the successful efforts to extend the ban on tobacco to all commercial establishments, the ban of trans-fat in all restaurants, requiring calorie posting at chain restaurants, and the failed proposal to ban the sale of sugared beverages more than 16 ounces. These efforts to restructure the public health environment and change health-related behaviors were supported by his administration's emphasis on the development of "evidence-based" policy (Colgrove, 2011; Laugesen & Isett, 2013). Along with encouraging the use of secondary data from published sources, New York City invested heavily in original data collection. This included the development of the New York Community Health Survey (2002), the nation's first community-based health and nutrition survey, the development of a mandatory hemoglobin A1C registry (2006), and other efforts to track chronic illness in real time (Laugesen & Isett, 2013). The emphasis of DOHMH, and other city agencies, on data collection and analysis allowed NYC to target programs designed to improve public health and combat population health and health-care inequalities.

Similarly, many studies point to the importance of the social and built environment in health. The recognition that neighborhood characteristics shape the health of their residents led New York City to establish District Public Health Offices (DPHOs). In August 2003, Mayor Bloomberg and Dr. Thomas R. Frieden, who was then the Commissioner of the NYC DOHMH, announced the creation of a new South Bronx DPHO, one of the three in NYC (NYC DOHMH, 2003). The City established the DPHOs to address health disparities by focusing on three neighborhoods (South Bronx, East and Central Harlem, and North and Central Brooklyn) with high rates of mortality and "avoidable deaths," and develop

"community-specific" strategies for improving health. The DPHOs target public health priorities including obesity, asthma, and teen pregnancy with the mission to develop community-based initiatives with local partners.

A year later, DOHMH's Take Care New York (TCNY) initiative (policy available online at NYC.gov/health/tcny), was created to reduce the city's mortality rate by 2008. It started with 10 priority areas and 16 indicators. According to Commissioner Frieden, the TCNY initiative reflected the administration's recommendations for improving health based on "2 years collecting data on the vital signs of New York, our patient." TCNY has continued beyond the Bloomberg administration and now includes a range of efforts designed to improve health and reduce health inequalities in the city.

The National Context

Until the Great Recession of 2008, NYC, like the rest of the country, enjoyed economic growth. These aggregate gains in wealth, however, were accompanied by nearly uninterrupted growth in economic inequality. Despite the mayor's many achievements in public health, income inequality and homelessness grew during his 12 years in office. NYC's economy remains driven by its role as a global financial center with high shares of revenue supplied by its bankers, corporate managers, and specialized attorneys. Among the largest cities in the nation (Chicago, Los Angeles, and Houston), NYC is the most economically polarized (Fiscal Policy Institute, 2016). The share of total income held by the top 1 percent of its population rose to 40 percent in 2014, twice that of their counterparts in the nation as a whole (Parrott, 2016).

From the Great Depression through the mid-1980s, there was a steady decline in the concentration of wealth in the United States. Since then, the bottom 90 percent of the population's share of wealth has declined. The growth of income, since the 1980s, has been concentrated in the top 0.1 percent of the population (Saez & Zucman, 2014). The distribution of wealth is harder to measure than income, but the available evidence suggests that wealth distribution is even more inequitable. The Pew Research Center found that between 2009 and 2011, following the Great Recession, "the mean net worth of households in the upper 7 percent of the wealth distribution rose by an estimated 28 percent, while the mean net worth of households in the lower 93 percent dropped by 4 percent" (Fry & Taylor, 2013). Racial differences in wealth are particularly pronounced (Conley, 1999). As former Labor Secretary Robert Reich explains,

> wealth is also transferred from generation to generation, not only in direct transfers, but also in access to the best schools and universities … Families of color are especially disadvantaged because they're less likely to have savings or inherit wealth, and face significant barriers to building

> wealth, such as discriminatory policies and practices that thwart home ownership. (Reich, 2016)

Why has the United States experienced growing income and wealth inequality in recent decades? This is a complex issue and a full explanation is well beyond the scope of this paper, but two contributing factors are wage inequality due to the relatively weak position of labor in the United States and the country's tax and transfer policies that are less progressive than most other wealthy nations (Gornick & Milanovic, 2015) are contributing factors. According Reich, the United States responded to the forces of globalization and labor-replacing technology by "disinvesting in education, job training, and infrastructure. We began shredding our safety net. We made it harder for many Americans to join unions. (The decline in unionization directly correlates with the decline of the portion of income going to the middle class.) And we reduced taxes on the wealthy" (Reich, 2014). In 2014, at a Conference on Economic Opportunity and Inequality, Federal Reserve Chair Janet Yellen, offered a useful summary of national the context in which the Bloomberg administration's efforts to improve health took place:

> The distribution of income and wealth in the United States has been widening more or less steadily for several decades, to a greater extent than in most advanced countries. This trend paused during the Great Recession because of larger wealth losses for those at the top of the distribution and because increased safety-net spending helped offset some income losses for those below the top. But widening inequality resumed in the recovery, as the stock market rebounded, wage growth and the healing of the labor market have been slow, and the increase in home prices has not fully restored the housing wealth lost by the large majority of households for which it is their primary asset. (Yellen, 2014)

Growing income inequality in the United States was mirrored in NYC during the period we examine (Figure 1). The gap between above and below median income neighborhoods of Manhattan was larger in the 2011–13 period than it was during the 1999–2001 period. There were small increases in the inflation-adjusted median household incomes among NYC's non-Hispanic white and non-Hispanic Black populations, but declines in median household incomes among Asians and Hispanics (Bergad, 2013).

Beyond the National Context

Beyond the national policies that increased inequality in NYC, the Bloomberg administration was criticized for failing to create enough affordable housing, which exacerbated the problem of income inequality. During his time in office,

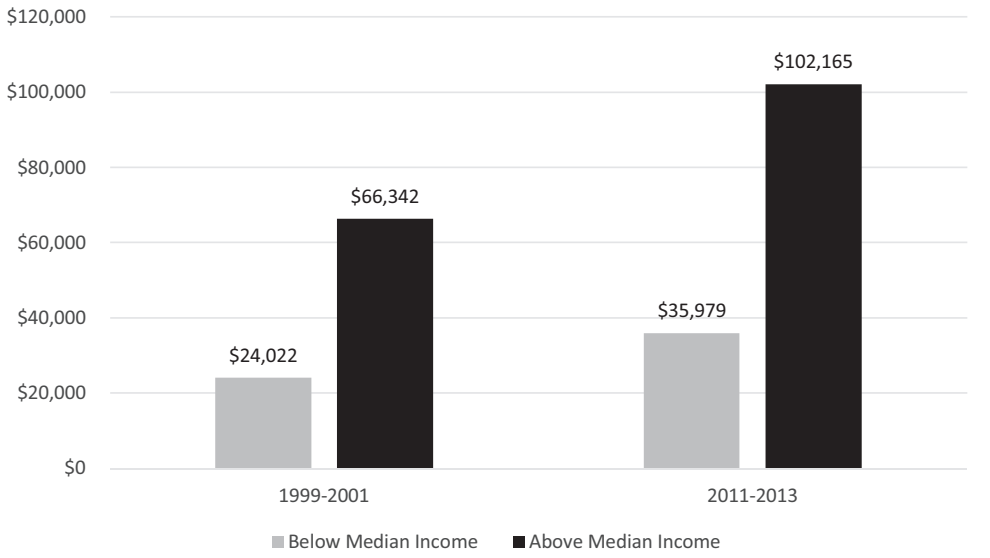

Figure 1. Changes in Median Household Income, Above and Below Median Household Income Neighborhoods (1999–2001) and (2011–13).
Source: U.S. Census.

the percentage of New Yorkers categorized as "severely burdened" by rent—defined as spending more than 50 percent of their income on housing costs—increased. Although the Bloomberg administration claimed to produce 165,000 new "affordable" housing units, the Association for Neighborhood and Housing Development (ANHD) asserted that "about two thirds of New Housing Marketplace units are too expensive for the majority of local neighborhood residents" (ANHD, 2011).

The problem of affordable housing was, in one sense, a reflection of Mayor Bloomberg's success at improving the quality of life in NYC. By making the city a more attractive place for people to live, the Bloomberg administration helped to drive demand for housing, which led to the gentrification of many neighborhoods. As Ingrid Gould-Ellen explains, "it is a double-edged sword, because the more people that want to live here, the more expensive it becomes" (Rodriguez, 2013). Together, the stagnation of incomes for lower and middle class residents, coupled with increases in housing prices, led to greater income inequality over the 12 years of the Bloomberg administration.

In the empirical part of this paper, we focus on the extent to which the Bloomberg administration's attention to public health and access to health-care services was able to overcome these economic inequalities within the city. More specifically, we examine access to community-based ambulatory care, in Manhattan, over the period from 2000 to 2012, as measured by hospital discharges for AHC.

Materials and Methods

Measuring Access to Ambulatory Care

Hospital discharges for AHC is recognized in the literature as a valid indicator of access to ambulatory care, an important dimension of health system performance, around the world (Ansari, Haider, Ansari, de Gooyer, & Sindall, 2012; Casanova & Starfield, 1995; Mercier, Georgescu, & Bousquet, 2015; Sanderson & Dixon, 2000; Thygesen et al., 2015). AHC are diagnoses for which access to timely and appropriate primary care services, including specialty services for the management of chronic disease, should decrease or avoid the need for hospital admission. Examples of such diagnoses include congestive heart failure, asthma, and diabetes. High rates of hospitalization for AHC, among residents of an area, often reflect barriers to community-based health services (Pappas, Hadden, Kozak, & Fisher, 1997). Previous research in the United States and Canada suggests that individuals without health insurance, as well as those living in lower-income neighborhoods, are more likely to be admitted to hospitals with AHC because they are less likely to receive appropriate and timely ambulatory care (Billings, Anderson, & Newman, 1996; Gusmano et al., 2006; Hadley, Steinberg, & Feder, 1991; Roos & Mustard, 1997; Weissman, Gatsonis, & Epstein, 1992).

To enable comparison with AHC rates calculated in an earlier study of Manhattan (Gusmano et al., 2006), we rely on the definition of AHC developed by Weissman et al. (1992), which has been validated by previous studies (Backus, Moron, Bacchetti, Baker, & Bindman, 2002; Pappas et al., 1997; Parchman & Culler, 1994). The Weissman definition includes pneumonia, congestive heart failure, asthma, cellulitis, perforated or bleeding ulcer, pyelonephritis, diabetes with ketoacidosis or coma, ruptured appendix, malignant hypertension, hypokalemia, five immunizable conditions, and gangrene.

Age Adjustment and Data Sources

We calculated hospital discharge rates of AHC for age-adjusted cohorts, employing the direct standardization method using the 2000 U.S. population to calculate adjustment weights (Klein & Schoenborn, 2001). We restricted the analysis to the population 18 years and over. Hospital data are from the Statewide Planning and Research Cooperative System (SPARCS), which includes individual-level data for all patients discharged from non-federal hospitals in New York State, excluding the population cared for in Veterans Administration hospitals. The SPARCS data includes approximately 97 percent of the hospital discharges in Manhattan. To calculate the population denominators for the descriptive statistics, we rely on U.S. census estimates. To assess whether the change in AHC rate between our two time periods in Manhattan was significant, we conducted a Wilcoxon signed-rank test.

Regression Model

To identify the factors that explain differences across and within Manhattan, we rely on a multiple logistic regression model to estimate effects of selected variables on the probability of hospitalization for AHC. The independent variables are age, sex, race/ethnicity, primary payers, and number of diagnoses on the record (as a measure of morbidity). The model also controls for a number of neighborhood variables at the ZIP code level: income quartile, and dummy variables for ZIP codes in which more than 15 percent of the households are linguistically isolated and more than 40 percent of the adult population does not have a high school degree. The 1999–2001 model included a ZIP code level variable for number of physicians per capita, but these data were not available for the 2011–13 period. We ran a model with secondary payers and interactive terms relating race and ZIP code, income and race, and the percent of population with health insurance. Since the inclusion of these additional variables did not change the results, we relied on our original model. Because observations on individuals from the same neighborhood might be correlated, we tested for bias attributable to unobserved neighborhood-level heterogeneity by estimating the models with a dummy variable for each ZIP code as a replacement for neighborhood-level variables. The parameter estimates for the individual characteristics were not appreciably different from those generated by these models.

Results

Access to Ambulatory Care in 1999–2000

A binary logistic regression analysis of factors affecting AHC rates, in Manhattan, over this period found that gender, race, ethnicity, insurance status, and neighborhood of residence had the largest effects on the odds of being hospitalized with an AHC (Gusmano et al., 2006). The odds of AHC discharges among women were 36 percent lower than men, which is consistent with literature indicating that women address their symptoms in a more timely manner, before exacerbation of their condition requiring hospitalization (Table 2). The odds of AHC discharges were about 29 percent higher among Blacks and 47 percent higher among Hispanics than non-Hispanic Whites. The odds of AHC discharges for uninsured people were about 82 percent greater than for people with private insurance. The odds are 39 percent higher among Medicaid recipients and 21 percent higher among Medicare beneficiaries than among people with private coverage. Finally, the odds of AHC discharges among people living in the lowest income neighborhoods of Manhattan were 36 percent higher than those living in the highest income neighborhoods.

Table 2. Logistic Regression Results for Characteristics Associated With Avoidable Hospital Condition (AHC) Discharges (Dependent Variable) In Manhattan, Population Age 18 and Older, 1999–2001

			95% C.I. for Odds Ratio	
Variable	Odds Ratio	Sig.	Lower	Upper
Age (continuous)	1.023	0.000	1.023	1.024
Omitted male				
Female	0.883	0.000	0.867	0.899
Omitted non-Hispanic White				
Black	1.288	0.000	1.252	1.324
Hispanic	1.469	0.000	1.428	1.511
Other race	1.125	0.000	1.092	1.123
Omitted highest income quartile neighborhoods				
Lowest income quartile neighborhoods	1.434	0.000	1.378	1.493
Second quartile income	1.276	0.000	1.171	1.244
Third quartile income	1.149	0.000	1.112	1.186
Number of diagnoses	1.024	0.000	1.021	1.027
Omitted private insurance				
Medicare	1.207	0.000	1.171	1.244
Medicaid	1.388	0.000	1.347	1.429
Uninsured	1.816	0.000	1.742	1.892
Other insurance	1.384	0.000	1.282	1.493
Over 15% linguistically isolated	0.988	0.420	0.958	1.108
Over 40% with No HS diploma	1.053	0.006	1.053	1.092
Physicians per 1,000 ZIP code populations	0.0998	0.046	0.997	0.999
Constant				

Source: Statewide Planning and Research Cooperative System (SPARCS), 1999–2001: Originally published in Gusmano et al. (2006).

Access to Ambulatory Care in 2011–2013

When we compare the AHC rates in Manhattan over this period in comparison to the 1999–2001 period, we find that it has fallen by 44 percent, from 20.1 to 11.3 per thousand. According to a Wilcoxon signed-rank test to compare the AHC rates in these two time periods, these changes are significant at the .001 level of significance.

We also found that the AHC rates fell in both above- and below-median income neighborhoods (Figure 2).

Yet, as we found in the earlier period, the above-median income neighborhoods of Manhattan had a lower age-adjusted rate of AHC than the below-median income neighborhoods in 2011–13 (Figure 3). In fact, the difference between above- and below-median income neighborhoods grew from 46 percent to 59 percent.

The binary logistic regression for the 2011–13 period found that the same factors helped predict AHC in Manhattan as the regression analysis of the 1999–2001 period (Table 3). As in the previous periods, we found that gender, race, ethnicity, insurance status, and neighborhood of residence had the largest effects on the odds of being hospitalized with an AHC. The odds of AHC

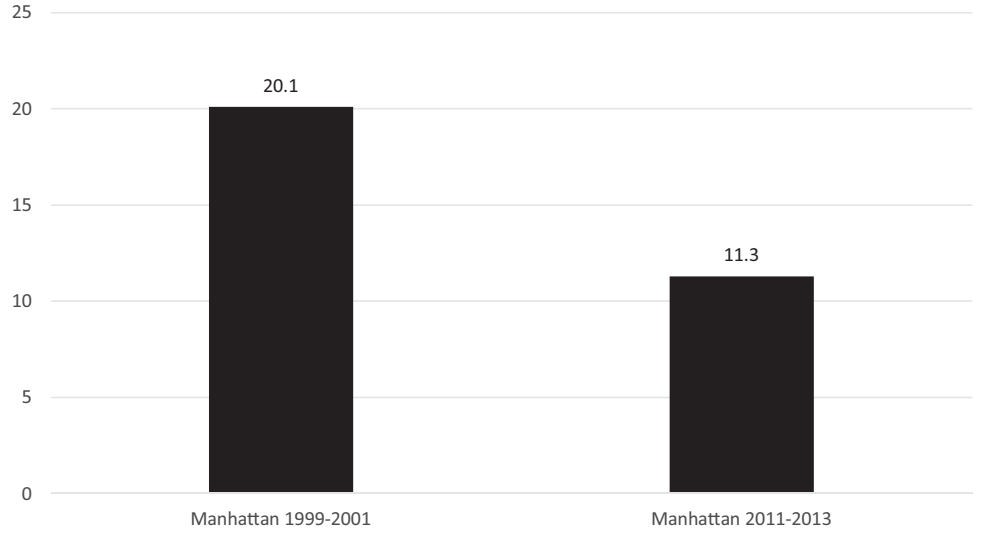

Figure 2. Age-Adjusted Rate Hospital Discharge of AHC in Manhattan, 1999–2001 and 2011–13.
Sources: Statewide Planning and Research Cooperative System (SPARCS), 1999–2001; 2011–13; U.S. Census.

discharges among women were 22 percent lower than men. The odds of AHC discharges were about 29 percent higher among Blacks and 23 percent higher among Hispanics than non-Hispanic Whites. The odds of AHC discharges for uninsured people were about 80 percent greater than for people with private insurance. The odds are 36 percent higher among Medicaid recipients and 23

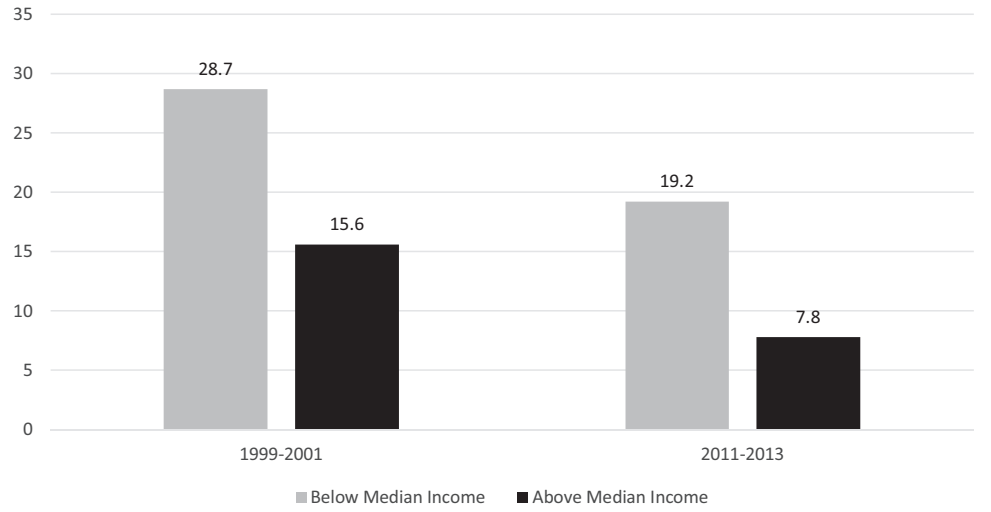

Figure 3. Change in Age-Adjusted Hospital Discharge Rates for AHC in Manhattan's Above and Below Median Income Neighborhoods, 1999–2001 and 2011–13.
Sources: Statewide Planning and Research Cooperative System (SPARCS), 1999–2001; 2011–13; U.S. Census.

Table 3. Age-Adjusted AHC Rates in Manhattan by ZIP Code[a], 1999–2001 and 2011–13[b]

1999–2001 Zip Codes	AHCs 1999–2001 (N)	Age-Adjusted AHC Rate /1,000 pop	2011–13 ZIP Codes	AHCs 2011–13 (N)	Age-Adjusted AHC Rate/1,000 Pop
10001	1,282	30.6	10001	820	17.2
10002	5,126	23.9	10002	2,972	12.7
10003	1,939	20.2	10003	1,219	9.6
10004	58	29.8	10004	26	6.4
10005	30	7.9	10005	50	7.2
10006	36	13.3	10006	32	20.8
10007	97	58.9	10007	102	9.8
10009	3,576	26.3	10009	2,136	14.6
10010	974	14.1	10010	512	10.2
10011	1,865	17.3	10011	909	7.4
10012	714	14.4	10012	337	6.4
10013	684	11.3	10013	431	6.5
10014	1,032	16.1	10014	334	4.8
10016	2,153	19.9	10016	1,305	10.9
10017	388	10.5	10017	261	5.8
10018	131	32.2	10018	100	12.5
10019	1,710	20.4	10019	869	8.5
10021	3,260	11.0	10021	2,126	7.94
10022	945	9.4	10022	652	5.4
10023	2,024	12.0	10023	1,189	6.9
10024	2,237	14.7	10024	1,277	7.5
10025	4,459	20.1	10025	2,821	10.7
10026	2,192	38.7	10026	1,322	19.9
10027	3,405	32.0	10027	2,037	16.9
10028	1,415	13.6	10028	797	6.0
10029	7,667	49.6	10029	4,184	24.2
10030	2,230	43.7	10030	1,260	24.4
10031	3,125	27.4	10031	1,900	15.8
10032	3,382	28.2	10032	2,417	18.0
10033	2,332	19.6	10033	1,707	14.1
10034	1,771	23.3	10034	1,348	16.4
10035	3,565	56.0	10035	2,076	28.5
10036	995	25.3	10036	654	12.5
10037	1,694	35.6	10037	1,000	20.1
10038	910	21.0	10038	743	14.8
10039	1,808	39.9	10039	1,284	24.8
10040	2,024	20.5	10040	1,462	14.3
10044	698	27.9	10044	431	13.4
10128	1,380	11.1	10128	1,040	9.4
10280	79	16.7	10280	149	4.9

Source: Statewide Planning and Research Cooperative System (SPARCS), 1999–2001; 2011–13.

[a]The number of ZIP codes in Manhattan increased by 6 during this time period. 10065, 10075, and 10162 were cut from 10021, 10069 was cut from 10023, 10282 was cut from 10280. A10020 was cut since it corresponds to Rockefeller Center.

[b]The difference between the two time periods is significant at the .001 level according to a Related-Samples Wilcoxon Signed Rank Test.

percent higher among Medicare beneficiaries than among people with private coverage. Finally, the odds of AHC discharges among people living in the lowest income neighborhoods of Manhattan were 29 percent higher than those living in the highest income neighborhoods.

Discussion

In comparison with the AHC rate in Manhattan at the end of the Giuliani administration, we found significant improvements over the course of the Bloomberg administration. Between the earlier period, 1999–2001, and 2011–13, the AHC rate decreased by nearly 50 percent. Furthermore, all neighborhoods reveal a large decrease in AHC rates (Table 3) over this period. These gains are significant because, although overall health status, measured in terms of infant mortality and life expectancy at birth improved, Manhattan's population experienced increases in obesity and a range of obesity-related illnesses, including diabetes and high blood pressure (Table 1).

Although we find that AHC rate declined, in Manhattan, disparities among these rates, by insurance status, race, ethnicity, and neighborhood, did not change over this period (Tables 2 and 4). The New York Community Health Survey reinforces this finding with data on disparities among Manhattanites, which indicate that racial and ethnic differences in self-reported health and the incidence

Table 4. Logistic Regression Results for Characteristics Associated With Avoidable Hospital Condition (AHC) Admissions (Dependent Variable) In Manhattan, Population Age 18 and Older, 2011–13

			95%C.I. for Odds Ratio	
Variable	Odds Ratio	Sig.	Lower	Upper
Age (continuous)	1.016	0.000	1.015	1.016
Omitted male				
Female	0.877	0.000	0.859	0.895
Omitted non-Hispanic White				
Black	1.292	0.000	1.256	1.329
Hispanic	1.23	0.000	1.201	1.26
Other Race	1.128	0.000	1.099	1.157
Omitted highest income quartile neighborhoods				
Lowest income quartile neighborhoods	1.291	0.000	1.237	1.348
Second quartile income	1.485	0.000	1.395	1.581
Third quartile Income	1.128	0.000	1.091	1.166
Number of diagnoses	1.033	0.000	1.03	1.035
Omitted private insurance				
Medicare	1.231	0.000	1.188	1.275
Medicaid	1.358	0.000	1.313	1.406
Uninsured	1.796	0.000	1.699	1.898
Other insurance	1.294	0.000	1.162	1.441
Over 15% linguistically Isolated	0.977	0.196	0.944	1.012
Over 40% with No HS Diploma	1.083	0.000	1.04	1.127
Constant	0.018	0.000		

Source: Statewide Planning and Research Cooperative System (SPARCS), 2011–13.

of most acute and chronic illnesses were largely the same in 2014 as they were in 2002 when the survey was launched. We suspect that this inertia reflects our inadequate investments in social programs that address the broader social and economic determinants of health. As Bradley, Elkins, Herrin, and Elbel (2010) have shown, in comparison to other wealthy nations, the United States spends a lower share of its GDP on social programs that are known to affect population health.

Comparison of cities in the United States to those in other wealthy nations suggests that many common "urban problems," particularly the geographic concentration of poverty, income inequalities, and the persistent inequalities in population health and health care documented in this paper, are not inevitable attributes of modern cities. Cities in other wealthy European nations do not have the same share of population living below poverty levels and in disadvantaged neighborhoods. Nor do they share the same extent of spatial segregation and city-suburb disparities as the United States (Dreier, Mollenkompf, & Swanstrom, 2001). These problems have been created by national policies that produce inequalities in wealth and income, and offer inadequate protection against racial and ethnic injustice. Our analysis documents one important consequence of these political decisions.

It is important to note that the data we examine are from the period immediately before the implementation of the Patient Protection and Affordable Care Act's (ACA) insurance expansion in 2014. Given the importance of insurance coverage for access to ambulatory care, it is likely that the ACA has further reduced the AHC rate in Manhattan and the rest of NYC. But the ACA includes only modest efforts to improve primary care delivery. It is unlikely that the ACA's insurance expansions, alone, are sufficient to address the persistent inequalities in health and health care, by race, ethnicity, and neighborhood, which our analysis has documented.

New York State's "Redesigning Medicaid" initiative, started in 2014, also seeks to reduce AHC rates. Under the state's 1115 Medicaid waiver, New York has committed to reducing these rates and avoidable emergency department visits by 25 percent over a 5-year period. To accomplish this, New York has established 25 "Performing Provider Systems" (PPS), led by public or other (safety-net) hospitals. Each PPS will work with a group of community-based "participating partners," which include health homes, skilled nursing facilities, community health centers, and behavioral health providers, among others, to improve access to and coordination of health and social care (Gusmano & Thompson, 2015). Our analysis suggests that the success of these efforts in reducing AHC rates will depend on how effectively they improve the care available to racial and ethnic minorities and residents of the city's poorest neighborhoods.

Conclusions and Policy Implications

In the context of growing income inequality, an aging population, higher rates of obesity, and chronic diseases, the NYC health system managed to lower AHC rates

in Manhattan. Yet racial, ethnic, and spatial neighborhood-income gaps within the city have remained about the same. The odds ratios for higher AHC rates among non-Hispanic Blacks hardly changed. It fell for Hispanics, but for both groups these ratios remains significantly higher than among non-Hispanic Whites. Despite efforts of the NYC DOHMH to address these disparities, there has been little progress in reducing inequalities in health and health care. We suspect that this is due to the broader social and economic inequalities in the nation, the reductions (in response to federal policy) in welfare payments, and the growth of income and wealth inequalities. Unless there are changes in federal and state policy, which begin to narrow the racial, ethnic, and neighborhood-level inequalities of income and wealth and address various forms of discrimination that undermine public health, it will be an extraordinary challenge for NYC officials to overcome the persistent inequalities in health and health care, which we have documented here.

Limitations and Bias

Analysis of AHC is based on hospital administrative data that do not include clinical information allowing for risk adjustment. Although we attempt to adjust for morbidity by including number of secondary diagnoses on the record, this is a limited measure. In addition, the hospital data do not include individual-level measures of income or education and our regression analysis for 2011–13 did not include physician density by neighborhood. Third, although the SPARCS database includes approximately 97 percent of all hospital discharges in Manhattan, the exclusion of Veterans Administration hospitals may bias the findings. Finally, although we test for bias by estimating models with a dummy variable for each ZIP code, it is still possible that our regression models are biased due to unobserved neighborhood-level heterogeneity.

Michael K. Gusmano, **PhD**, is an associate professor of health policy at Rutgers University School of Public Health and serves as a research scholar at The Hastings Center.
Victor G. Rodwin, **MPH**, **PhD**, is a professor of health policy and management at New York University.
Daniel Weisz, **MPA**, **MD**, serves as a research associate on the World Cities Project at Columbia University's International Longevity Center.

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Corresponding author: Michael K. Gusmano, mkg93@sph.rutgers.edu

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