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Gateways to Opportunity? Neighborhood Trajectories of Massachusetts Residents

Madeleine I. G. Daepp, Erin M. Graves, and Mariana C. Arcaya

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Abstract

The disproportionate impact of COVID-19 in high-poverty neighborhoods makes visible what researchers have long known: high-poverty neighborhoods suffer disproportionate rates of adverse health, social, and economic outcomes. Since 2010, policymakers in Massachusetts have directed funding to improve economic conditions and reduce neighborhood poverty specifically in the "gateway cities," so named because of their potential to act as gateways to economic opportunity for their disproportionately low-income and immigrant residents. While the goal of such policies is to improve economic conditions within the high-poverty neighborhoods of the gateway cities, it is also possible that these policies increased the chances that households exit high-poverty neighborhoods. Thus, part of understanding the gateway cities' role as rungs on the opportunity ladder requires understanding how residents' exposures to neighborhood poverty change when they move.

In this study, we examined the relationship between residential moves and concentrated poverty for residents of the gateway cities in comparison with residents of Boston and elsewhere in Massachusetts from 2000 to 2016. We found that when residents of high-poverty neighborhoods in the gateway cities moved during this period, they most frequently moved to a lower-poverty neighborhood. However, the probability that a person leaving a high-poverty neighborhood would move to a lower-poverty neighborhood was significantly lower when departing a gateway city (60.8%) than when departing a high-poverty neighborhood in Boston (69.6%) or elsewhere in Massachusetts (77.6%).

We further show that for those who moved out of high-poverty neighborhoods in Massachusetts during our window of observation, a majority remained in lower-poverty neighborhoods for at least five years, despite a statewide and national context of increasing poverty. However, moves out of poverty that began in gateway cities were significantly less durable than moves out of poverty that began elsewhere in Massachusetts: those who left high-poverty neighborhoods in the gateway cities had a 66.3% probability of remaining outside of a high-poverty neighborhood five years later, compared with 72% for movers originating in Boston and 73.7% elsewhere in Massachusetts, and the extent to which such moves constituted long-lasting reductions in neighborhood poverty exposures varied considerably across cities. Our results highlight a need for further research to uncover the factors that underlie these place-based differences in long-term neighborhood outcomes. Moreover, as cities invest in recovery from the COVID-19 pandemic and its economic effects, our approach offers a method for researchers seeking to examine the outcomes not just of the people who continue to reside in gateway cities but also of people who were residents during critical intervention periods.

Introduction

At the start of April in Massachusetts, high-poverty neighborhoods saw death rates from COVID-19 that were more than 25% higher than death rates in low-poverty

neighborhoods (Chen et al., 2020), making starkly visible the adverse health, social, and economic outcomes associated with living in high-poverty neighborhoods (Chetty et al., 2016; Kawachi & Berkman, 2003; Sampson et al., 2002). A 2008 Federal Reserve System report on high-poverty neighborhoods noted signs of increasing poverty concentration across the United States (Erickson et al., 2008; Kneebone et al., 2011). The pattern worsened with the onset of the Great Recession: from 2000 to 2010, the percentage of people living in census tracts with poverty rates over 20% increased from 18.1% to 25.7% nationally (Bishaw, 2014) and the percentage of people in neighborhoods with poverty rates of 40% or higher similarly increased by over 50% (Jargowsky, 2013). In 2016, after seven years of economic recovery, rates of concentrated poverty remained above prerecession levels.[1]

Prior to the COVID-19 pandemic, Massachusetts had seen a stronger post-recession recovery and lower poverty rates than the national average (Massachusetts Budget & Policy Center, 2016), but the number of people living in neighborhoods with poverty rates over 40% nevertheless doubled from 2000 to 2017 (Forman & Mallach, 2019).[2] The ongoing COVID-19 pandemic could reentrench neighborhood poverty because the relationship between health and poverty is self-reinforcing—infection rates are higher in high-poverty neighborhoods (Chen et al., 2020; Kumar et al., 2015), and poverty is more likely for people who have recently experienced illness (Bonds et al., 2010).

In 2007, the Brookings Institute and Mass INC (Muro et al., 2007) identified 11 cities that, despite accounting for fewer than a fifth of all neighborhoods in the state, were home to over half of the state's high-poverty neighborhoods.[3] These 11 former manufacturing centers have large immigrant and low-income populations, an abundant stock of affordable housing (Mallach et al., 2013), and well-established infrastructure (Forman, 2014), leading researchers to name them "gateway cities" because of the potential to revive their function as gateways to the American dream (Muro et al., 2007). However, the gateway cities have struggled with declining populations and the loss of manufacturing jobs (Sum et al., 2007). Further, fewer than a quarter of students in gateway cities obtain postsecondary degrees (Forman, 2014)—critical for a successful transition toward a knowledge-based economy (Sum et al., 2007)—and rising income segregation has exacerbated the isolation of families in high-poverty neighborhoods

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[1] Using ACS data for 2014–2018, we estimate that 23.1% of people for whom poverty status was determined lived in census tracts with 20% or higher poverty rates (n = 72,548,628). Furthermore, 3.2% of people lived in tracts with 40% or higher poverty (n = 9,969,701)—only slightly lower than the estimate of 3.5% that Jargowsky (2013) obtains using the 2006–2010 ACS.

[2] Both the number and percent of people exposed increased. While 1.27% of Massachusetts residents (n = 77,826) were identified as living in neighborhoods with poverty rates of 40% or higher in the 2000 census, 2.4% (n = 159,601) were in neighborhoods with such high concentrations of poverty in the 2013–2017 ACS—although estimates are somewhat attenuated in the most recent 2014–2018 ACS data (n = 123,630 or 1.9%). In the same period, the number of state residents living in neighborhoods with poverty rates over 20% increased from 755,720 (12.3%) in the 2000 census to over 1 million (15.0%) in the 2014–2018 ACS.

[3] For the purpose of this study, we operationalize neighborhoods as census tracts. In the 2005–2009 ACS, for example, the gateway cities accounted for 241 out of 1,356 census tracts (17.8%) in Massachusetts for which poverty rates were available. However, they were home to 32.5% of the 243 tracts with poverty rates over 20% and 55.3% of the 47 tracts with poverty rates over 40%.

(Forman & Koch, 2012; Reardon & Bischoff, 2011). Moreover, the gateway cities have seen particularly high COVID-19 infection rates: as of July 1, 10 of the 11 original gateway cities ranked in the 10% of Massachusetts cities with the highest rates of coronavirus infection (Massachusetts Department of Public Health, 2020).

The conceptualization of gateway cities as potential gateways to economic opportunity highlights a process that has received limited empirical examination: that some people reside in economically disadvantaged but affordable neighborhoods while accumulating the resources they then use to access more economically advantaged places. Our analysis thus examines how the changes in neighborhood poverty contexts for residents moving from high-poverty neighborhoods in a set of cities that policymakers and advocates have identified as "gateways" compares with movers leaving similarly high-poverty neighborhoods in Boston or elsewhere in Massachusetts. Because the pandemic is likely to contribute to new pockets of persistent poverty (Ambrus et al., 2020), particularly in the destinations to which people may move if evicted or otherwise are involuntarily displaced , research on whether movers exit high-poverty neighborhoods, and for how long, is important to inform strategies for effective recovery.

In this study, we first examine trends in neighborhood poverty rates for residents of gateway cities and for Massachusetts residents overall from 2000 to 2016. As a complement to existing work on changes in neighborhood poverty in the gateway cities (see, e.g., Forman & Mallach, 2019), we seek to develop a methodology for understanding how residents change neighborhoods and, in particular, assessing the changes in neighborhood poverty levels associated with a move. In the years before the COVID-19 pandemic, when gateway city residents moved, did they tend to follow trajectories researchers have typically described as "neighborhood attainment," in which individuals convert economic resources into a move to a more economically advantaged neighborhood (Logan et al., 1996; Logan & Alba, 1993)? Or were they more likely to experience a move between two neighborhoods of similar economic status (sometimes referred to as "churn" (Coulter et al 2016) in the case of high poverty neighborhoods and what we label as "exchange" in the case of moves from one low poverty neighborhood to another)or were they more likely to move from one high poverty context into an area with an even higher poverty rate? And when people moved, did they stay in their destinations over the long term, making what researchers call "durable" moves?

In particular, we ask:

1. What were the rates of and trends in the neighborhood poverty exposures of adult gateway city residents? Did they vary among gateway cities and how do patterns compare with those in Massachusetts overall?
2. When residents of high-poverty neighborhoods in the gateway cities moved, did they tend to move to lower-poverty neighborhoods, to neighborhoods of the same high poverty level (churn) or the same low poverty level (exchange), or to higher-poverty neighborhoods? How did the types of moves differ for residents of gateway cities in comparison with movers from high-poverty neighborhoods in Boston and elsewhere in Massachusetts?

3. How durable were moves out of high-poverty neighborhoods (neighborhood attainment) in the first five years in each of the gateway cities versus in Boston or the rest of Massachusetts?

Policy Context

The ongoing COVID-19 pandemic and recession is likely to increase neighborhood poverty in the United States, highlighting a pressing need for effective policies to help people mitigate their exposures to high-poverty neighborhoods. The most common way in which households reduce exposures to high neighborhood poverty is by moving from high- to lower-poverty neighborhoods (Quillian, 1999 & 2003),[4] yet many long-standing policy approaches do not account for the relationship between concentrated poverty and residential moves. Consider the two dominant policy approaches for reducing exposure to poor places: (1) investing in poor places (Partridge & Rickman, 2006) and (2) investing in people, including efforts to expand access to opportunity for people to move out of poor places (Crane & Manville, 2008; Glaeser, 2005; Moretti & Kline, 2014; Winnick, 1966). Residential moves can affect outcomes sought by either policy approach. The assumed benefits of place-based policies are diminished if residents move out of the place receiving improvements—especially if they move out of that place because the success of such policies directly or indirectly leads to less affordable housing stock (Tach et al., 2016)—and evaluations of such policies may fail to account for the benefits accrued by out-movers or the costs to people who have been displaced. People-oriented policies that intend to support households in move to lower poverty neighborhoods must also account for whether locational changes are durable (Quillian, 2003).[5] One of the most well-known people-based policies, the Moving to Opportunities (MTO) experiment, offered vouchers to help individuals move out of high-poverty areas. But many participants did not move, and more than a third of those who did relocated back to high-poverty neighborhoods within four years (Clampet-Lundquist & Massey, 2008). The relationships between policy and mobility can have important implications for place- and people-based policies alike, but these dependencies remain poorly understood.

Interest in the relationship between residential moves and economic mobility policy has recently increased, in part because of an influential study showing that neighborhood poverty can have a large effect on children's future economic outcomes. Revisiting MTO, Chetty, Hendren, and Katz (2016) found large and significant benefits of low-poverty neighborhoods: children in households that received the vouchers had, as young adults, higher earnings and increased rates of college attendance in adulthood

[4] Examining outcomes for movers in the Population Study of Income Dynamics for 1970–1990, Quillian (1999) writes, "neighborhoods tend to deteriorate more often than they gentrify; the predominant path to a less poor neighborhood is to move into it." Revisiting the study with CCP data for the early 2000s, we find that Quillian's conclusions continue to hold.

[5] For residents of any neighborhood, out-moves by high-income neighbors can contribute to increased poverty concentration for individuals who stay in place (Quillian, 1999), or gentrification—the revitalization of formerly disinvested places as they become populated by new people with higher incomes and educational attainment (Hwang & Lin, 2016)—can decrease neighborhood poverty for the prior residents (Freeman & Braconi, 2004; Hwang & Sampson, 2014), though only if those residents are not displaced (Newman & Wyly, 2006).

than did children in the control group. Using tax records for 40 million Americans, Chetty and Hendren (2018) further showed that low-income children are most likely to attain economic mobility in counties that have less concentrated poverty, less income inequality, better schools, and lower crime rates. Follow-on research identified "opportunity bargains"—affordable areas where low-income children are likely to achieve economic mobility (Chetty et al., 2018), but many high-opportunity neighborhoods remain inaccessible to low-income households.

Massachusetts is a useful case for the study of neighborhood attainment for two reasons. First, the state has recently prioritized initiatives to foster economic mobility through residential mobility. State leaders in both the Democratic and Republican parties have promoted initiatives that support residential moves in hopes that such moves will increase economic mobility. Republican governor Charlie Baker introduced the Housing Choice Bill, which would allow for zoning reform; Democratic senator Elizabeth Warren introduced the federal American Housing and Economic Mobility Act, which calls for a half-trillion-dollar investment in affordable housing construction and assistance as well as incentives for relaxed zoning rules; and the Massachusetts legislature established an Economic Mobility Commission, a body dedicated to developing a diverse portfolio of programs to help low-income families achieve economic mobility and independence. Yet we lack an understanding of the extent to which Massachusetts households moved out of concentrated poverty, both before the implementation of these policies and before the onset of the COVID-19 recession. That understanding is important as a baseline for evaluating the effects of policies that support mobility or of changes in mobility catalyzed by the changing health and economic context.

Second, regional stakeholders have created an array of programs that support particular places as incubators for economic mobility. The Federal Reserve Bank of Boston has initiated the Working Cities Challenge: grant funding to support revitalization in small- and mid-sized postindustrial cities in New England. Many of these "working cities" are also "entitlement cities"—identified by the U.S. Department of Housing and Urban Development based on population and urbanization as well as measures of community needs including poverty, housing age, and population growth—that are uniquely eligible for federal community development block grants. The commonwealth further offers a "small cities" program for cities too small to qualify as federal entitlement cities. These designations include gateway cities—officially codified as "gateway municipalities" by the Massachusetts legislature in Chapter 240, Section 17 of the Acts of 2010—which have been prioritized for redevelopment and revitalization efforts including infrastructure grants, brownfields remediation, and transit-oriented development (Jones, 2016). Notably, this place-based approach has recently been extended to the prioritization of places for COVID-19 mitigation: a Massachusetts bill included a provision specific to gateway cities to improve COVID-19 data collection (Doran, 2020), and a statewide economic recovery bill included funds set aside for housing in gateway cities (Spilka, 2020).

The promise implied in the term gateway cities is that these places serve as points of entry for low-income and immigrant families and, aspirationally as well as

historically, as gateways to the American dream. These cities are thus prioritized for place-based initiatives focused on enhancing economic performance. The underlying theory of change—that an improvement for the city would translate into an improvement for its residents—presumes that residents will remain in place. Yet place-based policies bolster the resources available for residents, who then may want to move. In this way, they are similar to successful people-based policies that improve residents' access to opportunities outside as well as within the cities. Evaluations of the efficacy of such policies thus may undervalue the benefits for residents who have moved: if an outcome of economic growth for gateway city residents is the ability to relocate, then a study of the gateway cities should focus not just on current residents but on the destinations attained by previous residents through residential moves. Similarly, evaluations of interventions during critical periods (such as the height of the COVID-19 pandemic) may miss important effects on people who then left the places targeted for intervention—a particular problem given the pandemic's effects in exacerbating housing instability.

Whether a policymaker is seeking to implement a place- or person-based program, either in general or specifically in response to the COVID-19 pandemic and its economic shockwaves, there is a need for a greater understanding of how people move between neighborhoods with different poverty thresholds because crossing these poverty thresholds is associated with meaningful effects on well-being (Galster et al., 2000) as well as because these thresholds are often used as cutoffs for government programs (Bishaw, 2014). Furthermore, place-based policy evaluations that look only at changes in those places' poverty rates will fail to account for the residents who left high-poverty neighborhoods but who then moved to a new, lower-poverty location—though such relocations could in fact be attributable to the placed-based intervention. We hope that our method will enable researchers to highlight the ways in which origin neighborhoods are actually part of a trajectory of varying neighborhood poverty rates. Although our research was conducted prior to the COVID-19 pandemic, for example, our approach could be used to assess the effects of health and economic interventions not just on people who resided in the gateway cities after the pandemic, but also on people who were residents during the period in which gateway cities were prioritized for critical interventions.

Methods

Data

We obtain neighborhood trajectories for individuals from the Federal Reserve Bank of New York (FRBNY)/Equifax Consumer Credit Panel (CCP), an anonymous panel data set of financial information for a 5% sample of all U.S. residents with a credit score and a social security number (Lee & Van der Klaauw, 2010). We include individuals ages 25 to 74 with an address in Massachusetts for at least one year between 2000 and 2016, the longest period for which both CCP and census data are available. Addresses are geocoded to census blocks based on the address at which each individual receives mail from creditors, with more weight given to addresses from reliable data providers, allowing for the assessment of mobility over time (DeWaard et al., 2018).

We link tract identifiers with census subdivisions ("minor civil divisions" in MA) to identify individuals living in gateway cities. Some census tracts cover multiple minor civil divisions; we assign an individual in a census tract to a minor civil division using geographic crosswalk files from MABLE/Geocorr (Missouri Census Data Center, 2014). The official Massachusetts "gateway municipalities" designation identifies places with a population between 35,000 and 250,000 where both average educational attainment and average household incomes were below the state average. In 2010, the set of cities considered gateway cities included the 11 original cities as well as Barnstable, Chelsea, Chicopee, Everett, Leominster, Lynn, Malden, Methuen, Quincy, Revere, Salem, Taunton, and Westfield; Attleboro and Peabody were added in 2013. For the purposes of this study, we focus on the experiences of individuals in the 11 original gateway cities—Brockton, Fall River, Fitchburg, Haverhill, Holyoke, Lawrence, Lowell, New Bedford, Pittsfield, Springfield, and Worcester—because of their high numbers of people in concentrated poverty and the emphasis, in a Gateway Cities Innovation Institute report, on their role in fostering moves (Mallach et al., 2013). Furthermore, the more recent additions have fewer high-poverty neighborhoods, which limits the sample sizes available and thus the analyses possible for these places.

We draw neighborhood poverty rates from the decennial census and the American Community Survey (ACS), assigning estimates to years in the ACS based on the midpoint of the five-year estimate.[6] We use the longitudinal tract database to convert data from 2000 census geographies to 2010 census tracts (Logan et al., 2014). We then apply linear interpolation to impute census data for missing years (2000–2006) following previous research (Lee et al., 2017; Quillian, 2003; Sampson & Sharkey, 2008). Given evidence of threshold effects in neighborhood poverty rates (Galster, 2003; Galster et al., 2000), we construct categorical measures for low-poverty (<5%), mid-low poverty (5–10%), mid-high poverty (10–20%) and high poverty (≥ 20%). We base our cutoff for high-poverty neighborhoods on the Census Bureau's designation of neighborhoods with 20% or higher poverty rates as "poverty areas" (Bishaw, 2014), which are commonly used to target interventions.[7] However, recognizing that much of the existing literature supports a higher threshold of 40% or more for concentrated poverty (Jargowsky, 1997, 2013; Wilson, 1987), we test the robustness of our results to the use of different cutoffs (10%, 20%, and 40%).

Analyses

We first construct a demographic and economic profile for each of the gateway cities as well as for Massachusetts overall. Using the CCP data, we calculate the mean and

6 We note that our use of multiple, overlapping ACS five-year estimates means that in some cases differences will be attributable to the sampling approach rather than to true change in the neighborhood (U.S. Census Bureau, 2019). However, these are the best available data for the measurement of tract-level neighborhoods in the 2000s.

7 For example, the 2000 Community Renewal Tax Relief Act included a New Market Tax Credit program that supports projects in high-poverty census tracts, using 20% as the threshold for eligibility. The Developmental Disabilities Assistance and Bill of Rights Act Basic State Grants projects similarly restricted eligibility to Census Bureau "poverty areas," or tracts with over 20% poverty.

standard deviation for age, tract-level mobility rate, and tract-level poverty rate for the individuals in our sample at baseline (2003). We further use data from the decennial census to calculate the percentage of people identifying as white, African American, or Hispanic/Latino; the percentage foreign-born; the median value of owner-occupied units; the percentage of renters paying over 30% of their incomes for rent in the previous year; and the total population count for each city as well as for Massachusetts overall.

We next calculate the percentage of individuals in the CCP who live in high-poverty neighborhoods (≥ 20%) and concentrated poverty neighborhoods (≥ 40%) over time for each of the gateway cities. We construct slope graphs to show how the concentration of poverty changed before the Great Recession (2000–2009) and from 2009 to the end of our window of observation (2016) in each of the gateway cities as well as in Boston and the rest of Massachusetts. While our data offer a unique large-scale panel data set for the examination of residential locations over time, the CCP may lead us to underestimate rates of concentrated poverty because it fails to account for "credit invisibles"— people who lack a social security number or credit history, estimated to comprise 11% of the population and to disproportionately reside in low-income areas (Brevoort et al., 2015). We thus check the robustness of our results by fitting slope graphs using census data rather than CCP data to calculate rates of concentrated poverty.

To compare the probability that an individual will experience an increase, churn/exchange, or decrease in neighborhood poverty, we construct transition probability matrices assessing the likelihood that a move from a gateway city neighborhood would lead a person to cross a threshold in neighborhood poverty exposure, conditional on the poverty level of a mover's origin neighborhood. We compare poverty levels of destinations for movers out of high-poverty neighborhoods in the gateway cities versus Boston or elsewhere in Massachusetts using chi-squared tests. Finally, we visualize moves between each origin and destination poverty level as a fraction of all moves both for moves originating in gateway cities and for all moves originating anywhere in Massachusetts. As a sensitivity analysis, we calculate these probabilities with both cutoffs for poverty rates.

Finally, we estimate the probability that a move will lead to a durable change in poverty rates. To test whether moves out of concentrated poverty are long lasting, we apply survival analysis to estimate the probability that a person who moves out of a high-poverty neighborhood at any point between 2000 and 2016 will see a neighborhood poverty exposure over 20% within five years. This approach allows us to include observations for which we do not know the full length of time spent in low-poverty neighborhoods, as is the case for people who remain outside of high-poverty neighborhoods at the end of the window of observation (2016) or for people who are "censored," dropping out of the data set for other reasons. We calculate separate survival probabilities for each gateway city and for the gateway cities in comparison with Boston or the rest of Massachusetts, mapping the results to visualize geographic variability in the resulting estimates.

Results

Our final sample comprises 340,253 unique individuals with 4,122,674 person-year observations. Table 1 presents descriptive statistics for each of the gateway cities and for Massachusetts overall. In 2000, individuals in gateway cities lived in neighborhoods with poverty rates that were, on average, 9.7 points higher than the average elsewhere in Massachusetts, excluding Boston. Two of the 11 cities had a higher percentage of white residents than the rest of the state, but over half of the gateway cities had a higher proportion of foreign-born residents than the statewide average, consistent with the framing of these cities as places with large immigrant populations. In 2000, moving rates in the gateway cities were only slightly higher than moving rates elsewhere in Massachusetts. Although median values of owner-occupied housing units were consistently lower in gateway cities than in Boston or Massachusetts as a whole ($185,700), gross rent nevertheless comprised over 30% of household income—a common benchmark used to identify “unaffordable” rents (Quigley & Raphael, 2004)—for over a third of renters in all cities except Fall River.

Table 1. Descriptive Statistics at Baseline

Gateway Cities	FRBNY/Equifax Consumer Credit Panel (2000)			Decennial Census (2000)[1]							
	Individuals – Mean (SD)			Demographic Composition (%)				Housing Market Characteristics			N
	Age	Mob. Rate	Poverty Rate[2]	White	Black	% Latino	% Foreign-Born	% renter-occupied	Rent > 30% of hh inc.	Median Value[3]	Pop.
Brockton	44.2 (12.6)	14.8 (4.7)	14.0 (8.6)	61.5	17.8	8.0	18.4	45.4	38.2	128,300	94,304
Fall River	45.2 (13.4)	11.8 (3.5)	16.3 (6.7)	91.2	2.5	3.3	19.8	65.1	32.6	132,900	91,938
Fitchburg	46.0 (13.3)	11.9 (3.8)	14.1 (8.6)	81.9	3.6	15.0	8.3	48.4	35.4	112,100	39,102
Haverhill	45.1 (12.8)	12.3 (2.9)	8.2 (6.4)	89.7	2.4	8.8	6.9	39.8	36.6	159,200	58.969
Holyoke	45.8 (13.5)	11.3 (5.2)	21.8 (15.4)	65.8	3.7	41.4	5.4	58.5	42.0	105,600	39,838
Lawrence	42.6 (12.4)	15.5 (3.5)	23.1 (9.5)	48.6	4.9	59.7	30.6	67.8	42.0	114,100	72,043
Lowell	43.6 (12.8)	13.8 (3.0)	15.0 (9.8)	68.6	4.2	14.0	22.1	57.0	35.7	134,200	105,167
New Bedford	45.2 (13.3)	13.9 (3.7)	18.8 (10.6)	78.9	4.4	10.2	19.6	56.2	38.9	113,500	93,768
Pittsfield	47.5 (13.4)	10.6 (2.7)	10.6 (6.7)	92.6	3.7	2.0	3.9	39.2	36.1	100,800	45,793
Springfield	44.5 (12.6)	13.0 (3.4)	20.8 (14.2)	56.1	21.0	27.2	8.0	50.1	41.8	87,300	152,082
Worcester	45.0 (13.4)	12.9 (2.9)	15.6 (11.9)	77.1	6.9	15.1	14.5	56.7	36.9	119,600	172,648
Boston	42.3 (12.9)	15.5 (4.3)	18.0 (10.7)	54.5	25.3	14.4	25.8	67.8	40.2	190,600	589,141
Gateway Cities	44.8 (13.1)	13.1 (3.7)	16.4 (11.2)	72.0	8.4	18.0	15.3	54.0	37.7	--	965,652
Elsewhere in MA	45.0 (12.8)	12.4 (12.4)	6.7 (6.1)	90.8	2.4	3.5	9.9	31.3	34.6	--	4,794,304

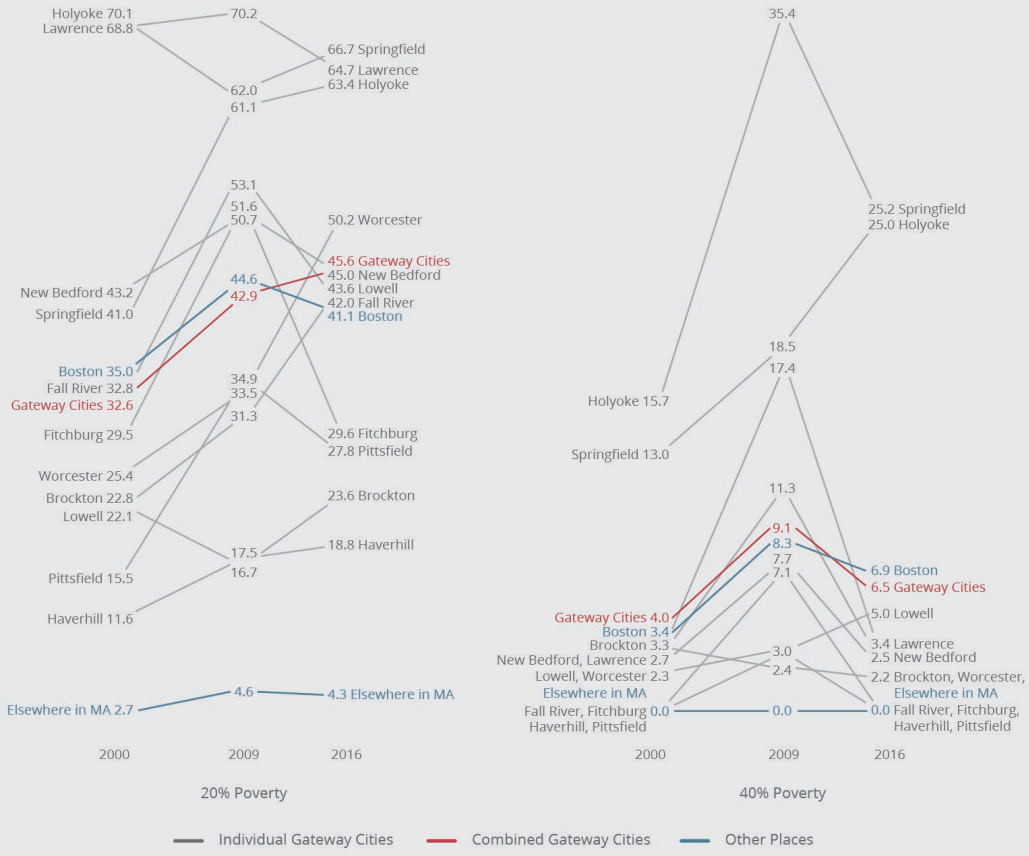
[1] Racial/ethnic characteristics, % Foreign born, and housing characteristics are from the 2000 decennial census.

[2] Poverty rates were calculated at the tract level using data from the decennial census and the five-year ACS.

[3] For owner-occupied units.

Our first research question concerns trends in the neighborhood poverty exposures of adult gateway city residents. We constructed slope graphs showing the percentages of people exposed to concentrated poverty over time for each of the gateway cities. Figure 1 shows that exposure to concentrated poverty increased from 2000 to 2009, remaining higher than pre-Great Recession levels at least until 2016. However, there is considerable variation both in rates of concentrated poverty and in changes over time. Findings are similar when we use census and ACS data rather than CCP data to construct rates of exposure to high-poverty neighborhoods (Figure A1, in appendix).

Figure 1: Percent of Individuals Living in High-Poverty Neighborhoods in Gateway Cities versus in Massachusetts Overall



Note: Estimates are authors' calculations constructed with tract-level location data from the FRBNY/Equifax CCP and tract-level poverty rate data from the decennial census and the five-year ACS.

The slope graphs overall show that the prevalence of living in areas with concentrated poverty is increasing, on average, in the gateway cities, but they do not tell us whether residents of gateway cities are more likely than the average Massachusetts resident to move out of high-poverty neighborhoods. To answer our second research

question, we examined the relative probabilities of decreasing, stable, or increasing poverty rates:

- **Decreasing poverty.** When residents of high-poverty neighborhoods in the gateway cities move, they are more likely to move to lower-poverty neighborhoods than they are to experience similar or increasing poverty rates (Figure 2). Nearly half (47.9%; 95% CI, 47.5–48.4) of all moves originating in the gateway cities led to a destination with a lower poverty level than that of the origin neighborhood. In contrast, 51.2% of all moves in Boston (95% CI, 50.7–51.6) and 28.2% of moves elsewhere in Massachusetts (95% CI, 28.2–28.2) were to destinations with lower poverty levels than the origin neighborhoods. With respect to the latter, however, the difference can be explained by the far higher proportion of moves in gateway cities than in Massachusetts overall that originate in high-poverty neighborhoods. Conditional on originating in a neighborhood with a poverty rate over 20%, 60.8% of moves originating in gateway cities (95% CI, 60.2–61.4), 69.6% of moves originating in Boston (95% CI, 69.0–70.2), and 77.6% of moves elsewhere in Massachusetts were to lower-poverty neighborhoods (95% CI, 76.9–78.3).
- **Churn or exchange.** A slightly smaller proportion of all residential moves in the gateway cities versus elsewhere in Massachusetts[8] occurred between two neighborhoods of the same poverty level (32.5% vs. 36.8%, $p < 0.001$). Figure 2 shows, however, that moves originating in gateway cities or Boston between two neighborhoods of the same poverty level were most likely to occur between two high-poverty neighborhoods and thus to constitute churn. In contrast, the most prevalent type of move originating elsewhere in Massachusetts was a move between two neighborhoods with the lowest poverty rates, a phenomenon we call exchange.
- **Increasing poverty.** Finally, 19.6% of moves in the gateway cities followed a trajectory of increasing neighborhood poverty (95% CI, 19.1–20.1), in which individuals moved to a destination with a higher poverty rate than their origin neighborhood. When we compare moves originating in neighborhoods with less than a 5% poverty rate (Figure 2, Table 2), 68.4% of moves originating in gateway cities versus 66.0% of moves originating in Boston led to a higher-poverty destination (95% CI, 0.2–4.6 for the difference). Elsewhere in Massachusetts, 54.9% of moves led to a neighborhood with a higher poverty rate (95% CI, 54.6–55.2).

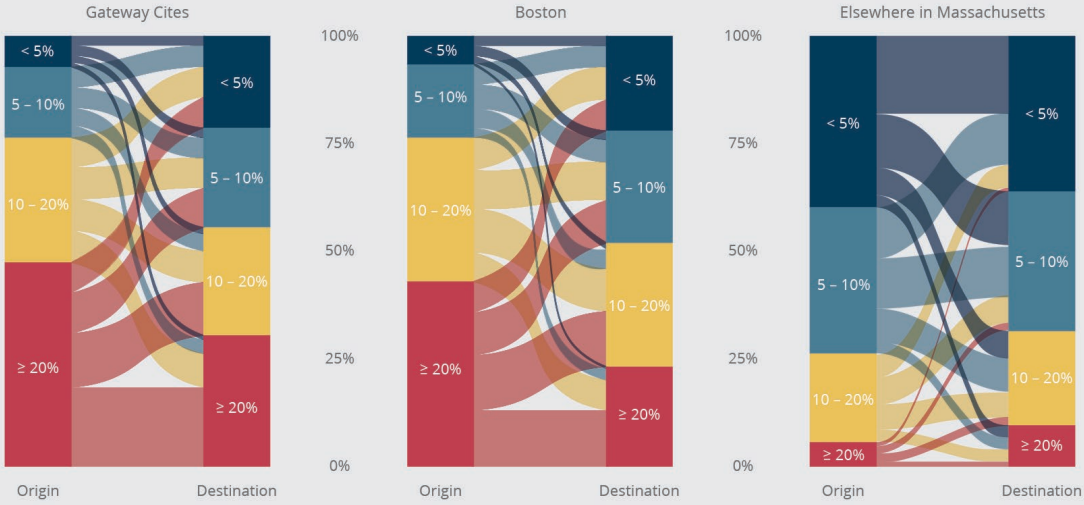
8 For movers originating in Boston, 30.5% of moves occur between two neighborhoods of the same poverty level (95% CI, 30.0–31.0).

Table 2: Probability of Moves Across Policy-Relevant Neighborhood Poverty Thresholds, Conditional on Poverty Rate of Origin Neighborhood

	Destination Poverty Rate				
	Gateway Cities	**< 5%**	**5-10%**	**10-20%**	**≥ 20%**
Origin Poverty Rate	< 5%	31.6 (1,188)	28.9 (1,088)	21.2 (799)	18.2 (685)
	5-10%	29.7 (2,515)	26.8 (2,275)	24.5 (2,074)	19.0 (1,612)
	10-20%	23.9 (3,578)	25.3 (3,780)	24.9 (3,723)	26.0 (3,887)
	≥ 20%	15.5 (3,800)	19.5 (4,792)	25.8 (6,352)	39.2 (9,638)
	Boston	**< 5%**	**5-10%**	**10-20%**	**≥ 20%**
	< 5%	34.0 (1,118)	31.0 (1019)	23.2 (762)	11.9 (391)
	5-10%	28.3 (2,357)	30.8 (2,572)	26.3 (2,197)	14.6 (1,217)
	10-20%	22.6 (3,690)	26.5 (4,331)	29.8 (4,873)	21.0 (3,434)
	≥ 20%	17.4 (3,690)	22.9 (4,865)	29.4 (6,244)	30.4 (6,460)
	Elsewhere in Massachusetts*	**< 5%**	**5-10%**	**10-20%**	**≥ 20%**
	< 5%	45.1 (44,990)	31.5 (31,455)	16.6 (16,610)	6.7 (6,711)
	5-10%	35.1 (29,959)	34.4 (29,407)	22.0 (18,769)	8.6 (7,333)
	10-20%	25.5 (13,108)	32.2 (16,506)	28.7 (14,705)	13.6 (6,988)
	≥ 20%	18.3 (2,660)	26.9 (3,909)	32.3 (4,689)	22.4 (3,254)

Transition probabilities with N in parentheses. Estimates are authors' calculations constructed with tract-level location data from the FRBNY/Equifax CCP and tract-level poverty rate data from the decennial census and the five-year ACS.

Figure 2: Moves across Policy-Relevant Neighborhood Poverty Thresholds



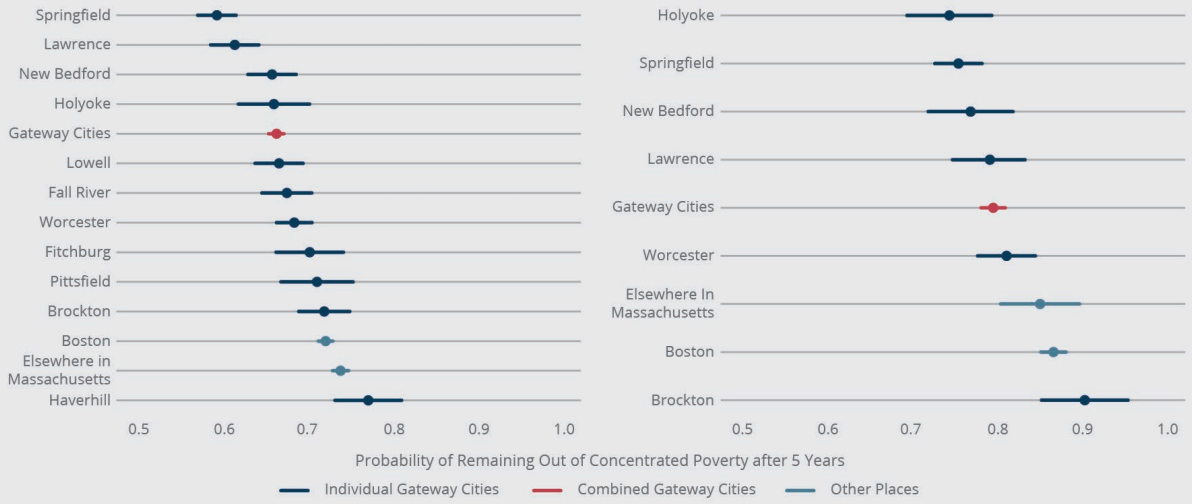
Note: The panel on the left shows the fractions of origin and destination poverty rates for all moves that originate in one of the gateway cities; the middle panel shows all moves that originate in Boston; and the rightmost panel shows all moves originating elsewhere in Massachusetts. Estimates are authors' calculations constructed with tract-level location data from the FRBNY/Equifax CCP and tract-level poverty rate data from the decennial census and the five-year ACS.

These results are robust to the choice of poverty-level thresholds: when we use stricter cutoffs for high versus low poverty (Figure A2, in appendix), trajectories of neighborhood attainment remain the most common outcome for moves that originate in gateway cities (46.4% of moves; 95% CI, 45.9–46.8) and Boston (48.0% of moves; 95% CI, 47.5–48.4) while moves between low-poverty neighborhoods are the dominant type of move that occurs elsewhere in Massachusetts (54.1% of moves; 95% CI, 53.9–54.3).

Our third and final research question asks whether moves from high-poverty to lower-poverty neighborhoods are long lasting, and how this durability differs for movers originating in gateway cities versus in Massachusetts overall. These moves affect a small but not negligible fraction of the individuals in our study: 36,425 individuals (10.7% of all residents and 33.1% of residents exposed to 20% or higher neighborhood poverty at any point) moved out of a neighborhood with a poverty rate over 20% at least once between 2000 and 2016, with 13,142 (21.6% of all gateway city residents and 36.7% of exposed residents) coming from high-poverty neighborhoods in gateway cities. Given the macroeconomic context of increasing concentrated poverty (Bishaw, 2014; Jargowsky, 2013), moves out of high-poverty neighborhoods were surprisingly long lasting: the probability of remaining out of a high-poverty neighborhood five years after leaving a gateway city neighborhood with a 20% or higher poverty rate was 66.3% (95% CI, 65.4–67.1), although this is considerably lower than the probability for Boston (72.0%; 95% CI, 71.2–72.8) or elsewhere in Massachusetts (73.7%; 95% CI, 72.8–74.7). The five-year estimate was higher than elsewhere in Massachusetts in only one gateway city (Haverhill), a difference that was not statistically significant (Figure 3, left panel).

The right panel of Figure 3 presents results using 40% rather than 20% poverty as the cutoff for high neighborhood poverty. After five years, the probability of returning to a neighborhood with 40% or higher poverty was just 20.5% for people who were living in a gateway city at the time of their move out of concentrated poverty, compared with 15.0% for people living elsewhere in Massachusetts, although the difference is not significant. Notably, the limited number of tracts with 40% or higher poverty rates in the state prevents the construction of survival estimates for most gateway cities. Moreover, some of the residents of these high-poverty neighborhoods may not be included in our database because of a lack of credit scores or social security numbers, and thus these results should be considered a conservative estimate.

Figure 3: Probability That an Individual Who Moves Out of a High-Poverty Tract Will Remain Outside of High-Poverty Tracts for at Least Five Years



Note: Data include moves in any year between 2000 and 2016 and are conditional on origin city. Left panel shows results based on "high poverty" rate of 20% or higher; right panel results based on rate of 40% or higher. Estimates are authors' calculations constructed with tract-level location data from the FRB-NY/Equifax CCP and tract-level poverty rate data from the decennial census and the five-year ACS.

Discussion

In this study we compared the residential trajectories of residents of high-poverty neighborhoods in the gateway cities with the trajectories of residents of high-poverty neighborhoods in Massachusetts overall. Our research examined the gateway cities as a sample of postindustrial small and mid-sized cities, developing a methodology to ask whether these cities do, in fact, represent "gateways" from high- to lower-poverty neighborhoods. Our research examines the period prior to the COVID-19 pandemic and thus results are not generalizable to present economic conditions; nevertheless, our approach offers an example of how administrative data could be used to better understand current critical questions about the relationship between economic recovery and residential mobility.

We estimate that from 2000 to 2016, nearly 750,000 Massachusetts residents followed a path of neighborhood attainment by making at least one move from a neighborhood with over 20% poverty to a lower-poverty neighborhood. Moreover, 36% of the people who moved from a high- to a low-poverty neighborhood started out in a gateway city. However, neighborhood attainment was less likely for residents of gateway cities than for residents of high-poverty neighborhoods in other parts of the state: the probability that a person leaving a neighborhood with a poverty rate over 20% would move to a neighborhood with lower poverty was 60.8% in the gateway cities, significantly lower than the probability of 69.6% for Boston or 77.6% elsewhere in Massachusetts. Moreover, when residents did leave high-poverty neighborhoods, people moving from such neighborhoods in gateway cities were more likely to move back into high-poverty neighborhoods than were movers originating in Boston or elsewhere in Massachusetts. Nevertheless, of the residents of high-poverty neighborhoods in gateway cities who left those neighborhoods between 2000 and 2016, a majority still made durable moves to lower-poverty neighborhoods despite a statewide and national context of increasing poverty concentration.

This analysis suggests that residents in gateway city neighborhoods were less likely move to lower poverty places than residents of other high-poverty Massachusetts neighborhoods. This is not to say that the gateway city neighborhoods were causing disadvantage, because we our data do not contain any information on the aspirations of households, or the reasons behind their moves. It could very well be that gateway cities launched moves to more desired, if not lower poverty, places compared to other economically disadvantaged neighborhoods. We also cannot differentiate the effect attributable to the impact of gateway cities on people versus the composition of people within gateway cities; however, disadvantage does appear to be concentrated there. Nevertheless, those people who did exit high-poverty neighborhoods in gateway cities most often remained in lower-poverty neighborhoods over the long term, albeit with significant differences among different cities in the durability of such exits. In Massachusetts, where COVID-19 disproportionately affects lower-income neighborhoods and neighborhoods of color, the gateway cities may face even greater challenges as

residents seek to recover from the health and economic shocks of the pandemic. Because of this, experts in public health, human services, and economic development have called for additional social and economic support for the most burdened communities (Ryan & Lazar, 2020). In evaluating the impacts of such spatially targeted and temporally constrained interventions, our work suggests that it is important to identify effects not just on long-term residents but also on those who moved elsewhere, for whom impacts could be quite different depending on whether the move occurred because of housing instability or because of a policy's effects in fostering a desired move.

Our analyses are subject to five major limitations. First, our approach cannot disentangle the role of place from the role of individual attributes in fostering residential moves—such as if certain cities attract households who are more likely to move in the first place—nor can we know how moves influence poverty rates. The formation of new high-poverty neighborhoods can be a result of nonpoor households leaving neighborhoods with moderate poverty rates (Quillian, 1999), suggesting that a dependency between moving and household resources could be contributing to the overarching context of increasing poverty concentration.

Second, our use of a relatively low 20% threshold for "high-poverty" neighborhoods captures inclusive urban neighborhoods that may have relatively high assets despite their high proportion of residents living in poverty (Jargowsky, 1996); however, our results are qualitatively similar when we use a cutoff of poverty rates over 40%, a threshold that has consistently been associated with adverse social and economic outcomes (Galster et al., 2000; Wilson, 1987).

Third, the interpretation of our results is constrained by the limitations associated with the use of administrative data. Our data do not include demographic variables such as race or ethnicity—documented extensively as key factors in models of mobility and neighborhood attainment (South & Deane, 1993)—or individual-level income or poverty data. This precludes us from differentiating between the outcomes of poor versus nonpoor movers; however, we note that this study has focused on *neighborhood* poverty, given evidence that high-poverty contexts have adverse effects even net of individual-level measures of disadvantage (Chetty et al., 2016; Kawachi & Berkman, 2003; Sampson et al., 2002; Sharkey & Faber, 2014). Furthermore, the geographic granularity of the data fail to capture highly localized moves like many of those Desmond (2012) documents as occurring due to housing instability (e.g., moves in which individuals move across different floors of the same apartment building or to neighboring houses). Perhaps most importantly, our data are missing observations for "credit invisibles"—individuals without a credit score or social security number, who comprise approximately 11% of the adult population and who disproportionately reside in low-income neighborhoods (Brevoort et al., 2015). A comparison of Figure 1 with the same figure constructed from census data (Figure A1) suggests that results are nevertheless comparable; moreover, our application of survival analysis allows the inclusion of data for individuals with missing data for some periods. But because our study excludes people who likely have the greatest risk of living in high-poverty neighborhoods and the highest probability of mobility

between and into high-poverty neighborhoods, our results are in effect a conservative estimate.

Fourth, because we lack data on whether and where residents had hoped to move, as well as data on individual outcomes following moves, results cannot be interpreted as markers of success or failure of any policies or investment approaches towards gateway cities. Moves from high to lower poverty may represent a desired trajectory of improving access to opportunity, but could also represent unwanted displacement from one's neighborhood to a lower poverty, but less desirable destination.

Fifth and finally, our research was conducted prior to the COVID-19 pandemic and thus our results are unlikely to generalize to more recent years. The new context, however, makes further study of entries into and exits from high-poverty neighborhoods particularly pressing because, in the absence of intervention, pandemics can contribute to new pockets of persistent poverty (Ambrus et al., 2020).

Although our findings should be interpreted cautiously given the potential for selection bias in consumer credit data, our approach offers a methodology for the identification of places from which people make durable moves into different levels of neighborhood poverty. For individuals followed in our study, the durability of exits from high-poverty neighborhoods varies considerably across different towns. For example, while a person who moves out of a high-poverty neighborhood in Haverhill has a 23.1% chance of returning to a high-poverty neighborhood within five years, a person who makes a similar move starting from Springfield has a 40.8% chance of returning to a high-poverty neighborhood within the same span of time. This result highlights a need for further research to uncover the factors that predict durable moves out of poverty. Given the evidence that residents of high-poverty neighborhoods experience poorer health, educational, and economic outcomes even after accounting for individual characteristics (Chetty et al., 2016; Kawachi & Berkman, 2003; Sampson et al., 2002; Sharkey & Faber, 2014), researchers are increasingly interested in identifying the neighborhoods that best foster opportunity (Chetty et al., 2014, 2018; Chetty & Hendren, 2018). A promising future extension of our work would be to examine the extent to which people from economically disadvantaged Massachusetts and gateway city neighborhoods move to places that Chetty et al. (2018) identify as particularly likely to foster intergenerational economic mobility.

The places in which people shape access to essential resources for wellbeing. Developing effective place-based policies to provide neighborhood-based opportunity remains critically important for the many residents of high-poverty neighborhoods who do not move. But evaluations should also examine whether these place-based policies help people move who want to be would otherwise have been unable to do so. As federal and state initiatives increasingly incorporate policies to help low-income residents move up the economic ladder by helping them "move to opportunity," additional research is needed to understand how local initiatives to support transformative redevelopment of places will interact with policy initiatives that support residential mobility.

Places are also a critical factor in how well people are able to weather a disaster like COVID-19 (Arcaya et al., 2020). Studies of recovery from disasters have tended to conflate the recovery of places with the recovery of people (Waters, 2016), yet the contributions of place will be underestimated if researchers do not account for the fact that different places set people on different residential trajectories. Our method thus offers an example for how researchers seeking to examine the impact of the COVID-19 pandemic and its economic effects can assess the outcomes not just of existing gateway city residents but also of people who were residents during critical intervention periods.

About the Authors

Madeleine I. G. Daepp

Madeleine Daepp is a former research fellow at the Federal Reserve Bank of Boston and an urban planner and social epidemiologist whose research repurposes administrative data to produce social and policy insight. She holds a Ph.D. from the MIT Department of Urban Studies and Planning and an M.Sc. from the University of British Columbia Faculty of Land and Food Systems.

mdaepp@hsph.harvard.edu

Erin M. Graves

Erin Graves is a senior policy analyst and policy advisor in Regional & Community Outreach at the Federal Reserve Bank of Boston.

Erin.M.Graves@bos.frb.org

Mariana C. Arcaya

Mariana Arcaya is an associate professor of urban planning and pPublic health at the MIT Department of Urban Studies and Planning. Her applied and translational research on the social determinants of health tackles the ways in which urban policy and planning decisions shape health risk factors. She holds a D.Sc. from the Harvard School of Public Health and a MCP from MIT.

marcaya@mit.edu

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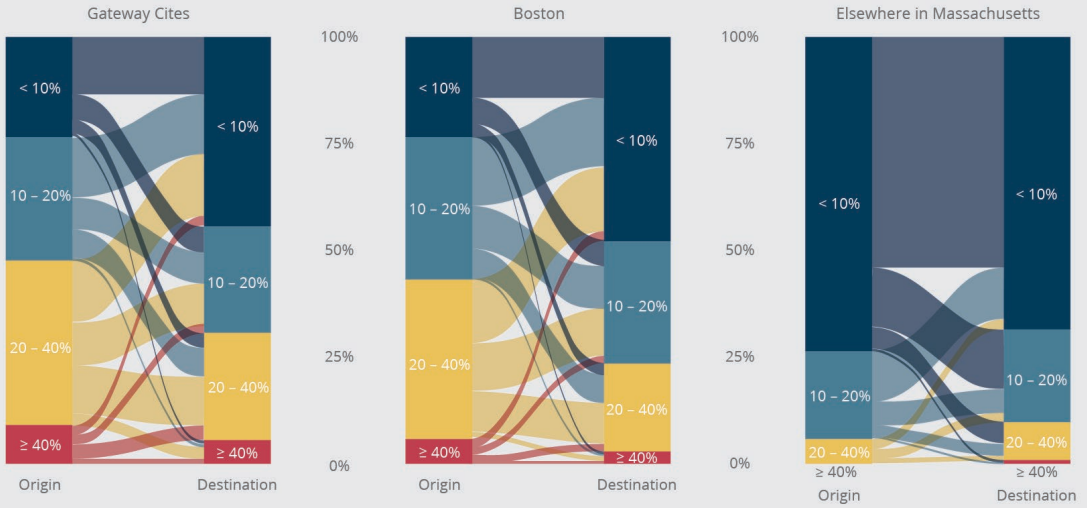
Appendix

Figure A1: Slope Graphs of the Percent of Individuals Living in High-Poverty Neighborhoods in Gateway Cities versus in Massachusetts Overall

Note: Estimates are authors' calculations constructed with tract-level population and poverty rate data from the decennial census and the five-year ACS.

Figure A2: Moves across Policy-Relevant Neighborhood Poverty Thresholds with Stricter Cutoffs



Note: The panel on the left shows the fractions of origin and destination poverty rates for all moves that originate in one of the gateway cities; the middle panel shows all moves that originate in Boston; and the rightmost panel shows all moves originating elsewhere in Massachusetts. Estimates are authors' calculations constructed with tract-level location data from the FRBNY/Equifax CCP and tract-level poverty rate data from the decennial census and the five-year ACS.