Our Shared History

Using Boston's Climate Opportunities to Address Systemic Racism

Boston Green Ribbon Commission | EMBRACE BOSTON

Acknowledgements

Dr. April Innis, MD

Nicholas Johnson, MS, UMass, Boston

Dr. Antonio Raciti, PhD, UMass, Boston

Pete Plastrik, Author

John Cleveland, Senior Advisor, GRC

Kate Canfield, Art and Design Director

Azanta Thakur, Project Coordinator, GRC

Amy Longsworth, Executive Director, GRC

Ted Landsmark, JD, Northeastern University

Barr Foundation

State Street Foundation

Members of our Guidance Group

Annie Lundsten, *Co-Founder and Principal, The Experience Alchemists*

Atyia Martin, *CEO and Founder, All Aces*

Dallase Scott, *Principal, Trust*

Isabella Gambill, *Assistant Director, Climate, Energy, and Resilience, A Better City*

Lindsey Santana, *Chief of Staff for Boston City Councilor Brian Worrell*

Reverend Mariama White-Hammod, *Chief of Environment, Energy, and Open Space, City of Boston*

Natalie Baker, *Vice President, SSGA*

Norm Lamonde, *Sustainability Manager, Turner Construction*

Cover Photos

Top row: (l) Two streetcars at the junction of Warren and Dudley Streets, 1920s, public domain / Wikimedia Commons; (r) Dudley Station Historic District in Roxbury by Tim Pierce / Wikimedia Commons

Middle row: (l) 1960s traffic on Mass Pike into Boston by H. Armstrong Roberts; (r) Boston skyline viewed Mass Turnpike by Sean Pavone;

Bottom row: (l) 1973 Washington Street under the El, toward Egleston Square by Hum Images / Alamy Stock; (r) "Buy the Block Party" in Nubian Square in Roxbury by Nicolaus Czarnecki/MediaNews Group/*Boston Herald*

"You can't be an antiracist, you can't even understand what it means to be antiracist, if you are not also fighting against climate change. They are interrelated."

—Ibram Kendi, Founding Director, Boston University Center for Antiracist Research; Sustainability, Health Equity, and Antiracism in the 21st Century event

"Among youths of colour, the climate crisis is now viewed as an existential threat that is directly linked to economic and racial justice."

—Theodore C. Landsmark, Distinguished Professor of Public Policy and Urban Affairs; Director, Kitty and Michael Dukakis Center for Urban and Regional Policy, Northeastern University

Every public action has an equity impact whether stated or unstated, and many new actions will be designed and implemented that embody choices about what to include and what to leave out.[1]

—"Carbon Free Boston: Social Equity Report 2019" from the Boston Green Ribbon Commission

Just like our communities, this team refuses to accept that things must be how they've always been. We're taking on the hard, complicated issues our residents face, no matter how deeply entrenched or politically fraught.

—Boston Mayor Michelle Wu

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Preface

Boston is on the cusp of a transformation to a resilient post-carbon city. For the sake of a livable climate, we will eliminate greenhouse gases as much and as fast as possible and take action to protect city residents from climate disruptions. In the next 30 years, we will spend tens of billions of dollars to retrofit buildings, decarbonize the energy supply, electrify transportation, protect our shores and flood-prone areas, and change our relationship to waste and materials of all kinds.

The change we are about to experience is as significant as the infilling of land and the building of the T in the 19th century. It could be as impactful as the development of the 20th century's highways and airport. Yet those historical "advancements" brought serious associated negative consequences by contributing to a Boston where the quality of lived experience on many dimensions correlates strongly to neighborhood and skin color. Without insight into how that happened we have little hope of addressing those disparities—and risk creating new ones—in the current period of transformation.

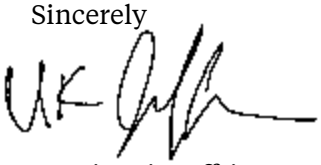
An important difference in 2023 is that Boston's residents and leaders have the historical awareness to make anti-racist choices and the technical knowledge to make pro-climate decisions. To ensure that we do not repeat harmful past approaches to city planning or rely on faulty policies (many of which flowed from the federal government), it helps to share a common understanding of our history.

Our Shared History aims to lay the foundation for an open dialog among a wide variety of stakeholders in Boston's future who hope to explicitly and consciously use the shift to a resilient post-carbon economy as an opportunity to eradicate the harms of racism embedded in our built environment. Embrace Boston and the Boston Green Ribbon Commission undertook this work together deliberately to reach different audiences who may leverage a mutual appreciation of the historical account as the platform for a shared vision of progress.

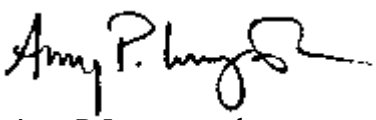
This short report tells the history of Boston's development from a land use, transportation, and building perspective, and how the resulting inequities are now being dramatically exposed by climate change. It also suggests specific ways we can fulfill climate and anti-racist objectives through action, following a core set of principles that determine outcomes of climate equity.

We hope that stakeholder dialogue and other research can add lived experiences and current perspectives to the historical record. By forming a more complete narrative of Boston's racial and climate realities, we can steer toward specific opportunities to address both in this next great transformation of the city.

Sincerely



Imari Paris Jeffries
Executive Director
Embrace Boston



Amy P. Longsworth
Executive Director
Boston Green
Ribbon Commission

I: Patterns of Racial Injustice

Numerous public and private decisions have rooted racial inequities deep into the city's physical design, social inclusion, and economic makeup.

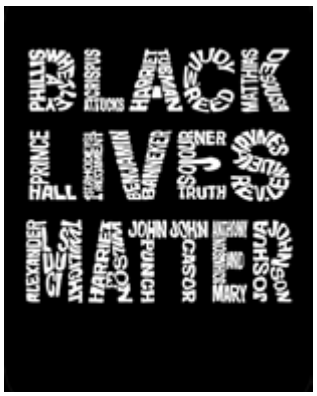
Boston has long been celebrated as a beacon for freedom from tyranny and slavery—but since the city's origin its governments and leading institutions have often adopted and perpetuated racist policies and practices. Numerous public and private decisions have rooted racial inequities deep into the city's physical design, social inclusion, and economic makeup. And they have embedded enormous disparities—also based on race—between the city and surrounding communities in the region.

Now, though, the city's public, private, and nonprofit leaders and its residents have a once-in-a-generation opportunity to substantially change the unjust pattern, improving the lives of Boston's residents and the city's physical, social, economic, and environmental well-being for decades to come.

The opportunity lies in addressing the grave challenges of climate change. During the next three decades, Boston will adopt numerous policies and practices and invest billions of dollars to achieve climate resilience and transition to a decarbonized economy. What they decide can ensure that racial equity is advanced as Boston pursues its climate goals. Or it can exacerbate and perpetuate inequities.

The impacts of climate change do not fall equally on all neighborhoods and households in Boston. Some places and people are more exposed, due to their location, to effects that include flooding from sea level rise or heavy rainfall or to extreme heat. Others are less able to bounce back from climate impacts, because their access to financial and community resources is constrained. A wealth of data shows that these climate vulnerabilities are disproportionately borne by Boston's communities of color, even though they have contributed far less to the greenhouse gas emissions that cause climate change.

BOSTON PUBLIC LIBRARY



CHERYL R. RILEY

These conditions didn't just happen. They resulted from decisions and actions taken throughout Boston's 400-year history—as a place inhabited by Indigenous people for thousands of years became a small English colony in 1630, then evolved into a nearly all-white major city in 1900, and emerged as a diverse 21st century global metropolis. The most crucial decisions involved land uses and zoning, public and private capital investment in infrastructure and buildings, and the design of transportation and housing systems and environmental protections. In the 1800s and 1900s, for example, Boston increased its land area by more than 5,200 acres, mostly by filling in tidal flats surrounding the city. The practice of land making was not unique for a coastal city but, *The Atlas of Boston History* reports, the amount of land Boston made is "probably more than any other city in the Americas."[2] Today about a sixth of Boston sits on landfill.[3]

All of this played out in a "top down" approach to urban planning and development controlled by white decision makers in Boston, the region, and the state leaders. The people negatively affected by these decisions have rarely had their voices heard or their needs considered.

Boston's inequities are not unique among American cities. Racial inequity is woven into the nation's fabric; many cities have taken the path of racial injustice, and federal and state governments have often paved the way.

Residents of vulnerable communities and activists have been living with, witnessing, and fighting to change these inequities. In 2020, many others joined them—propelled by the murders of George Floyd and Breonna Taylor and the realization that decades of unequal treatment had left neighborhoods and classes of people devastated by the Covid-19 pandemic.

In response to climate change, Bostonians—all residents, as well as leaders in the public, private, and nonprofit sectors—are in the early stages of long-term efforts to reduce the carbon emissions of energy, transportation, and building systems and to strengthen the climate resilience of these systems, s well as the health and well-being of neighborhoods and households. They have an opportunity make equity-building decisions about what they want Boston to be. They can choose to break the long patterns of discrimination, by adopting inclusive and empowering decision-making processes, priorities, policies and practices.

For Boston, this is a challenge of both moral conduct and practical consequence.

"Ordinary Elements of Life"

As the US Constitution was being negotiated among the original states in the late 18th century, leading Bostonians voiced opposition to slavery. In 1766 a Boston lawyer won the first trial to free an enslaved person. In 1783 the Massachusetts Supreme Court decided that slave owning would no longer have legal protections, and seven years later the 1790 federal census enumerated no enslaved people in Massachusetts, the only state with none. In the first half of the 19th century Bostonians led the national movement to abolish slavery, and during the Civil War the city supplied troops to the Union.

These admirable efforts were undercut by other deeds, however, starting with the city's founding around 1630. The English colonists who established Boston and other settlements in the Massachusetts Bay Colony displaced, battled, enslaved, murdered, and sold Indigenous people who lived in the region. In 1675, during a war with allied tribes throughout New England, the colony imprisoned up to 1,100 Native Americans on the Boston Harbor Islands, where as many as half died of starvation, exposure, and lack of medicine.[4]

The colony's Body of Liberties, adopted in 1641, permitted the buying, selling, and trading of Indigenous people and Africans. The first slave ship arrived in Boston Harbor in the early 1640s; colonists began purchasing enslaved Africans and participated in the Atlantic slave trade. Ships would purchase or capture people in Africa and carry them to the Caribbean for sale, then bring small numbers to New England. By 1754 a census listed nearly 4,500 enslaved people in the colony.

More than slave ownership was underway. Local merchants and, later, industrialists, built wealth on the backs of distant slave labor. Merchants provided plantations in the Caribbean with food, fuel, and lumber in exchange for tobacco, coffee, and sugar produced by enslaved people. Industrialists profited from slave labor in the US South, which supplied them with cotton for textile manufacturing. "Most of the enslaved toiled elsewhere," explains historian Mark Peterson," and this sustained "the illusion of Boston in New England as an inclusive republic devoted to the common good."[5]

One of the region's earliest local institutions, Harvard College, recently undertook the difficult work of acknowledging its participation in slavery and persistent discrimination against Black people. Presidents, faculty, and staff at Harvard enslaved more than 70 people, some of whom labored on campus and fed and cared for students, according to a 2022 report by a special university committee. "For hundreds of years, both before and after the Civil War, racial subjugation, exclusion, and discrimination were ordinary elements of life off and on the Harvard campus," the committee concluded. Well into the 19th century, the University benefited from the generosity of donors who accumulated their wealth through slave trading. Harvard also profited from its own loans to Caribbean sugar planters, rum distillers, and plantation suppliers along with investments in cotton manufacturing.

In 1850, the study recounted, Harvard's medical school enrolled three Black students but they were expelled after some white students and alumni protested. During the five decades between 1890 and 1940, a total of about 160 Black students attended Harvard College, an average of about 3 per year. Even in 1960, only nine Black men numbered among the 1,212 freshmen at Harvard College.[6]

After the national abolition of slavery in 1865, the nation, especially its northern states, grew rapidly into an industrial powerhouse with large urban centers. In the process, new policies and practices emerged, in Boston and other places, to discriminate against people of color. As we will see, these injustices played out throughout the 20th century. They forged a Boston of 700,000 people living in 2022 with pervasive and persistent inequities.

Boston's Racial Inequities Today

Today, spatial segregation of the races is the norm in Boston's neighborhoods, housing, and schools—resulting in large part from the discriminatory policies of local and regional governments, school districts, the real estate industry, and banks, as well as "white flight" to the suburbs.

Greater Boston's residential segregation ranks among the worst of any major urban area in the US, as the Boston Foundation detailed in 2019: "Boston, home to most of Massachusetts' black and Latino residents, is a majority-minority city where significant segregation persists both between urban neighborhoods and between the urban core and some of the more affluent suburban communities surrounding the city."[7]

Until the 1960s, Boston's population was more than 90% white. Today, African Americans, Latinx and Hispanic populations, Asian Americans, and Caribbean Black people make up about half of the city's population. The two largest Hispanic populations are Dominicans and Puerto Ricans, with more than 72,000 residents.

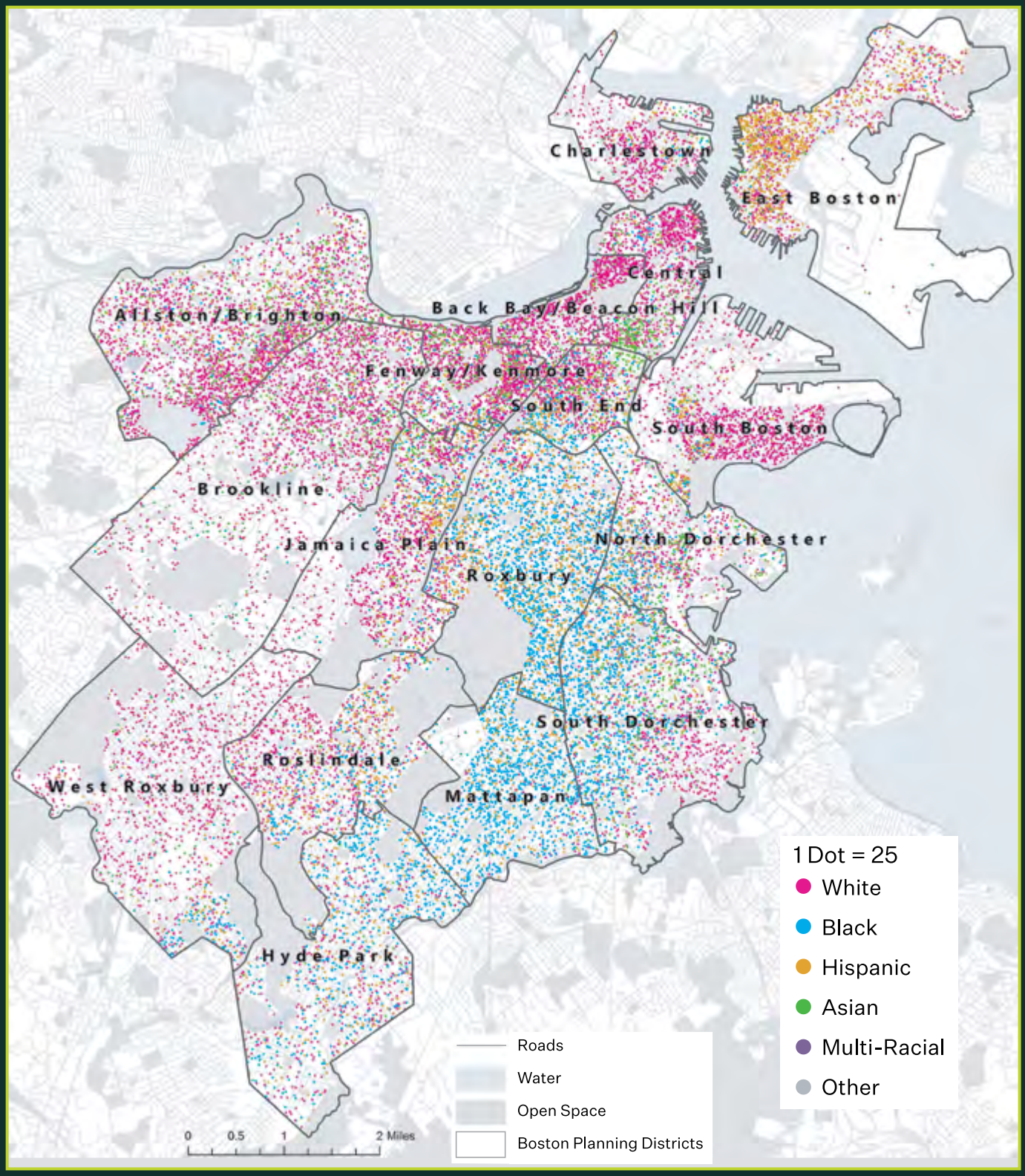
Most Bostonians of color live in a small number of Boston neighborhoods. For example, an estimated two-thirds of the city's Black residents live in Dorchester, Roxbury, and Mattapan. In five Boston neighborhoods the population is 65% to 95% people of color, comprising nearly two-thirds of all people of color in the city. In seven neighborhoods, whites make up two-thirds or more of the residents.[8] It was estimated, based on 2010 census data, that 69% of Bostonians would have to move elsewhere in the city for Boston to have an even racial distribution of Black and white residents—an indicator of a high degree of segregation.[9]

Recent housing development has not changed historic patterns. Between 2000 and 2010 Boston added more housing than in any decade since 1940, but most of it was built for high-income households, few of them nonwhite.[10] The new Seaport neighborhood, initiated in 2010, with more than 1,000 housing units, is almost entirely white residentially. Only 3% of mortgages went to Black homeowners.[11]

The Greater Boston region is slowly becoming more diverse—with Asian populations moving from Boston into communities to the west and north, Latinx and Hispanic populations in growing numbers along I-90, and some movement of Black people toward the South Shore. Of the region's 147 municipalities, nine had more than 50 percent of the population who identified as non-white in 2017; none fit that description less than 30 years ago. But at least 61 municipalities were at least 90 percent white.[12]

At the same time, Boston's labor force has diversified significantly, In 2015, for example, 30% of the labor force was foreign born, with about half of these workers coming from two regions: the Caribbean and Asia/Pacific Islands.[13]

2010 Boston Racial/Ethnic Demographics



Source: 2010 Census Tract data from American Fact Finder 2, census.gov.

Neighborhoods & Housing

The pattern of racial separation began more than a century ago. In 1910, 2% of Boston's population was African American, concentrated mostly in the South End and Back Bay.[14] In the 1930s mortgage lenders, property appraisers, and real estate professionals began redlining, using maps that based lending risks on the racial makeup of a community. They labeled Black people as a "detrimental influence" or an "infiltration" in mostly white neighborhoods, and excluded them from loan programs. Almost all of Boston's Black communities today are concentrated in areas deemed hazardous for lending in the 1930s.[15]

Until as late as the 1980s, spatial segregation was reinforced by:

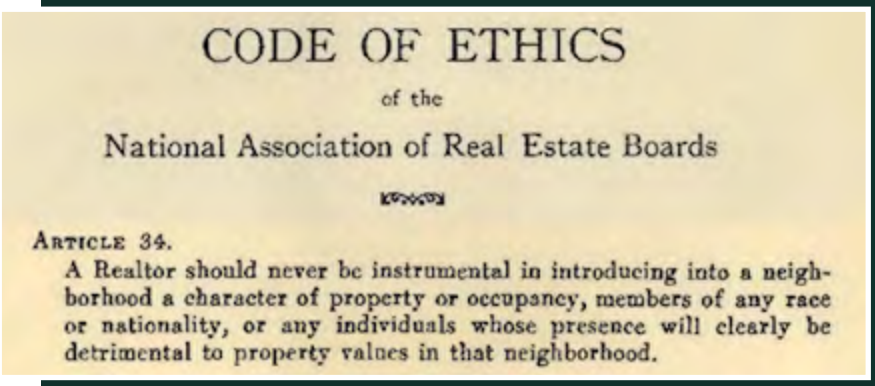
- Exclusionary zoning, which restricts the types of homes that can be built in a particular neighborhood
- Intentional segregation and location of public housing;
- Disinvestment in certain neighborhoods;
- "Blight clearing" urban renewal projects; and
- Block busting by real estate speculators, a practice of persuading white homeowners to sell their property cheaply because of fear that people of other races were moving into the neighborhood, and then profiting by reselling the properties at higher prices. This helped to trigger massive "white flight" from the city.

For instance, in 1954 Boston had one of the nation's largest public housing programs, providing shelter for about 14,000 families, most of them members of white working class.

The Boston Housing Authority designated some of the housing projects for nonwhite occupancy (Lenox, Camden, and Whittier Streets, and Mission Hill Extension) while permitting projects in white neighborhoods to remain nearly all-white into the 1980s. In 1988 the NAACP sued the Boston Housing Authority for keeping public housing segregated by using site-specific waiting lists that discouraged people of color from applying to public housing in white neighborhoods.

Federal Housing Authority policies allowed bankers to devise a plan to provide low-interest loans to homebuyers who were people of color, but restricted them to Mattapan and parts of Dorchester, neighborhoods that today are home predominantly to people of color.[16]

Persistent, systemic segregation has had substantial benefits for the city and region's white residents, the Boston Foundation's 2019 report notes: "Opportunities and resources are not evenly distributed across places, with some neighborhoods having less crime, better schools, less hazardous environments, and



CODE OF ETHICS

of the

National Association of Real Estate Boards

ARTICLE 34.

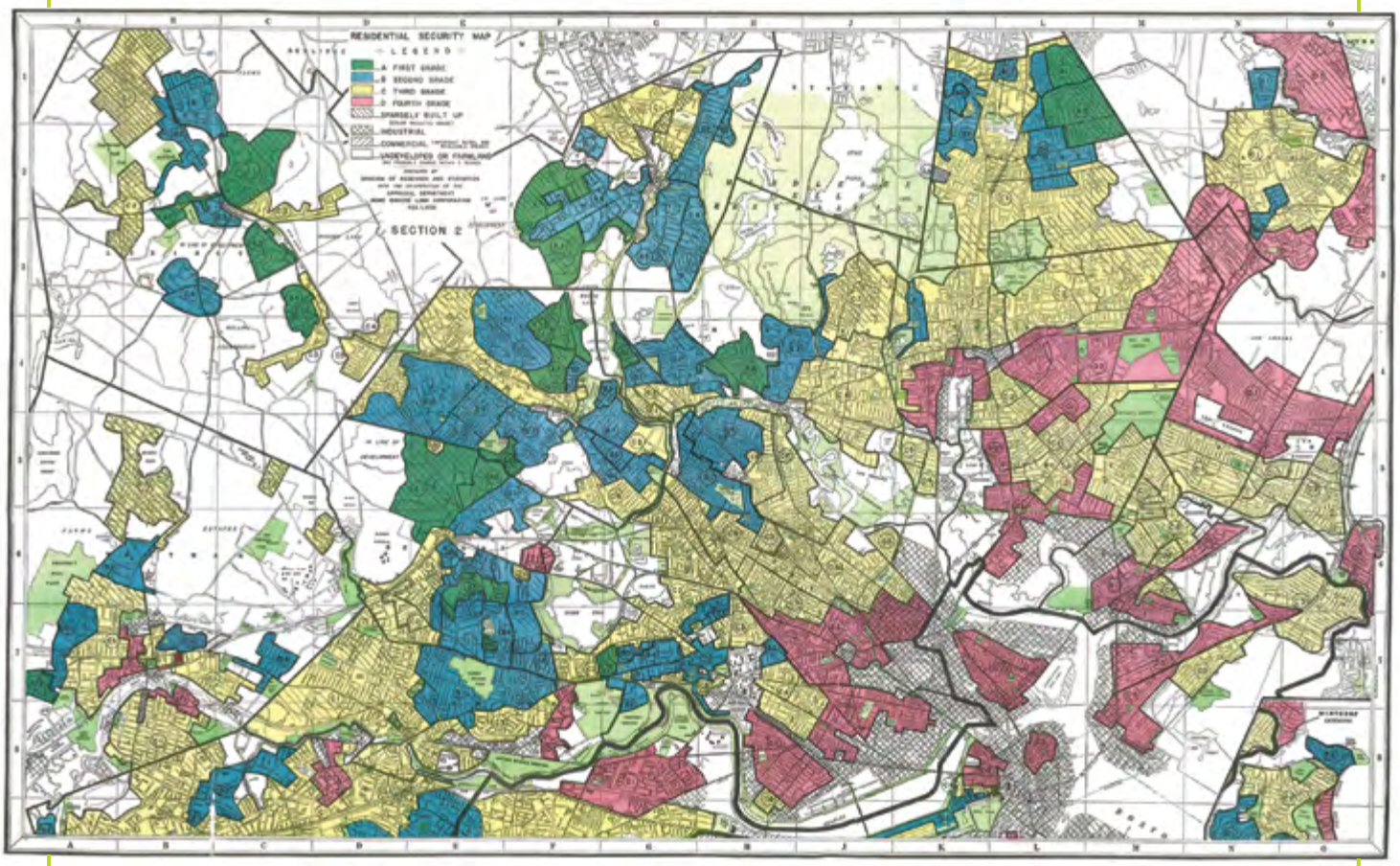
A Realtor should never be instrumental in introducing into a neighborhood a character of property or occupancy, members of any race or nationality, or any individuals whose presence will clearly be detrimental to property values in that neighborhood.

The Code Behind the Code

In 1926, the officers of the Boston Real Estate Exchange—an earlier name for the Greater Boston Real Estate Board that exists today—took out a hammer and nail and affixed to the wall of their new headquarters at 7 Water Street a framed copy of the National Association of Real Estate Boards' Code of Ethics. Toward the end of the document was Article 34, which had just been added two years before. It read: "A Realtor should never be instrumental in introducing into a neighborhood a character of property or occupancy, members of any race or nationality, or any individuals whose presence will clearly be detrimental to property values in that neighborhood."

Due to popular demand, the Exchange printed up frameable copies of the code for its members to pick up and display on the walls of their agencies, too.

Boston Redlining Map, 1938



Source: Home Owners' Loan Corporation; George F. Cram Company Cartographer. Scan: University of Richmond Digital Scholarship Lab

Residential security map of Boston, Mass. Residential security map assigning grades of "mortgage security" that were used to determine who should receive loans and which areas were safe investments. Cram's street map of the Boston area : 260 square miles including Arlington, Belmont, Boston, Brookline, Cambridge, Chelsea, Dedham, Everett, Lexington, Malden, Medford, Melrose, Milton, Needham, Newton, Quincy, Revere, Somerville, Waltham, Watertown, Winchester and Winthrop.

better access to job opportunities—typically accompanied by higher home values that reflect these characteristics."[17]

The 2019 "Carbon Free Boston Social Equity Report" echoed this conclusion about racial inequities: "White families were able to build wealth, advance their economic status, and live in their choice of neighborhood (or suburb), while Bostonians of color were confined to neighborhoods experiencing crippling levels of disinvestment."[18]

Zipporah Potter Atkins

Zipporah Potter Atkins was born in Boston in 1645 to enslaved parents, at a time when in MA, the children born to enslaved persons were considered freedmen under state law. She went on to become the first Black person—man or woman—to own land in colonial Boston in 1670. What's remarkable is that Ms. Atkins acquired this property while single and maintained control of that property throughout her marriage. This was 30 years after MA legalized slavery.

Baker B. and Crimaldi L. Black and free, woman bought Boston parcel in 1670. *The Boston Globe*. Retrieved from https://www.bostonglobe.com/metro/2014/05/19/centuries-ahead-her-time-black-woman-bought-property-century-boston/aNCFsgPX2ywG8lTxjKdDfI/story.html

Suburbanization

Racial segregation extended into the Greater Boston region, aided by transportation development, private practices of landowners, and government policies.

Suburban development began in the 19th century, propelled by railroads that enabled workers to commute into Boston. Between 1845 and 1860, the number of workers living outside the city grew from a few hundred to 10,000.[19] Between 1890 and 1940, the fastest growing areas in metropolitan Boston were communities 4-9 miles outside of downtown Boston.

Various practices and policies aimed to keep people of color out of communities. Upscale residential subdivisions in the late 19th century used property covenants to ensure that houses maintained a certain size and design.[20] In 1920s, zoning emerged as a municipal tool for land use and segregation; 28 communities in Greater Boston created zones that separated residential, commercial and industrial uses. They also restricted multifamily dwellings, a practice still present today.[21] A 1937 state law allowed communities to refuse to have public housing in their neighborhoods.

The state's 1948 Highway Master Plan spurred highway construction that included the opening in 1951 of Route 128, the nation's first outer beltway a dozen miles from Boston's downtown. This spurred prolonged growth of the suburban periphery and the migration of technology company offices and research parks. The opening of I-495, almost 30 miles from the downtown, in the late 1960s encouraged further suburbanization of business and residential development. Moreover, the impact of built environment and active construction projects on nearby communities in addition to the suburban periphery disproportionately affects BIPOC neighborhoods, disrupting daily life and health through noise, air, and water pollution.

Schools

Boston's schools have also long been segregated and discriminated against. For decades before Massachusetts outlawed segregation of public schools in 1965, the Boston School Committee made decisions that left schools in African-American neighborhoods badly underfunded, unequipped, and understaffed. These schools received about two-thirds of the funding received by schools in white neighborhoods, according to the Boston Research Center.[22] The committee refused to address the fact that 44 of the city's schools had

more than 50% of a particular racial group, the 1965 law's definition of segregation.

When court-ordered busing of students began in 1974, to integrate the city's schools, many white Bostonians were outraged and mass protests and violence flared up. More than 30,000 students left the public schools to attend private and parochial schools.

Today, only about 14% of students in Boston's public schools are white, although half of Boston residents are white. More than half of the schools are "profoundly segregated," with enrollments that are more than 90% students of color, the research center reports, a higher percentage than in 1965.[23]

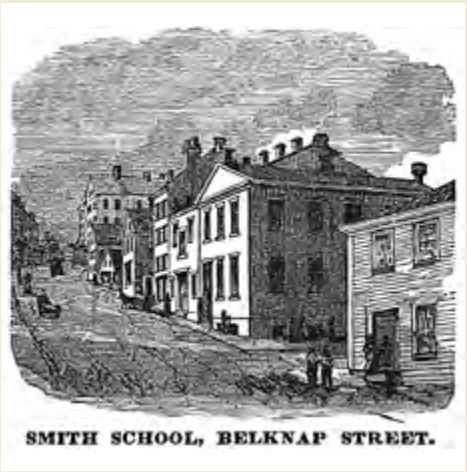
Separate But Equal. Roberts v. City of Boston

In 1848, Sarah Roberts, a 5-year-old Black girl living in Boston, was assigned to a segregated school for Black children. Her father, Benjamin Roberts, challenged the Boston School Committee when he petitioned to enroll her elsewhere. He filed a lawsuit, *Roberts v. City of Boston*, and was represented by Charles Sumner, who went on to become a Senator for the state of MA. Chief Justice Lemuel Shaw of the Massachusetts Supreme Judicial Court ruled that racial segregation in schools was legal and therefore allowed: this is where we first hear the phrase "separate but equal," which was later cited in *Plessy v. Ferguson*.*

Though Mr. Roberts lost this particular battle waged against the white supremacist status quo, others picked up the mantle over the years and continued to fight: from Ruth Batson, Chairwoman of the Education Subcommittee of the NAACP, who challenged the racism in the practices of Boston School Committee beginning in the early 1960s, to MA State Senator Royal L. Bolling who sponsored the state's landmark 1965 *Racial Imbalance Act*, another driving force in the effort to desegregate Boston Public Schools.**

Robert Morris, Attorney, abolitionist, and civil rights advocate, 1823–1882. Co-consul for Roberts v. City of Boston

Charles Sumner, US Senator, abolitionist leader, 1811–1874. Co-consul for Roberts v. City of Boston

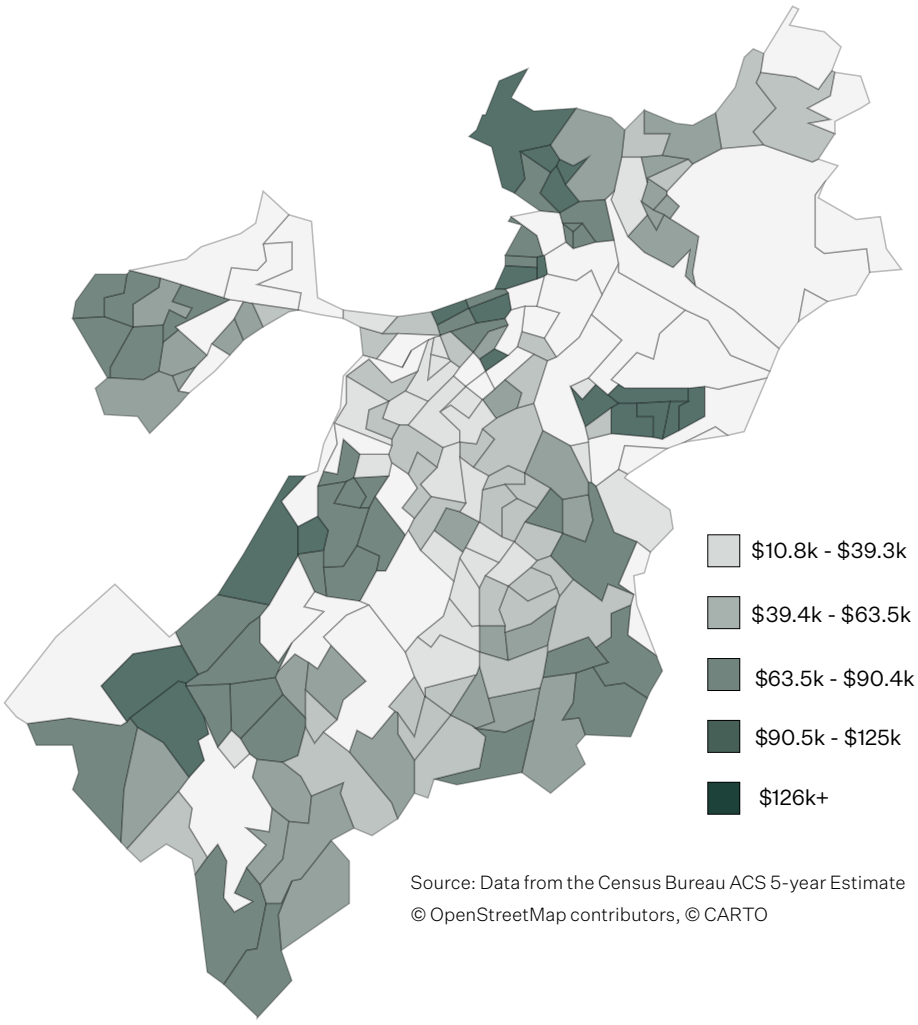


The Abiel Smith School opened in 1835, and served as a segregated public school for African American students in Boston.

*National Park Service (2021). The Sarah Roberts Case: Boston African American National Historic Site. Retrieved from https://www.nps.gov/articles/the-sarah-roberts-case.htm

**City of Boston. (2022). Black Boston History. Retrived from https://www.boston.gov/departments/diversity/black-employee-network/black-history-boston

Median Household Income 2020



Financial Assets, Jobs & Income

A vast "wealth gap" separates households of white people and those of people of color. Across the metro region, according to the Federal Reserve Bank of Boston report in 2015, "The Color of Wealth in Boston," white households in the metropolitan region had a median net worth of $247,500, while the average net worth of US-born Black families was $8.[24] Close to 43% of white households owned a home in 2009-2013, while only 29% of Black people and less than 16% of Latinx and Hispanic populations, and 26% of Asian households were homeowners.[25] Whereas 56% of white households own retirement accounts, only a fifth of Black households and 8% of Dominican households have them.[26]

Income from employment is a key driver of household wealth. Not surprisingly, racial inequities prevail in Boston's economy. In 1910, for example, African Americans in Boston worked predominantly as servants, waiters, and laborers.[27] A century later, Boston has become one of the most educated and high-tech-skilled cities in the US, and a leader in professional services, higher education, finance and healthcare. But now, too, people of color have a disproportionately low share of high-wage employment. Black residents, who comprise about 20% of the workforce, make up 40% of health care, personal care, and protective service employees and 34% of production and transportation and material moving employees. In the health care sector, they provide 56% of home health aides and 43% of

pharmacy technicians, but only 5% of physicians. And a quarter of Black business owners in Boston work in taxi and limousine services.[28] Similarly, Hispanic residents are most likely to work in jobs that must be done in-person: building maintenance, food preparation and serving, material moving, and construction.[329]

Although the average wage of jobs in Boston was higher than the national average, in 2010 two-thirds of the jobs were held by commuters.[30]

A 2010 analysis found a growing gap in household incomes—a transition from a middle-income city to a city with more low-income and more wealthy households than national averages. "In 1950 Boston had been a mostly middle-income city," report economist John Avault and scholar Jim Vrabel, "By 2010, it had become predominantly a city of the rich and the poor, the eighth most unequal major city in the United States."[31] Between 2011 and 2015 the income gap grew even more; the poorest 10% of Boston households had lower real income than in 1980 while the richest 10% had a 195% rise in income.[32] Top earning Boston households—at the 95th percentile of earnings—earned 15 times more than the lowest earning Bostonians, at the 20th percentile.[33]

The map on page 12, based on 2019 data, shows the vast income differences between Boston census tracts—which can be correlated to the predominant race of residents of the neighborhoods.[34] Meanwhile, unemployment rate for Black residents was 50% higher than the citywide average.[35] In 2013, the poverty rate for Black people in Boston was more than 50% higher than for whites and for Hispanic and Asian people it was more than double the rate for whites.[36]

Educational attainment, which reflects income potential, also divides sharply among Boston's races. In 2010, 60% of white people older than 25 had obtained a bachelor's degree or higher. For Black people, the rate was 19%, for Latinx and Hispanic populations, 16%, and for Asian populations 49%.[37] As the city reported in "Boston Citywide Plan: Trends in Poverty and Inequality," "The growth of the knowledge economy has brought increased the opportunities for well-educated workers, but residents with low levels of education are more likely to have low incomes." Even though people of color gain more income from being more highly educated, the city reported, "they gain less income than white men do from the same levels of education."[38]

Dr. Rebecca Lee Crumpler

Dr. Rebecca Lee Crumpler, the first Black female physician in the United States lived and is buried in Hyde Park. She started her medical career in Charlestown, where she worked as a nurse for 8 years. There, doctors highly commended her and supported her decision to attend medical school. She was the first and only Black graduate of the New England Female Medical College (which became part of Boston University) in 1864. She faced substantial and heartbreaking discrimination—including White pharmacists refusing to fill prescriptions written by her. She passed away in 1895 at age 64 and was buried in Fairview Cemetery in an unmarked grave until 2020, when she received a headstone more befitting the queen, servant, and trailblazer that she was.

Baker McQuarrie, B. (2020). Gravestone dedicated to the first Black female medical doctor in the US. The Boston Globe. https://www.bostonglobe.com/2020/07/17/metro/gravestone-dedicated-first-black-female-medical-doctor-us/

1945 map proposing a major expansion of the Boston Elevated Railway
Base map copyright by Boston Elevated Railway / Extensions prepared by Department of Public Utilities, Boston: Metropolitan Transit Commission, April 1945.

Public Transit

Since Boston opened the first subway in the Western Hemisphere in 1897, numerous decisions have resulted in significant transportation inequities within the city and the region.

The Greater Boston public transit system, built up over a century to funnel commuters toward downtown Boston, does a poor job of connecting to the service and physical-labor jobs that are not concentrated in downtown—meaning longer, slower bus rides, often with transfers. One of the poorest and most densely populated stretches of Boston lies in a "transit void" between the Orange and the Red subway lines, where about 126,000 people—nearly a fifth of the city's population—mostly in Dorchester and Roxbury, live more than a half-mile from the nearest rapid-transit station.

Low-income neighborhoods and neighborhoods of color in the city have longer transit commutes than average. The heaviest concentrations of bus passengers are in Roxbury, Mattapan, and Dorchester.[39] Black bus riders spend more time waiting, riding, and transferring than white bus riders—an estimated 66 more hours annually.[40] Buses with predominantly low-income riders of color are almost 20 percent more crowded than the commuter rail trains serving wealthier suburban residents.[41]

Investment in rapid transit—a combination of subway lines, surface trolleys, elevated and interurban rail, and trackless trolley buses—has followed a familiar pattern. The transit system replaced streetcars with diesel buses in Boston, but continued streetcar service in the wealthier, whiter areas of Newton, Brookline, Brighton, and Watertown.[42] The 1945 plan for expanding the rapid transit system would have brought service to underserved sections of Boston, but only portions of the plan were enacted. The mostly white community of Arlington vetoed a Red Line extension that would have increased access to the town by "undesirable urban types." Other extensions to predominantly white suburbs—including Needham, Dedham, West Roxbury, and Lynn—were also blocked. Some of these communities argued they needed to keep trains away to maintain their town's character.[43]

Green Space & Pollution

Boston neighborhoods that are home to communities of color and immigrants have less greenspace and tree canopy and more air pollution than more affluent, white neighborhoods. These conditions exacerbate the residents' health problems, increase their exposure to warmer temperatures (the "heat island effect"), and reduce their recreational options.

While parks and greenspace are often within walking distance for city residents, Boston ranks in the bottom of major U.S. cities in the amount of greenspace per resident—the city has twice as much roadway per resident as greenspace. Despite multiple plants and initiatives to increase the city's urban forest in an active effort in tree equity, only 27 percent of land in Boston was covered with tree canopy as recently as 2017,[44] which is about the national average but below the recommended 40 percent canopy in areas east of Mississippi River.[45] Charlestown, East Boston, and South Boston all have less than 10 percent tree canopy.

A 2020 Metropolitan Area Planning Council study found that roughly half of people of color in the region live in high-pollution areas, nearly double the proportion of white residents. Boston neighborhoods that are home to communities of color and immigrants are more likely to be closer to air pollution sources—highways, industry—that exacerbate chronic health problems like asthma and heart disease. Boston ranked 11th in the top 100 most challenging places to live with asthma in a 2018 report by the Asthma and Allergy Foundation of America.[46]

Three of the 10 most densely polluted census tracts in Massachusetts are in Boston: parts of Mattapan, Dorchester, and East Boston, while Chinatown, which is adjacent to a major highway, has the worst air quality of any census tract in the state.[47]

The most densely polluted census tracts in Massachusetts are in Boston.

Chinatown


East Boston


Dorchester


Mattapan

Affordability

Boston ranks as one of the nation's least affordable cities—a cost burden that falls most heavily on households with low incomes, many of them families of color, and reinforces gentrification of neighborhoods and displacement of residents.

- **Rent.** At a rate of $2,349 a month, the Boston area has the fourth-highest average effective rent of 79 major metropolitan areas across the United States, following only New York, San Francisco, and San Jose.[48] Rental costs: half of Boston's renters spend more than 30% of income on housing, a quarter spend more than 50% of their income.[49]

- **Transportation.** For transit riders with low incomes, fares charged can be a large share of their income. In neighborhoods that are predominantly made up of residents of color, transit costs can be as much as 16% of household income. In Boston public transit fares have increased 41% since 2012.[50]

- **Energy.** For low-income households in Boston the energy burden is twice as great as for the average household and for very poor households it is four times as great, rising to as much as 12% of income to pay utility bills.[51] In the Boston area, electricity costs were 67% higher than the national average in December 2018, and natural gas costs were 42% above the national average.

- **Health Care.** Massachusetts is already one of the most expensive states in the United States for health care costs per family and an average household of an income three to and five times the federal poverty level in Boston is more than $1,500 a month,[52] the fifth highest share in the U.S. For a low-income family facing the costs of living in environmentally justice neighborhoods, the costs are much higher than the average Boston resident with exposure to poor air quality, access to high-quality, affordable housing and groceries, and the risks associated with detrimental levels of stress.

Environmental Justice Communities

The injustices and inequities described above were not unintended or inevitable. They were purpose-fully baked into many of the governmental, economic, and social decisions made by people in the city and region. And the pattern continues to this day.

In a 2021 survey, for instance, 44% of Black Boston voters — and 33% of Hispanic voters — said they have experienced discrimination over the past year, compared to 10% of white voters.[53] A 2016 study of ride hailing in Boston reported that "the cancellation rate for African American sounding names was more than twice as frequent compared to white sounding names."[54] And a 2020 analysis of census data by the state found that Boston contains 428 "environmental justice communities"—76% of the city. EJ communities are census blocks, which range in geographic size from a city block to a neighborhood and contain high populations of people of color, low-income residents, and other marginalized groups that face disproportionate environmental burdens.[55]

Looking back to Boston's origins and progressions through four centuries, it is clear that numerous racial injustices were intended—not just under unique conditions or a short period of time, but in an ongoing and evolving arrangement that has deeply infected key public and private systems throughout the city.

Looking forward, as the city enters an extended era of adapting to climate change, Bostonians have an opportunity not just to end the pattern but also to heal the harm it has caused. To do this, we have to understand how climate change can exacerbate—and already is worsening—the city's racial inequities.

II: Climate Inequities

AIMIN TANG

The inequities of racism leave most Bostonians of color facing bigger risks from climate changes than the city and region's white residents. Along with other climate-vulnerable groups with which they overlap—children, older adults (65 years or older), the chronically ill, people with disabilities, people with limited English proficiency—people of color disproportionately suffer the current and emerging impacts of climate changes. The greenhouse gas emissions that have led to climate change have been primarily emitted from resource rich populations, often white communities and large corporations. Yet, marginalized communities bear the brunt of the impacts in their daily lives.

Types of Climate Risk

The climate risks due to inequities come in several forms:

- Physical injury and damage
- Ill health
- Financial stresses
- Housing displacement
- Disrupted access to medical and food services
- Exclusion from benefits of a "green transition"

These impacts may be experienced by individuals and households and also, due to segregation's effects, by entire neighborhoods of color. "Neighborhoods with higher concentrations of socially vulnerable populations tend to have lower median incomes, higher proportions of renters, less energy efficient residences, and fewer transit stops per capita, and they tend to devote a larger fraction of their income to fuel and electricity," the Green Ribbon Commission reports.[56] A 2019 assessment of social vulnerability of Boston's neighborhoods found that nearly all census tracts with the highest level of vulnerability were located in Dorchester, Mattapan, Roxbury, and East Boston.[57] The same neighbor-hoods also contained large majorities of people of color as residents and had median incomes between $27,301 and $49,902—far below the citywide average of $60,573.[58]

A 2019 assessment of social vulnerability of Boston's neighborhoods found that nearly all census tracts with the highest level of vulnerability were located in Dorchester, Mattapan, Roxbury, and East Boston.

The ability of neighborhoods and households to respond to various climate risks is not the same everywhere, as the "Climate Vulnerability Assessment" for Boston reported: "Not all residents are equally able to prepare for, adapt to, and bounce back from temperature and flood hazards."[59]

It's crucial to understand these inequitable climate risks so they will be fully addressed by decision makers. Experience has shown that in the absence of intentional planning to prioritize equity, the default decision criterion that planners and others use will favor property asset value and impact on economic development of the city, and will discount the needs and interests of systemically oppressed populations.

Physical Injury and Damage

The location and condition of buildings and neighborhoods may leave them physically exposed to severe flooding, extreme heat, and other climate changes.

Older buildings with poor ventilation systems can become overheated during heat waves. Neighborhoods in low lying areas can flood. As a result, the residents have a greater risk of injury and even death, and may have to cope with increased air pollution or contaminated water. Property in these areas may be seriously damaged, or even destroyed, by climate events—potentially dislocating residents and generating repair costs for property owners, as well as higher costs for property insurance.

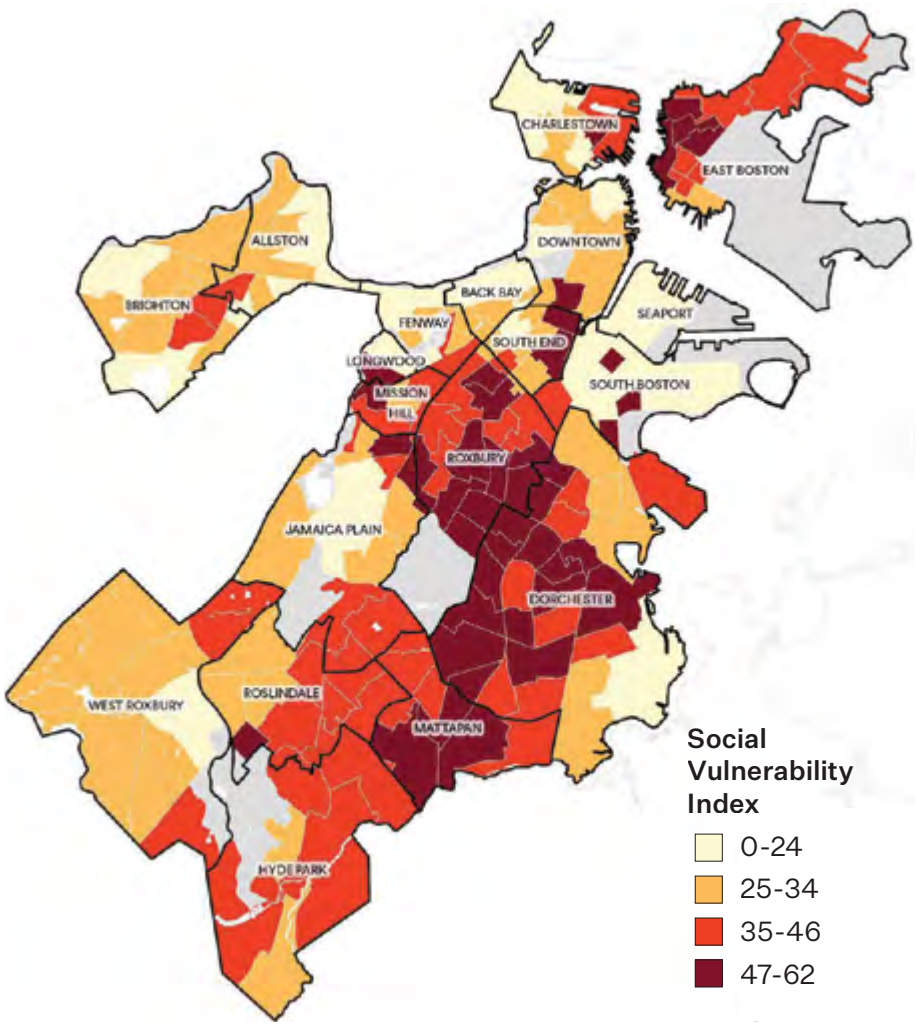
These risks are compounded by systemic underinvestment in buildings and neighborhoods as well as decisions that located the areas near high-pollution highways and industrial sites.

Ill Health

Bostonians with chronic health problems may have their conditions aggravated by extreme heat and other climatic events, even as their access to health care may be compromised. Neighborhoods with insufficient tree canopies become hotter than other places, raising the potential of heat exhaustion, stroke, and even death, for residents. As physical stresses increase, so do mental stresses.

Underinvestment in neighborhood parks means there is less natural area in which residents can recreate and recuperate from illnesses.

Social Vulnerability by Neighborhood, 2019



Source: Boston University Institute for Sustainable Energy

As households with low incomes cope with energy insecurity—they may adopt behaviors that also exacerbate ill health: using cooking stoves for heating increases the risk of carbon-monoxide poisoning; using space heaters and candles for lighting increases the risk of fires; closing off rooms or entire sections of residences reduces indoor ventilation and may increase air pollution and heat.

Financial Stresses

Bostonians with low incomes and little wealth are more vulnerable to the economic disruptions—property damage, business shut downs, reductions in public transit service, for example—that climate disasters often cause. Property owners need money to repair damage, and even if they are insured the coverage may be insufficient. Employees may miss paychecks if the businesses they work for are forced to close during and after flooding and other climate-induced problems. And they may be unable to get to work or to access essential services, such as health care, if transit systems have had to shut down. Small business owners may lose significant revenues during shutdowns, which threatens the financial health of their enterprises.

All of this can increase the already high and persistent level of financial stress that many people with low incomes already experience.

Housing Displacement

Boston has very old housing stock; the average home was built in 1942 and many residences are decades older than that. And the city has a chronic shortage of affordable housing. These factors combine to make some neighborhoods vulnerable to gentrification, including related to climate, and displacement.

Intense, frequent flooding of Boston's downtown and waterfront areas could lead relatively affluent residents of luxury buildings to seek other parts of the city in which to live—potentially making those areas more unaffordable and increasing displacement of current residents who are renters.

Policies—including those that increase property values and rents can contribute to neighborhood gentrification and displacement of people who can no longer afford the costs. Other costs that add to already unmanageable burdens as a share of income.

Disrupted Access to Medical and Food Services

In some neighborhoods that have large populations of people of color and low-income households, there are few or no health clinics, hospitals, and grocery stores. For example, two census tracts in West Roxbury and East Boston officially qualified in recent years as "food deserts," based on data from the US Department of Agriculture.[60]

During flooding events that interrupt transit system services and block the use of bicycle and pedestrian pathways, these neighborhoods' residents may be cut off from obtaining medicine and food supplies in other districts, potentially for days on end.

Exclusion from Benefits of a "Green Transition"

A different kind of inequitable climate risk for people of color involves missing out on the many other benefits, beyond decarbonization and resilience, that certain climate actions may produce for households and neighborhoods.

The benefits of increasing the energy efficiency of buildings, for instance, include improved health, safety, and comfort, as well as lower energy costs over the longer term. More efficient buildings have reduced indoor air contaminants that are linked to chronic illnesses, and this can result in fewer sick days from work and school. Energy-cost savings increase a household's disposable income, which can reduce the risk of falling behind on rent payments and being evicted.

At the same time, investments in the energy efficiency of buildings create local jobs that usually do not have stringent educational requirements, and offer living wages. Investments in solar panel installation and maintenance, and bicycling and pedestrian infrastructure, offer similar job creation potential. It is has been estimated that an investment of $1 million in creating and upgrading bicycling and pedestrian infrastructure produces 10-11 jobs with livable wages.[61]

In addition, installing rooftop solar to houses and commercial spaces can add to the value of the buildings.

These benefits are particularly important for residents of color and with low incomes—but they are also harder for them to obtain, primarily because they require financial investments.

"Energy efficiency services are expensive and require a large up-front investment before payback is realized, often over a period of 10 to 15 years," notes the Green Ribbon Commission. "Low-income households are much more likely to be denied credit or to be offered less credit than requested. As a result, low-income households are unlikely to participate in energy efficiency programs that require a monetary contribution."[62]

Highly vulnerable neighborhoods also tend to have more renter-occupied, multifamily homes, which are harder to retrofit for energy efficiency and clean energy. Neighborhoods with buildings that rely on heating oil and gas require more costly electrification retrofits. Between 2012-2016, in the East Boston, Dorchester, Mattapan, and Roxbury neighborhoods, for example, 65% or more of homes were heated by burning fossil fuels.[63]

Moreover, energy-saving investments in housing usually depend on the decisions of landlords who don't directly benefit financially from the energy savings. "A large portion of Boston's low-income households are renters that live in multifamily housing and therefore face another economic barrier: the landlord/tenant split incentive [in which] the landlord bears the cost of improvements but the tenant receives the benefit in terms of reduced energy bills," the Green Ribbon Commission reports.[64]

For low-income households with little in savings and difficulty obtaining private sector loans, these investments are not feasible. A 2018 analysis of energy efficiency data for Massachusetts found "little measurable progress achieved" in helping underserved populations participate in state programs. Families in towns and Boston neighborhoods with median household incomes of $45,000 or less averaged far less in energy efficiency reductions than more affluent households.[65]

With rooftop solar installations, electric vehicles, heat pumps, and energy efficiency retrofitting for buildings usually costing tens of thousands of dollars, these investments may be out of reach for households with low incomes, even with the cost-reductions provided by federal and state programs. In 2022, for example, the average price for an electric vehicle in the US was about $66,000, compared to $46,000 for all new cars.[66] The benefits these technologies provide can only be accessed by more affluent groups. About 90% of federal electric-vehicle tax credits went, for instance, to consumers with annual incomes of $75,000 or more, according to a 2016 study.[67] Critics have noted that tax breaks for these purchases don't provide much financial support to low-income households that pay little in taxes.

The risks described above are interwoven to a large extent. A household may live in an old, inadequate building in a highly exposed and polluted neighborhood. At the same time, it may have a low income and credit rating which prevent it from generating the financial resources to invest in clean technologies—heat pumps, electric vehicles, for instance—and to "bounce back" from illness or property damage.

A First Step

Awareness and acknowledgment of the disproportionate climate risks faced by Bostonians of color is an essential first step toward ensuring that Boston engages in equitable processes, practices, and policies to reduce carbon emissions and build climate resilience.

How Boston makes decisions about climate change matters, too, and the same is true for how regional and state government entities decide. Many of Boston's systems—roads and public transit, electricity supply, solid waste, and others—are embedded in regional systems and/or shaped by state policies.

"Equitable outcomes begin with equitable decision making," the Green Ribbon Commission notes. But power imbalances between the races—favoring white individuals, white-majority neighborhoods, and white-led institutions—have often prevailed and determined winners and losers when it comes to the city's design, economy, and social relations. Business as usual for climate action will simply perpetuate patterns of racial inequity.

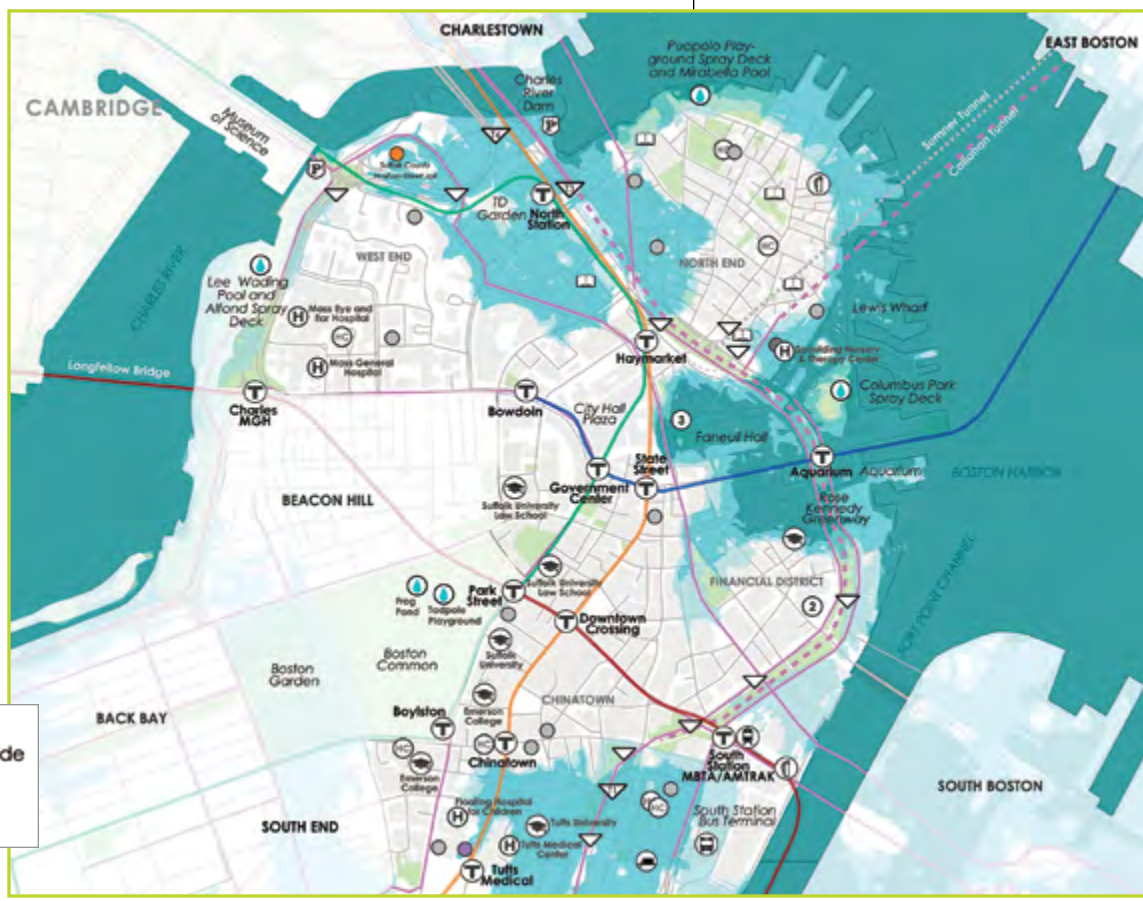
Creating an era of equitable climate action in Boston requires that the voices and priorities of people who will be living with the results of climate actions, especially people of color and other vulnerable groups, will be centered in the decision-making processes and the policies and practices that are adopted.

III: Equitable Climate Action Opportunities

Given the history of racial disparities and the complexities of planning for and implementing climate actions, it's essential to adopt a clear set of principles.

The development of a shared understanding of how longstanding, pervasive racial inequities in Boston have led to climate inequities is an essential starting point for deciding on equitable climate actions. But it is not enough.

Given the history of racial disparities and the complexities of planning for and implementing climate actions, it's essential to adopt a clear set of principles that will guide decision-making processes and the design of climate actions. These amount to



Downtown Flood Progression, 36 inches sea level rise

This map illustrates the flood impact on Boston's downtown if the sea rises by 36 inches. North Station, Faneuil Hall, and the New England Aquarium are all vulnerable to flooding, because they were built on fill decades ago and are low-lying.

Cartographer: Climate Ready Boston
Location: Boston Public Library, Norman B. Leventhal Map Center

criteria which can be used to examine, judge, and modify proposed processes and actions that include community feedback and engagement.

There have been multiple excellent reports that have framed the challenge of integrating racial and other equity principles into future climate actions on both emissions reductions and adaptation. These have included:

- The 2016 Climate Ready Boston report analyzes differential impacts of coastal flooding, extreme storms and extreme heat on vulnerable populations and the need to take that into account in implementation priorities.
- The 2019 Carbon Free Boston Social Equity Report proposes a general set of equity principles to guide implementation of emissions reduction strategies.
- The City of Boston Climate Action Plan 2019 Update includes a section on "Designing for Equity" for most of its 18 core strategies.
- The Boston Foundation's 2022 Boston Climate Progress Report makes recommendations on how to integrate climate justice outcomes into the next stage of "big lifts" to achieve the Boston communities' climate goals.

All these reports incorporate a core set of climate justice/climate equity principles, although each uses slightly different approaches and language. These core principles include the following:

- **Acknowledge historical harms.** "Openly acknowledge how historical racial and social discrimination has resulted in marginalized communities facing greater climate risk, despite contributing the least to the problem in the first place.
- **Address all aspects of equity.** Address the three widely recognized aspects of climate equity in decision making on climate mitigation and adaptation implementation.
  - PROCEDURAL EQUITY. Assure that residents of frontline neighborhoods have influence over critical decisions and processes and have the information and resources to effectively participate in decision making.
  - DISTRIBUTIONAL EQUITY. Assure that the benefits and burdens of climate action are fairly distributed—that systemically oppressed populations are prioritized for receiving the benefits of climate investments and are explicitly protected from undue burden from those investments.
  - STRUCTURAL EQUITY. Use climate investments to correct past harms to frontline communities and prevent future unintended consequences.
- **Create transparency and accountability for climate justice outcomes.** Create structures that provide transparency and hold key stakeholders…for tracking results, climate funding disbursements, and concrete Key Performance Indicators to measure success.

When put into practice, these principles result in climate action with the following characteristics.

- **Inclusive decision making.** Socially vulnerable households and communities and those who will be impacted by potential climate-action decisions have an active and meaningful role in decision-making, especially in governing bodies at the city and state level. Lived experiences and knowledge are tapped to avoid unintended, inequitable consequences of climate actions, such as increases in property values and rents that contribute to displacement of communities that are predominantly poor, working class, and/or people of color. Those most impacted by potential actions have meaningful participation in planning and design, implementation, and evaluation—and an enduring role, not just a one-shot chance.
- **Access to benefits.** The benefits of climate actions, such as reduced energy burden, are directed toward vulnerable households and environmental justice communities and address historical disparities and cultural differences. Actions target resilient infrastructure upgrades to communities most burdened by coastal flooding, stormwater flooding, or the heat island effect.
- **Avoidance of burdens.** The changes caused by climate actions are affordable and the economic benefits of climate actions are available to low-income households and communities, increasing disposable incomes and household financial assets. Actions do not increase cost burdens for low-income households and do not exacerbate inequities.

Summary of Climate Justice Opportunities

PRIORITIZE BENEFITS	AVOID BURDENS

• **Prioritize low-income neighborhoods and households for:**
  ▪ Building retrofits
  ▪ Community solar
  ▪ EV charging infrastructure
  ▪ Active transportation infrastructure
  ▪ Transit infrastructure
  ▪ Carsharing
  ▪ NC affordable housing
• **Increase affordable housing along transit lines**
• **Create financing tools for low-income households to able to afford on-site renewable energy installation**
• **Use inclusive hiring practices to connect low income and minority residents to job opportunities created by climate investments**
• **Develop minority and women-owned contractors to compete for retrofit projects**
• **Use social equity criteria to target climate and resilience investments in environmental justice communities**
	• **Structure climate-related fees in ways that part of the revenue is used to reduce the burden on low-income households**
	• **Discount or eliminate public transit fees for low-income individuals**
	• **Implement strategies and policies to reduce gentrification and displacement**
	• **Target areas for new development in locations that are the least vulnerable to climate impacts**
	• **Prioritize transformational opportunities around district energy solutions**
	• **Prioritize fixing natural gas leaks in vulnerable neighborhoods**
	• **Reverse the history of environmental injustice and avoid siting environmental hazards in vulnerable communities**
	• **Educate residents about the predatory practices of some retail electricity suppliers**
	• **Reduce energy insecurity by reducing the cost of energy and protecting ratepayers from cut offs**

- **Accountability.** Oversight structures exist to provide individuals from historically marginalized communities with influence over implementation decisions. The quantity and quality of services provided is measured to provide performance feedback. Regular updates on implementation progress are developed and presented to the public in multiple languages.

Some Practical Climate Justice Opportunities

There are multiple opportunities for advancing equity outcomes in the implementation of the existing Boston resilience and carbon neutrality plans. The table on the next page summarizes some of these opportunities.

Examples of some of the near-term opportunities to prioritize social justice/social equity outcomes in the Climate Action Plan implementation process include the following:

- **Establish a Baseline and Track Progress on Climate Justice Goals.** A "Climate Justice Scorecard" should be created to track progress on climate justice outcomes. It should include Key Performance Indicators (KPIs) for climate justice outcomes; define the data sets to measure the KPIs; suggest ways to engage Boston residents in informing the KPIs; and create user-friendly ways to share the data.

- **Target Resilience Investments to Vulnerable Populations.** The City has completed coastal resilience plans for the five neighborhoods most at risk from sea level rise and coastal flooding.

The plans include more than 100 potential projects, each with its own costs, timelines, and design challenges. Decisions will now need to be made about how to prioritize these investments—which ones to do first and when, and with what resources. Experience from other cities demonstrates that, in the absence of intentional planning to prioritize social equity, the default decision criterion will be property asset value and impact on economic development. The opportunity is for the city to establish explicit social equity criteria to prioritize resilience investments. In addition, the investments can be coupled with Community Benefit Agreements that prioritize community residents for job and business development opportunities linked to the investments.

- **Residential Retrofits.** There are enormous co-benefits for occupants of homes that have been retrofitted to become resilient or be on the pathway to carbon neutrality ("Zero Over Time"). These benefits can include lower energy costs (through energy efficiency and on-site solar), more thermal comfort (including cooling to address extreme heat), and improvements in indoor air quality. For homeowners, these investments can also increase the value of the property. Currently, the significant city policy initiatives on building decarbonization (Zero Net Carbon zoning requirements requirements for new construction and a building emissions performance standard for existing buildings) and coastal resilience (Future Flood Zoning Overlay District) are only applicable to large buildings (buildings over 20,000 square feet). They do not address single family and small multi-family building segments and therefore do not address the needs of many frontline neighborhoods. For neighborhoods of smaller buildings, strategies will have to be developed outside of policy mandates and will require dedicated staffing, dedicated financing, and policy advocacy to improve incentives at the state level. In addition, more sophisticated data analytics will be needed to help target individual building retrofits to the most vulnerable residents and neighborhoods, which the city typically has difficulty reaching.[68]

- **Equitable Workforce Development and Contractor Diversity.** As investments are made in resilience and emissions reductions, business opportunities and jobs will be created. Social equity outcomes can be advanced by targeting procurement to WMBEs and workforce development to job seekers from minority communities. The Climate Action Plan 2019 Update has a specific strategy on Workforce Development for Building Decarbonization, and the Climate Ready Boston roadmap also has a strategy focused on leveraging climate adaptation as a tool for economic development.

- **Organizational Climate Justice Strategies.** Many GRC members and working group participants represent large organizations, including campuses, that can leverage their assets to have a positive impact on their own communities. An organizational climate justice strategy identifies specific opportunities for organizations to use their climate action plan (carbon mitigation and resiliency) to improve the health and wellbeing of the stakeholders and the communities they are located in. Organizations with "anchor mission" strategies are particularly well positioned to use their mission strategies to advance climate justice. Advancing these practices could bring multiple benefits to Boston residents.

IV: Conclusion

What's required is... a sustained sense of urgency to take actions that break with past patterns.

Bostonians have the power to engage in equitable decision-making processes for climate action and to diligently apply principles for climate equity to all climate actions. They have already begun to do so and there is much more they can do. Residents and leaders of community-based organizations, businesses, civic and academic institutions, and city government have committed to achieve ambitious climate-change goals and to prioritize the needs and interests of socially vulnerable groups and neighborhoods.

But awareness and commitments are only the start of the journey. What's required is a shared understanding of the situation and its causes and a sustained sense of urgency to take actions that break with past patterns. Ending business as usual is not easy, and it doesn't usually happen if alternative mindsets and methods do not offer another way to behave.

This report has detailed the shared history of Boston's racist practices and policies and how they produce inequitable climate risks for many Boston residents. Combined with potential principles for engaging in equitable decision making and designing equitable climate actions, and identification of opportunities to prioritize equitable outcomes, it offers a pathway for ending the city's persistent and pervasive pattern of inequities. As Boston develops its future as a climate resilient and net-zero city, this is the road that must be taken.

CULLIGANPHOTO / ALAMY

Endnotes

1. Green Ribbon Commission, "Carbon Free Boston Social Equity Report 2019," 25.
2. Nancy Seasholes, "Addition of Land, 1880-2003," in Nancy S. Seasholes, ed., *The Atlas of Boston History* (Chicago: University of Chicago Press, 2019), 124.
3. Garrett Dash Nelson, "8 Maps That Explain Boston's Changing Shoreline," WBUR, June 24, 2021, https://www.wbur.org/news/2021/06/14/8-maps-that-explain-bostons-changing-shoreline.
4. National Park Service, "Native Americans and the Boston Harbor Island," website accessed June 14, 2022, https://www.nps.gov/boha/learn/historyculture/native-americans-and-the-boston-harbor-islands.htm.
5. Peterson quote cited in Presidential Committee on Harvard & the Legacy of Slavery, "Harvard and the Legacy of Slavery," April 2022, from Mark Peterson, *The City-State of Boston: The Rise and Fall of An Atlantic Power, 1630-1865* (Princeton, NJ; Princeton University Press, 2019), 19.
6. One of the region's . . . Harvard College: Presidential Committee on Harvard & the Legacy of Slavery, "Harvard and the Legacy of Slavery," April 2022, https://legacyofslavery.harvard.edu. Committee quote is on page 10.
7. Greater Boston's residential segregation . . . characteristics": Boston Foundation, "The Greater Boston Housing Report Card 2019: Supply, Demand and the Challenge of Local Control," June 2019, https://www.tbf.org/-/media/tbf/reports-and-covers/2019/gbhrc-chapters/gbhrc19-chapter-3--segregation.pdf.
8. City of Boston, "Climate Vulnerability Assessment," 32, see table "Socially Vulnerable Groups by Neighborhood." Neighborhoods that are 65% to 95% people of color: Dorchester, East Boston, Hyde Park, Mattapan, Roxbury. Neighborhoods that are two-thirds or more white: Allston/Brighton, Back Bay/Beacon Hill, Charleston, Downtown, Fenway/Kenmore, South Boston, West Roxbury.
9. Catherine Elton, "How Has Boston Gotten Away with Being Segregated for So Long?" *Boston Magazine*, December 8, 2020, https://www.bostonmagazine.com/news/2020/12/08/boston-segregation/
10. John Avault and Jim Vrabel, "Boston in 2010," in Nancy S. Seasholes, ed., *The Atlas of Boston History* (Chicago: University of Chicago Press, 2019), 156.
11. "A Green New Deal for Boston: Action Plan for Achieving Climate Justice," *Global Center for Climate Justice* (2022), 72, https://uploads-ssl.webflow.com/602c3fce05d7eca73687bb8b/6137ac8dbea8c045767f304c_BostonGreenNewDealReport.pdf.
12. Elton, "How Has Boston Gotten Away with Being Segregated for So Long?"
13. US Census data 2011-2015, American Community Survey, and other data sources cited in Boston Planning and Development Agency Research Division, "Boston's Immigrant Labor Force: Socio-Economic Characteristics and Economic Integration," January 2018, in Section 2.1.
14. Reed Ueda, "Boston in 1910," in Seasholes, ed., *The Atlas of Boston History*, 106-107.
15. B. Mitchell, "HOLC 'Redlining' Maps: The Persistent Structure of Segregation and Economic Inequality," National Community Reinvestment Coalition, 2018, https://ncrc.org/holc.
16. *Dorchester Reporter*, "Lack of regulation triggered mortgage crisis," 2008, www.dotnews.com/columns/2008/lack-of-regulation-triggered-mortgage-crisis, cited in "Carbon Free Boston: Social Equity Report 2019."
17. Greater Boston's residential segregation . . . characteristics": Boston Foundation, "The Greater Boston Housing Report Card 2019: Supply, Demand and the Challenge of Local Control," June 2019, https://www.tbf.org/-/media/tbf/reports-and-covers/2019/gbhrc-chapters/gbhrc19-chapter-3--segregation.pdf.
18. Green Ribbon Commission, "Carbon Free Boston: Social Equity Report 2019: Executive Summary," 16, https://greenribboncommission.org/app/uploads/2019/05/CFB_Social_Equity_Report_WEB.pdf.

19. C. Euchner, *Governing Greater Boston: The Politics and Policy of Place* (Cambridge, Massachusetts: The Press at the Rappaport Institute for Greater Boston, 2002), 34.
20. J.C. O'Connell, *The Hub's metropolis: Greater Boston's development from railroad suburbs to smart growth* (MIT Press, 2013), 35.
21. O'Connell, *The Hub's metropolis*, 35, and A. Dain, *Residential Land-Use Regulation in Eastern Massachusetts: A Study of 187 Communities*, Pioneer Institute for Public Policy Research & Rappaport Institute for Greater Boston, 2005, 32, https://pioneerinstitute.org/pioneer-research/housing-pioneer-research/residential-land-use-regulation-in-eastern-massachusetts/.
22. School segregation: Boston Research Center, "Encyclopedia of Boston: Desegregation of Busing," https://bostonresearchcenter.org/projects_files/eob/single-entry-busing.html.
23. School segregation: Boston Research Center, "Encyclopedia of Boston: Desegregation of Busing," https://bostonresearchcenter.org/projects_files/eob/single-entry-busing.html.
24. The Reserve Bank's analysis disaggregated US Black people and Caribbean Black people in Boston.
25. Home ownership rates from 2009-2013 American Community Survey, cited in Alvaro Lima, "Boston's Equity Challenges," presentation slides, July 2016.
26. A vast "wealth gap": Duke University, The New School, and Federal Reserve Bank of Boston, "The Color of Wealth in Boston," March 25, 2015, https://www.bostonfed.org/publications/one-time-pubs/color-of-wealth.aspx.
27. Ueda, "Boston in 1910," in Seasholes, ed., *The Atlas of Boston History*, 106-107.
28. Boston Planning and Development Authority, "Demographic Profile of Black/African Americans in Boston," February 25, 2022.
29. Boston Planning and Development Authority, "Demographic Profile of Black/African Americans in Boston," February 25, 2022.
30. Seasholes, ed., *The Atlas of Boston History*, 156.
31. A 2010 analysis … Avault and Vrabel quote: Seasholes, ed., *The Atlas of Boston History*, 156.
32. Alvaro Lima, "Boston in Context: Neighborhoods, 2011-2015 American Community Survey," January 2017, Boston Planning and Redevelopment Agency.
33. Alan Berube and Natalie Holmes, "Some cities are still more unequal than others—an update." The Brookings Institution. March 17, 2015, cited in Boston Redevelopment Authority Research Division, Boston Redevelopment Authority Research Division, "Boston Citywide Plan: Trends in Poverty and Inequality," October 2015.
34. https://datausa.io/profile/geo/boston-ma/#demographics.
35. "Boston's People & Economy," City of Boston, 2021, 99, www.boston.gov/sites/default/files/file/2022/04/6%20-Volume%201%20-%20Boston's%20People%20and%20Economy.pdf.
36. Poverty rates from 2013 American Community Survey, cited in Alvaro Lima, "Boston's Equity Challenges," presentation slides, July 2016.
37. US Census Bureau and 2010 American Community Survey, cited in Alvaro Lima, "Boston's Equity Challenges," presentation slides, July 2016.
38. Boston Redevelopment Authority Research Division, "Boston Citywide Plan: Trends in Poverty and Inequality," October 2015, slide #4.
39. C. Gatley & T. Riordan, "Racial Disparities in the Proximity to Vehicle Air Pollution in the MAPC Region," Metropolitan Area Planning Council, https://www.mapc.org/pollution-disparities-covid19/.
40. NE University Dukakis Center for Urban and Regional Policy
41. P. Loh, "T Riders' Union: A Tale of Two Campaigns in Boston," *Race, Poverty & the Environment,* 12(1), 2005, 47.
42. *Time Graphics: Urban Planning Boston* (Northeastern University, 2022), https://time.graphics/line/d3299c7fc7fd377503d7f16f21970a0a.
43. *Time Graphics* (Northeastern University).
44. Office of Boston City Councilor Michelle Wu, "Planning for a Boston Green New Deal and a Just Recovery," 39, 2020, https://www.michelleforboston.com/plans/gnd.
45. Tree canopy national average, recommended %: "Tree Cover % - How Does Your City Measure Up?" Enhancing the Built Environment, April 25, 2010, https://www.deeproot.com/blog/blog-entries/tree-cover-how-does-your-city-measure-up/.

46. AAFA, "Asthma Capitals 2018: The Most Challenging Places to Live With Asthma," 2018, 35.
47. https://www.boston.gov/sites/default/files/file/2022/04/04212022_Boston%20Heat%20Resilience%20Plan_highres-with%20Appendix%20%281%29.pdf
48. Green Ribbon Commission, "Carbon Free Boston Social Equity Report 2019," 35, cites J. McKim and A. Serrano, "As rents soar in Boston, low-income tenants try to stave off eviction," February 19, 2019, New England center for Investigative Reporting and The Boston Globe.
49. S. Bailey, "How to make rent affordable in Boston," *Boston Globe*, May 3, 2021, and C. Salviati, "*2019 Cost Burden Report: Half of Renter Households Struggle With Affordability*," https://docs.google.com/spreadsheets/d/1mSRmEh1rNafs5VJ5x4S-j3kkPb_hOr7qtSYptJVZoWw/edit#gid=0.
50. Reported by Collique Williams, organizer for Community Labor United, 2020.
51. Green Ribbon Commission, "Carbon Free Boston Social Equity Report 2019," 41, data from US Census Bureau.
52. https://www.mass.gov/doc/2022-health-care-cost-trends-report-and-policy-recommendations/download
53. https://www.wbur.org/news/2021/04/15/poll-boston-issues-racism-hostility.
54. Green Ribbon Commission, "Carbon Free Boston Social Equity Report 2019," 65, cites G. Yanbo, C. Knittel, D. MacKenzie, and S. Zoepf, "Racial and Gender Discrimination in Transportation Network Companies," October 2016.
55. Bruce Mohl, "Environmental justice designation coming under scrutiny," *Commonwealth*, August 3, 2021, https://www.mass.gov/doc/massachusetts-cities-towns-with-environmental-justice-populations/download. The state's 2021 definition states that an "environmental justice population" is defined as a neighborhood that meets 1 or more of the following criteria: (i) the annual median household income is not more than 65 per cent of the statewide annual median household income; (ii) minorities comprise 40 per cent or more of the population; (iii) 25 per cent or more of households lack English language proficiency; or (iv) minorities comprise 25 per cent or more of the population and the annual median household income of the municipality in which the neighborhood is located does not exceed 150 per cent of the statewide annual median household income.
56. Green Ribbon Commission, "Carbon Free Boston: Social Equity Report 2019: Executive Summary," 8, https://greenribboncommission.org/app/uploads/2019/05/CFB_Social_Equity_Report_WEB.pdf.
57. Green Ribbon Commission, "Carbon Free Boston: Social Equity Report 2019: Executive Summary," 20, Figure 7. Social Vulnerability Index.
58. Green Ribbon Commission, "Carbon Free Boston Social Equity Report 2019," 22, table 2.
59. City of Boston, "Climate Vulnerability Assessment," 23.
60. Kimberly Etingoff and Kimberly Zeuli, "A Grocery Story in Every Neighborhood," ICIC, https://icic.org/blog/grocery-store-every-neighborhood/
61. Green Ribbon Commission, "Carbon Free Boston Social Equity Report 2019," 70, cites 2011 study by H. Garrett-Peltier, "Pedestrian and Bicycle Infrastructure: A National Study of Employment Impacts."
62. Green Ribbon Commission, "Carbon Free Boston Social Equity Report 2019," 48.
63. Green Ribbon Commission, "Carbon Free Boston Social Equity Report 2019," 34, data from US Census Bureau.
64. Green Ribbon Commission, "Carbon Free Boston Social Equity Report 2019," 48.
65. Elizabeth Stanton, Emrat Nur Marzan, Sagal Alisaiad, "Accessing Energy Efficiency in Massachusetts: An Initial Review of Data," updated March 2018, Conservation Law Foundation, and Conservation Law Foundation, letter to Commissioner Judith Judson, March 29, 2018, https://ma-eeac.org/wp-content/uploads/CLF-GJC-and-allies-letter-to-the-EEAC-March-29-2018.pdf .
66. Jack Ewing, "U.S. Electric Car Sales Climb Sharply Despite Shortages," *New York Times*, July 14, 2022, https://www.nytimes.com/2022/07/14/business/electric-car-sales.html?referringSource=articleShare.
67. Green Ribbon Commission, "Carbon Free Boston Social Equity Report 2019," 77, cites 2016 study by The Greenlining Institute.
68. The Boston Climate Progress Report's "big lift" on housing ("Retrofitting the Small Building Stock") addresses this challenge in detail. See pp. 90-99 in the report, as well as the detailed supplemental materials that can be accessed at: https://drive.google.com/file/d/1CaZTvNIB2MVlga0b4kehFIxCw2tBJ0LN/view

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