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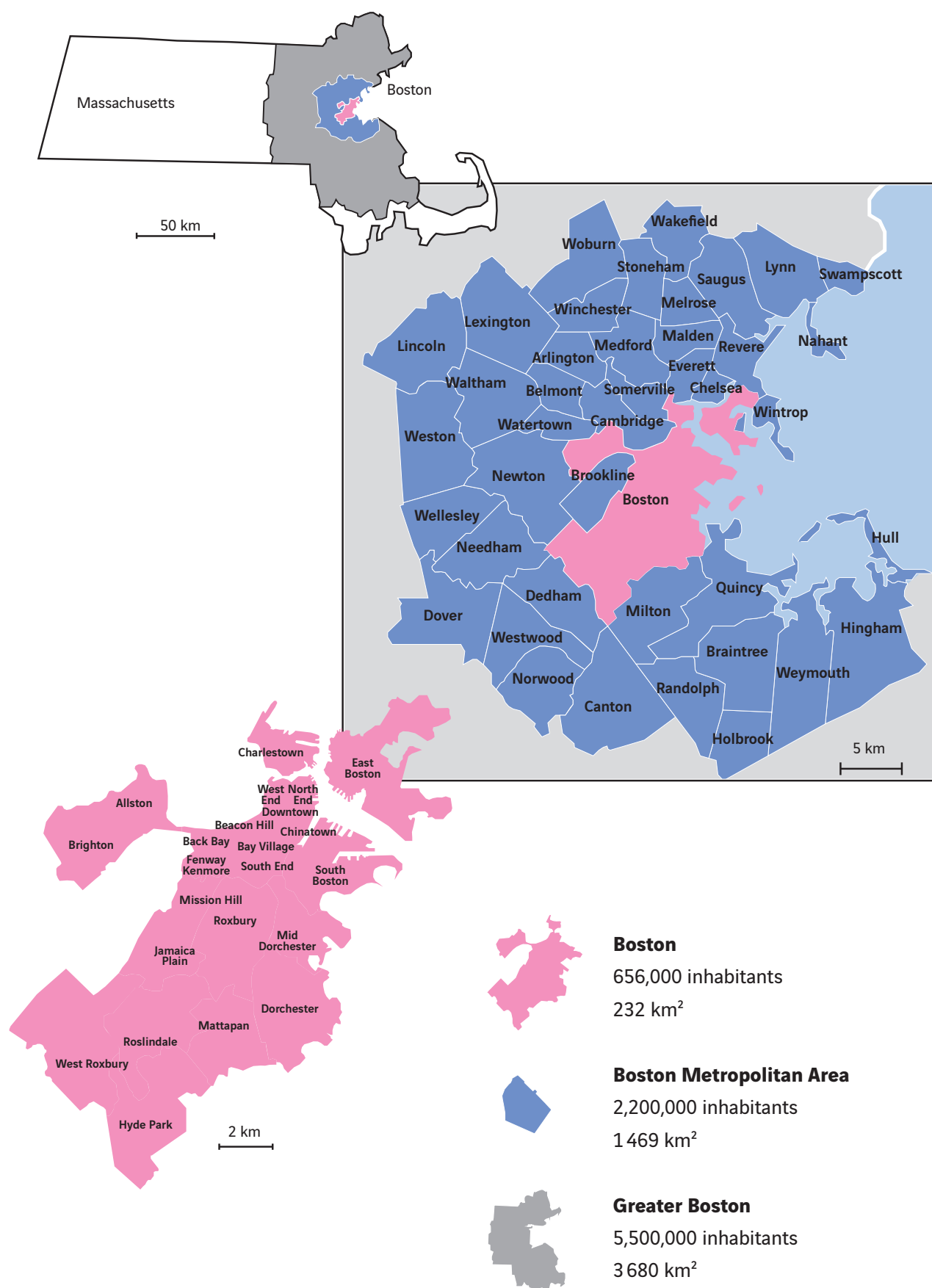


Boston



LA FABRIQUE
DE LA
CITÉ

BOSTON AND THE GREATER BOSTON



Source: City of Boston, MAPC

INTRODUCTION

The Boston area is one of the world's leading innovation hubs.

Over the years, this ecosystem has left an important footprint on the geography of the area. The Route 128 corridor, Kendall Square, the Seaport innovation district and the more recent "Neighborhood Innovation Districts" have become beacons of innovation that a wide number of cities across the world are eager to replicate.

However, social and economic equality, access to affordable housing and infrastructure upgradation remain major challenges for the city.

In order to find sustainable solutions to such issues, Boston has taken the lead in urban regeneration thinking and experiments.

► Mayor Walsh is proactively embracing data analytics and community engagement to craft Boston's public policies. The citywide "Imagine Boston 2030" initiative, the ONEin3 program, and the "Climate Ready Boston" plan aim to include citizens in the city's decision-making process.

► In parallel, Boston's Mayor's Office of New Urban Mechanics and the Citywide Analytics Team explore how data, new technologies, designs, and policies can improve the quality of city services. Applications and tools such as "CityScore" and "Citizens Connect" allow Boston to be better managed.

► Finally, Boston has also embraced open government to enable public participation and transparency.

Boston is currently at the forefront of urban innovation, harnessing data-driven policies and civic engagement and testing out new urban planning strategies.

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BOSTON

ECONOMY
IN THE US
6th RANK

ECONOMY
IN THE WORLD
12th RANK

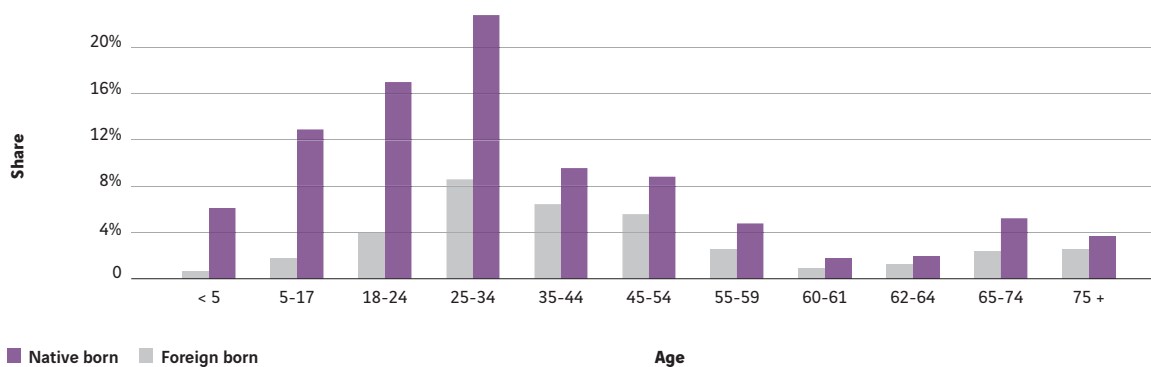
MEDIAN
HOUSEHOLD
INCOME
\$56,902

POPULATION
656,051
INHABITANTS

MEDIAN AGE
31,7 YEARS

Economy

Age by nativity in Boston



Source: datausa.io

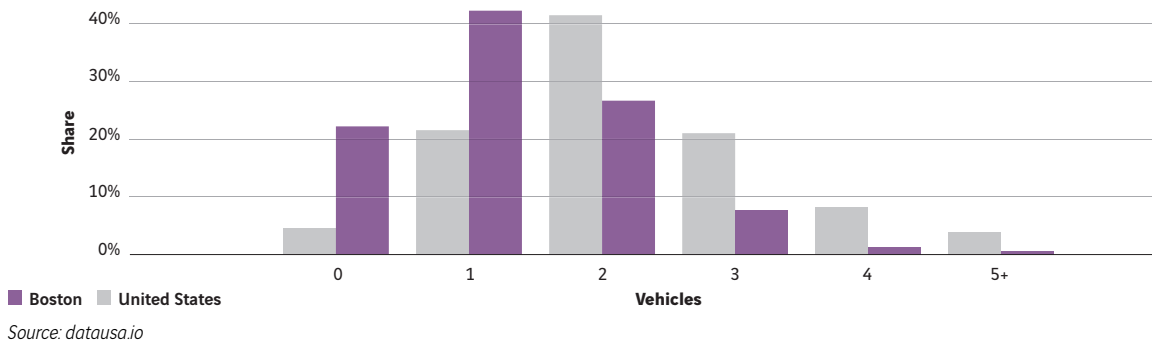
Industries by share



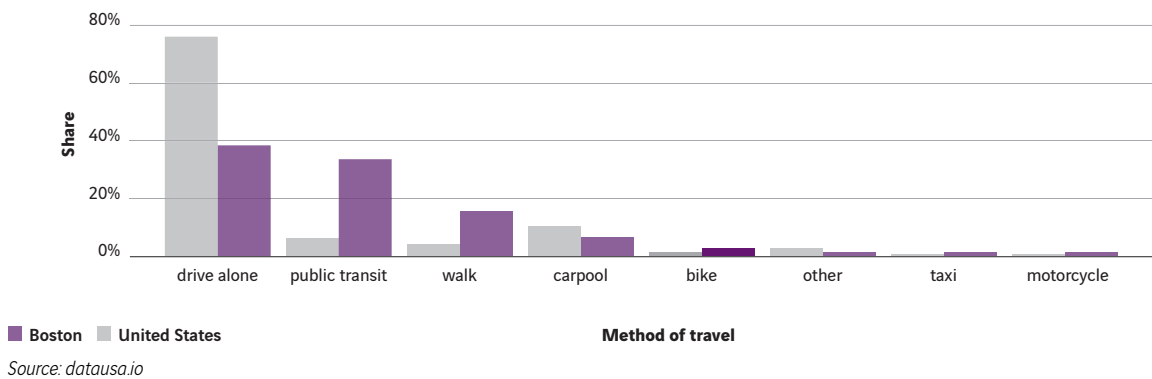
Source: datausa.io - Census bureau - Dataset: 2014 ACS 1, year estimate

Transport

Car ownership in Boston





Commuter transportation





How Bostonians commute for professional reasons


38,9%
use their personal vehicle


34%
use public transit


14%
use their feet


5,7%
share car seats


5%
use other modes
of transportation


2,4%
use their bike

Boston's four greatest challenges

Boston is the third most unequal city in the United States, with 30 percent of families with children earning incomes below the poverty threshold. Access to housing is a challenge for over one third of the city's population, as supply of new housing units does not match demand. The Boston area transportation infrastructure is also under pressure with expanding needs, aging assets, declining revenues, and political gridlock. This situation is particularly worrisome given the city's vulnerability to climate change.



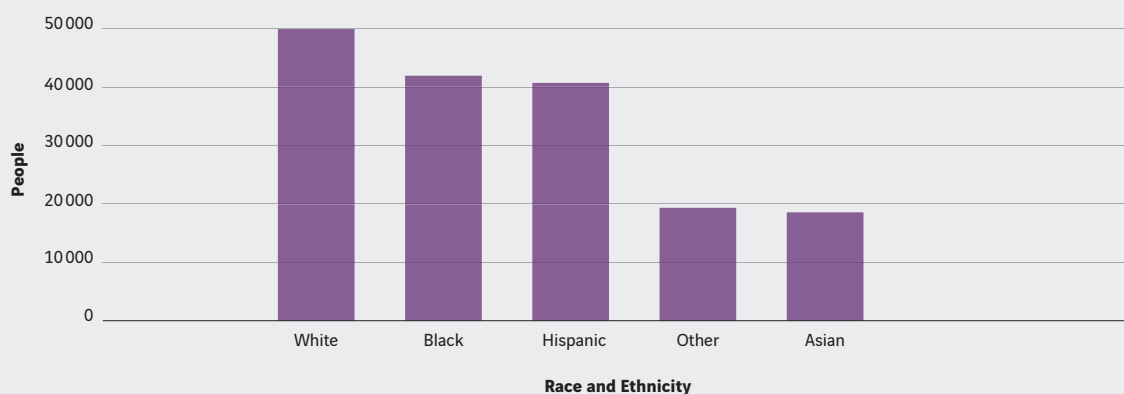
1. Fighting inequalities

Although the city has overcome the Great Recession of 2008, social and economic inequalities are on the rise. In 2000, the Boston Foundation warned that Boston was on the way to becoming “a two-tiered knowledge economy of ‘haves and have-nots’”. **The city has become the third most unequal city in the U.S., with 21.6 percent of Bostonians, and 30 percent of families with children, earning incomes below the poverty threshold.** According to the Boston Foundation, 11.3 percent of Bostonians lived in extreme poverty in 2013.

The gap between the rich and the poor is growing. A small percentage of the city’s households (5 percent) earn 25 percent of the \$20 billion total amount earned by Bostonians (aggregate income). In 2013, the top 5 percent of households earned 54 times more than their counterparts in the lowest quintile.

Beyond citywide numbers, a closer look at Boston’s neighborhoods reveals profound inequalities. In Roxbury, Fenway, Longwood, Mission Hill, and Allston, the majority of households earn less than \$50,000 annually. A focus on **child poverty highlights similar geographical and economic disparities.** In Roxbury for instance, the child poverty rate is over 50 percent.

Poverty in Boston by Race and Ethnicity
(per inhabitant)



Source: datausa.io – Census bureau – Dataset: 2014 ACS 1, year estimate



2. Promoting access to housing

The number of available housing units has not mirrored the pace of population growth. A 2015 report by Northeastern University's Dukakis Center revealed that "Boston would need to produce approximately 7,200 additional new units per year – a total of 36,000 units above current production levels – for supply to match demand".

Last year, over 38 percent of Boston-area homeowners spent more than a third of their income on housing. In downtown Boston, median home prices have increased by 76 percent since 2000. In 2015, the average monthly rent for a two-bedroom apartment reached \$2,602, up 42 percent from 2009.

The programs launched by the City of Boston



In 2014, Mayor Walsh unveiled "**Housing a Changing City: Boston 2030**", a new plan to find solutions to the rising cost of housing in Boston and to cater to the needs of an expected 91,000 new Bostonians by the year 2030. The plan announced the creation of 53,000 new units of housing across the City aimed at a variety of income levels.

Simultaneously, in 2015, Boston has launched the **Housing Innovation Lab** in order to facilitate middle-income families' access to housing. The Department of Neighborhood Development and the Department of New Urban Mechanics have joined forces to form the Lab. The Housing Innovation Lab is currently testing out ideas ranging from modular housing to participative housing

experimentation and the use of new construction processes for housing. The Housing Innovation Lab is supported by the **Bloomberg Foundation** with a \$1.35 million grant.

3. Addressing the obsolescence of the transportation system

Metropolitan Boston's transportation system is emblematic of the wider American crisis of aging assets, expanding needs, declining revenues, and political gridlock.

The system is in urgent need of repairs, improvement, and expansion. Congestion is rising, reliability is reduced, and operating costs are increasing.

Although the "Big Dig" (the most expensive – roughly \$14 billion – road project in the history of the U.S.) alleviated some of the worst traffic bottlenecks, Boston remains one of the most congested metropolitan areas in the U.S.

It is well-documented that metropolitan Boston's transportation infrastructure is at a crossroads and that failing to upgrade it would threaten the region's economic competitiveness (potentially costing Massachusetts between \$17.7 and \$26 billion by 2030 and the loss of as many as 15,000 jobs).

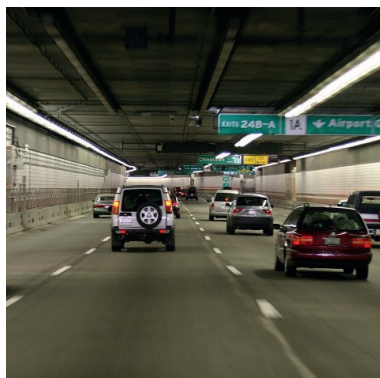
BURYING ROAD NETWORKS TO FIGHT URBAN TRAFFIC: THE BIG DIG



1 Leonard P. Zakim bridge



2 Ted William tunnel



3 Rose Kennedy greenway



Source: cartographic data © 2016 Google

► Boston's transportation system

Boston gave birth to the U.S.'s first subway and first car-share company. It is also one of the most walkable cities in the country.

► According to the 2010 census, **36 percent of households in Boston do not have a vehicle**, which makes public and alternative transportation particularly important to city residents.

► **Boston's public transportation** system consists in trolley, subway, bus, and commuter train. In terms of daily ridership, the MBTA is the U.S.'s fifth largest mass transit system.

► **Boston's South Station**, one of three major high speed rail terminals on Amtrak's Northeast Corridor, currently hosts high speed intercity passenger rail.

► **The City's Logan International Airport** is the 20th most active airport in the United States, and the 52nd most active airport in the world. In 2015, the airport served over 33.4 million international and domestic passengers.

► **The Port of Boston** provides deep-water port facilities and access to world ports for businesses of the region. In 2012, \$4.6 billion of economic value was related to the activity at the Port and a total of 50,042 jobs were in some way related to it. The Port of Boston ranked as the 14th largest container port

on the U.S. Atlantic Coast by container volume and has also become a major cruise ship port, hosting 328,305 cruise ship passengers in 2015.

► **On-demand transportation systems, such as Uber, Lyft or Bridj – an on-demand minibus system** – are also increasingly popular in Boston. Bridj offers buses with no fixed stops, and an app allowing each user to signal their desired arrival and departure locations. The pricing system is flexible, and changes in real time based on demand. Recently, Bridj has made a proposal to the city of Boston to replace the MBTA's late-night service, which is closing.

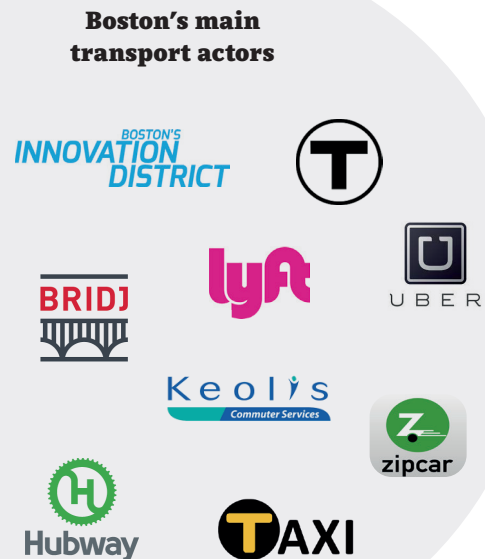
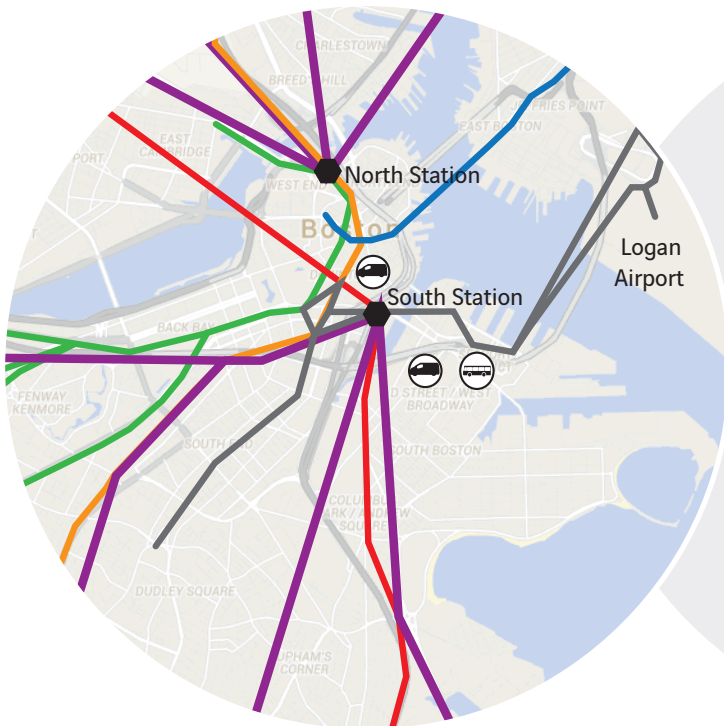
► The City has partnered with Zipcar and Carshare to promote **car-sharing**. Such services are filling gaps in the system and reducing reliance on private vehicles.

► Boston also joined forces with the cities of Cambridge, Somerville and Brookline in 2011 to launch a **bike-share system – Hubway**. Today, the system boasts more than 160 stations with 1,600 **shared bikes**.



The "T", Harvard Square Station.

BUILDING COMPLEMENTARY MOBILITY OFFERS



A multimodal network with multiple actors

The "T" public transport network is completed by:

- ▶ **"Hubway"**: bike sharing system (delegated to Alta Bike Share)
- ▶ **"Zipcar"**: car-sharing system
- ▶ **"Lyft" and "Uber"**: demand-responsive transport
- ▶ **"Bridj"**: public demand-responsive transport (mini-bus)
- ▶ **"Boston's Innovation District"**: Private shuttles used to connect the Innovation District to the rest of the city, at the request of companies.

Rail Network

- Green Line
- Blue Line
- Silver line
- Red Line
- Orange Line
- Commuter rail

Private mobility offers

- Corporate shuttle service
- Neighborhoods served by Bridj



Source: cartographic data © 2016 Google, MBTA

4. Becoming a Resilient City

The city faces rising temperatures, sea level rise, and heavier precipitation. **In economic terms, Boston is the 4th most vulnerable city in the United States and the 12th most exposed city globally with an estimated \$55 billion of its assets exposed to a 100-year flood event.**

Climate change is already a reality in the city, which has experienced more than 25 centimeters (10 inches) of relative sea level rise since 1920.

With a 2,3 meters (7.5 foot) storm surge and high tide, large parts of the subway system are threatened. And approximately 212 kilometers (132 miles) of road are vulnerable at a storm surge of 1,5 meter (5 feet).

► The Climate Ready Boston Initiative

Boston is also working closely with civil society organizations to develop resilient solutions which will prepare the city for climate change.

The city has launched the “Climate Ready Boston” initiative, with three main elements:

- using data visualization to forecast the impact of climate in the Boston region,
- assessing how climate change may impact Boston,
- and developing solutions to address major vulnerabilities.

The program is led by the City of Boston in partnership with the Green Ribbon Commission and with support from the Massachusetts Office of Coastal Zone Management. The Green Ribbon Commission brings together a group of business, institutional, and civic leaders to develop shared strategies for fighting climate change.



Sea Change Boston, an exhibition organized by the Sasaki agency, a member of the Green Ribbon Commission, presenting the city's vulnerability areas with regard to rising sea levels.

BOSTON AND THE CHALLENGE OF RISING SEA LEVELS

WE NEED TO DESIGN FOR RISING SEAS AT MULTIPLE SCALES



Dry Flood-Proofing



Wet Flood-Proofing



Floodable Park



Canal Street



Living Shoreline



Elevated Building



Dune Restoration



Absorbent Street



Temporary Floodwall



Floating Building



Revetment



Multi-purpose Levee

Source: Sasaki associate study, Sea level rise – www.sasaki.com

Boston and urban regeneration

Imagine Boston 2030, ONEin3, and Climate Ready Boston are examples of initiatives aimed at encouraging citizen participation in Boston's urban regeneration. The South Boston and Roxbury neighborhoods are representative of these efforts initiated by Boston's previous mayor, Thomas M. Menino, and continued by current mayor Martin J. Walsh.



1. Bottom-up policies

► Imagine Boston 2030

In 2014, Mayor Walsh launched **“Imagine Boston 2030”**, a citywide initiative that aims to engage the public in creating a framework to guide the development of the City between 2014 and 2030. “Imagine Boston 2030” covers transportation, housing, climate change mitigation, cultural planning, health, and open spaces.

This public conversation will unfold over a two-year period, with the **Strategic Vision Plan to be released in Summer 2016**.

Imagine Boston 2030

Four goals

- Goal 1: Ensure quality of life in accessible neighborhoods
- Goal 2: Drive inclusive economic growth
- Goal 3: Promote a healthy environment and adapt to climate change
- Goal 4: Invest in infrastructure, open space, and culture

A wide range of approaches

The City has used a range of engagement approaches to gather the input of Bostonians, including open houses, social media, and the digital mapping tool coUrbanize.



► ONEin3

With more than one-third of Boston’s population between the ages of 20-34, Boston is home to the highest proportion of young adults out of any major city in America.

Launched in 2004, **the ONEin3 program serves to encourage young people to participate in city government and civic affairs, facilitate communication between young adults and the city’s leadership, and connect them to city resources, neighborhood networks, and each other.**

The ONEin3 Council

The ONEin3 Council is an appointed body of thirty Bostonians between the ages of 20-34. The Council serves as the leadership team driving ONEin3’s efforts to engage the City of Boston’s millennial population. Council members are selected through an annual application process and assigned a role as either a Committee Chair or **Neighborhood Captain**.



► Go Boston 2030

Over 6,000 Bostonians engaged in the planning process and more than 600 people participated in the subsequent Visioning Lab in 2015.

Go Boston 2030: the City of Boston's initiative for mobility

GO
BOSTON
2030

An Action Plan proposes ways for transportation to support significant improvements, address inequities in underserved neighborhoods, connect the city's workforce to job opportunities, and prepare its systems for climate **change**. The plan builds on and complements other initiatives aimed at improving transportation in Boston, such as **the "Vision Zero program", which aims to eliminate fatal and serious traffic crashes in the city by 2030.**

Additionally, the New Urban Mechanics team is currently carrying out experiments aimed at:

- Improving public space (with design experimentations, such as new benches)
- Facilitating parking using mobile apps to visualize available parking spaces and pay parking fees
- Encourage the emergence of services through a partnership with Waze in order to better handle traffic flow, or the development of the Street Bump app to improve the quality of the city's roads.

► Data-sharing partnerships with Uber and Waze



The partnership with Waze is centered on improving traffic flow in Boston by allowing the City to share information on expected road closures (there are 400,000 Waze users in Greater Boston) and to allow the City's Traffic Management Center to adjust Boston's 550 **signalized intersections**.



The partnership with Uber is intended to allow the City of Boston to assess transportation patterns across Boston's neighborhoods with the ultimate objective of helping manage urban growth, relieve traffic congestion, expand public transportation, and reduce greenhouse **gas emissions**.

Finally, Boston has embraced **open government** as a crucial means for enabling public participation, transparency, collaboration, and effective **government**. To achieve this, the City promotes the availability and use of **Open Data**, and has developed a dedicated website in order to promote open governance.



For more information, read La Fabrique de la Cité's study: "Towards data-driven cities ?" at www.thecityfactory.com

2. South Boston and Roxbury, two flagship projects



1 South Boston Waterfront

Under the initiative of former mayor Thomas M. Menino, 4 km² of South Boston's seafront have been transformed into an urban environment aimed at promoting innovation, collaboration, and entrepreneurship. This zone, dubbed "Boston Innovation District", allowed the city to welcome 5,000 jobs and 200 companies. This seafront is also Boston's main land reserve.



2 Roxbury

Roxbury was Boston's historic shopping district until the 1960s-70s. Former mayor Thomas M. Menino suggested regenerating the area by hosting the Roxbury Innovation Center in the old Ferdinand Building facilities.



Source: cartographic data, Images 2016 Google

An “Innovation-Driven City”

In 1630, Boston is merely a town. In 1822, it becomes a city. Today, Boston is not only a city, but also an innovation platform fueled by various public and private actors. Companies, universities, and public agencies play a pivotal role in promoting and implanting innovation within Boston.



1. A highly involved administration

► The Mayor

He is elected every four years (there are no terms limit) and, being the head of the municipal government, the Mayor has strong executive powers. The incumbent Mayor – elected in January 2014 – is **Mr. Martin J. Walsh**.

► The City Council

The City Council is the legislative body of the City. It is made up of **13 members** who are elected for two years (there is no limit on the number of terms a member can serve). One of the main responsibilities of the City Council includes budget approval, creation and abolition of city agencies, land use decisions and the approval of legislative proposals.

► The Department of Innovation & Technology

The Department of Innovation & Technology is in charge of “improving life for citizens and partners through technology”. In addition to focusing on core technology infrastructure, the department strives to use digital communication technology to explore new channels for citizen engagement and participation in government, foster data-driven management, and promote on broadband expansion and digital equity. This department is headed by Jascha Franklin-Hodge. In his team, new Chief Data Officer, Andrew Therriault, heads the Citywide Analytics Team in order to develop the data-driven city, using data to improve quality of life and enhance government operations in Boston. The team works with departments across the City. Its priorities include Performance and Process Management, Pilots and Product Development, Data Viz and Dashboards, Open Data and Public Engagement.

Boston’s Mayor’s Office of New Urban Mechanics (MONUM) serves as the Mayor’s civic innovation group. A City agency that was formed in 2010, it pilots experiments that offer the potential to significantly improve relations between municipal agents and citizens (Boston Connect and Housing i-team are some of the programs launched recently).

► 100RC (100 Resilient Cities)

Boston’s **Chief Resilience Officer**, Atyia Martin, works across City departments and with external stakeholders to support all of Boston’s major planning efforts, including Imagine Boston 2030 and Go Boston 2030. The two-year position is fully funded through 100 Resilient Cities – Pioneered by The Rockefeller Foundation (100RC). The goal of 100RC is to find ways to infuse the principles of resilience into all aspects of local planning and the overarching issues facing Boston, including racial and socio-economic inequity, the lack of affordable housing, unemployment and underemployment, violence, climate change, flooding and terrorism.

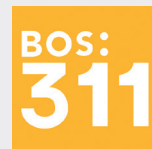
2. ... which relies on data

For Boston, the exponential growth of data is an opportunity to tackle the challenges faced by the city. Boston has launched open data initiatives. The city's three specificities in terms of urban data are the following:

- ▶ Schemes aimed at providing evaluation grids and performance analysis for City-led actions (such as CityScore)
- ▶ Crowdsourcing methods to encourage citizens to produce urban data
- ▶ Data reuse, spurring the creation of proximity services adapted to citizens' everyday needs.

The Citizens Connect mobile application

The Citizens Connect App helps residents and visitors make Boston neighborhoods even better by reporting service issues such as potholes to City government for a [quick resolution](#).



The mayor launched CityScore in 2015. This initiative allows the mayor and municipal agents to follow real-time indicators.

CityScore

CityScore aggregates and displays key metrics from across the City into a single number that represents the City's overall performance day-to-day. In theory, this allows the Mayor and his team to:

- ▶ spot trends that need additional investigation,
- ▶ measure the impact of changes to process and policy.

CityScore is an average of all individual metric scores.

- ▶ A CityScore of greater than 1: indicates that the City is exceeding specified targets and/or surpassing historical performance levels.
- ▶ A CityScore of exactly 1: indicates that the City is meeting specified targets and/or is maintaining historical performance levels.
- ▶ A CityScore of less than 1: indicates that the City is not meeting specified targets and/or is not keeping up with historical performance levels.



3. Agents of Urban Innovation



1 The City of Boston's Mayor's Office of New Urban Mechanics is a tool used to promote and develop civic innovation. Created in 2010, the municipal agency initiates experiments to improve the city's services. The MONUM focuses on four themes: education, civic engagement, urban form and economic development.

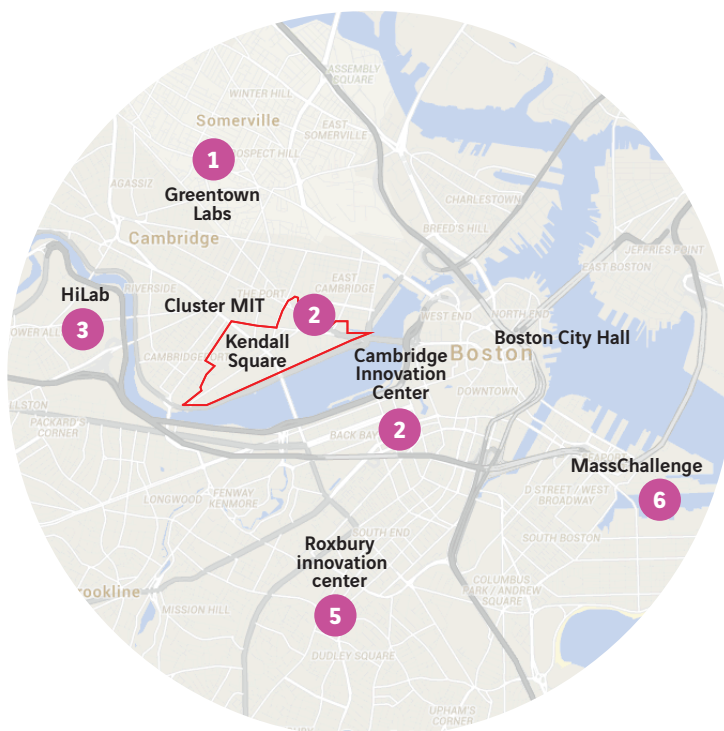


2 Metropolitan Area Planning Council (MAPC) is the Greater Boston's 101 cities' planning regional agency. MAPC's mission is to promote a smart growth strategy and to develop regional collaboration.



Boston Redevelopment Authority (BRA) is the agency in charge of planning and economic development in the city of Boston. It works hand in hand with the city's various departments and local communities.

4. Innovation labs



1 Greentown Labs is a combined structure specialized in the four green technologies. Created in Somerville in 2010, this former warehouse now welcomes more than 40 start-ups and several big companies' R&D departments (such as Saint-Gobain). Greentown Labs is a place of emulation for green technologies by connecting several innovative structures.



2 The Cambridge Innovation Center (CIC) is a structure allowing start-ups to rent office space. The CIC offers several corporate services: reception, furniture renting and dedicated communication services. The CIC currently hosts over 500 companies.



Harvard innovation lab

3 The Harvard Innovation Lab (HiLab) is a platform opened to Harvard students. It aims at developing innovation and entrepreneurship from students. The HiLab regularly organizes "challenges" to face current and future societal issues.



4 The Housing Innovation Lab is an initiative set up by the city hall of Boston with the financial support of Bloomberg Philanthropies. The Housing Innovation Lab aims to solve the access to housing problem by finding ways to reduce the costs of construction and the costs of access to property.

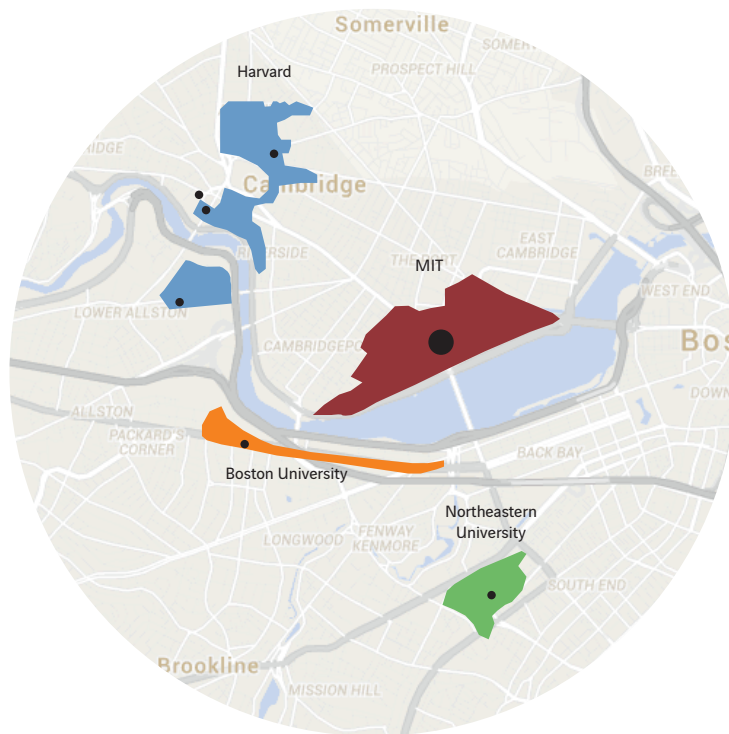


5 The Roxbury Innovation Center, located in the heart of Dudley Square, participates in the regeneration of the surrounding neighborhood. It offers workspaces and networking spaces and regularly organizes events. The Roxbury Innovation Center supports the local fabric of companies and start-ups and fosters innovative projects.



6 Masschallenge is an international start-up accelerator. This building located next to the Innovative District is the first founded by this organization. More than a nonprofit start-up accelerator, MassChallenge regularly organizes competitions for new start-ups to reward best seeds with an early-stage capital.

5. Universities



● Harvard

Harvard Kennedy School -
Ash Center for Democratic
Governance and innovation



Harvard Kennedy
School - Government
Performance Lab



Harvard Graduate
School of Design



Harvard Innovation Lab
(HiLab)



● MIT

MIT SENSEable City Lab



MIT Department of Urban
Studies and Planning



MIT School of Architecture
and Planning



● Boston University

Boston University City
Planning and Urban Affairs



● Northeastern University

Northeastern University -
School of Public Policy
and Urban Affairs



Northeastern University -
The Institute on Urban
Health and Practice



Studied subjects



Public affairs



Urban design



Health



Data

ZOOM ON INNOVATION NEIGHBORHOODS



Route 128

The Route 128 corridor, a highway that circles the Greater Boston Area, became the center of technological innovation in America as early as the 1950s, before the emergence of Silicon Valley. It became known as “America’s Technology Highway” when high-tech and biotech enterprises clustered along it, looking for new office space, educated professionals, and proximity to leading universities.



Kendall Square

The Kendall Square area benefits from its proximity to the Massachusetts Institute of Technology (MIT), which fosters academic partnerships. Genzyme and Biogen Millennium are some of the companies born in Kendall Square.

Kendall Square not only functions as an innovation district, but also serves as a living laboratory for urban-planning **strategies** to test out new public policies and architectural practices. Beyond Kendall Square, the Life Sciences Corridor (connecting Cambridge, Somerville, Boston, Quincy, and Braintree) is the world’s largest cluster of Life Science and Biotech Companies, with 82,000 Life Science Workers, 1,875 Life Science establishments and 3.38 billion dollars in **funding**.





The South Boston Waterfront Innovation District

The city of Boston works actively towards the promotion of innovation on its territory. In 2010, Mayor Thomas Menino created the “**Boston innovation district**” with a view to boosting economic growth in the nascent Seaport neighborhood and attracting **startups**.

The vision was to develop these 1,000 acres of land to position Boston at the forefront of urban economic development and turn this area into an “urban lab”. The district hosts MassChallenge, one of the world’s largest startup accelerators, which has already supported over 835 startups that have raised over \$1.1 billion in outside funding and created over 6,500 **jobs**. General Electric has decided to move its headquarters there, as well as Vertex Pharmaceuticals and the Boston Herald.



The Neighborhood Innovation Districts

To emulate the success of the innovation district on the South Boston waterfront and to grow entrepreneurship among local entrepreneurs beyond this District, the City of Boston recently launched a “Neighborhood Innovation Districts” initiative.

The “Dudley Square-Upham’s Corner Corridor” serves as a pilot to test the viability of a series of “**Neighborhood Innovation Districts**”.

In 2015, the Mayor launched the Roxbury Innovation Center to help bring startup businesses to the economically challenged **neighborhood**. It is meant to be a civic experiment that supports local economic development by encouraging innovation and entrepreneurship.

6. A knowledge- and service-based economy

Greater Boston has the sixth largest economy in the country and 12th largest in the world, generating \$363 billion. The health, biotechnology, higher education and financial services industries are all on the rise. Boston attracts companies, including most recently General Electric, which is planning on moving its headquarters to Boston in 2017 at the latest.

A highly educated workforce

Boston's economy is one of the fastest growing in the U.S. According to the Boston Redevelopment Authority (BRA), **the Gross City Product has grown at an average annual rate of 2.7 percent over the past four decades.**

► The number of jobs created in Boston grew at an average annual rate of 1.4 percent between 2009 and 2013, exceeding the national rate and adding nearly 45,000 jobs during this period.

► Unemployment in the City continues to decline from a high of 8.6 percent in January 2010 to a low 4.2 percent in May 2015 (the country wide unemployment rate is 5.5 percent).

In 2015, 46 percent of Boston's resident labor force had a Bachelor's degree or higher, compared to 35 percent in 2000. It is therefore not surprising that Boston workers produce on average \$157,152 per year, \$38,575 more than the national average.

► Boston's well-educated workforce also means comparatively high household incomes and wages. In 2010, **median household income** in the City was **\$49,893**, up 27 percent from 2000. Median household income in Boston is consistently more than 30 percent higher than the median household income in the United States.

The leading role of healthcare, life sciences, education and financial services

With a mix of universities, research institutions, and teaching hospitals in Boston and the region, the healthcare and life science industry is one of the most robust sectors of the Boston economy.

► **The Boston Metropolitan area hosts 54 higher education institutions and is home to over 250,000 students.** These institutions have a major impact on the economy. They are one of the top employers (with a workforce of over 47,000 themselves) and many of their graduates remain in Boston after graduation.

► Five of the top U.S. hospitals funded by the National Institutes of Health are in Boston.

► The **health industry** accounted for **18.7 percent** of these jobs in 2013.

► **The financial and insurance industry contributed to about 20 percent of Boston's Gross City Product from 2010 to 2013 and represented 11.3 percent of the total jobs in Boston in 2013.** Boston hosts some of the U.S.'s leading financial services firms such as Fidelity Investments, State Street Corporation, and Wellington Management.

Economic activities linked to education and services generate almost all job creations in Boston.



GLOSSARY

Behavioral sciences: Using insights about how people behave that come from academic fields such as economics, psychology, and neuroscience (collectively called the behavioral sciences) to inform policy making. Behavioral sciences also help decision-makers understand why people behave the way they do and move beyond the traditional economic model, which assumes that humans are rational beings. The MIT and Harvard University are both undertaking leading research in this increasingly influential field in urban policy making.

Big data & urban management: According to Alex (Sandy) Pentland, cities need to rethink their approach to services. Rather than separating systems by function – water, food, waste, transport, education, energy etc. – cities must consider them holistically. Instead of focusing only on access and distribution systems, cities should come up with dynamic, networked, self-regulating and resilient systems that take into account the complex socio-economic interdependencies of today's hyperconnected world. With big data (the billions of people and devices technologically connected throughout the world) we now have a feedback loop that can deliver the dynamic resilience a complex world requires. To ensure a sustainable future, we must leverage this new feedback loop to create a "nervous system" that maintains the stability of government, energy and public health systems globally. When we use big data to look beyond aggregates (such as markets, classes and parties) and instead examine the fine-grain patterns of society, new opportunities and discoveries emerge. With these discoveries we can deliver greater innovation, transparency, stability in market behavior and improved social outcomes. Just as importantly, data analytics provide unprecedented instrumentation for how policies are performing so they can be quickly adjusted.

More information: <https://www.media.mit.edu/people/sandy>

Data-driven: Insights and decisions that are based on the analysis of data. The City of Boston is actively promoting evidence-based policies, informed by data.

Data visualization: The presentation of data in a pictorial or graphical format (visualization). By enabling decision makers to see data presented visually, they can better understand difficult concepts and identify new patterns. The MIT SENSEable City Lab focuses on harnessing the value of data to identify new ways to imagine, monitor, and understand our cities.

Open data: Data is open if it is both technically open (available in a machine-readable standard format) and legally open (explicitly licensed in a way that permits commercial and non-commercial use and re-use without restrictions). The City of Boston is actively promoting open data to allow greater transparency, access, and innovation.

Innovation districts: According to the Brookings Institution, innovation districts are geographic areas where leading-edge anchor institutions and companies cluster and connect with start-ups, business incubators and accelerators. They are also physically compact, transit-accessible, and technically-wired and offer mixed-use housing, office, and retail space. Boston's Seaport Innovation District is one of the best examples of such districts.

Innovation ecosystem: According to the MIT, an innovation ecosystem is best defined as the connections among five key stakeholders: entrepreneurs, universities, and risk capital providers, but also with key roles for government and large corporations.

Mobility on demand: Flexible and convenient transportation options that respond to travelers' demands and that are based on technological advances such as smart phones, information processing, and widespread data connectivity. New mobility concepts and solutions are fast emerging in Boston, from bike- (Hubway) and car-sharing systems (Zipcar) to demand-responsive bus services (Bridj).

Resilience: According to the Rockefeller Foundation, resilience is the ability of a city to survive to, and thrive inspire of, multiple shocks and stresses. While cities can't predict which disruptions will come next, they can plan for them, learn from them, and generate additional benefits through the same investments, such as opportunities for economic growth or improved parks for city residents. The Rockefeller Foundation has launched a major initiative to foster urban resilience around the world. The city of Boston, which hosts a Chief Resilience Officer as part of its partnership with the Rockefeller Foundation, is an active member of the initiative.

The Boston Zoning Code: The Boston Zoning Code dictates the allowed shape, density, and use of development in a given area. It protects Boston's distinct neighborhoods from the development of buildings or uses that do not harmonize with their surrounding context. Enacted in 1964, the Boston Zoning Code has evolved and adapted to accommodate the unique character of these places. The BRA helps shape the zoning code.



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La Fabrique de la Cité

La Fabrique de la Cité is a think tank promoting discussion and leadership on urban innovation. Its interdisciplinary approach brings together thought leaders and international players in urban development to uncover good urban-development practices and put forward new ways of building and rebuilding cities. *La Fabrique de la Cité* has been an endowment fund since December 25, 2010.



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