AVs in BOSTON

Shared rides, Seagulls, & Streets

City of Boston
Mayor Martin J. Walsh

Kris Carter
Mayor’s Office of New Urban Mechanics
City of Boston
6.13.18
1. What is motivating Boston?
2. What do our testing efforts look like?
3. What is happening beyond testing?
4. What have we learned so far?
Top 5 cities for inequality

Average income of people who earn more than 95% of the population

versus

Average income of people who earn more than 20% of the population and their corresponding ratios (95:20)

1. Boston
   - Average income: $266,224
   - Ratio: 17.8
   - 95% income: $14,942

2. Los Angeles
   - Average income: $203,383
   - Ratio: 17.7
   - 95% income: $11,466

3. Atlanta
   - Average income: $281,653
   - Ratio: 17.5
   - 95% income: $16,057

4. Cincinatti
   - Average income: $164,410
   - Ratio: 15.7
   - 95% income: $10,454

5. Providence
   - Average income: $196,691
   - Ratio: 15.4
   - 95% income: $12,795

Source: Brookings Institute
Graphic by Huntington News
GoBoston 2030 Goals

ACCESS
Make Boston’s neighborhoods interconnected for all modes of travel

SAFETY
Collaborate on design & education to substantially reduce collisions on every street

RELIABILITY
Prioritize making travel predictable on Boston’s transit and roadway networks
SAFETY

14  4,537

Source: 2017 Boston Vision Zero
BETTER ACCESS

The average commute in Boston is **28 minutes**

24% of Mattapan residents have a commute over **60 minutes**
MORE RELIABLE
(UNOFFICIAL WINTER 2015 SNOW MAP)

Source: MBTA Snow Map, Sara Morrison
ENSURE EQUITY

2005-2009 American Community Survey 5-Year Estimates

Median Household Income
(in the past 12 months, in 2009 inflation-adjusted dollars)

Sub-prime service
The three Boston ZIP codes that do not receive Amazon Prime deliveries:

Source: Boston Globe
If you’re not at the table, you’re on the menu
“...that our expected preferred deployment will be fleets of autonomous vehicles that are electric and shared...ensure equitable access to opportunity for those least well served by transportation options today, including seniors, youth, and those with physical disabilities.”
Our Five Areas of Research

1. AV Testing
2. Business Models
3. Street Design & Infrastructure
4. Workforce
5. Governance
What Have We Been Doing?

Set Policy Priorities

- Formed Research Partnerships
- Technology Testing

EXECUTIVE ORDER

ESTABLISHING A POLICY FOR AUTONOMOUS VEHICLES IN THE CITY OF BOSTON

WHEREAS, the City of Boston has engaged thousands of residents in developing Go Boston 2030—a long-term transportation plan to increase equity, unlock growth and improve resiliency; and

WHEREAS, those residents have clearly articulated that our transportation options need to be safer, more accessible and more reliable; and

WHEREAS, autonomous vehicles could help us meet those goals by significantly reducing roadway fatalities and motor accidents, by expanding transportation choices, and by using our roads more efficiently; and

WHEREAS, those benefits should only accrue in Boston if they come with the reduction of emissions, with the improvement of the public realm, by complementing mass transit services, and with a serious commitment to those whose jobs may change if autonomous vehicles are adopted; and

WHEREAS, Boston’s deep history of technical innovation, transportation entrepreneurship, and progressive leadership made it an ideal international leader in the development of autonomous vehicle technology and policy; and

WHEREAS, the cost of not leading will mean these vehicles may not work safely on our streets, the business models may not work for our residents and the benefits from this technology are not realized here;

NOW, THEREFORE, pursuant to the authority vested in me as chief executive officer of the City of Boston by M.G. L. c. 40, § 11, and every other power, duty, and right vested in or conferred, hereby order and direct that:

1. The Boston Transportation Commissioner lead the oversight of autonomous vehicles in the City of Boston and, that

2. The Boston Transportation Department, with support from the Mayor’s Office of New Urban Mechanics, publish guidelines for the testing of autonomous vehicles and, that
Governance

Executive Order(s)

MOU

Testing Plans

All Documents Available at Boston.gov/Boston-AV
Testing: 1,000 Acre Innovation District
Testing:

1,000 Acre Innovation District
Three Partners

nuTonomy

optimus ride

aptiv (delphi)
1,000 Acre Innovation District
Fahckin' Seagulls Menace Boston's Self-Driving Cars

Ryan Felton
2/07/17 4:16pm • Filed to: CAR TECHNOLOGY
8.1K 5K
Getting AV- Ready: Digitizing our curbs

Prototype Completed to date:

- 37.9 linear miles of curb
- 9,372 assets
Socializing: The AV Petting Zoo

Boston’s First ROBOT BLOCK PARTY

Come see the largest collection of autonomous vehicles and robots ever assembled in Boston!

The City of Boston and MassRobotics have partnered to host our first Robot Block Party and Autonomous Vehicle Petting Zoo, presented by HUBweek!

Come by City Hall Plaza for a family-friendly, educational day!

Sunday
October 15, 2017
11:00AM - 5:00PM

The HUB
City Hall Plaza
Boston, MA 02201
Research: Citizen Behaviors

2,400 Bostonians

Source: World Economic Forum, BCG Analysis
Situations along four criteria

1. Trip reason
   - Commute to work alone

2. Group context
   - Family trip to the zoo

3. Weather
   - Night out with friends

4. Time of day

source: World Economic Forum & BCG analysis, 2018
Mass Transit

Bus/Subway

Commuter rail

Personal car

Personal car

Autonomous personal car

Taxi/ride sharing

Autonomous shared taxi

Autonomous minibus

source: World Economic Forum & BCG analysis, 2018
⅓ of trips will be through mobility on-demand service

(mostly shifted from private vehicles)

source: World Economic Forum & BCG analysis, 2018
The shorter the trip, the higher the AV adoption

source: World Economic Forum & BCG analysis, 2018
AV adoption is correlated to income levels.

<table>
<thead>
<tr>
<th>Median income</th>
<th>% AV adoption</th>
</tr>
</thead>
<tbody>
<tr>
<td>$100–$149K</td>
<td>53</td>
</tr>
<tr>
<td>$50–$74K</td>
<td>26</td>
</tr>
</tbody>
</table>

source: World Economic Forum & BCG analysis, 2018
## Results from agent-based trip model for City of Boston

<table>
<thead>
<tr>
<th></th>
<th>Today</th>
<th>Future (Conjoint Scenario)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traffic volume on the road</td>
<td>1.75M</td>
<td>-15%</td>
</tr>
<tr>
<td>Vehicle distance travelled (km)</td>
<td>8.8M</td>
<td>+16%</td>
</tr>
<tr>
<td>Parking space needed (km²)</td>
<td>10.0</td>
<td>-48%</td>
</tr>
<tr>
<td>Average travel time (min)</td>
<td>12.0</td>
<td>-4%</td>
</tr>
</tbody>
</table>

Source: World Economic Forum & BCG analysis, 2018
We shape our buildings; thereafter they shape us.

-Winston Churchill
Streets
We shape our buildings; thereafter they shape us.

-Me
44% of people said the number one reason for having a self-driving car is to **not have to park.**

source: World Economic Forum; BCG analysis, August 2016
shared trips = fewer cars = more space for people
Best practices for launching an AV pilot

- Develop clear a mobility vision
- Balance stakeholder interests in approval process
- Create a tiered testing plan with achievement milestones
- Build trust between stakeholders
- Share updates on testing progress with residents regularly to build awareness
Thank you

@Kris_W_Carter
Kristopher.Carter@Boston.gov

Boston.gov/Boston-av