Fiscal Management and Control Board
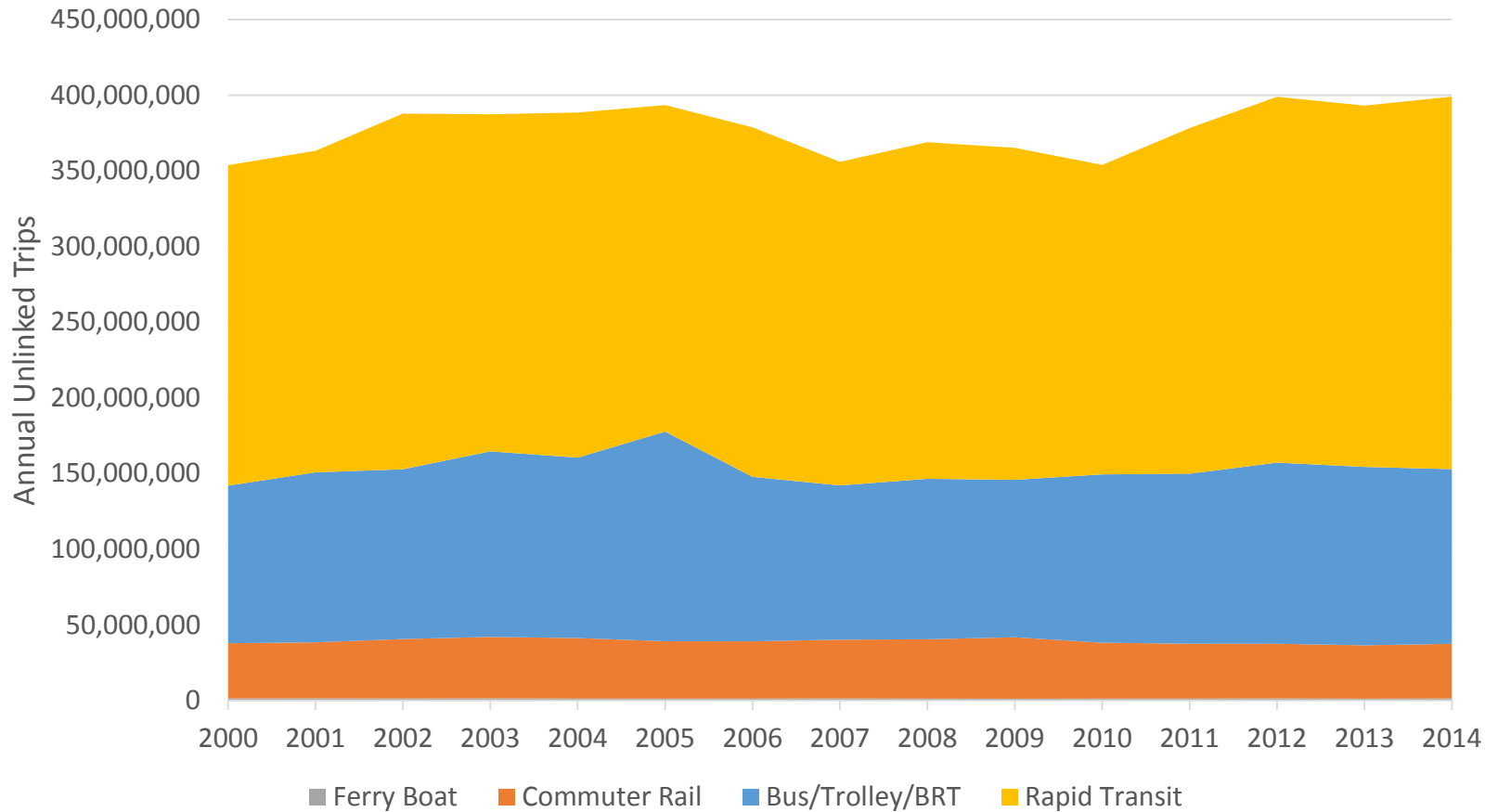
MBTA Ridership: History & Projections
November 18, 2015
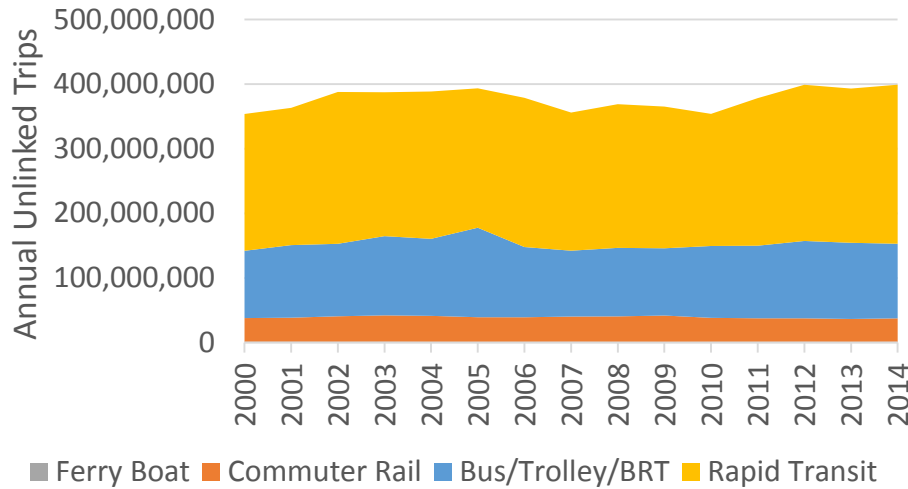
RECENT HISTORY

MBTA Total Ridership 2000-2014
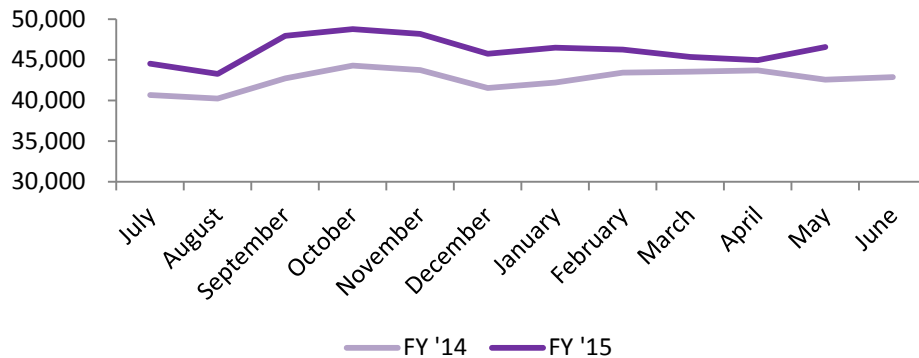

Massachusetts Bay Transportation Authority

Sources: National Transit Database 2000-2013 (http://www.ntdprogram.gov/ntdprogram/). Internal numbers 2014.

MBTA Total Ridership 2000-2014

Massachusetts Bay Transportation Authority

Annual Unlinked Trips — Ferry Boat, Commuter Rail, Bus/Trolley/BRT, Rapid Transit (2000–2014)

**Commuter rail monthly pass sales, FY14 vs. FY15**

FY '14 — FY '15

- Commuter Rail numbers are unreliable – new ridership estimates from pass & ticket sales
- Overall transit ridership increased in the early 2000s, was low during the Recession, and has recently been increasing
- 2000-2007 subway and bus ridership estimated from revenue; after 2007, based on AFC transactions
- Recent increases due largely to rapid transit ridership increases
- Current ridership levels are capacity constrained on some modes

Sources: National Transit Database 2000-2013 (http://www.ntdprogram.gov/ntdprogram/). Internal numbers 2014.

Rapid Transit and Bus Annual Ridership

Rapid Transit

Bus
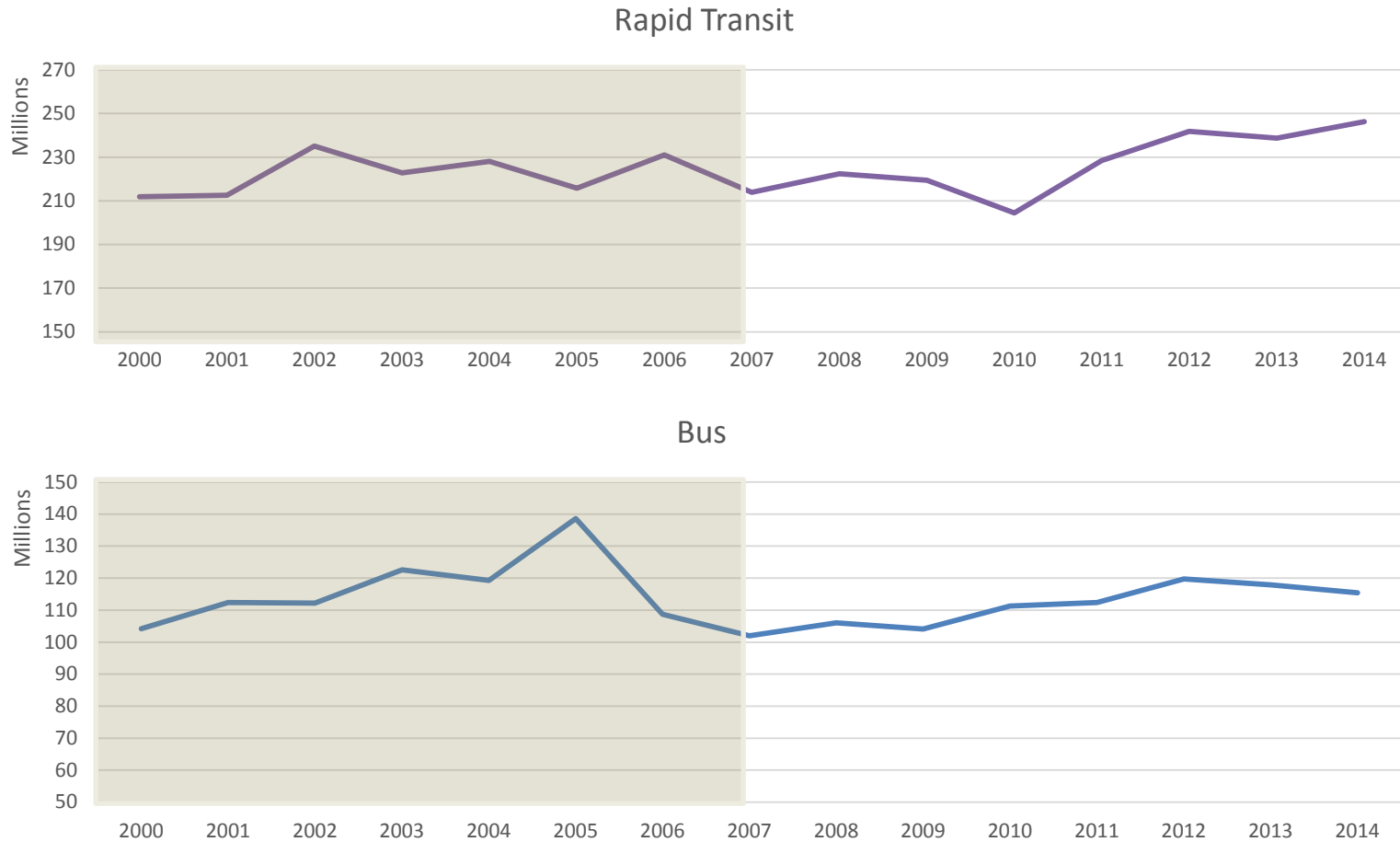
Sources: National Transit Database 2000-2013 (http://www.ntdprogram.gov/ntdprogram/). Internal numbers 2014.

Commuter Rail and Ferry Boat Annual Ridership
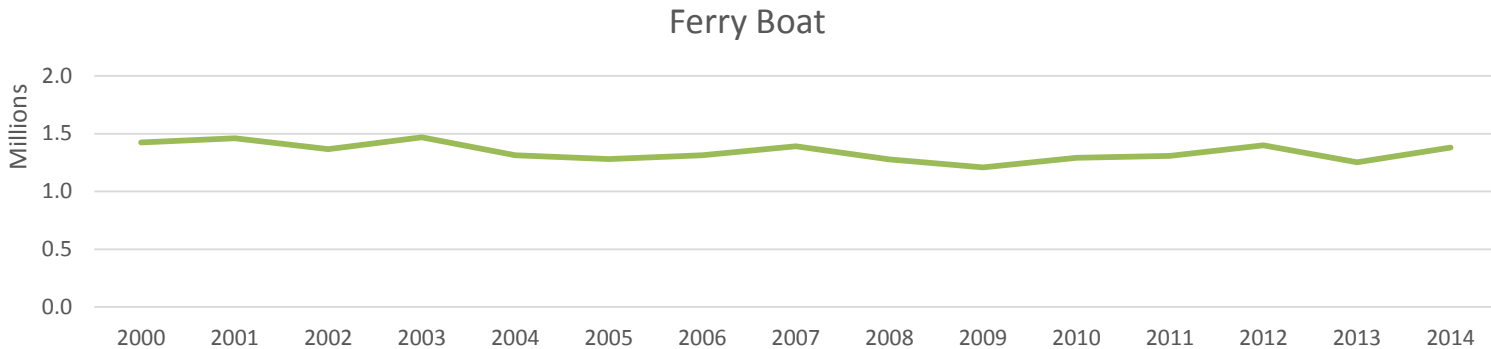
Sources: National Transit Database 2000-2013 (http://www.ntdprogram.gov/ntdprogram/). Internal numbers 2014.

FORECASTING RIDERSHIP

Different Approaches

- Forecasts based on long-term past ridership with varying assumptions about the future

- Forecasts made with Regional Travel Demand Model

- Forecasts based on ridership, population and usage patterns
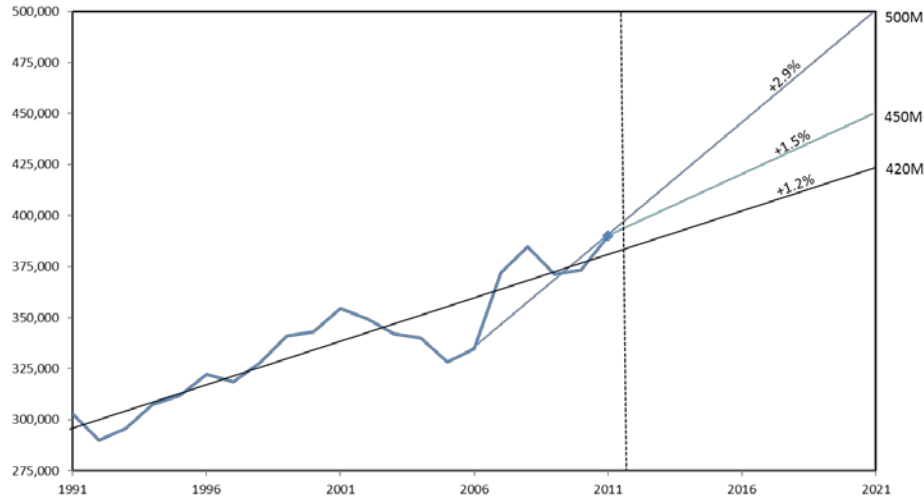
Annual MBTA Total Unlinked Trips (in thousands) 1991-2011 and Forecast
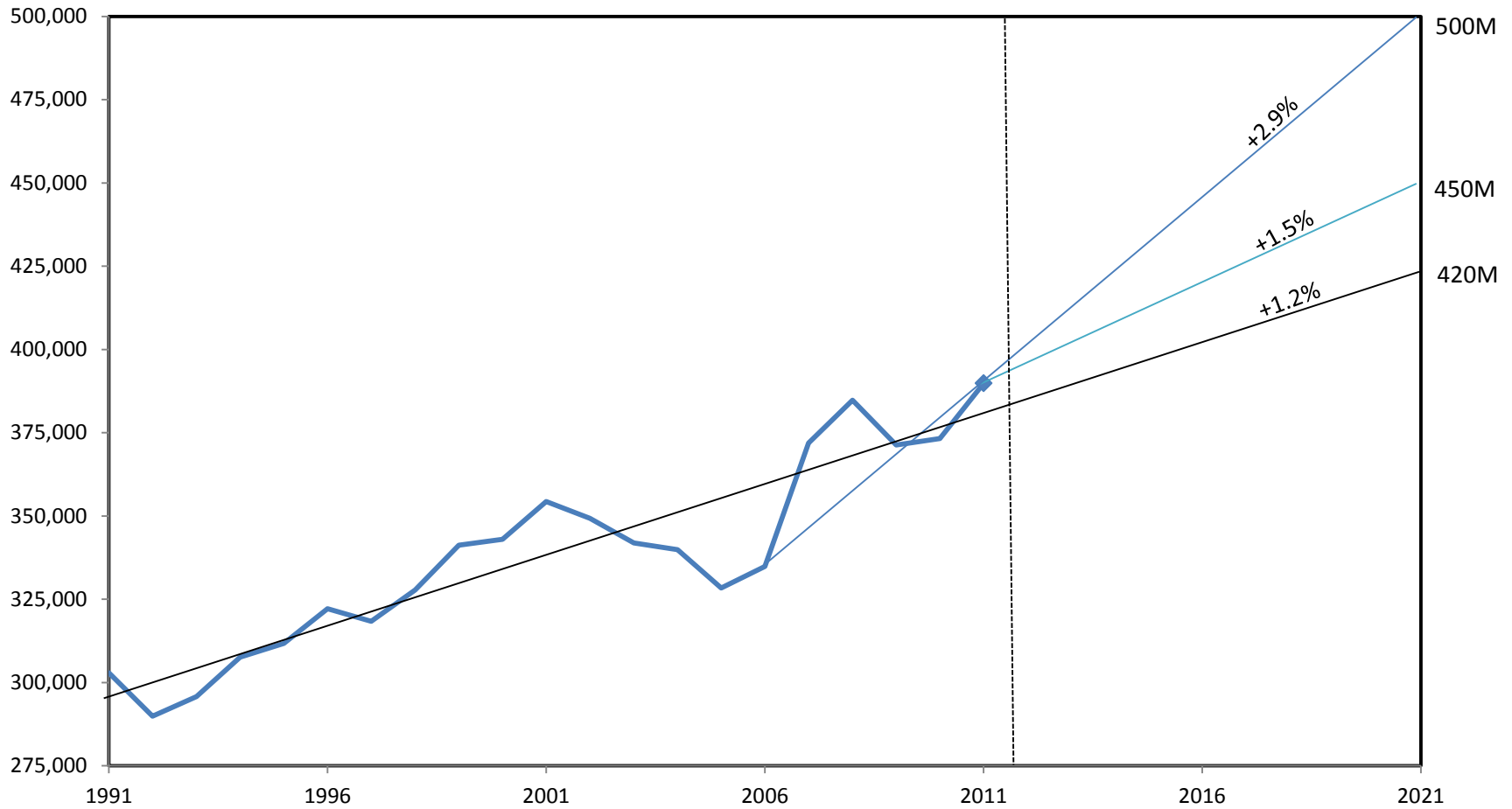
Source: *HUB AND SPOKE: Core Transit Congestion and the Future of Transit and Development in Greater Boston*, 2012.

Annual MBTA Total Unlinked Trips (in thousands) 1991-2011 and Forecast

Massachusetts Bay Transportation Authority

Low estimate (420 million annual unlinked trips) – assumes longest time horizon; treats 2006-2011 increase as part of the general trend. This estimate is the "baseline" based only on past data.

Moderate estimate (450 million annual unlinked trips) – uses past data with additional assumptions of economic factors (moderate employment and income growth), demographic factors (increasing numbers of seniors and immigrants) and relatively small responses to expected fare increases.

High estimate (500 million annual unlinked trips) – treats 2006-2011 increase as indicative of a new rapid growth in ridership, and assumes that the next ten years are like the last five years, with a higher growth rate driven by rising gasoline prices, relatively flat transit fares, and growth in employment.

Benefits:
- Long range not as susceptible to random variation
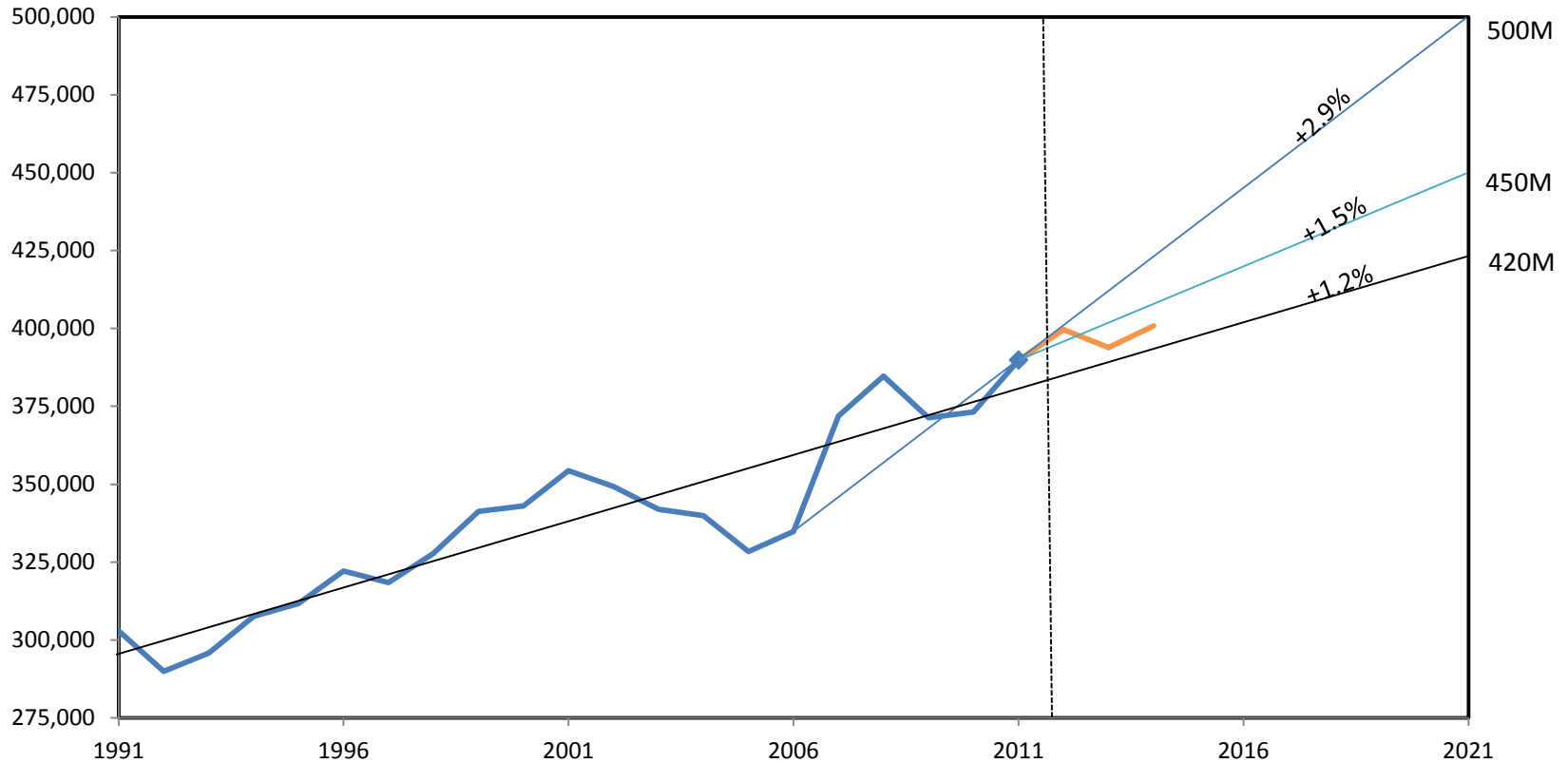- Provides a range of estimates
- Easy to compute

Drawbacks:
- Long range susceptible to methodology changes
- Estimates do not indicate the modes where ridership demand is likely to go

Source: *HUB AND SPOKE: Core Transit Congestion and the Future of Transit and Development in Greater Boston*, 2012.

# Annual MBTA Total Unlinked Trips (in thousands) 1991-2011 and Forecast

Updated with data from years 2012, 2013, and 2014.
MBTA ridership continues to rise within predicted levels.

Source: *HUB AND SPOKE: Core Transit Congestion and the Future of Transit and Development in Greater Boston*, 2012.

CTPS projections: Boston MPO Long-Range Transportation Plan (2040)

Massachusetts Bay Transportation Authority

27.7% increase in weekday trips on rapid transit and bus from 2012 to 2040.

Source: CTPS Travel Demand Model
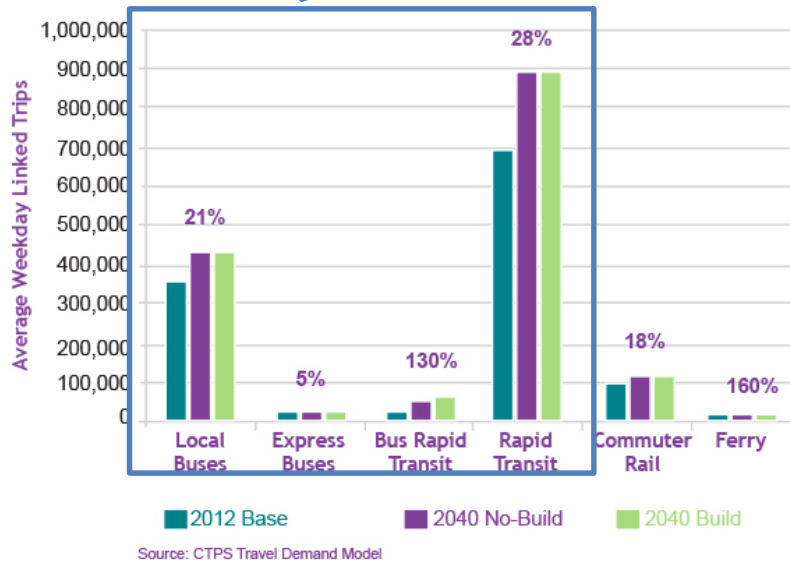
- Assumptions:
  - Growth in overall population (MAPC projections of resident and employment populations)
  - In addition to assumed growth in overall population, the characteristics and locations of the additional households lead to a predicted increase in 0-vehicle households
  - Assumed growth in employment centers and TOD in general will put more destinations in reach of transit
  - Changes in transit service supply (Green Line extension and Silver Line to Chelsea in no-build scenario)
- Most increases (by volume) are to occur in rapid transit and bus services
- Only weekday trips are considered; no implications are made about weekend/holiday service

*Source*: Boston MPO Long-Range Transportation Plan (2015). http://bosmpo.ctps.org/lrtp.

Usage and Population Forecast Methodology & Definitions

Data Sources

- Ridership:
  - National Transit Database 2000-2013
  - Internal estimates 2014
- Population
  - Census and intercensal estimates from U.S. Census
  - 2020, 2030, and 2040 projections from MAPC
- CTPS Projections
  - Boston MPO 2040 long-range transportation plan

MBTA 14 Core Communities
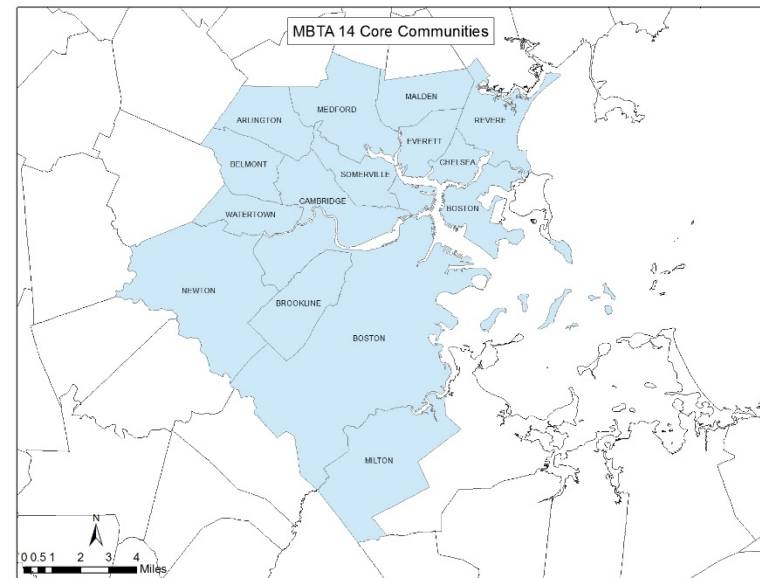
Transit Usage Rate
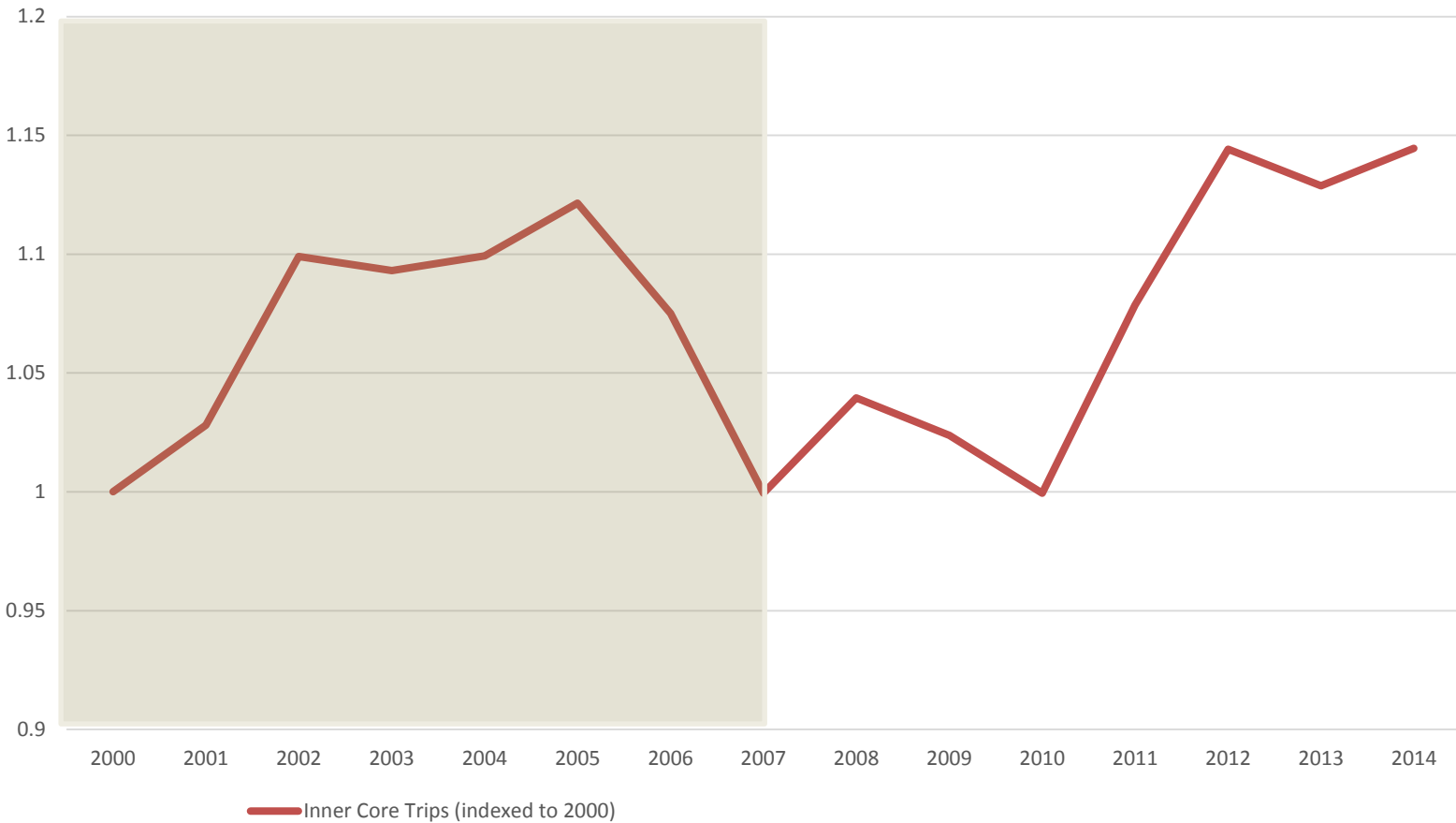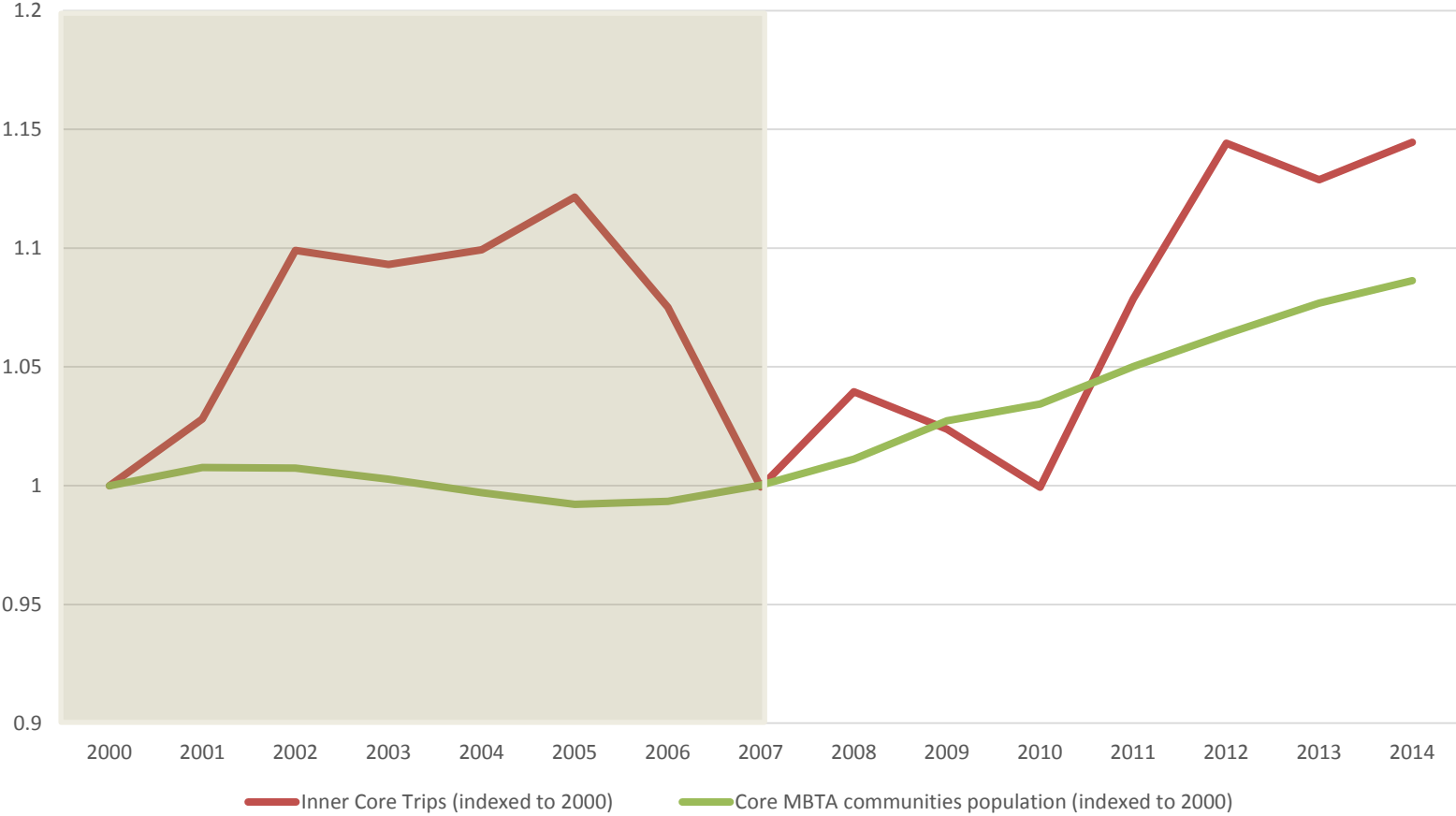
Number of unlinked rapid transit and bus trips per resident per year

MBTA Rapid Transit and Bus Ridership 2000-2014

Inner Core Trips (indexed to 2000)

Sources: Ridership from National Transit Database 2000-2013 (http://www.ntdprogram.gov/ntdprogram/). Internal numbers 2014. Population from U.S. Census and intercensal estimates (http://www.census.gov/popest/data/intercensal/).

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MBTA Rapid Transit and Bus Ridership 2000-2014

Inner Core Trips (indexed to 2000) — Core MBTA communities population (indexed to 2000)

Sources: Ridership from National Transit Database 2000-2013 (http://www.ntdprogram.gov/ntdprogram/). Internal numbers 2014. Population from U.S. Census and intercensal estimates (http://www.census.gov/popest/data/intercensal/).

MBTA Rapid Transit and Bus Ridership and Usage 2000-2014

Sources: Ridership from National Transit Database 2000-2013 (http://www.ntdprogram.gov/ntdprogram/). Internal numbers 2014. Population from U.S. Census and intercensal estimates (http://www.census.gov/popest/data/intercensal/).

MBTA Rapid Transit and Bus Usage 2000-2014

Annual Inner Core Trips per Resident

- Usage ≠ market share
- Mode shift away from transit can decrease usage
  - increase in active modes
  - appearance of Uber/Lyft/Hubway
- Overall decrease in trips can also decrease usage
  - gentrification
  - TOD
  - work from home
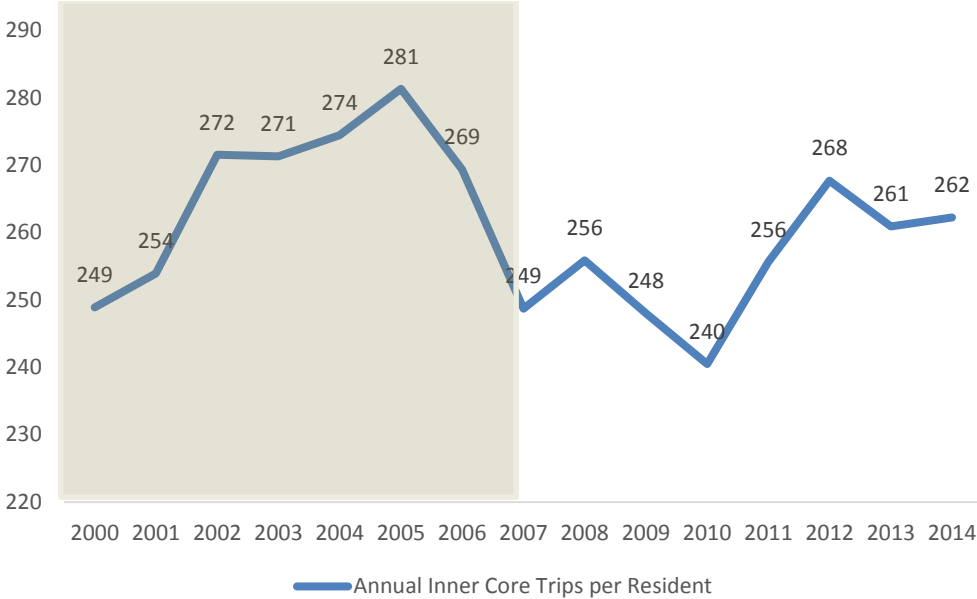
- Current usage shows recovery from the recession
- Ridership increases are currently driven by population increases and employment/economic conditions
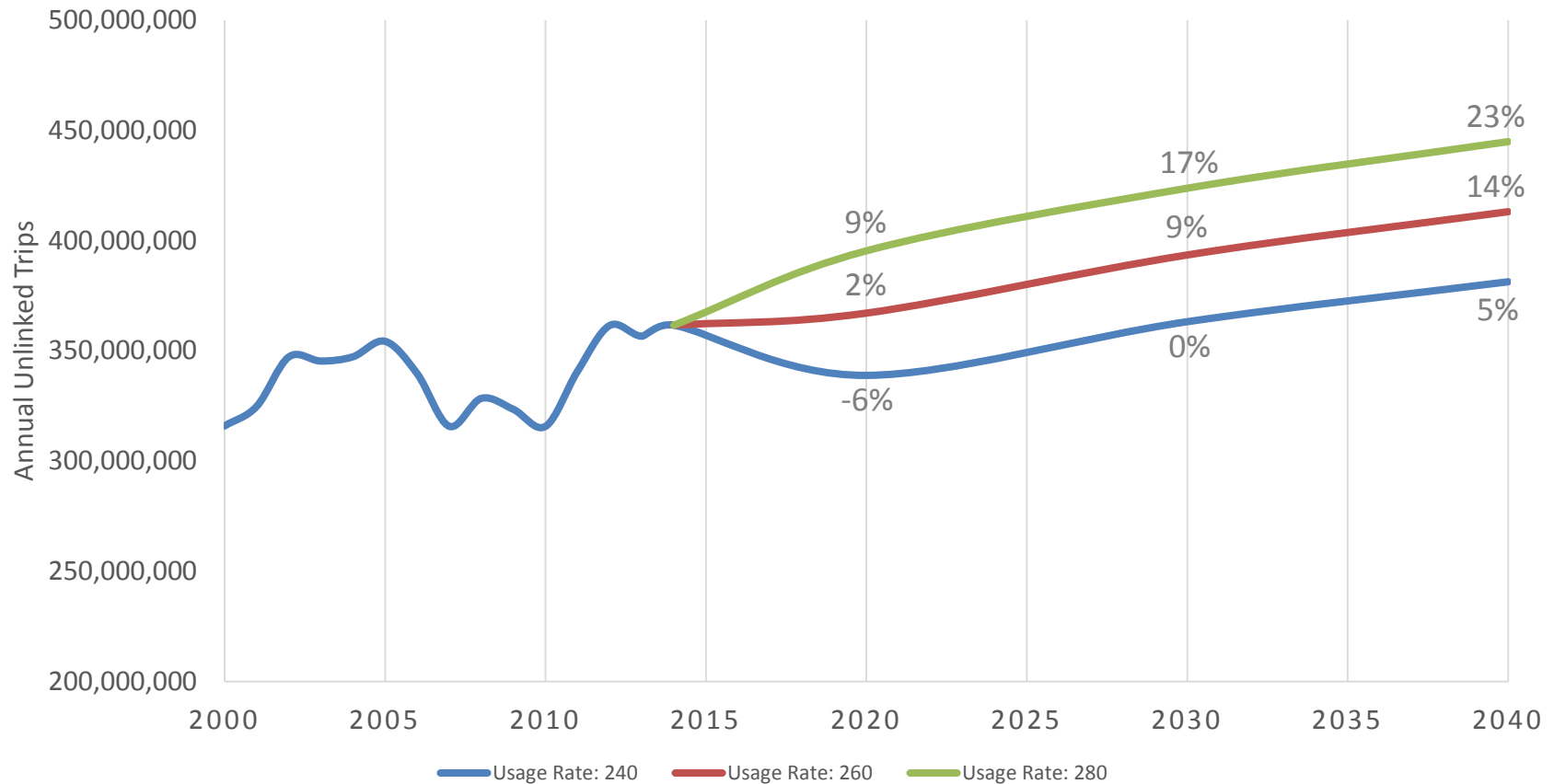
Sources: Ridership from National Transit Database 2000-2013 (http://www.ntdprogram.gov/ntdprogram/). Internal numbers 2014. Population from U.S. Census and intercensal estimates (http://www.census.gov/popest/data/intercensal/).

MBTA Rapid Transit & Bus Ridership Projections

Sources: Ridership from National Transit Database 2000-2013 (http://www.ntdprogram.gov/ntdprogram/). Internal numbers 2014.
Population from U.S. Census and intercensal estimates (http://www.census.gov/popest/data/intercensal/).
Population projections from MAPC's Stronger Region municipal projections (http://www.mapc.org/projections).

MBTA Rapid Transit & Bus Ridership Projections

- Usage has varied a lot over the last 15 years, from a low of 240 to a high of 280.
- Low estimate: another recession causes usage to drop back to 240 annual trips/resident
- Medium estimate: usage remains at current levels of approximately 260
- High estimate: usage increases to 280 due to increased TOD, decreased car ownership, etc
- Population projections are the same for all forecasts.

Sources: Ridership from National Transit Database 2000-2013 (http://www.ntdprogram.gov/ntdprogram/). Internal numbers 2014.
Population from U.S. Census and intercensal estimates (http://www.census.gov/popest/data/intercensal/).
Population projections from MAPC's Stronger Region municipal projections (http://www.mapc.org/projections).

Projections Overview

- Ridership vs. Demand
  - All the presented projections are demand-based; capacity needs to increase to meet this demand
  - Current ridership numbers in all projections are assumed to be representative of actual demand; in reality, ridership is probably undercounting demand due to current capacity constraints
- Most growth expected in rapid transit and bus services
- Realistic lower bound: 14% ridership growth by 2040
- Realistic upper bound: 28% ridership growth by 2040

Considerations and Next Steps

- Commuter Rail
- Fare Policy
- Fare Changes
- Employment
- Development
- Technology
- Capacity
- Focus 4T

FOCUS 4T — The 2040 Investment Plan for the MBTA — PROJECT ROADMAP

EXISTING CONDITIONS
- State of the System Reports

TRENDS SHAPING 2040
- Climate Change
- Demographic Changes
- Mobility Preferences
- Technology Impacts

ADDITIONAL INPUTS
- Policy Framework
- Travel Demand
- Financial Context
- MBTA Service Standards
- Preference Surveys

MENU OF POTENTIAL SCENARIOS
- Different approaches to guide MBTA investment decisions

STAKEHOLDER INPUT — SCREEN MENU OF POTENTIAL SCENARIOS
- Public Process
- Technical Analysis

FOCUS40 GUIDING SCENARIOS
- Best Performing/ Best Received Element of Long List of Scenarios

INVESTMENT IDEAS
- Assign to Scenarios

EVALUATE AND VET INVESTMENT IDEAS
- Stakeholder Input
- Internal MBTA Input
- Technical Analysis

RECOMMENDED PLAN
- STATE OF GOOD REPAIR
- BETTER SERVICE
- REFLECT FUTURE CHANGE

Long-Term Recommendations

- Evaluate/update prior projections
- Perform best-practice review and establish a methodology to ensure consistent ongoing forecasting
- Establish regular internal forecasts to inform SGR, revenue, planning, and other efforts
- Construct a scalable forecasting methodology that works at different levels of interest (regional, modal, local)