

Vehicle Miles Traveled in Massachusetts:

Who is driving and where are they going?

A presentation to the
House Committee on Global Warming and Climate Change
Representative Frank Smizik, Chair

April 13, 2010

Timothy Reardon
Metropolitan Area Planning Council





Metropolitan Area Planning Council

- **MAPC:** Regional Planning Agency for 101 cities and towns in Metro Boston www.mapc.org
- **MetroFuture:** Long-range regional plan for growth and development; adopted 2008; includes detailed land use and planning objectives; specific recommendation for public and private sectors. www.metrofuture.org
- **MAPC Data Services:** responsible for scenario modeling, population and employment projections
- **Metropolitan Planning Organization (MPO):** Regional body consisting of state and municipal officials, charged with programming federal transportation funds; MAPC is a voting member of the MPO.



New VMT Data in Massachusetts

16 million Registry of Motor Vehicles inspection records, 2005 - 2007

Processed, geocoded, and analyzed by MassGIS

4 million passenger vehicles

130 million miles travelled DAILY

Nearly 50 billion miles per year

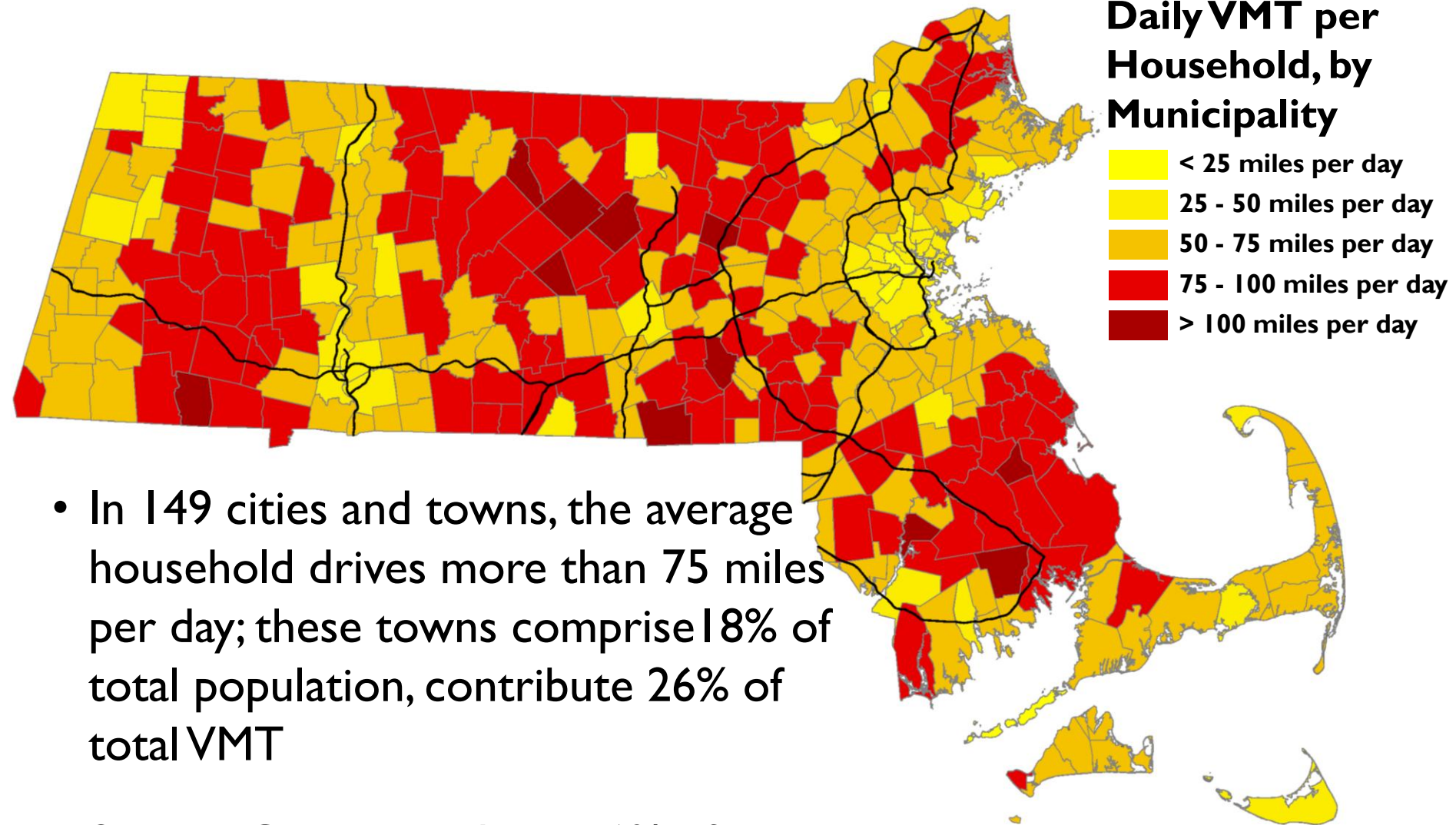
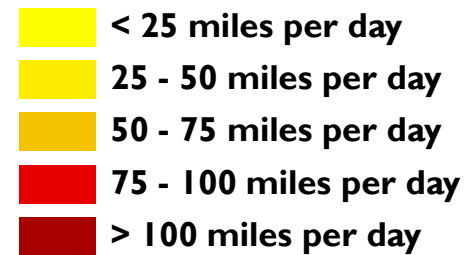
2.3 billion gallons of gas per year (@ 20 MPG)

22 million metric tons of CO₂ annually
(@ 0.0092 metric tons per gallon)

Who is driving and where are they going?

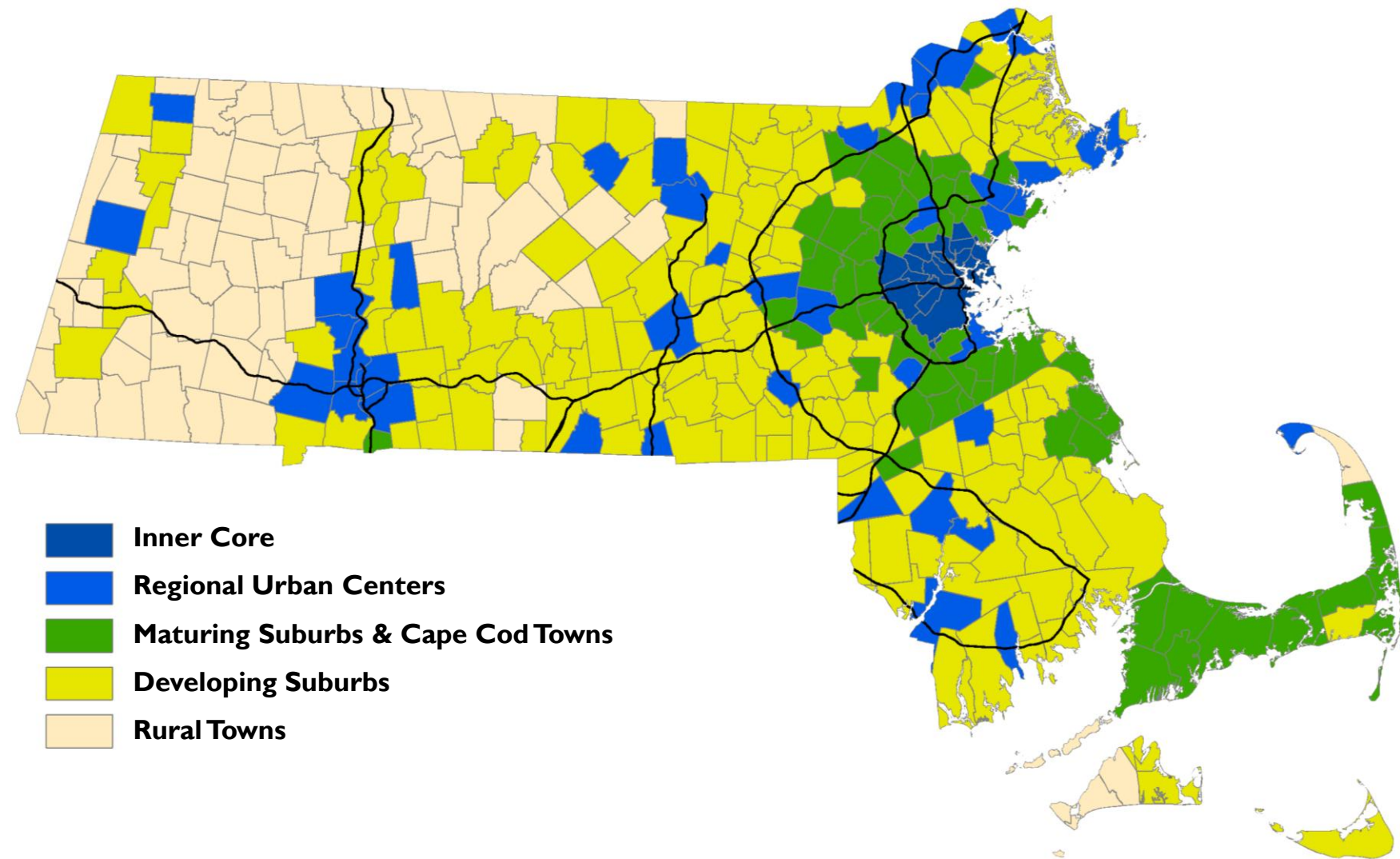
Driving Patterns—Location Matters

Daily VMT per Household, by Municipality



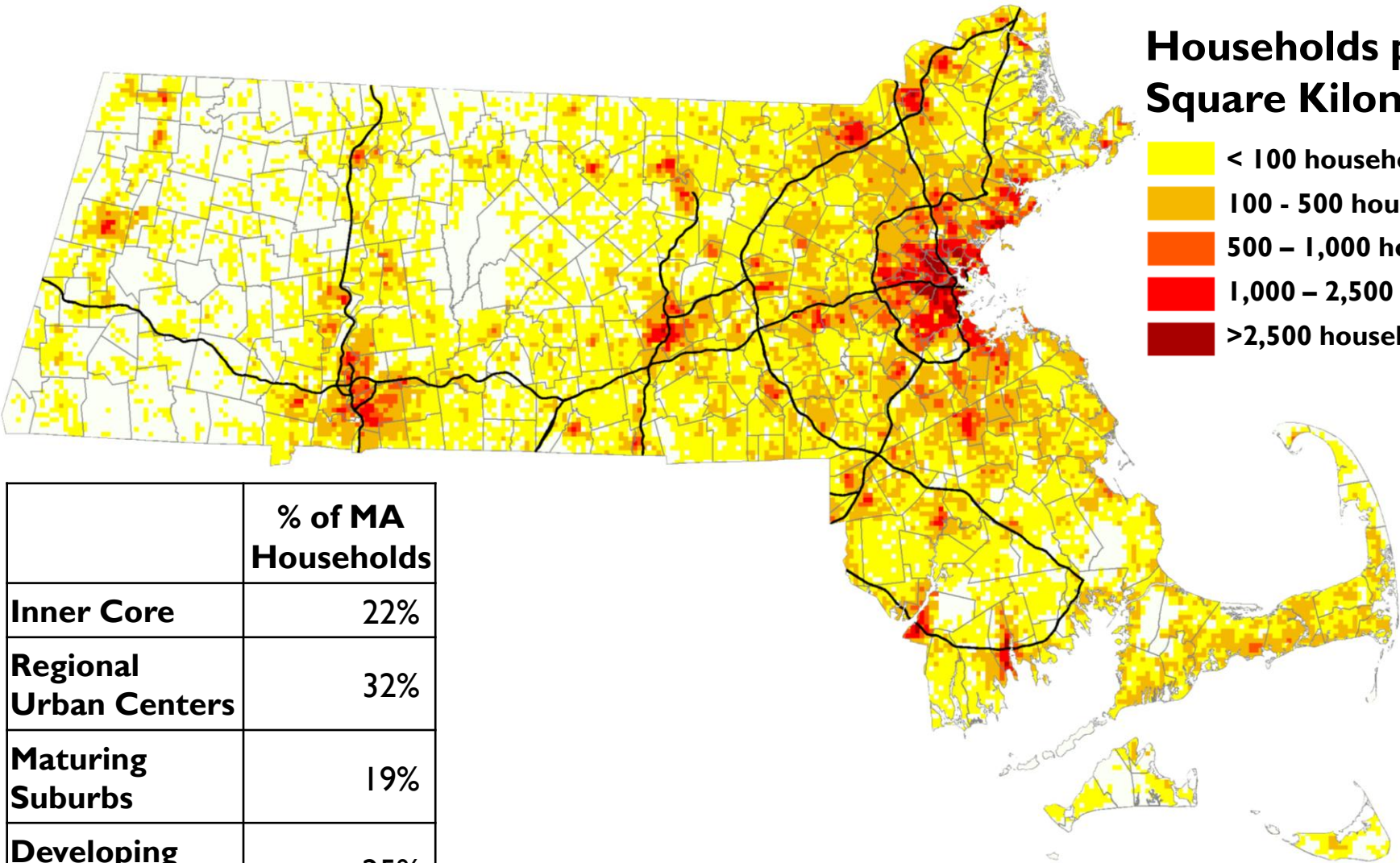
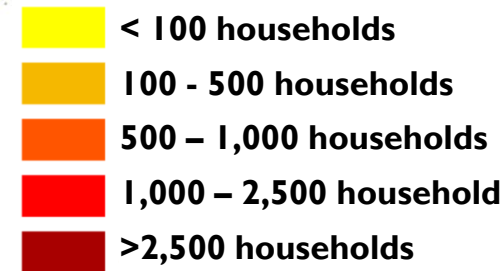
- In 149 cities and towns, the average household drives more than 75 miles per day; these towns comprise 18% of total population, contribute 26% of total VMT
- 8 Inner Core cities have 16% of population, generate 8% of total VMT

Massachusetts Community Types



Where Do People Live?

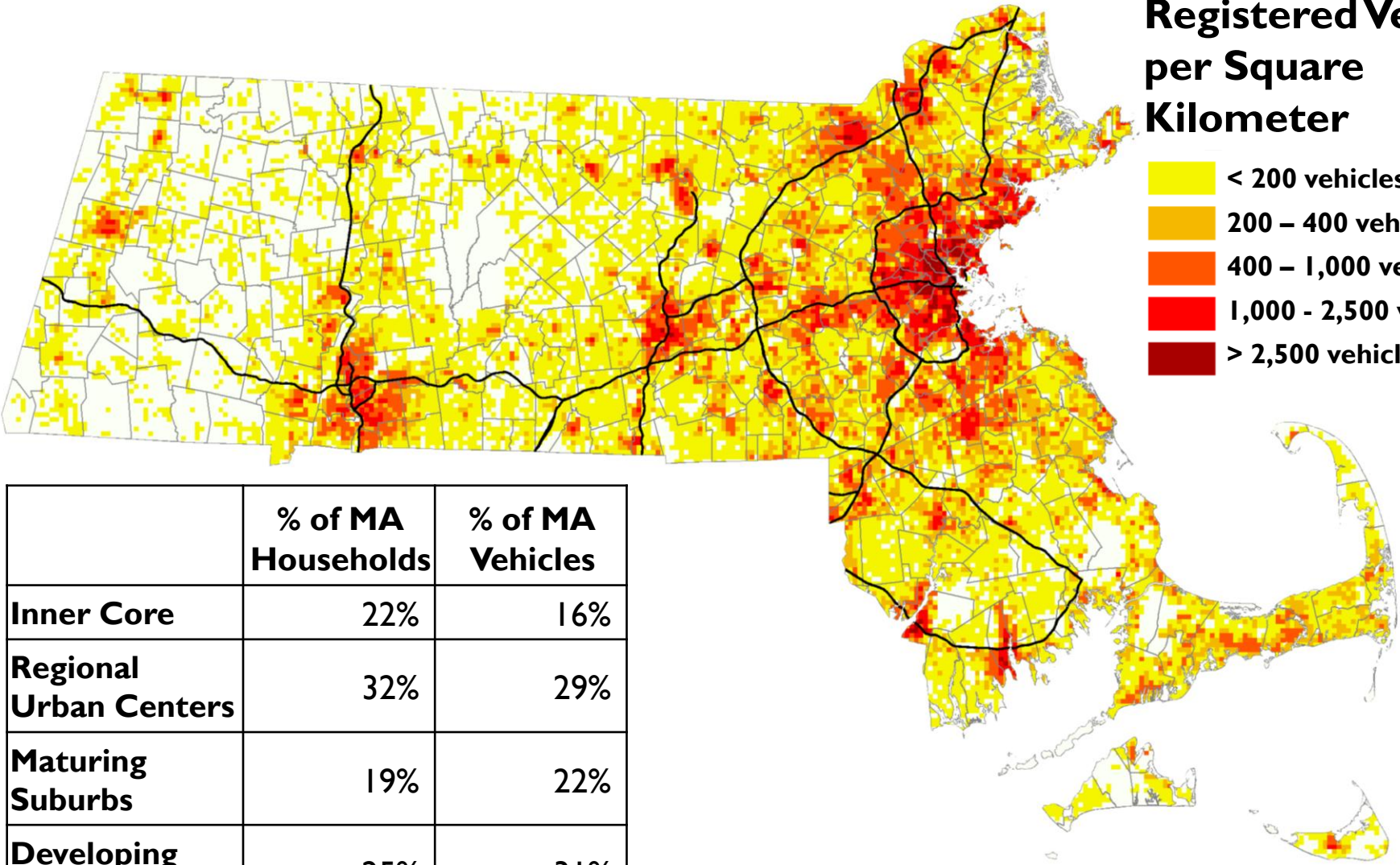
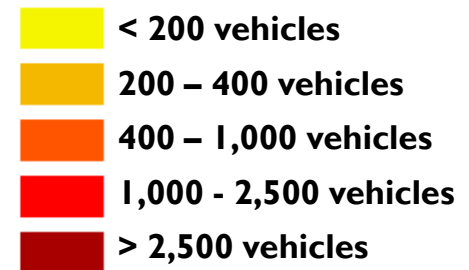
Households per Square Kilometer



	% of MA Households
Inner Core	22%
Regional Urban Centers	32%
Maturing Suburbs	19%
Developing Suburbs	25%
Rural Towns	2%

Where Do the Vehicles Live?

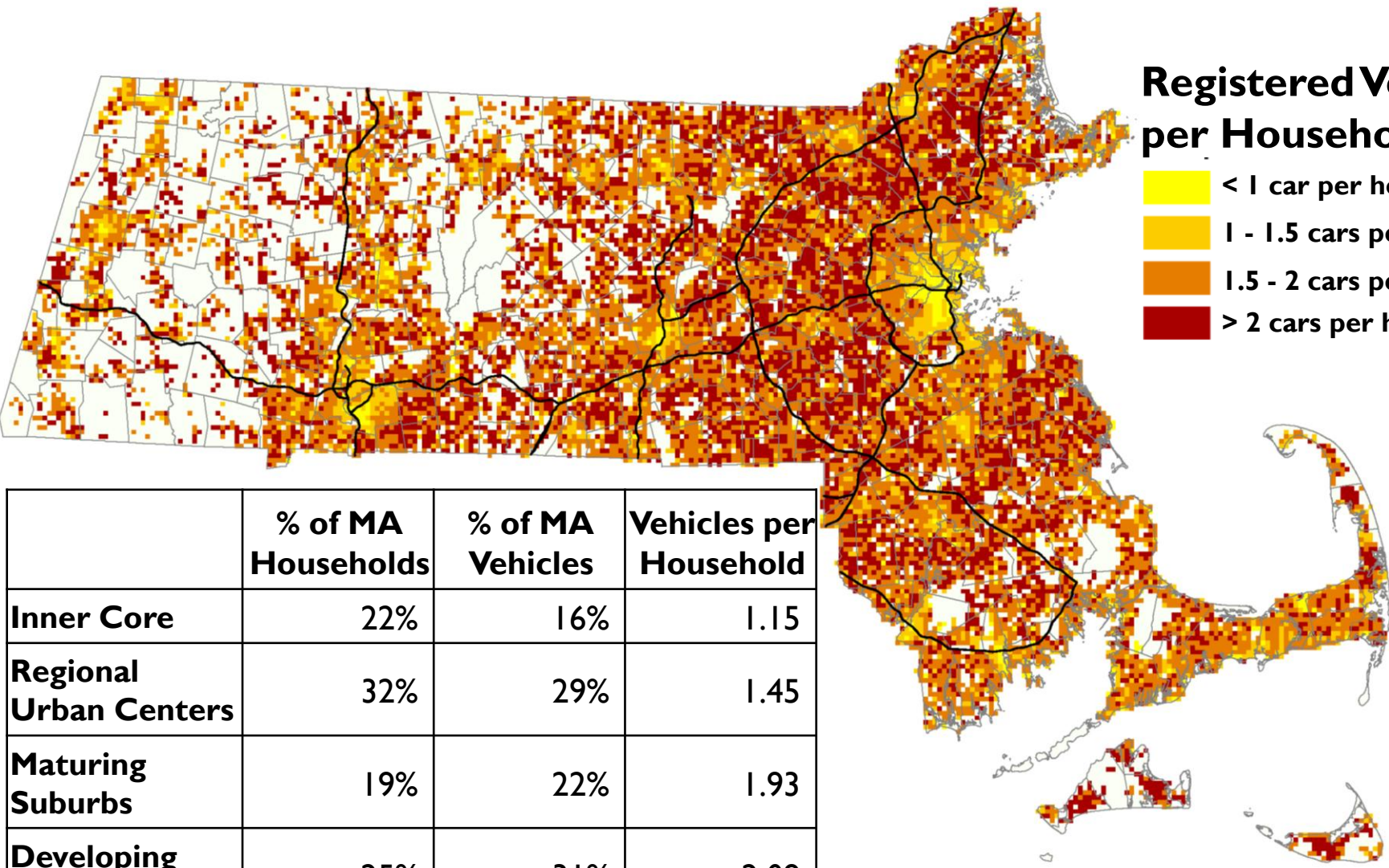
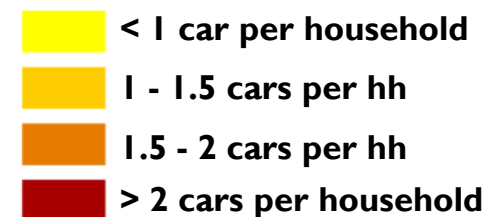
Registered Vehicles per Square Kilometer



	% of MA Households	% of MA Vehicles
Inner Core	22%	16%
Regional Urban Centers	32%	29%
Maturing Suburbs	19%	22%
Developing Suburbs	25%	31%
Rural Towns	2%	2%

How Many Vehicles per Household?

Registered Vehicles per Household

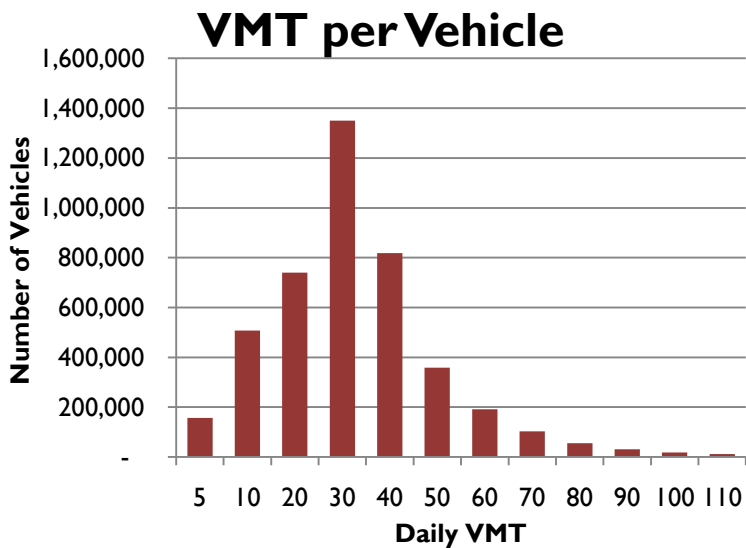
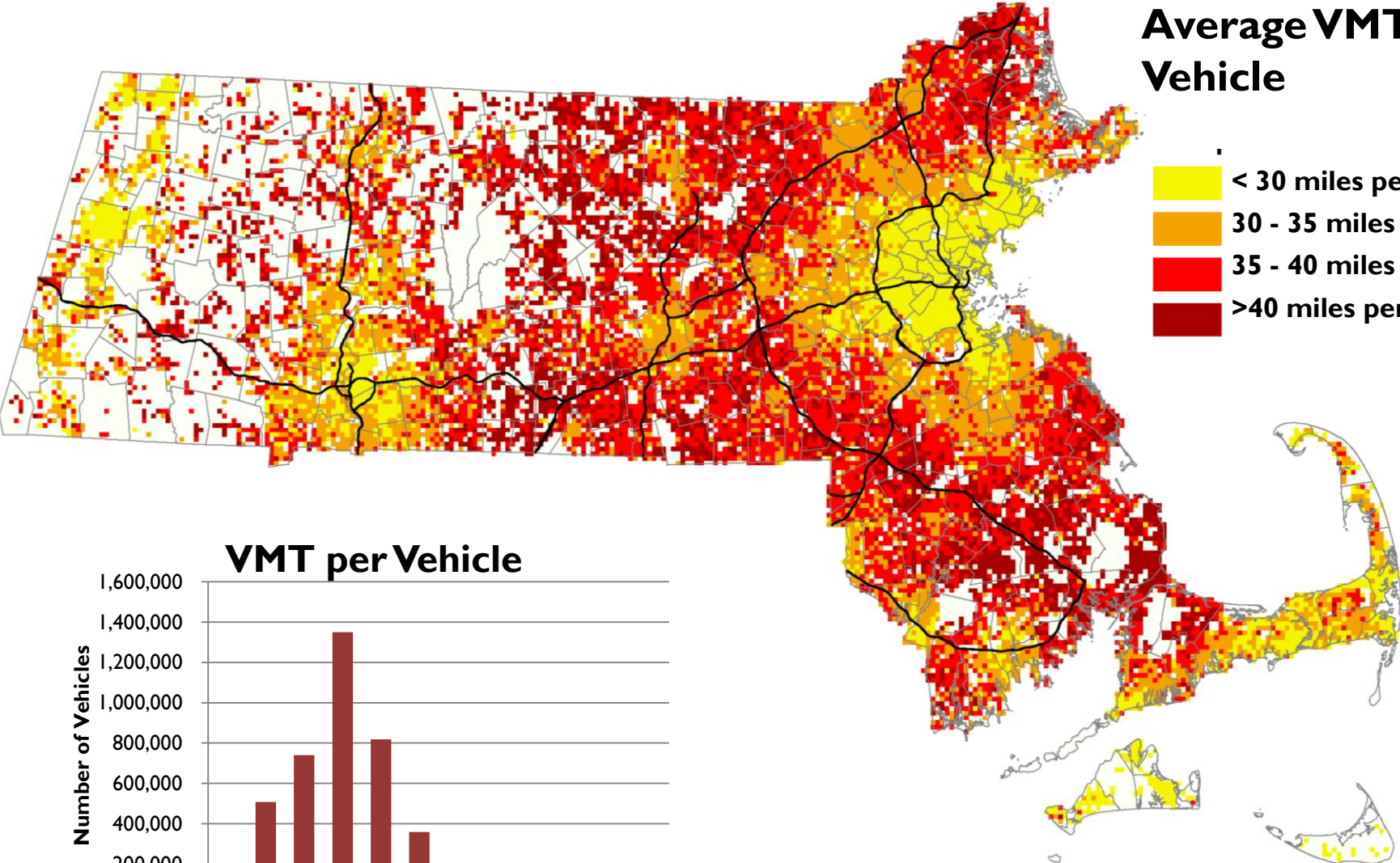
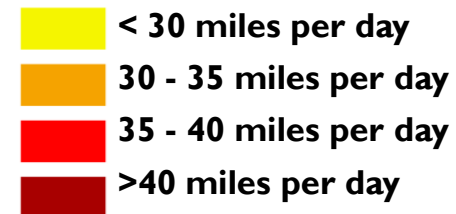


	% of MA Households	% of MA Vehicles	Vehicles per Household
Inner Core	22%	16%	1.15
Regional Urban Centers	32%	29%	1.45
Maturing Suburbs	19%	22%	1.93
Developing Suburbs	25%	31%	2.09
Rural Towns	2%	2%	2.15

Source: US Census, MA RMV, MassGIS, MAPC analysis

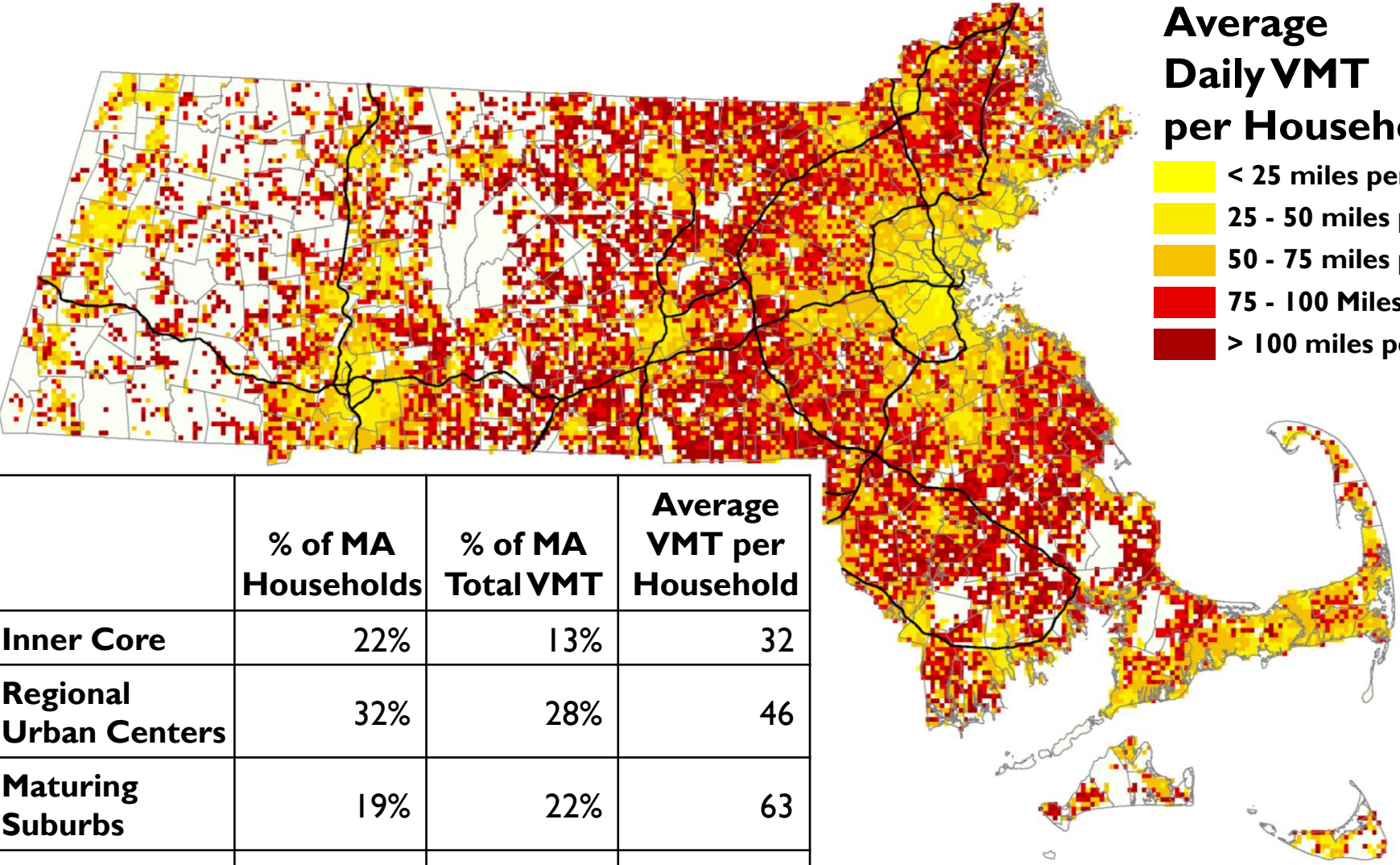
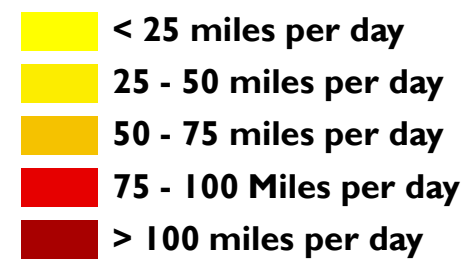
How Much is Each Vehicle Driving?

Average VMT per Vehicle



How Much is each Household Driving?

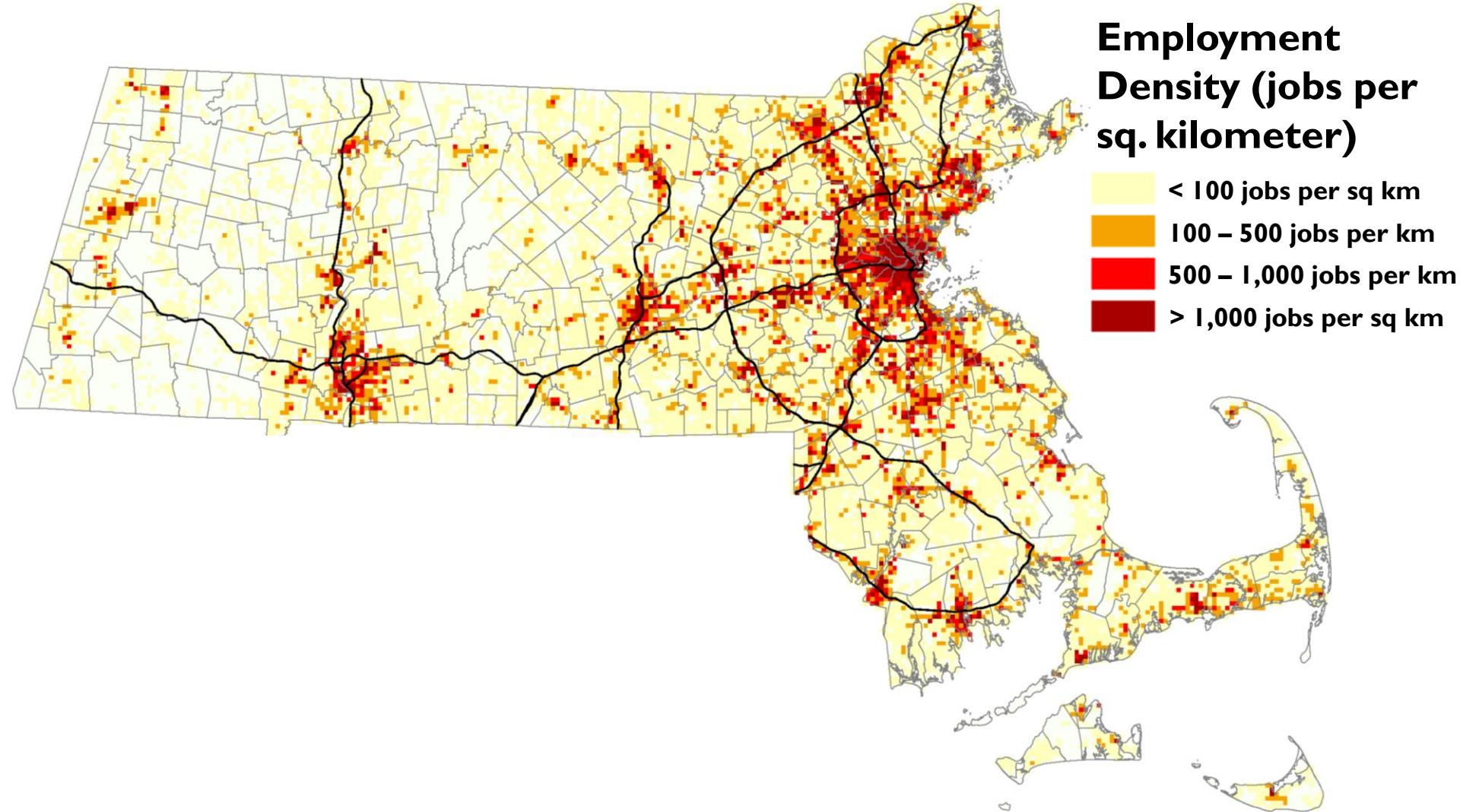
Average Daily VMT per Household



	% of MA Households	% of MA Total VMT	Average VMT per Household
Inner Core	22%	13%	32
Regional Urban Centers	32%	28%	46
Maturing Suburbs	19%	22%	63
Developing Suburbs	25%	34%	75
Rural Towns	2%	2%	79

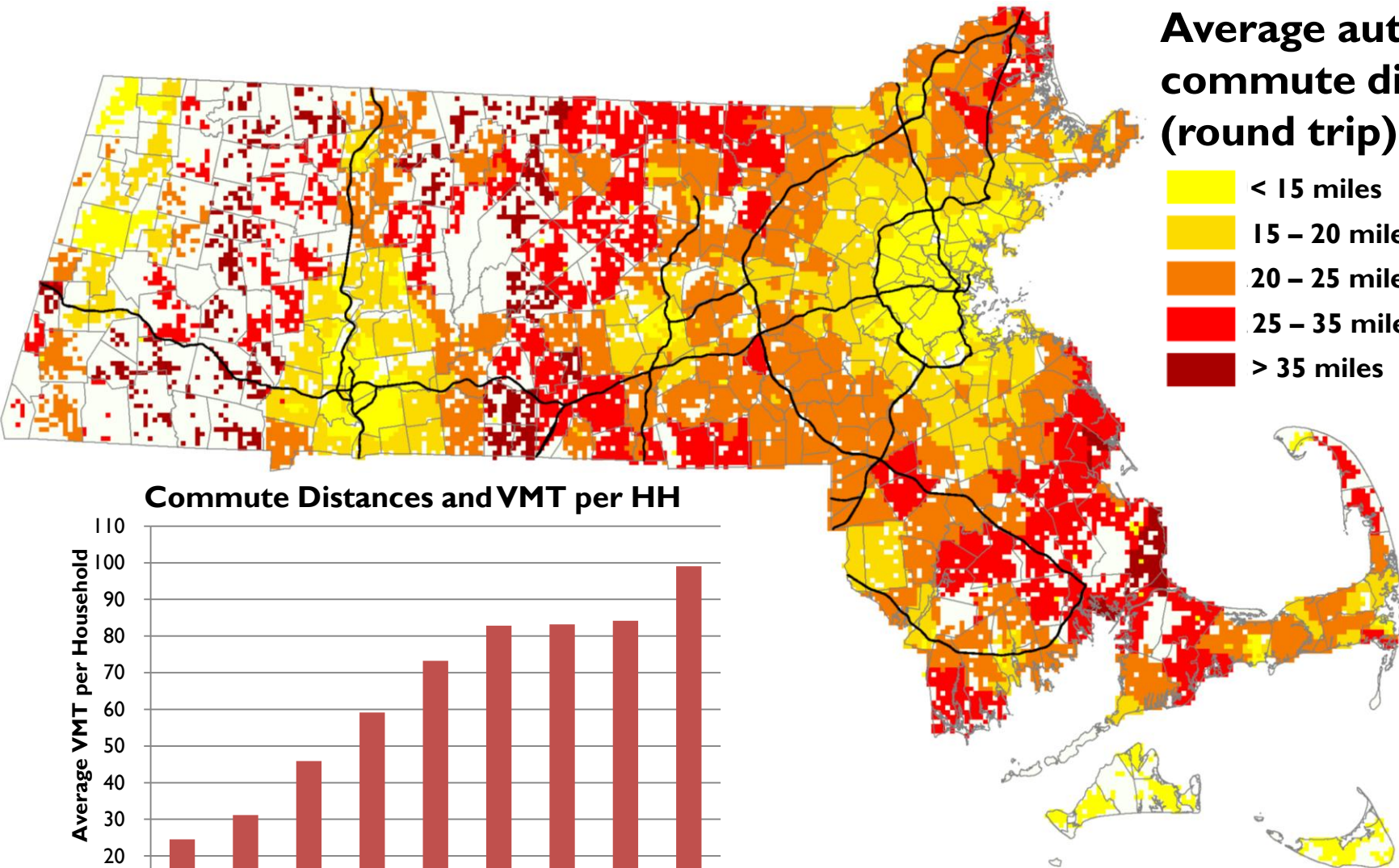
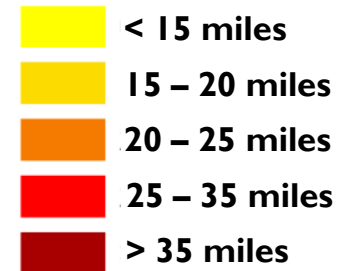
Source: US Census, MA RMV, MassGIS, MAPC analysis

Where Are People Working?

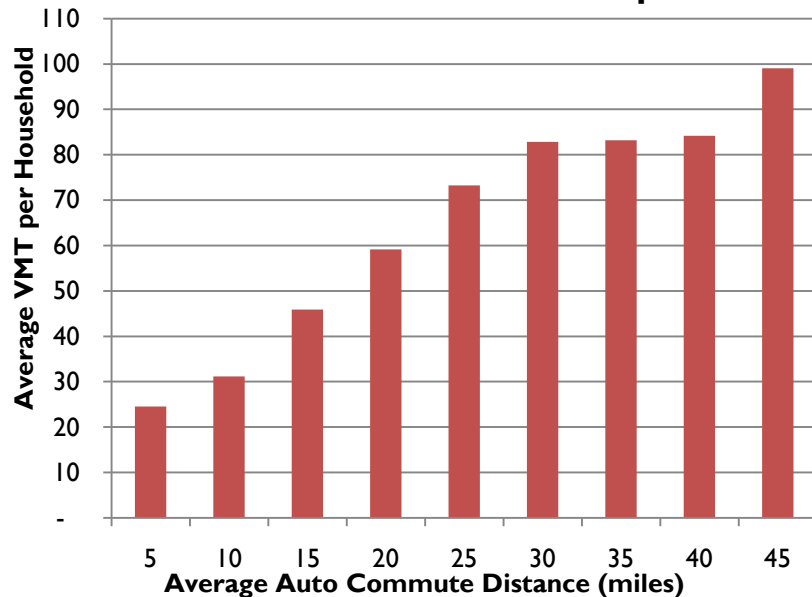


How Much Are Commuters Driving?

Average auto commute distance (round trip)

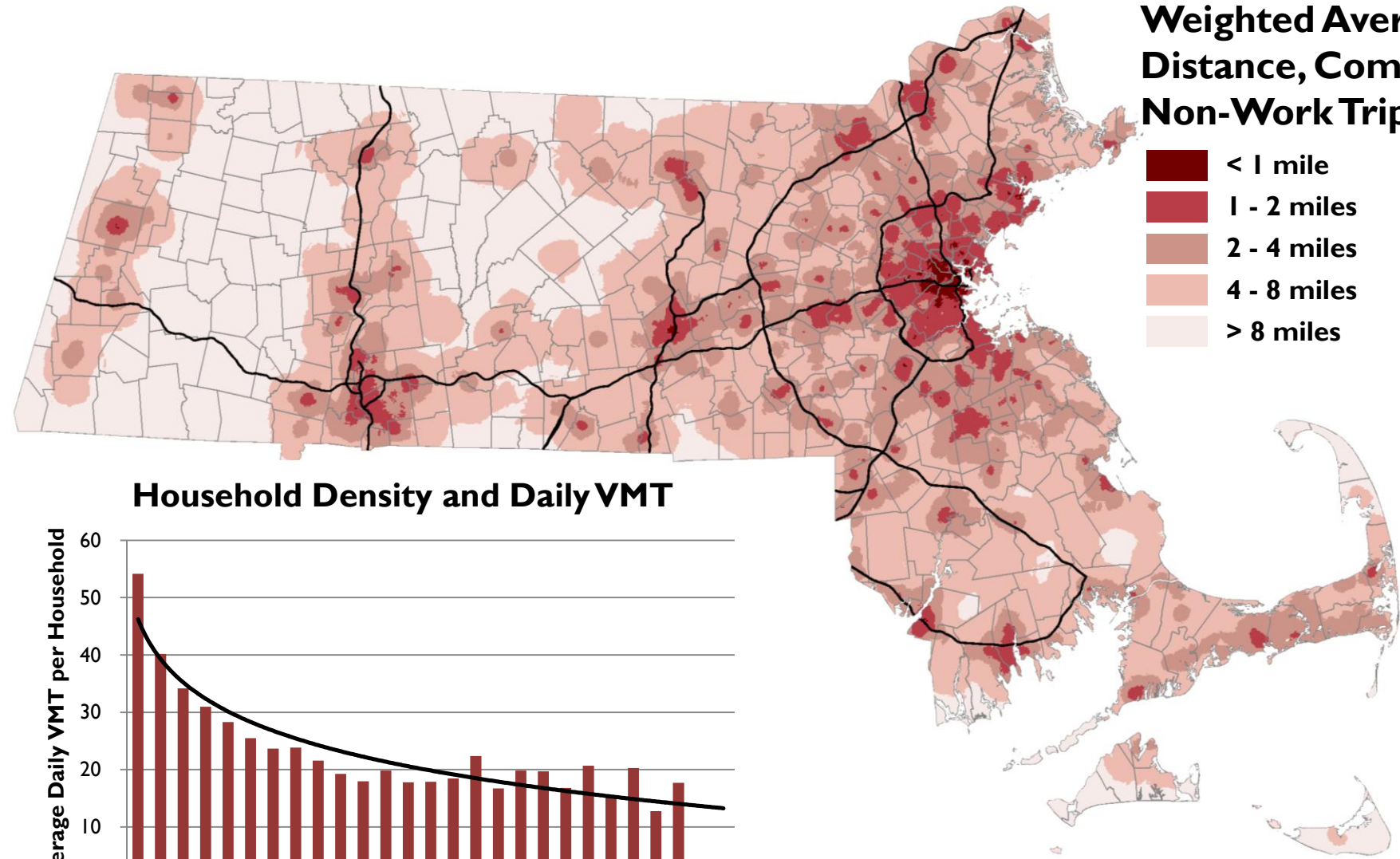
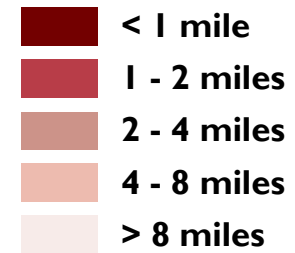


Commute Distances and VMT per HH

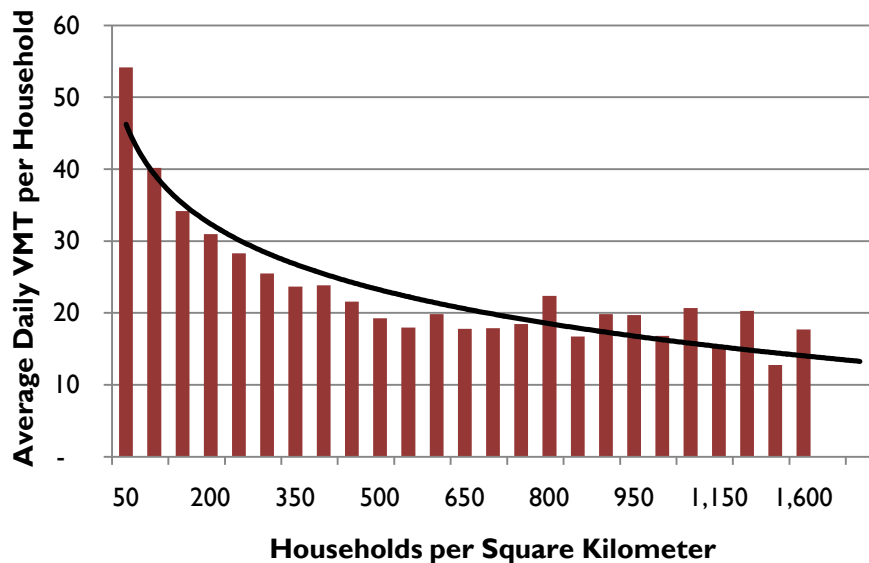


What About All Those Errands?

Weighted Average Distance, Common Non-Work Trips



Household Density and Daily VMT

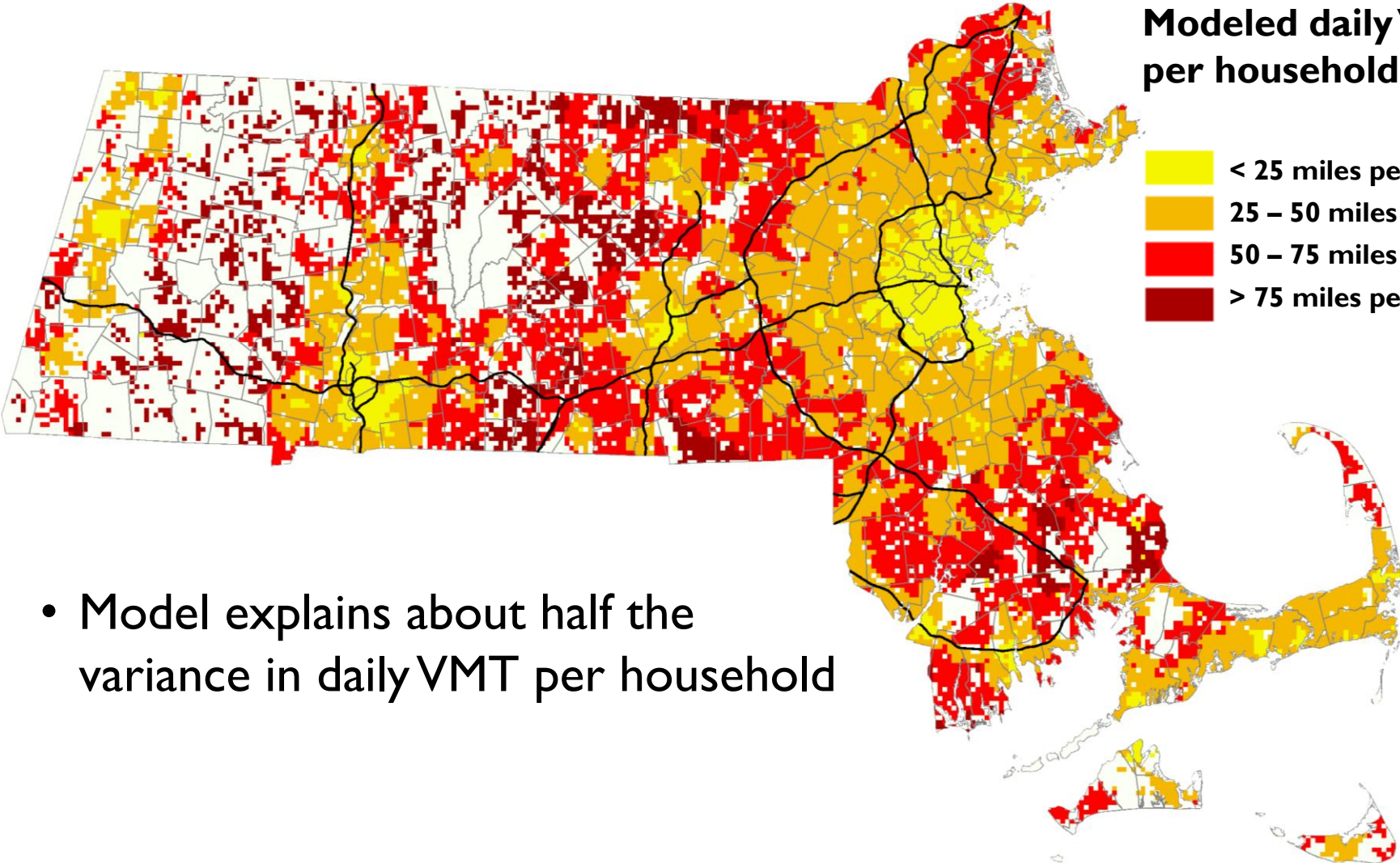
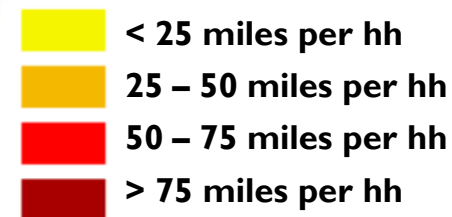


Statistical Analysis indicates Household VMT is highly correlated with:

- Density
- Access to Transit
- Distance to Shops and Services
- Proximity to Employment
- Land Use Diversity
- Income

Putting It All Together – Modeled VMT

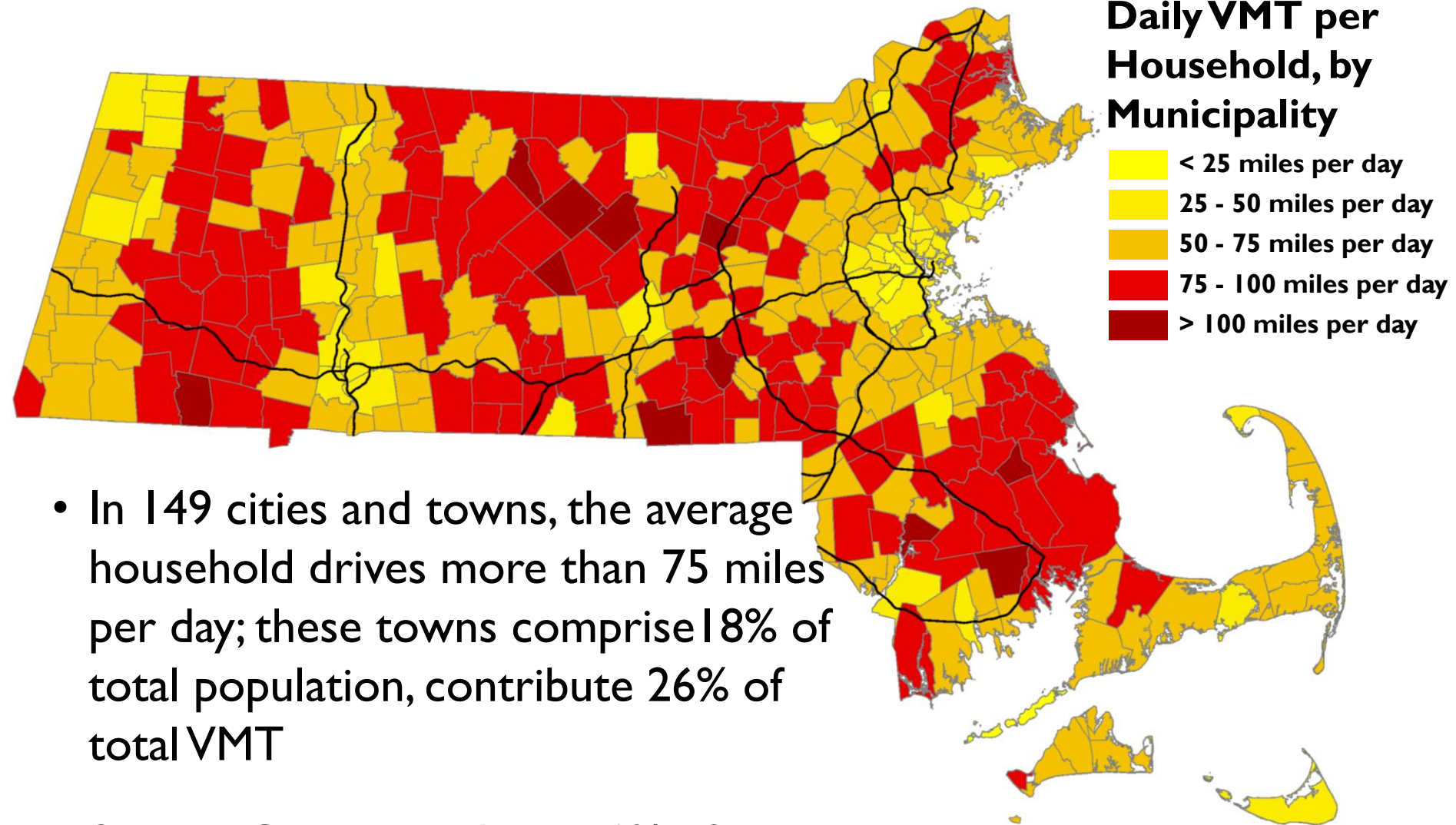
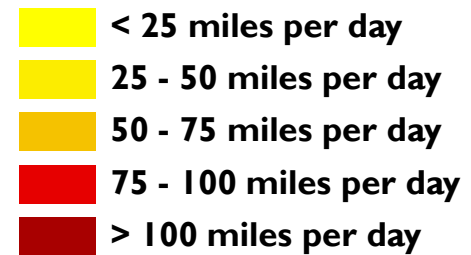
Modeled daily VMT per household



- Model explains about half the variance in daily VMT per household

Driving Patterns—Location Matters

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- In 149 cities and towns, the average household drives more than 75 miles per day; these towns comprise 18% of total population, contribute 26% of total VMT
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ULI Transportation Cost Estimates

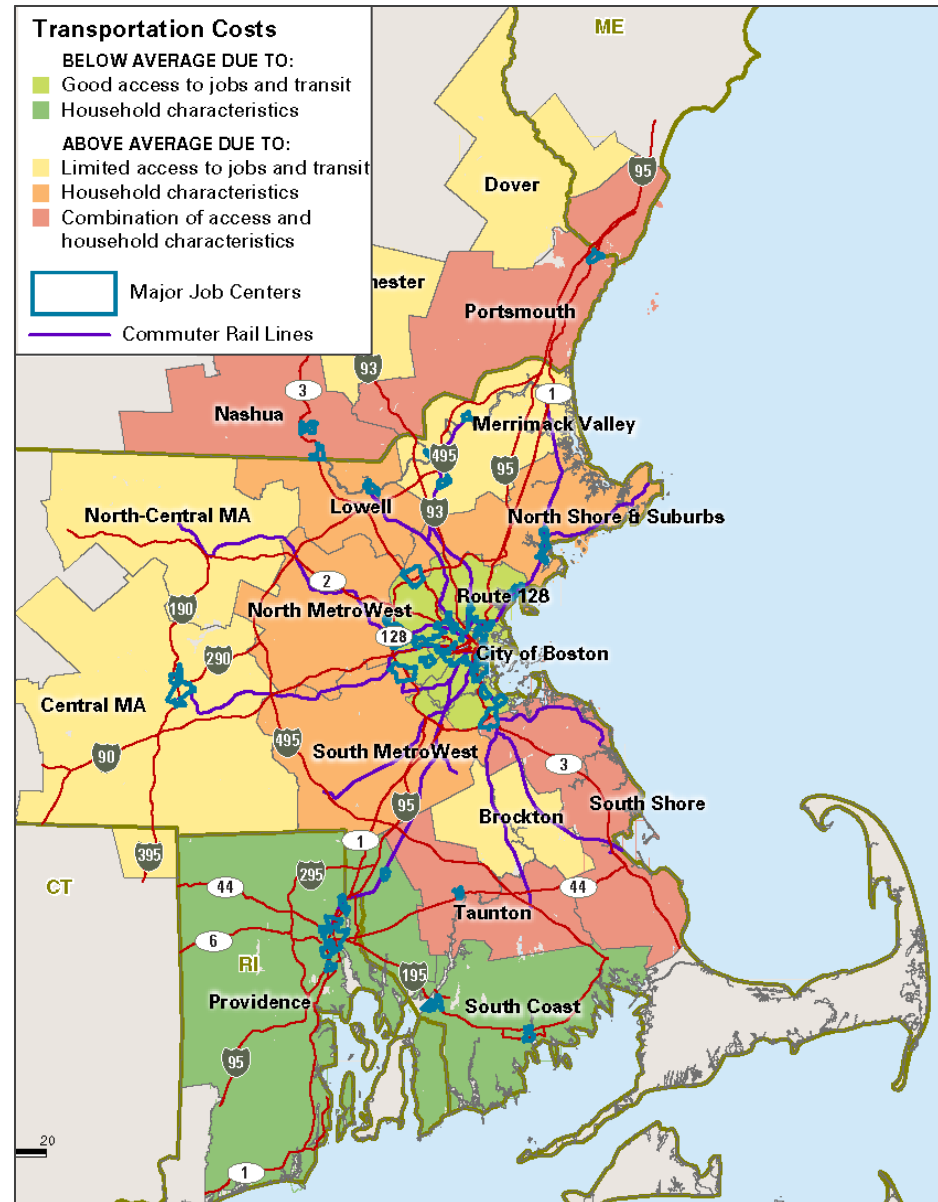
New Urban Land Institute transportation cost model based on land use and demographic variables

Estimated transportation costs in Boston Region:
\$11,927 per household

MetroWest: \$14,000 / year

South Coast: \$11,400 / year

Inside I28: \$9,800 / year



- Update database with RMV data from 2008/2009
- Match VINs to efficiency ratings to develop accurate profile of passenger fleet MPG
- Refine measurements of density, land use diversity, job access, etc.
- Identify applications for local and regional planning



Thank you!

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