Measures for Determining Municipal Suitability for Alternative Transportation

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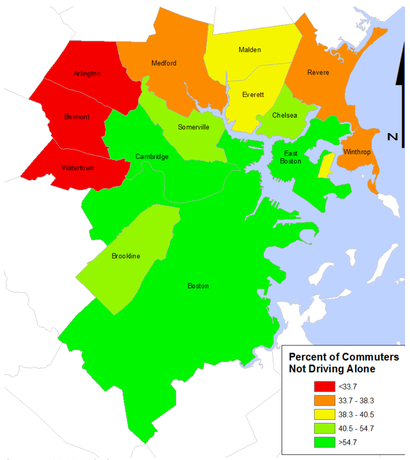
Projection: NAD 1983
State Plane MA, Mainland

Mode Split

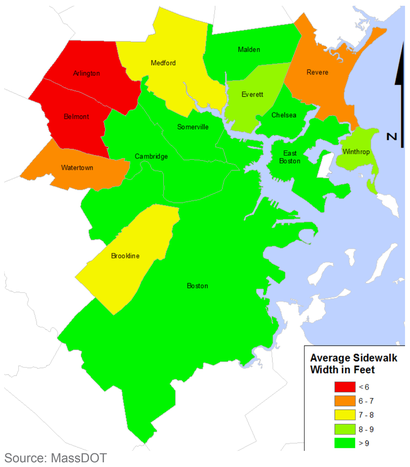
The US Census asks how respondents get to work. This map shows cities ranked by the percentage of commuters who use alternative transportation. Knowledge of existing commuting patterns is an important step in planning future outreach about alternative transportation.



Source: 2000 US Census

Sidewalk Coverage

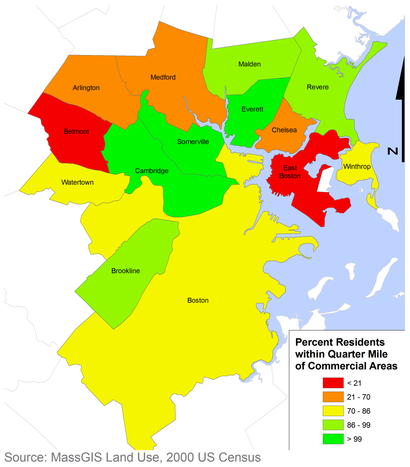
MassDOT provides the sidewalk width for each street segment in the state. Averaging in widths of zero makes this metric a description of overall sidewalk coverage in a city as well as just width. Wide sidewalks show pedestrians that their safety and comfort are valued.



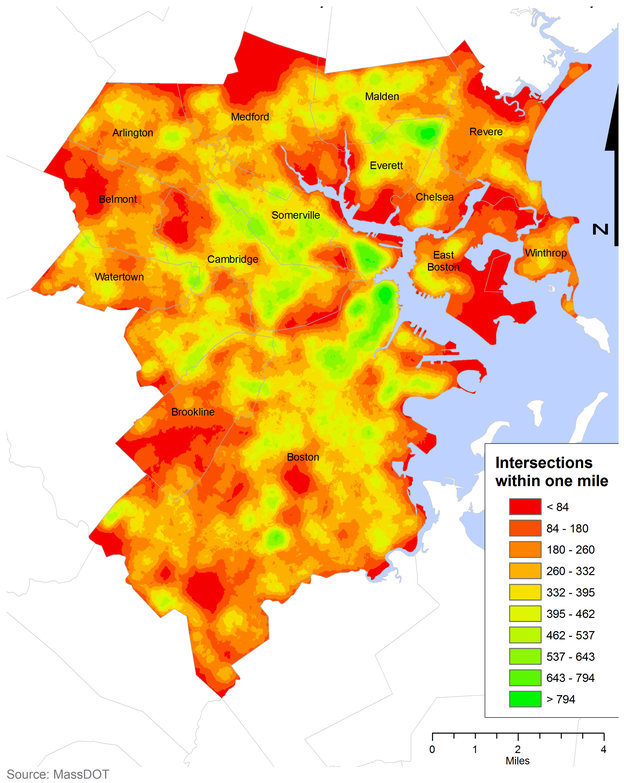
Source: MassDOT

Land Use Mix

Using MassGIS land use data, a ¼ mile buffer was created around commercial zones. Census block groups were then used to estimate the population living within that buffer for each city. This is one of several imperfect ways to estimate population.



Source: MassGIS Land Use, 2000 US Census



Source: MassDOT

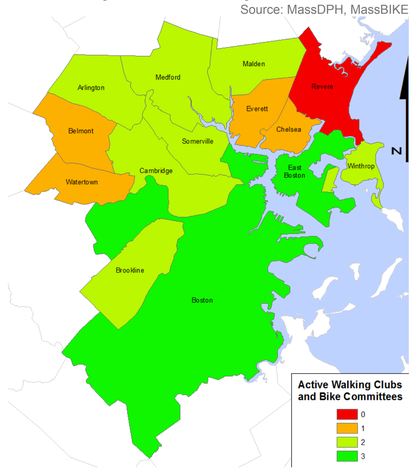
Intersection Density

Many studies indicate that intersection density is one of the most important indicators of walkability. While it may be less important in urban areas, this map shows the high correlation the metric has with the others considered. MassDOT street data were used to locate intersection points, and then ArcGIS calculated the density of intersections across the entire study area. A big challenge in this analysis was specifying which points the software should exclude as dead ends, cul-de-sacs, and city boundaries.

Active Groups

The presence of groups supporting walking and cycling can be valuable when promoting alternative transportation in a city. This map shows the presence of two such groups: walking clubs for seniors and bicycle advisory committees.

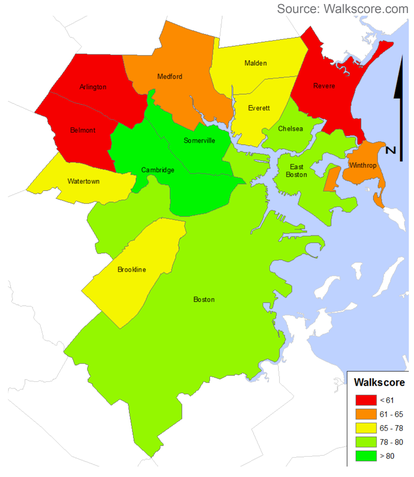
Source: MassDPH, MassBIKE



Source: Walkscore.com

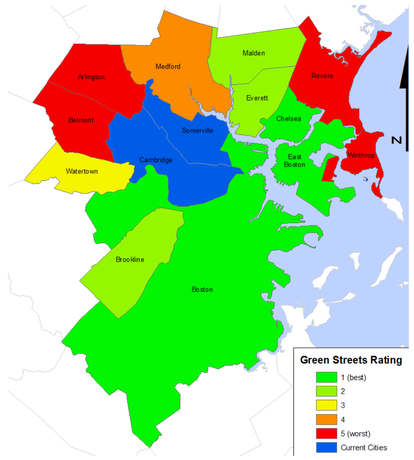
Walkscore

Walkscore.com gives walkability ratings for any address based on proximity to amenities. City-wide scores are also computed for many urban areas. To estimate scores for the the four Boston area cities without city scores, ten diverse addresses were scored and then averaged together.



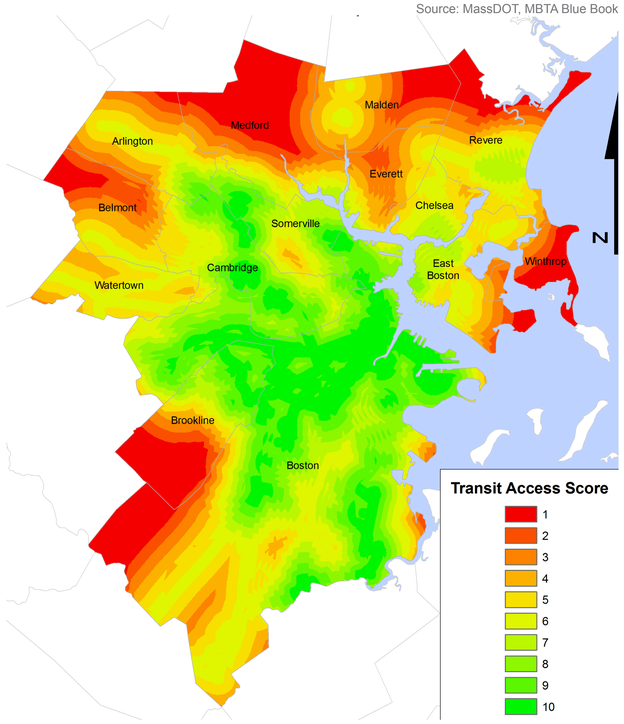
Aggregate Ranking

Once all these metrics were taken, an aggregate ranking was calculated. Transit access, walkscore, and sidewalk coverage were weighted strongly, while active groups, proximity to commerce, and intersection density were weighted less strongly.



Transit Access

Proximity and frequency are two very important factors influencing transit use. This map differentiates between key bus service (>6 buses per hour) and basic bus service (>1 bus per hour during off-peak times). Raster maps of distance were computed for both types of bus service, as well as for subway service.These three maps were then combined, weighting subway and key bus access strongly and basic bus service less strongly. These metrics were then converted into scores, with 10 being very good access and 1 being very poor.



This project was conducted in conjunction with a Field Project for the Green Streets Initiative, a Cambridge-based organization looking to regionalize its monthly Walk/Ride Day. Walk/Ride Day is a celebration of alternative transportation, involving partnerships with schools, businesses, and advocacy groups. These maps are intended to help Green Streets evaluate which cities would be most suitable for it to expand to. Additionally, this poster serves as an overview of different spatial methods for studying walkability. Many factors go into walkability, and these are merely a preliminary sampling.

Source: MassDOT, MBTA Blue Book