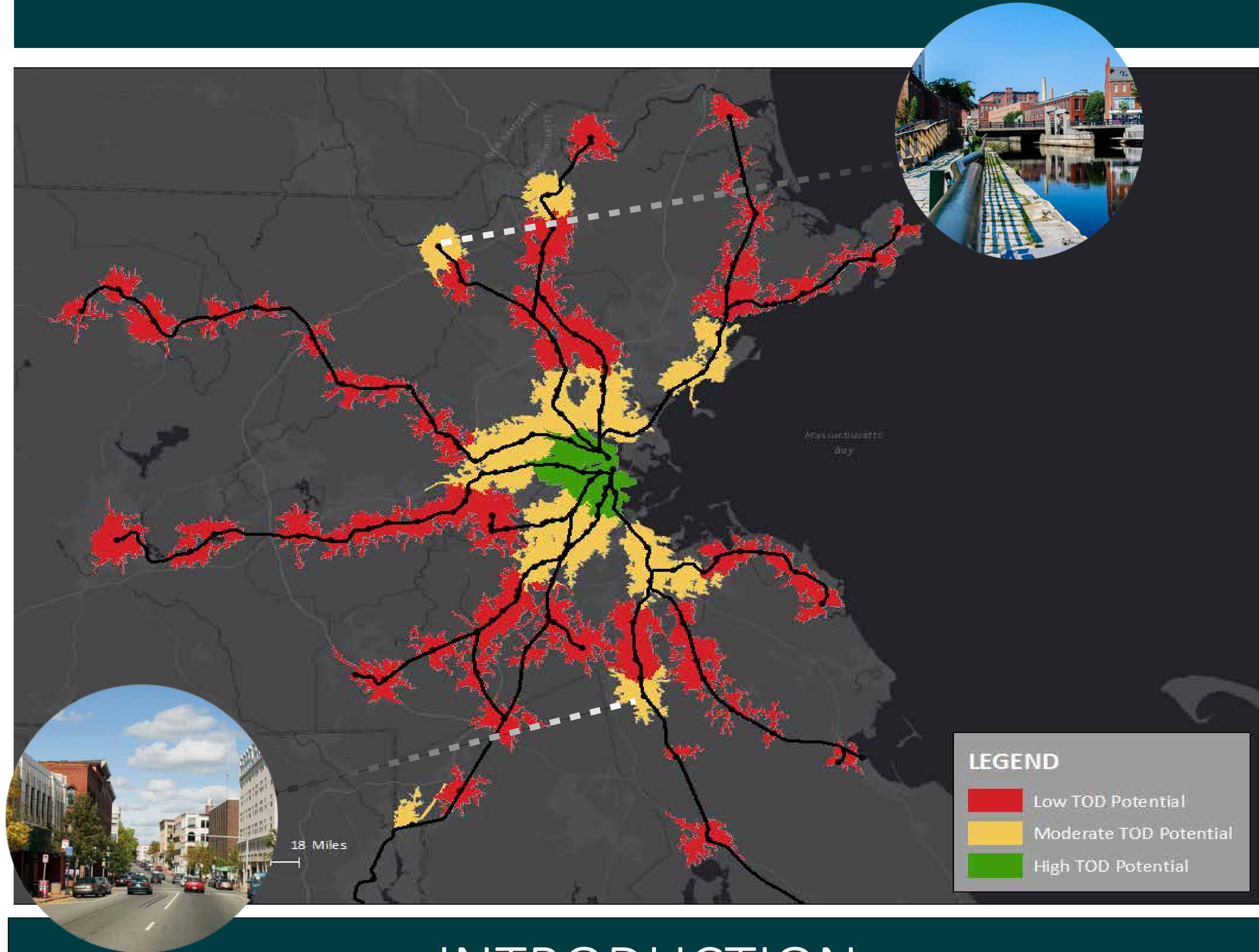


# COMMUTER RAIL TOD: NETWORK AND GROUPING ANALYSIS FOR WALKABLE DOWNTOWNS



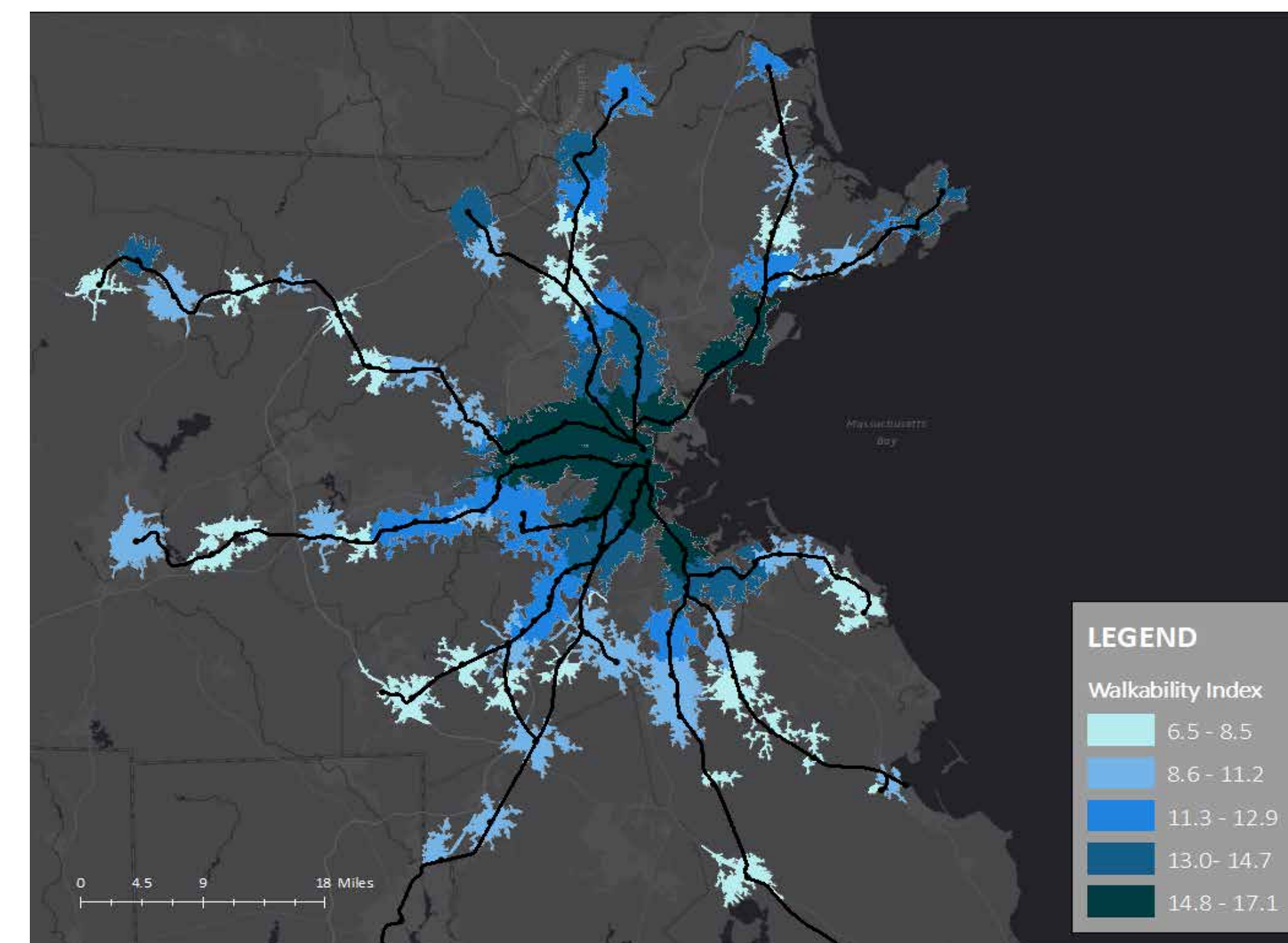
## INTRODUCTION

Transit-oriented development aims to focus urban growth in high-density clusters within walking distance of public transit stations and a mix of uses in order to reduce automobile use. TOD is seen as a way to reduce carbon emissions, pollution, congestion, the financial burden of vehicle ownership, and to reverse car-centric land use patterns. By concentrating housing and commercial development within walking distance of transit, planners aim to increase the number of trips that can be taken on foot and public transit. In Greater Boston, many recent housing and commercial developments have tried to adopt this model, but many of these projects fail to reduce automobile dependency because they lack walkability and connectivity to other places that are inherent in traditional town centers. Identifying places that possess the characteristics of truly walkable, urban places can help to guide housing where it is most likely to have the least environmental impact. This project identifies places with potential for walkable TOD by analyzing neighborhood characteristics including: walkability, residential density, transit frequency, and the mix of employment types.

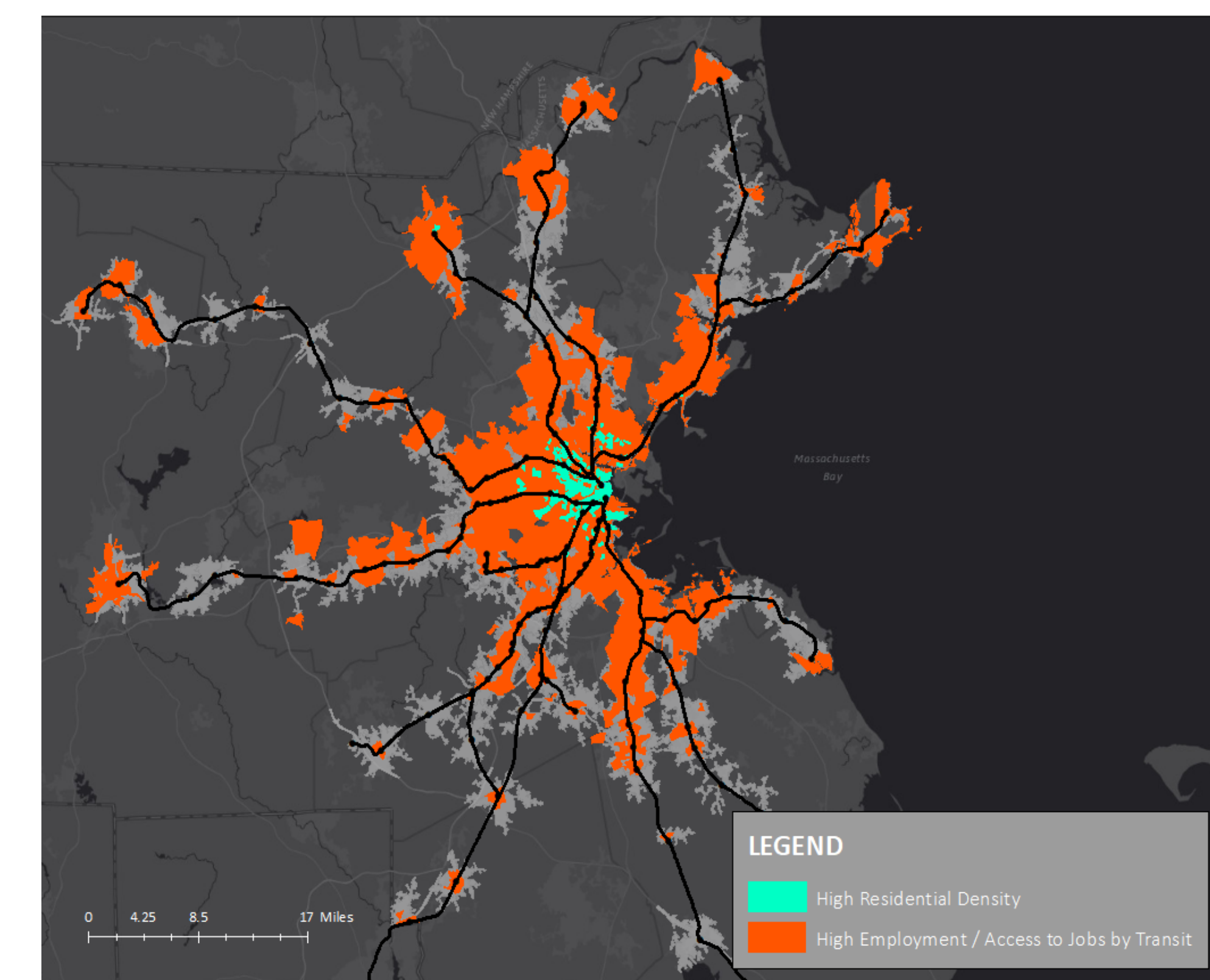
Connor Ring  
UEP 235-01  
Sumeeta Srinivasan  
NAD 1983 State Plan Massachusetts Mainland FIPS 2001  
Lambert Conformal Conic



## METHODS, FIELDS & DATA SOURCES



Walkability of Commuter Rail Station Service Areas



High residential density, high employment or access to jobs by transit.

### 1. How walkable is the station area?

First, a network analysis was conducted to generate service area polygons for each station area. A network dataset was built using MassDOT road data and an impedance field was calculated using vehicle speeds. Polygons were created for 5 minute drive times, and Spatial Join was used to calculate the average of the Walk Index of all blockgroups that intersect the service area.

### 2. Which station areas have the highest values in attributes associated with walkable TOD?

Following a literature review, a grouping analysis was performed using the EPA's Smart Location Database, Walkability Index, and Access to Jobs and Workers via Transit datasets. Multiple iterations were conducted using different variables and between 2 and 10 groups. The final analysis used the following fields:

#### Residential Density

The mix of employment types in a block group (such as retail, office or industrial).

National Walkability Index score.

Aggregate frequency of transit within .25 miles of the blockgroup at evening peak



View of the Fitchburg Station Area, Photo: Connor Ring

## RESULTS

Outside of the inner core, the Commuter Rail station areas most suitable for walkable TOD are: Lowell, Lawrence, Salem, Lynn, Riverworks, Brockton, and South Attleboro.

STATION AREA	WALKABILITY INDEX	LINE
AUBURNDALE	16.2	FRAMINGHAM/WORCESTER LINE
WAVERLEY	15.8	FITCHBURG LINE
QUINCY CENTER	15.6	MIDDLEBOROUGH MAIN
SWAMPSCOTT	15.5	NEWBURYPORT/ROCKPORT LINE
SALEM	15.4	NEWBURYPORT/ROCKPORT LINE
MALDEN CENTER	15.3	HAVERHILL LINE
WALTHAM	15.3	FITCHBURG LINE
CHELSEA	15.2	NEWBURYPORT/ROCKPORT LINE
WINCHESTER CENTER	15.1	LOWELL LINE
MELROSE HIGHLANDS	14.7	HAVERHILL LINE
LOWELL	14.6	LOWELL LINE
GLOUCESTER	14.6	ROCKPORT LINE