

Quantifying Qualitative Aspects of Urban Spatial Environments

A Walkability Analysis with Pedestrian Environment Data Scan (PEDS)

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Course: UEP - 232 (Intro to GIS)
Data Source: Mass GIS, Census 2000 Data, Independent PEDS Analysis
References: The development and testing of an audit for the pedestrian environment (Clifton, 2006)

Tufts



Objectives

Walkability is a measure of how friendly an area is to walking and can be correlated directly to various health, environmental, and economic benefits. Evaluating walkability factors is a challenging process because it requires the quantification of several qualitative spatial factors, particularly: the quality of sidewalks, traffic, land use patterns, building accessibility, safety, cleanliness, amenities, and the degree of urban enclosure, among other factors. The objective of this project was to test the effectiveness of the Pedestrian Environment Data Scan (PEDS) tool in quantifying these qualitative components in an attempt to create a comprehensive walkability analysis of the Silverline BRT region. The walkability of a neighborhood can influence residents' modal choice for travel is a key indicator of spatial mobility equity. Accessibility is a basic concept within the mobility framework because it indicates the potential for spatial interaction. The final project, presented through this poster, illustrates the findings of an extensive walkability and spatial layer analysis surround three BRT stations.

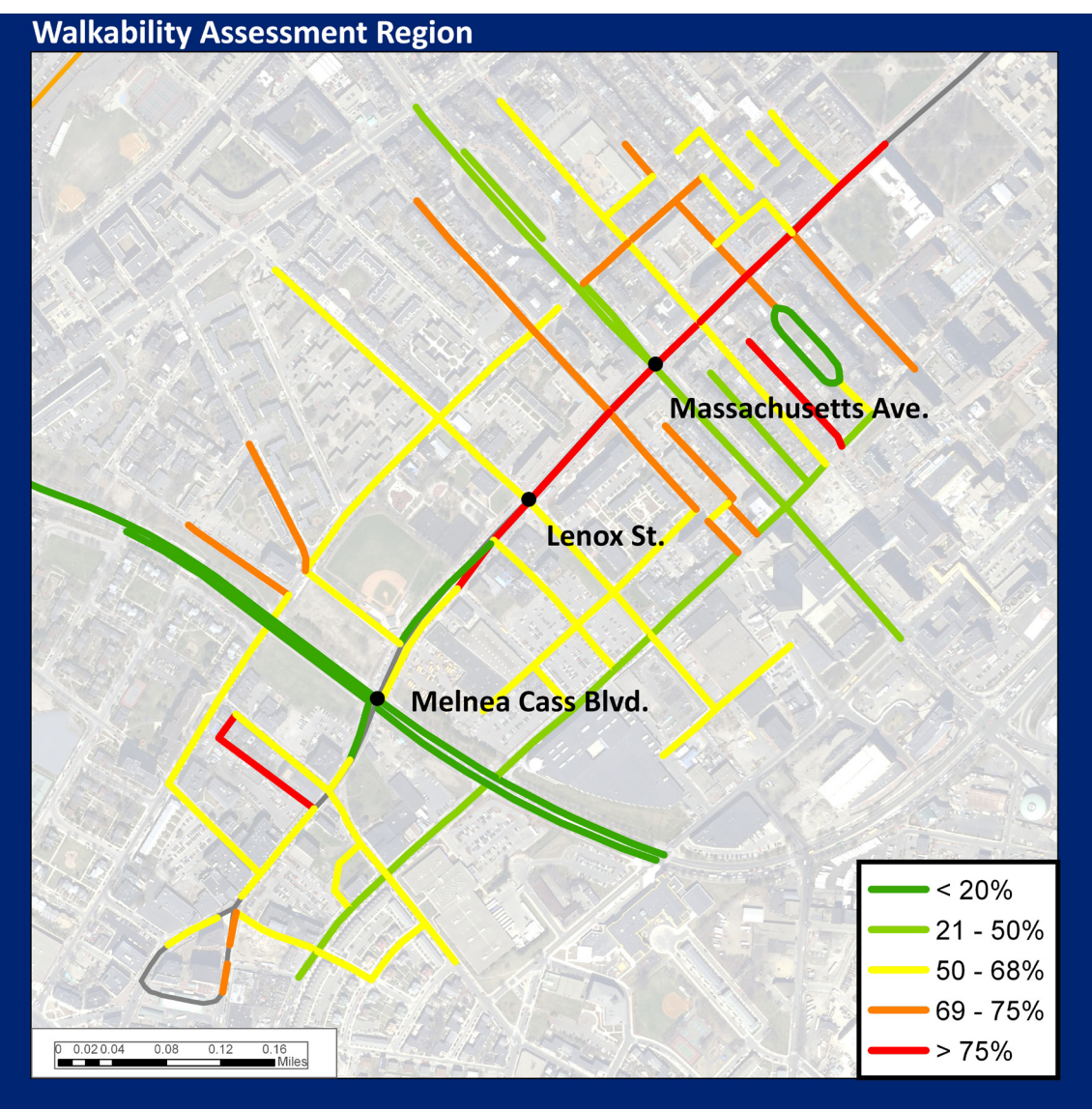
PEDS

PEDS is a built environment audit applied at the segment or path level that has been tested in various environments. The PEDS instrument was developed to measure environmental features that relate to walking in varied environments in the United States. The audit tool includes 78 measures of streetscape characteristics that other research has shown to influence walkability.

Analysis

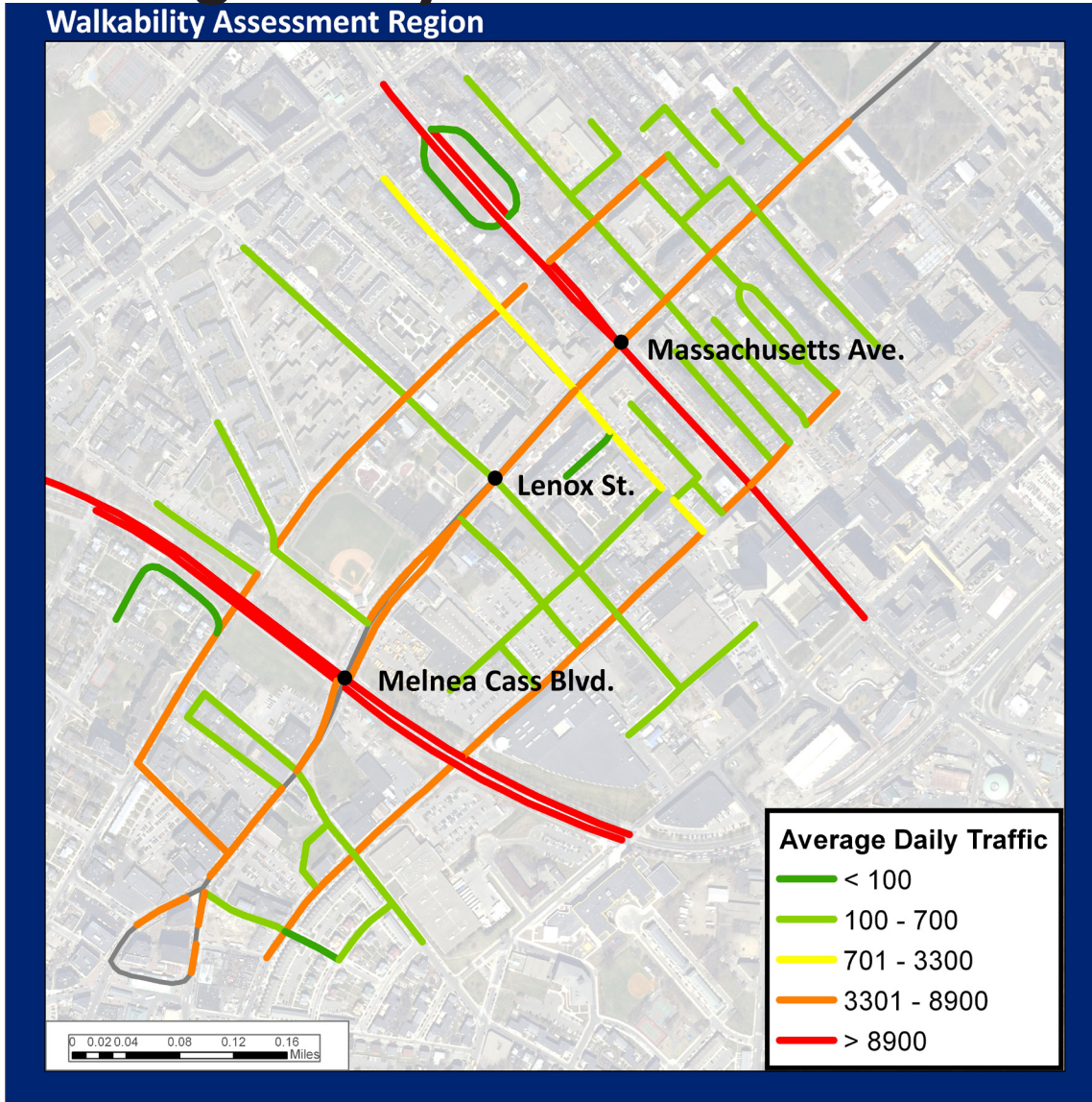
The PEDS was tool utilized as the starting point for developing an audit tool that would conform to the requirements of the study region. The framework was heavily modified by adding and deleting variables to make the tool relevant to the particular study. More than 100 individual street segments were highlighted and analyzed using the modified PEDS audit. The data was organized digitally and integrated with GIS to create visual layers depicting the results of the modified analysis.

Street Access Distribution



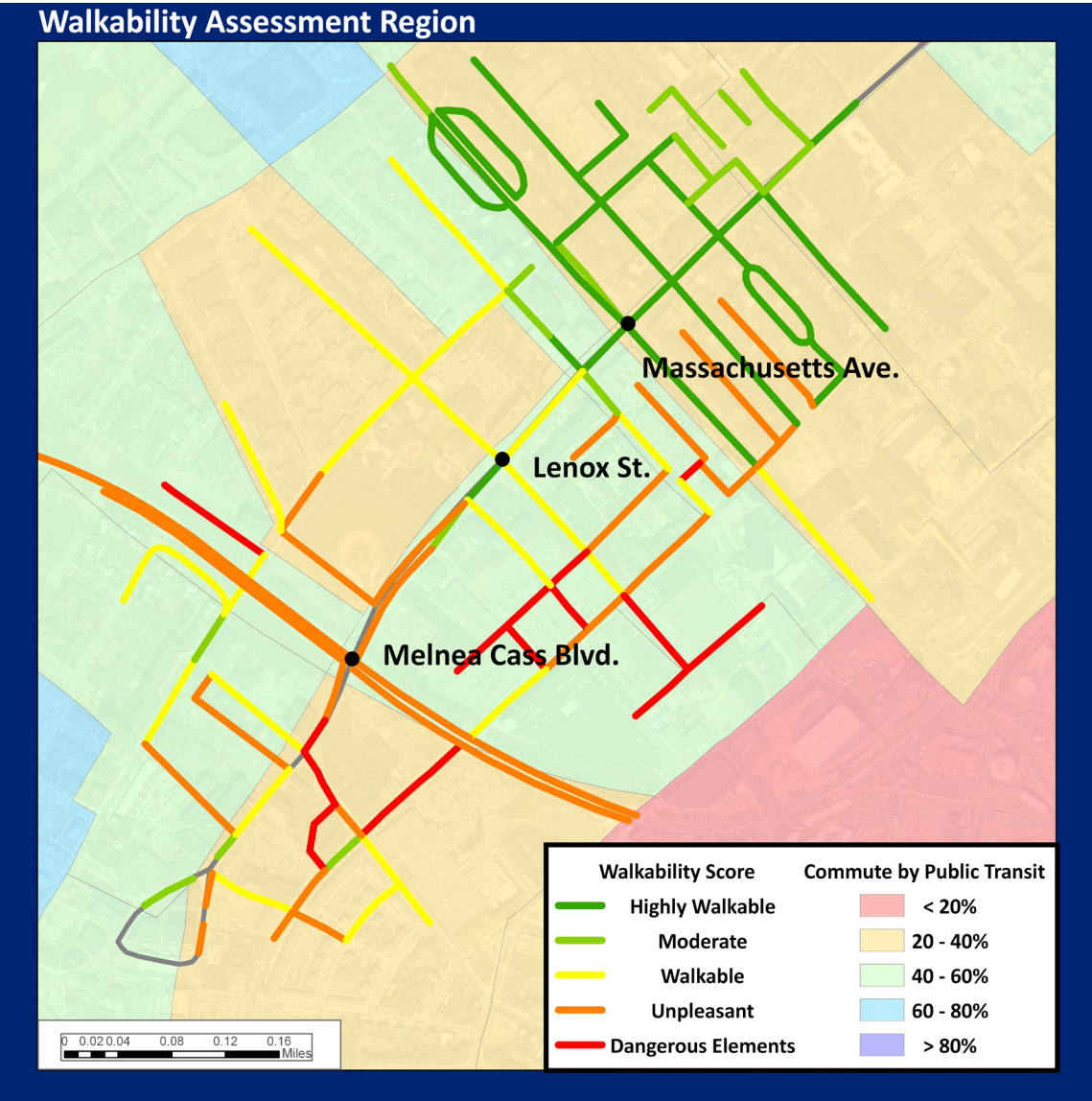
(1)

Average Daily Traffic



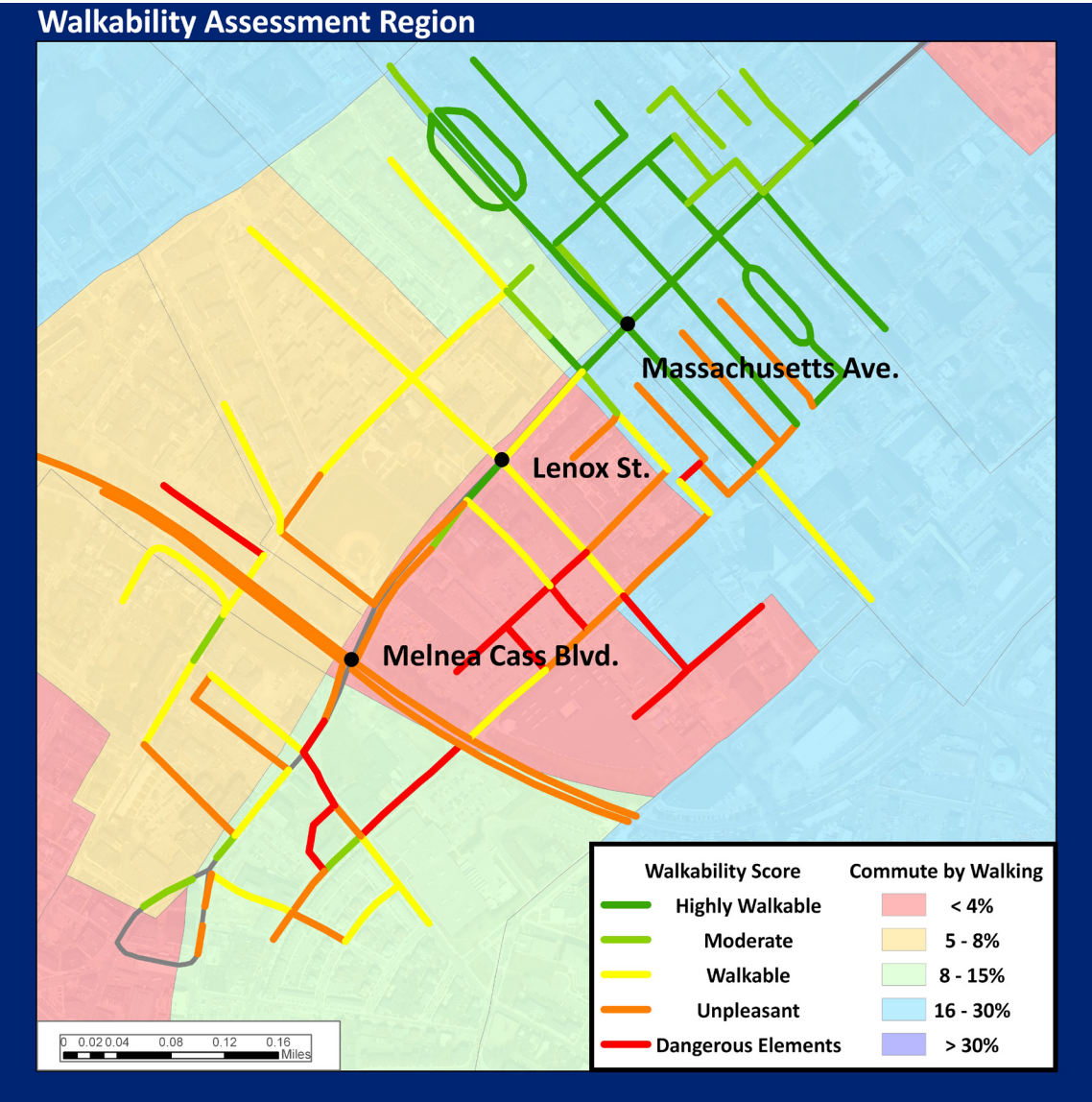
(2)

PEDS Results and Public Transit



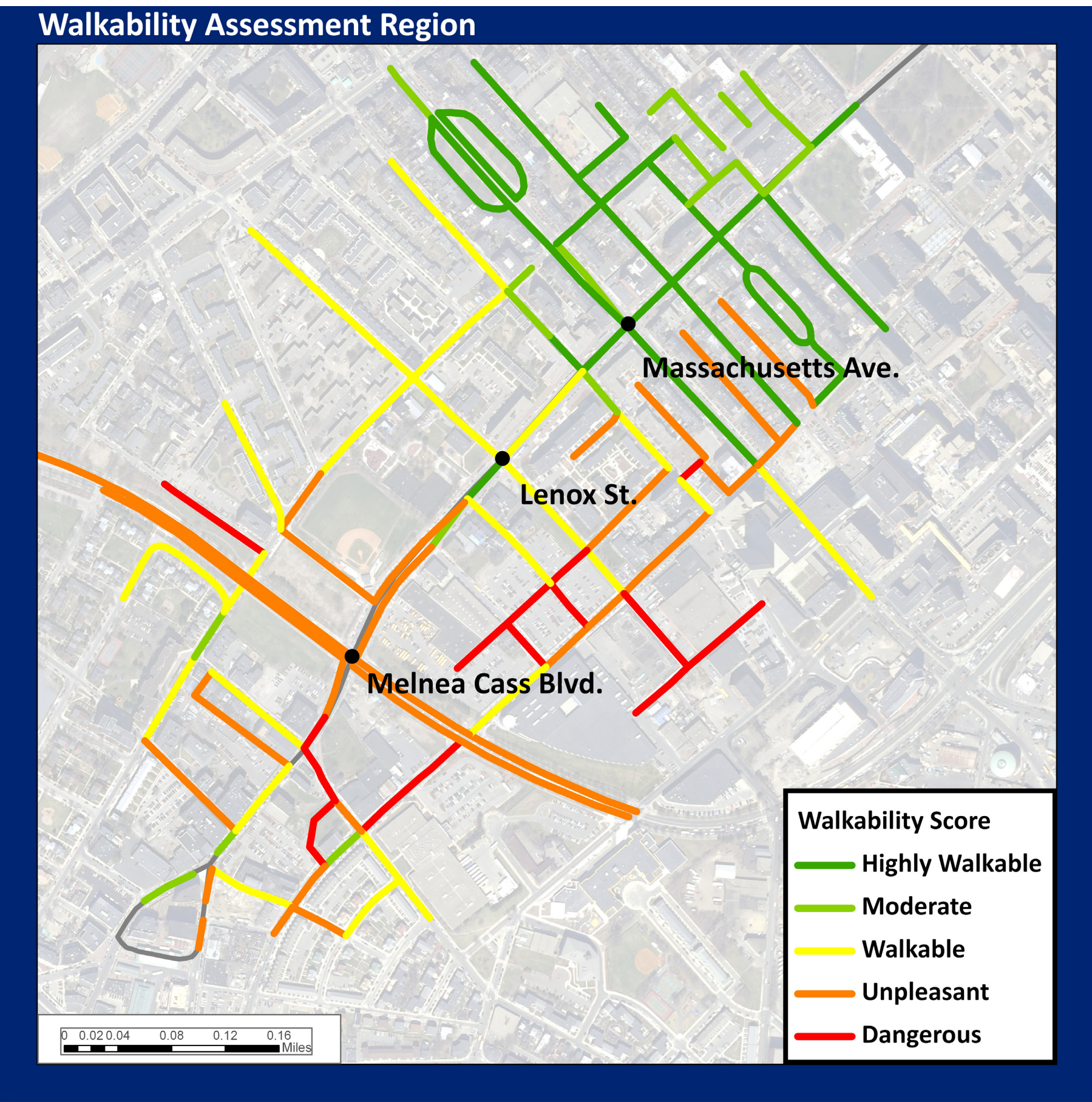
(3)

PEDS Results and Walk to Work



(4)

PEDS Results



Conclusions for Further Research

GIS-enabled pedestrian audit tools can be an efficient way to collect and quickly analyze pedestrian infrastructure characteristics so that planners, practitioners, policy makers, and community members can make more effective decisions on behalf of walkability. A comprehensive analysis of further urban areas can allow researchers to fully quantify what factors have the greatest effects on walkability and pedestrian access to urban spaces.

Study Region Land-Use



(5)

