

FITNESS DESERTS: MAPPING FITNESS ACCESSIBILITY IN BOSTON

INTRODUCTION

Recently, physical activity has been linked to the built environment of a community, specifically to the proximity of the fitness centers. Fitness centers are any location outside of the home where an individual engages in physical activity and include public and private gyms, courts, fields, rinks, pools, fitness clubs as well as community centers. Open spaces such as parks and playgrounds are also important destinations for physical activity and provide open access to all community members. Proximity to fitness centers and open spaces encourages physical activity by serving as visual reminders to exercise and by removing psychological and physical barriers to exercising resulting from longer commuting times. The distance between fitness center and home that seems to be the most significant in determining exercise habits seems to be around 1 km or approximately a twelve to fifteen minute walk.

Transportation is also important to access to fitness centers. In urban environments where many people do not have access to cars or driving is inconvenient, accessibility is often determined by proximity to public transit hubs. Public transportation also makes fitness centers accessible that are further away from the home. In Boston, the most widely used public transportation system is the rapid transit, or the T.

The purpose of this project is to determine if there is spatial inequality in access to fitness centers in Boston. Which areas are at highest risk of being a fitness desert, that is, an area that has many people with the least access to fitness centers or outdoor spaces to exercise? In the scope of this project, fitness deserts would be areas where higher quantities of people are further away from fitness centers, open spaces, and mass transit.

METHODS

To find if and where there are fitness deserts in Boston, I have created a map that displays accessibility of features in an area overlaid with the population of that area. Accessibility was determined by the proximity to fitness centers, open spaces, and MBTA T stops. Individual accessibility maps were first created for each of these features using spatial analysis tools. Five gradients were created to mark specific distances from the features based on walk-length time (2 min for 250 m, 5 min for 500m, 12 min for 1000 m, and 30 min for 2000 m). These gradients were then given scores of one to five with the closest gradient being scored as one and the farthest as five. These individual accessibility maps were then overlaid and added to a census map where population in census blocks had also been gradated one (lowest population) through five (highest population). The scores for all four maps (accessibility and census) were added together to create a display of the fitness deserts. Areas with a lower fitness desert score (most accessible, least people) are colored dark blue, whereas areas with a high fitness desert score (least accessible, most people) are colored yellow, orange and red.

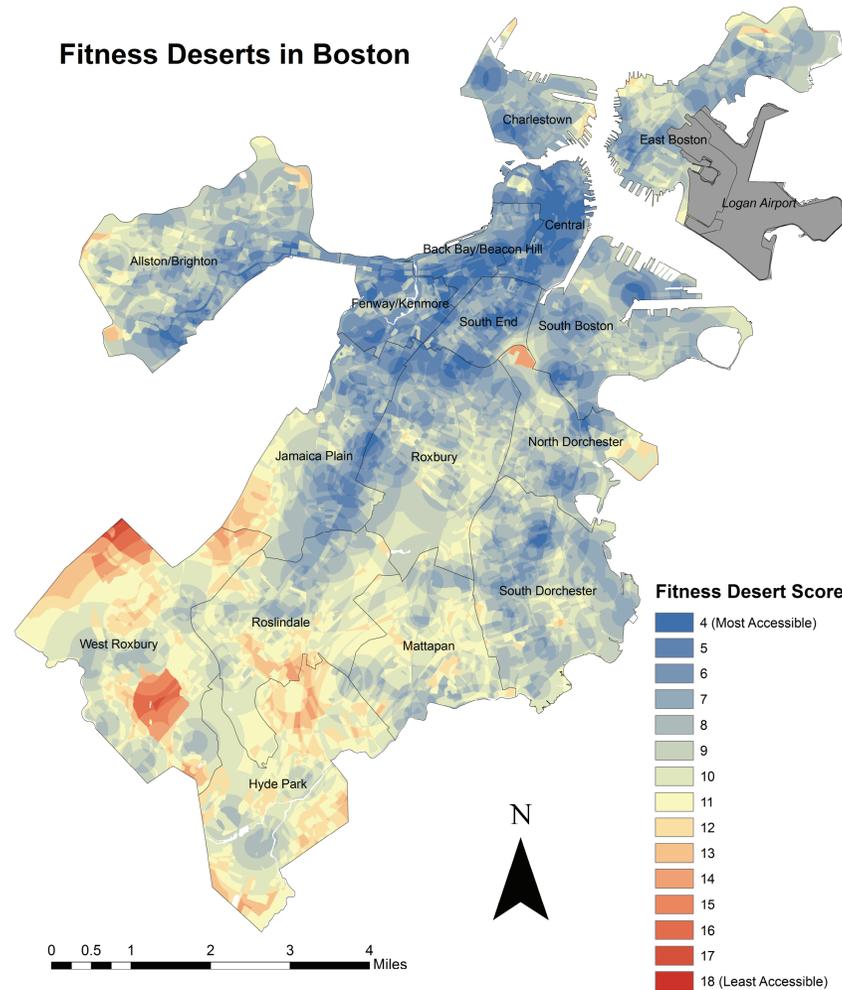
Cartographer: Kathleen Cohen

ENV 193—Intro to GIS

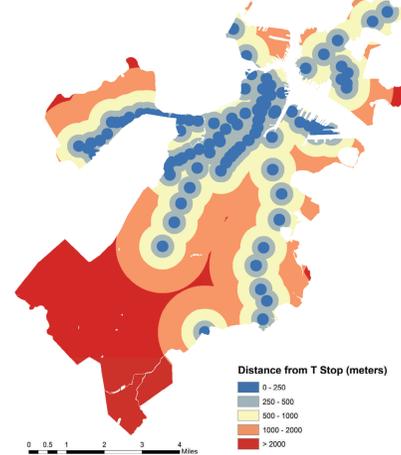
May 2012

Map Projection: NAD 1983 State Plane MA Mainland FIPS 2001—Meters

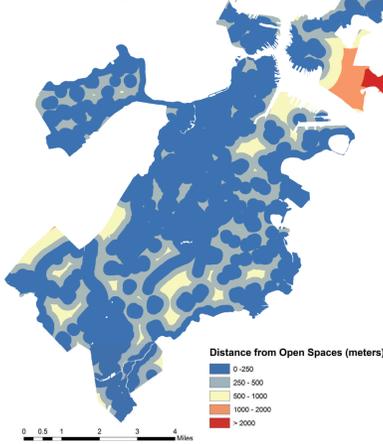
Fitness Deserts in Boston



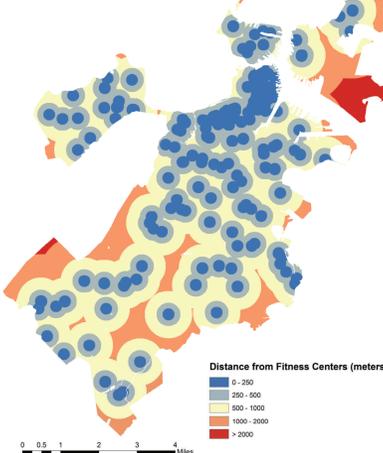
Distance from MBTA Rapid Transit (T) Stops



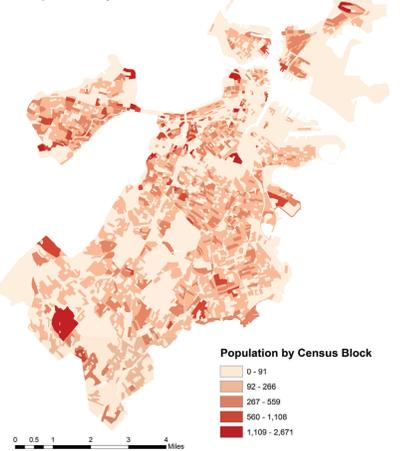
Distance from Open Spaces



Distance from Fitness Centers



Population by Census Block



CONCLUSION

Fitness deserts are most prevalent in the southern parts of Boston such as West Roxbury, Hyde Park, Roslindale, Mattapan, and parts of Jamaica Plain. Fitness accessibility is highest in the downtown regions of the city. The higher fitness desert scores in the southern part of Boston seem to be related to the fact that the T does not extend very much into these neighborhoods. Fitness centers as well appear to follow loosely the trajectory of the T, so a policy suggestion to increase fitness accessibility would be to extend the red and orange lines further south into Boston. There are also populations with lack of access along the outer edges of Allston/Brighton and at the northern most tip of North Dorchester. More refined maps in the future would benefit potentially from weighting the different feature proximities based on their importance. For example, parks might not have as much impact on fitness behaviors as other facilities do. Also, since most of Boston is within a ten minute walk of a park or playground, further research could be done to see which of these parks are used the most for fitness. Network analysis tools could also make this analysis better, since potential exercisers have to navigate by a network of streets, not by Euclidean distance. Bus routes as well as factors such as street aesthetics would also be useful to include in future analyses. Fitness accessibility maps such as these could be very useful for city, state, and federal governments to determine which areas to focus their efforts and often limited resources.

Physical Layout of Boston

