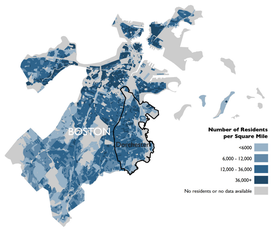
Accessing Dorchester's Coastal Trails

A SPATIAL ANALYSIS

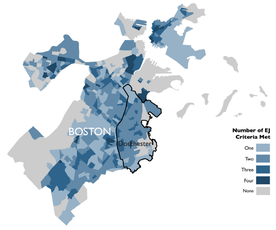
INTRODUCTION

Dorchester is the largest of more than twenty neighborhoods in Boston, Massachusetts. It is a densely populated neighborhood with a diverse population. Much of Boston's scenic coast runs along Dorchester's shores. Historically, much of the coast has been used for industrial and commercial purposes, and access to the coast has been severely impeded by Interstate 93 and several multi-lane, heavily trafficked roads, such as Morrissey Boulevard and Gallivan Boulevard. However, over the past several years many of the former industrial sites along the coast have been remediated and refurbished as public parks, beaches and multi-use trails. There are two trails along the Dorchester coast linking several coastal parks: the Boston HarborWalk to the north and the Lower Neponset River Trail to the south. Unfortunately, there is a two-mile stretch between the two trails that has no dedicated path for pedestrians or cyclists, which limits the value of the trails for recreational users as well as bicycle commuters. Those who choose to travel between the two trails must traverse heavily trafficked roads with limited, poorly maintained sidewalks and no dedicated bike path. This stretch is known to the residents of Dorchester as the "missing link."

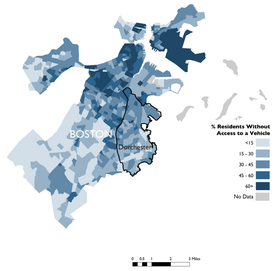
A team of students at Tufts University's Department of Urban and Environmental Policy and Planning has compiled a Master Plan for connecting the "missing link" between the Lower Neponset River Trail and the Boston HarborWalk. The Master Plan was commissioned by Massachusetts Department of Conservation and Recreation along with advocacy groups such as DotBike, Boston Cyclists Union and the Neponset River Greenway Council. The proposed trail is called the Dorchester Coast Greenway, and it was designed with extensive input from the residents of Dorchester.



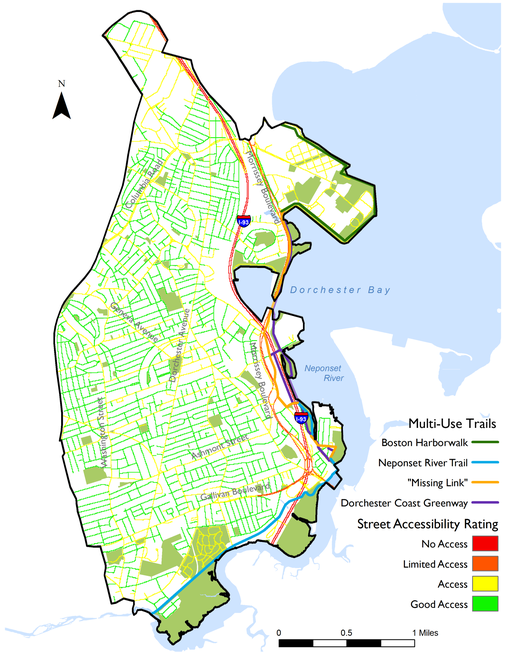
Census 2010 Population Density by Block

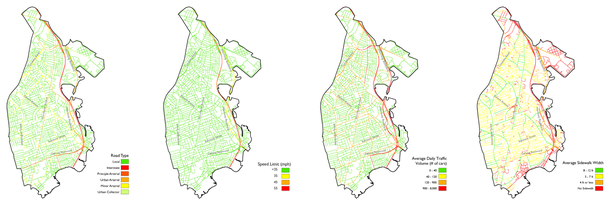


Census 2000 Environmental Justice Populations by Block Group



Census 2000 Residents Without Access to a Vehicle by Block Group

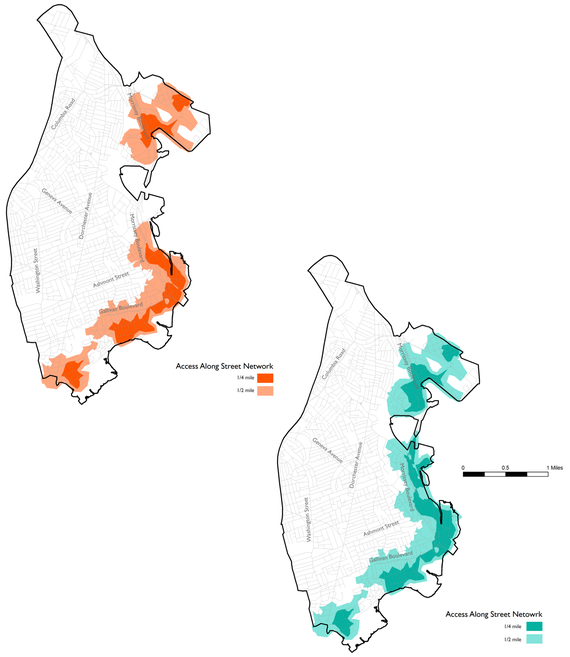




Street Access Analysis

Unweighted analysis of street type, speed limit, average daily traffic volume and average sidewalk width

One view of Dorchester's coast from Victory Park, a remediated former industrial site along the "missing link"



Network Access Analysis

Access to coastal trails along street networks before (left) and after (right) implementation of the Dorchester Coast Greenway

DEMOGRAPHIC CONTEXT

Dorchester is home to approximately 14% of Boston's 617,249 residents, according to the 2010 Census. The neighborhood's residential landscape is a mix of mostly high and medium density homes, with an average population density of approximately 16,640 residents per square mile, as illustrated in the map above.

In 2002, the Massachusetts Executive Office of Energy and Environmental Affairs implemented an official Environmental Justice (EJ) Policy in an attempt to begin to rectify the historically disproportionate share of environmental burdens and lack of environmental assets experienced by Massachusetts' low-income communities and communities of color. The EJ Policy promotes investment in green space, including parks, trails, urban wilds and gardens in neighborhoods that meet one or more of four EJ criteria. These criteria include populations that have a median annual household income at or below 65% of the statewide median income, are 25% or more minority, 25% or more non-English speaking, or 25% or more foreign-born. Populations by Census 2000 Block Group meeting one or more of these criteria are shown above.

Census 2000 data also indicates that many residents in Dorchester do not have access to a vehicle. This makes the development of accessible multi-use trails in the area particularly appropriate. While there is an abundance of public transportation in Dorchester, many residents may be prohibited from visiting their neighborhood's coastal trails and parks because they are not easily or safely accessible by foot or bike.

PURPOSE & METHODOLOGY

This analysis is meant to advocate for the implementation of the Dorchester Coast Greenway Master Plan and to provide recommendations for further linkages to the coastal trails for residents in Dorchester's central and western neighborhoods.

First, a demographic analysis of Boston was done, highlighting Dorchester, in order to understand who the residents are who have had this historical lack of access to their coast, and to get a sense for the number of people who may potentially benefit from the development of the Dorchester Coast Greenway. This demographic analysis was done using Census 2000 data and Census 2010 data where available.

Next, a network analysis was done of existing trail access points to quantify the number of residents with tangible pedestrian access to the coast. Another network analysis was then done with additional trail access points added for the potential Dorchester Coast Greenway in order to quantify how many residents would gain direct pedestrian access to the coast if the plan is implemented.

Finally, a street accessibility analysis was done to illustrate the potential for western extensions of the coastal trails to provide access for more of Dorchester's residents. The accessibility rating was based on street type, street speed limit, average daily street traffic and sidewalk width. All street data was sourced from the Massachusetts Department of Transportation.

CONCLUSIONS & RECOMMENDATIONS

If built, the Dorchester Coast Greenway would not only create a safe link between the Boston HarborWalk and the Lower Neponset River Trail, it would increase direct access to coastal parks for many Dorchester residents along the path. Network analysis, coupled with Census 2010 Block data shows that nearly two thousand residents live within a half-mile street network of the potential Dorchester Coast Greenway, not including those who already live within a half mile of the existing trails.

Street accessibility analysis reveals, however, that much of Dorchester is prevented from enjoying safe access to their coast because of prohibitive blockage from Interstate 93 and limited access across Morrissey Boulevard and Gallivan Boulevard. Future development needs to go further than simply building the Dorchester Coast Greenway. In order to provide coastal access to all of Dorchester's residents, western pedestrian and cycling access must be improved. This could be done by maintaining and widening sidewalks, increasing bike lane provision, and installing and improving crosswalks and lights over streets with limited access. Preliminary street accessibility analysis reveals that many of Dorchester's streets are accessible for pedestrians and cyclists, but that most of the streets bordering the coast provide limited or no access, prohibiting residents from safely enjoying their coastal parks and vistas.

Further research should be done to determine the best locations for improved coastal access. Feasibility criteria could include proximity to public transit, land use in the area, popular destination points and crime data, to name a few. Any analysis should include comprehensive site visits and extensive input from neighborhood residents.

Scenic Harborwalk trail along Tenean Beach in Dorchester

Residents enjoying recreational use of the Neponset River Trail in Dorchester

Cyclists navigating heavy traffic along the "missing link"

Heavy traffic and poorly maintained sidewalks along the "missing link"

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Maps, Photographs & Images: Jessie Partridge, UEP 232, Spring 2011
Data: Mass GIS, Boston Redevelopment Authority, Mass DOT, Census 2010