

Introduction to Geographic Information Systems (UEP 0232-01)
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Research Proposal: Bike Lanes in Somerville/ Cambridge (Assignment 1)

In recent years there has been a shift towards more alternative ways of transportation. To give just one example, in Germany there is currently a 65 miles long “Super Cycle Highway” being planned that would stretch from Duisburg to Hamm (in the most populated and dense agglomeration of Germany, the Ruhr area). Here, abandoned rail tracks serve as the spaces on which the project will be realized. Once this will be done, commuters will have another, and at the same time, more competitive, mode of transport available to get to their works.

In my research project I want to focus on the Greater Boston area, more specifically, Somerville/ Cambridge. What is described in the introduction also holds true for the City of Boston where more bike lanes were designated as such during the last years. For example, there are currently discussions under way that envision implementing bike lanes on Beacon Street or plan to close gaps between already existing bike paths, for instance the “Community Path Extension”. Through this the city wants to make commuting by bicycle more attractive and, lastly, more competitive in comparison to cars.

General Sources:

- http://www.mapc.org/sites/default/files/The_Work_Undone_-_October_2007.pdf#page=141&zoom=100,0,792
- <http://www.mapc.org/transportation>
- http://www.mapc.org/sites/default/files/DOC_Section_6_-_Transportation.pdf
- http://www.ctps.org/Drupal/recent_studies

These are pages where I found useful information on so far not undertaken, delayed or planned projects. Also, I gained additional information on the status quo of the city’s transportation planning and what the city aims to do during the next years in regard of bicycling as a means of transport.

References:

- Buehler, R. & Pucher, J. (2012): Cycling to work in 90 large American cities: New evidence on the role of bike paths and lanes. *Transportation*, 39(2), 409-432.
doi: <http://link.springer.com/article/10.1007/s11116-011-9355-8>
This article provides data on commuting by bike to work in US major cities. This seems to be one of the very few ones where there is also data on Boston available.
- Dill, J. & Carr, T. (2007): Bicycle Commuting and Facilities in Major U.S. Cities: If You Build Them, Commuters Will Use Them. *Transportation Research Record: Journal of the Transportation Research Board*, 1828, 116-123.
doi: <http://trb.metapress.com/content/a2485322g1249615/>

An article that specially focuses on the topic commuting by bike. Also, some links to demographic data are provided.

- Huang, Y. & Ye, G. (1995): Selecting Bicycle Commuting Routes Using GIS. *Berkeley Planning Journal*, 10(1), 75-90.
doi: <http://escholarship.org/uc/item/9pf2j1pd>
This article gives insight into how GIS can be used in order to find suitable space for bike lanes in cities. Although the article does not focus on Boston, it can help me in figuring out how to use GIS for my question.
- Pucher, J. & Komanoff, C. & Schimek, P. (1999): Bicycling renaissance in North America?: Recent trends and alternative policies to promote bicycling. *Transportation Research*, 33(7-8), 625-654.
doi: <http://www.sciencedirect.com/science/article/pii/S0965856499000105>
A general overview of recent developments in the US concerning bicycling.

(1) One of my two suggestions is to put some further research on the possibilities of designating more space for bike lanes. Following this interest, I would look for data that i) gives insight into the needs for more bike lanes (e.g. bike counts on streets that don't have any bike lanes so far) and ii) data that shows where underutilized space is available (e.g. abandoned rail tracks, low-frequented car lanes). This research would, insofar, concentrate on the further development potential in Somerville/ Cambridge and ask for more separate bike paths that could be created. Also, one could ask whether bike lanes are only created in certain areas, though maybe much more needed in other.

Research Questions:

- Where is a need for further bike lanes in Somerville/ Cambridge and where could more space for bicycling be created?
- Is there a discrepancy between certain areas in regard of bike lane coverage?

Sources:

- <http://geodata.tufts.edu> and <http://trailmap.mapc.org>.
 - Through these pages I could identify where the existing bike lanes are.
- http://www.ctps.org/apps/bike_ped3/bike_ped_query.html.
 - This page gives the opportunity to analyze counts that were undertaken during the years 1975-2013. Hereby, I could not only see where there is more need for bike lanes but also whether certain areas are neglected, although the need for bike lanes is considerably high.
- <http://www.mass.gov/anf/research-and-tech/it-serv-and-support/application-serv/office-of-geographic-information-massgis/datalayers/trains.html>.
 - This page gives the opportunity to analyze data in regard of abandoned rail tracks. Thus, potential underutilized areas can be identified for the use of bike lanes.

(2) My other research proposal would concentrate on the benefiteres of already existing or planned bike lanes in Somerville/ Cambridge. Following this interest, I would scrutinize who the people that would benefit from bike lanes, e.g. the ones planned on Beacon Street or the "Community Path Extension", are. I would question how far the catchment area extends and who would be a possible user of the bike lanes (e.g. local residents, commuters). Also, one could ask for the socio-economic background of these user groups. Therefore, I would need to find data that covers information about current streams of commuters (origin – destination), their socio-economic backgrounds and what modes of transport they use.

Research Questions:

- How many more people can be reached through the extension of certain bike lanes?
- What are the social strata of people benefiting from certain bike lane extensions?

Sources:

- <http://www.mapc.org/communitypath> and http://www.mapc.org/sites/default/files/2013-06-07_Final%20Metric%20Report.pdf.
 - These pages give a brief overview of the development of the Community Path Extension that would connect two already existing bike paths in Somerville/ Cambridge.
- <http://www.somervillema.gov/sites/default/files/BeaconStreetSummary.pdf>.
 - This page gives a brief overview of the planning process of Beacon Street and shows where the bike lanes are to be implemented.
- ftp://ctps.org/pub/Demographic_Data.
 - This page provides data in order to analyze the demographic backgrounds of certain groups. Thus, I could gain information on those people that would be potential users of the planned bike lanes (e.g. income group, employment status, vehicles per household, etc.).

by Henning Guenter.