Greenville's Bicycling Future

Analyzing Greenville's Bikeville initiative and its future effectiveness

Andy Wallin

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Abstract

The purpose of my project is to evaluate at the future effectiveness of the proposed bike lanes in Greenville and how they will effect the transportation of the constantly growing population within the City. We looked at Greenville's current trails and bike lanes, their current usage and location, and the potential usage of future trails and bike lanes found in the Bike Master Plan.

Currently the bicycle network in the City is limited to various neighborhoods and tends to serve the downtown area as opposed to the residential districts. The proposed Bike Mater Plan shows the development of trails and bike lanes throughout the City. Through our project we looked at dissecting the different areas of need that the Bike master Plan seeks to address, and predict the effects of an environment where bicycling opportunities cover virtually the entire City.

Introduction

During the summer of 2011 I lived in a house just outside of the City Limits and began biking into downtown Greenville for my day job. I became accustomed with the current map and the plan that was being designed, but was curious about its effectiveness. I had found a few different routes to my destination of work, but unfortunately I felt as if there were gaps in my routes.

While working at the City, I became accustomed with the City's data in the Bicycle Master Plan. I was very interested in the new connections that the City would be making with all of their proposed trails and bike lanes. I wanted to see more of the potential impact of the Bicycle Master Plan on the economy, environment, and overall health. These questions prompted me to take City data containing the bike lane map, the trail map, the proposed bike lanes and trails, and the parcel data, and look into the real impacts that they had to offer.

Methodology

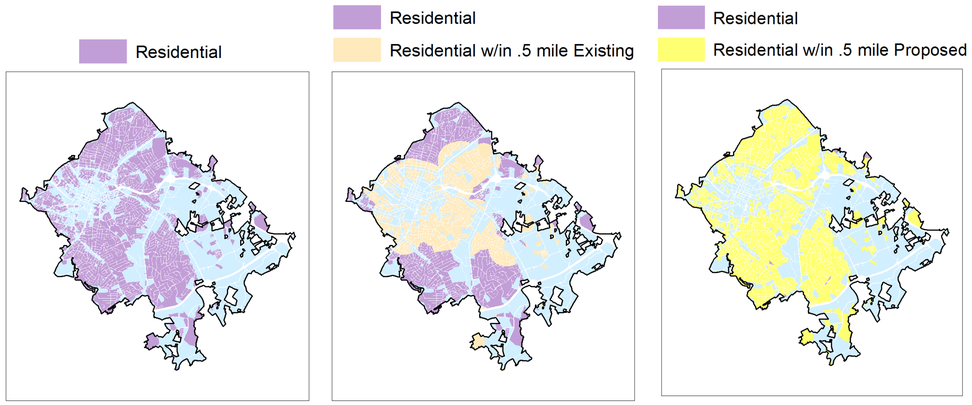
In the process of conducting my research, my first action was to decide what questions I desired to answer. I decided I wanted to assess if the Bike Master Plan would be accurate in covering the entire City within a .5 mile radius (which it states as its goal) and the improvements it makes regardless. I then wanted to research the percentage of the residential units that would be affected by the new additions. Finally I wanted to guess the amount of gas and miles that would be saved by the City if the amount of bicyclers increased proportionally to the amount of mileage added. I also wanted to create a visual representation of how much of the city would be within the .5 mile radius the trails and bike lanes.

While obtaining data, I was required to lookup Greenville City data such as parcels, streets, and City limits. I also sent an e-mail to the Greenville GIS department to ask for data on the current and future bike lanes and trails within the City. After accessing that data, I calculated the .5 mile buffer and labeling the trails and buffers as well. Afterwards I created separate residential parcels and looked into the percentage of residential parcels that would be affected by the trail. From this data I was able to measure various trail distances and apply previous data from the Bicycle Master Plan to arrive at a few hypothetical conclusions.

References

- Adler, B. (2011). Wheels of Progress. *Nation*, *29*(16), 22-24. Retrieved February 26, 2012, from the JStore database.
- Frankel, E., & Menzies, T. (2012). Reducing Oil Use in Transportation. *Issues in Science and Technology*, *28*(2), 51-58. Retrieved February 26, 2012, from the JStore database.
- Handy, S., & McCann, B. (2011). The Regional Response to Federal Funding for Bicycle and Pedestrian Project. *Journal of the American Planning Association*, *77*(1), 23-38. Retrieved February 26, 2012, from the JStore database.
- Providelo, J. K. (2011). Roadway and traffic characteristics for bicycling. *Transportation*, *38*(5), 765-777. Retrieved February 26, 2012, from the JStore database.

- **Rhetorical Precis available upon request.*

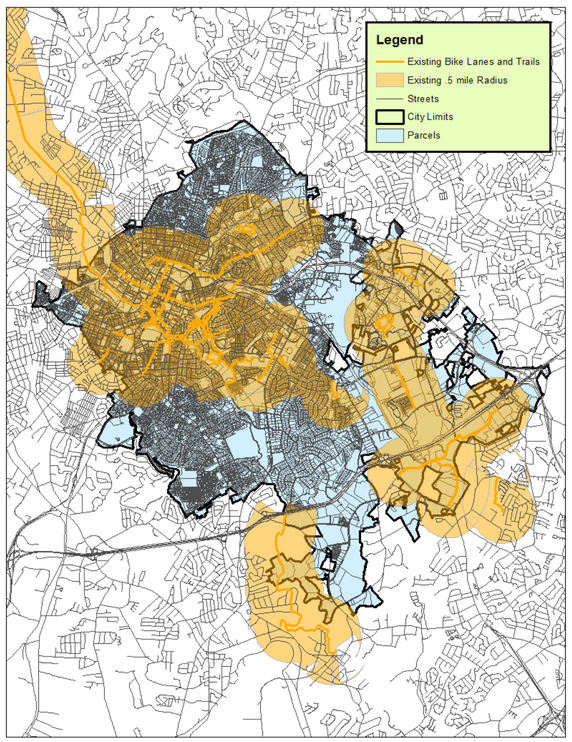


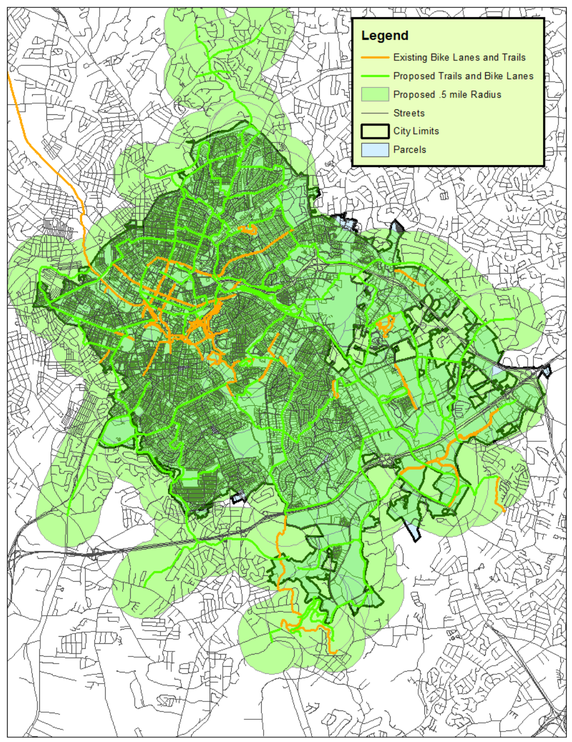
Results and Discussion

On the right is a table showing the different sizes and values of the varying residential parcels with measurements and proportions of sizes pertaining to existing and proposed conditions

	Total square miles	square miles w/ in existing trail	% in existing trail	square miles w/ in proposed trail	% in proposed trail
Parcels	23.87	13.08	54.80%	23.69	99.25%
Residential	12.02	5.74	47.75%	11.95	99.42%

Below are 2 maps featuring the current and proposed trails and bike lanes in Greenville. The map on the left shows the existing orange trails and bike lanes and the .5 mile buffer shown by the transparent orange. On the map on the right, we took away the .5 mile buffer on the existing trails and used green lines to show the proposed trails and bike lanes. The transparent green is indicative of the .5 mile buffer surrounding the proposed trails and bike lanes.





While many of the maps can represent the change that the Bicycle Master plan will bring, nothing can account for the potential environmental impact it serves to offset. On the right is a table showing the estimated gallons of gasoline saved due to the proposed implementation of the Bicycle Master Plan. While this data is very rough, several factors unaccounted for here could make the final number of gallons saved much higher or lower than it is stated.

Average Number of Trails and Bike Lanes on Spring Day currently	550
Average Number of Trails and Bike Lanes on Spring Day after proposed	1482.99
Proposed Length (mi)	156.93
Existing Length (mi)	58.25
Miles on Existing Trails and Bike Lanes in 2010	300,578
Average US mpg	20.6
Amount of annual gallons of gas saved due to trail usage	**39,342.82**

Conclusion

After evaluating the current and future conditions of the trails and bike lanes in Greenville, I would say that the future implementation of the proposed Bike Master plan is well designed and will be very effective. The largest piece of evidence for this would be the map in the lower left of the results and discussion section showing the future coverage of bike lanes in Greenville. If an individual was to move in from out of town and buy a residential property, there is a .58% chance that they would not be a minimum of .5 miles from the bike network. Through my research I believe that the Greenville Bicycle Master Plan will effectively help put a large dent in automotive travel, as well as supply a healthy and form of exercise for the average Greenville resident.

Future Research

While the data here provides a large grounding for bicycling in Greenville there is a need that could be filled in addressing the issue of replacing car travel. Over half of Greenville's working population commutes from outside of the City Limits. Research that addressed the increasing need for bicycle changing facilities at work places and bicycle routes that could replace commuting routes could serve as phenomenal baseline data as the City attempts to curb their automobile fix.

Data Sources

•City of Greenville. (2011, September). Department of Parks and Recreation, Bicycle Master Plan [PDF]. Retrieved from http://issuu.com/citygreenvillesc/docs/greenvillesc_bicycle_master_plan?mode=window&viewMode=doublePage

•City of Greenville. (2009). Department of Economic Development Greenville Comprehensive Plan [PDF]. Retrieved from http://www.greenvillesc.gov/PlanningZoning/CompPlan.aspx

•City of Greenville GIS. [shapefile]. Greenville, SC: City of Greenville, 2012.

•U.S. Department of Transportation (2009). Average Fuel Efficiency of U.S. Light Duty Vehicles . *Bureau of Transportation Statistics.* Retrieved April 12, 2012, from http://www.bts.gov/publications/national_transportation_statistics/html/table_04_23.html