A Spatial Assessment of Existing Bike Rack Locations and Usage

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**Abstract**

Furman University is considered a leading institution in sustainability, and promotes sustainable transportation by providing bike racks for bicycle storage. Yet there is no information on locations of bike racks or their usage available. Bike rack placement on campus is haphazard at best and uninformed by actual needs or use. The existing placement on campus is haphazard at best and uninformed by actual needs or use. The existing racks on Furman’s campus (as of Fall 2009) were observed for location, type, and usage, and were mapped as points on an orthophoto of campus to inform better bike rack placement.

Usage is distributed unevenly across existing bike racks. Racks that are completely unused and those that are overstressed were identified. Suggestions for rearranging existing bike racks and purchasing new ones were derived based on the results from this study. These measures, as well as providing additional support to bicyclists, would improve the sustainability of Furman’s bike program.

**Background**

- Many bikes sit unused on racks for long periods of time, taking up space (Getting There Greenly 2009).
- Bikes account for <4% total observed traffic (Getting There Greenly 2009).
- Public safety’s count of bikes on campus is an underestimate (only registered bikes are counted).
- Better placement and/or additional racks might encourage bike use (Getting There Greenly 2009).
- Designated moped parking areas and enforcement of moped use restrictions have created a safer bicycling atmosphere.

**Objectives**

- Create a map of the location of all existing bike racks on campus.
- Characterize use patterns of existing racks.
- Inform better bike storage planning and the overall bike program at Furman with regards to:
  - Rack placement.
  - Locations for covered bike racks.
  - Other measures to encourage bike use.

**Methods**

- Location, type, usage (actual bikes secured/near a rack) and maximum capacity of racks was observed and location noted on a 2008 orthophoto of campus.
- Observation times were limited to week days between 12-3:30 PM, October to November 2009.
- Due to time constraints, most bike racks were only observed once.
- Points and rack attributes were mapped on an orthophoto of campus using ESRI’s ArcGIS software.
- Use to capacity ratio was calculated for each rack.
- Rack location and use distribution, as well as “gaps” in bike rack placement were visually assessed.

**Results**

![Image Description](image1)

**Discussion/Conclusions**

Based on estimates of capacity and observations of use for each rack (Fig. 8). Furman bicyclists currently utilize about 50% of total available bike storage. Usage appears to have increased slightly, though this conclusion may be unreliable, as the survey of bike usage omitted some areas of campus, and double-counting may have occurred in both studies.

Locations that are lacking in adequate bike storage are the main entrance to the Science building, the front of the library, the front entrance of the Dining Hall, North Village and the side of Furman Hall facing the mall. Areas completely lacking in bike storage are the Cliff’s Cottage (soon to be offices for the Shi Center for Sustainability), the baseball fields and the Tennis Complex. Moving unused bike racks (e.g. two racks by the South Housing volleyball field, one rack from the front entrance of the music building) to different locations lacking storage would save Furman the cost of purchasing new racks.

Covered bike racks would make biking a more attractive transportation option, as bikes would be protected from the elements, keeping bicyclists’ bikes from rusting or the seats getting wet. High use bike racks that could be converted to covered racks are those in front of the library and the Dining Hall.

A maintenance/supply shop on campus would be extremely convenient for students, and would help ensure the safety of bicyclists. If bicyclists were supported in this way, mopeds or cars might become less attractive modes of transportation.

Providing support for campus bicyclists in the form of well-placed, secure storage should encourage more sustainable transportation choices. Additionally, providing adequate, safe bike storage might reduce bike theft and vandalism on campus.

**References**


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**Projection/Data Sources**

Projection: NAD 1983_HARN_StatePlane_South_Carolina_FIPS_3800_INT_Feed

Campus orthophoto: N:\Data\Greenbike2008\Aerial2008\COLOR_7.sid

Bike racks: N\users\hedden\Tori