

The Ohio State University
Campus as a Living Laboratory

The Ohio State University Bike Map

Emily Royer, Evan Brack, Paige Kobe

ENR 2367

OSU School of Environment and Natural Resources

December 4, 2013

Disclaimer

Ohio State's Campus as a Living Laboratory program provides students with the opportunity to share the findings of their studies, as well as their opinions, conclusions and recommendations with the Ohio State community. The reader should bear in mind that this is a student project/report and is not an official document of Ohio State. Furthermore, readers should bear in mind that this report may not reflect the current status of activities at Ohio State. We hope the ideas recorded here can be built upon by other students and researchers. We urge you to contact the persons mentioned in this report or appropriate Ohio State offices or departments about the current status of the subject matter of this report.

Campus as a Living Laboratory is a collaborative program of OSU Energy Services and Sustainability
Aparna Dial, University Director, Energy Services and Sustainability
Dial.15@osu.edu

Table of Contents

Executive Summary.....	2
Introduction.....	2
Background.....	2
Previous Student Bike Map Project.....	4
The Future of the Bike Map.....	4
Our Plan.....	5
University Classes.....	5
Replacing Brochures with Sustainable Methods.....	6
More Effective Implementation.....	7
Going Platinum.....	8
Involving Organizations.....	9
Conclusion.....	10
Literature Cited.....	11

Executive Summary

Ohio State needs a bike map to improve safety of travelers on campus and to make our university more bike friendly. We have evaluated an ongoing project at OSU led by a student to create a comprehensive bike map. The project has proven more complicated than anticipated, and while a first version of the map may be published in the near future, the map's sustainability and usefulness into the future will require new ideas and possibly additional funding. We propose changes be made to the existing project in order to make the map more sustainable and updated with our constantly changing campus. This will be achieved by using current technologies, university classes and organizations, and road markings.

Introduction

Bicycling is becoming a more predominant form of transportation in urban areas, particularly on college campuses. The Ohio State University is no exception to this trend. Not only has the number of bicyclists recently increased, but also the congestion on campus and the number of accidents involving bikers. After facing some serious accidents in fall of 2012, OSU created the Traffic Safety Task Force. Simultaneously, a group of students in Environment and Natural Resources (ENR) 2367 proposed a plan for a comprehensive bike map. They received a Coca Cola Student Sustainability Grant to create the map. This project is currently ongoing, requiring additional data collection and production steps before it will be ready for printing. The map will be designed to show bikers the least congested roads on campus. Once created, however, there will be a number of problems related to keeping the map updated with changing traffic patterns, construction projects, and new technology. As students who drive, bike, and walk to and from classes, we feel that further action is necessary to improve the current situation of biking on campus. Our research focuses on making recommendations to help OSU's bike map become a sustainable tool for campus safety and to encourage biking to help reduce OSU's carbon footprint. This bike map will create an environment of well-informed cyclists, while bringing a better flow of traffic on campus.

Background

In September of 2012, James Daniel Hughes was biking to class at OSU when he was hit by a dump truck on Woodruff Avenue. The truck veered into James, causing

him to lose his right leg and sustain damage to his pelvis and spine. Kristen Mitchell, writing for *The Lantern*, said the “crash was foreseeable and Ohio State did nothing to prevent it” (Mitchell, 2013). James sued the university for over \$25,000. As a result of this crash and several others during this time period, Ohio State created the Traffic Safety Task Force.

The Traffic Safety Task Force collected data that suggests there have been an increase in accidents that cause injury between vehicles and bicyclists from 2010 to 2012. The Task Force Report states that many people in the campus community believe that cyclists “do not know or understand the rules of the road. Many cyclists behave as pedestrians and do not know/understand that they are considered vehicles and are subject to the same traffic laws as motorists” (Kasey et al., 2012). However, many bikers on campus do not feel comfortable riding in the road and therefore do not follow traffic laws. Many choose to ride on the sidewalks, leading to the issue of biker and pedestrian accidents. Most sidewalks on campus are too narrow and congested for bikers and pedestrians to coexist. When a biker attempts to ride through congested sidewalks, they increase their chance of having collisions with people walking or running. There are three major concerns involving pedestrians on campus. First, many are not paying attention and are distracted by phones, headphones, and other electronic devices. Next is the issue of jaywalking and confusion regarding the rules for pedestrians. Lastly, many believe the infrastructure on campus is not conducive or safe for multiple modes of transportation. Combining unaware pedestrians with bikers on narrow sidewalks is a recipe for disaster. It is no surprise that this is the most common type of accident involving bicyclists.

Ian Peters and his peers began a project in ENR 2367 in 2012 to solve these issues. They created a plan to develop a comprehensive bike map for OSU. They applied for the Coca-Cola Student Sustainability Grant and received nearly \$4,000 for their plan. The grant was created for “student-led initiatives that support The Ohio State University’s goal to reduce greenhouse gases, conserve resources, and promote sustainability” (Isaacs, n.d.). The goal of Ian’s project was not only to promote biking as a sustainable mode of transportation on campus, but also to improve the safety of those who make the choice to bicycle.

Previous Student Bike Map Project

The Coca Cola Student Sustainability Grant covered the cost for road surveying, printing of 10,000 brochures, a graphic designer to create the map, and a display outside the RPAC. Road surveying determined the most congested roads on campus. Counts were taken at three different times, including morning, midday, and evening. Automobiles were sorted into one of three categories. Category A is passenger cars, pick up trucks, and motorcycles. Category B is large single unit vehicles (i.e. dump trucks and delivery trucks). Category C is large two unit automobiles (i.e. semi-trucks or tractor trailers). Cyclists were also counted and separated into those who ride on the street and those who ride on the sidewalk. The display outside of the RPAC is designed to include a pedestrian sign that presents the map on two sides, at a cost of \$4,100. A graphic designer currently working for Ohio State has been chosen to create the map.

There have been several issues since the beginning of Ian's project. One of his main problems has been a lack of manpower to get the data collected. According to Ian, by early fall of 2013, the project was only 15% completed (Peters, personal communication). The RPAC display would also use up most of the funding from the grant. Ian does not have the time or resources he needs to finish this project. He is now an Ohio State Alumnus and is no longer able to work on the project.

The Future of the Bike Map

The project now lies with Rob Osterfeld, who is heavily involved with Transportation and Traffic Management, the Strategic Planning and Communications Department, and is the Program Manager & Sustainability Coordinator at OSU. He realizes that a Bike Map is imperative to OSU and that it needs to be completed as soon as possible. Rob is working with Traffic Transportation Management and Facilities Operations Development to find employees to finish collecting data. He has received approval for the Coca-Cola grant to cover the full price of the RPAC display, and he has secured internal support to cover graphic design and data collection. He is also looking into additional contingency funds that can help support additions to the project. We are collaborating with Rob and proposing several ideas that we believe can help bring the project back to life and have it completed as soon as possible.

Our Plan

Based on the history of the bike map and the challenges that it presents, we have developed several ways to improve it for the future. Our focus for this project is to find ways to keep the bike map updated for the future and make the project more sustainable. The credibility of the map will quickly become obsolete if no thought is put into the long-term changes that will occur. A data analysis class and graphic design class can be used to keep the map updated. Using classes for data collection and map design not only reduces cost, but also provides students with real world projects that make a difference to their university. We will also examine other universities that are ranked highly by The League of American Bicyclists to draw upon bike map features that have been successful on other campuses. We will also analyze the possibilities of using the OSU Mobile App to provide students with easy accessibility to the map. The goal of this project is to encourage bikers to ride safely in the road at OSU. This includes educating pedestrians, bikers, and drivers by providing them with proper signaling techniques and rules of the road. The bike map will ultimately promote OSU as a sustainable campus by showing our commitment to environmentally friendly forms of transportation.

The bike map is designed to show the safest and most effective routes for bikers on campus. By providing bikers with this information, they will feel more comfortable riding in the street. This will help cut down on the number of pedestrian and biker conflicts. Cyclists consistently riding in the street will force drivers to become accustomed. The map is also designed to encourage more OSU commuters to bike to campus as opposed to driving. This bike map is vital if OSU's biking population continues to expand in order to ensure the safety of all travelers on campus.

University Classes

At the beginning of fall semester 2013, an ENR 2000 Data Analysis class gathered road-surveying data for the bike map. After speaking with Professor Lekies, the instructor for the course, we established that her class will collect data at the beginning of each semester in the future. This will keep the map updated in response to changing traffic patterns and constant construction. Using students in classes will have no cost and will provide consistent surveying. The students in ENR 2000 will

experience hands on research and tackle real life statistical problems. Overall it is a win-win situation for all, and could be a model for other projects as well.

Although OSU has a graphic designer on staff that has been chosen to create the map, we feel that it is more important for students to be involved in the map design portion of the project. We suggest using a graphic design class at the university to create the map. Again, we believe this will allow the students taking the course to gain real world experience. Students can collaborate to create a class map, or each individual can create a map and the best can be determined by vote. Students in the graphic design class will use the updated data from ENR 2000 to create a new map each semester. One department that could offer such classes is City and Regional Planning. Students majoring in this department focus on developing cities that are sustainable. Courses involving students with this major would benefit from developing a bike map that can be used on campus and throughout Columbus that promotes a sustainable mode of transportation. If a course cannot be identified to take on this map design task, another possibility is for Rob Osterfeld's office to host a map design contest for OSU students.

Involving students in this project as much as possible will have several benefits. The goal is to make as many students as possible aware of the bike map. This will help develop a more informed campus. Using classes will require no grant money. Lastly, students will form a sense of pride and deep connection with the university if they can contribute to a real project and see the results it brings. This will provide them with an exceptional learning experience that is unique to our university.

Replacing Brochures with Sustainable Methods

Ian Peter's original plan was to print 10,000 brochures of the bike map. To promote OSU as a sustainable campus, we suggest eliminating the brochure method of implementation. Instead, the map should be incorporated into all existing maps printed on campus. All freshmen are required to take a survey class where they receive a map of the university. Printing the bike map on these, along with safety tips, proper signaling techniques, dismount zones, and stations on campus to fix bikes, will build a better-informed student body. Similarly, maps are placed in OSU's *onCampus Guide*, a

newspaper available to individuals at OSU. The same format should be used to spread the bike map to those who receive this paper.

Next, we suggest incorporating the map into OSU's website and mobile app. Both currently have an interactive map. Since the technology has already been created involving a campus map, it would be quite simple to add the bike portion to the existing map. Google Maps has a biking option that allows bikers to get turn-by-turn directions, as well as view trails and bike lanes. Combining this with the mobile app would allow bikers on campus to plan their routes according to our campus biking map and Columbus's bike lanes. This would help provide a better transition to and from campus.

More Effective Implementation

There are many alternative options that can reduce the cost of the bike map. One method is to mark roads that are on the map, eliminating the need to print additional maps and therefore saving money and resources. Route markers would be easy to see while riding. Columbus already has a sharrow symbol for marking roads in the city. A sharrow signifies that bikers are allowed to ride in the center of the road. Some roads on campus already have this symbol. We would like to incorporate the design of the sharrow to signs around campus, signifying which particular bike route the rider is currently on. The signs would have different colors indicating the level of vehicular and pedestrian congestion for each road. For example, red would signify the highest level, yellow would be moderate, and green would be the lowest level of congestion. The inclusion of a map key would clearly state the connotation of each color. By placing these markers on existing signs, there would be no addition of roadway clutter. Once created, the sharrows could be moved according to new traffic patterns on campus. This would require little maintenance, would only have to be purchased once, and would last for decades. The price of route indicators remains relatively cheap, on average costing around "\$14.95 per sign for 12" x 18" Engineer Grade reflective aluminum signs" (Bike Route Sign, 2013). Another positive aspect is that the signs would be impossible to ignore for bikers, drivers, and pedestrians. Bikers would not have to look up a map to determine a route; instead, one would simply look at the signs while riding. Curiosity would also increase with the implementation of new signs, thus serving as a subtle advertisement promoting the use of the map.

Going Platinum

A good way to evaluate the current condition of OSU's bike community is to compare our campus to other universities. The League of American Bicyclists ranks the most bicycle friendly colleges around the nation. Schools like Stanford University, Portland University, and the University of California Davis have all achieved rankings of platinum or gold. These schools have well-organized bike routes for bikers of all skill levels and backgrounds. Universities are assessed by how well they meet criteria within the following five categories: engineering, evaluation, enforcement, education, and encouragement. Engineering includes the university having a well-connected bicycling network, bike parking readily available throughout the campus, and a campus that is easily accessible by bike. The evaluation section includes whether or not the school has a current comprehensive bicycle plan and if the school has a bicycle program manager. The enforcement section includes having a program on campus that prevents bike theft and if campus safety/law enforcement officers receive training on the rights and responsibilities of all road users. The education criteria require the school to offer bicycle education classes for students and staff. Finally, the encouragement section includes whether or not there is an active bicycle advocacy group at the school, and if there is an on-campus bike center for rentals and repairs (League of American Bicyclists, 2013).

The more standards that a university meets the higher they rank. Stanford University currently has a platinum ranking because they have met all the criteria of a bicycle friendly university in each of the five areas. Currently, OSU maintains a ranking of bronze, even without a bike map. This is due to good bike parking around university buildings and organizations that support bicycling such as Bike OSU. There is a lot of room for improvement in several areas of OSU's bicycle friendliness. In order to receive platinum ranking we must show excellence in every category. We must create a safe biking network that is comfortable for bicyclists. OSU must also have an exceptional bike education program and a police force that is supportive of biking. Lastly, there must be a very large biking population. Universities apply for rankings every four years. They can improve their status by meeting more criteria. Schools can also lose their status if they do not maintain their biking program. After the implementation of the bike

map, OSU will certainly rise in ranks. However, this should simply be the start of many improvements that will make Ohio State a more bicycle friendly university, and possibly someday reach a platinum ranking.

Involving Organizations

There are several organizations at OSU and throughout Columbus that we would like to involve in this project. Our end goal is to create a map that harmonizes with the city of Columbus's bike map. Bike signaling and rules need to be consistent within the city, including campus. This will create a more unified biking community with safer and more informed bikers, pedestrians, and drivers.

Bike OSU is a student run organization that is committed to creating a safe and fun campus for bikers. They are interested in encouraging campus and the surrounding community to bike while reducing the threat of danger. We suggest collaborating with them in order to get students more involved in this project. They can provide input and manpower to help finish the project. We intend on listing Bike OSU on the map to inform bikers about the organization. Facilities Operations and Development is an office at OSU that is dedicated to preserving OSU's physical assets for the future. They have a section of the department that is dedicated to Energy Services and Sustainability (ESS). ESS is responsible for leading Ohio State in becoming sustainable in every aspect of operations. Incorporating this department can provide some of the manpower and resources needed to collect data. In the future, both ESS and Bike OSU could potentially oversee the project to ensure the map stays updated.

The City of Columbus has a Department of Public Service that maintains and improves upon residents traveling safety, quality of life, and economic development. They have recently launched a 'Share the Road' campaign, encouraging citizens to ride to work and school. Mayor Coleman is adamant about informing Columbus that roads are for both vehicles and bikers. We intend on including Columbus's cyclist rules on the OSU bike map in order to create a uniform biking community. Many people commute to and from OSU from the surrounding Columbus area. There needs to be a seamless transition from on campus to off campus. Having the same rules will help reduce confusion and using similar road markings, such as the sharrow, will make this easier for bikers and drivers.

Conclusion

The Ohio State University is continuously striving to be the best school possible. This includes a huge effort to become a more sustainable campus. There are many initiatives on campus to push this idea. The number of bikers on campus has continued to increase in the past few years. The creation of a bike map would theoretically encourage even more people to bike at OSU. If creating a more informed campus can reduce the number of accidents, people will feel safer about biking. More people biking would mean less people driving on campus. This would potentially lower OSU's overall carbon footprint and make the campus more sustainable for the future.

With all of these additions to Ian's previous proposal, we feel that the bike map will stay updated in the future and the project will be more sustainable. Using university classes will help involve the student body and allow for real world experience for students. Road markers will require fewer resources than printing brochures, which would need to be reprinted each time changes are made to the map. Adding the bike map to existing university maps, the mobile app, and our website will allow for high visibility to OSU faculty, staff, and students. Involving organizations at OSU will spread awareness and help continue the project for years to come. Using the same rules and symbols as the City of Columbus will allow for a simple transition for people biking to and from surrounding areas of campus. With these changes, the bike map will be hard to ignore, and increased awareness of the bike map will create a safer community.

With all of these suggestions, we believe the biking community at OSU will be improved greatly. However, there may still be people who will not feel comfortable riding in the street and will continue to ride on the sidewalk. Some may simply disregard the proper signaling techniques. Others may not follow the rules of the road. Even with all of these possibilities, we believe that it is Ohio State's duty to continue with the bike map. This will give bikers the opportunity to create a much safer campus to ride through. Even if a single accident is avoided because of the bike map, it will be worth it.

Literature Cited

- Bike route sign: Bike route [with symbol] (2013). *Road Traffic Signs*. Retrieved from
<http://www.roadtrafficsigns.com/signs/bike-route-sign/sku-k-7906.aspx>
- Isaacs, D. (n.d.). *Coca Cola Student Sustainability Grant winners*. Retrieved from
<http://studentlife.osu.edu/articles/coca-cola-student-sustainability-grant-winners>
- Kasey, J., Adams-Gaston, J., Evans, M., Burgess, A., Komlanc, L., Readey, L.,
. . . Denton, P. (2012, September) *Traffic Safety Task Force report*.
Retrieved from
<http://ap.osu.edu/FileStore/Hosting/SharetheRoad/TSTFReportFinal.pdf>
- League of American Bicyclists (2013, September 16). *Current Bicycle
Friendly Universities Spring 2013*. Retrieved from
<http://www.bikeleague.org>
- Mitchell, K. (2013, September 20). Civil suits proceed 1 year after Ohio
State student struck by dump truck on campus. *The Lantern*. Retrieved from
<http://thelantern.com/tag/james-daniel-hughes/>
- Parking and Transportation Services at Stanford University. (2013, September
18). *Bicycling at Stanford*. Retrieved from <http://transportation.stanford.edu>