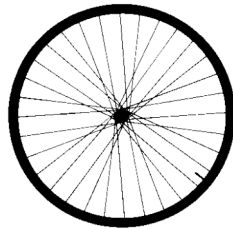


Kalamazoo Bike Works



Evaluation of Strategies to Increase Western Michigan University's Bicycle Ridership

Environmental Studies 4100: Appropriate Technology and
Sustainability – The Campus as a Living Laboratory

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Executive Summary:

The lack of safe, well-defined, non-motorized corridors connecting the main campus of Western Michigan University with the downtown and residential areas of Kalamazoo encourages the use of personal automobiles for transportation to and from campus. Coupled with an absence of affordable bicycles and cycling education, this has significantly decreased the number of students using non-motorized transportation to commute to campus.

This perpetuates a situation that is undesirable for all stakeholders – WMU, the City of Kalamazoo, and the environment as a whole. Western is negatively affected by factors such as higher parking infrastructure costs, decreased student productivity (due to lack of exercise), and increased automobile traffic congestion. Kalamazoo businesses miss opportunities to serve students that cannot safely and confidently make their way downtown, leading to other missed opportunities for student recruitment and retention because students are not exposed to all the city has to offer. Automobiles emit greenhouse gasses and other pollutants into the atmosphere and perpetuate a fossil fuel economy with devastating environmental impacts.

This project - Kalamazoo Bike Works - sought to identify levers for increasing bicycle ridership at WMU. The authors of this report have assumed that the “health, environmental, and economic benefits” of cycling are widely recognized. According to a previously conducted survey by WMU students, 99% of Kalamazoans do not need a reminder¹. Therefore, this report focuses on how to move towards increased bicycle use, not why we should do it.

Four methods were used to assess potential options for meeting this goal – interviews, best practices comparisons, policy research, and physical inspection of infrastructure. First, interviews were held with local cycling advocates, WMU administrators, bike shop owners, and others to establish a history of previous work. Second, extensive research was conducted into community and campus bike initiatives across the continent to identify best practices. Third, policy and planning documents were analyzed to discover government strategies for increasing non-motorized vehicle use. Fourth, surveys of existing infrastructure were conducted on bicycle throughout campus and at gateways to Kalamazoo.

Our research indicates that there is an aggregate lever for increasing bicycle ridership formed of three parts. The first – infrastructure - refers to bike lanes, signage, side paths, and other engineered improvements to campus and its gateways. The second part is affordability, referring to the cost of bikes and maintenance. The third necessary part of this lever is education, both in terms of safety and navigation; many students, especially first or second year, do not know their way around town.

Because of heavy financial constraints, infrastructure is currently the least practical part to tackle. We have come to realize that campus and city officials are working hard to address our concerns, but with the current Michigan financial crisis change is extremely difficult. However, affordability and education can and should be addressed on campus while the slow process of capital improvement is undertaken. We propose to address both of these parts with a student-run, campus bike shop serving as a

¹ Campbell, Et. Al. 2006. Making Kalamazoo A More Bike Friendly City. Unpublished.

vender of high quality, used bikes; a public access shop for inexpensive repairs; a library of cycling information for the WMU community; a training center for student mechanics; and a starting point for free downtown orientation rides.

Introduction:

During the 2004 academic school year 27,829 students were enrolled at WMU, with 5,440 of these students living on main campus¹. Assuming that 22,000 students were enrolled and attending main campus (excluding those who attended the engineering college, the aviation college, etc.), over 16,000 students were in need of transportation to and from WMU at any given moment. Current WMU infrastructure provides 8063 parking spaces for student and commuter parking. The disproportionate number of parking spaces available compared to the number of student commuters propagates an undesirable amount of automobile congestion.

Furthermore, a strong emphasis on motorized transportation is incompatible with WMU's commitment to advancing "responsible environmental stewardship" and contributing to the "economic development" of Kalamazoo². Indeed, the Master Plan for Western Michigan University has identified non-motorized flow to and from campus as a priority. The first six "significant issues" listed in the Master Plan involve vehicular congestion, pedestrian traffic flow, and campus entrances³.

Continuing with this theme, our initial survey of WMU's campus gateways showed that most were extremely unsafe for cyclists. Most included hazards such as potholes, debris, poorly routed crossings of multi-lane converging roadways, and poor signage. Initial inquiries also suggested that WMU students and faculty were unaware of safe cycling routes and practices, or did not have access to bicycles.

Methodology:

Three central methods were employed to gather data for this project – interviews, research of best practices, and analysis of legislation/planning documents.

Our vast interview process included several prominent figures in Kalamazoo's bicycling community. We conducted interviews with contributors to the 1999 Kalamazoo Non-Motorized Transportation Plan (NMTP), current and past presidents of the Kalamazoo Bicycle Club (KBC), owners of three local bike shops, and administration officials at WMU. All of these individuals provided such valuable insights that we are seeking to continue our interviews to include city officials.

We also evaluated best practices in "bicycle friendly" communities and universities. Our initial focus was on different models of student bike shops, but expanded into programs, infrastructure, and policy. Communities examined included Ann Arbor, Madison, Chicago, Portland, Seattle, New York and many others.

¹ <http://www.recyclemaniacs.org/profile/2004/wm-michigan-univ.htm>, provides the number of students that lived on campus ca.2004.

² http://www.cpec.wmich.edu/docs/masterplan/masterplan_summary_full.pdf, Western Michigan University Master Plan.

³ WMU Master Plan

Institutions of higher education included Michigan State, University of California at Davis, University of Wisconsin, University of British Columbia, Oberlin College, etc. U.C. Davis is particularly noteworthy as its Bike Barn was recently featured in *The Chronicle of Higher Education* (February 23, 2007).

Our final method was to research legislation and planning documents related to non-motorized transportation. We extensively reviewed the Kalamazoo Non-Motorized Transportation Plan and its intentions regarding WMU. We also analyzed WMU's Master Plan to evaluate its possible impacts on student cyclists. Several other important documents were reviewed, including material from the Michigan Dept. of Transportation (MDOT), the U.S. Dept. of Transportation (USDOT), and the Michigan Legislature.

Best Bicycle practices on Campus

There are several examples of good practices on WMU's campus. Currently it has adequate bicycle infrastructure within main campus because of low speed limits, traffic calming measures, and abundant bike and pedestrian pathways. The new West Campus roundabout is a good example of what can be done, as the intersection of Howard and West Michigan Ave. is now a bicycle friendly area. The implementation of bike lanes and a side path furnish the gateway with a safe entrance. It is also worth noting that the WMU Master Plan contains several features that will make other gateways such as Howard & Stadium and Oliver & Stadium more pedestrian and bicycle friendly.

Best Practices at other universities and communities

The League of American Bicyclist maintains a list of bicycle friendly cities, which we used as a starting point for our research¹². We found a plethora of noteworthy practices, some universal and some suited to particular geographic and cultural locations. We have chosen to include only those practices suitable to Southwest Michigan, and in some cases WMU specifically.

Davis, California:

Davis was one of the first cities in the U.S. to actively start planning for and incorporating the bicycle into its transportation infrastructure, as well as being the first to begin using traffic control devices. The city has two full-time bike coordinators - plus staff - and two bicycle advisory committees. In Davis there are more bikes than there are cars, and the city has bike lanes on 95% of its roads. So far the city has spent more than \$14 million dollars on bicycle projects alone in the last 10 years. The city also estimates that 20 - 25% of all trips are being made by bicycle

¹ Bicycle Friendly Communities 2006

http://bicyclefriendlycommunity.org/Images/bfc_pdf_pages/bicycle_friendly_community_case_study.pdf
(Accessed 4/20/07)

² Bicycle Friendly Cities 2003

<http://bicyclefriendlycommunity.org/pdf/BFC%20case%20study.pdf>
(Accessed 4/20/07)

University of California - Davis

The campus at UC-Davis holds a semi-annual public bicycle auction where hundreds of abandoned and unclaimed bikes are sold¹. The campus offers bicycle repair and maintenance courses that are open to everyone and are taught at the Bike Barn through the ASUCD Experimental College². The Bike Barn also provides a tool loan service for students, faculty and staff, and offers bike commuters showers and lockers.

Eugene Oregon:

Eugene has a policy framework that incorporates bicycling and other alternative transportation modes into all aspects of the city's transportation system. This includes requirements for new development to accommodate and enhance bicycling and a provision for an integrated system of bikeways throughout the community. During new development bicycle facilities are designed into projects from the outset - not added on as an afterthought. Eugene is equipped with an ample number of bicycle racks, and bike paths that are well lit. It is also home to very good bicycle education programs for children.

University of Oregon:

The following statement illustrates U. of Oregon's commitment to the tenets of a bicycle friendly university:

The Department of Public Safety strongly encourages bicycling as a way of responsible transportation. One of the most important lessons learned at the university is the value of our surrounding environment. The health of a community is a result of its accumulative actions, and bicycling is a means of promoting both personal and community health.³

University of Oregon also has a Bicycle management plan⁴. It established a plan of current and proposed bicycle circulation facilities, which is coordinated with and tied together with the City of Eugene's bicycle paths and routes. This system is in place and identified with standard bicycle route signs. UO has also created and will maintain a bicycling map that shows bicycle parking areas, dismount zones, and bicycle routes. The university also distributes City of Eugene bicycle route maps when they are available.

Tucson, Arizona:

Tucson and the surrounding 7 regions have included bike lanes or paved shoulders on new roadways and reconstruction projects to connect the communities together. Tucson, Oro Valley, and PAG have full-time Bicycle Program Coordinators and Pima County has three full-time bicycle staff - a Bike-Ped Program Manager, a Safe Routes to Schools Coordinator, and a Bike-Ped Educator.

¹ UC-Davis Bicycling Program. www.taps.ucdavis.edu/bicycle/ (Accessed 4/20/07)

² UC- Davis Bike Barn <http://bikebarn.ucdavis.edu/> (Accessed 4/20/07)

³ University of Oregon Department of Public Safety <http://safetyweb.uoregon.edu/bicycling/index.htm>

⁴ University of Oregon Bicycle Management Program
<http://www.uoregon.edu/~uplan/plandoc/BicycleManagementProgram.pdf>
(Accessed 4/20/07)

In the area there are over 475 miles of bike lanes, 100 miles of bike routes, 55 miles of shared use paths and 7.5 miles of bus-bike lanes. Tucson won national recognition for innovative bicycle and pedestrian signalization, which provide safe crossings at mid block crosswalks using median islands or adjusted signal timing. The community also started a cyclist education program that uses league certified instructors to teach proper bicycling. Last year, the Regional Transportation Authority (RTA) passed a funded 20-year transportation plan that includes \$80 million for bicycle and pedestrian improvements.

Chicago, Illinois:

The Millennium Park Bicycle Station is in the heart of downtown. It is a \$3 million dollar facility in the Central Business District (CBD). The bike station provides indoor bike parking, showers, repairs, bike rentals, car-sharing services, Internet access, guided bike tours, children's bicycle camps and bicycle registration. The mayor hired eight-full time bicycling Ambassadors who teach drivers how to interact safely with cyclists, and educate children and attend community events to deliver bike safety and road sharing information. With Chicago's new pro- bicycling policies and developments has come a great increase in ridership in the city.

University of Wisconsin - Madison

UW-Madison has a Bike Annex, which is a hands-on bike workshop¹. The facility offers UW staff and students the opportunity to check out professional quality tools for free and work on their own bike maintenance needs. It is a collective tool concept, where tools are shared (free of charge) for public good, however no bike mechanic is on staff to advise or repair bike problems. If a person needs a bike repair they have to take the bike to a bike shop.

UW-Madison also features what is called Flex-parking². The Flex Parking Program allows students to bike, bus, carpool, vanpool or walk to campus. Flex Parking is for those few times when driving is necessary. The program allows a person to combine the alternatives that work best for them. Flex Parking is a pay-as-you-use program - the less you park, the less you pay.

Ann Arbor, Michigan:

The city council of Ann Arbor has made a long-term commitment to earmark 5 percent of state gasoline and weight tax revenues for non-motorized transportation purposes. This is exemplary since they and all of Michigan are only required to use 1% to non-motorized transportation.

¹ UW-Madison Bike Annex <http://www2.fpm.wisc.edu/trans/TDM/Bicycling/BikeAnnex.htm> (Accessed 4/20/07)

² UW-Madison Flex Parking Program
<http://www2.fpm.wisc.edu/trans/TDM/Flex.htm#Flex%20Parking%20Eligibility>
(Accessed 4/20/07)

Also, the city has joined the bike winter campaign, which was initiated to encourage cyclists to bike year round. The program encourages people to ride throughout winter by scheduling rides, social events and winter bike workshops.

Portage, Michigan:

Portage was listed as a bicycle friendly city in May of 2004. Portage's most significant accomplishment was that it completed the 2-mile Northwest Portage bikeway, a \$346,000 off-road trail partly funded by a MDOT grant. Portage is also known for its bike lanes - any new roads that are repaved or built must contain a bike lane.

Discussion:

Our interviews, while invaluable, yielded mostly similar results from all parties. It was made abundantly clear to us that the university and city were amidst budget crises (facts we were already aware of). What we were not aware of was how little was spent on non-motorized transportation in the first place (as noted earlier, in Michigan a meager 1% of infrastructure funding). We were confronted with all kinds of issues like Kalamazoo's narrow streets (which make it more difficult to install bike lanes) and the separate responsibilities of MDOT, USDOT, and the City of Kalamazoo to maintain roadways. For example, all three of them share separate responsibilities for the intersection of Stadium (Red Arrow Highway), Oakland, and Michigan Avenue (M-43/Business I-94). So, figuring out who was in charge of the roads and intersections we wanted fixed was a project in itself.

Our interviewees also pointed almost unilaterally to the Kalamazoo Non-Motorized Transportation Plan (KNMTP). This plan proved difficult to find at the Kalamazoo Public Library, but after some searching we dusted it off. After copying the pages directly related to WMU, we went for a bike ride. Unfortunately, those improvements listed in the plan affecting WMU either hadn't been made or were not as functional as we would have liked. For example, the intersection of Lovell, Stadium, and Oakland was recently modified to match KNMTP maps, but is still absolutely terrible to ride through. This intersection was a reoccurring gripe throughout the writing of this report (two of us live downtown and commute up Lovell) but we came up with exactly zero ways to improve it short of a multi-million dollar pedestrian bridge or tunnel.

So many of the people we interviewed were working hard on infrastructure and policy improvements that we felt we could be more useful elsewhere. Thus, we sifted through our best practices data to identify program and shop models we might emulate.

First, we looked at "free-bike" programs where bicycles were left haphazard around a campus or city for anyone to ride. We found that in the U.S. these bikes often ended up broken, tossed into trees and rivers. So, free bikes were out. We then sifted through bike co-op models and rental programs before looking closely at UC-Davis's Bike Barn.

The Bike Barn and other programs like it (such as Bike Kitchen in San Francisco and Bike Works in Seattle) were attractive for WMU because they could be inexpensive to start and actually teach participants usable skills. We were resistant to starting a regular bike shop because there are two excellent shops in town already, Alfred E. Bike and Breakaway Bikes, and thought we could provide something else. Lucky for us, Paul Wells and Doug Stevenson, owners of both shops, were happy to hear that we could

potentially supply them with semi-experienced mechanics. Another added benefit of this project – we could be creating student jobs!

Limitations of Analysis and Future Work:

As with any analysis, this report is incomplete. There are many more people we would have liked to interview - such as city commissioners and engineers - who we were unable to meet with before the submission of this document. There are also countless other bike programs we did not unearth (although those listed here are by no means all that were surveyed). Also, much of the data we relied upon - such as the Kalamazoo Non- Motorized Transportation Plan – is dated by almost a decade. This report makes numerous assumptions due to what was available.

Future work in this area could include a number of things. One suggestion would be to survey the WMU population with a questionnaire about their commuting habits. This would be useful to the campus administration in allocating funds and designing new facilities. Another would be to initiate a GIS project to map bike routes from campus to downtown Kalamazoo, with the goal of distributing maps to incoming freshmen and transfer students. Also, this project did not rigorously investigate incentive programs to bicycle commuters (such as discounts at local businesses, etc.). Last, a detailed critique of the KNMTP could be conducted, identifying which parts of the plan have or have not been done since 1999.

Lastly, it must be noted that we wanted a student bike shop from the beginning. We believe the data suggests that a shop - combined with other factors - will help increase ridership. But, we're not trying to fool anyone; the goal from the outset of this project was to start a non-profit bike shop.

Conclusions:

While we were unable to identify any specific correlations between singular best practices and increased ridership (i.e. installation of additional bike lanes or the availability of a campus bike shop) we found three key practices that, when used together, will have the desired outcome. These practices are to:

1. Provide safe and adequate bicycle infrastructure
2. Make bicycles and maintenance affordable to students
3. Educate students on safe bike routes and riding strategies

Safe and adequate bicycle infrastructure means cyclists are able to ride safely in traffic, whether it is in regular lanes (with low speed limits and traffic calming), bike lanes, or side paths. As outlined in a previous section, WMU has adequate bicycle infrastructure on main campus. However, there are many opportunities for improvements to periphery and gateway areas. Although the new West Campus turnaround can be taken as an example of a best practice for cyclists and pedestrians, major changes are needed at the Northeast gateway (Lovell, Stadium intersection). Changes at the Howard and Oliver gateways could also increase the safety of riders, and security could be improved in periphery areas (such as the Howard/West Michigan area)

with the installation of additional bike racks. It is the conclusion of this report that the university administration is trying hard to address these issues and that until the State of Michigan is in a better financial position major changes to infrastructure will be extremely difficult. In other words, we are trying to be patient.

WMU currently has no programs in place to address the affordability of bikes and maintenance to students or to educate the campus community in bicycle safety or route planning. The following recommendations deal mostly with these latter portions of our aggregated lever.

Recommendations:

In order improve WMU's bicycling environment, we would like to make the following recommendations:

Campus Bike Shop

The WMU administration should assist in the establishment of a student led bike shop on campus. This shop should refurbish used bikes to sell at an affordable price, provide mechanical service and training, and act as a center for cycling education. The shop should provide low cost tool rentals and free maintenance instruction. Specific needs would be:

- A 500-1000 square foot space somewhere on or near main campus. Suggested locations other than main campus include any of the dormitories, East Campus, or anything between East Campus and Main Campus (Physical Plant area of Oakland)
- \$2000 seed money for tools and an initial supply of parts.
- Legal council for start-up period of shop
- Permission to use universities non-profit status for bike donations and tax exemption
- Liability insurance through university

Guided Rides

A student led program should be established to offer weekly, guided bike rides to students from campus to downtown Kalamazoo. We believe this will be beneficial to both students and the university administration – students will gain riding and navigational skills, and their increased exposure to Kalamazoo's cultural, business, and recreational amenities will increase student retention. Specific needs would be:

- Legal council for creation of waiver forms
- Agreements with local businesses to provide discounts/tours/etc.

Planning Representatives

Student and/or faculty bike commuters should be included in campus planning decisions affecting cyclists. We realize that infrastructure improvements are extremely expensive, difficult, and long-term, but that understanding does not always permeate the university community. Student/faculty involvement will help promote a relationship of patience and respect between all stakeholders, and the input of cyclists will help planners avoid good intentioned but ineffective strategies for non-motorists.

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