

University of Illinois at Urbana-Champaign

Bicycle Sharing Feasibility Study

Background, Potential, and Next Steps

Facilities & Services

2012

As commissioned by the Student Sustainability Committee

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Chapter 1: Introduction

Introduction

The University of Illinois at Urbana-Champaign (UI) seeks to serve the needs of its current and future students, residents, faculty, staff, employees, and visitors. It is an institution that seeks first and foremost to provide a quality education to its students, provide key resources for learning, and help develop the potential of all who come to campus. Additionally, the University seeks to give a voice to those who bring new ideas to its attention during their time here.

The Student Sustainability Committee (SSC) is dedicated to working with the University to provide resources to encourage sustainable projects on this campus. Bicycling as a means of sustainable transportation has been an interest of the SSC for many years, and a bicycle sharing program was included as a priority in the 2010 Illinois Climate Action Plan (iCAP) for implementation by 2012.

In order to clarify the viability of a bicycle sharing program at the UI and in the surrounding community, a close analysis of the local area was completed. The geography, demographics, economics, and available infrastructure will all play a role in defining the feasibility of a bike sharing program, as well as determining the economic sustainability of such a system.

Partnerships with key players in the local bicycle and transportation sectors are crucial in understanding not only the current but also historic needs of the campus and surrounding community. The SSC made such a partnership with the UI's Transportation Demand Management (TDM) department in Facilities & Services for bike sharing upon approving the proposal to fund this study in Spring 2011.

The TDM department at Facilities & Services is responsible for UI oversight of the transportation systems for campus. These include the physical infrastructure and support programs and services for walking, biking, transit, and driving on campus. The streets within the University District fall under the jurisdiction of multiple entities, including the UI, the Cities of Urbana and

STREET OWNERSHIP & SPEED LIMIT MAP

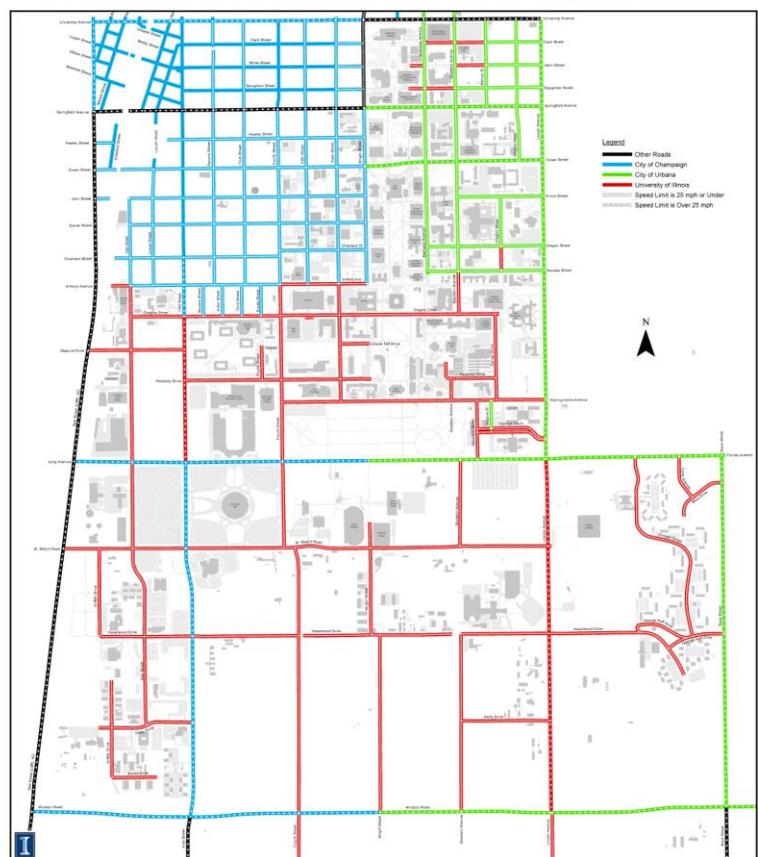


Figure 1: Street Ownership & Speed Limit Map. UI only owns about one third of the streets on campus, and very few of the streets in the central core of campus.

Champaign, and the Illinois Department of Transportation (see figure 1). These agencies coordinate together and with other important transportation agencies like the Champaign-Urbana Mass Transit District (MTD) and the Champaign County Regional Planning Commission's transportation arm, the Champaign-Urbana Urbanized Area Transportation Study (CUUATS). Specific to the University District, an interagency agreement was signed by Urbana, Champaign, the UI, and MTD to coordinate all transportation decisions, as the Campus Area Transportation Study (CATS).

TDM has also collaborated with the SSC to improve bike parking areas throughout campus and initiate the Campus Bicycle Shop, which is a collaboration with The Bike Project of Urbana-Champaign, where students and visitors can repair, maintain, or make changes to bikes. Funding for the bike sharing feasibility study was requested by Michael Hites and Mike Lyon, and SSC approved it with the condition that the study would be coordinated by TDM.

This report is the result of the study and the work of the many entities involved. Research for this report was conducted over the summers of 2011 and 2012, with the aid and input of many local organizations, governing bodies, and stakeholders, all of whom are dedicated to making this program a possibility within the near future. This study needed a timeline extension to allow a survey assessment of campus to be conducted during spring 2012.

Message from Study Coordinator, Grace Kenney

The University of Illinois at Urbana-Champaign is home to thousands of students, some spending as little as a few weeks on the campus and others spending their entire lives involved with the institution. The actions, policies, services, and projects supported by this University are of utmost importance, as each one, whether perceived as small or large, does have an impact on the daily lives, habits, and thoughts of the students, faculty, and staff sharing this environment.

It is my personal belief that this University would not only benefit by implementing a bicycle sharing program, both environmentally and economically, but that it would make a positive impact on those traversing the campus, whether for a short or long time. The health impacts are straightforward; the other social impacts are more difficult to achieve, yet have such potential to change and shape the way people experience and interact with this campus.

Why bicycle sharing and not just a focus on the improvement of bicycle culture? The two go hand in hand. Bicycles currently are an individual choice – if one wants one, a bicycle can be bought for a low price and used at the owner's leisure. Bicycle ownership is for those who are already interested in riding, have some sort of vested interest, and feel comfortable riding a bicycle as opposed to taking the bus, walking, or driving a car. Additionally, many people who own bicycles often don't use them as much as they could. Bicycle *sharing*, on the other hand, brings a formerly unknown element to the concept of riding bicycles: community. Instead of it being an individual decision or responsibility, through a campus-wide service, users and potential users can connect through knowledge of the service, through a feeling of safety (as others are using the bicycles and there is higher visibility for bicycles bearing similar slogans, colors, branding, etc.), and of knowing that the bicycle is cared for, well-maintained, and available when needed.

This concept is what has been missing from the campus bicycle culture at large, and if introduced through careful marketing campaigns and through such a program centered on this idea, it can not only affect the current users of bicycles, but those who previously had not been a bicycle rider. *Availability – convenience – safety – belonging* – these concepts are absolutely crucial in encouraging increased usage and awareness. Out of this comes an impact on individual habits – in a culture where bicycling is accepted and encouraged through a variety of services and facilities, individuals will find it easy to create habits corresponding to that of the local culture. When it comes time for those individuals to leave campus, the habits formed here will accompany the users and participants into their next location and local community, bringing the goals and practices encouraged here around the globe, for a much greater impact.

Not only is this concept of community needed for the campus cycling community, but the **environmental impacts** of such a program can also be impressed on users and those in the local community. We live in a culture of hyper-consumption. A bicycle produces fewer greenhouse-gas emissions per mile than a motor vehicle, but a bicycle is still a product and requires energy and materials to be manufactured. With a shared system, the use of a single product is instantly increased. One bike can have 8 or more riders in a day, perhaps 120 minutes or more of use, as opposed to one rider and only 30 minutes. This is efficiency, this is conservation, this is green.

The concept of sharing transportation resources is not new to the campus either – the Zipcar® program for car sharing has seen great success – and using this sharing concept to achieve greater communal and individual benefits will resonate with students... perhaps leading to bright business ideas by Illinois students, research in

current marketing strategies, sociological studies on the impact of communal decisions, or innovative products that aid existing programs to be less wasteful and more efficient.

We are a University that has prided itself on the excellence and quality of our **research**. With the rise of bicycle sharing worldwide, we have the opportunity to create such a system on our own campus, while monitoring its implementation, usage, progress, and degree of success. We have raw data waiting to be collected, analyzed, and publicized. We have the ability to create value for Illinois students through research opportunities, experience, and also for those outside of the Illinois system. Such an opportunity cannot go overlooked – in this rapidly more popular market, Illinois can have an impact and bring quality research and findings to campuses, cities, and countries around the world, especially in these times of environmental concern. Our international University has a large impact on research and projects in other countries – with such a timely, impactful project we can make a direct impact on the quality of life for both our community and others around the world.

A bicycle sharing system is not only something this campus has been pursuing for quite some time, but something it can gain much from, and give much to. With the right implementation and the right partnership with University departments, organizations, and local entities, this program will aid in creating a well-rounded experience for those who use it, and it can create value for many more within and beyond the Illinois system.

I highly recommend a three-tiered approach for bike sharing implementation, so it will aid different demographics effectively and provide excellent case studies for research and analysis. The proposed program as outlined later in this report consists of: a short-term bike rental system and a scalable departmental bike sharing model and, both of which can be implemented relatively quickly and affordably; and potential options for a student-targeted program to be considered after certain critical steps are taken to prepare the campus for a wide-scale bike share system. The reasons for multiple tiers in the program are backed by analysis from case studies of other tried and true systems, as well as the findings of a campus-wide survey of potential users.

This kind of system comes at a great time for the bicycle sharing field, and we have the ability to jump on this opportunity for the benefit of all related parties. Illinois definitely has the potential to be a leader in the national green movement, and a ‘mover and shaker’ as well.

Sincerely,

Grace R. Kenney

Transportation Demand Management Bicycle Intern
Bicycle Sharing Program Feasibility Study Coordinator
May, 2012

Feasibility Study Process

Student Sustainability Committee Funding

As part of the initiative to improve the local bicycling culture, environment, and infrastructure, the SSC funded the feasibility of a bicycling sharing program at the UI. This study came as a result not only of recent interest, but from a history of student initiatives to bring such programs to campus. This study was funded by the SSC and also overseen by campus experts and local community stakeholders in the form of a Steering Committee. The text from the funding allocation letter is shown here:

“This proposal seeks to conduct a feasibility study of different options for implementing a bike-sharing program at the University of Illinois. A feasibility study for this project is a necessary step before implementation of a campus bike sharing project can be considered, in line with the Illinois Climate Action Plan. University bike-sharing programs exist in different forms across the country and the challenge is finding a model that will be highly used by students as well as being mostly self-sustaining. Committee funds will be used to support a half-time summer intern as well as for other expenses relevant to the study, with any unspent funds held for implementation of improvements to campus bicycle parking infrastructure. The SSC will fund this project with \$10,000.”¹

The SSC website includes the following description of who they are and what they do: “We are securing a cleaner, safer, lasting sustainable environment for the University of Illinois. We are students of this university and stewards of our future world.”² The SSC allocates funding collected through the Sustainable Campus Environment fee and the Cleaner Energy Technologies fee to fund projects that fit the fee requirements. According to the 2010 “*Bylaws and Operating Procedures of the Student Sustainability Committee*” the funds from these fees go to projects that include “sustainable campus development, green buildings, energy efficiency, sustainable resource purchasing, and education and campus engagement in order to create a more sustainable campus environment.”³

It is with these guidelines in mind that the following report has been prepared, keeping in mind “sustainable campus development,” “energy efficiency,” “sustainable resource purchasing,” and “education and campus engagement” have priority in the creation of any program serving the UI students.

Steering Committee Members

Urban Planning undergraduate student Grace Kenney was hired as the Study Coordinator to conduct the feasibility study. Grace was guided by Morgan Johnston, Sustainability and Transportation Demand Management Coordinator, Amelia Neptune, Sustainability Specialist, and Mike Lyon, bicycle sharing co-champion. As a mechanism for communication with stakeholders, a Steering Committee was formed to review progress, discuss issues, and provide feedback.

¹ SSC website <http://sustainability.illinois.edu/ssc/projects.shtml>.

² SSC website homepage: <http://ssc.union.illinois.edu/>

³ Bylaws and Operating Procedures of the Student Sustainability Committee 2010: <http://ssc.union.illinois.edu/downloads/Bylaws-SSC%202010%20Final.pdf>

The Steering Committee members are as follows:

- Rebecca Bird (Planner II, City of Urbana)
- Michele Guerra (Director of Wellness Center, University)
- Michael Hites (Vice President, University)
- Cynthia Hoyle (Transportation Planning Consultant, C-U MTD)
- Morgan Johnston (Sustainability and Transportation Coordinator, University)
- Grace Kenney (TDM Bicycle Intern, University) (FY09-FY12)
- Katie Kinley (Student Sustainability Committee, University), (FY12)
- Rhonda Kirts (Associate Dean of Students, University)
- Rick Langlois (CITES @ University, Vice President of Champaign County Bikes, and member of Campus Transportation Committee)
- Gabe Lewis (Transportation Planner, CCRPC/CUUATS)
- Mike Lyon (Assistant Vice President of Computer Operations, University)
- Amelia Neptune (Sustainability Specialist, University)
- Ari Sahagun (Student Sustainability Committee, University), (FY11)
- Carl Stewart (Campus Bike Project, The Bike Project of Urbana-Champaign), (FY11-12)
- Mishauno Woggon (City Planner, City of Champaign), (FY11-FY12)
- Jane Sullivan (Intern, C-U MTD), (FY12)

Methodology

This study was conducted according to the following methodology:

Review literature and past research

Documents from 2009 which were produced while the Study Coordinator worked at MTD were re-assessed in order to gather information useful to the new study. From this, the missing information and issues were found, which laid a framework for determining which new data needed to be gathered and which entities to contact.

Gather new information on campus and recent literature

All documents pertaining to bicycle use on campus were gathered and reviewed, in order to understand the problems facing the campus historically and physically. An understanding of campus issues was developed, which was useful in determining possible implementation methods and needs in terms of marketing, education, and outreach. Recent international literature was researched in order to discover the new technologies available to larger bicycle sharing systems, and articles on programs started at other campuses provided relevant case study comparisons.

Seek input from community partners

The Steering Committee included local stakeholders to provide input to the feasibility study. This group met during summer 2011 and the 2011-2012 school year to discuss the expectations and demands of a potential bicycle sharing system, critique the suggestions and findings. The Study Coordinator also met one-on-one with each committee member to discuss their organization's role, concerns, and expectations.

Conduct interviews of experienced bicycle sharing communities

Based on Steering Committee feedback and assessment of literature, universities that had already implemented bicycle sharing programs of differing types were contacted and interviewed, most in person and some by telephone. These interviews provided input for the Case Studies chapter.

Review of interviews and current literature

After committee members and case study contacts were interviewed, follow up questions were sent via email, so the Study Coordinator was able to delve deeper into the issues faced by college campuses when implementing bicycle sharing programs. Loopholes and missing information were identified, and another assessment of literature was made in order to fill in the missing pieces related to environment, climate issues, and infrastructure needs.

Survey of Potential Users

After an initial set of survey questions were drafted by a Steering Committee member, these questions were modified and further developed by a partner class of TDM, ENG 315: LINC (Learning In the Community) to create a full-scale survey of the entire campus and Champaign-Urbana community. The students worked on the survey in Fall 2011 and it was finalized and opened to respondents in Spring 2012. The results were compiled in Summer and Fall 2012 and are included in this report.

Compilation

The Study Coordinator prepared the documents from 2011 and 2012, utilizing the new information and updating it according to Steering Committee feedback.

Limitations

As with every study, there were limitations to the process. The following factors had an impact on the scope and scale of the feasibility study process:

In order to best assess how to conduct a feasibility study for the UI, much consideration was given to existing feasibility studies and case studies of other universities. These of course were not perfectly comparable and did also show the Study Coordinator where the limitations were in assessing the feasibility of such programs for the UI. Few university and college programs have provided detailed financial information about their programs or the cost breakdowns for specific aspects of their programs. Many of these campuses did not have a measure of success either. No universities have publicly shared a feasibility study on bike sharing on their campus.

In addition, this community boasts a unique geography compared to other locations that have existing bicycle sharing programs, or have conducted feasibility studies to consider such programs. Finding studies that were comparable to our micro-urban setting was difficult; thus, the reports used for comparison were not completely applicable to our campus.

Goals & Objectives

The mission of this feasibility study is to analyze the potential for a bike sharing program on the UI Campus. The Steering Committee helped identify a number of goals and objectives that a bike sharing program can help campus achieve.

Goals

1. Fulfill the commitment from the 2010 Illinois Climate Action Plan (iCAP) to “create and implement a bike sharing program by 2012.”⁴
2. Increase safety on campus, by offering convenient active transportation options for traveling on and around campus and reducing average daily trips in the University District.
3. Enhance the support for bicyclists in the University District by strengthening and enhancing a bicycle culture and community on campus with appropriate attitudes and knowledge for safe riding.
4. Increase health of employees, students, visitors, and community members by offering bicycles for their use.
5. Reduce vehicle miles traveled and associated emissions by providing support systems for campus travelers that do not bring a car to campus.

Objectives/Benefits

- **Mobility** for employees – providing transportation options that assist University employees to conduct their duties and responsibilities in an efficient, environmentally-friendly manner
- **Safety** through reduced motor vehicle traffic – reducing the amount of motor vehicle traffic in areas with complicated infrastructure or high pedestrian volumes
- **Health** through increased physical activity – providing methods for employees and students to add more movement into their daily routine, thus impacting alertness, health, longevity, and more
- **Environmental** benefits of reduced motor vehicle traffic – reducing greenhouse-gas emissions, decreasing impervious surfaces for parking lots, decreasing need for road maintenance
- **Social** benefits through enhancement of bicycling culture – supporting a culture that sees cycling as a preferred transportation mode choice, and a community that respects and works with the different transportation options
- **Convenience** factor – providing efficient transportation choices to aid users in arriving at destinations quickly and safely by reducing the need to always be in search of a bicycle or car parking area as well as the need to have to do own maintenance on bicycles
- **Economically** self-sustaining – implement a system that will pay for itself and reduce transportation costs for the campus community
- **Research** opportunities – provide the potential for research in urban planning, kinesiology and community health, marketing, environment, engineering, and more, with opportunities to publicize findings internationally
- **Education** campaign – participate with the campus-wide bicycle education campaign, by creating a platform for information sharing
- **Enhanced Image** of the Campus – Implementing a bicycle sharing program would improve the campus’ standing as a preferred employer and be an attractive feature for prospective students. This could positively impact recruitment and retention.

⁴ Illinois Climate Action Plan, May 15, 2010: <http://sustainability.illinois.edu/CAP.html>

Chapter 2: Background

Explanation of Bicycle Sharing

What is bicycle sharing?

Bicycle sharing programs come in many forms. The general concept is that multiple bicycles will be set aside for short-term communal use – whether in a region, city, town, campus, business or college department. The bicycles are owned by no single individual, but anyone in the community can have access to the bicycles, according to time, cost, and type of journey limitations.

What kinds of programs exist?

Early examples of public bike share programs were free, with or without locking devices, and were either managed by the public sector or a non-profit organization. Problems arose with such systems. They were easily vandalized or stolen since there was little or no accountability for users and maintenance was often performed by volunteers.

These systems later evolved to integrate more accountability for users such as: bicycle libraries that loan bicycles out on a short-term basis, charging late fees and fees for damages or theft; and kiosk systems that automatically lock/unlocks the bikes, tracks where and when and by whom bikes are checked out, and then charges the user based on that information. Advanced kiosk models have also begun to track information and metrics for users such as miles ridden, calories burned, pollution avoided, and greenhouse gas emissions reduced.⁵ As monitored systems and more complex infrastructure and technology have increased, so too have the costs for maintaining such systems. Smaller-scale programs, such as bicycle libraries, are often covered by grants and funding from a university or other entity, while larger-scale programs, like those found in major cities, are cost-based and charge both a membership fee to use the program and additional fees based on time, damage, or distance traveled from a hub or zone. Corporate sponsorship has also provided a source of funding for the kiosk-based programs in some cities.

Chapter 4 shares real case studies of a range of bike sharing programs implemented on university and college campuses, to explore how these different programs may work on this campus.

Why offer bicycle sharing?

- Bicycle sharing is a means to introduce students, employees, and others to the benefits and ease of using a bicycle as a means of transportation, and thus serves as a tool to encourage new ridership and promote mode shift from single occupancy vehicles.
- Bicycle sharing provides bicycles to visitors, groups, and short term residents who may not own or bring a bike with them to the area.

⁵ Westervelt, Amy, "Bike-Sharing Grows Up: New Revenue Models Turn a 'Nice Idea' into Good Business," Forbes.com, August 22, 2011. <http://www.forbes.com/sites/amywestervelt/2011/08/22/bike-sharing-grows-up-new-revenue-models-turn-a-nice-idea-into-good-business/>

- For people who commute to campus by automobile or bus, bicycle sharing provides a sustainable and active option to travel more quickly and efficiently throughout the day.
- Bicycle sharing helps build healthy communities, and provides the opportunity to connect students with community members throughout the Champaign-Urbana area.
- Bike sharing is a visible sign of the University's commitment to sustainability.

The purpose of a bike sharing program is to improve the health, sustainability, and economic vitality of the Urbana-Champaign community, by increasing the use of environmentally-friendly active transportation options such as bicycles.

Direct effects of a bike sharing program are lowered costs of car pollution, reduced need for car-related infrastructure, such as parking lots, and lowered costs of healthcare. Convenient multimodal travel would increase, as well as the culture of health and sustainability. There are many health issues with lack of activity, including obesity, diabetes, heart disease, and more. Among existing bike sharing programs, studies have shown that these programs have proven benefits for both users and cities in the areas of improved health, reduced traffic incidents, and reduced carbon dioxide emissions.⁶

According to a 2009 study of bicycle sharing systems worldwide the general benefits of bike sharing are as follows:

- "Greater mobility
- Greater quality of human life and health found through exercise
- Reduced traffic congestion leading to quieter, safer and more livable streets
- Reduced carbon emissions (Green House Gases)
- Retention of 18-34 years of age demographic
- Further reinforce community's position for leading in innovation and quality of life
- Creates employment opportunities
- Provides transportation-based case study prospects
- Increased amounts of disposable income for users
- Increased public transit ridership
- Greater environmental awareness across community
- Reach destinations unable to be served by public transit"⁷

In addition, there is much to be said for community programs. Riding a bike is an independent choice, but it is made much easier by realizing that others are riding bikes as well on the same lanes, streets, and paths. If using a bike-share bicycle, safety concerns are reduced as riders not only have a visible solidarity, but know that the bike they ride has been maintained, is safe, and is one that many others trust as well. Additionally, an increase in ridership resulting from any form of bike sharing, or other bike advocacy efforts, can have a positive effect on the rate of safety for all cyclists. A study of the bicycle community in Portland, Oregon, found that as the number of

⁶ Rojas-Rueda, David, "The health risks and benefits of cycling in urban environments compared with car use: health impact assessment study," *BMJ.com*, August 4, 2011. <http://www.bmj.com/content/343/bmj.d4521.full>

⁷ Taken from CityRyde LLC's "Bicycle Sharing Systems Worldwide: Selected Case Studies." http://www.collaborativeconsumption.com/assets/CityRyde-Bicycle_Sharing_Systems_Worldwide-Selected_Case_Studies.pdf

daily bicycle trips in the city increased, the rate of bicycle crashes decreased, as shown in Figure 2.⁸ Having more bicycles on campus can serve to increase awareness and visibility of cycling, and thus encourage cyclists, drivers, and pedestrians to become more aware of each other, and to act more safely in each other's presence.

What is the prevalence of bicycle sharing?

Bicycle sharing programs are in existence all over the world. Kiosk-based systems are growing in popularity for large cities, especially in Europe and the USA. There are more than 300 bicycle sharing programs worldwide, with a growing amount in the USA in particular.⁹ Large, city-scale programs often employ the aid of advertising

companies to help fund the systems, along with additional membership and usage fees, while many campuses have opted for less infrastructure-intensive systems such as bicycle-loaning library systems.

Due to their relative nascence, there is limited information analyzing the success of these various programs, their impact on local communities, or the factors leading to success. With the increased demand for bicycle sharing programs, as well as increased focus in the news about existing programs, this is a field to be developed further as more groups seek to understand what kinds of bicycle sharing programs would best suit their needs and how they can use bike sharing to their greater benefit.

History of Bicycle Efforts at UI

Timeline of Events

The UI campus has a history of pro-bicycle activities and actions, as shown in the following studies, reports, and programs:

1999 – Campus Area Transportation Study (CATS)

The Campus Area Transportation Study committee was formed in 1999 with representatives from four entities (UI, Champaign, Urbana, and MTD) to focus on campus transportation issues. They produced a report then and continue to function to this day.

2006 – The Bike Project of Urbana-Champaign (TBP)

A bicycle cooperative was formed, with the following mission: “The Bike Project is a non-profit, charitable organization of bicycle users whose mission is to educate and empower the community by providing a welcoming space to learn about bicycle repair, engage in maintenance practices, and promote safe operation through outreach and advocacy activities.”¹⁰

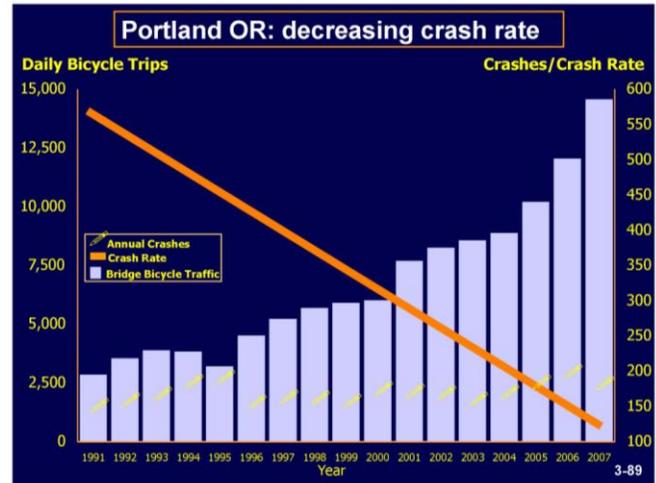


Figure 2: The decreasing bicycle crash rate that accompanied an increase in daily bicycle trips in Portland, OR.⁸

⁸ LaPlante, John “Designing for Bicycle Safety” presentation, Champaign County Regional Planning Commission Workshop. October 10, 2012.

⁹ <http://www.bbc.com/travel/blog/20110909-travelwise-bike-sharing-around-the-world>

¹⁰ The Bike Project By-Laws <http://thebikeproject.wikispaces.com/Coop+Bylaws>

2007 – UI Multi-Modal Transportation Study

The study was conducted by Martin Alexiou Bryson (MAB) Consulting at the request of the UI in order to identify ways to encourage active transportation on campus.

2008 – Illinois Cross-Campus Bicycles (ICCB)

This research was conducted by the Department of Kinesiology and Community Health (KCH), to study employee activity. When their SSC grant request was denied, KCH decided to fund the program and implement it themselves.

2009 – Parking System Review Committee (PSRC)

The committee was led by the Faculty Senate Committee on Operations, and was composed of faculty, staff and students. The PSRC provided recommendations to the Chancellor, including recommendations supporting bicycling and active transportation. The Faculty Senate Committee on Operations worked to get a resolution from the full Faculty Senate that all the recommendations should be implemented. This committee continues to have strong interest in resolving bicycle issues for campus.

2009 – Request for Proposal (RFP) for Bicycle Sharing Programs

Undergraduates in an entrepreneurship class researched and presented on international and USA programs of different scales and wrote an RFP with MTD funding and supervision.

2010 – Campus Bike Project

The University and The Bike Project of Urbana-Champaign developed a Facility Use Agreement to open a campus location for The Bike Project. Facilities & Services and SSC were heavily involved in providing funds, and the Office of Sustainability worked with the Prairie Research Institute to identify and allocate space for the campus location.

2010 – Illinois: A Climate Action Plan (iCAP)

The iCAP documented how campus will become a leader in sustainability. It included bicycle sharing as a goal to be achieved by 2012, as well as finalization and completion of the Campus Bicycle Master Plan.

2010 – Bike Parking Priorities Survey

This informal survey conducted by Facilities & Services of students, faculty, staff included questions on bicycle sharing programs, and other bicycle topics.

2011 – University District Bike/Transit Safety Study

With funding from MTD, this study was conducted by T.Y.Lin International. It assessed bicycle transportation issues in the University District, including issues of safety between bicycles and busses.

2011 – Bicycle Sharing Feasibility Study

Michael Hites and Mike Lyon acquired SSC funding for a feasibility study for bicycle sharing programs on the UI campus and greater community.

2011 – Bicycle Friendly University

The UI was named a Bronze-Level *Bicycle Friendly University* by the League of American Bicyclists.

2012 – Campus Bicycle Shop

The Bike Project and the University agreed to update the Facility Use Agreement regarding the Campus Bike Project. It was renamed the Campus Bicycle Shop and is now managed by a University employee in TDM. The Campus Bicycle Shop is a collaboration with The Bike Project of Urbana-Champaign.

Bike-Share Milestones

Over the years, different groups and stakeholders on the University campus have tried, largely unsuccessfully, to start bicycle-sharing programs. Bicycle awareness and infrastructure improvement campaigns and projects have also increased, with collaboration from many stakeholders. These actions have led to this feasibility study for a bicycle sharing program on campus. Without the combination of the events leading to this point, this study would not have occurred.

In **2005**, residents at Allen Hall attempted to start a bicycle sharing program, but it was not able to become self-sustaining due to logistical conflicts. Their efforts later turned into The Bike Project of Urbana-Champaign.¹¹

In **2007**, the Multi-Modal Study was conducted in order to better understand how to encourage bicycling on the campus.

Also in 2007, the Department of Kinesiology and Community Health launched a proposal for the Illinois Cross-Campus Bikes (ICCB), a departmental bicycle sharing program. It started as a study in **2008** and continues to this day, serving the faculty, staff, and graduate students of KCH.

In **2009**, the Parking System Review Committee included bicycle sharing as a recommendation. Grace Kenney and Masha Stul researched and presented on international and USA programs of different scales, drafting an RFP for future use. The RFP is available from TDM upon request.

Grab-a-Bike at the University started in **2009** as a class for engineering students, ENG 298. The program was formerly called B'Sharing – Bike sharing at UI – and there have been no updates past 2010 on the website.¹² The class has since become a “Learning in Community” (LINC) Engineering 315 class – with a model solar-powered locking kiosk (prototype) created in Spring 2011. They also built a multi-functional bicycle as part of the class, which was assigned to an F&S employee as a pilot departmental bicycle. In Fall 2011, Facilities & Services became the project partner for the class, which is now called UI Bikes, and focuses on a wide range of bicycle topics, including bike sharing.

¹¹ <http://www.jag-wire.net/demos/bikes/about.html>

¹² <https://sites.google.com/site/cycletopay/>

The **2010** Illinois Climate Action Plan (iCAP) included the goal to have bike sharing on campus by 2012. An informal survey of students, faculty, staff, was conducted in 2010 and included questions regarding acceptance of bicycle sharing and potential usage.

In **2011**, Michael Hites and Mike Lyon requested and received SSC funds for a bicycle sharing feasibility study, which resulted in this report.

In **2012**, the Transportation Demand Management department released a campus-wide bicycle sharing survey to help inform this study. The survey received 1,169 responses from students, employees, and community members over the course of the 2-month survey period.

Additionally, Campus Recreation offers mountain bikes and tandem bicycles, available for \$10-25 a day. The tandem bicycles are reportedly well used on weekends during warmer months, while the mountain bikes are not as well used. Campus Recreation also supplies a bicycle for its employees who need to travel from one Campus Rec location to another for work.

Chapter 3: Existing Conditions

When assessing the feasibility of a bike sharing program in a locality, a number of factors specific to that location have an impact on the potential success of the program. Analyzing characteristics of the local physical landscape, climate, seasonality, socio-economics, and geography is absolutely necessary in determining the potential likelihood of increasing cycling rates or the viability of a bicycle sharing program. In the following pages, we present an analysis of the factors that would hinder or encourage a bike sharing program in Champaign-Urbana.

Climate

Champaign-Urbana's climate is moderate with four distinct seasons each year. During winter the area has approximately 4-6 months of cold weather, and a fair amount of snowfall. The following chart illustrates average temperature and precipitation in the Champaign-Urbana area¹³:

Month	Average High (°F)	Average Low (°F)	Average Precip.	Average Snowfall
January	32.9	16.7	2.05"	6.8"
February	37.7	20.2	2.13"	5.8"
March	49.9	30.0	2.86"	2.6"
April	62.8	41.1	3.68"	0.4"
May	73.4	51.6	4.89"	0.0"
June	82.5	61.9	4.34"	0.0"
July	85.0	64.9	4.70"	0.0"
August	83.7	63.1	3.93"	0.0"
September	78.2	54.2	3.13"	0.0"
October	65.2	42.6	3.26"	0.1"
November	50.6	33.0	3.68"	0.9"
December	36.7	21.2	2.73"	6.6"
Annual	61.7	41.7	41.38"	23.2"
The average date of the last spring frost is April 15				
The average date of the first fall frost is October 17				

Table 1: Illinois State Water Survey, Monthly Averages for Champaign-Urbana, IL, based on 1981-2010 normal period.

Heaviest precipitation occurs during the summer months of May through August. This coincides with the summer vacation dates set by the University and local school districts. November through March have the heaviest snowfall, leaving April, September, and October with the most ideal weather for cycling. Though many cyclists in the area continue to bicycle year-round, winter months could pose some difficulty for less experienced cyclists in the community, as roads are not always quickly plowed, and neither Champaign nor Urbana have a legal mechanism to require homeowners to take responsibility to shovel or salt the sidewalks adjacent to their properties. Only in certain districts are property owners required to remove snow and ice. These areas include the two downtowns, Campustown, the University District, and on Urbana safe walking routes around the public elementary schools. According to the City of Urbana website, some roads are given top priority, such as high-

¹³ <http://www.isws.illinois.edu/atmos/statecli/cuweather/cu-averages.htm>

traffic city roads, while smaller residential streets must wait until primary roads are first plowed before being cleared.¹⁴

The majority of campus cyclists do not continue to bicycle during the winter months, taking the bus or walking to class instead. The dangers of snow on pavement, as well as many bicycles that are not equipped for such weather, do influence the campus body, as further illustrated in the T.Y. Lin study.¹⁵ In their survey of 580+ respondents, 210 of those who decided not to cycle to class, did so due to uncertainty of weather. Thus, it can be understood that weather conditions do have a negative impact on the probability of cyclists riding to and about campus. These factors should be kept in mind in planning any kind of bike-share program, particularly for student riders.

Socio-Economic Factors

Community Demographics

According to the US Census 2010,¹⁶ Champaign County is 70.9% white, (and not of Hispanic descent), 12.4% African-American, 8.9% Asian, 5.3% Hispanic. 10.9% of the population are foreign-born persons. 15.1% speak a language at home other than English. In Champaign, 17% speak another language at home, while in Urbana, this number is 24.3%.

In Champaign County, 92.3% of the population has graduated from high school, and 41.2% have attained a bachelor's degree. There are 11,779 veterans. 20.5% of the population was below the poverty level in 2010, with Champaign at 26.2% and Urbana at 29.8%. High levels of poverty are common in university towns due to the low income of most full-time students.

There are over 996 square miles in Champaign County, with about 202 people per square mile. For Champaign, there are 22.43 square miles, with 3,613.2 people per square mile. For Urbana, there are 11.65 square miles of land, with 3,539.6 people per square mile. There were over 87,000 housing units in Champaign County, 35.2% of which were in multi-unit structures. In Champaign, 42.3% of housing units are multi-unit structure, and for Urbana, 55.7%.

The mean travel time to work for workers age 16+ is 16.9 minutes.

UI Demographics

The University of Illinois is a predominant factor in influencing the local demographic of Champaign-Urbana. Champaign County has a total population of 201,081 and campus enrollment is 42,605. Of the total campus population, there are 31,932 full-time undergraduate students, 10,673 graduate and professional students, and 10,838 faculty/staff.¹⁷ 33% of students live on campus, with 67% living in either the surrounding communities or commuting from a different location. The average commute distance for those living off campus is about three miles.

¹⁴ "In the Know About Snow," January 5, 2011. <http://urbanaininois.us/residents/snow-removal-information>.

¹⁵ T.Y. Lin International, "University District Bike/Transit Safety Study," June 2011. (Appendix C, page 43.)

¹⁶ <http://2010.census.gov/2010census/>

¹⁷ <http://illinois.edu/about/overview/facts/facts.html>

Means of Transportation to Work

The 2005-2011 American Community Surveys listed the following as the means of transportation to work by place of work in Champaign County for workers aged 16 and over:¹⁸

	2005		2006		2007		2008		2009		2010		2011	
	#	%	#	%	#	%	#	%	#	%	#	%	#	%
Total:	87,026	100%	93,390	100%	93,206	100%	95,270	100%	94,583	100%	97,494	100%	96,257	100%
Car, truck, or van - drove alone:	63,036	72.4%	64,268	68.8%	64,844	69.6%	65,525	68.8%	64,877	68.6%	67,194	68.9%	65,270	67.8%
Car, truck, or van - carpooled:	8,825	10.1%	7,624	8.2%	8,322	8.9%	8,491	8.9%	8,388	8.9%	8,781	9.0%	8,088	8.4%
Public transportation:	4,583	5.3%	6,377	6.8%	5,887	6.3%	5,550	5.8%	5,061	5.4%	5,449	5.6%	6,237	6.5%
Walked:	5,641	6.5%	8,133	8.7%	8,140	8.7%	9,048	9.5%	9,581	10.1%	8,993	9.2%	8,553	8.9%
Taxicab, motorcycle, bicycle, or other means:	2,999	3.4%	2,441	2.6%	2,954	3.2%	2,926	3.1%	3,190	3.4%	3,146	3.2%	3,026	3.1%
Worked at home:	1,942	2.2%	4,547	4.9%	3,059	3.3%	3,730	3.9%	3,486	3.7%	3,931	4.0%	5,083	5.3%

Table 2: Champaign County Means of Transportation to Work by Place of Work, 2005-2011

We can see from this table that the vast majority (over 67%) of workers in 2011 traveled alone by car, while between 5-10% of the working population chose to either carpool to work, use public transportation, or walk to work, respectively. Finally, only 3.1% of the County population used other means of transportation to travel to work, including bicycling.

UI Bicycling Culture

UI Support for Bicycles

The University of Illinois has a broad range of stakeholders involved in promoting and enabling bicycles as a mode of transportation and in exploring solutions to improve the resources and infrastructure for bicycles on campus. In addition to a few staff in Facilities & Services' TDM department who are responsible for bicycle improvements on campus, there are several courses that allow students to explore bicycling topics academically. The most directly-related course is the *UI Bikes* section of the Learning in the Community (LINC) Engineering 315 course, which assigns a number of hands-on bike related projects for students each semester, under oversight of TDM.

Additionally, many student groups and organizations help to promote a healthy culture of cycling and to keep the campus informed about bicycling. Registered Student Organizations (RSOs) such as Illini 4000 and the Illini Cycling Team all have a role in supporting bike culture on campus. The Campus Bicycle Shop, a collaboration between the University and The Bike Project of Urbana-Champaign, serves as a resource for students and others in the community to learn to repair and maintain bicycles. It also fosters a strong community for cyclists by offering a place for riders and bike enthusiasts to gather on campus. In addition to open shop hours, the Campus Bicycle

¹⁸ Source: U.S. Census Bureau, 2011 American Community Survey

Shop hosts a weekly ride for anyone interested each Friday at 5:30, and in the future will be offering bike mechanics classes.

On an administrative side, the Campus Transportation Committee and the Campus Area Transportation Study (CATS) function as bicycle advisory committees for the campus. The Campus Transportation Committee advises TDM regarding campus transportation policies and other major decisions on behalf of the University, while CATS focuses on the entire University District. CATS meets quarterly to discuss issues and provide solutions for transportation-related topics.

In the broader community, the local organization Champaign County Bikes (CCB) exists to “make Champaign County ... the most bicycle friendly county in the Midwest.”¹⁹ They advocate for cyclists and promote bicycle education and awareness both on campus and across Champaign County. The University has partnered with CCB and other external players on a number of initiatives such as Champaign-Urbana Bike to Work and School Day, the Champaign-Urbana Area Bicycle Map, and improved bicycle parking pilot studies. CCB membership is open to anyone in the community, and several university staff and faculty have served on the CCB Steering Committee and/or the CCB Executive Board.

UI Bicycle Education

With the various groups described above, the UI promotes safe cycling through a number of bicycle education efforts. Public Safety Day occurs each fall semester in September, and features safety information related to all modes of transportation, particularly focusing on cycling and walking. The University helps to organize and fund the Light the Night event annually, where volunteers install 800 sets of bike lights on bicycles for free every year and educate riders that using a light on your bike at night is required by law in Illinois. Light the Night volunteers also share information about the importance of following rules of the road when cycling, encourage cyclists to register their bikes with the campus, and provide additional resources for riders about safe cycling habits. Facilities & Services staff also host an informational table about bikes and other sustainable transportation options at Quad Day every fall, as well as at other campus fairs, expos and events year-round.

As previously mentioned, the Campus Bicycle Shop provides resources, tools, and educational information to empower individuals with knowledge about how to repair and maintain bicycles. The Bike Project of Urbana-Champaign offers regular courses on basic bike maintenance with additional classes on advanced maintenance topics held as needed, primarily in the early spring and late summer months. Champaign County Bikes is a key player in bicycle education and awareness campaigns. The [C-U Area Bicycle Map](#) has information on state traffic laws, rules of the road, safe cycling techniques, and tips such as how to use a bike lock and proper helmet fitting. The Division of Public Safety has produced materials about safe cycling habits, and our officers speak at student orientation and host Public Safety Day each year.

The University and its partners have conducted public service announcements, produced campus newsletter/paper articles, and contributed to new student/hire packets to promote cycling and raise awareness about the rights and responsibilities of cyclists. The Champaign-Urbana Safe Routes to School Project displays educational information on some billboards for motorists and cyclists on safe road sharing etiquette. In 2011, the Cities partnered with support from other bicycling groups in the area and the League of Illinois Bicyclists to

¹⁹ <http://www.champaigncountybikes.org/>

produce a video titled “[C-U Sharing the Road](#).” That video is now broadcasted through various media on a regular basis, and is available online via YouTube.

There are many bicycle safety classes offered on campus and in the community, from bike rodeos for grade school children, to day-long training sessions from national organizations, including [Cycling Savvy](#) and the [League of American Bicyclists](#). As of October 2012, the Champaign-Urbana area has five League Certified Instructors (LCIs) who are able to teach cycling courses such as [Traffic Skills 101](#).

Despite these efforts, bike education does not currently reach every student, and efforts must be made to expand educational resources to reach a broader audience. Many students are unaware of the rules of the road, and do not understand that the Illinois Vehicle Code applies to cyclists when riding in the street. Furthermore, the current degraded state of bike infrastructure contributes to the safety hazards by encouraging unpredictable and often erratic behavior among cyclists on campus. The University would be well served to continue to increase and improve the bike safety education made available to students, employees, and others who may ride on campus.



Figure 3: Side bike path along Gregory Drive, displaying faded paint and interrupted by concrete barriers. Photo by Geoff Merritt, 2012.

Infrastructure

Campus Bikeways

The existing bicycle infrastructure on campus includes a mixture of off-road bicycle and shared-use paths, as well as some newer on-street bike lanes. The majority of the campus bicycle system is intermixed with pedestrian walkways, resulting in countless conflicts between pedestrians and bicyclists. The campus also contains many side paths where bikeways run adjacent to the street, separated from vehicular traffic by a curb or concrete barrier. Many smaller streets on campus are not specifically marked for bicycle traffic, but the Illinois Vehicle Code allows cyclists to ride on any city street, whether or not that street contains designated bike lanes or signage.²⁰ The

vast majority of the bikeways on campus were constructed over 30 years ago, and have not been maintained or repaired in over a decade, due to funding cutbacks. As a result, the campus contains many degraded, worn, and potentially dangerous bicycle paths in need of improvement.

The 2007 Multi-Modal Transportation Study identified numerous issues with the existing bikeways on campus. The majority of these paths are not up to current national safety standards. They have been left unmaintained for over ten years, with piecemeal changes causing disconnection and unclear directions for travel. In their existing condition, most bikeways on campus are dangerous to use.

The campus transportation plan identified a number of issues with the current bicycle system, listed here:

- Typically, the paths end before they reach the intersection, leaving bicyclists to mix with pedestrians at street corners.

²⁰ 625 ILCS 5/Ch. 11 Art. XV

<http://www.ilga.gov/legislation/ilcs/ilcs4.asp?DocName=062500050HCh%2E+11+Art%2E+XV&ActID=1815&ChapterID=49&SeqStart=125200000&SeqEnd=127100000>

- Since the bike path system is often segregated from the roadway, bicyclists cannot operate as vehicles in most intersections, causing unpredictability and introducing conflicts with pedestrians and vehicles.
- The bike paths are poorly marked and difficult to distinguish in many areas from the sidewalk since there is no physical separation.
- Most paths are of sub-standard width for two-way bike paths.
- Many paths are partially blocked with potentially hazardous obstructions.
- Poor geometric design at some locations makes turning precarious.

The Transportation Demand Management department is in the process of completing a Campus Bicycle Network Master Plan, which outlines a series of improvements to the bicycle network infrastructure on campus. As part of the Master Plan, there will be a concerted effort to encourage cyclists on campus to ride with traffic in streets, rather than on sidewalks, by removing several off-road paths that run parallel to streets where on-street bike traffic would be safer. Lower traffic streets that are too narrow for formal bike lanes will be designated as bike routes, and will be labeled with appropriate signage to let roadway users know that bicycle traffic is welcome on those streets. Finally, due to the high number of one-way streets and the portions of campus which are inaccessible by streets, selective off-road paths will still be necessary. For these paths, the Master Plan calls to upgrade them to meet national standards such as 8-foot widths, as well as ongoing maintenance to keep them from degrading as they have done in the past.

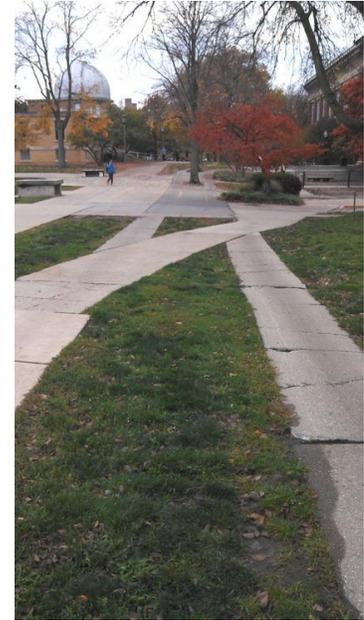


Figure 4: A narrow, outdated off-road bike path, south of Matthews Ave. Photo by Geoff Merritt, 2012.

Completing the written Campus Bicycle Network Master Plan document will be the first step in achieving a more cohesive network of quality bikeways on campus, but implementing such a plan will take several years. Funding limitations, as well as competing construction priorities on campus such as new academic buildings and dormitories all contribute to the potential challenges of getting the campus bicycle network completely up to standard in a timely fashion. Additionally, the University only owns about one-third of the streets in the

University District, while the others are split between the cities of Champaign and Urbana, and the Illinois Department of Transportation. As a result, many of the solutions needed to improve the entire bicycle network in the University District are under the jurisdiction of the surrounding cities or the state, rather than the University.



Figure 5: A dangerous convergence of several two-way bike paths with sidewalks and a bus stop at the corner of Wright and Armory. Photo by Geoff Merritt, 2012.

Off-Campus Bikeways

In addition to the challenges with the bicycle network on campus, connectivity with the surrounding community is also a challenge. The Champaign Urbana Urbanized Area Transportation Study (CUUATS), the transportation entity of the Champaign County Regional Planning Commission (CCRPC) developed the map shown in Figure 6, which illustrates access to bike facilities in the area. According to CUUATS, this map “shows the parcels within ½ mile of any bicycle facility in the Urbanized Area. Bicycle facilities are defined as shared-use paths, divided shared-use paths, bike paths, UIUC bike paths, on-street bike lanes, and shared lane markings (sharrows). This map will be used to identify optimal connections between fragmented bicycle facilities and which areas are in need of additional facilities.”²¹ While the University District does have the best connectivity in the community, it is clear that certain areas in Champaign-Urbana are not well served and do not have equal access to existing bicycle infrastructure.

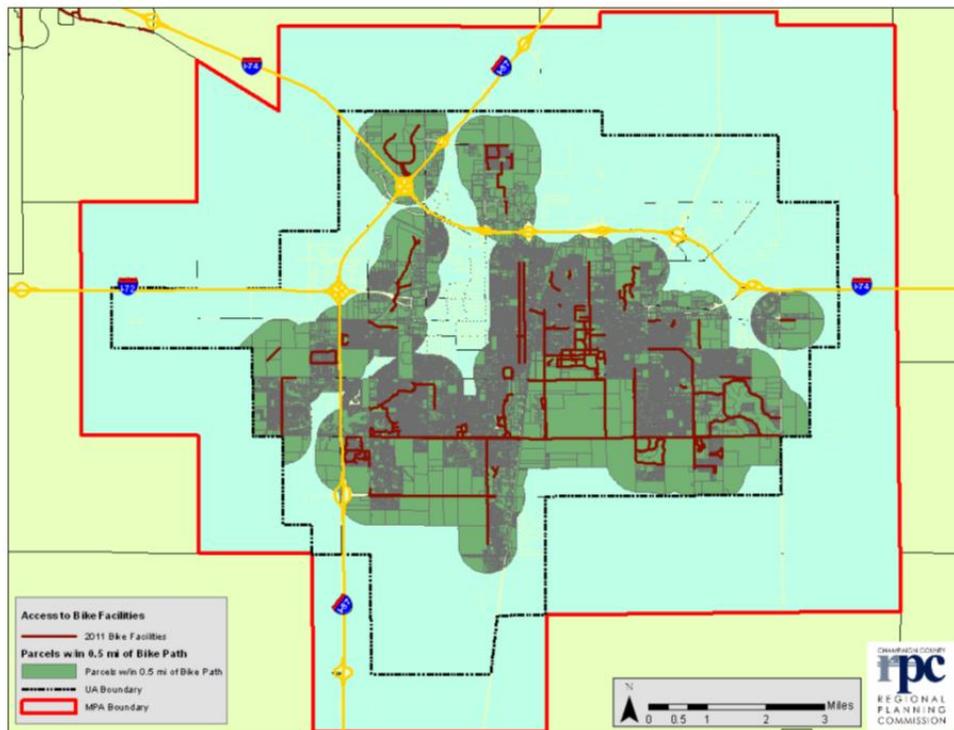


Figure 6: Champaign-Urbana Bicycle Facility Connectivity (CUUATS Title VI Draft Compliance Report, 2011)

The CUUATS data report has shown that bicycle facilities service the urban core more than the rest of the Champaign-Urbana area. These facilities are expanding to serve those on the outskirts as well. In the Urbanized Area, there was an increase of 5.4 miles of on-street bike lanes and 1.2 miles in shared lane markings, for a total of 7.5 miles. This represents a 13% increase of all bicycle facilities between 2009 and 2010. CUUATS is also helping to improve bikeways through the Greenways and Trails Plan, a concerted effort by local agencies to develop greenways and trails, including bike facilities, across Champaign County.²²

As previously mentioned, because the University only owns roughly a third of the streets on the Urbana-Champaign campus, many of the improvements needed to improve the campus bicycle network fall under the jurisdiction of either the cities of Champaign or Urbana. Urbana released a Bicycle Master Plan in 2008, which it has been working to implement, and is about to begin revising the plan in early 2013. Champaign has a similar effort underway, and is working to turn its existing Bicycle Vision into a formalized plan. The University works with these agencies through the Campus Area Transportation Study (CATS) group, and should continue to coordinate efforts in order to maximize connectivity and efficiency for bike infrastructure in the campus area.

²¹ CUUATS Title VI Compliance Report, 2011

²² <http://www.ccrpc.org/greenways/index.php>

Bike Parking and Storage

The Urbana-Champaign campus has roughly 5,200 bike parking spaces, using a variety of bike racks. The current campus facilities standard requires new racks to be the upside-down U-loop, though many older racks of other varieties still exist. The Student Sustainability Committee has funded upgrading several outdated bike parking areas to meet the current standards. The campus currently does not have any covered bike parking, though there are plans to include covered bike parking at the newest residence hall, a part of Ikenberry Commons. The campus does not have any indoor storage for bicycles, and University policy prohibits bringing bicycles inside any campus buildings, including UI Housing.

The lack of sheltered bike parking and storage poses a problem for students who live in UI Housing Facilities and own a bicycle here, because they have no options to protect their bicycles from rain, snow, and ice. Many bicycles left outside unprotected during winter months become rusted or damaged, and as a result many damaged bicycles are unused and frequently abandoned by their original owner. Unused bikes abandoned at bike parking areas reduce the amount of existing bike parking that is available for regular cyclists. Once a year, at the end of each spring semester, the Parking Department collects between 400-600 abandoned bicycles from campus bike racks.

If indoor storage or covered bike parking continues to be unavailable for student-owned bicycles on campus, a bike sharing program may be a solution by reducing the number of bicycles abandoned on campus. Alternatively, any large-scale bike sharing program implemented on campus will most likely require winter storage, which could compete with the existing demand to provide storage for student-owned bikes.

Chapter 4: Case Studies

A number of University communities have implemented or attempted various types of bicycle sharing programs, and the University of Illinois can learn from these trials to help inform our bike sharing efforts. Below is a table summarizing the six programs that were assessed as case studies for this report, each showcasing different program features that Illinois may want to consider.

Summary Table

System	Location	Program Type	Funding/Costs	Fees	Quantity
B-Cycles	University of Illinois at Chicago	Commercial campus + city, kiosks	Unknown	2 hours free, additional \$2.50/hour	6 racks
Recycles	University of Chicago	Refurbished / Campus; Library system	\$25,000 startup, \$34,000 recurring	Free, late/damage fees	20 bikes, 6 locations
ChainLinks	Loyola University	Private Commercial; Rental	\$100,000 grant	Daily \$3/Weekly \$5	100+ bikes, 1 location
SoBi: Social Bicycles	Indiana University at Bloomington	Commercial mobile GPS-enabled tracking	~\$1,300/bike; 10% revenue to SoBi if students charged to use system; wifi costs	TBD	50 bikes, not location-specific
Wildcat Wheels	University of Kentucky	Bicycle Library; Departmental	\$14K/yr, now \$25K/yr; grants	Free, late/damage fees	140 bikes; multiple locations
ICCB	University of Illinois at Urbana-Champaign	Departmental	~\$1,800 for 6 bikes; ~\$1,000/yr recurring	Free	6 bikes, 2 locations

University of Illinois at Chicago (UIC) B-Cycles

<http://bcycle.com/>

Contact: Cynthia Klein-Banai, Associate Chancellor for Sustainability at the University of Illinois at Chicago

cindy@uic.edu



Vendor	Operator	Period of Use	Cost to School	Cost to User	Outcome
Chicago B-Cycles	Bike and Roll Chicago	Between tourist seasons 2010-2011	Energy, locations	\$25/semester, 2 hrs free, additional \$2.50/hr	Discontinued

Background

Chicago B-Cycles worked in collaboration with the University of Illinois at Chicago to bring the B-Cycles system to campus. The company approached UIC about installing kiosks and bicycles on campus after the tourist season in the Chicago downtown was drawing to a close, using the kiosks and bicycles as used in the City of Chicago in a pilot program. This is not the first time a system like this has been implemented in Chicago, as the Illinois Institute of Technology in Chicago has the B-Cycle system already installed on their campuses.

Limiting Factors

Although UIC was contacted at the end of summer 2010, the hopes to install the program did not go as planned in mid-fall semester. Instead it was finally implemented the following semester, during Spring Break. Six locations were plotted in popular destination areas on both sections of UIC. These kiosks required connection to the electric grid, since pure reliance on solar energy was not possible, especially during winter months. Costs for students were the same as the downtown Chicago locations – for \$25 a semester, riders would get 2 hours free, with any additional hours costing \$2.50 an hour.

Problems

According to Cynthia Klein-Banai, Associate Chancellor for Sustainability at the University of Illinois at Chicago, this system was not a success. Due to issues with paperwork, proper authority, and timing, the program was installed

at a time close to the end of the school year – 6 weeks before classes were finished. Weather conditions at that time of year were also particularly bad, which decreased the potential for cycling during the pilot period. Additionally, and most importantly, the marketing to students was not conducted well as only a few mass mailings were sent out, one booth was in the student union, and most students were unaware what bicycle sharing programs were. The program was thus discontinued after the semester as there was not enough interest gathered during the pilot program and financial costs were too high to buy into the program.

Lessons Learned

- Significant planning and preparation are necessary to ensure the success of a large-scale program.
- Initiating the program on the most appropriate start date is essential.
- A strong, immediate marketing plan will be necessary for success.

University of Chicago Recycles

<http://www.recyclesbikeshare.com/>

Contact: Colleen Christensen,
Program Coordinator, Office of
Sustainability, University of Chicago

colleent@uchicago.edu



Vendor	Operator	Period of Use	Cost to School	Cost to User	Outcome
Blackstone Bicycle Works	University of Chicago, City Ryde software	Most of the year, varying times in summer/winter	Capital: \$25K, \$34K annually	Free, costs incurred for damages	Success

Background

The University of Chicago, a private university, has a successful refurbished, home-grown bicycle-sharing program that started several years ago. As a partnership between the university and a local non-profit, Blackstone Bicycle Works, the university provides impounded bikes at the end of each school year to the organization, which fixes up usable bikes for a fee, selling them back to the university to use for its sharing program. These bikes are all outfitted with decals and labels, branding the product into an instantly-recognizable bike. The system uses CityRyde software in order to check out bikes to university users, as well as track how many bikes are at each of its 4 locations. The system has round-trip only availability, so users must check out a bike at a location and return it to the same location within the same day, during working hours. Hours vary at different times of the year.

As of 2012, there are 26 refurbished bikes in the program, and partnerships with personnel in certain campus buildings, such as the library, gym, and other high-traffic locations, are crucial to the success of the system. Each location is given the keys to the locks of particular bikes, and designated employees are given the responsibility of checking out/in bicycles to users. The system is free for students, and there is a special fleet of bikes for faculty and staff in addition to the 26 bikes for students. Students must sign a waiver prior to admission to the program.

The initial capital costs for 20 bikes, locks, software, marketing and design was \$25,000. Recurring costs for the program coordinator, part-time bike mechanic, replacement parts, website hosting and support, and marketing add up to \$34,000 annually.

The University of Chicago has integrated the system with the campus ID system, but it doesn't allow charging of the student account. They have a fee schedule for late bikes – and repeat offenders will be suspended and then kicked out of the program. If the student owes \$200 (cost of bike) or more, their university account will be put on hold.

Limiting Factors & Problems

Finances

- The University hired a coordinator in its Office of Sustainability to run the program. This coordinator position does require a high amount of funding – part of \$34K annual recurring costs.
- They currently do not have enough budget to add more bikes and locations to the program, even though demand is pushing for it.
- Bicycles used by the program are from the University's pool of abandoned bikes, and are resold back to the University after being refurbished.
- It is very expensive to update their current system to track VMT or carbon offset.

Convenience

- Hours and locations are limited. There are four locations on campus. Hours differ according to the location, and are limited by sunlight and staffing at each station.
- With the employee bike-share option, they made these bikes solely available to the F&S staff, thus had a manual check-out system.
- Employee system is a manual check-out, yet it could be integrated if they wanted to do so.

Accountability

- The University had an original liability waiver, and when they updated it, users of the program had to sign it again, which was a hassle.
- Although the program uses the Campus ID system to check out bikes, it is not allowed to charge the accounts, so had a lot of late bike returns and lost keys.
- To prevent bicycle theft, they had to educate students about locking.

Other

- They do not provide bike lights.
- The program is only used for people associated with the University.
- There is not much environmental impact, as they are not replacing very many VMT.
- Program participants are mostly college students and staff, few faculty.

Lessons Learned

- UI Parking fees are the most appropriate funding source for bicycle needs, so the PSRC recommendations need to be implemented.
- Any home-grown student bike sharing program should be linked to, and payable through, the i-cards system. (Note that TDM has discussed this option with the UI i-card Programs office, and it is a possibility.)
- This program has great staffing details we can use for cost estimates.
- Including locking education in member sign up process.

Loyola University ChainLinks



Contact: chainlinks@loyolalimited.com

<http://www.loyolalimited.com/chainlinks/>

Vendor	Operator	Period of Use	Cost to School	Cost to User	Outcome
Trek B-Cycles, SIRRUS bicycles	ChainLinks	Year-round	Partial grant funded	See below chart	Has financial problems

Background

Loyola's bicycle sharing program began as a volunteer-based bicycle program (Grab-a-Bike), which transformed into a student-run business, opening on August 21, 2011. This program is mainly funded through a \$100,000 grant from Loyola University, and some sponsorship by I-GO Car Sharing. It also charges fees for rentals, storage, and maintenance in order to ensure the sustainability of the program (see below). The grant funds also cover storefront space for ChainLinks in a central location on the Loyola campus. Higher Gear Bike Shop is also a partner of the company.

Prior to creating the company, students involved with the Grab-a-Bike program conducted a survey, using SurveyMonkey, of students on campus. It had a 1 out of 6 response rate, and allowed them to assess the needs of the campus. For the company's launch in 2011, about 100 new specialized SIRRUS bicycles were purchased, with a stock of donated Trek B-cycles (donated by the Chicago vendor) available to rent as well. Prices are as follows:

Rental Services		Maintenance Services	
\$10	Daily Rental – B-Cycle	\$30	Bike Tune Up
\$15	Daily Rental – Specialized SIRRUS	\$100	Overhaul
\$25	Weekly Rental		
\$40	Monthly Rental	Bikes for Sale	
\$90	Semester Rental	\$400	L and XL Specialized SIRRUS Bicycles
\$160	Full Academic Year		
\$75	Summer Rate		
\$30	Early Session		
\$40	Sessions A & B		
\$50	Session C		

Source: <http://www.loyolalimited.com/chainlinks/products.html>

Hours are limited to Monday through Friday, 3-6pm, and Saturday and Sunday, 12-3pm. ChainLinks operates on a seasonal basis, from April to November, and stores bikes during the winter months.

Limiting Factors & Problems

Loyola's ChainLinks program has suffered mainly from two factors: its status as a student-run service and its high operational costs with limited funding.

The program is primarily grant-funded and has a storefront space, requiring extra funding.

The biggest change was from its status as a student-run organization of volunteers, to a student-run business of paid student laborers. As with every student-run organization, there are issues of training and transitioning.

As of fall and spring semesters of the 2011-2012 school year, the program was experiencing financial difficulties, as it was mainly grant-funded. Labor and supply costs proved to be challenging.

Lessons Learned

- Winter storage from November to April should be considered for any model of bike sharing.
- Staff support/oversight may help maintain a program over the long-term, in addition to student-run assistance.
- Grant-funded initiatives must have a strong business plan in order to become financially self-sufficient before the grant runs out. Even with a user-fee structure in place, bike sharing can be difficult to fund.

SoBi: Social Bicycles

Contact: Ryan Rzepecki - ryan@socialbicycles.com

<http://socialbicycles.com/>



Vendor	Operator	Period of Use	Cost to School	Cost to User	Outcome
Social Bicycles (SoBi)	University	Depends on operator	\$1,300/bike of a 3-year lease	Dependent on operator	Not yet implemented

Background

SoBi: Social Bicycles is part of the newest wave of bicycle-sharing programs. This system is similar to kiosk-based programs in that it utilizes GPS tracking, user-accountability, locking systems, and one-size-fits-all bicycles. However, this system has replaced the infrastructure-heavy systems with a smaller locking system fitted to an individual bike, eliminating the need for kiosk locations that must connect to the electrical grid.

The system costs are approximately \$1,300 per bike, which is nearly a fourth of the capital cost of other commercial vendors for kiosk-style stations.

The cost breakdown for operators is as follows: bicycles cost nearly \$1,100 per bike, \$100 each for delivery, and \$8 per bike per month for connectivity to the system (thus, approximately \$96 for 12 months of connectivity.)

There are user charges for out-of-zone end locations, where a bike has been left by the user beyond the set boundary defined for the bike. SoBi has considered a credit-based system to encourage users to bring bikes from locations outside of the zone back to hubs within the zone, thus reducing operating and maintenance costs.

CEO Ryan Rzepecki has said that operators can choose whether or not to have the system be free or charge-based for users. If, however, it should be a charge-based system, Social Bicycles will require 10% of the revenue gained.

In Fall 2011, Indiana University at Bloomington announced that it would potentially sign a lease with Social Bicycles, acquiring 50 bikes for the college campus. This was the first location for Social Bicycles to be integrated into a community, and should be highly monitored by those interested in using such a system to gauge the success of the program. As of March 2012, it appears that SoBi did not become implemented on campus, reasons for which have not been disclosed to the public.

Limiting Factors & Problems

This operating fee is for a three-year lease, and does not grant ownership of the bicycles. Maintenance is performed by the operators.

The system so far has been untested and has undergone several changes to the bike designs and program. However, on the company website, it said that it would be launching in several communities and expanding in 2012.

Similar programs

- Viacycle (Located at Georgia Tech)
 - <https://gt.viacycle.com/>
 - <http://www.viacycle.com/>
- Webikedoyou (UMD)
 - <http://webikedoyou.com/>

Lessons Learned

- Self-regulated/tracked systems do not require full kiosk installations, and technology can provide a valuable alternative to the expensive up-front costs of a kiosk-based system.
- New programs can have trouble getting started, and untested technology should be vetted thoroughly before being adopted on campus.
- Service-based bike sharing models do exist, in which the program operator is not required to purchase the bikes.

University of Kentucky Wildcat Wheels

Contact: Shane Tedder – shane.tedder@uky.edu

<http://www.sustainability.uky.edu/node/115>

The screenshot shows the Wildcat Wheels website with navigation links: Home, Hours, Volunteer, Location, and Contact. Below these are links for PROGRAMS: Check out a bicycle, Repair Shop, Air Stations, and Classes and Workshops. The main heading states: "Wildcat Wheels offers several options for checking out a bicycle." A note below says: "Bikes are available in a variety of sizes to any UK student, faculty or staff. All bikes are equipped with a durable bike lock and some have baskets. Bicycle helmets are not provided but are recommended. Bikers must follow all local, state, and national bike laws." There are six categories of bicycles with corresponding images: Semester Check-outs, Departmental Check-outs, Weekly Check-outs, Tandems!, Residence Hall Fleets, and Unicycles.

Vendor	Operator	Period of Use	Cost to School	Cost to User	Outcome
Purchased bicycles	University Office of Sustainability	Most of the year	Part of \$25K budget for bike shop and program	Free	Popular

Background

Wildcat Wheels is a long-running bicycle library system and bicycle shop run by the Office of Sustainability of the University of Kentucky in Lexington. The University of Kentucky is only slightly smaller than UI, with 28,094 students and over 12,000 full-time employees. The program was started in order to give students a means to travel about campus via bicycle and also to aid them in understanding that bicycles are a viable mode choice. The program operates under the same budget that covers the bicycle maintenance shop, so the actual costs of starting the program are unknown. Using grants from the federal Congestion Mitigation and Air Quality (CMAQ) as well as donors, both the shop and program have been running on \$14,000 campus funding annually, but now the school is increasing the budget up to \$25,000 annually, compensating the needed amount as some grants are expiring soon.

Student Program

The system is comprised of several different types of rentals for students: weekly, semester-long, and residential hall fleets. (Although pictured on the website, unicycles are not offered in reality.) Weekly and semester-long rentals are straight-forward, but residential hall fleets are designed for individual halls. Halls may rent two bicycles from the library to provide to students for convenient rentals at any time, and responsibility then lies with the hall for late fees, maintenance, theft, etc.

There are a total of 140 bikes in all the different fleets. These bikes are mainly refurbished bicycles, with some donations. Students are required to sign a sign-out form and waiver prior to use, and the program is completely

free of cost to students. The program and shop are mainly student-run, of which most have had some form of training.

Departmental System

The Wildcat Wheels program also offers a specific system for faculty and staff use only. For each department interested in renting a bicycle, they must designate an administrative assistant to handle checkouts. The rental is free for up to 16 weeks at a time. The program started with 25 bicycles, but has dwindled to 18 over the years. Like the student system, a check-out form and waiver are required, and maintenance is performed through the campus bicycle shop. Funding for this system comes from TIAA-CREF, and also partially from the CMAQ grant, which covered three years of costs.

Limiting Factors & Problems

Halls may only rent two bicycles from the library.

Daily rentals are no longer an option, since the users were not good stewards of the bikes, and it was hard to track the appropriate people to be held accountable. Semester-long checkouts are extremely popular and due to the high demand, they've had to introduce a lottery at the beginning of each semester to acquire one of the 75 bikes.

The bike shop is mainly student-run, which means that there is some degree of turnover when students graduate or leave.

Funding will likely run out and is limited in terms of time usable, as is seen with the departmental system.

Lessons Learned

- TIAA-CREF is a potential funding source to explore for large-scale bike sharing systems.
- Daily rentals are more difficult to administer and more costly to maintain than longer-term rentals.
- Ensuring responsible stewardship of bikes during daily rentals is a challenge, and should be strongly encouraged and enforced from the start of the program.
- A lottery for semester-long rentals is an option to explore for students.
- Offering a variety of programs for different audiences may be the best way to meet the many varying needs within the campus community.

Illinois Cross-Campus Bicycles

Contact: Professor Wojciech Chodzko-Zajko

wojtek@illinois.edu



Vendor	Operator	Period of Use	Cost to School	Cost to User	Outcome
Durst Cycle	Department of Kinesiology & Community Health (KCH)	Warm months	\$300/bike, \$1,000 annual for 6 bike tune-ups	Free	Used by 20% of able riders in dept use program

Background

At the University of Illinois at Urbana-Champaign, there is one working system of bicycle sharing for departments. The Illinois Cross-Campus Bicycles (ICCB) program is within the Department of Kinesiology and Community Health. It is available for the faculty, staff, and paid graduate students of the department. This program was founded by Professor Wojciech Chodzko-Zajko in 2008 and has been running successfully since then.

The system is comprised of six bikes, of which three each are located at Freer and Huff Halls. The program is easy to use, with no forms or waivers involved, and each building's secretary is in possession of the key, which can be acquired merely by signing it out. The program is free for users and funded by the department.

ICCB partners with Durst Cycle for the acquisition and maintenance of the bicycles. Each bike cost about \$300, and maintenance and servicing of all six bikes costs no more than \$1,000 annually. The department services the bicycles on an annual basis, and stores them in the attic at Freer Hall during the winter season.

About 20 percent of those able to ride bicycles use ICCB. A research study was conducted during the pilot program of this system, which contains useful information on obstacles to riding and ways to involve faculty with riding bicycles.

Limiting Factors & Problems

The system is only available to the Department of Kinesiology and Community Health. Employees of other departments do not have access to the program. There is no tracking other than the sign-out sheet. Because

bikes are not inspected by the department after each use, it is difficult to decipher who caused any problems, especially overnight.

Lessons Learned

- Small-scale, departmentally-run bike sharing programs can be successful if there is enough interest from employees within a given department.
- It is possible to maintain a small-scale program at a relatively low cost and with little staff time.
- Partnering with local bike shops can be a way to maintain the bikes, rather than attempting to handle all maintenance in-house.
- If the model is to be duplicated in other departments, efforts should be made to centrally coordinate all departmental bike sharing programs to allow for efficiencies of scale and the sharing of best practices.

Comparisons

University of Illinois at Chicago B-Cycles

Pros: Offers users flexibility to pick up and return bikes to multiple locations. Available 24-7 through kiosk technology. Could be expanded to public use throughout community.

Cons: High costs for infrastructure and purchasing uniform bicycles; need for recuperating costs by charging users. Paperwork, proper authority, timing, weather conditions, marketing, and awareness of bike sharing all had an impact on the lack of success of this particular program.

University of Chicago Recycles

Pros: Uses refurbished bikes (outlet for abandoned bikes); free for users

Cons: Budget issues haven't enabled expansion or improvement (bike lights, additional bikes, better online program), even when there is demand for it. Hours and locations are limited. Employees and students have a different checkout system. Program was not allowed to charge school accounts of users. The program had to educate students about locking.

Loyola University ChainLinks

Pros: Student-run, flexibility for the user to rent bikes by the day, week, month, semester, academic year, or summer. Maintenance costs included in rental price for all services, and also available for personally-owned bikes for additional fee.

Cons: Loyola's ChainLinks program has suffered mainly from two factors: its status as a student-run service and its high operational costs and limited funding. It is primarily grant-funded, has a high transition rate and need for training, and as students were paid for their labor, added to the already high costs from supplies, storefront space, and labor.

SoBi

Pros: No infrastructure requirements or costs, users have complete flexibility in where they pick up and drop off bikes; could be expanded to public use. University has flexibility to charge users or not.

Cons: Bikes & associated technology are quite costly. Bikes are for a 3-year lease with recurring annual costs, and operators still have to monitor the system. The system is so far largely untested.

University of Kentucky Wildcat Wheels

Pros: Flexibility for user to rent by week or semester, or to use departmental/residence hall fleets by the hour. Uses refurbished bikes; free for users.

Cons: The program is largely grant-funded rather than self-sustaining. The amount of bikes available for rental is very limited. Users were not good stewards of bikes in daily rentals and it was difficult to hold users accountable. The bike shop is mainly student-run, and faces a high turnover.

University of Illinois Cross-Campus Bicycles

Pros: Proven example at the University of Illinois, model can be replicated by other departments. Free for users.

Cons: The system provides access only to the employees of the participating departments; annual maintenance costs are responsibility of each department.

Findings

The main issues surrounding these bicycle sharing programs come in three areas: finances, services, and promotions.

Finances: Many programs are underfunded or temporarily funded through grants and are thus not economically viable in the long-term. The lack of ongoing funding limits expansion and improvement of the programs, and it reduces the number of bikes available, as well as the hours and locations of availability. In untracked programs, it is difficult to hold people accountable for losses and damages to bikes. Most programs had high start-up costs, as well as recurring maintenance and labor costs.

Services: Many universities had student-run bike programs which have high staff transition rates and needs for retraining staff. Others were unable to provide additional staff and thus had to limit hours of availability and locations. Many programs had paper and manual systems which caused problems for tracking and also for updating the systems. There has also been a need for education on proper locking and to introduce what bike sharing is to the student body.

Promotions: Particularly for programs with high start-up costs which need to be recuperated, carefully targeted marketing campaigns were absolutely essential to ensuring that a fee-based program can be self-financed. For programs that are made available free of cost, marketing is not as vital, but educational components are still important.

Chapter 5: Community Input

Steering Committee Feedback

As previously mentioned, the Bicycle Sharing Steering Committee was formed to help guide this study and inform the recommendations by including feedback from a range of key stakeholders. At the final meeting of the Steering Committee in April 2012, a number of committee members expressed a strong concern that the campus is not yet equipped to handle the increase in new cyclists that could result from a campus-wide bike sharing program. The two main concerns raised by the committee were safety risks due to the current state of bicycle infrastructure on campus, and the lack of awareness of the rules and responsibilities of cyclists on campus. Not only does this lack of a cycling safety culture put cyclists and others at risk, it also results in conflicts between cyclists, pedestrians, and drivers. While generally supporting the concept of a campus-wide bike sharing program, the committee insisted that improving the existing campus bicycle infrastructure is absolutely essential to ensuring the success of such a program. Also, they said ongoing bicycle safety education at a campus-wide scale would be needed to ensure that bike sharing poses minimal risk and is met with support by the community at large. Without prior improvements in cycling on campus, the committee feared that any attempt to implement a campus-wide bike sharing program would put users and others at risk, and they felt that these issues would certainly jeopardize the long-term success of any attempted bike sharing program.

This concern was well articulated by steering committee member Gabe Lewis on behalf of CUUATS:

*It is reasonable to assume a bike-sharing program would increase the number of bicyclists on campus. With the high number of conflicts between pedestrians, bicyclists, transit vehicles, delivery vehicles, and passenger vehicles, **a safe, modernized, and connected bicycle network should be installed before increasing the number of inexperienced cyclists on campus.** The most effective strategy to create such a network is for the University of Illinois to create and approve a complete bicycle plan, including goals and objectives with measurable performance measures, a public involvement process that engages as many cycling students and staff as possible, and an implementation plan with cost estimates and timelines. A reasonable financial plan should also be determined before proceeding with a campus-wide bike-sharing program, so that the program can be sustained long-term.*

Survey of Potential Users

As part of this feasibility study, a survey was developed during the 2011-2012 school year, to gauge interest in a bike sharing program at the University of Illinois and in the surrounding community. An initial draft of the survey was developed by the Bike Sharing intern and members of the Steering Committee, and it was expanded by an Engineering 315 Learning in the Community (LINC) course that worked closely with Facilities & Services. The survey was finalized by the Steering Committee and Facilities & Services in March 2012 and was opened to the university community using SurveyMonkey®. The survey was open for approximately two months, from March 16

to May 15, 2012. It received 1,169 survey responses during that time. Survey results were analyzed by Facilities & Services staff as well as by students in the Spring 2012 and Fall 2012 LINC course sections.

The goal of the survey was to determine whether the campus community has sufficient interest in a bicycle sharing program to pursue such a program, as well as to get a sense of what type of bike sharing program, if any, is most likely to succeed in this area. A serious limitation of the survey is the inevitable response bias that exists in an optional survey. While it was advertised widely to the campus community, those who are interested in bike sharing or bicycling in general are more likely to take the time to respond, thus skewing the responses toward a favorable opinion of biking and bike sharing. Taking this response bias into consideration, the results of the survey are still quite encouraging and do show significant interest in bicycle sharing at the University of Illinois among selective audiences.

Which of the following best describes your relationship to the University of Illinois at Urbana-Champaign?

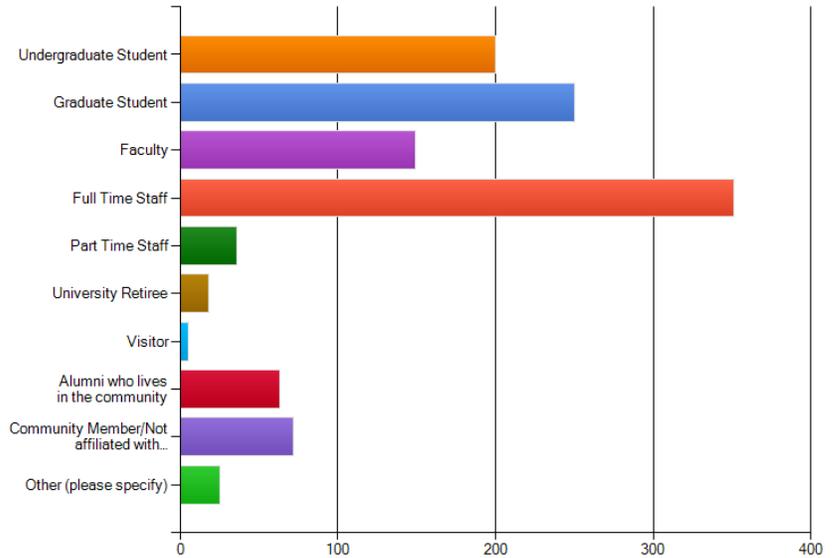


Figure 7: "Which of the following best describes your relationship to the University of Illinois at Urbana-Champaign?"

Would you be interested in using a bike sharing program in Champaign-Urbana?

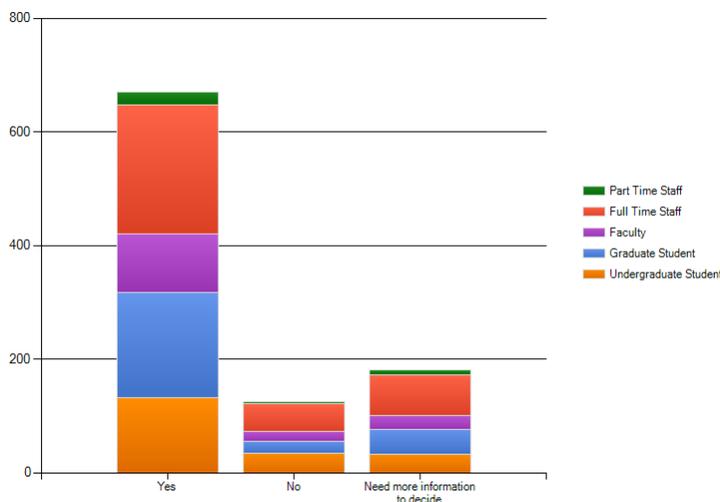


Figure 8: "Would you be interested in using a bike sharing program in Champaign-Urbana?" showing respondent type.

The survey was promoted through a number of information and media channels to students, faculty, staff and retirees of the University, as well as visitors and neighboring community members not directly affiliated with UI. The exact breakdown of survey participants' relationship to the University can be seen in Figure 7. The majority of respondents were full-time staff, with the next highest respondent group being graduate students. Taking the response bias concept into consideration, this may be an indication that departmental bike sharing for staff and graduate students may be one of the most popular types of bike sharing programs for the University to implement.

Of the total 1,169 participants who completed the survey, 64 percent said that they would be interested in using a bike sharing program in Champaign-Urbana, 20 percent said they needed more information to decide, and 16 percent said they would not be interested in using a bike sharing program here (see Figure 8). Due to the response bias mentioned above, these numbers are not scalable to the campus community. However, correlations between stated interest in bike sharing and specific demographic information collected in the survey may help to point to potential target audiences for a bike sharing program. For example, to the question **“Would you be interested in using a bike sharing program in Champaign-Urbana?”**:

- 87.2% of respondents who reported using Zipcar in C-U answered “yes.”
- 76.8% of respondents who reported not having access to a bike in C-U answered “yes.”
- 64.5% of respondents who reported living outside of Champaign-Urbana answered “yes”; 61.3% of respondents who reported living in Champaign-Urbana, but off-campus, answered “yes”; and 70.4% of respondents who reported living on campus (including Orchard Downs) answered “yes.”
- 83.7% of respondents who reported originally being from outside the U.S. (“international”) answered “yes.”
- 63.4% of respondents who reported originally being from out-of-state but within the U.S. answered “yes.”
- 59.7% of respondents who reported originally being from Illinois answered “yes.”
- 67.7% of female respondents answered “yes”; 59.6% of male respondents answered “yes.”
- As shown in Figure 9 below, 70.8% of respondents who identified as students (including undergraduate and graduate) answered “yes”; 66.9% of respondents who identified as employees of the University (including faculty, full-time staff and part-time staff) answered “yes”; and only 31.1% of respondents who identified as community members (including retirees, alumni living in the community, and those not affiliated with the University) answered “yes.”

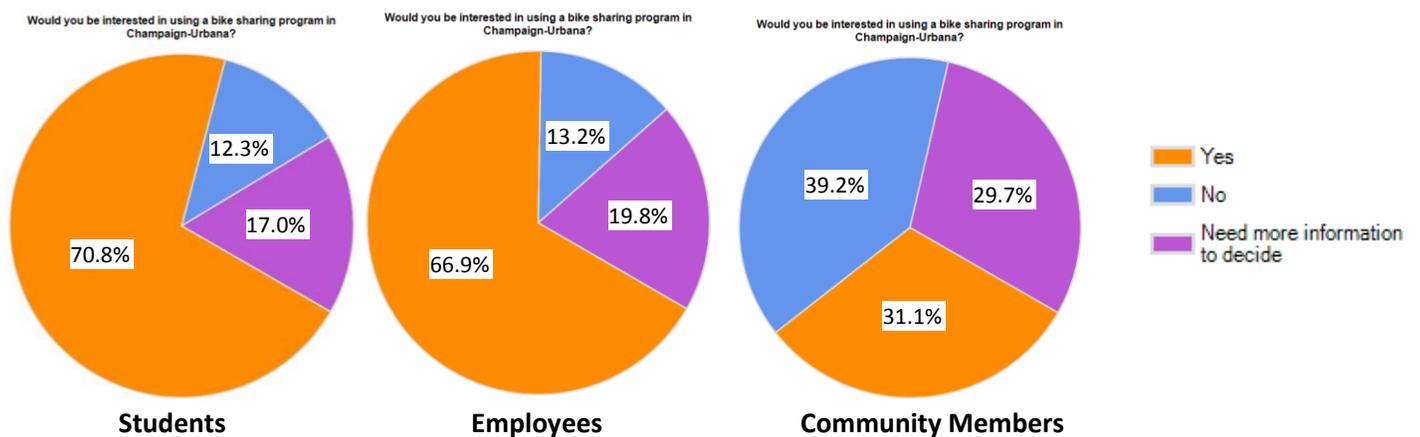


Figure 9: “Would you be interested in using a bike sharing program in Champaign-Urbana?” by respondent type.

In addition to providing information about *who* would be most interested in bike sharing, further analysis of the survey results also provide insight into what the optimal structure for a bike sharing program would be, including cost structure, physical location, and other organizational and logistical details. The analysis shared below only focuses on the campus-affiliated respondents, including undergraduate students, graduate students, faculty, and full- and part-time staff members. In order to better understand the needs of potential bike share program users, the survey asked respondents which features would interest them most in a bike sharing program. Respondents were given a list of 19 potential criteria, of which they could select as many as they wanted. Essentially, the potential user group wants access to a bike *when* and *where* they want it, without having to maintain it themselves. Respondents also had the option of selecting “other” and entering additional criteria. In addition to the features listed below, the most common responses entered under “other” expressed the need for bicycle baskets to carry books and other cargo, infrastructure with covered bike parking to keep the shared bicycle dry, and a desire for the program to be free. Figure 10 shows the results for all responses, noting respondent type. According to survey results, the top five most important features are:

1. Flexibility to return bikes to any location, rather than the exact location where I picked it up from (84.9%)
2. Multiple locations (78.7%)
3. Having someone else be responsible for maintenance of bikes (67.8%)
4. Cost effectiveness (56.9%)
5. Ability to reserve bikes by smart phone or computer (55.8%)

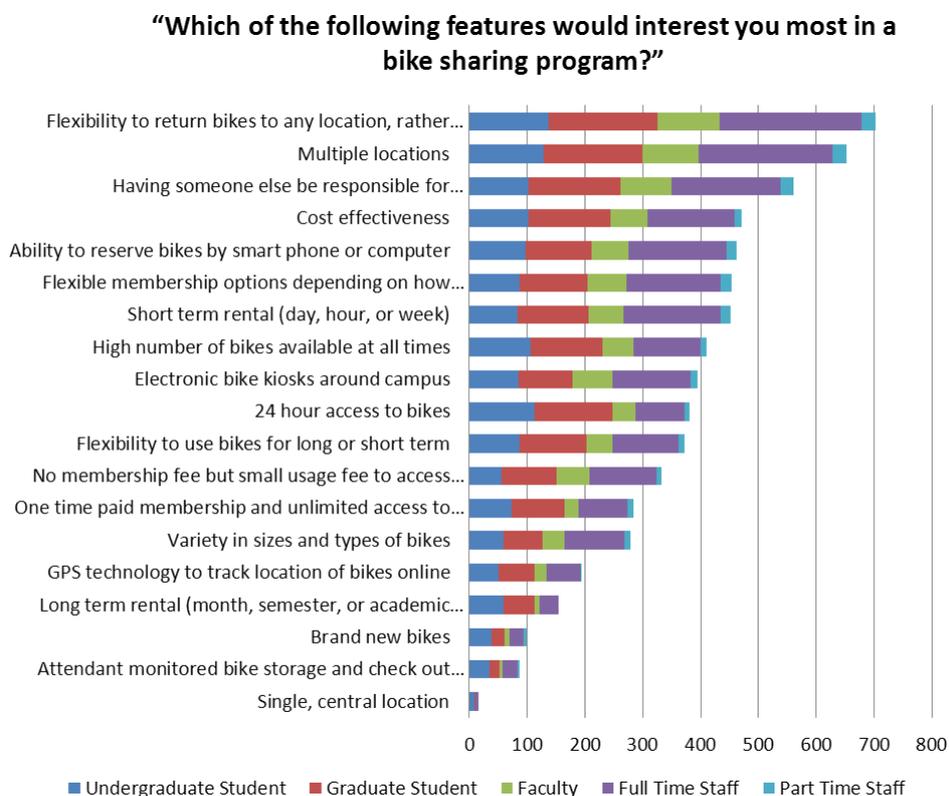


Figure 10: “Which of the following features would interest you most in a bike sharing program?”

In response to the question “What would be your preferred way to pay to use a bike sharing program?” the majority of undergraduate students (55.1%) indicated that they would prefer to pay to use a bike sharing program on a per-semester basis, while the majority of faculty and staff (64.0% and 59.0%, respectively) indicated that they would prefer to pay to use a bike sharing program on an hourly basis. Note that there is a difference in wanting to *pay* by a certain timeframe and wanting to *access* bikes by that time frame. For example, while most undergraduates prefer to pay by the semester according to this question, the previous graph clearly shows that they would prefer short term rentals or flexibility for different rental lengths, rather than long term rentals. The full breakdown of payment preferences is shown in Table 3. While there is a clear preference among undergraduate students (per semester) as well as faculty and staff (hourly), graduate students seem fairly evenly split between hourly, daily and per semester, indicating that a flexible program may be most successful for this audience.

Table 3: “What would be your preferred way to pay to use a bike sharing program?” by respondent type

Group \ Answer Options	Precision	Hourly	Daily	Weekly	Monthly	Per Semester	Annually
Undergraduate Student	±9%	32.6%	37.7%	21.0%	27.5%	55.1%	15.9%
Graduate Student	±7%	47.2%	46.2%	16.5%	26.4%	49.5%	22.2%
Faculty	±10%	64.0%	41.2%	9.6%	15.8%	21.1%	16.7%
Staff	±6%	59.0%	44.7%	15.3%	23.7%	26.1%	25.8%

The survey also asked respondents where in Champaign-Urbana they would likely want to pick up or drop off a shared bicycle, to gain a better understanding of where bike sharing hubs should potentially be located. Again, respondents were able to select more than one option. The top ten locations chosen by respondents are displayed in Figure 11.

Finally, in order to gain a better understanding of the potential barriers to overcome to successfully implement a bike sharing program, the survey asked the open-ended question “**What would make bike sharing more appealing to you?**” to respondents who indicated that they

At which of the following locations would you be likely to want to pick up or drop off a shared bicycle?

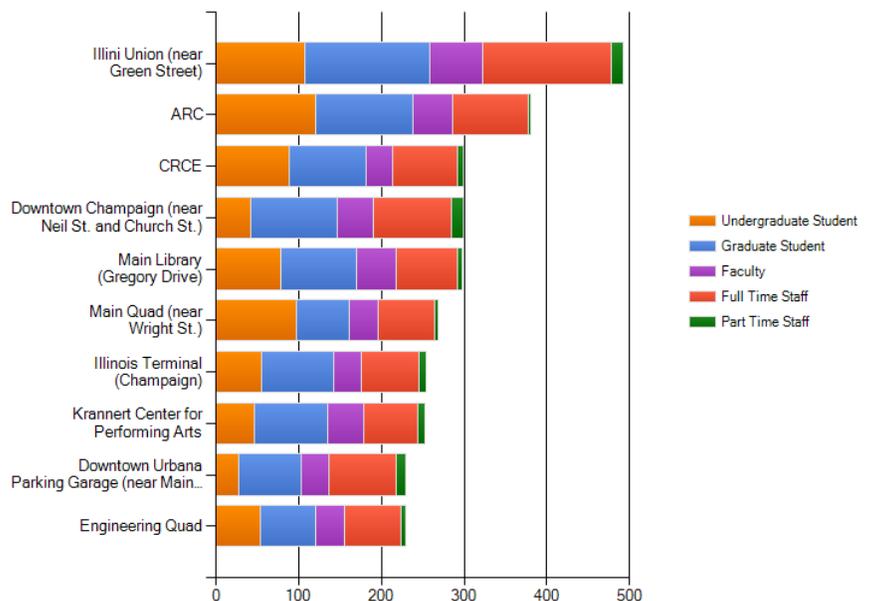


Figure 11: “At which of the following locations would you be likely to want to pick up or drop off a shared bicycle?”

were **not** interested in using a bike sharing program here. Many respondents in this category answered that “nothing” would make bike sharing more appealing or that they already owned a bike and thus had no need for the program. Among those that did list potential ways to make bike sharing more appealing to them, there was a clear interest in improved bike infrastructure, and increased attention to bike safety education and enforcement. A sampling of these free responses is shared in Table 4.

Table 4: "What would make bike sharing more appealing to you?" Responses from those who indicated they were NOT interested in bike sharing

What would make bike sharing more appealing to you? (free response)
Nothing. Bikes are inexpensive. The bike-co-op has tons of used bikes that they make available. Take the money you would spend on this and improve the bike infrastructure in CU with east-west bike lanes, better road repair within the bike lane, more friendly bike signal patterns, etc.
More clearly marked bike paths that do not end abruptly. Seeing fewer incidents of almost accidents between motor vehicles and bikes.
informing all bikers on campus of rules of the road. most bikers are inconsiderate
more designated bike paths vs. sharing the sidewalks with the walkers
I might consider it if current traffic laws were actually enforced for bike riders. Riding the wrong-way down a one-way street (as often seen on 6th) is unsafe and against (<i>sic</i>) the law.
I would rather the money were spent on better facilities that encourage private bike use (i.e. more bike racks, sheltered bike racks, more narrow bike-only paths, more room on bus bike racks)
Probably nothing. For safety reasons, I prefer to drive. On campus, bicycle riders rarely follow the rules of the road, which increases the risk of accidents.
A clinic to teach ADULTS to ride bikes! Please!
Bikers and drivers being better educated about how to share the road here.
They would be better off taking the money that they would use on the bike sharing program and investing it in high quality, secure, weather proof, bicycle lockers at all of the dorms, certified univeristy (<i>sic</i>) housing, academic buildings, and sports facilities. Bicycle sharing is for tourist towns. It wouldn't make any sense to share a bike in a town that you have access to store a bicycle where you live.

Additional comments from those who did express interest in bike sharing also reinforce the need for improved infrastructure and expanded safety education and enforcement:

Table 5: Additional comments from those who indicated they WERE interested in bike sharing

Please share any questions or additional comments about bike sharing or biking in Champaign-Urbana. (free response)
Enforcement of biking laws needs to be increased. I see bikers ignoring stop signs, riding the wrong way on a one way street and breaking other laws and safety practices regularly - but I never see them get a ticket or a warning.
I wish there was a better system of informing drivers (of cars) how to interact with bike in bike lanes on the road - especially now that Urbana has so many marked bike lanes.

I had to go to the Life Sciences building today and had no where to park my bike! Please put in bike parking!
Bike sharing would hopefully cut down on the # of bikes brought to campus by students who don't use them. Where I park my bike on campus (ISR) is filled with bikes that are never used and are rusting in the rain.
Campus bike lanes need to be repainted and signed so that bikers/walkers know where the dedicated lanes are. Add more bike-crosswalks, please. Need covered bike parking to protect bikes from rain/snow.
Please make more bike parking spaces and more bicycle (<i>sic</i>) paths.

Summary of Feedback

From survey comments, and from the feedback received from Steering Committee members, it is clear that there is substantial concern about implementing a bike sharing program without first addressing existing issues. Namely, the network of campus bike infrastructure is subpar and the majority of cyclists on campus do not follow the rules of the road. While there is a stated demand for some form of bicycle sharing at the University of Illinois at Urbana-Champaign, there is also a clear need to first address certain issues regarding infrastructure and education for bicycles.

Chapter 6: Recommendations

Through the data collection, case study assessment, survey analysis and discussions with Steering Committee members and cyclists, certain key factors rose to the top as input on recommendations about bike sharing.

- The existing bicycle network system on campus is in poor condition, and a public bike sharing system cannot be successful until the majority of bikeways in the University District are up to current national design standards.
- There are a variety of needs on campus that can be met with various forms of bicycle sharing.
- The local bicycle culture is close to reaching maturity, with community plans, campus projects, and active community supporters.
- It is simpler to expand existing programs than to implement a brand new program.

Three-tiered System

With these points in mind, the recommendation for implementing bike sharing is a three-tiered approach:

1. Bikes available for employees – The small existing program at Kinesiology and Community Health should be replicated at departments throughout campus. The program needs to be approved by Legal Counsel, Risk Management, Purchasing, and interested Colleges. Then it should be promoted to departments, to encourage them to invest in bicycles for their employees and provide them with a simple support system for maintenance and tracking.
2. Bikes available for short-term rentals – As an interim solution until the campus can handle a large-scale bike sharing program, the small existing program at Campus Recreation should be expanded with support from the Student Sustainability Committee. They should increase the number of bicycles available, make the program self-sufficient financially, and market the program to visitors, conference attendees, faculty, staff, and students. A similar program could be investigated for the Illini Union.
3. Bike solutions for students and the public – Before this campus is ready to pursue a public bike sharing system, we must first address the issues regarding degraded infrastructure and the need for more bike safety education. Once these issues have been resolved, the campus should renew consideration of several options for bike sharing, such as bicycle libraries, kiosk systems, and GPS-enabled community bikes.

This three-tiered approach builds on existing programs to meet immediate needs, and it allows the burgeoning bicycle culture to fully mature so that a public bike sharing system will be highly successful.

Bikes for Employees

Departmental bikes for employees will build on the existing departmental bicycle sharing program, Illinois Cross-Campus Bicycles (ICCB), as maintained by the Department of Kinesiology and Community Health. Professor Wojciech Chodzko-Zajko, who initiated the ICCB, has offered his services as a point-person for campus administrators who have questions about starting their own system. The Fall 2011 LINC class developed a draft “how-to” manual with recommendations for types of bicycles to purchase, how to manage the system, how to maintain the bicycles, and potential funding sources. This manual is in the process of being revised and finalized with the input of Legal Counsel, Risk Management, the Campus Bicycle Shop, and Procurement. This system can be adopted by many departments in different locations around campus, and it would be available to all staff, faculty, and graduate employees of participating departments. This system should be consistent across campus in order to reach more participating staff, and also to make marketing the system to different departments more readily accepted.

For example, building off the ICCB program, a department interested in participating in such a system would initially read through the how-to manual, perhaps contact the bicycle point-person in Facilities & Services (F&S) regarding any further questions, and then go through the recommended process involving purchasing bikes, informing employees about the availability of bikes, and also letting F&S know the contact people for the program within the department. These can later be listed on the F&S bicycle page, and also included in a UI bicycle guide book.

Once the approval of Legal Counsel and the various colleges of the University has been granted, TDM will begin to reach out to individual departments to determine if they are interested in developing their own program. Some departments have already expressed interest in participating in departmental bike sharing, and indicated that they would likely be willing to pay for the service. The following departments can be contacted as part of the first phase of rolling out departmental bicycle sharing at the University.

College of Law	Library
Facilities & Services	Mechanical Engineering Building
Illinois Sustainable Technology Center	Siebel Center
Krannert Center for the Performing Arts	Urban & Regional Planning

TDM will help each department in the set-up of the program, exploring the possibility of buying bicycles in bulk for savings, or partnering with the Campus Bicycle Shop to purchase used bikes. Additionally, each program will be tracked, analyzing the success and progress as a means of encouraging the University to become involved with similar programs, such as public and student systems, in the future.

These steps are needed for implementing this tier:

- Confirm campus administration’s approval of this system
- Clarify appropriate process for purchasing the bicycles
- Contact college leadership to seek approval for their departments to participate
- Contact interested departments to implement the program
- Clarify a method for tracking and reporting impact of Departmental Bike Sharing

Approximate Cost: \$2,500 to \$3,000 per department for five bikes, plus ongoing maintenance costs.

Short-Term Bike Rentals

While the campus is not yet prepared to handle a full public bike sharing program, there is an unmet demand for the temporary use of shared bicycles at a low cost. To address this demand, the campus should explore the possibility of expanding the existing bike rental program that currently exists through Campus Recreation. Not only does Campus Rec already have a system to check in and out equipment including bicycles, but two of the top three preferred locations selected by respondents of the bike sharing survey were Campus Rec locations: the ARC and CRCE (see Figure 11). To make this effort successful, the expansion of a bike rental program at Campus Recreation should be strongly supported by SSC. They will need to increase the number of bicycles available, make the program financially self-sufficient, and market the program to visitors, conference attendees, faculty, staff, and students.

Short term bike rentals will be useful for campus visitors, conference attendees, local visitors, and for those who do not own a bike but have the occasional need to travel by bike. This system will require a marketing program coordinated with implementation in order to educate and make the public aware of how the system works, the purpose, and how it can directly benefit their lives in terms of health, the environment, etc.

These steps are needed for implementing this tier.

- Form an agreement with Campus Recreation or another entity if Campus Rec is not interested
- Determine the number of bicycles needed to sustain a successful rental program, and identify a space to store bikes year-round
- Establish a maintenance protocol for the rental bicycles
- Estimate the annual operating costs of the program, to finalize the cost per short-term rental
- Seek funding for purchase of bicycles, as well as ongoing operating costs as needed
- Purchase the bicycles
- Create and initiate a clear marketing campaign for the system, in coordination with the bicycle education efforts through community groups and the Campus Recreation standard marketing protocols

Approximate Cost: \$15,000 to \$50,000 for bicycles and staff time, plus on-going operating and maintenance costs.

Potential Bike Solutions for Students

Eventually, when the current issues concerning degraded bike infrastructure and safety education are addressed, bike solutions for students could include low-tech bicycle libraries on campus or more advanced public kiosks or GPS-based bike share systems.

These steps are needed for implementing this tier:

- Finalize and approve the Campus Bicycle Network Master Plan
- Fund and implement a majority of the bicycle network improvements
- Identify solutions to the key safety and communication issues related to bicycles for students
- Determine whether there is sufficient funding and campus support for a public kiosk or GPS-based system or whether a lower-tech bicycle library would make more sense for the UI

Bicycle Library

With a bicycle library, bicycles would be available for rent or lottery for extended periods, giving students who need a bicycle for recurring everyday use the ability to rent or ‘check out’ a bicycle for an entire month or semester, with access to regular maintenance. As this concept is still under development, the following issues need to be addressed.

- Storage: Where will these bicycles be located when not in use by students? How will students gain access to these bicycles? During winter/non-biking months, where will the bicycles safely be stored against the weather and theft?
- Library logistics: What type of a system will work best? Online check-out/reservation? Fee schedule? Paid rental or free loan? How many bicycles – and which kinds? Refurbished or brand new? How can the University ensure that users will take care of the bicycles and pay for damages or late returns? Who will manage the program?
- Bike maintenance: Will maintenance of the bicycles be performed in-house, or by an outside vendor? Preliminary conversations with the Campus Bicycle Shop have revealed that there is not enough capacity to maintain bike-share bicycle under the organization’s current structure and mission, but this could change with additional staff solely dedicated to maintaining bike-share bicycles. This change would also require amending the Facility Use Agreement between the UI and The Bike Project, but it is certainly an area worth exploring in the future.
- Registration: Will students need to register with the ‘library’ in order to use the system? How can all the information be tracked and kept up-to-date and accessible?

Kiosk or GPS-enabled Bike Sharing

If a kiosk or GPS-enabled bike sharing option is selected for the campus, the program could benefit from partnering with local agencies or businesses to make the program available to the general public. This feasibility study engaged several off-campus entities including the Cities of Champaign and Urbana as well as the Champaign County Regional Planning Commission and the C-U Mass Transit District. If demand for a public bike sharing program grows in the future, the University should partner with these entities to explore bike sharing solutions for the general public. Such a program could use electronic kiosks or mobile GPS software. Either system would likely allow users to sign up for a low membership fee, and use the bikes for a low hourly rate, similar to the programs currently being used in major cities around the world.

Chapter 7: Conclusion

The University of Illinois at Urbana-Champaign intends to increase bicycle usage and ease of use on campus. Bike sharing is one option the campus can pursue to achieve its goals to reduce transportation emissions and increase the use of active transportation. However, at this time it is clear that certain prerequisite steps must be taken before large-scale bike sharing can be successfully implemented for student or public use. First and foremost, the campus bicycle infrastructure such as bikeways and parking must be improved. Secondly, bicycle education and enforcement must be utilized to ensure that cyclists, pedestrians, and vehicle drivers can all function safely together on campus. Plans for these important steps are currently underway through the development of the Campus Bicycle Network Master Plan, and through discussions of the CATS Education Working Group.

Feasibility of Bike Sharing at UI

Some forms of bicycle sharing would be effective in serving certain unmet cycling needs for campus. These include providing bicycles for conference attendees with a daily bike rental program that is large enough to serve those in need, and providing bicycles for UI employees at their departmental buildings with a free and familiar process similar to checking out a university-owned vehicle.

However, this campus is not yet prepared to implement a more complex public bike sharing system. The major problem is the physical bicycle pathway network in the University District, and the associated unsafe behavior of campus cyclists. When the majority of infrastructure is up to current national design standards, and the education and enforcement systems are effective so most cyclists follow the rules of the road, then a typical public bike sharing system may be successful here.

To support bike sharing on campus, the Student Sustainability Committee should continue to support the ongoing efforts to prepare our community for bike sharing. Only with a sound network of bicycle infrastructure and a matured, well-educated cycling community, can bicycle sharing at the University of Illinois succeed.