

The Next Green Revolution: Bike Sharing in the U.S.

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Abstract

More than 50 percent of all trips made by car in the United States are less than three miles. In a country that is dependent on automobiles as the central mode of transportation, is there a sustainable alternative that is easily accessible to all citizens? Bike sharing has been established in order to extend the distance a person can travel to utilize public transportation, eliminate fossil fuel dependence, and improve local environmental conditions. Through an analysis of large city and university bike share programs, it is evident that bike share systems are a sustainable option that connects with additional public transportation modes and is preferable over automobiles.

What is Bike Sharing?

Bike sharing is a system of bicycles that are made available to the public for short term use or rental. Since many benefits to bicycling exist, such as increased physical activity and a reduced environmental impact, it is clear that bike sharing programs offer many advantages over automobiles and even individual bicycle ownership. Utilizing bike share programs reduce fossil fuel emissions, eliminate individual bicycle ownership burdens such as maintenance and repairs, and improve on resource efficiency by reducing the amount of time a bicycle spends parked.

In general, there are three models for bike share programs.

1st Generation: These programs are unregulated and bicycles are released into a given area, free to any citizen. After, the user is expected to leave the bicycle in a public location after use. There is no tracking technology and although expenses are low, these programs suffer heavily from theft and vandalism.

2nd Generation: These systems include small deposits that permit citizens to check out bicycles at a low fee. However, due to limited tracking technologies, these programs still suffer from theft and vandalism.

3rd Generation: To ride a bicycle, users must have membership cards that track the bicycle location and user. These programs are more expensive, ranging from \$500-\$3,000 per bicycle but programs are larger and have low theft and vandalism rates. All five major city bike share programs utilize 3rd generation models.

Research Methods

Data for this research project was collected primarily from scholarly academic journals, newspaper articles, and bike share program websites. After research, it was clear bike share programs are most prevalent in major cities and universities. Since there are five existing bike share programs in all U.S. major cities, interviews were conducted in order to obtain specific data regarding the successes and obstacles of the programs located in Washington D.C., Minneapolis, Denver, Chicago, and Des Moines. As for universities, different programs were evaluated based on the location, climate, population size, and economic resources. Accordingly, research was carried out for programs at the University of Oregon, the College of Saint Benedict and Saint John's University, the University of Montana, St. Xavier University, and North Carolina State University.

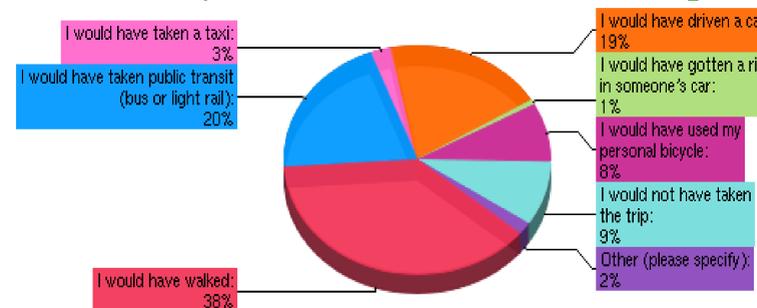


This Nice Ride Minnesota docking station map demonstrates how bike share programs organize stations to have a high density in order to facilitate short trips and increase convenience.

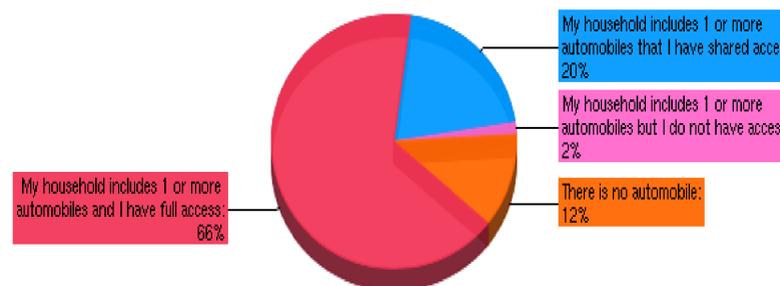
Case Study of Nice Ride MN: Minneapolis Bike Share Program

Launched on June 10, 2010, this third generation program obtained 100,817 trips before closing for winter on November 7, 2010. Nice Ride is a non-profit organization and receives funding from many sponsors, including Bike/Walk Twin Cities and Blue Cross and Blue Shield of Minnesota Center for Prevention. The capital costs were about \$3.2 million and operational costs are expected to be \$1,300 per bike/year. Subscription costs and trip fee revenue will cover 2/3 of the long term costs. After five months of operation, only two bicycles were stolen, demonstrating successful third generation anti-theft technology. In a survey, 77% of all respondents reported they already owned a bicycle and 89% reported that their primary use of Nice Ride was for transportation, indicating that bike sharing improves access to bicycles and can be utilized as a sustainable form of transport.

If you had not used Nice Ride, how would you have otherwise made this trip?:



Describe your access to automobiles:



Data of survey from 1 year and 30 day subscribers of which 680 out of approximately 1,300 responded. This demonstrates demand for bike share programs and alternative forms of transportation.

Case Study of University of Oregon Bike Program

The UO Bike Program is a second generation bike share system that is student driven and operated through the UO Outdoor Program. The program launched in September 2008 in order to improve student access to a sustainable, affordable, and reliable form of transport on campus. To obtain funds for the program, students at UO received a Cliff Bar Grant of \$5,000 to pay for start up costs. The program currently receives \$26,000 annually from the student government on campus to pay for staffing and equipment. All bicycles have been donated and are each unique, keeping theft low. A benefit to this program is the Bike Maintenance Shop. It is a "do-it-yourself bike shop" available to all UO students and staff. There are two mechanics that assist with repairs and teach classes to educate riders on basic bicycle maintenance, safety, and commuting skills. The biggest obstacle this program has faced is the lack of access to additional bicycles. Since this program relies on donated bikes, the demand is greater than what they can currently supply. Another barrier is that there is no exclusive space for bike shop and program.



The style of bicycle greatly impacts the cost of a bike share program. Nice Ride bicycles (left) cost \$1000 to replace because of the resilient design and durable tires. Second generation programs such as the UO Program relies on donated bicycles (right) which keep costs low but increases the amount of maintenance and repairs needed.

Conclusion

Bike sharing in the U.S. has been extremely successful with more than 90 university programs and 5 major city programs currently in operation. As a result, it is evident that bike share programs can decrease automobile dependency by functioning as a sustainable alternative. Not only do bicycle programs increase accessibility of bicycles to all citizens, but they have a low environmental impact, provide exercise to the user, and can support other forms of public transportation systems such as busing. Despite these benefits, aspects such as adequate funding, theft and vandalism, and liability are prevalent obstacles. Through the case studies, it was found that capital costs for city bike programs range from \$120,000 to \$4 million while university costs can range from \$5,000 to \$250,000, depending on model. Generally, funding will come mainly from donors, city governments, and sustainability fees at universities. Ultimately, in order to comprise a successful program, demand, monetary capital, ample bicycle infrastructure, safety, and education are principle factors that must be addressed.

Further Information:

University of Oregon. "UO Bike Program." Bikes. Last modified 2006, <http://outdoorprogram.uoregon.edu/uo-bike-program/>.

Vars, Mitch. "Nice Ride Subscription Survey-Summary Report." Last modified November 1, 2010, <http://appv3.sgizmo.com/reportsview/?key=102593-416326-6d13ea0276ea0822c9f59f4411b6c779>.