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Bicycle Safety Programs in the U.S. and Abroad

Each year in the United States about 500,000 people are treated in emergency rooms for bicycle related injuries, and more than 700 people die as a result.¹ Children and young adults between the ages of 5 and 24 account for over 1/3rd of all bicycle related injuries suffered in the United States.² As a result, the U.S. Department of Transportation (DOT) and many states have commissioned support for bicycle safety programs in order to reduce accidents, injuries, and death.³ This report will provide an overview of the bicycle safety programs in Vermont, several other states, and a couple of programs abroad. It will also discuss the effectiveness of bicycle safety programs.

Vermont

According to the advocacy group, the League of American Bicyclists, Vermont ranks 17th out of the 50 states in "Bicycle Friendliness."⁴ The League's Bicycle Friendliness rankings are based on five categories: Legislation and Enforcement, Programs and Policies, Infrastructure and Funding, Education and Encouragement, and Evaluation and Planning.

The Legislation and Enforcement category covers basic laws and regulations that oversee cycling in each state. This includes whether cyclists can or cannot legally use the shoulder, signal turns with either hand, motorist responsibilities, and data on the types of training law enforcement officers and traffic court judges receive to safeguard cyclists' safety and

¹ Centers for Disease Control and Prevention, "Injury Prevention and Control: Motor Vehicle Safety," *Centers for Disease Control and Prevention, National Center for Injury Prevention and Control, Division of Unintentional Injury Prevention*, Updated April 11, 2016, Retrieved April 30, 2016,

<http://www.cdc.gov/motorvehiclesafety/bicycle/>.

² Ibid.

³ U.S. Department of Transportation: Federal Highway Administration, "Design Guidance Accommodating Bicycle and Pedestrian Travel: A Recommended Approach," last modified April 4, 2011, Retrieved April 5, 2011, http://www.fhwa.dot.gov/environment/bicycle_pedestrian/guidance/design.cfm.

⁴ The League of American Bicyclists, "2015 Bicycle Friendly State Ranking," Retrieved April 30, 2016, <http://bikeleague.org/content/ranking>.

rights to the road.⁵ The Programs and Policies category mandates what state agency requirements are for accommodating cyclists, agreements for mountain bike trails, and whether or not bicycling is included as part of state's carbon-reduction plan.⁶ Infrastructure includes the funding spent on facilities for cycling.⁷ The Education and Encouragement category manages the amount of cycling education provided in the state for cyclists, individual, and motorists.⁸ The Evaluation and Planning category mandates how bicycling is incorporated into each state's yearly planning.⁹ This can include highway safety plan, outdoor recreation plan, or bicycle transportation plan. This section also measures results of the state's bicycle and care crash rates and bike commuting rates.¹⁰

According to the League's 2015 report, Vermont ranked highly in education and encouragement, legislation and enforcement, and policies and programs; but poorly in evaluation and planning and infrastructure and funding.¹¹

The main bicycle safety program in Vermont is Local Motion, a non-profit organization that promotes healthy and sustainable Vermont communities through people-powered transportation. In early 2015 Local Motion merged with Vermont Bicycle and Pedestrian Coalition (VBPC) which allowed the organization to expand in order to provide services state-wide rather than just to the greater Burlington area. Local Motion has implemented a number of successful programs to improve bicycle safety across Vermont. Safe Streets is one such program that aims to reduce bicycle crashes and injuries by "building a culture of respect" on Vermont streets. The program attempts to achieve this by giving safety presentations, conducting campus outreach, and distributing helmets among other tactics. Safe Streets is funded by Vermont's Highway Safety Program.¹² Another Local Motion program is Kohl's Kids Bike Smart which offers bicycle skills and training camps to summer camps in Vermont. The Bike Smart program distributes booklets on safe bicycling to parents, schools, camps, and other organizations. Additionally, through Bike Smart, Local Motion loans the equipment for bicycle skills and training camps to schools and other organizations.¹³

⁵ The League of American Bicyclists, "Bicycle Friendly State Categories and Maps," Retrieved April 30, 2016, <http://bikeleague.org/content/bicycle-friendly-state-categories-and-maps>.

⁶ Ibid.

⁷ Ibid.

⁸ Ibid.

⁹ Ibid.

¹⁰ Ibid.

¹¹ The League of American Bicyclists, "Report Card: Vermont, Ranking #17", 2015, Retrieved April 30, 2016, http://bikeleague.org/sites/default/files/BFS2015_Vermont.pdf.

¹² Local Motion, "Safe Street Collaborative: What is the Safe Streets Collaborative?" Retrieved April 30, 2016, <http://www.localmotion.org/education/safestreets>.

¹³ Local Motion, "Bike Education and Skills Training: Kohl's Kids Bike Smart Youth Skills Trainings," Retrieved April 30, 2016, <http://www.localmotion.org/education/bikeskillstraining>.

Programs in Other States

Maine's Bicycle Safety Education Program

The Bicycle and Pedestrian Safety Education Program (BPSE) is a program funded by Maine's Department of Transportation via a Federal Department of Transportation Section 402 Grant. This program is presented as a forty-five minute to one-hour session on helmet fittings, dressing for safety, and rules and laws that concern cycling and walking. Where some programs simply speak to the dangers that bicycling can pose, this program also focuses on the many positive aspects of biking. The BPSE encourages follow-up programs by designating a School Bicycle Safety Coordinator who is also trained in bicycle safety and who can disseminate that knowledge to the school. The program has reached tens of thousands of school children over the past five years. The BPSE also organizes after school Bike Clubs and Bike Safety Rodeos in order to give children an opportunity to practice bicycle safety.¹⁴

Washington's Pedestrian and Bicycle Grant and Safe Routes to School Program

Washington State was named number one on the list of "Bicycle Friendly States" by the League of American Bicyclists for the seventh year in a row in 2015. In 2005, the Governor and Washington State Legislature increased the state's role in improving conditions for biking and walking by providing a grant program and related technical assistance services (ESSB 6091).¹⁵ The two programs are Pedestrian and Bicycle Grant Program and Safe Routes to School.

Safe Routes to School program addresses pedestrian and bicycle mobility and safety near schools. The goal is to increase the numbers of children walking and biking to school safely. Between 2005 and 2012, \$32 million was made available for 96 projects. The program has reached approximately 25 school districts and over 10,000 children from 5th through 8th grade by 2012.¹⁶ The program has an average increase of 20 percent in the number of children walking and biking to school.¹⁷ Safe Routes to Schools also completed about 75,000 additional feet of sidewalks near schools. The state has seen a reduction in motorist travel speeds and traffic citations in school zones. Washington's Pedestrian and Bicycle Grant Program addresses the nearly 400 statewide collisions involving pedestrian and bicycles each year. Between 2005 and 2013, \$32 million has been made available to 45 local agencies for 87 projects.¹⁸ The program has improved over 80 individual known

¹⁴ Bicycle Coalition of Maine, "The Maine Bicycle and Pedestrian Safety Education Program," 2015, Retrieved April 30, 2016, <http://www.bikemaine.org/safety-education/bike-ped-safety-education>

¹⁵ Kathleen Davis, "Washington State Department of Transportation: Pedestrian and Bicycle Safety and Safe Routes to School Grant Programs: 2013-2015 Prioritized Project List and Program Update," December 2012, Retrieved April 30, 2016, <http://www.wsdot.wa.gov/NR/rdonlyres/A4F69DAF-4044-49A3-834F-86036BD5AF20/0/Final201315HLPGrantProgramsReporttoLegislature2012December27.pdf>

¹⁶ Ibid.

¹⁷ Ibid.

¹⁸ Ibid.

pedestrian risk locations.¹⁹ Notably, between 2007 and 2010 there was a 36 percent growth in bicycle commuters and pedestrian commuters grew by 5.6 percent.²⁰ The growth rate has been flat between 2008 and 2010. Between 2006 and 2010, the number of annual pedestrian fatalities decreased from 67 to 61.²¹ Also between 2006 and 2010, the rate of bicyclist fatalities fell from 0.11 per 100,000 people to 0.09, a fourteen percent drop.²²

Florida Traffic and Bicycle Safety Education Program

The Florida Traffic and Bicycle Safety Education Program (FTBSEP) is an organization based out of the University of Florida and funded by the Florida State Department of Transportation, which seeks to educate bicyclists and motorists alike in order to reduce the number of injuries and fatalities of bicyclists.²³ This program was founded in 1982 and has developed and expanded ever since, educating hundreds of thousands of children over the years.²⁴ There are three courses offered by the FTBSEP that are taught by instructors certified by the League of American Bicyclists. These courses include:

- An eight-hour elementary and middle school teacher workshop;
- An eight-hour community workshop; and,
- A two hour “Driver’s Ed” for pedestrians and bicyclists.²⁵

The FTBSEP also provides several “mini-grants” to help schools fund bicycle and pedestrian safety programs, these grants are up to \$2,000.²⁶

A study that focused on elementary schools that participated in the FTBSEP conducted between 1996 and 1998 in Duval County, Florida found that helmet use had increased from 19% to 47%, and coincidentally there was an 80% decrease in bicycle-related fatalities, and a 68% decrease in bicycle-related injury between 1996 and 1997.²⁷

¹⁹ Ibid.

²⁰ Ibid.

²¹ Ibid.

²² Ibid.

²³ University of Florida, “About Us,” *University of Florida: Florida Traffic and Bicycle Safety Education Program*, Updated October 1, 2015, Retrieved April 30, 2016, <http://safety.hhp.ufl.edu/index.php/about/>.

²⁴ University of Florida, “Program Summary,” *University of Florida: Florida Traffic and Bicycle Safety Education Program*, Updated October 1, 2015, Retrieved April 30, 2015, <http://safety.hhp.ufl.edu/index.php/about/program-summary/>.

²⁵ Ibid.

²⁶ University of Florida, “Mini-Grant Program,” *University of Florida: Florida Traffic and Bicycle Safety Education Program*, Updated October 1, 2015, Retrieved April 30, 2015, <http://safety.hhp.ufl.edu/index.php/about/mini-grant-program/>.

²⁷ U.S. Department of Transportation: Federal Highway Administration, “FHWA Good Practices Guide,” Retrieved April 29, 2016, <http://bendoregon.gov/modules/showdocument.aspx?documentid=3091>.

Programs in Other States for Motorists

Michigan

In 2009, the League of Michigan Bicyclists (LMB) proposed a plan to the Governor and Michigan Legislature to include a bicycle safety and awareness component into drivers' education. The LMB suggests that many motorists insist and often threaten cyclists to stay on the sidewalk because of incomplete education, which leads to hundreds of Michigan bicyclist injuries and deaths. They argue that failing to include a bicycle-safety education into drivers education, which would encourage drivers to share the road with bicyclists and would improve new drivers' understanding of cyclists legal right on the road, would threaten the safety of all roadway users.²⁸ The Michigan House passed House Bill 4960 in the spirit of this plan, though the bill did not make it through the Michigan Senate.²⁹

Other Programs

For an extensive list of bicycle programs that are funded at the state and federal level, visit the [Pedestrian and Bicycle Information Center website](#).³⁰

Programs Abroad

Many European countries have embraced bicycling as a safe, effective, and convenient way to get around their cities. While we have listed two safety programs below, it appears that the successes in Europe are attributable to a culture that not only accommodates but truly promotes bicycle use and safety and not just with mere safety programs alone. Most municipalities in bicycle-friendly countries fund safety programs as a state mandate, and are given funding.³¹

In their article on the safety and prevalence of biking in the Netherlands, Denmark, and Germany, John Pucher and Ralph Buehler from Rutgers University identify eight key areas that explain the success of these countries:

1. **Bike Paths and Lanes** – European countries have significantly expanded bike paths and lanes in recent years allowing for cyclists to access safe and convenient roads designed specifically for cyclists.
2. **Traffic Calming** – On lightly travelled streets where bike lanes are not necessary, many countries have reduced the speed limits, raised intersections, and created

²⁸ League of Michigan Bicyclists, "Bicycle Safety in Drivers Education," accessed April 19, 2011, <http://www.lmb.org/index.php/Advocacy/bicycle-safety-in-drivers-ed.html>.

²⁹ Michigan Legislature, "House Bill 4960," accessed May 6, 2011, <http://www.legislature.mi.gov/%28S%28lgcoeu45djsyx155uch2jf55%29%29/mileg.aspx?page=getObject&objectName=2009-HB-4960>.

³⁰ Pedestrian and Bicycle Information Center, "State Resources," *University North Carolina Highway and Safety Research Center*, Retrieved April 30, 2015, <http://www.pedbikeinfo.org/data/state.cfm>.

³¹ John Pucher and Ralph Buehler, "Making Cyclists Irresistible: Lessons from the Netherlands, Denmark, and Germany," *Bloustein School of Planning and Public Policy*, Revised November 5, 2007, Retrieved April 30, 2016, <http://bikeportland.org/wp-content/uploads/2007/11/pucherbuehlermakingcyclingirresistible.pdf>.

curved or zigzagged roads in order to reduce the speed at which cars can travel, thus giving pedestrians and cyclists alike more freedom to use the road.

3. Intersection Modifications – Many European cities have identified intersections as hazardous zones for cyclists and therefore have implemented advanced signals for cyclists, turn restrictions for cars, sharper turns for cars so that they must turn slower, and many other modifications.
4. Bike Parking – Convenient and secure bicycle parking is widely offered and sometimes even mandated in European cities.
5. Integration with Public Transport – Many countries continue to develop bicycle rental programs that allow any person with a credit card to use a city bike for a fee.
6. Training and Education – Most children in bicycle-friendly European countries have already completed safety programs by the fourth grade. These programs have on the road training administered to them by police officers. Motorist training is also very thorough and extensive, and placed pedestrians and cyclists as priority on the road.
7. Traffic Laws – Laws in these countries favor pedestrians and cyclists to motorists and require that motorists are constantly vigilant about the safety of others.
8. Promotional events – Almost all of the most bicycle-prevalent European countries create a certain excitement and enthusiasm for cycling by promoting it throughout citizen's lives.³²

Denmark

The Children's Traffic Club is a traffic safety education program for children, which is popular in Europe. The Danish Road Safety Council facilitates the Children's Traffic Club in Denmark, which has been in operation for 30 years. At the age of 3, Danish children are provided the opportunity to become members of the club and about 30 percent of children register for the club. Those who register are given a traffic package, which includes a training booklet and toys every 6 months until they turn 6½. In Denmark, since 1994, road safety education has been mandatory in elementary and middle schools.³³

United Kingdom

In Bristol, officials plan to offer the Bikeability Bicycle Safety Program. It is a government-approved program that is overseen by the United Kingdom's CYCLE Training Safety Board. This program consists of three levels. Level 1 is for children up to the age of 9 and teaches basic playground skills; Level 2, for children 9 to 11, offers basic lessons on calm streets; and Level 3, for children older than 11 and adults, teaches advanced cycling skills. Bristol also offers the "Bike It" programs to local schools. Bike It actively promotes and educates biking to school and it is offered at numerous locations throughout the United Kingdom. This program is designed to create a culture in schools that regards cycling highly, and the

³² Ibid.

³³ Federal Highway Administration, "Pedestrian and Bicyclist Safety and Mobility in Europe," International Technology Scanning Program, February 2010, Retrieved April 30, 2016, <http://www.bv.transports.gouv.qc.ca/mono/1023711.pdf>.

program aims to have the students maintain their attitude toward biking long after the program ends.³⁴

Effectiveness of the Programs

Researchers at the Center for Applied Science in Eugene, Oregon conducted an experiment involving 206 elementary school students from Kindergarten to third grade. The purpose of the experiment was to test "Bike Smart," an eHealth software program that teaches bicycle safety to young children. The software contains training videos and images that teach children about bicycle safety by providing positive information about proper equipment use and safety precautions. After completing the lesson, the user is given exercises where they have to make decisions about bicycle safety. In one lesson, children are shown images of someone wearing a helmet and they must determine if the helmet was properly worn.³⁵

The experiment was designed with a division of the students; half of the students participated in the Bike Smart computer program while the other half participated in the control, which was a video on childhood safety. The outcome of the experiment was measured by the computer-based knowledge and a measure on helmet placement. Results indicated in this study that no matter what gender, cohort, or grade, those students who participated in the Bike Smart program showed a significant gain in both measures of the outcome. The findings of this study concluded that Bike Smart is a low cost, effective method of safety training.³⁶

In a different study published in *Pediatrics Adolescent Medicine*, Michael L. Macknin and Sharon VanderBrug Medendorp conducted research in four upper-middle class suburbs of Cleveland, Ohio. The 1994 study sought to measure the association between children wearing bicycle helmets in places where bicycle education and legislation had been implemented. The participants were students between the 1st and 7th grades. The study found that students in towns with both legislation and education for bicycle safety wore helmets the highest percentage of the time. Students in suburbs with legislation and no education wore helmets at a higher rate than students in places with neither education nor legislation for bicycle safety.³⁷

³⁴ Ibid.

³⁵ Karen McLaughlin, "The Effectiveness of a Bicycle Safety Program for Improving Safety-Related Knowledge and Behavior in Young Elementary Students," last modified September 15, 2009, accessed February 19, 2011, <http://jpepsy.oxfordjournals.org/content/35/4/343.full.pdf+html>.

³⁶ Ibid.

³⁷ Archives of Pediatrics & Adolescent Medicine, "Association Between Bicycle Helmet Legislation, Bicycle Safety Education, and Use of Bicycle Helmets in Children," *Archives of Pediatrics & Adolescent Medicine* 148 (1994): 255-259, accessed February 22, 2011, <http://archpedi.jamanetwork.com/article.aspx?articleid=517056>.

Conclusion

Bicycle accidents are a major source of injury in the United States, especially in children. The programs we have examined all seek to combat this issue, and as evidenced above, have proved to be effective. Many states as well as European countries have exhibited very strong bicycling programs. European programs, however, are much more integrated into the school system and culture compared to the United States. While Vermont has implemented strong education and encouragement programs as well as legislation and enforcement and programs and policies, it still ranks poorly according to a ranking of states by a bicycle advocacy group in the areas of infrastructure and funding and evaluation and planning.

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