

TAKING PROFESSIONALS TO CYCLING CITIES:

DOES IT MATTER?

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ABSTRACT

Bikes Belong Foundation and the Federal Highway Administration have sponsored study tours to European countries for cycling including The Netherlands, Denmark, and Germany. Via on-site study tours, professionals experience how bicycle transportation functions within integrated, multi-modal, balanced transportation systems. The goal is to give policymakers and transportation professionals opportunities to learn lessons they can apply in the US to encourage greater use of the bicycle for transportation. This research assesses the impact of those study tours through interviews with past participants. The research analyzes major lessons learned, how participants have implemented the lessons in US cities, and barriers to implementation. Based on interview responses, participants valued firsthand experience in world-class bicycling environments, expanded their vision for transportation and approach towards their work, and successfully transferred certain lessons.

Recommendations for future study tours include organizing a cycle track specific study tour, providing more firsthand experience with bicycle supportive policy formation and soft measure implementation, supporting participants through peer-to-peer information sharing and readjustment assistance upon return, and taking teams of politicians, engineers, planners, and community leaders from the same community to the most advanced European cycling cities.

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INTRODUCTION

Over the past few decades, Americans have started using bicycles for transportation more often. Cities such as Portland, Oregon, that have implemented a wide range of pro-bicycle measures, have experienced the greatest increase in rates of cycling in the US (Pucher, Buehler, & Seinen, 2011). Although a few dozen US cities have made significant efforts and achievements around cycling, they do not begin to approach the fully integrated policy packages and rates of cycling seen in top European cities for cycling in The Netherlands, Denmark, and Germany (Pucher & Buehler, 2007). Contrary to popular myth, these European cities have not always been world-class bicycling environments (Pucher & Buehler, 2008) suggesting that US cities may also have the potential to significantly increase rates of bicycle commuting.

There are many ways that transatlantic lessons could be transferred including professional reports, academic case studies, sharing best practices and design manuals at international conferences, or bringing US professionals to world-class bicycling cities to experience and learn firsthand. This last technique is exactly what Bikes Belong Foundation and the Federal Highway Administration (FHWA) have used, giving professionals the opportunity to experience how bicycle transportation functions as part of an integrated, multi-modal, balanced transportation system. Their goal is to give policymakers and transportation professionals the opportunity to learn lessons they can apply in the US to encourage bicycle transportation.

While the goal is clear, there has been no research to date regarding the impact of these study tours on professionals and their US communities. The purpose of this research is to assess the impact of these study tours by investigating major lessons learned, how participants implemented lessons, and barriers impeding their implementation.

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BACKGROUND

Bicycle Commuting in the US

Bicycling is on the rise in the US. The percent of total trips taken by bike nearly doubled between 1977 and 2009 (0.6% to 1%), and the number of daily bike commuters increased significantly between 2000 and 2009 alone (488,000 to 766,000) (USDOT, 2004, 2010; USDOC, 1980-2000, 2009, 2010).

The US Department of Transportation (USDOT) has specifically embraced cycling as an important part of the overall transportation mix as a mode that can “improve individual health as well as reduce air pollution, carbon emissions, congestion, noise, traffic dangers, and other harmful impacts of car use” (Pucher, Dill, & Handy, 2010, p. S107). At the 2010 National Bike Summit, President Obama’s Transportation Secretary Ray LaHood asserted that bicycling is central to livable communities. His department issued a 2010 policy statement indicating that “walking and biking should not be an afterthought in roadway design” (Adamo, 2011, p. 102).

The modern era of federal support of bicycling began in 1991 with the passage of the Intermodal Surface Transportation Efficiency Act (ISTEA), raising annual federal funding for walking and biking from \$5 million to \$150 million per year from 1992 to 1998. Subsequently, the Transportation Equity Act for the 21st Century (TEA21) and the Safe, Accountable, Flexible, Efficient, Transportation Equity Act (SAFETEA-LU) built on this momentum and increased funding (Pucher, Buehler, & Seinen, 2011, p. 457).

Growing rates of cycling, pro-bike policies, and increased federal funding for cycling may be indicative of a “bicycling renaissance” in the United States, albeit not distributed evenly. Rather, “the boom in cycling... has been limited to a few dozen cities, which have implemented a wide range of programs to aggressively promote cycling” (Pucher Buehler, & Seinen, 2011, p. 471).

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Of all the US cities, Portland may have transitioned most significantly toward bicycle supportive infrastructure and policies. Portland experienced a 5-fold increase in bike mode share between 1990 and 2009 achieving the highest rate of cycling in North America (5.8%). On the infrastructure side, “The cornerstone of Portland’s policy package is the steadily expanding and improving bikeway network, consisting of bike paths and lanes as well as superbly designed bike boulevards through residential neighborhoods” (Pucher, Buehler, & Seinen, 2011, p. 452). Portland is also increasing the supply of bicycle parking, instituting education and marketing programs, organizing community cycling events, enforcing cyclists’ legal rights to the roadway, and offering incentives to employers who provide end-of-trip facilities. It is this comprehensive approach to infrastructure and culture, which most closely resembles the approach of top European cities for cycling, that led to Portland’s 5-fold increase in cycling rates.

The success of Portland and other US cities that have begun to implement a wide range of pro-bike measures, demonstrate that US cities have the potential to significantly increase rates of bicycle commuting. While Portland’s efforts and accomplishments are significant, they do not begin to approach the fully integrated policy packages and cycling rates in top European cycling cities. Thus, these European cities may still offer valuable lessons for the US (Pucher & Buehler, 2007, p. 9).

Top European Cycling Cities

Cycling rates are highest in the Netherlands, where 27% of all trips are made by bike. Many Dutch cities achieve even higher levels of cycling. In Amsterdam 50% of residents made daily bicycle trips in 2003. In Groningen, 59% of local trips are made by bicycle. Denmark is second to the Netherlands, with cycling rates of 18%. Copenhagen, a Danish city with many large streets like those in the US, achieved cycling rates of 20%, with 36% of work trips by bike in 2005. Even Germany, home of the Autobahn, is closely tied with Finland and Sweden with 10%

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of trips by bike (Pucher & Buehler, 2007, p. 10 - 26). Rates of cycling in these countries are distributed fairly evenly across a range of demographics including sex, income, and age. All types of people bicycle in the Netherlands, Denmark, and Germany (Pucher & Buehler, 2008, p. 496).

The “universality” of cycling is due in part to the safety of cycling in these countries. Cyclist fatality rates are lowest in the Netherlands. Averaged over the years 2002 to 2005, the number of bicyclists killed per 100 million km cycled was 1.1 in the Netherlands, 1.5 in Denmark, 1.7 in Germany, and 5.8 in the US. Evidence suggests that safer bicycling environments increase the rates of cycling (Pucher & Buehler, 2007, p.12.), and motorists are less likely to collide with bicyclists when there are more people bicycling (Jacobsen, 2003, p. 208). This phenomenon is commonly referred to as “safety in numbers” (Pucher & Buehler, 2007, p. 12).

Although cities are “ultimately responsible for implementing the key transport and land use policies that establish the necessary supportive environment for cycling to thrive” (Pucher & Buehler, 2007, p. 9), since the 1980s, the central governments of all three countries have become increasingly involved in cycling by promoting research, disseminating best practices, creating National Bicycling Master Plans, and funding innovative projects. Prior to the 1970s, cycling levels had fallen in these countries, but oil shortages and environmental awakening prompted explicit transportation and urban planning to support bicycles as an important transportation mode (Pucher & Buehler, 2008, p. 509 - 510). These European cities were not always “cycling cities” but became so through deliberate policies that created balanced transportation systems integrated into an urban environment conducive to bicycle transportation.

Study Tours in World-class Bicycling Environments

Study tours are one technique that Bikes Belong Foundation and FHWA utilize to expose transportation professionals and politicians to world-class bicycling cities in Europe. Bikes

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Belong Foundation is the non-profit branch of Bikes Belong Coalition, a national organization for bicycle retailers who work to “put more people on bicycles more often” (“What We Do,” 2012). Bikes Belong has led separate tours for representatives from Madison, Wisconsin and the San Francisco Bay Area (Bikes Belong, 2011).

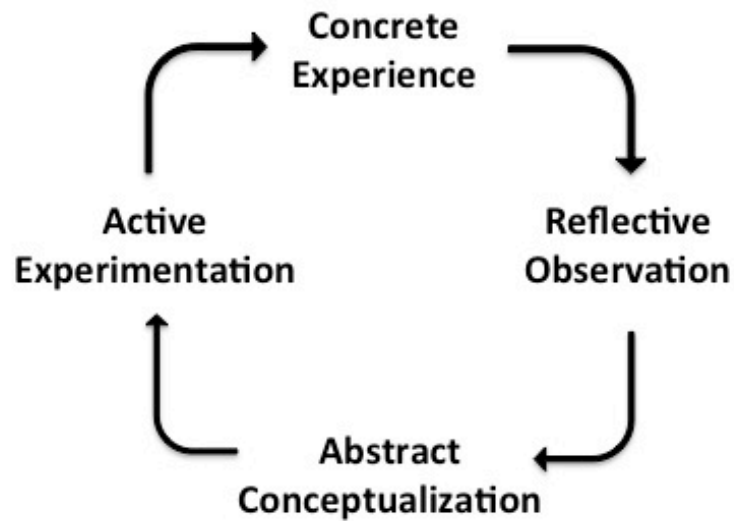
FHWA is concerned with design, construction, maintenance, and safety of the nation’s highways (“About FHWA,” n.d.). FHWA supported transportation professionals from across the nation on a study tour to Europe focused on bicyclist and pedestrian safety and mobility (Fischer et al., 2010, p. 1).

Study Tours as Experiential Learning

Taking professionals to Europe to learn about cycling firsthand involves experiential learning. Literature on educational theory indicates that learning is most effective when linked with action and experience (Dewey, 1938) (Revans, 1998). Experiential learning in unfamiliar environments encourages students to question the origins, causes, and implications of cultural paradigms and take action for social change (Mezirow, 1998).

Educational theorists David Kolb and Ronald Fry describe four aspects of effective experiential learning: concrete experience, reflective observation, abstract conceptualization, and active experimentation. During these stages, learners engage “fully and openly” in new experiences, “reflect on and observe these experiences from many perspectives”, “create concepts that integrate ... observations into logically sound theories”, and “use these theories to make decisions and solve problems” (Kolb & Fry, 1975, p. 33 - 36).

FIGURE 1. Kolb and Fry's cycle of experiential learning



There is an extensive body of literature on experiential learning and bicycle transportation, but no research to date has analyzed study tours that allow American professionals to experience how bicycles are integrated into European transportation systems. It is the intent of this research to fill that gap.

METHODS

The purpose of this research is to determine how study tours impact participants and their communities. Twenty-five US transportation professionals and politicians participated in one of the three European study tours organized by either Bikes Belong or FHWA between 2009 and 2010, and eleven were interviewed for this study.

Data was collected through semi-structured interviews conducted over the phone and digitally recorded using Google voice. Interviews lasted approximately 30 minutes. Interviewees

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were chosen because they are representative of the diversity of the larger study population.

FHWA participants interviewed include representatives from the federal, state, and local levels, in three different states. Bikes Belong participants interviewed include both politicians and transportation professionals from April and August 2010 tours. The following table outlines the characteristics of the interviewees and the tours in which they participated.

TABLE 1. Outline of study tours and interviewees

Tour	Cities visited	Participant	Position at time of tour
FHWA May 2009	Denmark Copenhagen & Nakskov	Ernie Blais	Division administrator, FHWA Vermont Division
	Germany Berlin & Potsdam	Cindy Engelhart	Bicycle/pedestrian transportation engineer, Northern Virginia District, Virginia Department of Transportation
	Sweden Lund & Malmö	David Henderson	Bicycle/pedestrian coordinator, Miami-Dade County Metropolitan Planning Organization
	Switzerland Bern & Winterthur	Jon Kaplan	Bicycle/pedestrian program manager, Local Transportation Facilities; Vermont Agency of Transportation
Bikes Belong April 2010	United Kingdom Bristol & London	Peter Bock	Former state legislator, Wisconsin state assembly
		Dave Ciezlewicz	Mayor, City of Madison
		Tony Fernandez	City engineer, City of Madison
		Dan McCormick	Traffic engineer
Bikes Belong August 2010	Germany Muenster	David Chiu	President, San Francisco Board of Supervisors
		Ed Reiskin	Director, Department of Public Works; City of San Francisco
		Bridget Smith	Director, Livable Streets Program; San Francisco Municipal Transportation Agency
	The Netherlands Amsterdam, The Hague, Rotterdam, & Utrecht		

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Participants were questioned about their motivation for participating in the study tour, their experience of bicycle transportation in Europe, how they implemented lessons in the US, barriers to implementation, what would help them to implement lessons, and their major recommendations for promoting bicycle transportation in the US. Follow-up questions were used to clarify responses and encourage participants to elaborate. Audio recordings of the interviews were transcribed and information provided by interviewees was grouped thematically to identify similarities and differences by study tour, professional affiliation, and city base.

Two pilot interviews were conducted with national experts Jay Walljasper and Gary Obery to test the data collection instrument and the audio recording equipment. Mr. Walljasper is a freelance writer and editor who joined Bikes Belong's August 2010 tour. Mr. Obery is an alternative modes traffic engineer with the Oregon Department of Transportation, who attended the Velo-city conference in Copenhagen, Denmark in June, 2010.

Additional interviews were conducted with Gabe Rousseau (FHWA) and Zach Vanderkooy (Bikes Belong), organizers of the respective tours, as well as Charlie Zegeer, associate director of the University of North Carolina's Highway Safety Research Center. Zegeer participated in FHWA tours in 1993 and 2009. These interviews provided background and context for the study. The tour organizers provided additional insight into their intentions for creating the tours.

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FINDINGS

Data from the interviews can be grouped into four main categories: lesson learned, lessons implemented, lessons that participants hope to implement, and barriers to implementation.

Lessons Learned

Participants shared major lessons from their study tours regarding what they saw, heard about, and experienced. Their responses can be grouped into these broad categories: general observations, policies, infrastructure, and soft measures.

General Observations

Sheer Number of Cyclists Participants were overwhelmed by the sheer number of people commuting by bicycle. Peter Bock, former representative to the Wisconsin State Assembly was “very impressed with the high numbers of people who use a bicycle to do their daily routines, whether that’s going to work, going to the store, or traveling to the nearest town”. Ernie Blais, Division Administrator of FHWA’s New Jersey Division, described, “We started off in Copenhagen, and it was just amazing the number of people that use bicycles for transportation year round, and the weather there is comparable to many of our Midwestern and Northeastern cities”.

Bicycling as a Normal, Everyday Activity Another commonly-expressed observation was that commuting by bicycle seemed to be an ordinary, everyday activity for all types of people in the cities visited. Jon Kaplan, Bicycle and Pedestrian Program Manager, Vermont Agency of Transportation, saw “women in skirts and heels and guys in business suits” on bicycles. Anthony Fernandez, Project Engineer, City Engineering, City of Madison shared that “biking can be as ordinary as driving a car. People of all ages, athletic abilities, genders, and economic statuses will get on a bike as just an ordinary thing to do ... whereas here I tend to associate it with a little bit

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more committed group of people who are quite aware that they are swimming against the stream”.

As a parent, Bridget Smith, Deputy Director, San Francisco Municipal Transportation Agency’s Livable Streets Program, was impressed that “people were carrying children on bikes”. She saw a “guy with two kids that were ten and eleven on his bike”. These images resonated with her because “people who used to walk, bike, or take transit every day” in the US often “start driving because it is difficult to maneuver around with kids”. Participants saw people of all ages, sexes, and socio-economic classes riding bikes as a normal way of getting around.

Policy

Conscious and Balanced Approach Toward Transportation System Planning

Another common theme was a realization that cities achieved high rates of bicycle commuting through conscious policy decisions. Dave Cieslewicz, former Mayor, City of Madison, recognizes that people in the US assume that the Netherlands has high rates of bicycling “because the price of gas is so high and the land is flat”. He acknowledges that the Netherlands “does have some built in advantages”, but that it achieved high rates of cycling “by making conscious decisions about bicycle infrastructure and policies”. The lesson that “hit (him) over the head” was that the US “can make conscious policy decisions that dramatically change the mode share”.

Participants also observed that the cities take a balanced approach towards transportation system planning. Jon Kaplan noted that bicycle transportation was not “a stand-alone program” overseen by one or two bike planners. Rather, all city engineers and planners integrated bicycling into their overall transportation work. Dan McCormick, Traffic Operations Engineer, City of Madison Traffic Engineering Division, commented, “the bicycle was a third feature on every street and at every intersection”. Germany and the Netherlands provide traffic signals not only for motorists and pedestrians, but also cyclists. He contrasted that with US streets, which are

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“ambiguous about bicycles”. McCormick is confident that “this third layer of the bicycle” can be added into US streets “fairly seamlessly”. Participants learned that bicycling is not a preexisting part of the culture, but has been promoted through conscious policy decisions and a balanced approach towards transportation system planning.

Infrastructure

Complete Bicycle Networks Participants learned that the cities visited are committed to building complete networks of bicycle facilities rather than project-by-project bicycle enhancements. Bridget Smith described the bicycle networks as “seamless”. David Henderson, Bicycle/Pedestrian Coordinator, Miami-Dade County Metropolitan Planning Organization, noticed these cities were committed to “connect(ing) origins and destinations and build(ing) a robust network” for bicyclists. The European hosts approached their work with the goal of improving not only bicycle safety, but also mobility. Dan McCormick explained, “there was never a facility that was built but not connected”. He contrasted the “contiguous” bicycle networks he saw in Europe with the “scatter shot of projects” in Madison that are “not connected in a strong way”.

On-street Separated Facilities Participants noted the importance of separating automobiles from bicyclists on high-volume, high-speed streets. Peter Bock expressed, “Segregat(ing) the bike lane with a curb or having it slightly elevated, right next to the road” provides a sense of security to cyclists. Cindy Engelhart, Northern Virginia District Bicycle/Pedestrian Coordinator, learned about cycle track intersection design from Copenhagen. Cycle tracks in Copenhagen are “raised about four inches (above the roadway), but four inches below the sidewalk”. Copenhagen found a reduction in the crashes on cycle tracks after dropping them down to the road level at intersections so automobiles could merge into the cycle track. This

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lesson resonated with Ms. Engelhart because she is hearing more discussion about cycle tracks among US transportation professionals.

Colored Pavement Participants frequently referred to the use of colored pavement to delineate bicycle facilities. Peter Bock described that cyclists sense that colored pavement is their “territory” and drivers are “very aware that it is a different surface”. Bock related techniques for colorizing pavement. Rather than painting bike lanes, Dutch cities mix the paint into the top layer of asphalt so that the color lasts longer. Bridget Smith noticed how color “functioned to brand the bike space”, creating a “visually intuitive” system that is “easily understood by all of the users”.

Bike Parking The third infrastructural element that arose as a common theme is bike parking. Anthony Fernandez learned that “bike parking needs to keep pace with bike usage, particularly with an emphasis on preventing theft”. Fernandez “never thought of bike parking as a huge issue”, but he realized that “as the number of bikers goes up it clearly is”.

Soft measures

Marketing/Encouragement Although participants mentioned a wide range of soft measures for promoting bicycle transportation, only marketing arose as a common theme. Participants realized the cities visited actively encourage bicycle transportation. Dan McCormick expressed that European cities market bicycling as “trendy and normal”.

Lessons Implemented

Ultimately, the purpose of these study tours is to influence work back home. Unsurprisingly, infrastructure improvements are the most common element that participants implemented, perhaps because of extensive firsthand experience with infrastructure innovations on study tours.

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Colored Pavement

Participants on both FHWA and Bikes Belong tours experienced colored pavement. Upon return, participants from Madison used colored pavement to delineate a separate crossing for bikes adjacent to an existing crosswalk in a complicated intersection. After this redesign the City received “great feedback especially from mid-level bikers and beginners that suddenly they understand the intersection. They know where to cross”.

Bridget Smith explained that San Francisco had been using some colored pavement before receiving permission from the federal government. She was forced to convince one of San Francisco’s engineers that color was “decorative”. The City had been “locked in a discussion with the state traffic control device committee,” which said color was an experimental traffic control device, and the City would be limited in the way it could use color. Now that colored pavement is allowed by FHWA as a temporary provision, San Francisco has “used it to alert bicyclists to weaving situations with cars”.

The shift in federal standards on colored pavement was due in part to lessons implemented by FHWA study tour participants. Participants identified infrastructure innovations, such as colored pavement for bicycle facilities, which would require changes to the Manual on Uniform Traffic Control Devices (MUTCD) to be approved in the US.

Firsthand experience with the use of colored pavement in Europe helped tour participants to implement these facilities in the US. Colored pavement may have been easier to implement than others lessons because it is relatively inexpensive compared to other European facilities and is a reasonable step forward from current US practice of striping bike lanes for on-street bicycle facilities, involving nothing more than paint on the road.

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Hope to Implement

Participants experienced mature, comprehensive bicycle transportation systems and thus it is expected that implementing such knowledge takes time, given the very nascent nature of American bicycle transportation planning.

Cycle Tracks

Of all the experiences participants had, cycle tracks were overwhelmingly mentioned as key for future implementation. Cindy Engelhart is on a bicycle technical committee for the MUTCD, which is creating guidance for cycle track design, which she says goes hand-in-hand with bicycle signals. As of 2012, the MUTCD does not contain finalized guidance on cycle tracks or bicycle signals.

Dan McCormick explained that Madison has “type A cyclists who will ride in any conditions” and cyclists that will only ride on paths. McCormick suggests that ridership will not increase dramatically until the City builds cycle tracks. Similarly David Henderson suggested that even if US cities “fully implemented the kinds of facilities that are commonly applied in the US”, they would appeal to less than 20% of the population. Striping complete networks of bike lanes would result in a six to eight percent mode shift. Developing facilities with broader appeal” such as “buffered bike lanes, cycle tracks, and protected bike lanes” is more challenging.

Bridget Smith described differences in US and Dutch driving practices that complicate cycle track design. The Dutch bring the cycle track across the intersection “where we would traditionally have the crosswalk” and move the crosswalk back. Dutch drivers are accustomed to “turning the corner, stopping, and waiting for the bikes there” whereas US drivers are accustomed to “stopping at the intersection. Once (drivers) start to make the turn they continue. They don’t have to pause”. She thinks that once San Francisco has “a lot of cycle tracks and people really

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understand what they are, (the City) can start to shift that cultural nuance”. Both San Francisco and Madison have built on-street separated facilities, but not cycle tracks.

Barriers and Opportunities

Participants were asked about barriers to implementing lessons from the tour and what would help them to overcome these barriers. Four barriers arose as common themes, lack of funding for bicycle projects, regulations that allow innovative facilities, expertise on bicycle facility design, and public acceptance.

Funding

Multiple participants mentioned lack of funding for bicycle projects as a barrier. Dave Cieslewicz hopes for long-term, consistent, dedicated federal funding for bicycle transportation. “It could be a small fraction of the money spent on highways but a little bit ... would go a long way”. With the new transportation act, Cieslewicz encourages the federal government to establish a new program for bicycle transportation with enough funding “to make some real changes”.

Peter Bock described the challenge of securing government funding for cycling when America is “so in love with automobiles”, prioritizing them over bicycles and pedestrians. “We have the resources”, he says, but “we prioritize building roads and highways and things to benefit vehicular traffic.” Although Madison is “more progressive than other places” in terms of spending on bicycle infrastructure, the City does not have sufficient resources to “designate as many bike paths or lanes as (it) would like.”

Ed Reiskin, San Francisco Municipal Transportation Agency’s Director of Transportation, believes that better data on cycling’s benefits to economy, business, traffic, and health would generate greater political support and subsequently more funding for bicycle transportation. “Sometimes cycling can be hard to sell here,” he explains, “because it seems like

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you're trying to spend scarce transportation dollars to appease a very small portion of the population who tend to be very strong advocates that people see as on the fringe". If people do not understand the benefits of bicycle transportation, they "tend to see these investments as narrowly benefiting a small constituency rather than (contributing to) the large benefits that we get when people are on bicycles instead of in cars taking up space and polluting the air".

Regulations

Regulatory barriers arose as a common theme. Jon Kaplan mentioned the difficulty of implementing innovations like bicycle signals because "it's hard to find something that complies with the MUTCD". The lack of proven standards for infrastructure will be a barrier "until the MUTCD adopts interim approval of more (facilities) or goes through another revision".

Bridget Smith described the difficulty of obtaining "an exception to use safe-hit posts to separate bicyclists from traffic" on Market Street. California state laws require that on-street separated facilities include a concrete barrier and 48-inch high fence. When reviewing San Francisco's request for an exception, the state staff person argued "if a bicyclist fell, every bicyclist behind him would crash and the cyclists in the lane would be trapped". Smith explained, "That's just not how it functions. People have brakes, or they can check and weave into the traffic lane if needed", plus "the posts are spaced 30 feet apart". San Francisco was finally allowed to build the facility because the city traffic engineer justified the logic and signed in approval. Nevertheless, vehicular cyclists challenged the City and are theoretically "still waiting to sue".

Anthony Fernandez suggests that "proven standards" could help transportation professionals implement unconventional cross-sections such as "bicycle boulevards, bike preferential streets, and contra-flow lanes. Engineers are conservative by nature", he explains, "and don't want to go out on a limb on anything that's not tested or in a manual". He considers the National Association of City Transportation Officials' (NACTO) urban bikeway design guide

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to be “a good step in that direction”. Fernandez says, “Anything that helps develop some standards like the CROW manual gives designers a place to stand so it doesn’t look like they’re inventing it as they go along”.

Design Expertise

According to participants, peer-to-peer exchange would help transportation professionals gain design expertise for innovative bicycle facilities. David Henderson cited how roundabouts “spread like wildfire” because the “technical evaluation and standards development ... were translated very effectively... through the engineering community”. He emphasized, “Recommendations that come from outside the engineering community don’t have nearly the same level of acceptance, rapid implementation, and buy-in from the professional community as those coming from within”.

Public Acceptance

Another common barrier was the lack of public support for bicycle transportation. Dan McCormick expressed that Madison gets “backlash” for spending money on bicycling. “If we compare the numbers,” he says, “it’s unbalanced”, and “bike space is only taking up five percent or less of the pavement” but “people feel like bikes don’t pay for anything”.

Bridget Smith suggested “getting some really great facilities on the ground” as a strategy for increasing public acceptance for bicycling. Smith described how the buffered bicycle lane on Market Street, the very facility that violates California state traffic code, garnered community support:

A couple of people told me that the first time they rode through it, they cried because it was such a transformative experience. They felt so much more dignified, ... like they had a space of their own, and ... much safer. The people who didn’t bicycle regularly said, ‘if

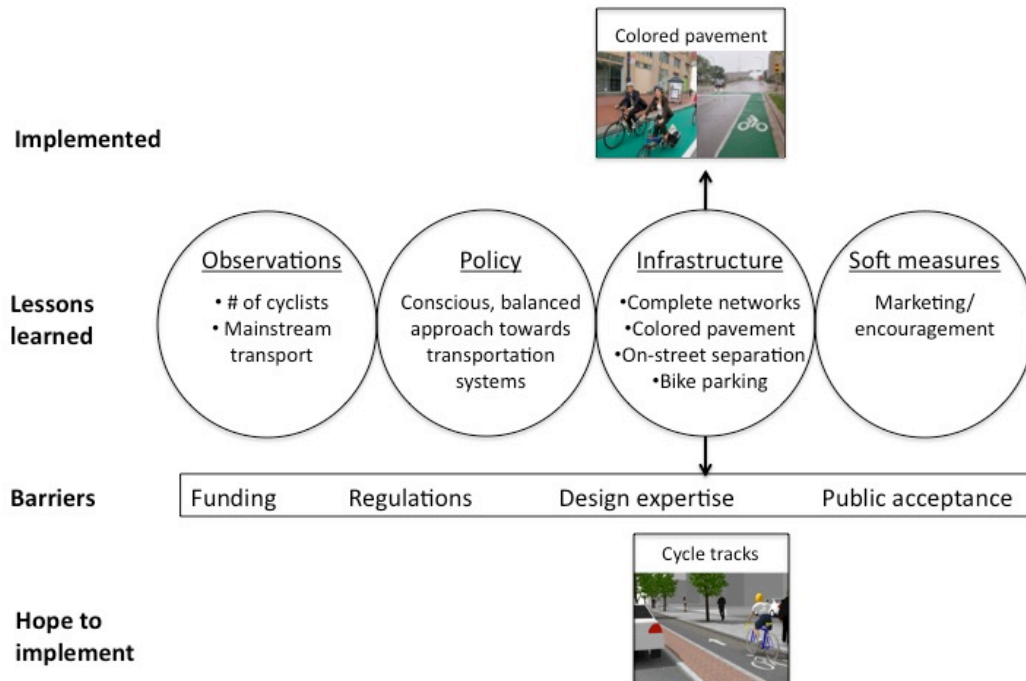
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you could get more of these, I would start biking because ... they don't feel safe riding with auto traffic anywhere near them.

Smith thinks that building more on-street separated facilities will improve public acceptance of cycling.

Of all the lessons participants learned, colored pavement was implemented the most commonly. Participants hope to implement other lessons, especially cycle tracks, in the future, but have identified the lack of funding, regulations, design expertise, and public acceptance as barriers.

FIGURE 2. Common themes

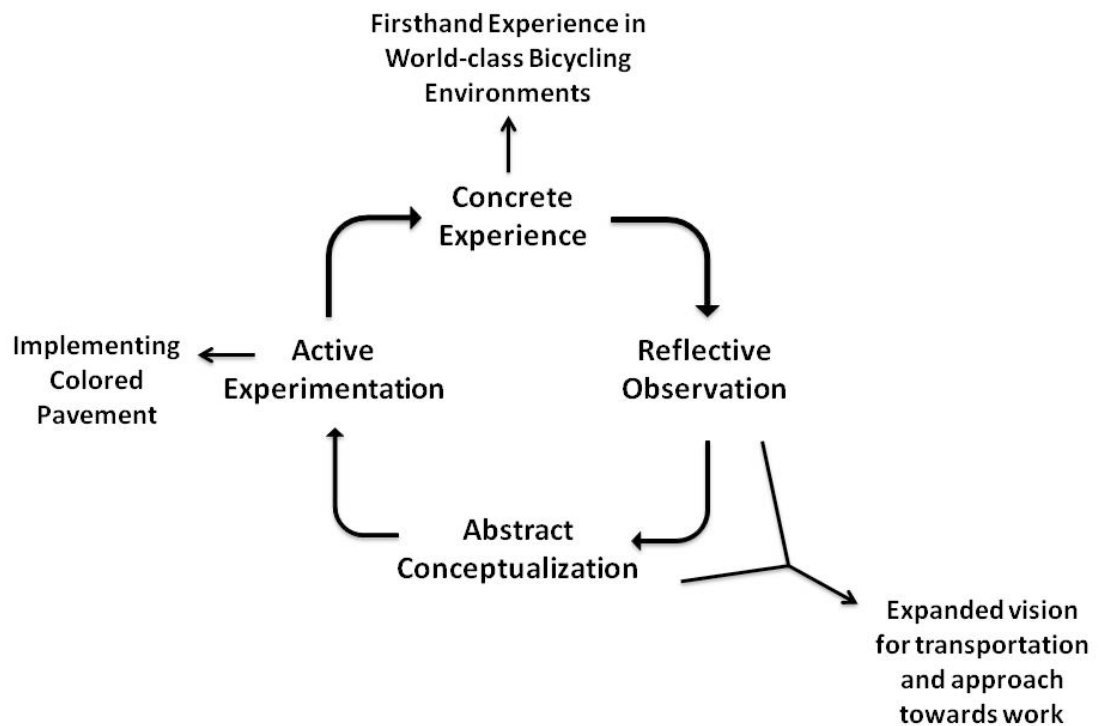


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DISCUSSION

Kolb and Fry's model of experiential learning provides a solid theoretical foundation to explain tour participants' reflections and subsequent actions. The tours provided concrete experience in world-class transportation systems. Participants' vision for transportation expanded and approach towards their work shifted through reflective observation and abstract conceptualization. Participants carried lessons about colored pavement through the entire experiential learning cycle to the active experimentation phase.

FIGURE 3. Impact of study tours within the experiential learning framework



Concrete Experience

Zach Vanderkooy, International Programs Manager, Bikes Belong Foundation says the motivation behind the study tours was to provide concrete experiences in a “living, 3D, functioning example of world-class transportation systems that are about connecting people to

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places and are multi-modal”. Tour participants confirmed that traveling to Europe is key because North America does not have examples of world-class bicycle transportation systems. “You can look at Boulder, Portland, or Davis in the United States,” Dave Cieslewicz described, “but they’re nothing compared to Utrecht, Muenster, & Amsterdam. It was a great opportunity for us to learn firsthand how to talk about 20, 30, or 40 percent mode share as opposed to two, three, or four percent”.

Participants described the value of seeing, experiencing, and riding in world-class transportation systems firsthand. David Chiu explained:

Until I went (on the tour), it was an intellectual concept to see on a piece of paper that Dutch cities have mode shares of 40 to 50 percent ... It’s one thing to hear it as numbers and it’s another thing to actually see it on the street. It’s one thing to look at pictures of traffic signals and segregated bikeways and it’s another thing to actually be in a segregated bike lane and feel safer and see the dance as pedestrians, bikes, and cars cross the street. It’s one thing to see a picture of a bike parking structure and another thing to park in a bike parking structure with thousands of other bikes. You can talk about food but it’s really different to eat it. That real tangible experience opened my eyes, made me a better advocate and allowed me to really speak about (bicycle transportation) with much more authority when I articulate a vision for the city.

Study tours to Europe give participants firsthand experience in cities with rates of bicycling that are unparalleled in North America.

Reflective Observation and Abstract Conceptualization

Study tours allowed participants to speak with local counterparts and meet amongst themselves to discuss their experiences, prompting reflective observation and abstract

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conceptualization. In these stages of the experiential learning cycle, participants often change their vision for transportation and approach towards their work.

Peter Bock's vision for transportation expanded as a result of the study tour. He admitted he was a "bike snob", who only rode for recreation. After seeing bicycle commuting as "commonplace" on the tour, he realized it is a legitimate form of transportation, and also started commuting by bike.

Anthony Fernandez shared that until local hosts emphasized the importance of bicycles equipped for commuting, he "never really thought of the equipment as an important issue". Fernandez' vision has expanded. He believes providing access to upright bikes with built-in fenders, lights, chain guards, and skirt guards, is an important aspect of promoting bicycle transportation.

In addition to changing participants' visions for transportation, tours can alter the way they approach their work. Ed Reiskin noticed that European hosts "never talked about cycling as a standalone", but as "one component of the transportation system". As a result, Reiskin now relates how cycling "fits into the overall transportation system" in San Francisco.

For Bridget Smith, the tour reframed her approach towards marketing. Previously, San Francisco had launched campaigns about safe riding with messages such as "don't ride in the door zone". European hosts encouraged tour participants, "Tap into people's memory that biking is fun". Now San Francisco is developing a "joy of biking" campaign.

Active Experimentation

Individual participants experimented with the following lessons upon return to the US: bike boxes, buffered bike lanes, contra-flow lanes, bike signals, bike boulevards, bike parking, goals of achieving a particular bike mode share, goals of prioritizing certain streets for certain

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modes, issuing policy summaries, marketing, education, bike count programs, bike share, and integrating bike facilities with transit.

Participants from all three tours have used colored pavement to delineate space for bicycles on the roadway. They were able to experiment with colored facilities because of their firsthand experiences on the tours and the relatively small regulatory and financial barriers involved. After FHWA tour participants saw the widespread use of colored pavement in Europe, they encouraged FHWA to grant interim approval for colored facilities, making it is easier for cities and states to install. Subsequently, Jon Kaplan applied for approval for municipalities in the state of Vermont to use colored pavement, and both Madison and San Francisco installed colored pavement.

Although participants carried colored pavement through the entire experiential learning cycle, for other lessons, certain phases of the cycle may have been lacking. Thus, recommendations suggest how experiential learning could be more robust for lessons that were not implemented as commonly.

RECOMMENDATIONS

While this research made clear the value of study tours and experiential learning when it comes to advancing bicycle transportation planning in American cities, it also identified a disconnect between lessons that participants learned abroad and lessons they implemented in the US. Study tour participants may be able to transfer even more lessons in the future with support for the active experimentation phase, a cycle track-specific study tour, and more concrete experience in policy formation and soft measure implementation. Recommendations for the composition of study tours and future research are also provided.

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Support for Active Experimentation

Peer-to-peer information sharing and readjustment assistance should support tour participants as they engage in the active experimentation phase.

Peer-to-peer Information Sharing

Participants suggested peer-to-peer information sharing to help US transportation professionals develop design expertise and share best practices. Professionals could learn how to implement facilities that tour participants observed, such as colored pavement, cycle tracks, bicycle signals, and bicycle preferential streets. David Henderson suggested that a national organization should be responsible for coordinating peer-to-peer information sharing because “professionals at the local level are taking their cues from national professional organizations and national regulatory agencies”.

Readjustment Assistance

Readjustment assistance could address questions or barriers that arise when participants return to work with a new approach or try implementing lessons from the tour. ThinkBike workshops offered by the Netherlands Embassy are one possible resource for such support. These workshops bring Dutch transportation professionals to US cities to help them “develop strategies for increase(ing) bike ridership” and redesign priority routes for bicycle transportation (“Sustainable Transportation,” n.d.). San Francisco participated in a ThinkBike workshop as a follow-up to its Bikes Belong study tour. Bridget Smith found the workshop valuable because Dutch professionals examined transportation issues specific to San Francisco.

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Expanded Support Structure

These methods of support are being introduced in a new program. In 2012, the Bikes Belong Foundation launched the Green Lane Project, which will take six cities on study tours. Participants will have opportunities for peer-to-peer information sharing with counterparts from two other cities on study tours to either Denmark or the Netherlands ("Project Events," 2012). The Project staff will facilitate communication between the focus cities to help them develop a "forum for information sharing and joint problem solving" ("Focus Cities," 2012). Participants will have opportunities for readjustment assistance through workshops, including the North American City Transportation Officials (NACTO) Cities for Cycling Road Shows and Dutch ThinkBike Workshops ("Project Events," 2012). In addition to these two forms of support, "Bikes Belong will dedicate 70% of its annual grants budget to support the focus cities in their efforts to improve and promote bicycling in their communities" ("Grants," 2012).

Cycle Track Specific Tour

Based on participants' responses, a tour focused on cycle tracks could be valuable. Such a tour would allow professionals to have more in-depth experience of cycle tracks, talk with the designers, consider how they function within the bicycle network, and learn how to retrofit US streets to include cycle tracks. While cities across the US are starting to experiment with on-street, separated facilities, no North American city has a complete system of cycle tracks on streets with the requisite speed and volume of auto traffic. A cycle track specific study tour would be especially valuable because participants could experience cities with complete bicycle networks that include a variety of cycle track designs.

Since the FHWA bicycle technical committee is currently drafting guidance for cycle track design, FHWA would be the logical agency to host the tour. If the FHWA were able to draft design guidance and provide interim approval for cycle tracks as a result of the tour, it would help

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to remove the regulatory barriers for cities that hope to build these facilities. Unfortunately, FHWA's International Technology Scanning Program has been suspended. It is unknown if or when it will be reinstated.

Concrete Experience of Policy Formation and Soft Measures

Program organizers should consider developing tours that provide more concrete experience of policy formation and the implementation of soft measures because participants were most successful in implementing lessons that they were able to see and experience firsthand.

For the next five years, tours should continue to provide a general overview of the comprehensive package of infrastructure, policies, and programs that support bicycle transportation. After that, certain cities that have participated in general tours should be prepared to explore bicycle-supportive policies and soft measures at greater depth.

Starting in 2017, program organizers could select a policy or soft measure focus of the year, identify the cities or agencies that are primed to participate, and lead in-depth tours on the focal area. For example, if bicycle education for school-aged children were the soft measure focus of the year, the tour could include discussions with local professionals who are responsible for coordinating education programs; visits to local schools; meetings with administrators, teachers, parents, and students; observations of bicycle safety courses; and bike rides to school with parents and children. Other policy focal areas could include financial incentives for cycling, legal interventions, and cycle-friendly land use planning. Other soft measure focal areas could include encouragement programs, evaluation, and bicycle access.

Study Tour Composition

In addition to highlighting the type of support and in-depth experience that tour participants need, interviews provided insight into the cities that the tours should visit and the types of professionals that should participate. Study tours that focus on integrating bicycling into

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the transportation system should visit the countries that have made the greatest advances in the field: the Netherlands, Denmark, and Germany. The specific cities can vary according to the participants' cities of origin, but they should include a mix of cities that have achieved the highest mode share and cities with systems that seem more achievable in the short term.

Each tour should include a politician, engineer, planner, and community leader from the same city because each plays a unique and vital role in implementation. Politicians communicate the vision for transportation to the public and make decisions about policies and funding. Engineers are directly responsible for implementing infrastructure and have the power to approve the use of innovative facilities. Planners consider how bicycle networks function within the transportation system and how to create supportive policies and programs. Community leaders garner public support and excitement for bicycling. Politicians, engineers, planners, and community leaders from two to three cities can participate in the same tour to begin the process of peer-to-peer information sharing.

Long-term Impacts

Future research should assess the long-term impacts of study tours. Such research could involve interviews with participants before, during, and at several points after they return to the US. Pre-tour interviews will allow researchers to gauge the change in participants' vision for transportation and approach towards their work.

Interviews during the tour would allow the program organizers and local hosts to determine which lessons participants found most memorable. The content and delivery of the presentations and discussions can be altered for future groups to resolve any disparities between lessons learned and lessons that local hosts hoped to convey. Feedback during tours can also lead to customized, post-tour readjustment assistance.

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Post-tour interviews can record lessons that participants implement within one, three, five, and ten years of the tour. Are participants better able to implement lessons sooner or later? Do participants who move to new agencies carry the lessons with them? Do organizations develop institutional support for the lessons learned on the study tour, or do the tour participants act as individual champions for the lessons within the organization? These are all questions that could be addressed by long-term research on study tours.

CONCLUSION

The research suggests that study tours provide significant value through concrete experience in world-class bicycling environments that expands participants' vision for transportation and approach towards their work. The study also revealed that participants were able to carry the lesson of colored bicycle facilities through the entire experiential learning cycle, from riding on the facilities in European countries to building the facilities in the US. Participants found implementing cycle tracks, bicycle supportive policies, and soft measures more difficult despite clear evidence of their critical nature within bicycle transportation planning.

Perhaps in the near future, US transportation professionals and politicians will be able to visit San Francisco, California; Madison, Wisconsin; and Portland, Oregon to experience world-class bicycle environments with complete networks of low-stress bicycle facilities, integrated seamlessly into well-balanced, multi-modal transportation systems. They can learn how to implement the policies and soft measures that encourage all types of people in these cities to use the bicycle for upwards of fifty percent of their trips. Until that day comes, study tours to top European cities for cycling are highly effective means of helping participants to advance bicycle transportation in America.

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