Chapter 1:

INTRODUCTION

"I bike with my kids on board. I'd love to see biking made more family friendly in Seattle. Well marked bike lanes/boxes–especially when buffered–should be all over town. We take the Burke-Gilman whenever we can, but of course it's not complete in Ballard."

CARFREEDAYS.ORG

The Seattle Bicycle Master Plan Vision

"Riding a bicycle is a comfortable and integral part of daily life in Seattle for people of all ages and abilities."

The vision for the 2013 Seattle Bicycle Master Plan (BMP) signifies an important shift in the way Seattle will accommodate people riding a bicycle for any trip purpose. There are several important themes embedded in this vision statement. First, the idea that bicycling is "comfortable" suggests it is a safe, convenient, and attractive travel option for a large number of people. "Integral to daily life in Seattle" means that bicycling is not a niche activity only for experienced and confident riders, but is part of the overall urban framework and built environment of the city. Finally, "all ages and abilities" is a key theme for the entire plan, meaning that the emphasis is on planning, designing, and building a bicycle transportation network that will be used by a broad range of people throughout the city.

The updated BMP includes best practices and the latest thinking about bicycle facilities, which will result in planned investments to serve a broader range of people who already ride bicycles, and those who are considering it.

The updated plan will help Seattle continue its national leadership in bicycling. Thousands of people already bicycle daily to work, to play, and to run errands in their neighborhoods and across the city. The increase in bicycling in the city over the past several years makes Seattle third in the country for the percentage of people who commute to work by bicycle (see Figure 1-1).

IN THIS CHAPTER:

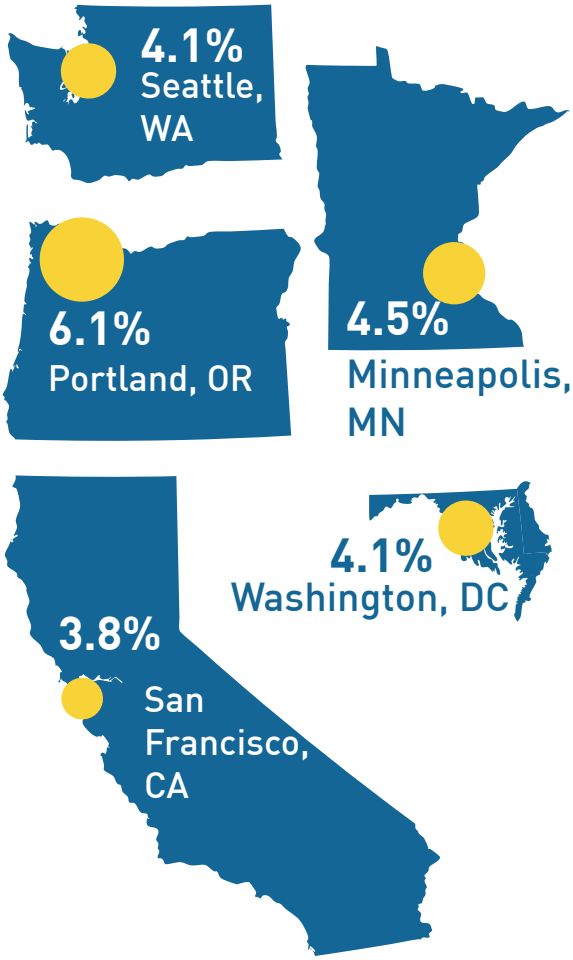
The strategies and actions identified in this plan will not only make bicycling a viable form of transportation for more Seattle residents, workers, and visitors, but also will help the city achieve its goals relating to mobility, climate change, economic vitality, and community livability.

BICYCLE FRIENDLY COMMUNITY 2013-2017 GOLD THE LEAGUE OF AMERICAN BICYCLISTS

Seattle is a good city for cycling by US standards, but to truly compete for and attract the top international talent these days, cities like Seattle have to be world-class cycling cities.

– Andy Clarke, President, League of American Bicyclists

Figure 1-1: Top 5 Bicycle Commute Rates for Large US Cities



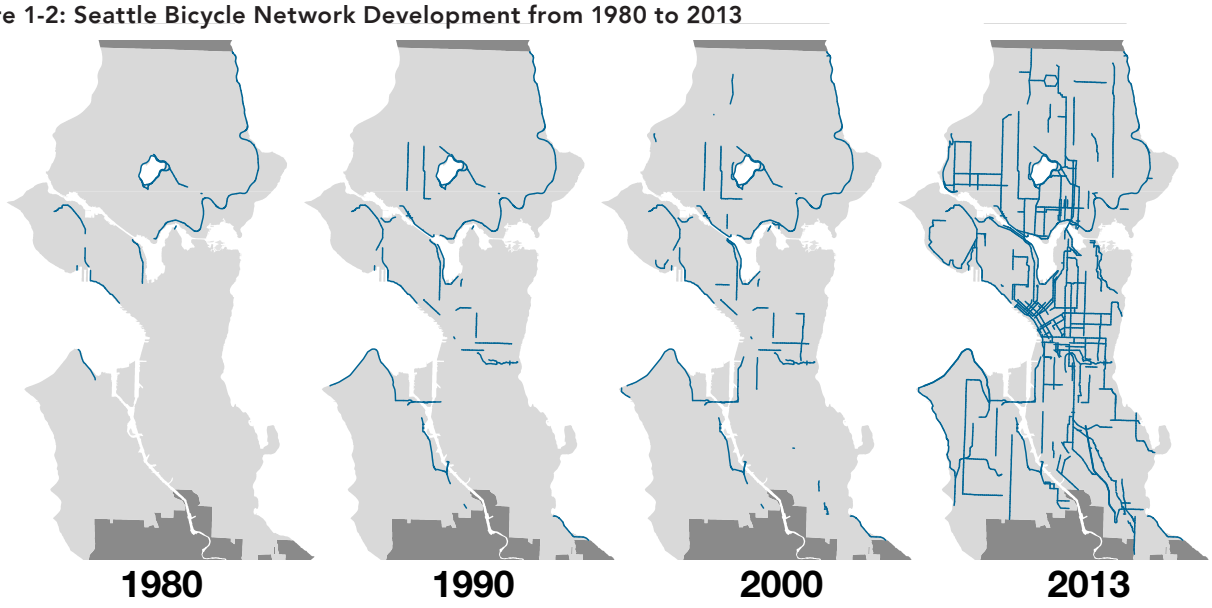
LEAGUE OF AMERICAN BICYCLISTS. 70 LARGEST CITIES RANKED BY BIKE COMMUTING. 2013. (BASED ON 2012 CENSUS DATA).

Plan Purpose

The purpose of the Seattle BMP is to provide a framework for improving the bicycling environment throughout the city. The actions and investments identified in the plan will advance the vision through new bicycle infrastructure (off-street trails and on-street bicycle facilities); maintenance; bicycle parking spaces and other end-of-trip facilities; and programs to enhance safety for all roadway users and encourage more people to ride bicycles.

A central focus of this plan is to design and implement bicycle facilities that are safe and appropriate for riders of all ages and abilities. New bicycle facility types are introduced, including cycle tracks (protected bicycle lanes), to physically separate people riding bicycles from motor vehicle traffic on arterials, and neighborhood greenways, in which low volume and low speed streets are optimized for walking and bicycling. While the bicycle network will be designed for all, riders should always use their own judgment in selecting routes that suit their experience and comfort level. The plan also provides guidance on how bicycle investments will be prioritized in the future, and contains performance measures that establish how the city will track progress made in accomplishing the goals of the plan over time. The plan outlines a number of other actions the city and its partners can take to support bicycling in the future.

Figure 1-2: Seattle Bicycle Network Development from 1980 to 2013



Burke-Gilman Trail.

Who Rides (or Doesn't) and Why?

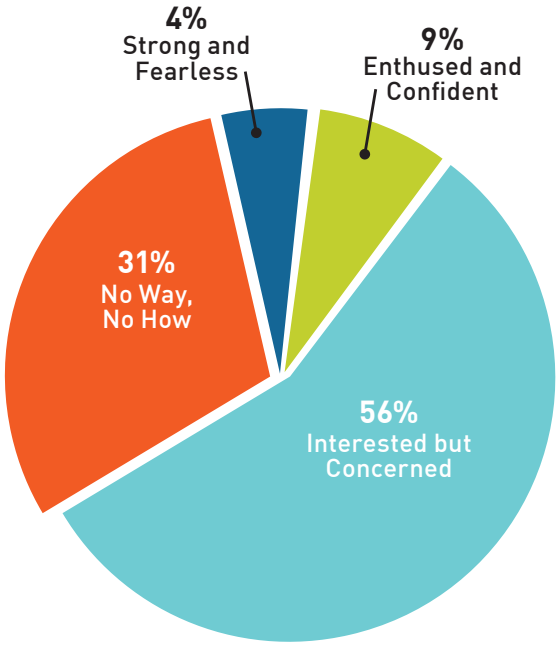
A 2012 Portland State University working paper explored the concept of "Four Type of Bicyclists"[1] put forth by the Portland Bureau of Transportation[2] in order to understand the potential for city residents to ride a bicycle. The study found that four percent of the population is made up of hardy riders who will ride regardless of the extent and quality of bicycle facilities. The study also classified nine percent of people as confident riders who will ride with basic bicycle facilities, such as bicycle lanes. These two categories presumably make up the majority of riders in Seattle today. Another 31 percent will not or cannot consider riding a bicycle under any circumstance. However, 56 percent were classified as "interested but concerned," meaning that they would be willing to ride a bicycle, or ride more often, if conditions were improved. This large portion of the population provides the greatest opportunity to increase bicycle use.

Another way of identifying the potential market for increased bicycle ridership is to consider trips that are short. According to the 2009 National Household Travel Survey, 41 percent of trips Americans make each day are less than 3 miles, a distance which could be traversed in 18 minutes by bicycle. As shown in Figure 1-4, there is great potential to increase the number of these trips made by bicycle. Longer trips, too can be made more practical, by improving bicycle connectivity to transit.

1 J, Dill., N McNeil. *Four Types of Cyclists?* 2012. http://web.pdx.edu/~jdill/Types_of_Cyclists_PSUWorkingPaper.pdf.

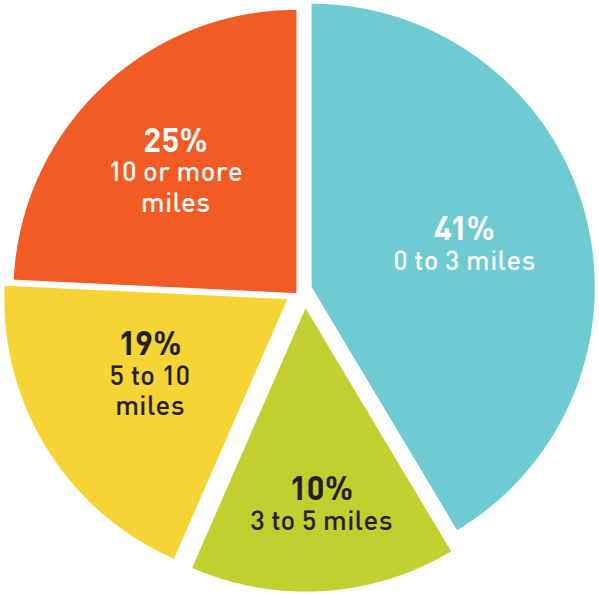
2 Roger Geller. Portland Bureau of Transportation. *Four Types of Cyclists*. 2006. www.portlandoregon.gov/transportation/44597?a=237507.

Figure 1-3: The Four Types of Transportation Bicyclists in Portland by Proportion of the Total Population



SOURCE: ADAPTED FROM J, DILL., N MCNEIL. *FOUR TYPES OF CYCLISTS?*. 2012.

Figure 1-4: National Averages of Personal Trip Lengths



TODD LITMAN. SHORT AND SWEET: ANALYSIS OF SHORTER TRIPS USING NATIONAL PERSONAL TRAVEL SURVEY DATA. VICTORIA TRANSPORT POLICY INSTITUTE. 2012.

Waiting to cross the street at NE 45th Street and Wallingford Avenue.

Addressing the reasons willing and able people choose not to ride is a focus of this plan. Admittedly, some conditions cannot be mitigated by public intervention: the weather of the Pacific Northwest, the hills throughout the city, and early winter darkness. While the city cannot change these conditions, individuals can address many of them with different types of bicycles (e-bicycles), appropriate bicycle clothing, and lights.

The city, however, can create an inviting environment, a sense of safety, thoughtful accommodation, and the reward of convenience for people who travel by bicycle. This plan proposes a network of bicycle facilities throughout the city that provides a way for people of all ages and abilities to travel by bicycle within their neighborhoods, from one neighborhood to the next, and across the city. This plan also proposes approaches to end-of-trip facilities that will make trips by bicycle more convenient and combining modes more practical. Finally, this plan includes recommendations for programs to enable all roadway users to understand the rules of the road and how to travel safely and predictably within the city, and to encourage people to ride a bicycle more often.

Making the Case for Investing in Bicycling

The case for improving the bicycling environment for people of all ages and abilities is growing. Academic and popular literature is expanding America's understanding of the relationships between bicycling and health, economic, and environmental benefits, safety, time competitiveness, space efficiency, and equity. There is evidence that bicycling is good for individuals, businesses, cities, and society as a whole.

Safe Streets for All Users

Safety concerns are another reason to improve bicycling conditions. Although the incidence of crashes involving bicycles may be low, concerns about safety have historically been the single greatest reason people do not commute by bicycle, as captured in polls as early as 1991.[3] A Safe Routes to School survey in 2004 found that 30 percent of parents consider traffic-related danger to be a barrier to allowing their children to walk or bicycle to school.[4] This plan addresses safety concerns through physical and programmatic improvements.

Planning for safety requires accommodating pedestrians, bicyclists, and motorists as they share space on the street. Studies have shown slower motor vehicle speeds exponentially increase survival rates for both pedestrians and people riding bicycles involved in collisions with motorists. At 20 mph, a pedestrian or bicyclist has a 98% survival rate, compared with survival rates of 80% and 30% at 30 mph and 40 mph respectively.[5]

Studies from across the world also suggest that the risk of injury or death in a collision with motor vehicles declines as more people walk or bicycle. Policies that increase the numbers of people walking and bicycling appear to be an effective route to improving the safety for all roadway users.[6] A study of improved safety records in bicycle-friendly cities concludes that while bicycle infrastructure, the design of the street, and the street network help slow traffic, it may be the presence of large numbers of bicyclists that changes the dynamics of the street enough to lower vehicle speeds. Safety for all road users may result from reaching a threshold of bicyclist volumes that compels motorists to drive more carefully. Strategies that attract bicycle riders are the same ones that improve safety for all road users. Cities should strive

3 Lou Harris Poll. 1991.

4 U.S. Centers for Disease Control and Prevention. *Barriers to Children Walking to or from School United States 2004*. 2005.

5 Petro, J. Ganson, L. *Vision Zero: How Safer Streets in New York City Can Save more than 100 Lives a Year*. 2011.

6 Jacobsen PL. *Safety in numbers: more walkers and bicyclists, safer walking and bicycling*. 2003.

for "safety in numbers" but before they can get to that point, they need to create bicycle friendly streets that will make it comfortable for the average person to ride a bicycle.[7]

Affordability

Bicycling is one of the most affordable means of transportation available to Seattle residents. Nationally, the average annual operating cost of a bicycle is $308, compared to $8,220 for the average car.[8]

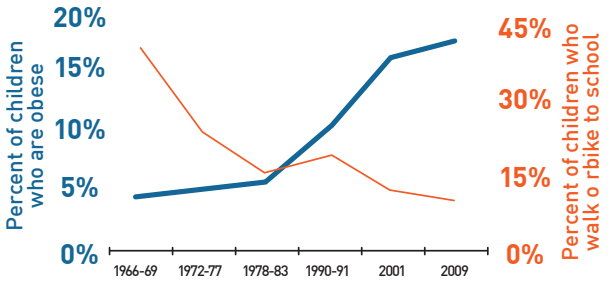
The cost of gasoline alone places a growing burden on household budgets. Gasoline expenditures as a portion of the average household budget are increasing, going from 3.4% in 1996 to 5.3% in 2011.[9]

Replacing vehicle trips with bicycling offers immediate financial benefit for households, and providing bicycle facilities appropriate for people of all ages and abilities can help make that choice a reality.

Health Benefits

Physical activity is indisputably effective in the primary and secondary prevention of cardiovascular disease, diabetes, cancer, and other related chronic diseases. Public health professionals support active transportation as a means of improving these and other health outcomes related to the obesity epidemic. The rapid rise in childhood obesity is particularly alarming and correlates with the nationwide drop in bicycling and walking to school over the last half century (see Figure 1-5). Creating a bicycle network appropriate for all ages and abilities and a built environment that encourages bicycling will support efforts to improve healthy lifestyles.

Figure 1-5: National Rates of Walking and Bicycling to School and Childhood Obesity



SOURCE: CDC, NHANES, MCDONALD 2007, OGDEN AND CARROL 2010, NHTS 2009.

Children who bicycle or walk to school learn better:

- More attentive and able to concentrate
- Advanced mental alertness by half a school year
- More benefit for mental development than having breakfast and lunch

SOURCE: EGELUND ET AL. *STUDY OF OVER 20,000 SCHOOL CHILDREN*. 2012.

Mental health and academic achievement are also improved by bicycling and walking. Children who walk or bicycle to school learn better as they are more attentive and better able to concentrate. A study of more than 20,000 school-aged children found that by walking or bicycling to school, children's mental alertness was advanced by half a school year. Walking and riding a bicycle to school has more benefit for mental development than eating breakfast or lunch. This plan supports safe routes to school and training students, parents and school administrators to understand traffic laws for safe walking and bicycling as a means of supporting Seattle students' learning.

Economic Benefits

There are many ways to consider the economic benefits of increased levels of bicycling. The direct dollars earned in bicycle-related businesses—manufacturing, wholesale, retail, service, and accessories—have an obvious positive impact on Seattle. Nationally, bicycling makes up $133 billion of the US economy, funding 1.1 million jobs, and bicycle-related trips generate $47 billion nationally in tourism activity.[10] In a number of cities, realtors report that good walking and bicycling access to neighborhood destinations and good bicycling facilities in general are important home selection criteria.[11] Major employers—and young, talented employees—seek communities with good opportunities for active lifestyles and attractive

7 Marshall and Garrick. *Evidence on Why Bike-Friendly Cities Are Safer for All Road Users*. 2011.

8 Bureau of Transportation Statistics. *Pocket Guide to Transportation*. 2009.

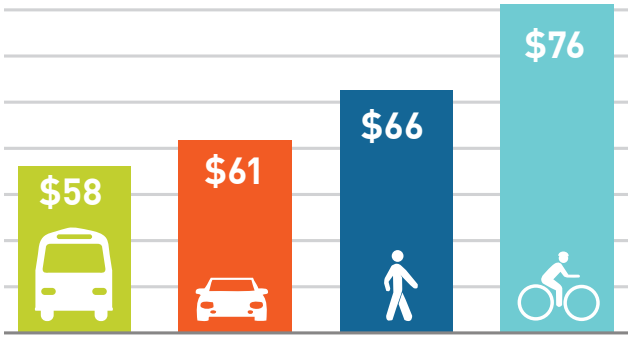
9 Bureau of Labor Statistics. *Consumer Expenditure Survey*. 2012.

10 Flusche, Darren, for the League of American Bicyclists. *The Economic Benefits of Bicycle Infrastructure Investments*. 2009.

11 Cortright, Joe, for CEOs for Cities. *Walking the Walk: How Walkability Raises Home Values in U.S. Cities*. 2009.

"Develop and implement a comprehensive land use and multimodal corridor plan in a high priority transit and bicycle corridor with the goal of shifting more trips to travel modes that generate fewer, or no, greenhouse gases." – *Seattle Climate Action Plan*

Figure 1-6: Average Monthly Customer Expenditures by Travel Mode in Portland, OR



CLIFTON, K.J., MORRISSEY, S., RITTER, C. *BUSINESS CYCLES: CATERING TO THE BICYCLING MARKET*. TR NEWS 280. 2012.

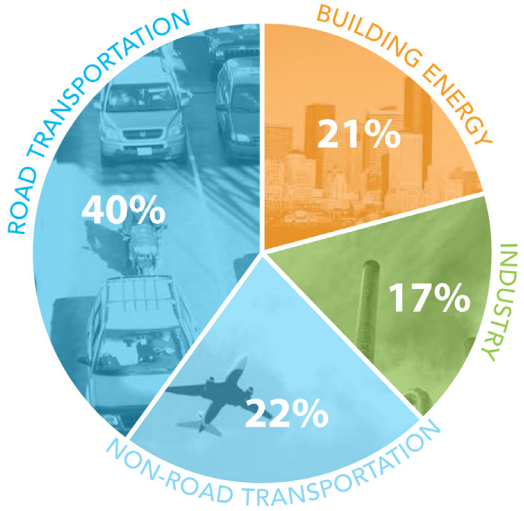
urban amenities.[12] Intercept surveys in Portland, OR found that people arriving to retail stores on foot or by bicycle visit more frequently than those who drive, and spend more money over the course of a month (see Figure 1-6).[13]

Bike sharing systems have also been shown to create economic benefits for cities. In Washington, DC, a survey by Capital Bikeshare found that its members save an average of $800 per year on transportation costs.[14] Bike share stations may also help stimulate retail sales. More than four in five Capital Bikeshare members surveyed in 2011 said they were more likely to patronize an establishment accessible by bike share. Bike share can also induce additional trips by making new destinations accessible when other modes are inconvenient or unavailable. Three in ten Capital Bikeshare members reported making an unplanned trip to a restaurant, and a quarter reported making an unplanned shopping trip made easier because they were on a bicycle.[15]

Environmental Benefits

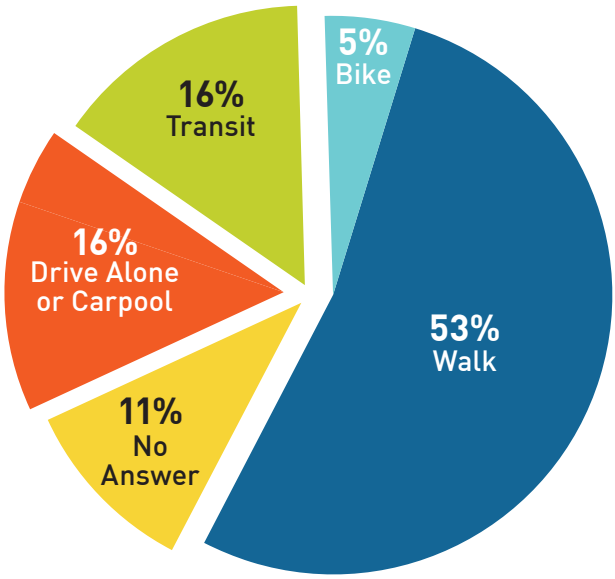
Transportation is a significant source of air, water, and carbon pollution. Reducing vehicle miles travelled (VMT) in fossil fuel burning vehicles and reducing greenhouse gas (GHG) emissions intensity per mile travelled, will improve and protect Seattle's natural environment while reducing carbon emissions. Expanding and enhancing active transportation opportunities are a highly cost-effective approach to meeting the goals of Seattle's Climate Action Plan and protecting Seattle's unique natural environment (see Figure 1-7).

Figure 1-7: GHG Emissions Sources in Seattle



SOURCE: CITY OF SEATTLE. *CLIMATE ACTION PLAN*. 2013.

Figure 1-8: Travel Survey of Visitors to Six Seattle Neighborhood Business Districts



SOURCE: SDOT. *NEIGHBORHOOD BUSINESS DISTRICT ACCESS SURVEY*. FEBRUARY 2012.

12 Cortright, Joe, for CEOs for Cities. *Portland's Green Dividend*. 2007.

13 *Neighborhood Business District Access Survey. Intercept survey of neighborhood visitors*. Seattle Department of Economic Development. 2012.

14 LDA Consulting for Capital Bikeshare. *2013 Capital Bikeshare Member Survey Report*. 2013.

15 LDA Consulting for Capital Bikeshare. *2011 Capital Bikeshare Member Survey Report*. 2011.

Time Competitiveness

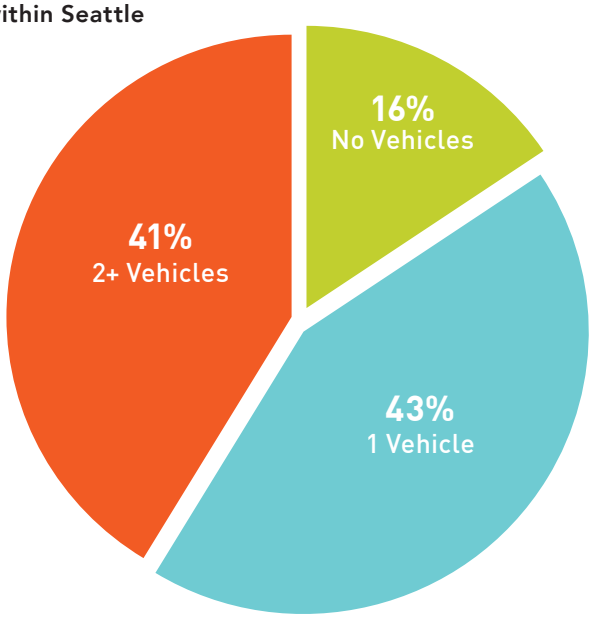
People in the urban core and throughout denser neighborhoods in Seattle are finding it more convenient to walk or bicycle for short trips they once would have driven (see Figure 1-8). Not only are the direct costs of owning and operating a car becoming more onerous, but also congestion and parking cause delays that make riding a bicycle time-competitive and more convenient.

Space Efficiency

There simply is very limited space to add traffic lanes to meet increasing travel demands, reduce congestion, or increase parking in the public right-of-way. Both vehicles and bicycles usually carry a single person, but bicycles take up much less space. Planning for bicycles may permit a better use of the resources available to accommodate additional trips. To take advantage of this it will require a realignment of priorities in how space is allocated and resources are invested (see Figure 1-9).

The BMP identifies strategies to coordinate transit and pedestrian priorities with bicycle improvements to encourage increased use of bicycles as a practical and desirable form of urban transportation in the limited roadway space available. Increasing the number of people riding bicycles will help optimize the use of limited urban space and create safer streets for all.

Figure 1-10: Household Vehicle Availability Rates within Seattle

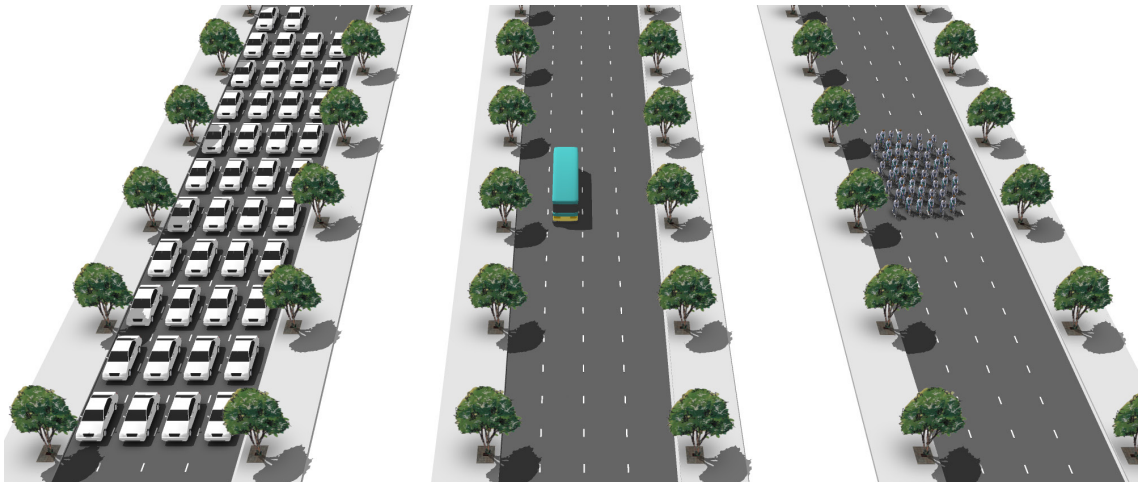


SOURCE: 2007-2011 AMERICAN COMMUNITY SURVEY 5-YEAR ESTIMATES.

Equity

According to the Census Bureau's 2007-2011 American Community Survey, 16 percent of Seattle households have no motor vehicle available for use (see Figure 1-10). Furthermore, many residents are too young to drive; are incapable due to age, illness, or disability; are unable or unwilling to afford the costs of owning and operating a car; or for other reasons are simply unfit or unwilling to drive. Transportation choices for these residents may include walking, riding a bicycle, taking transit, or carpooling. This plan strives to provide access

Figure 1-9: Moving 55 People by Car, Bus, and Bicycle

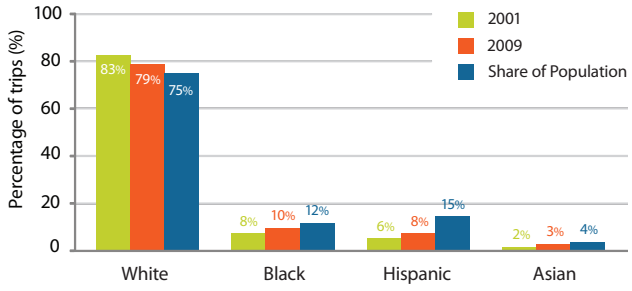


FHWA. SUMMARY OF TRAVEL TRENDS: 2009 NATIONAL HOUSEHOLD TRAVEL SURVEY. 2011.

to good bicycling infrastructure in parts of the city with lower car ownership.

Nationally, as well as in Seattle, the majority of trips made by bicycle are by white people. Between 2001 and 2009, the percentage of trips made by bicycle has shifted to more closely match the ratios of racial populations (see Figure 1-11).

Figure 1-11: Percent of all US Bicycle Trips by Race/Ethnicity



SOURCE: PUCHER, J., BUEHLER, R. *BICYCLING TRENDS AND POLICIES IN LARGE NORTH AMERICAN CITIES*. 2011.

Changes in Transportation Behavior

Auto ownership and use is dropping in the United States, particularly among young people who are becoming drivers later in life and owning fewer vehicles per household. This seems to be in part due to costs of ownership and operation, trip convenience, concern for the environment, personal health concerns, or for the pure joy and fun that it is to ride a bicycle. This is often a lifestyle choice, made possible by home and employment location decisions. Existing and future active and shared travel options, such as transit, car sharing, walking, and bicycling, provide viable travel alternatives to the car. Puget Sound Bike Share, a non-profit bike-sharing organization, will launch a program in Spring 2014, providing another travel option for the public that will increase the number of people riding bicycles, and will likely draw new, less experienced bicycle riders to the city's street system.

Planning Process

The 2013 Bicycle Master Plan (BMP) was a public and technical endeavor. The process included extensive public input, regular briefings with the Seattle Bicycle Advisory Board (SBAB), and coordination with city staff and other local agencies. Data relating to past bicycle plans, the city's land use pattern, topography, traffic speeds and volumes, and a number of other factors were reviewed. Both geographic information systems (GIS) and field analysis of Seattle's transportation network were extensively used to determine locations where bicycle facilities can be integrated into the existing street network.

Staff reviewed documents adopted over the last several years, including the 2007 Bicycle Master Plan, the Pedestrian Master Plan (2009), the Transit Master Plan (2012), and the Climate Action Plan (2013 update). The Transit Master Plan was particularly important, since it identified a number of priority transit corridors, many of which are arterials that serve as important destinations and desirable bicycle corridors. Another important document was the map of Major Truck Streets in the city's Transportation Strategic Plan, which highlights arterial streets that accommodate significant freight movement through the city. SDOT uses the Major Truck Street designation on an on-going basis as an important factor for street design, traffic management decisions, and pavement design and repair.

The BMP uses a multimodal approach to consider appropriate locations for bicycle facilities, based in large part on these earlier plans, recognizing that in some cases there will be arterial streets that will accommodate bicycles, transit, and/or freight within the same right-of-way. In other cases, parallel routes can be developed to provide better service for all modes in a particular corridor.

Public Engagement Process

Public engagement is an important element of any successful planning process. To be considered successful, the BMP planning process needed to reach beyond the current bicycling community, encouraging infrequent bicyclists or potential new users of the bicycle network to provide their input on what it would take to make the bicycling environment in Seattle work better for them. The purpose of the strategy was to broaden the conversation about how people riding bicycles can help build and

create vibrant, livable communities and produce safer streets. One important purpose of the BMP is to develop strategies to transform bicycling from a niche activity for a small portion of users to one that a majority of people view as a viable form of transportation for all trip purposes.

Public Engagement Goals and Objectives

The public engagement process for the BMP was organized around two main goals:

Goal 1 *Engage broad and diverse segments of Seattle residents, businesses, employees, and property owners.*

Goal 2 *Update the BMP to reflect the priorities and interests of infrequent and potential riders, as well as avid users of the system.*

With City Council's endorsement, the Seattle Bicycle Advisory Board (SBAB) was selected to act as the primary advisory committee for the 2013 BMP. The SBAB met monthly with the SDOT project team through the course of the project. All SBAB meetings are open to the public, and include opportunities to comment on topics concerning the BMP and bicycling issues in general.

There were three primary phases during the planning process that encouraged the public to provide input and feedback on project materials. Information summarizing the results of each phase can be found online in the plan appendices (http://www.seattle.gov/transportation/bikemaster_materials.htm).

Phase I

The first phase of public engagement was intended to **gather information**. Importantly, a wide variety of people participated—those who ride bicycles, those who may only occasionally ride a bicycle, and those who may never be inclined to ride a bicycle for any purpose. Through survey tools and attending community meetings, SDOT learned why some people choose to ride bicycles, what may encourage others to begin bicycling, what some barriers to bicycling are, and what people would like the city to invest in to encourage more bicycling in the future. This phase utilized an innovative web mapping tool. Seattle Neighborhood Greenways provided SDOT with their suggestions for neighborhood greenways that connect community members to neighborhood destinations. Data and route recommendations were also provided from other stakeholders, such as the Seattle Bicycle Advisory Board, Cascade Bicycle Club, and the University of Washington.

Phase II

The second phase of broad public involvement began in November 2012 and included the **review of the policy framework, the draft bicycle network map, and early thoughts around implementation strategies.**

Phase III

The final phase of public engagement in spring and summer 2013 consisted of public meetings designed to **gather comments on the entire draft plan, which was released for review in June 2013.**

During both Phase II and Phase III, SDOT conducted a number of community meetings across the city as well as two online "lunch and learn" events. SDOT staff also attended a large number of district council, community council, and various community and employee-based meetings to discuss the BMP and gather input. Staff also briefed a number of City Commissions and Advisory Boards, including the Freight Advisory Board, the Pedestrian Advisory Board, Planning Commission, Design Commission, and the Bridging the Gap Oversight Committee.

Public Engagement Phase II, Gould Hall, University of Washington.

During the first phase of public engagement, SDOT wanted to engage with families to learn about why they do or do not ride a bicycle. Pedal Powered was created to get kids to ride a stationary bicycle with the Seattle skyline behind them so they could act like Superheroes flying through the air. Having the ability to fly through the air like a Superhero excited the kids and helped engage families with the launch of the BMP update.

Plan Updates

This plan is, by its nature, a work in progress. Updates to the full BMP should occur every five to seven years. These future updates will be necessary to assess progress, take advantage of emerging opportunities, and re-evaluate priorities.

As new sections of the bicycle facility network are developed and new technologies are adopted, bicycling mode share will likely increase and travel patterns will change. Priorities will shift and new opportunities will become apparent. These changes will be reflected in regular updates to the implementation plan.

In addition to updating the plan, SDOT and other city departments will be accountable for implementing the plan in a strategic manner that will involve on-going review by the Seattle Bicycle Advisory Board and City Council. This is addressed in more detail in Chapter 7 of this plan.

BMP public engagement process "flat bike" participants.

During the BMP public engagement process, SDOT encouraged all types of bicycle riders to take photos with either the "I bike" sign or "flat bike" cut-out to show all the different types of people on bicycles riding in Seattle.


NO
STOPS
TOW-AWAY
ZONE