

# Washington County Bicycle and Pedestrian Facility Design Health Impact Assessment

## **Contributors**

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## **EXECUTIVE SUMMARY**

Washington County is committed to promoting healthy communities by encouraging active lifestyles, building and maintaining the best transportation system, ensuring the safety of all roadway users, and operating the county roadway system in a cost-effective and environmentally responsible manner.

In an effort to promote healthy communities, Washington County departments of Land Use and Transportation and Health and Human Services conducted a health impact assessment (HIA) to provide decision makers with information to maximize the benefits of active transportation projects and policies in Washington County.

Specifically, the goals of this HIA are to understand barriers to biking and walking in Washington County, and research the connections between health, built environment design and transportation policies. It will also recommend strategies and facility designs that address these barriers, with the intention of increasing physical activity among all residents in Washington County. This grant-funded HIA will continue to provide valuable and timely information as the county updates its Transportation System Plan's 'active transportation' (bicycle and pedestrian) policies, develops a 'toolkit' for bicycle facility design, and develops a strategy for prioritizing bicycle and pedestrian improvements. The HIA data and recommendations can also inform the design of active transportation features included in future county transportation projects.

The complexity of Washington County's population and geography include a demographic composition that is both younger and more diverse than the state average. Washington County also has a physical footprint of 727 square miles, and ranges from rural, urban and suburban settings which challenge traditional bike and pedestrian facility designs.

The HIA project included 5 steps: 1) screening; 2) scoping; 3) assessment; 4) reporting; and 5) monitoring. The screening process was conducted by the HIA workgroup which included staff from both Washington County departments of Land Use and Transportation and Health and Human Services. The scoping was conducted by the workgroup and the HIA steering committee which included a broad range of community partners who represented traditionally underserved populations in Washington County.

A three-part assessment using a randomized survey, listening sessions, and a literature review on key health outcomes and determinants. There were nearly 1300 completed surveys that provided a variety of perspectives concerning bicycle and pedestrian facility design. This information was supported and enhanced by a series of listening sessions and key informant interviews. All of which were targeted to obtain input and feedback from groups that do not typically participate in community engagement processes. These groups which

included marginalized and vulnerable populations, such as Spanish speaking residents, aging adults and young children, also do not typically choose to bicycle or walk for short errands or trips. For this reason, the workgroup felt very strongly that every effort must be made to better understand the barriers, and potential solutions, to biking and walking that these groups experience. A literature review was also conducted. It included an assessment of local, state and some national data and findings to better understand the connection between health, the built environment design and transportation policies.

Findings from the assessment included a preference for bike and pedestrian pathways that are separated from traffic. This finding indicates that traffic separation may be a key design issue that could impact a wide range of Washington County residents who do not engage in biking and walking due to safety concerns. Additional barriers to address included cultural perceptions of walking and biking as a lower socio-economic activity as well as the need for a continuous active transportation network with specific focus on distance from transit to preferred destinations.

Based on the findings from the assessment, the workgroup and steering committee identified 2 primary recommendations. They are 1) pedestrian and bicycle facility design and 2) education.

Designing pedestrian and bicycle facilities to be more safe and convenient could encourage county residents to walk and bicycle as a means of transportation and recreation. Changes to facility design could also impact health outcomes for county residents across the lifespan. Improving bicycle and pedestrian facilities may increase opportunities for physical activity and encourage recreational cyclists, non-cyclists and pedestrians to be more physically active. This could eventually reduce chronic disease rates, decrease traffic fatalities, and improve air quality in Washington County.

Another recommendation is to conduct more comprehensive outreach and education to Washington County residents about sharing the roadways among pedestrians, bicyclists and motorists. A common misconception is that increased bicycle and pedestrian activity will result in an increase in traffic related injuries and fatalities. This was echoed by findings from the survey across all respondent groups. The survey responses suggest that motorists need more education about safely sharing the roadway with bicyclists and pedestrians, and cyclists and pedestrians need more education about sharing the roadway with motorists.

## **INTRODUCTION**

Washington County is committed to promoting healthy communities by encouraging active lifestyles, building and maintaining the best transportation system, ensuring the safety of all roadway users, and operating the county roadway system in a cost-effective and environmentally responsible manner.

The most important health benefits of active transportation are those related to obesity and air quality.<sup>1</sup> Making bicycle and pedestrian facilities more accessible encourages physical activity, supports healthy lifestyles, and could reduce air pollution caused by fossil fuels. However, while there are clear connections between physical activity and physical and mental health, we lack information on the barriers Washington County residents face to making walking and biking a part of their everyday lives.

The Washington County departments of Health and Human Services (HHS) and Land, Use and Transportation (LUT) conducted this health impact assessment (HIA) to provide decision makers with information to maximize the benefits of active transportation projects and policies in Washington County. This HIA provides information on the specific barriers to walking and biking for short trips among county residents who do not typically use walking or bicycling as a primary mode of transportation. It also recommends strategies and facility designs that address these barriers, with the goal of increasing physical activity among all residents in Washington County. This grant-funded HIA will provide valuable and timely information as the county updates its Transportation System Plan's 'active transportation' (bicycle and pedestrian) policies, develops a 'toolkit' for bicycle facility design, and develops a strategy for prioritizing bicycle and pedestrian improvements. The HIA data and recommendations can also inform the design of active transportation features included in future county transportation projects.

Key partners in this effort included representatives from Washington County departments of Land Use and Transportation, Environmental Health, Public Health and Disability, Aging and Veterans Services, as well as community representation from a broad range of organizations to ensure an inclusive and equitable process. These organizations included county and city government, citizen participation organizations, bicycle and pedestrian advocates, community based organizations and traffic safety advocates.

### **Washington County Community Profile**

Washington County is one of five counties making up the Portland Metropolitan area and the second most populous county in the state of Oregon. Within a physical footprint of 727 square miles, Washington County residents range from rural and migrant farm workers to high tech industry employees living in urban and suburban settings. While it is home to the fifth and sixth largest cities in the

state, approximately half of county residents live in unincorporated areas and 7% of the population lives in a census-designated rural area.<sup>2</sup>

Washington County’s population has grown by approximately 70% since 1990, reaching nearly 540,410 in 2011.<sup>3</sup> The population is one of the most diverse in the state and continues to experience more growth in the Hispanic/Latino and Asian communities. In 2011, 13.2% of the county identified as Asian/Pacific Islander and 15.7% identified as Hispanic/Latino. Washington County has a relatively young population with 34% of the population under age 24, compared to the state average of 32%<sup>4</sup>, 56 % of the population between 25 – 64 years of age and 10% 65 years of age or older.<sup>5</sup> Poverty rates in Washington County have steadily increased since the year 2000 with disparities in poverty by race and ethnicity. The county’s population is the one of most diverse in Oregon (Table 1).

Table 1. Poverty Rates by Race/Ethnicity<sup>6</sup>

	PERCENTAGE OF POPULATION		PERCENTAGE IN POVERTY	
	Washington County	Oregon	Washington County	Oregon
<b>TOTAL POPULATION</b>	14%	100%	10%	14%
White	79%	86%	9%	12%
Black	2%	2%	16%	29%
Asian & Pacific Islander	8%	3%	30%	34%
American Indian	2%	2%	24%	29%
Other	4%	3%	15%	24%
Hispanic origin	14%	11%	22%	26%

## HIA SCREENING AND SCOPING METHODS

HIA is “a structured process that uses scientific data, professional expertise, and stakeholder input to identify and evaluate public health consequences of proposals [or projects] and suggests actions that could be taken to minimize adverse health impacts and optimize beneficial ones”.<sup>7</sup> HIA uses quantitative, qualitative and community participatory techniques to help decision makers make policy choices to prevent disease and injury and actively promote health.<sup>8</sup> HIAs are systematic evaluations that include the following five steps:

- 1) Screening: Determining the need and value of a HIA
- 2) Scoping: Determining which health impacts to evaluate, the methods for analysis, and developing a plan to complete the assessment

- 3) Assessment: Using data, research, expertise, and experience to judge the magnitude and direction of potential health impacts
- 4) Reporting: Communicating the results to stakeholders and decision makers
- 5) Monitoring: Tracking the effects of the HIA recommendation and the decision on health

### **Screening**

The screening process involved a broad range of staff from all levels of Washington County Health and Human Services and Land Use and Transportation. The initial workgroup included the following:

<b>Name</b>	<b>Role</b>	<b>Title</b>
Toby Harris	Program Contact	Environmental Public Health Program Supervisor, Washington Co. HHS
Amanda Garcia-Snell	Program Lead	Chronic Disease Prevention Program Coordinator, Washington Co. HHS
Kelly Jurman	Program Support	Health Promotions Supervisor, Washington Co. HHS
Shelley Oylear	Program Support	Bicycle and Pedestrian Coordinator, Washington Co. LUT
Rose Kelter	Project Support	Portland State University MPH Intern

During the screening process, the project team evaluated information from the following sources:

- Public comments and stakeholder input collected during several county projects over the past 2 years, including the Washington County Aloha-Reedville Study and Livable Community Plan, TV Highway Corridor Plan, Healthy Communities Community Health Action Response Team, Health Improvement Plan Listening Sessions, Public Health Strategic Planning and Westside Active Transportation Coordinating Committee pub talks
- Washington County’s existing road design standards for biking and pedestrian facilities
- Interagency meetings between HHS and LUT leadership and staff
- Information on upcoming transportation funding decisions, including the Major Street Transportation Improvement Projects and the Washington County Transportation Systems Plan

Through careful deliberation, the project team decided that a bike and pedestrian facility design HIA project was feasible, and could potentially inform three projects in the near future: a Bicycle Facility Design Toolkit for planners, design decisions for Major Street Transportation Improvement Projects, and the Washington County Transportation Systems Plan. The workgroup met frequently prior to applying for grant funding to complete the HIA.

The HIA was funded by the Centers for Disease Control through a grant administered by the Oregon Health Authority's Center for Health Protection. Washington County HHS and Washington County LUT contributed in-kind donations.

**Scoping**

The scoping process was conducted by representatives from HHS and LUT. Facilitation and assistance was provided by staff from the Oregon Health Authority. A scoping meeting was held in spring 2012 and attended by representatives from HHS, LUT and the Oregon Health Authority Center for Health Protection. At this meeting, participants determined the goals, mission and research question for the HIA, and defined the populations of interest.

As part of the scoping process, the HIA workgroup convened a steering committee comprised of community partners representing various stakeholders within Washington County. It was important to include individuals who represent some of Washington County’s most vulnerable populations. Committee members include representatives from city and county government, bicycle and pedestrian advocacy groups, schools, and non-profit organizations that represent ethnic and racial minority populations (see roster below).

<b>Name</b>	<b>Organization</b>
Kaely Summers	Adelante Mujeres
Susan Peithman	Bicycle Transportation Alliance
Margo Barnett	Oregon State University Extension
Jeff Hill	Washington County Division of Aging and Veteran Services
Toby Harris	Washington County Environmental Health
Kathleen O’Leary	Washington County Public Health
Steph Routh	Willamette Pedestrian Coalition

The steering committee members helped to refine the HIA goals and research questions; aided in the design and implementation of the survey and listening sessions; and provided continuous consultation throughout the process. In the future, these members will serve as advocates for the project by disseminating the final report and recommendations throughout the community.

The workgroup and steering committee developed a plan for assessment based on the identified goals and research questions. One in-person scoping meeting was held in late June 2012. Additional input from steering committee members came from phone, email and personal interviews.

The goals of this HIA are to understand barriers to biking and walking in Washington County, and research the connections between health, built environment design and transportation policies. The workgroup and steering committee determined that the HIA should answer the following questions:

- What are the barriers to walking and biking in Washington County?

- What are some evidence-based strategies that could reduce the barriers to walking and biking in Washington County?
- What types of active transportation strategies would reduce pedestrian and bicycle related injuries and fatalities?
- How would increased active transportation improve health outcomes related to chronic disease and air quality in Washington County?
- How could health outcomes of older adults and children be impacted by increased opportunities for active transportation?

The workgroup and steering committee identified many potentially vulnerable populations within Washington County who could experience disproportionate barriers to biking and walking in their communities. Ultimately the workgroup selected children under age 18 and adults over age 65 as populations of focus. These groups selected because they experience disproportionate rates of obesity and chronic disease respectively; they represent the full spectrum of safety concerns; and they are frequently underrepresented by bicycle and pedestrian advocates in Washington County. Further, the workgroup and steering committees assumed that if biking and pedestrian facilities are designed to protect the safety of children and the elderly, they will be safe for most other users.

The steering committee and workgroup discussed a variety of assessment methods given limited staff capacity and funding. These groups determined that qualitative and quantitative data collection through a survey and listening sessions would be most appropriate for identifying barriers to biking and walking in Washington County, and a review of Washington County data and scientific literature would provide general information on the health impacts of active transportation policies and design.

In addition to the steering committee, the workgroup also relied heavily on input from the data team who provided technical assistance for the assessment, survey design, and analysis. This team also gathered existing epidemiological data for the final report. This team was comprised of Kimberly Repp, Epidemiologist, Washington County HHS and Steve L. Kelley, Senior Planner, Washington County LUT. The project lead and student intern wrote the final report with input from additional workgroup members.

### **Assessment**

Bicycle and pedestrian advocates in the area have historically provided a wealth of anecdotal evidence about the state of bike and pedestrian facilities around the county, however no formal assessment has been conducted about how residents in general view and utilize the facilities. In response to this, the HIA workgroup, steering committee and data team conducted a three-part assessment using a randomized survey, listening sessions, and a literature review on key health outcomes and determinants.

## **Survey**

A survey was developed to determine if respondents self-identify as utilitarian, recreational or non-cyclists, and obtain details on their pedestrian habits. The survey was administered online in both English and Spanish. Postcards with a link to the survey were sent to 50,000 randomly-selected addresses throughout Washington County. Survey links were also shared in community participation organization newsletters and at a variety of community engagement and public involvement events. The survey was open for participant response for 10 weeks. At the survey's close, there were over 1,300 surveys completed.

The HIA project team continues to analyze the survey results. However preliminary findings indicate that respondents strongly prefer bike and pedestrian pathways that are separated from traffic. This preference was a top recommendation by respondents who rarely or never ride a bike, cyclists who identified as recreational bikers, and pedestrians. This finding indicates that traffic separation may be a key design issue that could impact a wide range of Washington County residents who do not engage in biking and walking due to safety concerns. Respondents who identified as utilitarian cyclists (those who ride a bike despite traffic or weather conditions for long and short trips) identified more bike lanes as a priority.

## ***Listening Sessions and Key Informant Interviews***

The assessment also included a series of community listening sessions that were held to gather qualitative data and ensure equitable inclusion of a broad range of perspectives. During the months of May and June, staff conducted listening sessions at the Forest Grove Farmer's Market; an Aloha Reedville Open House held at a local Beaverton area high school; and two Citizen Participation Organization meetings. Bi-lingual staff were available at the Forest Grove Farmer's Market to ensure equity in our communications and outreach.

Additionally, key informant interviews were conducted with persons representing community-based organizations such as Adelante Mujeres, Willamette Pedestrian Coalition and the local Area Agency on Aging. Lastly, special outreach was directed to families with young children who participate in the Washington County Women, Infants and Children (WIC) program. The WIC program serves low-income and traditionally underserved members of the community and conducts regular classes and informational sessions for parents and children regarding nutrition and physical activity. During some of these classes staff were able to discuss conduct brief brainstorming about barriers to walking and biking and potential solutions to the barriers.

Key findings from the listening sessions and interviews include the following:

- safety concerns in high traffic areas and a preference for safe crossings and pathways that are separated from traffic (sidewalks, buffered bike lanes);

- cultural perceptions of walking and biking as a lower socio-economic activity in conjunction with the perception of automobile ownership as an indicator of financial status;
- distance from transit to preferred destinations and the difficulty in completing a trip by walking or biking; and
- lack of active transportation opportunities, including access to safe and inviting walkways and bike paths.

### ***Review of Literature and County Data***

#### PHYSICAL ACTIVITY

According to the CDC<sup>9</sup>, regular physical activity helps improve overall health and fitness and reduce the risk for chronic diseases. As bicycling and walking levels in the United States have decreased, overweight and obesity levels have reached all time highs, demonstrating an important correlation between physical activity and obesity<sup>10</sup> (Ogden and Carrol 2010, Census 1960-2000, American Commuting Survey 2009). National data shows that states with the lowest bicycling and walking rates have the highest rates of obesity, diabetes and high blood pressure (Alliance for Biking and Walking, 2012- BRFSS 2009, ACS 2009). In 2009, 16.5% of adults age 20 and over in Washington County reported no leisure time physical activity.<sup>11</sup>

#### CHRONIC DISEASE

The burden of chronic disease is significant in Washington County, with nearly one third of all adults suffering from at least one preventable chronic disease (Table 2).

Table 2. Age-adjusted prevalence/incidence of chronic disease conditions in Washington County

	<b>Washington County*</b>	<b>State of Oregon**</b>
Chronic Health Condition	Adult	Adult
Arthritis	23.1%	27.3%
Asthma	9.0%	10.2%
Heart Attack	2.5%	4.0%
Angina	3.1%	3.7%
Stroke	1.9%	3.3%
Diabetes	5.9%	8.2%
High Blood Pressure	22.9%	27.1%
High Blood Cholesterol	30.2%	37.5%
Cancer Prevalence		12.5%

\*BRFFS 2006-2009, Adult percentages are age-adjusted

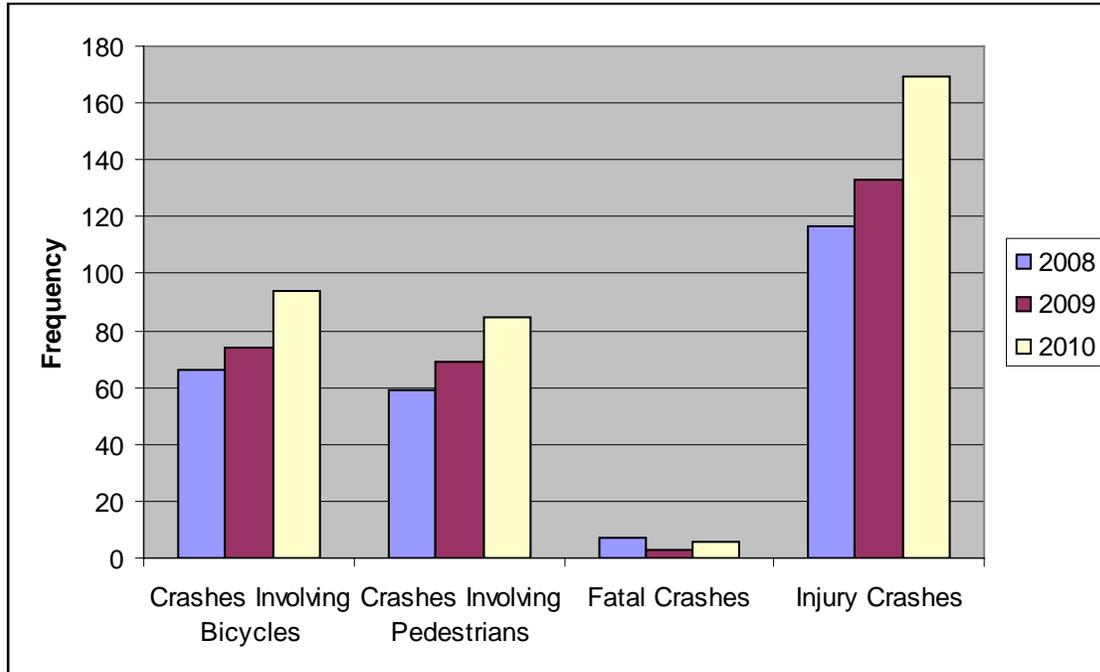
\*\*2009 only, adult percentages are age-adjusted

#### TRAFFIC FATALITIES AND INJURIES

Traffic fatalities and injuries have significant effects on health and safety. Crashes cause personal tragedy, congestion, and loss of productivity while contributing to rising healthcare costs. According to Oregon Department of Transportation<sup>12</sup> records for Washington County from 2008 to 2010, crashes

involving bicycles and pedestrians were steadily on the rise (Figure 1). In 2010 alone there were eighty-five traffic crashes involving pedestrians and ninety-three involving bicyclists in Washington County. Of these, six resulted in fatality, accounting for sixty percent of all crash related fatalities that year.

Figure 1. Washington County Crash Data 2008-2010



The National Highway Safety Administration collects data on traffic collisions. National data indicates that between 2007 and 2009, nearly one-quarter of all bicycle fatality victims were under the age of 16 or over the age of 65, and 26% of pedestrian fatalities occurred in these age groups. Bicyclists account for 2% of all traffic fatalities in the U.S. while 12% of the traffic fatalities in the U.S. are pedestrians. Although the risk of vehicle-to-bicycle or vehicle-to-pedestrian crashes is low compared to vehicle-to-vehicle crashes, they are more likely to involve serious injury or death.

AIR QUALITY

Poor air quality is associated with chronic diseases such as asthma, lung disease, and cancer. Despite improvements in vehicle emissions over the years, automobiles are still significant sources of pollutants. According to the Public Health Air Surveillance Evaluation (PHASE), Washington County experienced 32 days in 2010 where air quality was unhealthy for sensitive populations due to fine particulate matter.<sup>13</sup> This is significantly higher than the overall state average of 12 days.

Pollutants produced by automobile travel are one of the largest contributors to unhealthy air quality. This is heavily influenced by an increase in vehicle miles traveled over the years.<sup>14</sup> Exposure to these pollutants contributes to asthma,

diminished lung function, adverse birth outcomes and cancer.<sup>15</sup> Research suggests that improving neighborhood design through increasing access to alternative modes of transportation is an important strategy for reducing motor vehicle emissions and improving air quality<sup>16,17,18</sup>

### BUILT ENVIRONMENT

The built environment refers to human-made (versus naturally occurring) resources and infrastructure designed to support human activity, such as buildings, roads, parks, restaurants, grocery stores and other amenities.<sup>19</sup> The characteristics of the built environment can affect the health of residents in multiple ways, particularly on outcomes such as obesity, arthritis, asthma and other chronic diseases; consequently it is a focus of many public health interventions. Increasing bicycle and pedestrian facilities is one important way to improve the built environment and the health of a population, since these facilities may increase physical activity rates, decrease chronic disease rates and traffic fatalities, and improve air quality.

In a poll conducted by Metro, 80% of people said they wanted to live and work in areas where they could walk, bike, and take transit.<sup>20</sup> Unfortunately, Washington County is home to four out of ten focus areas identified as needing improvement in the Portland Metro region, based on a pedestrian network analysis conducted by TriMet.<sup>21</sup> This indicates that many sites in Washington County lack the infrastructure to make active transportation a safe and viable option.

Washington County's existing roadway design standards include bicycle lanes for major urban roads and shoulder bikeways for rural roads. Design practices for bicycle facilities have evolved rapidly over the past five years, and like many jurisdictions, Washington County's existing road design standards do not include the latest innovative bicycle treatments.

### WALKABILITY AND BIKEABILITY

In the Portland Metro Region 43.7 % of all trips made by auto are less than 3 miles in length, and nearly 15% are less than a mile, distances that could easily be completed by foot or bicycle<sup>22</sup>. There are real or perceived barriers<sup>23</sup> that impact a person's decision to not walk or bicycle for these short trips and often the barriers are related to the built environment. A walkable community is one where sidewalks, trails, and street crossings are safe, accessible, and comfortable for people of all ability levels.<sup>24</sup> Similar to walkability, bikeability pertains to ease and safety of getting around by bicycle. Numerous studies have shown that there is a positive association between walkability, increased physical activity, and reduced obesity rates.<sup>25</sup>

A common concern regarding bicycle and pedestrian planning is the increased incidence of traffic injuries and fatalities involving these modes of transit. However, research shows that motorists adjust their driving in the presence of increased numbers of bicyclists and pedestrians.<sup>26</sup> Increased visibility of cyclists

and pedestrians encourages others to utilize these modes of transit, and thus motorists become more aware of sharing the road. Research shows that states with higher levels of walking and biking have lower levels of pedestrian and bicyclist fatalities.<sup>27</sup> In Portland, where cycling rates have doubled over the past decade, the number of crashes involving a person on a bike has remained fairly constant.<sup>28</sup>

To increase the share of biking and walking trips, bicycle and pedestrian infrastructure network is needed to form safe connections between destinations. According to national surveys, Americans say they would walk or ride a bicycle to work, or to run errands, if it was safe and convenient to do so<sup>29</sup>. Some common features that make bicycle and pedestrian facilities less safe include:

- Absence or gaps in system, and substandard lane widths
- Utility poles, signal control boxes, signs, and other obstructions
- Obscured sight distance
- Poor maintenance of facilities
- Lack of designated roadway crossing opportunities
- Lack of lighting and security along routes
- Frequent driveway crossings
- Discourteous or inattentive drivers
- Lack of enforcement of traffic laws,
- Safety or perceived safety threats from motor vehicles as well as threats to personal safety
- Weather
- Unimproved or poorly designed railroad crossings
- Uncomfortable environment that results from traveling immediately adjacent to high-volume and/or high-speed traffic

Continuity of facilities and connections to desired destinations is essential to encourage both bicycle and pedestrian travel. Especially important is connecting people to other modes of transportation such as transit. Improving access to multimodal travel is an important element in facilitating regional travel. The use of two or more modes of transportation in a single trip (i.e., bicycling and riding the bus) can extend the distance that someone is able to travel, thus reducing another barrier to pedestrians and bicyclists: destinations that are out of reach.

There are a variety of ways to improve walking and bicycling, namely through the Five E's—Engineering, Education, Enforcement, Encouragement, and Evaluation. Engineering, operating, and maintaining quality bicycle and pedestrian facilities is a critical element in producing a comfortable and safe

environment for all users. The engineering solutions to improve the quality of the pedestrian and bicycle network include:

- Traffic calming
- Street crossing treatments
- Railroad crossing treatments
- Designing for special pedestrian populations
- Roadway, bikeway and pedestrian facility design
- Maintenance
- Path, trail, and sidewalk design including landscaping and features
- Traffic management
- Access and on-street parking management
- School zone improvements
- Intelligent Transportation System (ITS) technologies.

Education can be a powerful tool for changing behavior, perception, and improving safety. Pedestrians, bicyclists, and motorists alike can benefit from educational tools and messages that teach them the rules, rights, and responsibilities of various modes of travel.

Enforcement of traffic laws and regulating pedestrians, motorists, and other roadway users is a key element for ensuring a safe and healthy walking environment. Enforcement programs can be used to educate transportation facility users about the traffic laws that govern them, serve as periodic reminders to obey traffic rules, encourage safer behaviors, and monitor and protect public spaces. They can also help reinforce and support educational programs.

Encouragement includes activities and events to promote walking and bicycling, create awareness about bicycling and pedestrian issues, and inform others to the ways that bikeable and walkable places foster healthier, more livable communities. Employers, retailers, and schools may offer incentives or organize events to encourage bike and pedestrian travel.

Evaluation of current activities and planning for the future are essential to ensure that a community is working towards removing barriers to walking and biking. Monitoring and documenting outcomes and trends that result from the previous E's work provide important information to best utilize limited resources and reach long-term goals.

#### VULNERABLE POPULATIONS

According to the CDC<sup>30</sup>, "A lack of efficient alternatives to automobile travel disproportionately affects vulnerable populations such as the poor, the elderly, people who have disabilities and children by limiting access to jobs, health care,

social interaction, and healthy foods.” Households in locations with poor accessibility and no alternatives to driving tend to spend more on transportation, creating a financial burden for those most vulnerable<sup>31</sup>

### *Older Adults*

Walking is the most common form of physical activity among older adults<sup>32</sup>, yet in 2009, 25.6% of older adults in Oregon reported no physical activity in the last month<sup>33</sup> The CDC recommends enhancing community environments to support walking as a promising approach to increasing physical activity among this population.

### *Children*

Rising chronic disease rates in the United States are not only affecting our adult population, but also children. Concurrent with the rise in childhood obesity and other diseases, there has been a sharp decline in the numbers of children who walk and bike to school. Encouraging children to walk and bike at a young age produces life long habits and an appreciation for incorporating physical activity into daily routines. In a study conducted by the CDC, distance to school and traffic-related danger were the leading reasons why children did not walk and bike more regularly.<sup>34</sup>

Safe and accessible physical activity opportunities for older adults improve cardio-respiratory and muscular fitness, bone health, and reduce the risk of depression and cognitive decline. In addition, children benefit from safe and accessible walking and biking that reduces the risk of childhood obesity and incorporates physical activity in their daily routines.

Evidence-based recommendations for improving health outcomes through transportation projects include promoting active transportation to improve safety for all users and ensure equitable access to transportation networks. Having safe places to walk and bicycle are especially important to older adults and children who cannot or choose not to drive.

## **CONCLUSIONS AND RECOMMENDATIONS**

Based on the findings from the assessment, the workgroup and steering committee identified the following recommendations:

### **Pedestrian and Bicycle Facility Design**

The HIA identified a connection between the design of active transportation facilities and residents’ motivation to bicycle and walk. Designing pedestrian and bicycle facilities to be more safe and convenient could encourage county residents to walk and bicycle as a means of transportation and recreation. By creating safe and convenient opportunities for active transportation, changes to facility design could also impact health outcomes for county residents across the

lifespan. The available evidence suggests that improving bicycle and pedestrian facilities may increase opportunities for physical activity and encourage recreational cyclists, non-cyclists and pedestrians to be more physically active. This could eventually reduce chronic disease rates, decrease traffic fatalities, and improve air quality in Washington County.

Specific recommendations for facility design improvements include providing bicycle and pedestrian pathways that are well lit, separated from vehicle traffic and include safe street crossings. Additional recommendations for designing active transportation facilities can be found in the Washington County Bicycle Facility Design Toolkit (<http://www.co.washington.or.us/LUT/Divisions/CPM/bike-facility-design-toolkit.cfm>). The Toolkit was created by LUT and is a supplement the current County Road Design Standards. It provides engineers and planners more options to address safety concerns and accommodate a wider range of bicyclists. The range of bicyclists identified in the toolkit is similar to the range of groups identified by the HIA assessment. The toolkit clarifies the types of facility designs that would be most supportive of the various types of cyclists.

### **Education**

Another recommendation is to conduct more comprehensive outreach and education to Washington County residents about sharing the roadways among pedestrians, bicyclists and motorists. A common misconception is that increased bicycle and pedestrian activity will result in an increase in traffic related injuries and fatalities. This was echoed by findings from the survey across all respondent groups. The survey responses suggest that motorists need more education about safely sharing the roadway with bicyclists and pedestrians, and cyclists and pedestrians need more education about sharing the roadway with motorists.

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