

Improving Health and Mobility in Clatsop County: A Rapid Health Impact Assessment of the Clatsop County Multi-Use Paved Path Concept

Oregon Health Authority Health Impact Assessment Program

Clatsop County Health Department

August, 2016



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Acknowledgments

This project was funded by the Healthy Community Design Initiative in the National Center for Environmental Health at the Centers for Disease Control and Prevention, through a grant administered by the Oregon Public Health Division’s Health Impact Assessment Program. This report was produced by the Oregon Health Authority, in partnership with the Crook County Health Department. For further information please contact:

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Executive Summary

The purpose of this rapid Health Impact Assessment (HIA) is to help inform decisions related to the planning of a multi-use paved path connecting Warrenton to possibly Cannon Beach, in Clatsop County, Oregon. For the purposes of this report the multi-use paved path will simply be referred to as a “path.” This report is the result of a full day workshop led by staff from the Oregon Health Authority’s HIA program in Astoria on June 17th, 2017 with local public health,



transportation, planning professionals and other local stakeholders with knowledge of the project and community. Through this workshop, participants identified the key health issues that would be impacted by the project and assessed different possible project components based on their relative potential to impact the key health issues. In addition to a rapid stakeholder assessment, this HIA includes findings from a review of recent research-based reports and similar HIAs focused on multi-use path projects, as well as the results of OHAs Transportation Options Health Impact Estimator modelling tool (the Estimator) that was used to quantify the possible health benefits of the path related to increased levels of physical activity among county residents. While the ideal proposal for a path would run most of the length of the county this workshop focused on just one of the more populated sections from Warrenton to Gearhart, which would likely also be the first segment of the path to be planned and built.

Summary of Findings

1. According to existing research, multi-use paths can impact health by:
 - a. Providing **opportunities for physical activity**.
 - b. Providing **opportunities for social cohesion**.
 - c. Reducing or exacerbating **crash risk**.
 - d. Providing improved **access to health supportive resources**, particularly for people without cars.
 - e. Reducing or exacerbating **exposure to air pollution and noise**.
2. Research also demonstrates that **the health benefits of walking and biking outweigh the risks**. Considering the combined risks of crashes and exposure to air pollutants and noise, researchers have found that the health benefits resulting from increased physical activity outweigh these risks.
3. Research also indicates that, **while all members of a community can benefit from paths, they can provide greater benefits to vulnerable groups including youth, elderly, people with low incomes, and people with disabilities**.
4. **Increases in physical activity related to path use would result in reduced costs of illness for path users**.
5. Depending on the proportions of walkers, joggers, and cyclists who use the path, and on how far they walk, jog, and bike, **the path could result in about \$92,500 in reduced costs of illness per year for every 1,000 people who use the path**.

6. According to local stakeholders, of the three path alignments considered, **building a path west of Hwy 101 would produce the greatest health benefits.**
7. According to local stakeholders, of the three path alignments considered, **building a path along Hwy 101 would produce the least benefits.**
8. **Real or perceived personal safety issues could limit path use and related health benefits.**
9. According to local stakeholders, **the Clatsop County residents that would benefit most from the path include the residents of Warrenton, Gearhart, Seaside, and Astoria, particularly people with low-incomes and people with access and functional needs, such as seniors and people with disabilities.**

Recommendations

Based on these findings, the local stakeholders who participated in the rapid assessment and full day HIA workshop proposed the following set of initial recommendations. These recommendations were developed based on initial consideration of the health impacts of the path that were discussed during the workshop. As such, they should be considered preliminary, as starting points for future conversations with stakeholders about whether and how the path should be planned and built.

1. In order to mitigate potential negative impacts, path planning and design should consider and address the following potentially negative issues:
 - a. Trespassing by path users on adjacent properties, through education and fencing, if necessary.
 - b. Easement impacts on adjacent property owners by choosing a path alignment that minimizes the need to acquire easements from adjacent property owners.
 - c. Personal safety from crime through the use of “community policing through environmental design” concepts.
 - d. Possible displacement of informal/homeless communities.
 - e. Crash safety, particularly at intersections, through design and signalization.
2. In order to enhance the positive health impacts of the path, path planning and design decisions should consider:
 - a. Choosing a path alignment that best links residents with each other and with daily goods and services
 - b. Choosing a path alignment that creates a safe and attractive place to walk and bike
 - c. Designing the path for comfort and safety
 - d. Including signage and wayfinding to facilitate path use
 - e. Working with local stakeholders to plan and implement education and encouragement activities to boost path use
 - f. Ensuring that path design meets the needs of people with access and functional needs
 - g. Including amenities for physical activity (eg exercise stations) and for relaxation (eg benches)
 - h. Planning for high volumes of users in order to accommodate local and visiting path users

Introduction

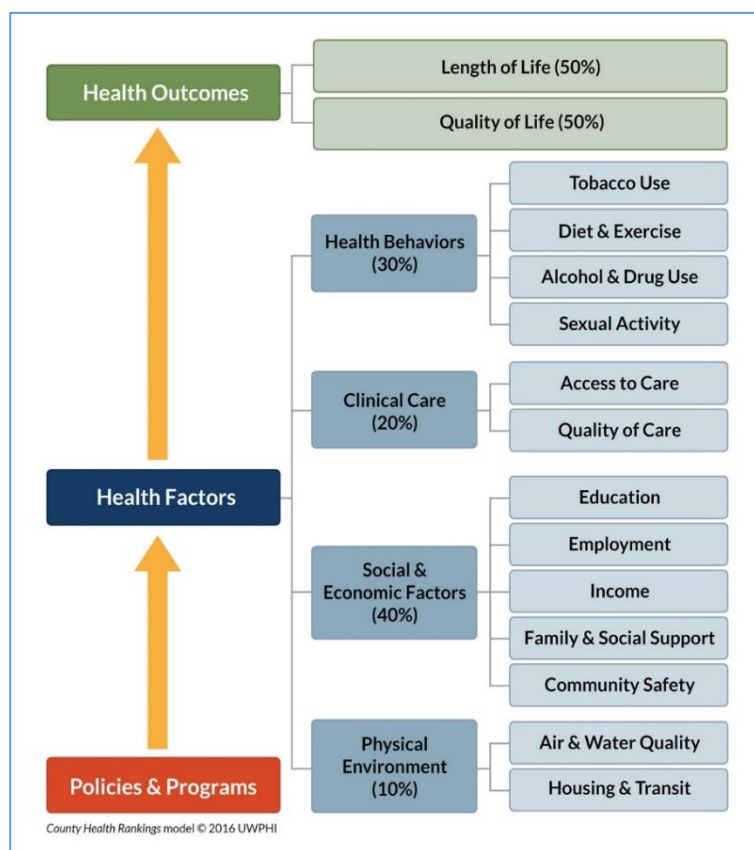
Health impact assessment (HIA) is a structured process developed by public health professionals in order to facilitate engagement with non-health sectors to explicitly consider and address the potential direct and indirect health impacts of proposed plans, policies, and projects.¹ The primary reason that public health professionals are interested in engaging other sectors is that research has increasingly demonstrated that many of the primary health issues facing most communities are influenced by decisions made in non-health sectors. According to the University of Wisconsin’s Population Health Institute, only about 20% of the differences between the health of one community from another can be explained by the relative accessibility and quality of clinical care (Figure 1). Much more important are the “upstream” factors that influence a person’s ability to maintain good health—the social, economic and physical conditions in which people live, along with their individual behaviors and choices, many of which are also influenced by these conditions. Because our social, economic, and physical environment are shaped largely by decisions in non-health sectors such as education, community development, and transportation planning, it is important to ensure that the health impacts of decisions made in these sectors are taken into

consideration. HIA is one tool for helping public health professionals to work across sectors to help ensure that this happens. It is a decision-making tool designed to facilitate collaboration between public health and non-public health stakeholders and ensure that health information and expertise is considered when making decisions in non-health sectors.

In Clatsop County, as in most communities throughout Oregon and the United States, chronic diseases related to lifestyle choices--particularly physical activity, nutrition, and smoking--are among the primary health issues contributing to poor health, disability, and death. These “lifestyle” diseases include heart disease, some cancers, type 2

diabetes, stroke, heart attack, depression, high blood pressure, and others. Diabetes, heart disease and

Figure 1: Health Determinants



¹ A more complete overview of HIA practice, including tools, resources, and examples of other HIAs done in Oregon, can be found on the Oregon Health Authority’s HIA program webpage:

<https://public.health.oregon.gov/HealthyEnvironments/TrackingAssessment/HealthImpactAssessment/Pages/index.aspx>

stroke are particularly harmful. Together, these three diseases account for more than a quarter of all deaths in Oregon annually, and cost Oregonians \$1.5 billion in hospitalizations each year.²

Both of these challenges—the heavy burden of chronic diseases related to lifestyles, and the need to work with non-health sectors to encourage healthier lifestyles—are reflected in three of the four priority areas identified in the 2013 Clatsop County Community Health Improvement Plan³, which include:

- **Healthy Lifestyle Choices**
- **Reducing Chronic Conditions**
- **Collaboration**
- Access to Healthcare Services

A key collaboration that the Clatsop County Public Health Department (CCPHD) has sought to strengthen is between public health, transportation, and public works. While public health, transportation, and public works agencies have a history of working together on injury prevention, an increasingly large body of research now also demonstrates that transportation plans, policies, and projects also impact opportunities for physical activity. This research has demonstrated that people who live in neighborhoods where it's safe, convenient, and attractive to walk and bike for transportation and recreation are more active and less likely to suffer from chronic diseases related to physical activity. Well-designed bicycle and pedestrian infrastructure can also reduce crash risk and exposure to air and noise pollution, and improve access to health supportive resources such as grocery stores, parks, and medical and social services.

The purpose of this rapid HIA is to help inform decisions related to the planning of a multi-use path connecting Warrenton to Gearhart. This is part of a larger path concept that would result in a continuous multi-use path parallel to Hwy 101 from Astoria in the north to Tillamook County in the south. Recognizing that such a path could provide a significant opportunity for physical activity for county residents and visitors and encourage healthy, active lifestyles. CCPHD has been a key champion of this project from the outset and has been working with multiple stakeholders to promote the path as a public health intervention.

CCPHD chose to do an HIA on this project for three reasons. First, they saw it as an opportunity to continue to address key health issues and improve community health by promoting healthy, active lifestyles. Second, they saw it as an opportunity to continue to develop and strengthen relationships with city, county, and state land use and transportation planners and public works staff. Finally, the timing was right. ODOT and CPPD are starting to make decisions about what features to include in the streetscape improvement plan, so there is the opportunity to use the HIAs findings and recommendations to guide these decisions.

The primary goals of this HIA are to:

² Numbers are from 2011. See Oregon Health Authority's "Heart Disease, Stroke and Diabetes in Oregon: 2013". Available online at <https://public.health.oregon.gov/DiseasesConditions/ChronicDisease/Pages/pubs.aspx>

³ Available online at: https://www.co.clatsop.or.us/sites/default/files/fileattachments/public_health/page/691/clatsop_county_chip_fi nal_11_14_13.pdf

- Increase awareness of the connections between health, land use and transportation planning, and parks and paths among city and county planning and public works staff, and local stakeholders
- Identify and characterize the potential health impacts of the Clatsop County path concept
- Develop materials useful for communicating the health impacts of the path concept to local communities in Clatsop County
- Conduct an HIA according to the established HIA Minimum Elements and Practice Standards.

In addition to these project goals, this project is also serving as a case study for the Oregon Health Authority’s (OHA) “HIA-in-a-Day” project model, in which staff from OHAs HIA program work with staff at local health departments to conduct a full day HIA workshop for project stakeholders. In addition to training participants to use and participate in HIAs, the workshop also involves gathering input from the participants that can help inform the assessment of the project that the HIA is seeking to inform. OHA staff then use this input, along with other information such as published research, to conduct the assessment, and then work with the local health department to develop recommendations and a final report. In addition to being designed to support decisions that are happening on a relatively quick timeline, the HIA-in-a-Day model also acknowledges that, particularly for smaller, community-scale projects, local community members and stakeholders are often the experts and know best how their community will be impacted by project decisions. In the absence of time and resources for conducting more formal assessments, pairing this knowledge with existing research can still provide useful information for decision-makers about the possible health impacts of their decisions.

This report has three sections. The existing conditions section provides an overview of Clatsop County, including information on key health issues facing its residents. The following section on assessment contains a more detailed description of the project and study area, a description of the methodology used to assess the potential health impacts of the project, and a summary of the anticipated impacts. The assessment section will be followed by the HIAs recommendations for how to best ensure that the path best promotes active lifestyles among Clatsop County’s residents and visitors.

Existing Conditions

What follows is a brief description of Clatsop County, including information on key health issues and outcomes related to physical activity and path use, and an overview of the area where the path would be built. More information about the County and the health status of its residents can be found in the 2013 Clatsop County Community Assessment.⁴

Demographics

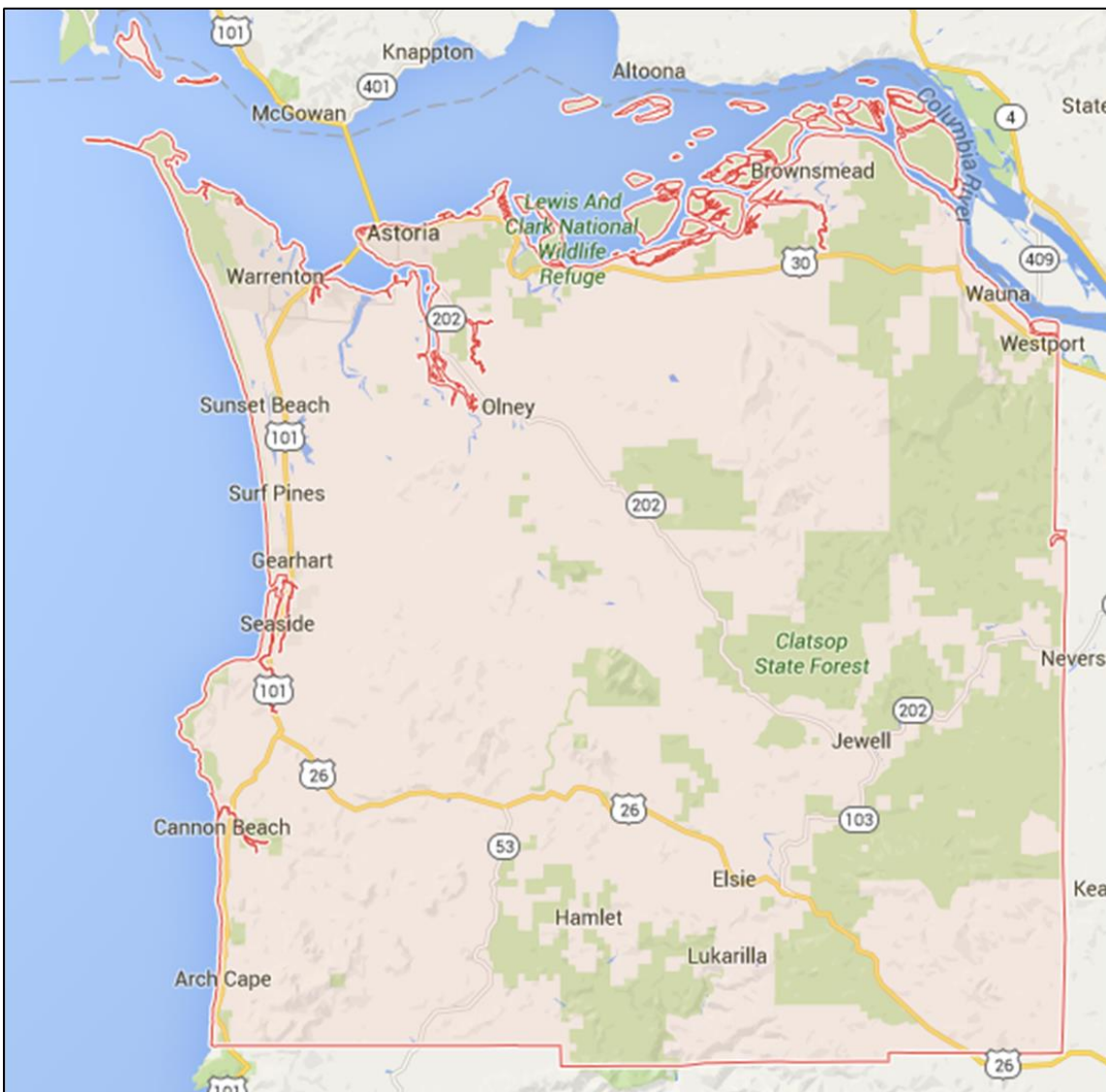
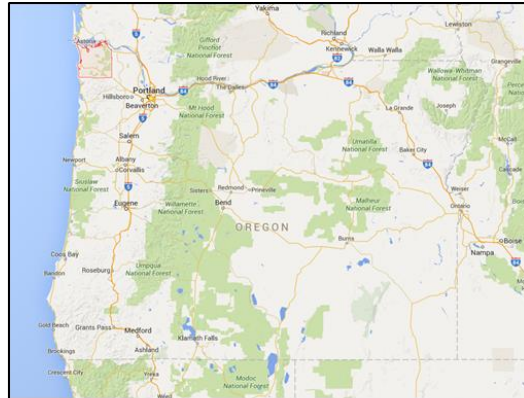
Clatsop County is located in the northwest corner of Oregon, bordered on the west by the Pacific Ocean on the north by the Columbia River, on the south by Tillamook County, and on the east by Columbia County. Much of the county is mountainous and densely forested. The county’s five incorporated cities (Astoria, Cannon Beach, Gearhart, Seaside, and Warrenton) are located along the coastal edge, which is

⁴ Available online at:

https://www.co.clatsop.or.us/sites/default/files/fileattachments/public_health/page/691/clatsop_assessment_2013.pdf

served primarily by Hwy 101. These cities house the bulk of the county's businesses and services. Astoria, the county seat, is the biggest city, with about 9,600 residents.

Figure 2, Clatsop County



As Table 1 below indicates, there are just under 38,000 residents in Clatsop County. Compared with the state as a whole, Clatsop County has been growing more slowly, and has fewer youth and more elderly residents. Clatsop County also has less racial and ethnic diversity. As with the rest of the state, Hispanics and Latinos comprise the largest minority group. College education levels and median household income are somewhat lower than the state levels, but the County also has a slightly lower poverty rate than the state as a whole.

Table 1: Clatsop County Demographics, 2015		
	Clatsop County	Oregon
Population		
Population	37,831	4,028,977
Population, % change 2010- 2015	2.1%	5.2%
under 5	5.3%	5.7%
under 18	19.6%	21.4%
65 years and over	20.0%	16.4%
Race and Ethnicity		
White alone	93.0%	87.6%
Black	0.9%	2.1%
American Indian / Alaska Native	1.3%	1.8%
Asian	1.6%	4.4%
Hawaiian / Pacific Islander	0.3%	0.4%
Two or More Races	2.9%	3.7%
Hispanic / Latino	8.4%	12.7%
Foreign born	6.0%	9.8%
Persons per household	2.3	2.5
Language other than English at home	8.9%	14.9%
Education		
High school graduate or higher	90.9%	89.5%
Bachelor's degree or higher	23.6%	30.1%
Median household income	47,337	50,521
Persons in poverty	15.4%	16.6%
<i>Source: Census QuickFacts (www.census.gov/quickfacts/)</i>		

Health

Tables 2 and 3 below display the most recently compiled health outcome data for issues most directly related to transportation. Table 2 displays county and state rates of chronic diseases. The rates have been age-adjusted to account for the fact that Clatsop County's population is generally older than the state population. As this information indicates, rates of most of these chronic diseases are somewhat higher than the state level rates, even when adjusted for the fact that Clatsop County's population is a bit older than the state as a whole.

Table 2: Transportation-related chronic health outcomes in Clatsop County (Age-adjusted)			
Health Indicators		Clatsop	Oregon
Body Mass Index	BMI - % of Adults Obese	29.10%	25.90%
	BMI - % of 8th Graders Overweight	14.70%	15.40%
	BMI - % of 11th Graders Overweight	11.60%	15.40%
	BMI - % of 8th Graders Obese	15.80%	11.40%
	BMI - % of 11th Graders Obese	17.90%	13.20%
Physical Activity Risk	% of 8th Graders who met CDC PA recommendations	36.50%	30.70%
	% of 11th Graders who met CDC PA recommendations	20.80%	23.70%
	Adults meeting CDC guidelines for physical activity	33%	25.10%
	Adults-no physical activity outside of work within past month	18.60%	18.00%
Cardiovascular Outcomes	Angina (Coronary Heart Disease)	6.00%	3.60%
	Arthritis	29.70%	24.50%
	Cancer	11.50%	8.50%
	Cardiovascular Disease	10.50%	7.00%
	High Blood Pressure	27.50%	27.70%
	High Cholesterol	25.70%	31.80%
	Survived a Stroke	2.40%	2.50%
	Survived a Heart Attack	4.70%	3.40%
	one or more chronic disease**	59.40%	52.30%
Metabolic	Diabetes	9.70%	8.20%
Mental Health	Depression	26.60%	24.80%
Respiratory	Asthma	11%	10.40%
Limitations	Adults Who Have Any Limitations in Any Activities, Due to Physical, Mental, or Emotional Problems	26.70%	24.20%
	Adults With Limitations That Require Them to Use Special Equipment (e.g., a Cane, a Wheelchair, or a Special Bed)	5.90%	7.60%
General Health	Adults reporting no poor physical health in past 30 days	60.70%	60.80%
	Adults reporting no poor mental health in past 30 days	56.70%	59.80%
<i>Source: Oregon BRFSS County Combined Dataset 2010-13, Oregon Healthy Teen Survey 2014</i>			
<i>Age-adjusted estimates are adjusted to the 2000 Standard Population using three age groups (18-34, 35-54, and 55+).</i>			
<i>**One or more chronic diseases includes angina, arthritis, asthma, cancer, COPD, depression, diabetes, heart attack, or stroke</i>			

Table 3 contains information on traffic crash injuries and deaths in Clatsop County. Information on crashes involving bicyclists was not available. As Table 3 indicates, pedestrians were involved in only 2.2% of the recorded crashes, but account for 28.6% of the crash fatalities and 10.5% of people experiencing major injuries, indicating how much more vulnerable pedestrians are to the severe health effects of crashes. While there is no information on the actual number of pedestrian trips that occur in Clatsop County or the proportion of trips that result in crashes and injuries, research in other areas support the conclusion that, compared with other modes, the risk of crash injury while walking is high, with the highest walking fatality rates occurring among older adults⁵--a key concern for Clatsop county given its aging population.

Table 3: Traffic Crash Injuries and Deaths in Clatsop County (2012)		
Total number of crashes=543		
Total number of crashes involving pedestrians=12		
Crash outcome	Motor Vehicle Occupant	Pedestrian
Fatalities	5	2
Major injuries	17	2
Moderate injuries	115	6
Minor injuries	264	2
Property damage only	281	0
% of total crashes involving pedestrians		2.2%
% of fatalities that were pedestrians		28.6%
% of people with major injuries that were pedestrians		10.5%
% of people with moderate or minor injuries that were pedestrians		2.1%
<i>source: 2012 Clatsop County Crash Data for Law Enforcement, ODOT Crash Analysis and Reporting Unit</i>		
ftp://ftp.odot.state.or.us/Crash_Data_Book/ClatsopCounty.pdf		

Path Area

The proposed path would run between Warrenton and Gearhart, and would be about nine miles in length. Warrenton and Gearhart are both coastal towns located in the northwestern corner of the county. Warrenton has about 5,200 residents and is located just to the west of the more populous town of Astoria. Gearhart itself is smaller, with about 1,500 residents. It is located just to the north of Seaside, which has about 6,500 residents. In between Warrenton and Gearhart are the unincorporated communities of Sunset Beach and Surf Pines. Warrenton and Gearhart are connected by Hwy 101, which is the only continuous road between the two cities. Both Warrenton and Gearhart, and the communities in between are primarily residential. As Figure 3 indicates, while there is some development to the west of Hwy 101, most of the development is west of 101, in between the highway

⁵ For a review of this research, see Haggerty, et al. (2015) "Transportation Research Briefs", Oregon Health Authority. Salem, OR. Available online at: <https://public.health.oregon.gov/HealthyEnvironments/TrackingAssessment/HealthImpactAssessment/Documents/OHA%208246%20Transportation%20Research%20Brief%20Final.pdf>

and the beach. As with all coastal beaches in Oregon, the entire beach between Astoria and Warrenton is publicly accessible.

Hwy 101 itself varies from two lanes in each direction as it approaches and passes through Warrenton and Gearhart, to one lane in each direction with a center turn lane, to one lane in each direction without a center turn lane. Speed limits range from 30 to 55 mph. Paved shoulder width varies greatly over the nine mile section from less than two feet to more than five feet, and there are no sidewalks along this section of 101. These conditions make it difficult and dangerous to access many destinations along Hwy 101 by bike or foot. As the 2015 Clatsop County Transportation System Plan notes,

“State highways act as the transportation backbone for walking in urban area of the county, especially in Astoria, Seaside, and Warrenton. The disconnected and sometimes absent sidewalk system along the highways in these cities creates a major pedestrian barrier...

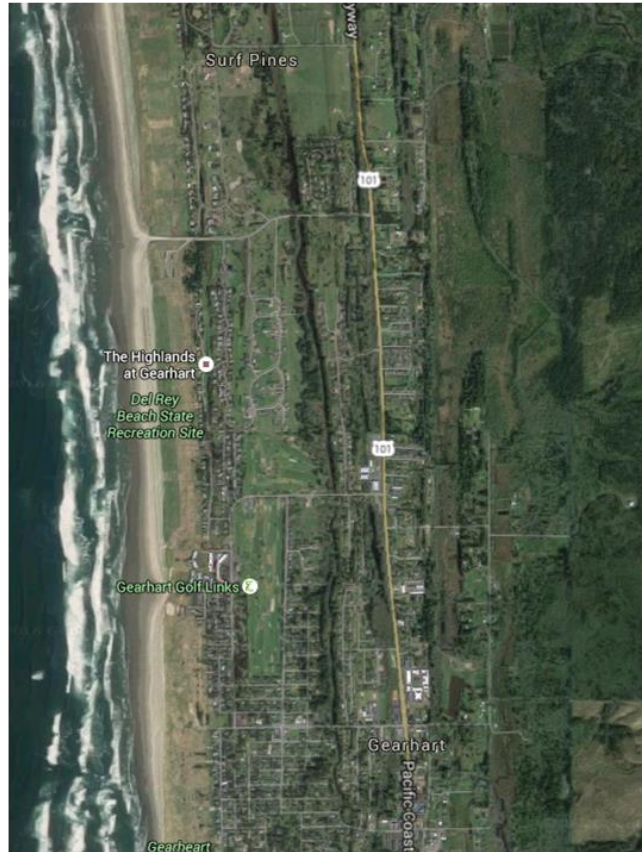
...While bike lanes are available along most state highways within incorporated cities in Clatsop County, there are several gaps within the network.”⁶

Traffic volumes on Hwy 101 vary greatly over the course of the year, with summertime traffic being significantly greater than other times of the year as visitors and residents take advantage of warm weather, long days, and vacation times.

Path Concept Overview

As noted at the outset, the purpose of this HIA is to inform decisions about a potential multi-use path connecting Warrenton and Gearhart. This is one component of a larger concept for a multi-use path that would run the length of Clatsop County’s coast line. While much of the impetus for this path comes from the recognized need to provide County residents with more and better opportunities for physical activity, it would also support local and county planning goals related to improving mobility, providing transportation options, supporting the tourism industry, resilience and others. At this point, however,

Figure 3. Aerial view of Surf Pines and Gearhart



⁶ 2015 Clatsop County Transportation System Plan Update, Technical Memorandum #5: Existing Transportation Conditions. Available online at: <http://clatsopcountytsp.org/wp-content/uploads/sites/2/2014/08/FINAL-TM-5-Existing-Conditions-Clatsop-County-TSP-Update.pdf>

there is no specific proposal being considered for planning or building any part of the path, including the section being considered in this HIA. As a result, the decision that this HIA seeks to inform is not about whether to adopt or implement a specific path plan or design, but about whether or not to proceed with promoting the path and pursuing resources to plan and build the first section of the county-long multi-use path between Warrenton and Gearhart. In addition, assuming that there is support for planning and building this section of the path, this HIA also considered the relative impacts of three different general alignment options for the path since decisions about path alignment would be among the next decisions to be made about the path once planning proceeds.

Methodology

In order to inform stakeholder conversations and decisions regarding whether to move forward with planning and building a multi-use path between Warrenton and Gearhart, this HIA sought to answer two general questions.

- What are the health impacts that typically result from multi-use paths?
- What are the relative impacts of three different possible path alignments? The three path alignments considered were:
 - A path west of Hwy 101
 - A path along Hwy 101
 - A path east of Hwy 101

To answer the first question, OHA staff reviewed other path-focused HIAs and recently produced research-based reports on the connections between paths and community health (the HIAs and research reports reviewed for this HIA are listed in Appendix A). In addition, OHA staff ran their Transportation Options Health Impact Estimator modelling tool (the Estimator) to quantify the possible health benefits of the path related to increased levels of physical activity among county residents. While physical activity is only one of many ways that paths impact health, physical activity is generally considered the most significant. In addition, there is enough research on monetizing the health-related benefits of increases in physical activity to provide estimates about potential reductions in the costs of physical activity-related illnesses. The Estimator tool and the assumptions and inputs used for this project are described in Appendix B.

To answer the second question, a full day workshop with local stakeholders was held to get input from community members on the potential health impacts of the path, including the relative impacts of the three different possible path alignment options. Participating stakeholders included representatives of public health agencies and organizations, county public works staff, and local, regional, and state land use and transportation planners. The first half of the day focused on providing participants with an overview of HIA, information on current community health issues in Clatsop County, information on the connections between transportation infrastructure and health, and information on the proposed path concept. The second half of the day focused on identifying the key health issues for Clatsop County residents related to the path, and then on conducting a rapid assessment of three different possible path alignment options. The assessment methodology used in the workshop is described in Appendix C.

Findings

10. According to existing research, paths can impact health by:
 - a. Providing **opportunities for physical activity**. Increasing physical activity can reduce the risk of numerous health risks, including the risks for:
 - i. Multiple cancers
 - ii. Cardiovascular disease
 - iii. Stroke
 - iv. Heart attack
 - v. Diabetes
 - vi. Obesity
 - vii. Injury
 - viii. Anxiety, stress, and depression
 - b. Providing **opportunities for social cohesion**. Improved social cohesion supports the formation and maintenance of strong social networks that can enable the dissemination of health-related information such as medical care options, establishing and maintaining social norms and practices associated with healthful behaviors, and by discouraging unhealthful behaviors such as smoking and drug use. Higher levels of social cohesion have been also correlated with increased rates of physical activity, including walking and biking among both children and adults.
 - c. Reducing or exacerbating **crash risk**. Paths can positively or negatively impact the risk of crashes with motor vehicles or other path users, depending on how they are designed and how they align with and intersect roads. Paths with multiple road crossings or sections that are not separated from parallel roads, particularly high-traffic roads, can result in greater crash risk, while paths that are largely separated from roadways can reduce crash risk.
 - d. Providing improved **access to health supportive resources**, particularly for people without cars. Good health requires access to resources such as healthy food retail, healthcare, employment, education, parks and recreation facilities, publicly accessible gathering spaces, and social services. Research has shown that a person's ability to each of these resources can influence their health:
 - i. **Access to healthy food** has been linked with rates of obesity and type-2 diabetes.
 - ii. **Clinical healthcare access** has been linked with a wide variety of health outcomes, and has been identified as a primary driver of health disparities between different socio-economic groups in America.
 - iii. **Employment** is the primary source of income for most people, and income levels are correlated with a wide variety of health outcomes, in large part because it determines a person's ability to access health-supportive resources. In addition, lower income levels contribute to higher levels of psychological stress that undermines physical health. Frequent or continuous exposure to stress can result in adverse effects on cardiovascular and immune systems leading to heart disease, diabetes, high blood pressure, strokes, depression, infections, and premature death. The stress and lack of opportunity associated with lower income levels also lead to the increased likelihood of engaging in

unhealthy behaviors such as smoking, crime, substance abuse, and physical abuse.

- iv. **Education** impacts health primarily through its influence on a person's income level. In addition, education can impact health by providing access to information and by allowing a person the opportunity to develop cognitive skills useful for identifying, avoiding and/or changing unhealthy or risky behaviors. Schools also offer opportunities for social engagement. Social engagement influences social cohesion which can contribute to improved health outcomes by enabling the dissemination of health-related information about healthcare options and healthy behaviors, and by reinforcing social norms and practices associated with healthy behaviors
 - v. **Parks, and recreation facilities** offer opportunities for physical activity and social engagement with attendant health benefits. Access to greenspace has also been correlated with mental health benefits.
 - vi. **Publicly accessible gathering spaces**, including public spaces such as libraries, parks, plazas, schools, and community centers, as well as private spaces such as restaurants and neighborhood retail establishments that facilitate chance encounters with other community members, can increase social engagement and social cohesion.
 - vii. **Social services** encompass a broad set of services which directly and indirectly address numerous physical and mental health issues. Such services include those that help people cope with issues stemming from aging, disability, substance abuse, domestic violence, social isolation, poverty, and mental illness. These services can be provided by both public and private sector organizations.
- e. Reduce or exacerbate **exposure to air pollution and noise**. Depending on how paths are designed and used, they can decrease people's exposure to air pollution by reducing automobile use and associated emissions and by separating path users from more polluted areas near high traffic corridors. Pollution from motor vehicles is highly localized near roadways. Placing bicycle and pedestrian facilities even short distances, such as 50' or 100', can reduce exposure to air pollution for bicyclists and pedestrians. However, bicycle and pedestrian facilities that are placed alongside, or very close to, roadways can increase bicyclist and pedestrian exposure to air pollutants. Health issues related to air pollution include asthma, some cancers, and reduced lung function. Health issues related to noise exposure include sleep deprivation, stress, and anxiety.
11. Research also demonstrates that **the health benefits of walking and biking outweigh the risks**. Considering the combined risks of crashes and exposure to air pollutants and noise, researchers have found that the health benefits resulting from increased physical activity outweigh these risks.
12. Research also indicates that, **while all members of a community can benefit from paths, paths can provide greater benefits to vulnerable groups including youth, elderly, people with low incomes, and people with disabilities**. Because these people are typically less likely to own cars and more likely to be dependent on walking and biking for mobility, providing safe, convenient walking and biking facilities can greatly improve their mobility, safety, and physical activity levels.

- 13. Increases in physical activity related to path use would result in reduced costs of illness for path users.** Physical inactivity is very costly. According to the CDC, each year Oregonians spend \$3.6 billion on cardiovascular diseases alone, an amount similar to what the state spends on education each year. Oregonians also spend \$411 million treating asthma, \$1.9 billion on cancer, \$892 million on depression, and \$1.7 billion on diabetes. Importantly, public spending accounts for 30-40% of these and other health care expenditures through medical assistance programs such as Medicare and Medicaid. In addition to treatment costs, these diseases can also result in lost productivity and income. The risk, prevalence, and severity of each of these conditions can be reduced through increased physical activity rates, as can the costs associated with treatment and lost productivity.
- 14.** Depending on the proportions of walkers, joggers, and cyclists who use the path, and on how far they walk, jog, and bike, **the path could result in about \$92,500 in reduced costs of illness per year for every 1,000 people who use the path.** To estimate the cost savings associated with increases in two of the most common types of physical activity—walking and biking—OHA developed the Transportation Options Health Impact Estimator that calculates disease and cost of illness reductions from increases in walking and biking. The assumptions about path use that produced this estimate are described in Appendix B.
- 15.** According to local stakeholders, of the three path alignments considered, **building a path west of Hwy 101 would produce the greatest health benefits.** Since most of the area’s residents and businesses are located west of 101, a path on this side of the highway would likely produce the greatest use. Relative to the other two alignment options, local stakeholders scored this alignment highest for its potential to support physical activity, social cohesion, access to resources, and reduced crash risk.
- 16.** According to local stakeholders, of the three path alignments considered, **building a path along Hwy 101 would produce the least benefits.** Relative to the other two alignment options, local stakeholders scored this alignment lowest because of increased crash risk and likelihood of low path use because of safety concerns and a generally unpleasant walking and biking environment.
- 17. Real or perceived personal safety issues could limit path use and related health benefits.** Depending on how the path is planned and built, it could increase or decrease the real or perceived potential for crash risks and criminal activity. If the path is unsafe, it could have negative health consequences. Increased crash risk could result in increases in injury and death, and increased criminal activity could result in personal injury, fear, stress, isolation and other mental health issues associated with traumatic events. If the path is even perceived as unsafe, it could have negative impacts related to reduced physical activity rates if the perception prevents people from using the path.
- 18.** According to local stakeholders, **the Clatsop County residents that would benefit most from the path include the residents of Warrenton, Gearhart, Seaside, and Astoria, because of their proximity to the trail and likelihood of using it. Additional primary beneficiaries identified include people with low-incomes and people with access and functional needs, such as seniors and people with disabilities because of their reliance on non-automobile transportation modes.** Other County residents would benefit from the path include bicyclists, drivers, joggers and walkers, youth, people without cars, and nearby business owners. County residents who

could potentially be negatively impacted by the path depending on how it is designed include adjacent property owners and homeless people.

Recommendations

Based on these findings, the local stakeholders who participated in the rapid assessment and full day HIA workshop proposed the following set of initial recommendations. These recommendations were developed based on initial consideration of the health impacts of the path that were discussed during the workshop. As such, they should be considered preliminary, as starting points for future conversations with stakeholders about whether and how the path should be planned and built.

3. In order to mitigate potential negative impacts, path planning and design should consider and address the following potentially negative issues:
 - a. Trespassing by path users on adjacent properties, through education and fencing, if necessary.
 - b. Easement impacts on adjacent property owners by choosing a path alignment that minimizes the need to acquire easements from adjacent property owners.
 - c. Personal safety from crime through the use of “community policing through environmental design” concepts.
 - d. Possible displacement of informal/homeless communities.
 - e. Crash safety, particularly at intersections, through design and signalization.
4. In order to enhance the positive health impacts of the path, path planning and design decisions should consider:
 - a. Choosing a path alignment that best links residents with each other and with daily goods and services
 - b. Choosing a path alignment that creates a safe and attractive place to walk and bike
 - c. Designing the path for comfort and safety
 - d. Including signage and wayfinding to facilitate path use
 - e. Working with local stakeholders to plan and implement education and encouragement activities to boost path use
 - f. Ensuring that path design meets the needs of people with access and functional needs
 - g. Including amenities for physical activity (eg exercise stations) and for relaxation (eg benches)
 - h. Planning for high volumes of users in order to accommodate local and visiting path users.

Appendix A: Assessment Resources

Haggerty, et al. 2015. "Transportation and Health: A Summary of Current Research" Oregon Health Authority Transportation Research Briefs. Available online at: www.healthoregon.org/hia

Croucher, et al. 2007. "The Links between Greenspace and Health: A Critical Research Review". Greenspace Scotland Research Report. Available online at: <http://greenspacescotland.org.uk/links-between-greenspace-and-health.aspx>

Vohra, et al. 2008. "Health Impact Assessment of Greenspace: A Guide". Greenspace Scotland. Available online at: <http://greenspacescotland.org.uk/links-between-greenspace-and-health.aspx>

US Centers for Disease Control and Prevention and National Parks Service. 2015. "Parks, Trails, and Health Workbook". National Parks Service. Available online at: https://www.nps.gov/public_health/hp/hphp/resources.htm

Heller and Bhatia. 2007. "The East Bay Greenway Health Impact Assessment." Human Impact Partners, Oakland, CA. Available online at: <http://www.humanimpact.org/projects/past-projects/>

Molina, et al. 2012. "Health Impact Assessment: Quequechan River Rail Trail, Phase 2". Metropolitan Area Planning Commission, Boston, MA. Available online at: <http://www.mapc.org/quequechan-river-rail-trail-hia>

White and Dobson. 2011. "Lake Oswego to Portland Transit Health Impact Assessment." Oregon Public Health Institute, Portland, OR. Available online at: <http://ophi.org/strategic-projects/ophi-hia/>

White and Dobson. 2011. "SE 122nd Avenue Health Impact Assessment." Oregon Public Health Institute, Portland, OR. Available online at: <http://ophi.org/strategic-projects/ophi-hia/>

Appendix B: Transportation Options Health Impact Estimator

About the Estimator

The Oregon Health Authority's (OHA) Transportation Options Health Impact Estimator (the Estimator) is based on the Integrated Transport and Health Impact Model (ITHIM). ITHIM is the primary model currently being used to quantify health impact from transportation plans, policies, and projects. It was developed in England, but researchers in the United States have adapted it for use locally. While the ITHIM model is very useful in many transportation planning contexts, it is limited in its ability to assess smaller scale projects such as the Warrenton-Gearhart section. OHA developed the Estimator model for such projects. A key difference between the two models is that, while ITHIM assesses impacts related to changes in physical activity, air quality, and crash safety, the Estimator provides information only on health impacts related to physical activity. It does not assess impacts related to air quality because smaller projects typically do not result in measurable changes in air quality. It does not assess impacts related to crash safety in part because of scale issues, but also because smaller projects typically lack the information necessary for populating the necessary model inputs.

The Estimator contains county level information on demographics, disease burden, current rates of walking and biking, and established algorithms for calculating changes in health outcomes based on changes in physical activity levels. Changes in disease are estimated in terms of disability-adjusted life years (DALYs), a standard measurement of illness used by the World Health Organization and researchers. Cost estimates resulting from changes in disease burden are based on the latest peer-reviewed national cost of illness figures scaled to Oregon county populations and adjusted to 2010 dollars. Cost estimates are per number of path (or other facility) user, and are inclusive of lost productivity due to absenteeism. Cost estimates are also inclusive of all expenditures, public and private.

Estimator Inputs for the Warrenton-Gearhart Section

To calculate health impacts, the Estimator requires information on the additional miles of walking and biking trips per year that can be attributed to the path. Generating this information for this project required making some assumptions about how the path will be used. The assumptions for use of the Estimator were developed by OHA staff and are summarized below in Table B1. Key assumptions include that 60% of the path users will be pedestrians (walkers and joggers), 20% will be bicyclists, and 20% will use the path for both walking/jogging and biking. In addition, because walking/jogging and biking at different intensity levels produce different health outcomes, additional assumptions were made about intensity of walking/jogging and biking and translated into common metrics based on Metabolic Equivalent (METs). Using these proportions, Table A1 also displays the resulting Estimator model inputs and outputs for three different path use scenarios. Scenario 1 assumes that 1,000 Clatsop County residents will use the path each year. Scenario 2 assumes 500 County users, and scenario 3 assumes 2,000 annual County users. While it is likely that the path will see significant use by tourists, the Estimator was run for estimates for County residents only.⁷

⁷ As a point of comparison for local trail use. A counter was placed on the Astoria River walk during the Month of August 2015 and recorded close to 5000 passes. August is a month where the trail would see the highest rate of use, and captured all passersby including visitors and our target local population.

Based on these assumptions, the Estimator produces an estimate of \$92,569 in savings from reduced costs of illness for every 1,000 County path users per year. If path use is 500 persons per year, then the savings would be \$46,284. If the path were to be used by 2,000 County residents per year, then the total annual cost of illness savings for path users would be \$185,137.

Table B1. Estimator Assumptions, Inputs and Outputs					
	<i>Assumed proportions of total users/yr</i>	Scenario 1	Scenario 2	Scenario 3	Assumptions
weeks		52	52	52	
users/yr--total		1,000	500	2,000	Clatsop County residents only, does not include path use by tourists
users/yr--walk		800	400	1600	Professional opinion
<i>exercisers</i>	12.5%	100	50	200	Professional opinion -includes joggers and fast walkers (avg 6 mph); 12.5% of total walk users
<i>strollers/shoppers</i>	87.5%	700	350	1400	Professional opinion -includes recreational walkers and people walking to access local goods and services (avg 2.5 mph); 87.5% of total walk users
users/yr--bike		400	200	800	Professional opinion; 40% of users
<i>commuters</i>	12.5%	50	25	100	includes people who regularly use the path to get to and from work (avg speed=15 mph); 12.5% of bicyclists
<i>exercisers</i>	25.0%	100	50	200	includes people who use the path to bike for exercise; 25% of bicyclists
<i>casual</i>	62.5%	250	125	500	includes occasional bicyclists; 62.5% of bicyclists
walk miles (person/week)		3.5	3.5	3.5	MET adjusted: exerciser miles are multiplied by 1.44 when calculating walk miles per person per week to account for additional METs associated with jogging/speed walking vs casual walking over the same distance
<i>exercisers</i>		10	10	10	Professional opinion
<i>strollers/commuters</i>		2	2	2	Professional opinion
bike miles (person/week)		7.1	7.1	7.1	MET adjusted: exerciser and commuter miles are multiplied by 1.22 when calculating walk miles per person per week to account for additional METs associated with fast biking (14-16 mph) vs casual riding (10-12 mph) over the same distance
<i>commuters</i>		10	10	10	Professional opinion
<i>exercisers</i>		10	10	10	Professional opinion
<i>casual</i>		4	4	4	Professional opinion

Table B1. Estimator Assumptions, Inputs and Outputs				
<i>Estimator Inputs</i>				
Total walk miles over one year		147,513	73,756	295,025
Total bike miles over one year		147,333	73,667	294,667
<i>Estimator Outputs</i>				
Cost of Illness Savings		\$92,569	\$46,284	\$185,137

Appendix C: Rapid Stakeholder Assessment Methodology

The rapid stakeholder assessment for this HIA focused on determining the relative impacts of the project components on each of the four key health issues (see Figure 2) using a scoring approach that OHA staff have developed and used in other similar small-scale rapid HIAs. The scoring approach involves working with local stakeholders that are familiar with the project, project area, and impacted populations to develop a set of assessment questions for each health issue that can be asked and scored for each project component. It is based on the assumption that, for local, small-scale projects, local stakeholders are in the best position to understand how their community might be impacted by the proposed changes. Assessment questions for this HIA were developed collaboratively by workshop participants working in two small groups. Each group developed and scored three questions for each issue and were as follows:

- **Safety:** Does the alignment option...
 - ...promote safety from crime by facilitating “eyes on the street”?
 - ...reduce road crossings and other areas of potential conflict?
 - ...separate motorized from non-motorized traffic?
- **Physical Activity:** Does the alignment option...
 - ...provide a safe, comfortable and attractive place to walk and bike?
 - ...connect residents to goods and services for meeting daily needs?
 - ...provide easy access for potential users?
- **Access to resources:** Does the alignment option...
 - ...improve route convenience?
 - ...improve proximity to daily goods and services, including jobs and school?
 - ...integrate effectively with other transportation options, including transit?
- **Social Cohesion:** Does the alignment option...
 - ...encourage use by families and other groups of people?
 - ...create a sense of place?
 - ...support neighborhood personal connections?

Answers to each of the questions were based on professional/personal judgment and expressed in numerical scores, based on the following scale:

- 2="Yes, a lot (relative to the other recommendations)"
- 1="Yes, a little (relative to the other recommendations)"
- 0=no impact
- -1="No, it would actually negatively impact this issue a little (relative to the other recommendations)"
- -2="No, it would actually negatively impact this issue a lot (relative to the other recommendations)"

Workshop participants answered each question individually, but did so in the context of small groups so that participants could discuss each issue to ensure that they understood the issues and discuss the rationale for their scores with other participants. Scoring was facilitated with the use of a worksheet that aligned the questions with the project components (see below), and allowed for the scores for each

project component to be summed and compared. After all of the participants completed their scoring worksheets, OHA staff combined all of the scores to determine the group’s assessment of the relative impacts of each of the alignment options on each of the health issues. Table C1 below displays the total and average scores for each component for each health issue, as well as combined total and average scores for each alignment option. As the information in this table indicates, stakeholders concluded that a path west of 101 would have the greatest health benefits, and had the highest average scores for each of the four health determinants considered.

<i>Alignment options</i>	<i>Physical Activity</i>		<i>Social Cohesion</i>		<i>Access to Resources</i>		<i>Safety</i>		COMBINED	
	<i>Tot.</i>	<i>Avg.</i>	<i>Tot.</i>	<i>Avg.</i>	<i>Tot.</i>	<i>Avg.</i>	<i>Tot.</i>	<i>Avg.</i>	TOT.	AVG.
<i>Path west of 101</i>	40	4.4	51	5.7	29	3.2	41	4.6	161	4.5
<i>Path east of 101</i>	30	3.3	21	2.3	-6	-0.7	22	2.4	67	1.9
<i>Path along 101</i>	11	1.2	2	0.2	32	3.6	-1	-0.1	44	1.2

Scoring: 2="Yes, a lot (relative to the other recommendations)"; 1="Yes, a little (relative to the other recommendations)"; 0=no impact; -1="No, it would actually negatively impact this issue a little (relative to the other recommendations)"; -2="No, it would actually negatively impact this issue a lot (relative to the other recommendations)"				
	Health Determinant #1: Walking/Physical activity			
Alignment options	"Does the component..."			
	Q1: "...provide a safe, comfortable and attractive place to walk and bike?"	Q2: "...connect residents to goods and services for meeting daily needs?"	Q3: "...provide easy access for potential users?"	Total Score
Path West of 101				
Path East of 101				
Path along 101				

Appendix D: Workshop Participants and Event Summary

Attending:

Name	Affiliation
Garrett Phillips	Columbia River Estuary Study Taskforce
Jeff Hazen	Sunset Empire Transportation District
Shasia Fry	Sunset Empire Transportation District
Patrick Wingard	Oregon Dept. of Land Conservation and Development
Heather Hanson	Clatsop County
Brian Mahoney	Clatsop County Public Health
Michael Summers	Clatsop County
Nancy Ferber	Astoria City Planner
David Mattison	Tillamook City Planner
Michelle Jenck	Tillamook Year of Wellness
DeAnna Pearl	Tillamook Prevention
Mike Morgan	Astoria City Planner (retired)
Steven Blakesley	Clatsop County Public Health
Tessa James Scheller	Clatsop Community College BOD, Northwest Coast Trails Coalition BOD
Tegan Boehmer	CDC

Training overview:

Health Impact Assessment (HIA), is a framework for determining how a decision on a policy, project, or project could impact public health. Using the best available evidence, including research, local expertise, and public health data, HIAs present both findings and recommendations for improving health outcomes from decisions in transportation, land use planning, education, and other arenas, for everyone in the community.

Clatsop County health department staff and their colleagues in land use and transportation planning and public works hosted a full-day training on HIA in order to learn about the connections between transportation plans, policies, and projects and local health concerns, and lay the foundation for a rapid assessment of a proposed multi-use path proposal in Clatsop County. The training was designed to achieve the following goals:

Training Goals:

- Participants will leave the training with
 - a grounding in the environmental determinants of health, particularly those related to land use and transportation planning
 - an understanding of local health and planning issues, including
 - primary health issues related to the path concept
 - potential relative health impacts of different possible path alignments

- the ability to participate in an HIA, and
- new tools and resources for understanding how transportation and health intersect
- Participants will also provide input useful for informing the development of a health impact report that,
 - Identifies and characterizes health impacts related to the path concept, and proposes recommendations for mitigating negative health impacts and maximizing positive health impacts.

The training was led by Steve White, MURP, Oregon HIA Program Coordinator.

Training summary

The training was divided into two main components. The first half of the day focused on building participants understanding of health impact assessments, including why public health departments are increasingly using them to improve community health and how they are done. This component also included information and discussion about the connections between the built environment and health, with a particular focus on how paths can impact health.

The second half of the day focused on developing the scope (summarized below), conducting a rapid assessment, and drafting an initial set of recommendations for the Warrenton-Gearhart section of the Clatsop County path concept.

Scoping summary

Scoping in HIA involves determining who will be most likely impacted by the policy, plan or project under consideration, identifying how the policy, plan or project will impact health, and determining which health issues will be most impacted.

Impacted populations

Workshop participants identified the following groups of people as likely to be most directly impacted by decisions about how the streetscape project is designed.

Path users	Non-path users
<ul style="list-style-type: none"> ● Residents of communities served by the path, including Astoria, Warrenton, Gearhart, and Seaside ● Low-income residents ● Commuters ● Tourists ● Local bicyclists and athletes ● People with access and functional needs, including seniors and people with disabilities ● Hispanic residents 	<ul style="list-style-type: none"> ● Nearby business owners ● Adjacent landowners <ul style="list-style-type: none"> ○ Farmers ○ Residents ○ Developers ● Homeless population ● Project funders and operators (eg, public works agencies) ● Policy/change-makers ● Drivers

Prioritized populations for consideration in HIA:

- Residents of communities served by the path, including Astoria, Warrenton, Gearhart, and Seaside
- Low-income residents
- People with access and functional needs, including seniors and people with disabilities

Health Pathways

There are five primary health determinants, or pathways, through which transportation systems can impact health outcomes (see figure 2 below).⁸ They include:

- **Crash safety for bicyclists and pedestrians, as well as for motor vehicles.** Primary health outcomes related to crash safety are physical injury and death.
- **Opportunities physical activity.** Primary health outcomes related to physical activity include obesity, type two diabetes, cardiovascular disease, stress, depression, and multiple cancers.
- **Exposure to air pollutants.** Primary health outcomes related to air pollution exposure include asthma, reduced lung function, and some cancers.
- **Exposure to noise.** Primary health outcomes impacted by noise include stress, hearing loss and sleep deprivation.
- **Access to a wide variety of health supportive resources** such as healthy food retail, employment, schools, affordable housing, and parks and recreation facilities.

Secondary pathways through which transportation systems can impact health include providing opportunities for social interaction and cohesion, and influencing economic development.

Based on the project information and their knowledge of the project area and community, workshop participants identified and prioritized the following health issues as potentially being impacted by the project:

- Physical activity
- Safety
- Access to resources
- Social cohesion

⁸ For a more detailed review and discussion of the research connecting transportation systems and health, see the Oregon Health Authority's "Transportation Research Briefs", available on-line at: <https://public.health.oregon.gov/HealthyEnvironments/TrackingAssessment/HealthImpactAssessment/Documents/OHA%208246%20Transportation%20Research%20Brief%20Final.pdf>