



Memo

Date: November 17, 2022

Project: Equitable Active Safety Improvements Evaluation

To: Equitable Active Safety Improvements Evaluation Project Management Team and Executive Committee

From: HDR, Inc

Subject: Task 5 Final Report Memorandum

Introduction

The Equitable Active Safety Improvements Evaluation (the Project) presents strategies to guide the Oregon Department of Transportation (ODOT) in addressing issues related to pedestrian and bicycle safety on the state highway system with consideration given to social equity. This memorandum provides an approach for the Project developed through a review of existing programs, peer exchanges with similar agencies, and collaboration with an ODOT project management team. The Project is meant to be a complement to the All Roads Transportation Safety (ARTS) Program, Pedestrian and Bicycle Strategic Funding Program, and Great Streets Program.

The Equitable Active Safety Improvements Evaluation responds to ODOT's understanding of the deficiencies in the transportation system with respect to equity and safety. As a result, the Project's call to action is as follows:

Now is the time for action. The Oregon transportation system is not working for everyone. Severe crashes involving people walking and bicycling are happening too often, and they are disproportionately located in low-income and BIPOC communities. The Project will reduce the frequency and severity of crashes involving people walking and bicycling and will prioritize social equity in its solutions on the State transportation system.

This final memorandum relies on prior tasks to develop program approach alternatives for further evaluation and recommendation. The five sections included herein present: (1.) project background and goals; (2.) a summary of the program evaluation; (3.) recommendations for data practices and evaluation; (4.) peer review summaries; and (5.) a program delivery implementation plan.

Project Background, Goals, and Tasks

An independent review of existing ODOT programs was completed to help inform ODOT's evaluation of pedestrian and bicycle safety on the state system and to provide recommendations for changes to existing programs or sub programs or to create a new program that more rapidly addresses pedestrian and bicycle safety improvements. The Project strategies discussed herein are built upon key observations and priorities by ODOT that have



driven this project. Potential recommendations focusing on the ODOT system may include, but not be limited to: speed limit changes, signal improvements, signing, pavement markings, illuminations, and other infrastructure solutions that benefit pedestrian and bicycle safety. The prioritization method should be data driven, prioritizing social equity to fill an existing gap within ODOT safety and active transportation programs. It is imperative that the safety-related data is readily available. Long timelines for recent data create obstacles in project programming for safety projects. Several recommendations developed throughout the Project for data collection are in the process of implementation and would significantly improve safety data timeliness.

Project Goals

Driven by these observations and priorities, as discussed above, the following project goals were developed:

- Evaluate existing active transportation and safety programs to determine if they can be augmented or if an additional program needs to be developed to speed up safety improvements for people walking and bicycling.
- Improve access to safety-related data and the information collected so programs can better prioritize social equity and be responsive to findings as they emerge.

To achieve these project goals, it was important for the study team to:

- Focus on programs that could reduce crash frequencies and severity, especially for people walking and biking on the State transportation system
- Define “quickly” as within two years of programming to bid for construction
- Conduct educational and outreach efforts in tandem to constructed projects

Table 1 below summarizes a review of the existing ODOT programs and how each currently meets the Project’s goals. As illustrated in the table, none of the existing programs completely meet all Project goals; therefore, there is a need for a new program. Further details on this evaluation are included in the Program Evaluation matrix on page 8.

Table 1. Existing Programs and Project Goals

Program	How Program Currently Meets Project Goals		
	Emphasis on People Walking and Bicycling	Prioritize Social Equity	Implement Projects Quickly
All Roads Transportation Safety (ARTS)	Partially	Partially	No
Safety Quick-Fix	Partially	No	Partially
State Safety Priority Funds	Partially	No	Partially
Sidewalk Improvement Program (SWIP)	Yes	Partially	Partially
Safe Routes to School (SRTS) Rapid Response	Yes	Yes	Partially
Transportation Safety Office	Partially	No	Yes

Completed Tasks

As part of the project, two peer exchange workshops were conducted and four memoranda were created for the different project tasks, as described below:

1. **Goal Statement.** In this first task, the Call to Action, project goal, and problem statement were developed.
2. **Peer Exchange Workshops.** Following development of the goal statement, two workshops were conducted as described below:
 - a. Workshop # 1 centered around two questions for participating state Departments of Transportation (DOTs):
 - In your active transportation and safety grant programs, do you incorporate social equity?
 - What programs do you have to deliver quick-fix active transportation safety projects?
 - b. Workshop #2 centered around two questions for participating DOTs:
 - How participating DOTs receive and process crash data and what is the data timeline
 - How equity and racial data variables are included in crash data
3. **Program Evaluation.** In the second task, the ways ODOT programs currently meet the Project goal, as well as gaps, were evaluated and potential program opportunities to meet the Project goal were identified.
4. **Review ODOT Data Practices / Data Evaluation.** This third task included the identification and review of a subset of ODOT's data sources, equity indices, and active transportation evaluation tools for relevancy to the Project.
5. **Program Approach.** Upon completion of the aforementioned tasks, an approach to delivering the Project in three major steps – *annual corridor selection, concept development, and design and construct* – was developed.

Each task relied on previous work completed. The final task, this memorandum, includes an evaluation of existing programs, peer exchange workshops with other state DOTs, and technical advisory committee meetings. It is also derived from the Statewide Priority Quick Response Pedestrian Safety Corridor Identification methodology.

Peer Review Workshop Summaries

Two workshops were conducted on equity practices and use of crash data to facilitate peer-to-peer exchange across different state DOTs around the country. The two workshop summaries are below.

Workshop #1

This workshop was held virtually on December 3, 2021, and included representatives from ODOT, FHWA, Florida DOT, Washington State DOT, Minnesota DOT, Ohio DOT,

Massachusetts DOT, and the Oregon Bicycle and Pedestrian Advisory Committee (OBPAC). The workshop centered around two questions, listed below with key findings related to the questions summarized.

ODOT's current definition of social equity was shared as reference: *“Equity acknowledges that not all people, or all communities, are starting from the same place due to historic and current systems of oppression. Equity is the effort to provide different levels of support based on an individual’s or group’s needs in order to achieve fairness in outcomes. Equity actionably empowers communities most impacted by systemic oppression and requires the redistribution of resources, power, and opportunity to those communities.”*

Question 1: In your active transportation and safety grant programs, do you incorporate social equity?

Findings:

- Most DOTs recognized social equity as an urgent priority; however, all are just beginning to understand how to better achieve social equity and operationalize it.
- Several DOTs have developed tools to help incorporate social equity in their active transportation and safety programs.
 - Ohio has developed a spatial analysis using census data (minority, youth, elderly, poverty, limited English proficiency, and zero vehicle households. The analysis provides spatial identification of social equity populations
 - Several DOTs (Ohio DOT, MNDOT, WSDOT, Caltrans) have developed equity related criteria with quantified point scores to evaluate project applications
 - Ohio also asks for narrative descriptions in addition to quantitative assessment related to potential equity benefits
 - WashDOT employs an “Equity by Design” approach
- *Challenges:* All have also focused on active transportation and safety projects, but acknowledge historic DOT emphasis of asset management poses a challenge to innovation around equity (maintaining what currently is versus providing new solutions to address inequities)

Question 2: What programs do you have to deliver quick-fix active transportation safety projects?

Findings:

- Focus on State funds where DOTs have more flexibility
- All utilized a safe systems approach¹
- State DOT approaches and tools include:
 - Streamlined contracting: FDOT had 3- to 6-month “push button” contracts that allow for quick construction and even some right-of-way acquisition
 - Speed reduction programs
 - Focus on key or strategic corridors with high crash rates
 - Leverage pavement resurfacing projects and leverage other projects as often as possible

¹ FHWA Safe System Approach, [Zero Deaths - Safety | Federal Highway Administration \(dot.gov\)](https://www.fhwa.gov/zero-deaths-safety)

- Decentralize decision-making to regions; Florida DOT allows traffic operations to decide on signal modifications directly
- Several had tracking tools to track progress of projects
- Local government IGAs (Intergovernmental Agreement) are key, developing templates and streamlined approaches helps

Workshop #2

This workshop was held virtually on February 18, 2022, and included representatives from FHWA, ODOT, OBPAC, Oregon Traffic Safety, Maine DOT, Florida DOT, Washington State DOT, and Ohio DOT. This workshop focused on multiple questions around crash data safety analysis and non-crash data safety analysis as described below.

ODOT shared its interest in identifying best practices around use of crash data: *ODOT needs to reduce crash frequencies and severity, specifically pedestrian and bicycle fatalities, on the state highway system in a quicker manner than current ODOT programs have historically done. Simultaneously, ODOT needs to prioritize social equity and respond to the disproportionately high number of pedestrian fatalities in communities with high concentrations of low-income and BIPOC people.*

Findings:

- DOTs are able to obtain fatality and serious injury crashes sooner, by breaking their reporting out separately from other crash data
- Self-reported data are unreliable, often contain conflicting reports, and in states that do have self-reporting, self-reported data are not used and separated out of other data sources
- Most states use electronic forms of data, and many receive data that is already geocoded
- Supplemental crash data include use of smart signal technology, level of traffic stress (LTS), and other forms of near-miss data
- Public Health data are also used to better understand demographics and communities. Examples of CDC data used are: [Social Vulnerability Index](#) and [Behavioral Risk Factor Surveillance System \(BRFSS\)](#)
- Other DOTs are also navigating the question of spatial resolution of social equity data

Program Evaluation

ODOT provided an initial inventory of programs and documents based on research and conversations with program managers. The project team, with input from the project management team, selected a subset of six programs for further evaluation. Selection was based primarily on the funding source (State – i.e., free of Federal requirements) and how relevant the program is to the Project goal. State funding allows for more flexibility in ways the dollars are programmed. Ultimately, the project team selected the following six programs for evaluation.

- All Roads Transportation Safety (ARTS)
- Safety Quick-Fix
- State Safety Priority Funds (SSPF)
- Sidewalk Improvement Program (SWIP) (including former Bicycle Pedestrian Quick-Fix)
- Safe Routes to School (SRTS) Rapid Response
- Transportation Safety Office (TSO)

The project team reviewed the documents and conducted a series of interviews with managers of the six programs to gain an understanding of how programs currently meet the Project goal and how they could in the future. In addition, the project team conducted a peer exchange with other state DOTs and FHWA to gain insights into potential program opportunities for ODOT. The project team also held a workshop with program managers who listed strengths, weaknesses, threats, and opportunities for programs to meet the Project goal.

Evaluation Findings

The analysis of the program evaluation is summarized below, followed by a detailed program evaluation matrix.

Universal Program Opportunities

Many program opportunities can be implemented by all of the six programs evaluated. These improvements could be implemented independent of a new program.

SOCIAL EQUITY

- Programs can use the Transportation Disadvantaged Index (TDI) earlier in the process (i.e., as part of identifying projects) or emphasize its importance in project selection.² We recommend changing the name of the index to avoid using the term “Transportation Disadvantaged,” which may imply the responsibility for disadvantage is individual. Instead, we recommend using the name “Active Transportation Social Equity Index” or a similar name to imply a collective responsibility. This change will be considered in conjunction with the Priority Multimodal Network Development project in the future.

ACTIVE TRANSPORTATION QUICKLY IMPLEMENTABLE

- Seek environmental, right-of-way, and other approvals on a programmatic basis so individual projects do not have to go through this process, prolonging the timeline for implementation.
- Use Intergovernmental Agreements (IGAs) for faster delivery of projects, as appropriate.
- Define priority corridors, such as the forthcoming statewide priority multimodal network, to help with decision-making and streamline project implementation. In the short-term, priority corridors defined by Active Transportation Needs Inventory (ATNI) can be used.

² [Statewide Active Transportation Needs Inventory Evaluation Criteria](#)

ATNI uses TDI to prioritize segments located in or adjacent to census tracts that have relatively high concentrations of transportation disadvantaged communities.³

- Since small projects outside of the of Statewide Transportation Improvements Program (STIP) process are difficult to resource, use streamlined/on-call contracting for stand-alone projects. Adding appropriate staff in Regions for technical review and approvals and dedicated FTE for District project managers.
- It is likely that multiple programs may need to be combined for the Project.

SAFETY

- Fast-track (1-2 years) the projects from the approved active transportation safety countermeasures list developed in this Project available in Appendix A
- Test newer countermeasures by funding and implementing pilot projects.
- Projects funded by the program should address social equity by increasing the use of proven active transportation safety countermeasures, use existing design guides and countermeasures, and develop an overarching policy document (e.g., WSDOT).

ENGAGEMENT

- To implement projects quickly, conduct public engagement prior to an application; IAP2⁴ strategies could be used at the Project-level alongside and following project implementation for the purposes of informing, educating, and publicizing the project.
Tradeoffs
- If programs including federal programs change substantially in their goals due to the Project and funding is spent differently, programs may need to be backfilled with additional funding so Project Managers can continue to fund necessary projects that may not align with the Project.
- Reallocation of SWIP funds to the Project would require additional funds to be identified to cover unfunded KPM requirements, such as addressing temporary or permanent system deficiencies, such as sidewalk gaps.

Limitations

An emphasis on equitable projects may limit leveraging of program funds in combination with larger projects, unless larger projects have an equity focus as well. Action is needed to prioritize social equity for programs that do not focus on it currently.

Program Evaluation Matrix

The assessment in Table 2 provides a qualitative summary of how programs currently meet or do not meet the Project goal. Rationale for why a given program meets, partially meets, or does not meet the Project goal is provided.

³ TDI is comprised of the same data as the Social Equity Index (SEI), with a few more variables related to active transportation needs (zero vehicle households, under 18, and crowded housing); the spatial resolution is the same between the two.

⁴ [International Association of Public Participation, IAP2](#)

Table 2. Summary Assessment of How Programs are Currently Meeting the Project Goal

Program	People Walking and Bicycling	Social Equity	Quickly Implementable
ARTS			
	Rationale for Assessment <ul style="list-style-type: none"> • Targeted toward safety for all modes, including people walking and bicycling; a subprogram targets walking and bicycling improvements • SEI and TDI currently considered to aid project prioritization at the regional level • The larger nature of these projects often translates to longer implementation timeframes (5-7 years) 		
Safety Quick-Fix			
	Rationale for Assessment <ul style="list-style-type: none"> • Targeted toward safety for all modes, no specific focus on active transportation • Program is for emergency needs and social equity is not considered • Projects are typically delivered by maintenance or Region Procurement, sometimes within less than a 1-year timeline 		
State Safety Priority Funds			
	Rationale for Assessment <ul style="list-style-type: none"> • Targeted toward safety for all modes, no specific focus on active transportation • No direct emphasis on social equity • Some emphasis on quick implementation 		
SWIP			
	Rationale for Assessment <ul style="list-style-type: none"> • Specifically targeted toward improving conditions for people walking and bicycling • TDI considers but does not necessarily change outcomes; regions are awarded funding as requested if funds are available • IGAs with local agencies and partnerships with Maintenance Districts currently aid quick implementation; leveraging funds with larger projects elongates timeline 		
SRTS Rapid Response			
	Rationale for Assessment <ul style="list-style-type: none"> • Targeted toward improving conditions for people walking and bicycling, specifically students • Intentional multi-year committee work to use TDI and other school-related social equity criteria; provision for geographic balance; can serve as a model for other programs • Projects can be granted in up to 4 weeks; however, construction can take up to 5 years 		
Transportation Safety Office			
	Rationale for Assessment <ul style="list-style-type: none"> • Targeted for all modes, including people walking and bicycling, particularly SRTS • No direct emphasis on social equity • Can implement messaging campaigns quickly 		



ODOT Data Practices and Data Evaluation

A subset of ODOT’s data sources, equity indices, and active transportation evaluation tools was evaluated to understand the extent to which the tools consider social equity, the challenges or opportunities to improve timeliness or maintenance of data, and the challenges or opportunities to improve the data.

The evaluation is based on an inventory of data provided by ODOT, a review of the 2020 Crash Analysis and Reporting Unit (CAR Business Plan), and results of the two Project Peer Exchange Workshops. In addition, the Project team interviewed Chris Wright, Transportation Data Manager (ODOT Transportation Data Section), Robin Ness (Crash Analysis & Reporting Unit), and Traci Pearl, Ben Khan, and Ari Woods from Department of Motor Vehicles (DMV) who receive law enforcement and self-reported crash reports.

The Project team identified long-term actions that would enable crash data, particularly people walking and bike riding who have died in a crash, to be available more quickly. Long-term actions and potential legislative concepts or actions are described further in this memorandum. Several recommendations developed through this for data collection are concurrently being implemented and would significantly improve safety data and systems as they are needed irrespective of this Project.

Data and Programs Evaluated

In collaboration with ODOT, the team selected the data sources and analytical tools for review and evaluation, as described in Table 3.

Table 3. Data and Programs Evaluated

Data	Source	Responsible ODOT Unit
Fatal Analysis Reporting System (FARS)	National Highway Traffic Safety Administration	Crash Analysis and Reporting Unit
Active Transportation Needs Inventory (ATNI)	ODOT	Pedestrian and Bicycle Program
Transportation Disadvantaged Index (TDI) and Social Equity Index (SEI)	ODOT	Pedestrian and Bicycle Program
National Cooperative Highway Research Program (NCHRP) Research Report 893 Systemic Pedestrian Safety Analysis	ODOT	ODOT Highway Centerline
Crash Data System (CDS)	ODOT	Crash Analysis and Reporting Unit

The evaluation revealed the potential crash data gaps, opportunities for improving social equity data, and opportunities for improving data timeliness, as described below.

Data Gaps

- For the number and severity of pedestrian and bicycle crashes that do not include a motor vehicle, include hospital system information data into the crash data systems can

help provide more information and fill gaps on bicycle, pedestrian, and micro-mobility crashes and injuries.

- More readily rely on police reports to identify non-Property Damage Only (PDO) crashes for cases where police reports are present. This will help streamline PDO and non-PDO crashes for the program.
- Assign staff to update and maintain the ATNI and Pedestrian/Bike Crash Indicators and implementation of NCHRP Research Report 893 (Systemic Pedestrian Safety Analysis). Integrating latest crash data information in these systems can provide updated list of priority corridors and risk factors every two years.
- Increase ODOT data users' awareness of TDI and/or the NCHRP Research Report 893 (Systemic Pedestrian Safety Analysis) dataset: Integrate these and ATNI datasets on TransGIS. This data integration is already in progress. There is a need to explore the simplest way to visualize bicycle and pedestrian data along with equity priority areas. This can help with equitable distribution of resources and funding along priority corridors.

Improving Social Equity Data

- These data – including FARS, ATNI, and CDS – have limited demographic variables that are relevant to social equity. Training police to consistently collect these data is not possible and people self-identify race, ability, and other demographic characteristics differently. The Project evaluation recommends using other data, such as TDI as a lens to understand the demographics, namely the residential demographics, of the area in which crashes occur. Using the TDI as an equity lens can help analysts understand if crashes or certain crash types are disproportionately occurring in high TDI areas.

Improving Data Timeliness

- CDS recommendations from the CAR Business Plan (DKS 2020⁵):
 - Encourage and promote the shift to 100% electronic crash reporting. This is a long-term recommendation.
 - Encourage DMV to scan crash reports and send CAR unit electronic files instead of paper reports.
 - Implement additional automation throughout the crash coding and reporting process, including the use of data validation checks during crash report creation (once electronic crash reports are implemented), automated reporting of basic information through data visualization portals including roadway information (number of lanes, signals etc.), etc.
 - Conduct outreach with data users and Law Enforcement on the importance of completing timely and accurate police crash reports.

⁵ DKS. (2020, March). [Crash Analysis and Reporting Unit Five-Year Business Plan](#). ODOT.

Potential Long-term Changes

Long-term changes have been sorted into 1) process improvements, and 2) possible legislative action. Many potential process improvements do not require legislative action, but legislative action could provide greater funding and priority to process improvements.

Process Improvements

- **Streamline crash data reporting processes.** Law enforcement-reported and self-reported crash data are received by DMV by statute (ORS 811.720). For fatalities particularly, and preferably severe injury crashes that involve pedestrians or bicyclists, DMV could expedite reporting the law enforcement-reported crash reports, even if the DMV has not conducted their compliance check for these crashes. Releasing these law enforcement-reported pedestrian and bicycle fatalities and severe injury crash data earlier would help identify any crash patterns and infrastructure responses.
- **Eliminate self-reported data which often conflict with law enforcement-reported data.** For pedestrian and bicyclist fatalities, eliminate the distribution of self-reported, citizen crash reports to streamline the availability of the fatality and severe injury data.
- **Provide consistent electronic law enforcement reporting.** Currently the DMV administers a grant program that uses a system called Central Square, which allows for uniform, electronic reporting. Central Square allows for geolocation, allows for law enforcement signature, and overall expedites data submission to the DMV. Grants currently fund equipment and training. Expansion of this program, through budgetary or legislative action, would help streamline data submission, with geolocation and greater consistency. CAR systems cannot currently receive electronic data in this format; however, CAR will be releasing a request for proposal to update to their system. The CAR unit estimates their system will be updated in five years.
- **Prioritize non-PDO crashes.** In the first year of the Project, prioritize fatal and injury crashes over PDO crashes and begin prioritizing PDO crashes in future years.

Legislative Concept

The potential improvements below would require legislative action to be implemented and can be further developed into a legislative concept by ODOT.

- **Release all preliminary policy reports.** Local law enforcement and district attorneys delay release of law enforcement crash reports to the DMV because of pending trials and assessments of fault. For the purposes of understanding crash patterns and potential infrastructure responses, preliminary police reports, which do not assess who may be at fault, could be released to the DMV. Legislation and/or promulgating rules would define what is contained in a “preliminary” report.
- **Provide consistent electronic law enforcement reporting.** As referenced in the section above, expansion of the Central Square program by legislation would result in expediting crash data accuracy, consistency, geolocation, and timely availability.



Table 4 illustrates priorities (low, medium, and high) and timelines (short-term, mid-term, and long-term) for recommended actions for ODOT crash data practices.

Table 4. ODOT Data Practices and Data Evaluation Recommendations

Recommendation/Description	Priority	Timeline
Encourage and promote the shift to 100% electronic crash reporting	High	Long Term (5+)
Encourage DMV to scan crash reports and send CAR unit electronic files instead of paper reports.	High	Long Term (5+)
Implement additional automation throughout crash coding and reporting process, including use of data validation checks during crash report creation (once electronic crash reports are implemented), automated reporting of basic information through data visualization portals including roadway information (number of lanes, signals etc.), etc.	Medium	Long Term (5+)
Conduct outreach with data users and Law Enforcement on the importance of completing timely and accurate police crash reports.	High	Short Term (1)
Use TDI as a lens to understand the demographics, namely the residential demographics, of the area in which crashes occur	Medium	Mid Term (2-5 years)
Consistent electronic law enforcement reporting	Medium	Long Term (5+)
Streamline crash data reporting process	High	Long Term (5+)
Release of all preliminary policy reports	High	Long Term (5+)
Consistent electronic law enforcement reporting	Medium	Long Term (5+)
Prioritize non-PDO crashes	Medium	Mid Term (2-5 years)

Additional Recommendations for Future Data Improvements

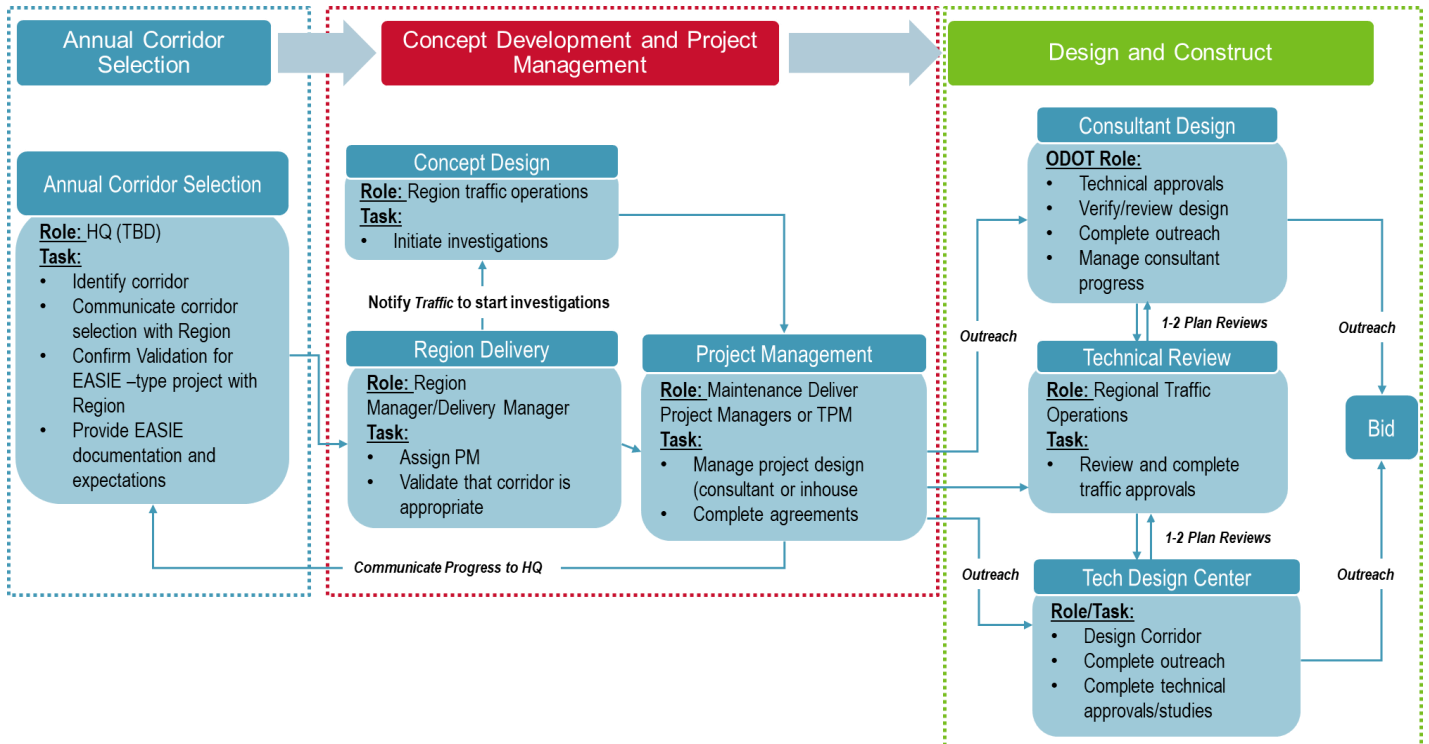
The following recommendations are in addition to the ones that emerged from the synthesis of research and workshops conducted as part of this study to help ODOT identify and prioritize equitable active safety improvements in the state.

- Research opportunities to **integrate and use Emergency Medical Services (EMS) data** with crash data.

Program Delivery Implementation Plan

The proposed delivery of the Project is illustrated in the Draft Future Project Implementation Plan shown in Figure 1.

Figure 1. Draft Future Project Implementation Plan



The Project Implementation Plan process is divided into three major steps, as described below

- Annual Corridor Selection
- Concept Development and Project Management
- Design and Construct

Step 1: Annual Corridor Selection

The Project’s corridor selection methodology makes use of the ATNI completed in February 2021. ATNI is scheduled to complete data updates on a 3- to 4-year cycle. The ATNI follows a methodology developed through NCHRP 803 (ActiveTrans Priority Tool). Factors with associated data sets used in the ATNI analysis are based on priority areas identified in the Oregon Bicycle and Pedestrian Plan and include:

- Safety: Crash history; crash risk
- Connectivity: Level of Traffic Stress; Fills a gap in an area surrounded by existing facilities
- Demand: Access to essential destinations; access to transit; bicycle tourism routes

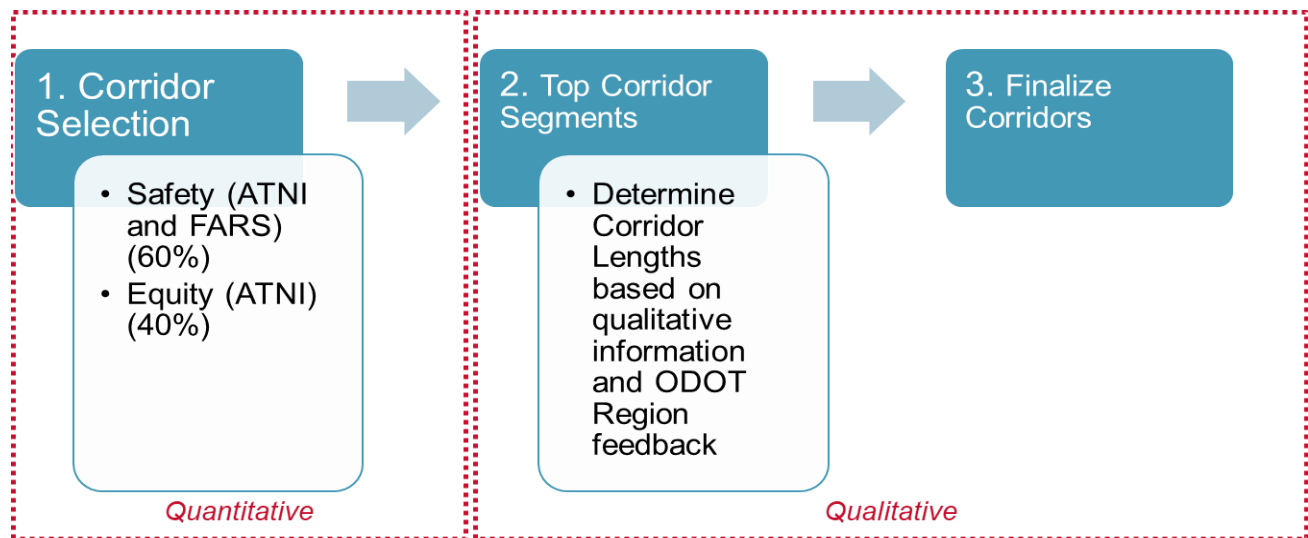
- Equity: Transportation Disadvantaged Communities; health/respiratory hazards
- Stakeholder Input: Support in local plans
- Existing Conditions: Presence of an existing facility

From ATNI’s methodology two criteria are chosen to be used for the Project methodology, consistent with the Project’s call to action:

- Safety
 - Pedestrian and bicycle crash frequency, severity and latest 3 years crash data and latest fatalities (CDS and FARS)
 - Pedestrian and bicycle crash Risk Factors (ATNI)
- Equity
 - Transportation disadvantaged Index (TDI)
 - Health (ATNI)

The steps to the Project corridor selection are shown in Figure 2.

Figure 2. Priority Corridor Selection Methodology



Quantitative corridor selection criteria are shown in Table 5, along with the data source, criterion weight, a rationale for the weighting, and notes. Specific methodology for each criterion is available in ATNI Final Evaluation Criteria (January 2021).



Table 5. EASIE Corridor Selection Criteria

Factor	Evaluation Criterion	Source	Weight	Notes
Safety	Pedestrian and bicycle crash frequency, severity and latest 3 years crash data and latest fatalities	CDS Crash Data bicycle and pedestrian crashes (2018-2020) and FARS (2021)	30%	This criterion prioritizes segments based on the frequency and severity of reported crashes involving pedestrians using the most recent 5 years of finalized crash data
	Pedestrian and bicycle crash Risk Factors	ATNI	30%	This criterion prioritizes segments based on treatable risk factors associated with pedestrian crashes using analysis conducted for ODOT's Ped/Bike Safety Implementation Plan
<p>Rationale</p> <ul style="list-style-type: none"> Safety is weighed 60% because it is directly tied to infrastructure improvements and Crash Reduction Factors (CRFs) Crash frequency and risk factors are scored equally because crashes are relatively infrequent and may not demonstrate a clear pattern 				
Equity	Transportation disadvantaged Index (TDI)	ATNI	40%	This criterion prioritizes segments located in or adjacent to census block groups and <i>within a quarter mile radius</i> of the block groups that have relatively high concentrations of transportation disadvantaged communities. A quarter mile radius is suggested because residential areas often do not abut ODOT corridors, and the radius can help capture demographics of nearby residents
	Health	ATNI		This criterion will prioritize segments with a high respiratory hazard index. <i>Health and equity are not scored individually because the scores are combined in ATNI and that score is directly being used here</i>
<p>Rationale</p> <ul style="list-style-type: none"> TDI provides a geospatial lens to help understand the residential, demographic landscape around potential corridors. Health data rely on EPA Air Toxics Respiratory Hazard Index (https://ejscreeen.epa.gov/mapper/) and are included because respiratory hazards are more directly tied to negative health outcomes that can be inequitable 				

Qualitative evaluation would help refine and finalize selected corridors. Headquarters, in consultation with relevant ODOT Regions, would collaborate together to determine the corridor extents. Extents may be determined with an understanding of local traffic generators, geographic constraints, other recent improvements, or already planned improvements. To aid determination, qualitatively, the Project could use remaining ATNI data to help determine corridor extents. These include data for connectivity, demand, stakeholder input, and existing conditions.

Continuous Program Improvements

This methodology assumes that the first 1-2 years of the program will be focused on urban corridors, which likely will demonstrate the greatest need and urgency. In subsequent years depending on the size of the program the Project could implement a provision for outside of urban or small communities. The Project data programming should use the ATNI definition for urban corridor which includes Urban Growth Boundaries (UGB) layer, City Limits layer, and the Unincorporated Communities layer. Ideally, future years of the program will demonstrate fewer needs.

Similarly in year 3+, the program could evaluate the efficacy of the program overall and determine if a change in methodology would allow the program to meet the Project's call to action better. This memorandum recommends a program evaluation step following year two or three. To aid program evaluation, project development and introducing a greater level of coordination with external stakeholders, the Project should create a committee similar to the Safe Routes to School rapid response committee, that involves OBPAAC and the Oregon Safety Advisory Committee. The committee can review prioritized corridors and review how recent fatalities and injuries impact the corridor prioritization.

Outreach at this level would be qualitative and conversationally based.

Evaluate efficacy of corridor improvements by building a database that captures before and after outcomes. The database could also include GIS data that identifies corridors and specific improvements made. The database would also include three years of crash data prior to improvement implementation and three years following, to allow for an evaluation.

Communicate

Regional delivery and project management would communicate concept development progress to headquarters and would conduct frequent check-ins to monitor progress on priority corridors; see Figure 1. Project Implementation Plan.

Identify

Identify corridors using the Priority Corridor Selection Methodology

Step 2: Concept Development and Project Management

The project team's analysis recommends using Regional Traffic operations and Regional Delivery to develop concepts and manage the project. Florida DOT found that decentralizing aspects of implementation led to quicker results.

Initiate Investigations

In this case, investigations would relate to evaluations needed to directly inform concept development or if needed for permitting requirements.

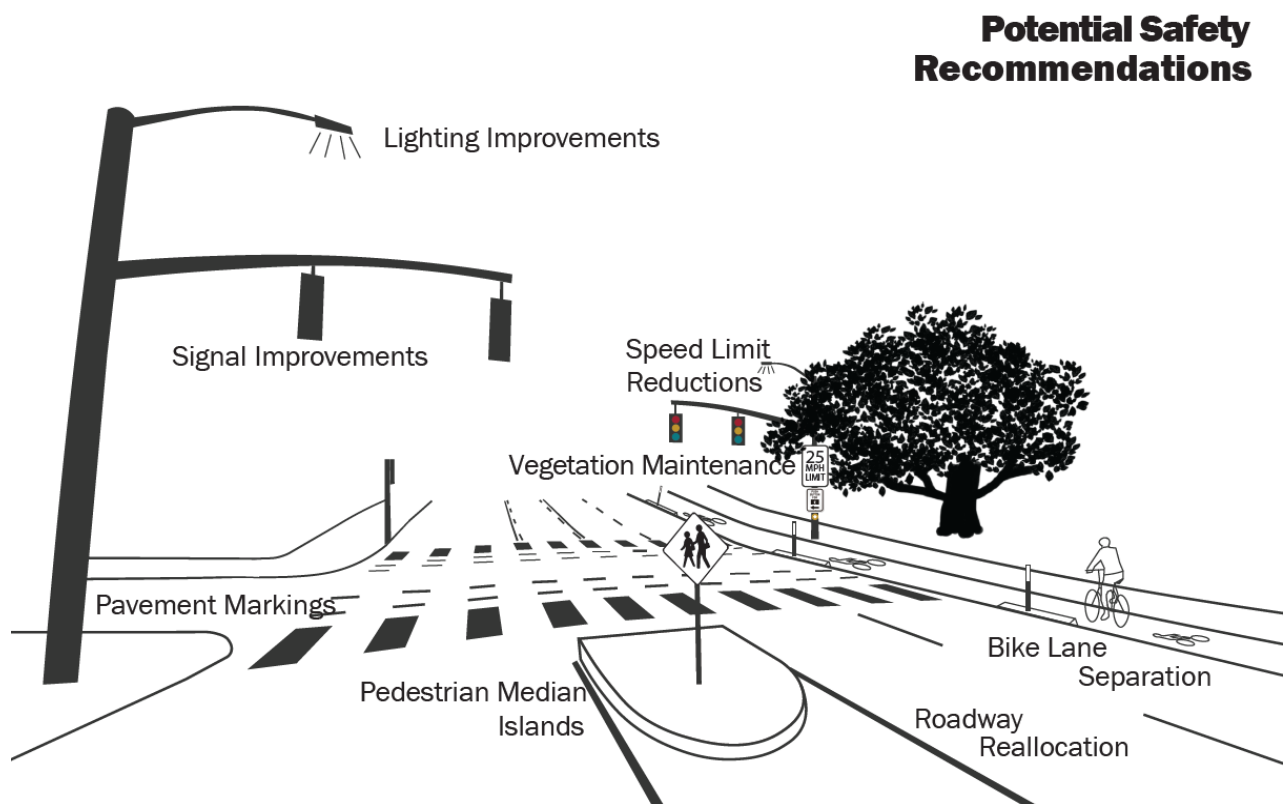
Concept Development

Concept development would rely on an understanding of the demographics, user needs, and existing conditions of a corridor gained through existing planning documents and during the annual corridor selection process, and use of a pre-determined list of Crash Reduction Factors

(CRF) with corresponding countermeasures. This combination of information would be used by Region Delivery and Project Management to develop a corridor concept.

To develop a pre-determined list of countermeasures that could be used as part of the Project improvements, the project team reviewed the All Roads Transportation Safety (ARTS) program CRF list and identified countermeasures most applicable to the Project. The countermeasures identified for the Project are bicycle and pedestrian focused safety improvements that are quickly implementable. Therefore, solutions requiring extensive stormwater infrastructure, right of way acquisition, and other solutions that require greater customized design, mitigation, and permitting were omitted. A sample of the Project countermeasures are shown in Figure 3. Detailed list of the Project countermeasures is available Appendix A.

Figure 3. Sample Project Countermeasures



Additional countermeasures, not originating from the ARTS CRF list that would be part of the Project include:

- Vegetation removal and other types of maintenance:
 - This includes tree trimming to improve sightlines as well as vegetation removal in the project right-of-way
- Traffic Investigations:
 - Speed zone evaluations and reducing speed limits as new guidance allows. The new guidance, based on national research, uses context to determine appropriate speed ranges within cities and applies the 50th percentile speed in more situations instead of the 85th percentile as in the old method.

- Other short term traffic investigations for the projects include lighting evaluations (day and night) and school zone evaluations.

Step 3: Design and Construct

Based on conversations with program managers within ODOT and Peer Exchanges with other DOTs, the project team recommends use of the following tools to expedite design and construction.

1. Partner with maintenance and leverage existing regional contracts with construction firms. These may include indefinite delivery/indefinite quantity (IDIQ) type of contracts. Currently IDIQ contracts for State funds are limited to under \$150k. These contracts can sometimes be entered into as quickly as within one month. Maintenance divisions could manage the construction using their existing contracting mechanisms. As an example, Florida DOT has 3- to 6-month “push button” contracts that allow for quick construction and even some right-of-way acquisition if needed.
2. Many sidewalks are owned and maintained by local agencies, and local agencies may be able to mobilize construction more quickly than ODOT maintenance. Understand existing maintenance agreements with local agencies, and how they may be leveraged since several roadway features are owned and maintained by local agencies and depending on the agreements can be done on a case-by-case basis. Intergovernmental agreements could be established where none exist to expedite construction. Template agreements can also be developed to rapidly install proposed countermeasures for projects. Making use of an organization such as The League of Oregon Cities could be helpful. ODOT could work with the organization to establish conditions of agreement for construction, and local agencies’ membership with the organization can indicate concurrence to expedite agreements. ODOT can also develop template agreements that could be customized upon negotiation.
3. Make use of STIP guidelines on determining impact and impact thresholds that help avoid the need for permitting. The team’s analysis does not suggest pursuing permitting on a programmatic level, because the quick-fix nature of the pre-determined list of countermeasures likely would not require permits. However, a worthwhile step would be to evaluate existing programmatic permits in place to determine if they could be helpful.
4. Understand the requirements of funding sources before combining with other projects.
 - a. Currently funds are leveraged by being combined with larger projects whose focus may not be rapid implementation and pedestrian and bicycle safety which is a priority of the Project.
 - b. Larger projects may “federalize” the dollars and may not be consistent with the Project’s equity goals within the call to action. If, as an example, resurfacing projects provide a serendipitous opportunity, with the Project’s call to action as the driver for decision-making, leveraging the Project’s dollars with a larger project may be feasible.
5. For the Project, particularly within the first two years of operation, the team’s research findings indicate that outreach would be at the “inform” level, using the International



Association for Public Participation (IAP2) spectrum of public engagement⁶. For the Project, the team recommends publicizing exiting corridor safety concerns and the equity context, rationale for the corridor selection including extents, the benefits of solutions identified, and timeline for implementation. The team does not recommend further levels of engagement, such as consult, because that would draw out the timeline; although in 3+ years of the program’s operation, consultation with a committee to evaluate the program’s success is suggested.

Table 6 illustrates priorities (low, medium, and high) and timelines (short-term, mid-term, and long-term) for recommended actions for ODOT program delivery and implementation.

Table 6. Program Delivery and Implementation Recommendations

Recommendation/Description	Priority	Timeline	Staffing Levels Needed (FTE)
Implementing the quantitative Project corridor selection methodology	High	Short Term (1-2 years)	0.1
Evaluation and prioritization of the Project corridors	High	Short Term (1-2 years)	0.2
Evaluating and improving the Project corridor methodology	Medium	Mid Term (2-5 years)	XX*
Partner with maintenance and leverage existing regional contracts with construction firms including IDIQ contracts	Medium	Mid Term (2-5 years)	XX*
Make use of STIP guidelines on determining impact and impact thresholds that help avoid the need for permitting	Medium	Mid Term (2-5 years)	XX*

* This would need additional FTE depending on the scale of the program

Key Takeaways

ODOT has advanced safety improvements through multiple successful programs and initiatives, summarized below. Through the research and workshops that comprised this project, several best practices are recommended for ODOT to consider equity in safety improvements.

Successful Initiatives

A few of the recent successful initiatives from ODOT are described below.

ATNI

ODOT’s Active Transportation Needs Inventory is a program created to develop a seamless network of bicycle and pedestrian needs for all ODOT highways. The program has successfully compiled data on existing sidewalks, bicycle lanes, shared use paths, and shoulder data sets to provide an inventory of existing infrastructure in cycle and continues to collect data in the next cycles every 3 to 4 years.

⁶ https://cdn.ymaws.com/www.iap2.org/resource/resmgr/pillars/Spectrum_8.5x11_Print.pdf

ODOT Asset Management System⁷

To overcome the challenge of disparate asset data and data/process duplication, ODOT implemented two new programs to manage their roadway assets. The first program, TransInfo, is a statewide asset management system that provides ODOT asset management staff with the most up-to-date statistics on assets and other features on the State highway system. The second program is the Features, Attributes, and Conditions – Statewide Transportation Improvement Program (FACS-STIP) Tool, which is a web-based program that provides information on an asset’s location, attributes, and condition.

Accessing all asset data through a single, uniform asset management system enabled the following benefits:

- The new statewide asset management system is expected to deliver approximately \$3.4 million in tangible benefits, as well as many intangible ones. For example, the system has streamlined data entry and reporting, enhanced data accuracy and available detail, reduced risk of errors, cut training time and improved safety.
- Reduced time to enter construction-planning information by 15 percent and labor costs related to data collection, entry, and maintenance by 10 percent.
- Realized a 66 percent increase in overall efficiency compared to when the other systems were used.
- Using the mobile collection portion of the FACS-STIP Tool allows for maintenance crews to collect data electronically using mobile devices, eliminating the use of hard copies.

ARTS

ODOT developed the All Roads Transportation Safety Program to achieve the goals of the HSIP using a data-driven, jurisdictionally-blind process. Through the ARTS program, projects on all public roads in Oregon, regardless of roadway ownership, compete for HSIP funding. The primary objective of the ARTS Program is use data driven safety methods to select the best projects to reduce fatalities and serious injuries on all public roads in the state. The ARTS program uses a data-driven process to identify potential hot spot and systemic safety projects across the state. Geocoordinates tied to crash records are used to identify where the greatest number and severity of crashes occur on the roadway network. Tools, such as the Safety Priority Index System (SPIS), are utilized to identify potential project locations. In 2020, the potential impact of ARTS projects includes⁸:

- Per year, the projects on the 150% list are estimated to prevent 34 fatal and serious injury crashes and over 2,000 lower severity crashes
- Over the course of the treatment life (15 years on average), the reduction in crashes on Oregon’s roadways due to projects on the 150% list translates to over 510 prevented deaths and serious injuries and 6.75 fewer total crashes

⁷ [ODOT Asset Management System Benefits](#)

⁸ [ODOT All Roads Transportation Safety \(Arts\) Program](#)