

SPR RESEARCH PROGRAM

SECOND-STAGE PROPOSAL SUMMARY

PROBLEM NUMBER & TITLE

26-43 | Enhancing the analytic capability of the Equity Index Map (EIM) tool to better account for diffusion effects of transportation projects on (dis)affected communities.

PROBLEM SUMMARY

One-way ODOT can work to include diversity, equity and inclusion within its transportation project decisionmaking framework is through the expanded use of the Equity Index Map (EIM) tool. The EIM would expand the use of Block Group-level, Census information to indicate where concentrations of people—who have been historically, and likely currently remain, underserved by Oregon’s transportation system—reside. The EIM tool has been used by different ODOT units and local agencies in various efforts to improve state and local public decisionmaking. We are proposing an expansion of this EIM tool to better understand gaps in transportation equity and inclusion for enhanced future ODOT transportation strategic action plan priority setting and decisionmaking. As ideas, fairness and equitable outcomes are enshrined in state anti-discrimination statutes. ODOT has public and legal obligations to follow applicable laws in the due diligence of project planning and to fully understand how diversified impacts either advantage or disadvantage different communities inequitably, as well as how to redress unlevel, uneven or disparate outcomes, when they occur, especially as a result of transportation plans and projects undertaken by ODOT. However, two primary problems with the SEI mapping tool persist:

1. An inability of the tool to determine the diffusion of effects.
2. An inability of the tool to shed light on whether projects benefit or burden underserved communities.

ODOT OBJECTIVES

- 1) To determine the diffusion of effects.
- 2) To discover benefit or burden among underserved communities.
- 3) To better track “leveling-playing-field” equity metrics.

BENEFITS

The tool’s primary focus is on equity. This research will enable ODOT staff to better identify community needs and gaps in service. This aligns with our agency’s Strategic Action Plan goal of advancing equitable outcomes. Moreover, assessing these equity metric areas will robustly evaluate greater dimensions related to project planning, policy, and decisionmaking that affects historically and currently underserved transportation user-groups and communities.

This project will help improve transportation safety by identifying areas and communities historically and currently underserved by transportation planning efforts, which can help ODOT invest strategically in enhancements that will positively impact these communities, rather than adversely affect them. Moreover, this project will help support healthier and more livable communities by providing users and communities with more nuanced and accurately derived modeling input factor variables to inform *actual* benefits and burdens of ODOT transportation projects within communities where these ODOT projects are located. These more accurate variable inputs will better enable ODOT to consider these critical and vital planning factors, when moving forward with both transportation project plans and community engagement.

SCHEDULE, BUDGET & AGENCY SUPPORT

Estimated Project Duration: 24-48 months

Estimated Project Budget: \$190,000 - \$300,000

Internal ODOT Support: Serena Stoudamire-Wesley, ODOT Assistant Director of Equity & Civil Rights; Matt Bagwell, Principal Research Analyst; Anisha Datta, Data Manager; & Josh Roll, Principal Research Analyst.

FOR MORE INFORMATION

The complete Stage Two Research Problem Statement can be accessed online at:

<https://www.oregon.gov/odot/Programs/ResearchDocuments/26-43>

SPR RESEARCH PROGRAM

SECOND-STAGE PROBLEM STATEMENT

FY 2026

PROBLEM NUMBER & TITLE

26-43 | Enhancing the analytic capability of the Equity Index Map (EIM) tool to better account for diffusion effects of transportation projects on (dis)affected communities.

RESEARCH PROBLEM STATEMENT

One of ODOT's 2024-28 Strategic Action Plan (SAP) priorities is to improve equitable community outcomes. This priority includes ensuring that ODOT's employees are "equipped with tools that ensure decisions lead to more equitable [community] outcomes" (SAP 14). Collecting data on communities in Oregon can help ODOT identify how transport projects affect Oregonians and has the potential to more optimally define outcomes to work toward. How can we better integrate data on community needs and effects within an ODOT decisionmaking framework to ensure that ODOT understands diverse transportation impacts in the state?

One-way ODOT can work to include diversity, equity and inclusion within its transportation project decisionmaking framework is through the expanded use of the Equity Index Map (EIM) tool. The EIM would expand the use of Block Group-level, Census information to indicate where concentrations of people—who have been historically, and likely currently remain, underserved by Oregon's transportation system—reside. The EIM tool has been used by different ODOT units and local agencies in various efforts to improve state and local public decisionmaking. We are proposing an expansion of this EIM tool to better understand gaps in transportation equity and inclusion for enhanced future ODOT transportation strategic action plan priority setting and decisionmaking. As ideas, fairness and equitable outcomes are enshrined in state anti-discrimination statutes. ODOT has public and legal obligations to follow applicable laws in the due diligence of project planning and to fully understand how diversified impacts either advantage or disadvantage different communities inequitably, as well as how to redress unlevel, uneven or disparate outcomes, when they occur, especially as a result of transportation plans and projects undertaken by ODOT.

However, two primary problems with the EIM mapping tool persist:

1. An inability of the tool to determine the diffusion of effects.
2. An inability of the tool to shed light on whether projects benefit or burden underserved communities.

More on each of these problems is described below. First, given that the EIM tool is intended to map demographic information, it can give decision makers some information about who lives in the vicinity of a project and who might be impacted by it. However, the tool is limited because it only tells users who lives in the area, but not who uses the roadway. For projects such as those that improve pedestrian safety, use of the current tool may be more sensible, since most pedestrian crash victims are injured relatively close--within 1.1 miles--of their home (McNeil and Roll 2021). But for many types of projects that ODOT develops and builds, including rural highways and interstates that will impact travelers from many miles away, the use of the current tool is less sensible. This is because many projects, such as highway or major arterial road projects, affect more than just the residents nearby and can change access, mobility, safety and air quality conditions not only for people using that road but also for those living many miles away—hence the need to enhance the EIM.

Another limitation of the current tool is that most current uses of the tool simply determine if a project is within a block group that is historically and/or currently underserved, which doesn't help practitioners answer the question about whether the project benefits or burdens underserved populations. For instance, a new set of ADA ramps, sidewalk infill, and high visibility mid-block rapid flashing beacons would be a clear safety and accessibility benefit to local residents. Conversely, a project that expands a roadway in an underserved neighborhood has the potential to increase traffic safety risk, emissions, and noise which would be a further burden to the community. The increased traffic flow may be a benefit for some individuals—those with access to cars, who are typically wealthier—who are now able to travel more quickly, but that increased accessibility benefit comes at the burden of the local population. Currently, the tool and the way it is

being applied cannot account for the difference between these benefits and burdens—we need additional nuanced constructs within the built EIM inputs for analysis and interpretation to better understand advantage vs. disadvantage.

These two specific problems require further EIM tool development and refinement, so that ODOT can construct expanded input (variable factors) to optimize or enhance transportation project decisionmaking, which then inform the planning logic model across various transportation projects.

RESEARCH OBJECTIVES

1. To determine the diffusion of effects.
2. To discover benefit or burden among underserved communities.
3. To better track “leveling-playing-field” equity metrics.

WORK TASKS, COST ESTIMATE & DURATION (*Estimates Only*)

Task 1: Comprehensive Literature Review Background Assessment with Technical Advisory Kickoff Meeting (\$30K, 2-3 months): An assessment of background materials will be gathered/ compiled.

Task 2: Data Framework Integrated Development pre-methodology (\$30K, 3-4 months): A framework for the completion of the research project will be developed and compared for ODOT needs and final product expectations with internal ODOT technical advisory committee (TAC) input.

Task 3: Methodology Development/ Technical Advisory Meeting (\$30K, 3-4 months): Methodology will be developed to use before analysis phase of project work.

Task 4: Analysis Phase (\$30K, 3-4 months): Analysis phase to begin.

Task 5: Presentation of Research Results/ Technical Advisory Meeting (\$30K, 2-3 months): Present and interpret results of research findings.

Task 6: Draft Final Report (\$25K, 2-3 months): Draft Final Report

Task 7: Technical Advisory Input for changes within the Final Report (\$20K, 1-2 months): Technical Advisory Input for changes within the Final Report

Task 8: Final Report Delivered to Research Section (\$15K, 1-2 months): Final Report Delivered to Research Section

Task 9: Publication/ Dissemination Phase (\$10K, 1 month): Publication/ Dissemination Phase

KEY DELIVERABLES:

- 1) To determine the diffusion of effects.
- 2) To discover benefit or burden among underserved communities.
- 3) To better track “leveling-playing-field” equity metrics.

Estimated Project Duration: 24-48 months

Estimated Project Budget: \$190,000 - \$350,000

IMPLEMENTATION

We propose to improve ODOT’s ability to include diversity, equity and inclusion in its project decision making by expanding the analytic capability of the EIM tool to better account for diffusion effects of transportation projects and communities affected. Building on the Transportation Equity Scorecard developed by the Center for Urban Transportation Research (Williams et al. 2021), this research would develop additional functionality for the EIM tool that would help ODOT staff understand how a project affects communities in terms of ensuring fair access to essential services. The EIM tool’s enhanced functionalities are intended to be utilized in addition to conducting community engagement (to provide additional context), rather not to simply replace the need for community engagement work (but accompany it). By employing both (a) geospatial data and (b) network routing algorithms, the *refined* EIM tool would

specifically help (better and perhaps more accurately, given data collection considerations) answer the questions featured in the Scorecard, presented in Table 1 directly below.

Directions : Select " No, Yes, or Yes, high impact". See user guide for details.

Project ID

	Criteria	Response
COCs	What is the concentration of COCs within a 1/4 mile of the project?	
Access to Opportunity	Does the project improve access to jobs?	
	Does the project improve access to educational facilities?	
	Does the project improve access to community services?	
Health and Environment	Does the project improve access to health care?	
	Does the project improve access to grocery stores or markets with healthy and fresh affordable food?	
	Does the project increase livability through design and/or mitigation measures?	
Safety and Emergency Evacuation	Does the project implement appropriate safety countermeasures for pedestrians and bicyclists at high-crash locations?	
	Does the project implement appropriate safety countermeasures at other (non-high crash) locations?	
	Does the project improve emergency evacuation?	
Affordability	Does the project decrease the share of household income consumed by transportation and housing?	
	Does the project reduce travel time or eliminate a barrier to/from affordable housing?	
	Does the project provide affordable transportation choices, especially in areas with a high transportation cost?	
Mobility	Does the project improve or expand bicycle or pedestrian facilities?	
	Does the project improve transit service or access, including first mile/last-mile access?	
	Does the project include special measures to improve accessibility for persons with disabilities?	
Burdens	Does the project cause cumulative, disproportionate, or other major adverse impacts?	

Cancel Save & Continue

Figure 1: The Transportation Equity Scorecard Tool developed by the Center for Urban Transportation Research (Williams et al. 2021).

Using the latest Census and Longitudinal Employment and Household Dynamics (LEHD) data and a routable network with basic impedance functions, the additional functionality would make answering the above questions more easily obtainable through the use of a web-based application that pulls the necessary population and network data together. In addition to making answering the above questions more easily obtainable, this tool would ensure that these questions are being answered using consistently applied methods and data.

Currently, the typical process used by ODOT staff to include social equity involves answering **ONLY** the first question in Table 1 (What is the concentration of COCs (Communities of Concern) within a ¼ mile of the project?). This is an extremely blunt and ineffective tool. Improving ODOT’s analytic capability to answer the remaining questions more easily and with consistency across projects will advance ODOT’s mission of reducing burdens to communities that have been and continue to be underserved and marginalized by an advantaged, status-quo-centric transportation system. Other input factor variables, such as: Access to Opportunity, Health & Environment, Safety & Emergency Evacuation, Affordability, Mobility, & (Community) Burdens, must also be built (or baked) into the required information (these cannot simply be bolted on at the end of a project; they must be intentionally collected within the integrated data sought to inform the analysis of actual equity for all transportation projects undertaken by ODOT statewide, locally and regionally).

POTENTIAL BENEFITS

The tool’s primary focus is on equity. This research will enable ODOT staff to better identify community needs and gaps in service. This aligns with our agency’s Strategic Action Plan goal of advancing equitable outcomes. Moreover, assessing these equity metric areas will robustly evaluate greater dimensions related to project planning, policy, and decisionmaking that affects historically and currently underserved transportation user-groups and communities.

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PEOPLE

ODOT CHAMPION(s) (internal ODOT support):

Serena Stoudamire-Wesley, ODOT Assistant Director of Equity & Civil Rights: Serena.STOUDAMIRE-WESLEY@odot.oregon.gov

Tova Peltz, Statewide Capital Program Engineer: Tova.R.PELTZ@odot.oregon.gov

PROBLEM STATEMENT CONTRIBUTOR(s):

Matt Bagwell, Principal Research Analyst: Matt.T.Bagwell@odot.oregon.gov;

Anisha Datta, Data Manager: Anisha.datta@odot.oregon.gov;

Josh Roll, Principal Research Analyst: Josh.F.ROLL@odot.oregon.gov.

REFERENCES

Oregon Dept. of Transportation, Strategic Action Plan (SAP, 2024): <https://www.oregon.gov/odot/SAPDocs/Strategic-Action-Plan.pdf>

Roll, J., & McNeil, N. (2021). *Understanding Pedestrian Injuries and Social Equity* (Report No. FHWA-OR-RD-22-05). Oregon Department of Transportation, Research Section. Prepared for the Oregon Department of Transportation and Federal Highway Administration.

Williams, K. M., Boyd, T., Keita, Y., & Kramer, J. (2021). *Transportation Equity Toolkit: Transportation Equity Needs Assessment & Project Prioritization* (Final Report No. CUTR-2021-04; Project No. CTEDD No. 72016-00). USF Center for Urban Transportation Research. Prepared for the Center for Transportation, Equity, Decisions, and Dollars (CTEDD).

STAFF REVIEW PAGE

LITERATURE CHECK OF TRID & RIP:

☒ A review of TRID & RIP databases found no existing research that answers the research question.

ODOT DECISION LENSES

Climate: Climate will not be the focus of this research. However, identifying equitable outcomes includes considering how climate-related issues—e.g. GHGE or temperature increase—may disproportionately impact Oregonians who are historically/currently underserved by our transportation system. By incorporating demographic information from ACS data, the updated tool can help to identify communities or areas that may be disproportionately affected by, or more vulnerable to, climate events, effects, and natural disasters.

Equity: The SEI map tool's primary focus is on equity. This research will enable ODOT staff to better identify community needs and gaps in service. This aligns with our agency's Strategic Action Plan goal of advancing equitable outcomes. Moreover, assessing these equity metric areas will robustly evaluate a greater dimension of considerations related to project planning, policy, and decision making that impact historically and currently underserved transportation user-groups and communities.

Safety: This project will help improve transportation safety by identifying areas and communities historically and currently underserved by transportation planning efforts, which will help ODOT invest strategically in improvements that will positively impact communities. This project will help support healthier and more livable communities by providing ODOT and users with initial project input information on the benefits vs. burdens of transportation projects in local communities.

TECHNOLOGY & DATA ASSESSMENT

☐ No Identified T&D output.

☒ At the end of this project, STATEWIDE and LOCAL implementing unit(s) within ODOT will need to coordinate the adoption of new technology or data COLLECTION STANDARDS in order to realize the full potential of this research within implementable applied agency practice.

TRANSAGENCY PARTNERS

List ODOT partners or affected units: ODOT Statewide, regional and local planning practices: PDAD, TPAU, Traffic Counts, Climate, Equity, Communications and Information dissemination to the public (senior ODOT leadership, statewide and local implications). One ODOT: How we assess planning inputs for decisionmaking.

Identify any issues of concern raised by any ODOT partners. Note expected mitigation that addresses these concerns: Added Time, Budget & Project Burden Considerations. But it is high time that ODOT became more equitably inclusive in making planning decisions that may have historically, and potentially still continues to, disaffect marginalized communities.