

Research Stage 1 Problem Statement

PROPOSED TITLE: STATEWIDE MULTIMODAL DESTINATION ACCESS METHODS AND DEMOGRAPHIC ANALYSIS.

1. Concisely describe the transportation issue (including problems, improvements, or untested solutions) that Oregon needs to research.

ODOT does not currently have a consistent, statewide method to evaluate whether people can reliably and affordably reach essential destinations such as employment, education, health care, and key services. While agency performance measures and analyses focus primarily on infrastructure conditions and system mobility, they do not answer whether investments are improving people's ability to access that they need for daily life. Without a standardized destination access methodology, ODOT lacks a clear, data-driven basis for monitoring progress, understanding structural access gaps, or using access outcomes to inform investment decisions.

This research would help answer fundamental questions such as:

- Are ODOT investments improving people's ability to access essential destinations?
- How many places of employment are reachable within a reasonable commute time by vehicle, transit, and bicycling?
- Who faces structural gaps in access?

State and ODOT policies and plans support the use of destination access as an analytical method, goal, and performance measure. The Transportation Planning Rules direct local communities to prioritize transportation investments to key destinations. An implementing action in ODOT's Strategic Action Plan calls for increasing connectivity and access to destinations (Strategic outcome #7). Access to destinations is a key theme in the Oregon Transportation Plan (OTP), such as strategy EC.3.3.1: "Promote the ability of people to access essential destinations, such as employment, education, and health care, with and without access to a private vehicle." Reflecting this priority, access to destinations is a candidate performance measure for the OTP.¹ If adopted by the Oregon Transportation Commission as a key OTP performance measure, destination access will be monitored over time and reported via the State of the System Dashboard. In addition, the developing Capital Investment Plan (CIP) intends to incorporate a destination access criterion with the results of this research effort. Linking the OTP destination access analysis to a criterion in the CIP will enable ODOT to strategically prioritize investments that improve access. Over time, these improvements will be reflected in the OTP performance measure, demonstrating that ODOT is making progress toward its goals. This research is essential for ODOT to follow-through with its commitment to measure destination access.

¹ A list of recommended performance measures, including destination access, will be presented to the Oregon Transportation Commission in early 2026.

2. What final product or information needs to be produced to enable this research to be implemented?

This research project has two objectives described below:

1. Establish a standardized, agency-wide methodology for multimodal destination access analysis.

ODOT currently performs destination access analysis on an ad hoc basis and does not have a consistent, documented method for statewide or cross-program use. This project will develop and test a unified approach that can be used across business lines for performance reporting, planning, and investment decision-making.

2. Integrate user profile analysis to identify which populations face transportation access gaps—and to what extent.

This research will move beyond demographic assumptions based solely on race, gender, or ability. Instead, it will use data-informed definitions of at-risk populations to understand who experiences structural access barriers and why.

To report on the status of the OTP Performance Measures for destination access, ODOT requires a statewide, multimodal analysis of access to essential destinations by private vehicle, transit, bicycle, and walking. This research will use key destinations as defined in OAR 660-012-0360, which include employment centers, schools, grocery stores, health care facilities, and public services. A statewide analysis of destination access, illustrating areas of high and low access, can be referenced as part of the CIP to prioritize transportation projects to make strategic improvements in access. In addition to statewide analysis, this same method can be applied to local transportation system plans, enabling local jurisdictions to develop transportation solutions that improve access in areas with poor access. The resulting methodology will be transparent, replicable scalable for use in ongoing performance reporting, planning, and investment prioritization.

Because the destination access performance measure is connected to an OTP goal, it is critical to understand who experiences structural gaps to access and why. The research will include at-risk populations and public-informed analysis that identifies populations and geographic areas where transportation systems, land use patterns, and service design create unfair access conditions. These insights will refine ODOT's understanding of at-risk populations and inform data-driven decision-making to advance fair and reliable access to essential destinations statewide.

The destination access analysis will answer the following questions:

- **Vehicle Access to Employment Destinations:**
 - How many jobs are available to residents within a 45-minute vehicle trip as compared to other modes of transportation?
- **Transit Access to Employment Destinations:**
 - How many jobs are available to residents within a 45-minute transit trip under current service levels? Where do structural gaps in the transit network limit access to employment opportunities?
 - How many jobs are available to residents within a 45-minute transit trip under a scenario with reduced service levels? Which populations experience the greatest loss of access to employment under constrained conditions?
- **Bicycle Access to Essential Nonwork Destinations:**

- How many essential nonwork destinations can residents reach within 20-minute bicycle trip? What proportion of residents experience high, moderate, or limited access?
- What is the ratio of bicycle access to nonwork destinations on the low-stress network as compared to the high-stress network?
- **Walk Access to Essential Nonwork Destinations:**
 - How many essential nonwork destinations can residents reach within 20-minute walking trip? What proportion of residents experience high, moderate, or limited access?
 - How safe is the pedestrian network? What share of areas with limited access coincide with a high crash history or unsafe conditions?

The research team will need to define and document consistent data and analytical methods, including the following:

- **Unit of analysis.** Census block groups may be the most appropriate geography for demographic analysis, but census tracts or travel analysis zones can also be used.
- **Destination data.** The Longitudinal Employer-Household Dynamics (LEHD) data set is commonly used to represent employment locations; additional datasets will be used to represent essential nonwork destinations such as health care, education, and grocery access.
- **Impedance data.** Impedance data addresses travel time thresholds. For transit, General Transit Feed Specification (GTFS) data will be used. For bicycle impedance, data from the ODOT-led multimodal inventory project will be used to create a Level of Traffic Stress to inform impedance.
- **Accessibility analysis.** Using a tool for accessibility analysis, conduct a cumulative opportunities analysis to quantify how well people can reach essential destinations across modes and geographies. The team will develop an analytical approach employing a distance decay weighting method that is appropriate to each travel mode.
- **Human Access Indicator:** Identify data and develop a methodology for understanding how people experience barriers to accessing destinations. For this task, the team will explore datasets such as aggregated, de-identified patient-reported transportation access indicators collected by healthcare providers as part of routine Social Determinants of Health (SDOH) screenings. Patients are asked whether they experience difficulty accessing medical appointments or essential services due to transportation barriers. Responses are recorded in electronic health records (EHRs) using standardized codes (e.g., ICD-10 Z59.82 – transportation insecurity), providing real lived experiences of access barriers.

The second objective of this research project is to better understand which populations experience structural transportation gaps to essential destinations. The research team will examine the average destination access levels for different population groups. The research team will conduct regression analysis and/or cluster analysis with population variables to determine whether there are patterns of unequal access. The analysis will focus on populations who have experienced negative impacts from transportation decisions in the past, such as: older adults, youth, low-income zero-vehicle households, etc. This approach will help refine ODOT's understanding of at-risk populations based on empirical evidence rather than assumption tied only to race, gender, or ability.

The project will document the methods and data used to conduct the analysis for inclusion in ODOT's Analysis Procedures Manual, which will provide guidance to ODOT staff and local transportation agencies.

3. (Optional) Are there any individuals in Oregon who will be instrumental to the success of implementing any solution that is identified by this research? If so, please list them below.

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Kelly Rodgers	Senior Transportation Planner	Kelly.RODGERS@odot.oregon.gov	(503) 442-7165
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4. Other comments:

References Cited under 5) State of Oregon Decision Making Lenses

Broach, J., Currans, K.M., Roll, J.F., & Orrego-Oñate, J.P. (2024). *Incorporating bicycle activity and vehicle travel reduction from bicycle infrastructure into strategic planning tool*. National Institute for Transportation and Communities.

Eldér, E., Haugen, K., & Vilhelmson, B. (2022). When local access matters: A detailed analysis of place, neighborhood amenities and travel choice. *Urban Studies*, 59(1), 120-139.
<https://journals.sagepub.com/doi/pdf/10.1177/0042098020951001>

Committee on data, metrics, and analytic methods for assessing equity impacts of surface transportation investments: Phase 2 study to support state and local decision making (2025). *An assessment of data, tools, and metrics for equity in decisions about surface transportation investments: Transportation Research Board Special Report 356*. National Academies of Sciences, Engineering, and Medicine. <https://www.nationalacademies.org/our-work/data-metrics-and-analytic-methods-for-assessing-equity-impacts-of-surface-transportation-investments-phase-2-study-to-support-state-and-local-decision-making>

5. State of Oregon Decision Making Lenses

State decision making lenses are a part of the state of Oregon's policy structure. State policy and federal policy are not always aligned. The state will prioritize research according to state policy, however ODOT may be required to skip prioritized proposals based on constraints placed on the use of federal funds. If state funds are available ODOT will attempt to fund prioritized research that is deemed ineligible for federal funding.

Please complete the following three sections. Your answers to these questions will be applied on a programmatic basis to support agency decisions. Answering yes to the questions below is not required. Resolving a narrowly focused technical research problem may meet agency needs without answering yes to any of the following questions. The ODOT Research Section will seek a balanced portfolio some

projects will answer yes to one of the three categories below (e.g. climate, equity, and/ or safety) and other projects in a different category.

We are looking for an overall program balance and no one project is expected to balance all categories. Generally, a research problem statement is expected to be able to answer yes with clear and verifiable information in only one of the three categories below, some projects may be able to answer yes in two or even three categories. Some projects (i.e. needs focused on specific elements of infrastructure design), may have no 'yes' answers but may still be a high value research need.

Climate

Oregon recognizes the climate crisis and makes systemic changes to reduce emissions caused by travel. To that end, we seek research that reduces carbon emissions from construction activities and materials, and from maintenance equipment and operations. Oregon envisions a transportation system that is resilient, this means a system that is durable in the face of seismic events and extreme weather to avoid negative impacts, withstand them or bounce back quickly to resume system function. We seek research that improves the ability of the transportation system to adapt or cope with more frequent and extreme weather events. This may include innovations in data and data sharing, construction materials and project design, communication, emergency planning and response, and more. Similarly, we seek research that avoids negative impacts on key habitats and ecosystems that can buffer or reduce damage to infrastructure and improve environmental conditions for wildlife and native vegetation. For definitions and details please review the equity vision, goals, and objectives of the [ODOT Strategic Action Plan](#) and [Oregon Transportation Plan](#).

5a. Will addressing the transportation issue identified as a need in Question 1 develop, or **validate methods for the estimation, measurement, or monitoring** of transportation generated greenhouse gases (GHG)?

☐ Yes

☒ No

☐ Unsure

5b. If climate or GHG is not the focus of this **transportation issue** identified in this problem statement, will the research apply a GHG analysis to transportation infrastructure, planning, operations, maintenance, or materials?

☒ Yes

☐ No

☐ Unsure

5c. Will addressing the **transportation issue** include development or testing of construction practices, methods, or materials to establish potential reductions in greenhouse gas emissions?

☒ Yes

☐ No

☐ Unsure

5d. Will solving the **transportation issue** in question 1 study or support the reduction of vehicle miles traveled and single occupancy vehicle travel or support transition to electric vehicles (or other types of zero emission vehicles) or low-carbon alternative fuels?

☒ Yes

☐ No

☐ Unsure

5e. Will the solving the **transportation issue** in question 1 lead to work that will support, measure, or monitor, transportation system resilience in response to expected climate events, effects, or natural disasters in general?

☐ Yes☒ No☐ Unsure

5f. Will solving the **transportation issue** in question 1 lead to work that may result in better environmental conditions for wildlife and native vegetation?

☐ Yes☒ No☐ Unsure

5g. If you answered yes to any of the climate questions above or can provide alternative details related to climate, please provide additional information:

Destination access analysis not only addresses the primary purpose of transportation—reaching valued destinations—but also enables analysis of climate, equity, and public health outcomes. Increasing access to destinations is a proven way to reduce driving and reduce greenhouse gas emissions. For example, Broach et al. (2024) found that a 1% increase in bicycle network access predicts a corresponding 0.025% to 0.23% reduction in daily household motorized VMT. With an accepted destination access method that this research will provide, ODOT can examine how travel behavior outcomes and GHG emissions change with changes in access. Taken a step further, employing destination access analysis that focuses on nonlinear effects can help determine thresholds in the built environment that affect travel behavior. For example, Elldér et al. (2022) found that neighborhoods with 6-8 destinations within 1 km were correlated with a significant reduction in driving, but increasing the number of destinations produced diminishing returns until reaching another threshold of about 50 destinations within 1 km. Developing a destination access methodology within ODOT provides a foundation for further research that can provide better guidance for strategic policy and practice change to reduce VMT and GHG.

Equity

Equity can have many dimensions and impacts relating to communities and transportation. It is important that problem statement proposals clearly explain the equity dimensions or impacts being examined. Oregon commits to social equity in the OTP, specifically to *improve access to safe and affordable transportation for all, recognizing the unmet mobility needs of people who have been systemically excluded and underserved. Create an equitable and transparent engagement and communications decision-making structure that builds public trust.* We seek research that studies elements of this goal or applies analysis to specific transportation topics to ensure the resulting research recommendation is consistent with agency equity goals. For definitions and details please review the equity vision, goals, and objectives of the [ODOT Strategic Action Plan](#) and [Oregon Transportation Plan](#).

5h. Is the **transportation issue** identified as a need in Question 1 specifically focused on transportation equity?

☒ Yes☐ No☐ Unsure

5i. If the **transportation issue** is not focused on transportation equity, will the primary topic be assessed for equity benefits or impacts within the research project?

☒ Yes☐ No☐ Unsure

5j. Is the implementation of potential findings from this research likely to directly involve participation from an identified group that would benefit from an equitable process or outcome?

☐ Yes☐ No☒ Unsure

5k. Is the intended final product or information expected to support ODOT's equity efforts (Including but not limited to supporting one of the equity related objectives of the [ODOT's Strategic Action Plan](#) or [Oregon Transportation Plan](#)) ?

☒ Yes

☐ No

☐ Unsure

5l. If you answered yes to any of the equity questions above or can provide alternative details related to equity, please provide additional information:

In a 2025 National Academies Report on transportation equity data and methods, destination access was considered the primary way to evaluate the benefits of transportation investments from an equity perspective. Consistent with this finding, destination access is a key theme in the OTP and is a recommended OTP performance measure. Through a demographic analysis of destination access, ODOT will better understand which population groups and geographies are underserved by the transportation system. This helps inform ODOT's definition of transportation-disadvantaged. With this analysis, ODOT can prioritize investments to improve access for these populations and improve outcomes for all Oregonians.

Safety

Research outcomes may include interventions and countermeasures to prevent or reduce the frequency of crashes or other causes of transportation-related injury or death; or may include measures to reduce severity of injury (including prevention of death) after a crash or other injurious event. For definitions and details please review the equity vision, goals, and objectives of the [ODOT Strategic Action Plan](#), [Oregon Transportation Safety Action Plan](#) and [Oregon Transportation Plan](#).

5m. Will solving the **transportation issue** in question 1 support improving **safety culture** for either transportation workers or the traveling public?

☐ Yes

☐ No

☒ Unsure

5n. Will the solving the **transportation issue** support improving safety through **healthy and livable communities**?

☒ Yes

☐ No

☐ Unsure

5o. Will solving the **transportation issue** support improving safety through using **best available technologies**?

☐ Yes

☒ No

☐ Unsure

5p. Will solving the **transportation issue** support improving safety through **communication and collaboration**?

☐ Yes

☐ No

☒ Unsure

5q. Will solving the **transportation issue** support improving safety through **investing strategically**? 5r. If you answered yes to any of the safety questions above or can provide alternative details related to safety, please provide additional information:

Current transportation policy, analysis, and performance measures tend to favor vehicle mobility solutions, with the assumption that decreasing travel times by increasing speeds is an ideal solution.

However, without connecting increased speeds to people's ability to reach destinations, ODOT is essentially valuing speed for speed's sake. A multimodal destination access analysis enables ODOT to understand how land uses and the transportation network work together to provide access. With this understanding, ODOT can identify other solutions to improve access that does not rely on speed as a measure for improvement. In addition, multimodal destination access analysis can help steer investments toward improved walking and bicycling networks, contributing to improved health and livability outcomes. Furthermore, destination access analysis can be used to understand access to key health-supporting destinations, such as grocery stores and health care providers, enabling decision makers to target investments to support public health outcomes.

6. Corresponding Submitter's Contact Information:

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7. ODOT Sponsor Contact Information (Required if Submitter is not an ODOT employee)

Name:	
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This form is not a grant application or contract document. Please do not include proprietary information on this form. Once this form is received ODOT may revise and publish the problem statement. If selected, ODOT will assign investigator(s) of the department's choosing to conduct research.