Draft Performance Measures
Oregon Bicycle and Pedestrian Plan

Overview

At the Plan level, performance measures will need to focus on ways to gauge Plan success or to help inform decision making to achieve the Plan vision. While performance measures are often specific in nature, Plan level performance measures need to be high-level, encompassing, and few in total number for better statewide applicability.

At the May meeting, staff introduced five performance measure categories for PAC review:

Pedestrian and Bicyclist Safety – The safety of pedestrians and bicyclists is among ODOT's and local agencies' highest priorities. Proposed performance measures track pedestrian and bicyclist safety outcomes.

System Performance – To support people of all ages, incomes, and abilities to bike and walk, streets must be designed and operated to meet the needs of a broad range of users. Performance measures within this category reflect that the network must serve a variety of users with differing needs and abilities in varying contexts.

Utilization – Utilization performance measures seek to quantify the extent to which Oregon residents' use bicycling and walking to or from school or work. Higher utilization of walking and bicycling would signal an increase in people choosing to walk or bike to meet daily needs.

Facility Implementation – Construction and enhancement of facilities is necessary to provide biking and walking options and to increase overall use. Performance measures would provide a way of tracking progress toward the provision of seamless bicycle and pedestrian systems, including access to public transit.

State and Local Recognition – The Bicycle Friendly Community, Bicycle Friendly State, and Walk Friendly Community programs provide a third-party assessment of progress made toward improving conditions for bicyclists and pedestrians. Proposed performance measures can help Oregon understand its performance from a national perspective and to gauge the degree to which cities and towns are accommodating pedestrians and bicyclists in their infrastructure, policies, and programs.

In May, the Technical Advisory Committee (TAC) reviewed these performance measure categories and associated measures to assist in narrowing performance measures for incorporation into the Bicycle and Pedestrian Plan. The TAC discussed appropriateness of measures for the Plan, identified any items of concern, and suggested improvements of the proposed measures. The following sections describe those performance measures suggested for Plan level incorporation and those which should be set aside for other potential uses in the future. In addition to what was discussed at the TAC, the consultant team reviewed a variety of additional potential performance measures not recommended for the Plan. These additional performance measures are attached in Appendix A.

Upon PAC review and agreement, the recommended performance measures will be added to *Chapter 5: Implementation Considerations*.

Recommended Plan Performance Measures

The following performance measures are have been recommended as suitable for Plan level incorporation, because they are flexible and encompass the Plan vision, especially safety, transportation users' system perception, and rating system performance. These measures can be used statewide and can be applied in various contexts, an important consideration given the unique needs throughout the State.

Table1: Recommended Plan Performance Measures

Performance Measure #	Performance Measures	Description
Safety (1)	Number of pedestrian and bicycle fatalities (five-year average)	Average annual number of pedestrians and cyclists killed in crashes with motor vehicles over a five-year period.
Safety (2)	Number of pedestrian and bicycle serious injuries (five-year average)	Average annual number of pedestrians and cyclists seriously injured in crashes with motor vehicles over a five year period.
Safety (3)	Perceived safety of walking and bicycling	Percent of the public that feels safe walking and bicycling in their community.
Utilization (1)	Utilization of walking for short trips	Percent of commute trips less 20 minutes that are accomplished by walking.
Utilization (2)	Utilization of bicycling for short trips	Percent of commute trips less than 20 minutes that are accomplished by biking.

While each of these performance measures would begin to help assess Plan success, it is important to note how data will continue to inform performance measure efforts. Data currently exists for each of the measures listed above, and as a result, these performance measures would require a low to moderate level of effort for implementation.

However, it is important to note that as data improves, these measures could be revisited to better reflect the Plan vision over time. For example, commute data is easily obtainable given existing mechanisms, but data on all trips (not currently available) may be needed to better understand mode choices or rates of mode use, or to help identify the circumstances in which users feel comfortable walking in their community.

Considerations for Future Efforts

The TAC reviewed the following performance measures, though after thorough discussion, it was determined these were not desirable for measuring Plan implementation success at this time. While recognized as important tools, these performance measures were deemed either too detailed, or too broad, for measuring the Plan vision. However, it is important to note that these measures, and those in

Appendix A, could be used in other efforts or could be better suited for future Plan updates once they have been further developed and tracked.

Table2: Performance Measures for Future Efforts

Performance Measures	**Description**	**Explanation**
Bicycle level of traffic stress (LTS) *and/or* Multi-modal level of service (MMLOS)	LTS and MMLOS are emerging ways to include analysis of bicycle and pedestrian modes, as opposed to just vehicular traffic.	This is still emerging analysis. However, it is important to note that LTS/MMLOS are becoming more frequently used in transportation analysis and may be suited for a nearer term performance measure, once wider statewide use has occurred.
Pedestrian access to transit	The percent of streets within ½ mile of a transit stop that have sidewalks.	Access to transit was determined as a good proxy for accessibility, but ultimately the TAC thought it too specific for a Plan level performance measure.
Bicycle access to transit	The percent of streets within 1 mile of a transit stop with a Bicycle LTS 2 rating.	
Bicycle Friendly State ranking	Oregon's annual rank in the League of American Bicyclists' Bicycle Friendly State Ranking program.	State and local rankings were viewed as important information tools, but not suited for a Plan level performance measure due to changing evaluation criteria of recognition programs and the ability or inability of different communities to apply was thought to vary.
Bicycle Friendly Communities	Number of local jurisdictions with a Bicycle Friendly Community Designation at any level.	
Walk Friendly Communities	Number of local jurisdictions with a Walk Friendly Community Designation at any level.	

Appendix A: Other Performance Measures Considered

Several potential performance measures were researched and discussed, but ultimately not recommended. These are discussed briefly below.

Safety

- **Total number of motor vehicle crashes involving pedestrians or bicyclists.** The total number of crashes involving pedestrians or bicyclists is an important statistic that is already monitored by ODOT. However, as a statewide performance measure measuring total crashes has significant drawbacks resulting from under-reporting of lower severity crashes.

- **Pedestrian Score**. The ODOT Pedestrian and Bicycle Safety Implementation Plan uses a 'Pedestrian Score' to evaluate and prioritize corridors for potential implementation of safety improvements. The score takes into account crash history, traffic volume, number of lanes, posted speed, intersection and midblock crossing characteristics, the presence of signals, and the presence of transit stops. These factors were determined to have an influence on pedestrian safety through an analysis of crashes and roadway features. Applying pedestrian score as a performance measure for the Bicycle and Pedestrian Plan would entail a very high level of effort. Most importantly, it is noted in the Pedestrian and Bicycle Safety Implementation Plan that several important data elements are not available on a consistent basis (e.g., sidewalk presence, median presence, and number of lanes). Additionally, to use the pedestrian score as a performance measure a process for aggregating scores to a higher level, such as regional or statewide, would need to first be developed. Some of the individual criteria that are used in the Pedestrian Score (e.g., number of undivided 4-lane segments) could be considered for performance measures, but more research is needed to determine their appropriateness and the level of effort required.

Utilization

- **Bicycle and pedestrian counts.** Bicycle and pedestrian count programs have been established in several cities and regions in Oregon. Approximately 50 permanent counters have been installed throughout the state. While counts from these locations could be used to establish a performance measure, it is not clear that the locations are representative of the entire state or that the data collection protocols are sufficiently robust and consistent to allow this data to be used as a performance measure. An effort is currently underway to develop a centralized count repository. Upon its completion, the feasibility of using count data to measure utilization should be re-evaluated.

System Performance

- **Roadway Characteristics.** Some states have considered pedestrian and bicycle performance measures based on roadway characteristics. For example, a report completed for CalTrans recommended the use of urban arterial performance measures such as the percent of signalized intersections with certain crossing features or bicycle pavement markings, and the percent of arterials with an 85th percentile speed below 25mph.[1] Performance measures such as these could be aggregated to a regional or statewide level; however, it is not clear that a single measure such as this would adequately represent walking or bicycling conditions. Additionally, data may not be available for the measures of interest.

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[1] Macdonald et al. Performance Measures for Complete, Green Streets: A Proposal for Urban Arterials in California. http://www.uctc.net/research/papers/UCTC-FR-2010-12.pdf

- **Pedestrian Level of Service.** Pedestrian level of service (PLOS) is a quantitative measure of the perceived safety of walking. There are separate formulas for street segments, intersections, and crossings, which take into account a wide range of factors, such as traffic volume, number of lanes, lane width, presence and type of horizontal buffer, and sidewalk width, among others. In order to calculate PLOS, a substantial number of data elements are required. As a result, PLOS is not recommended as a performance measure for statewide implementation.

- **Access to transit**
  - **Street connectivity**. A 2013 research report conducted for ODOT, OTREC, and FHWA found that street connectivity (measured as the number of intersections within a quarter-mile of a given transit stop) was an important indicator variable for transit ridership.[2] This is an important finding for transit agencies that may use this information for route optimization or stop location decisions, but the measure does not lend itself well to inclusion as a performance measure in the Plan since urban street networks are largely built out and unlikely to change significantly over time.
  - **Access shed**. The term 'access shed' refers to the distance a person can travel in a set amount of time by a given mode of travel.[3] The access shed for walking and bicycling to transit is a function of the street network characteristics (connectivity and block length) around a transit stop. Although the access shed concept is very relevant to pedestrian and bicycle access to transit, its utility as a performance measure is limited for the same reasons that street connectivity is not recommended: street networks in urban areas with transit are largely already built.
  - **Bicycle boardings.** The number of transit riders who access transit by bike would provide insight into the integration of the transit and bicycle networks. Unfortunately, this data is not currently collected on a routine basis. Portland's TriMet system has very limited information about bicycle access to transit.

Facility Implementation

- **Percent of projects that include pedestrian and bicycle facilities.** Inclusion of pedestrian and bicycle facilities within other roadway projects is an important part of a comprehensive effort to develop a network of facilities. For example, repaving, capacity expansion, and bridge replacement projects provide an opportunity to integrate pedestrian and bicycle facilities as part of these larger projects. Oregon's 'Bike Bill' (ORS 366.514) already requires pedestrian and bicycle facilities to be included in the construction or rebuilding of streets or highways, making this performance measure unnecessary.

- **Percent of urban state highways with bike lanes and sidewalks.** Tracking the coverage of bike lanes, sidewalks, or other facilities across the state may provide some insight into the state's progress toward developing a comprehensive network of facilities. However, without a better understanding of context, it is questionable whether facility mileage alone is a meaningful indicator of progress.

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[2] Schlossberg et al. 2013. Measuring the Performance of Transit Relative to Livability. http://www.oregon.gov/odot/td/tp_res/docs/reports/2013/spr735.pdf

[3] Los Angeles Metro. First and Last Mile Strategic Plan and Design Guidelines. http://media.metro.net/docs/sustainability_path_design_guidelines.pdf

- **Sidewalk coverage and conditions.** Sidewalks are necessary for safe and comfortable walking on most streets. In order to benefit all pedestrians (including those who use mobility aids), they must also be in a state of good repair. While sidewalk condition and coverage measures would be informative, a greater understanding of context is needed to determine whether progress is being made. For instance, the construction of new sidewalks that do not connect to a broader network offers little benefit to pedestrians whereas repair of a short segment in an extensive network could impact many. Along with this shortcoming, the availability, quality, and ease of reporting of sidewalk data on a statewide level is unknown.

State and Local Recognition

- **Number of university campuses and businesses with a Bicycle Friendly designation**. Along with the community and state rankings, the League of American Bicyclists evaluates and recognizes businesses and university campuses that accommodate bicyclists. These designations may provide an indication of efforts being made across Oregon to accommodate bicyclists; however, since the decisions of universities and businesses are not controlled by ODOT or its partner agencies, this performance measure is not well suited for the Plan.