



Research Problem Statement

ODOT Research Section
555 13th Street NE; Ste 2
Salem OR 97301-5192

Phone (503) 986-2700
Fax (503) 986-2844

I. TITLE

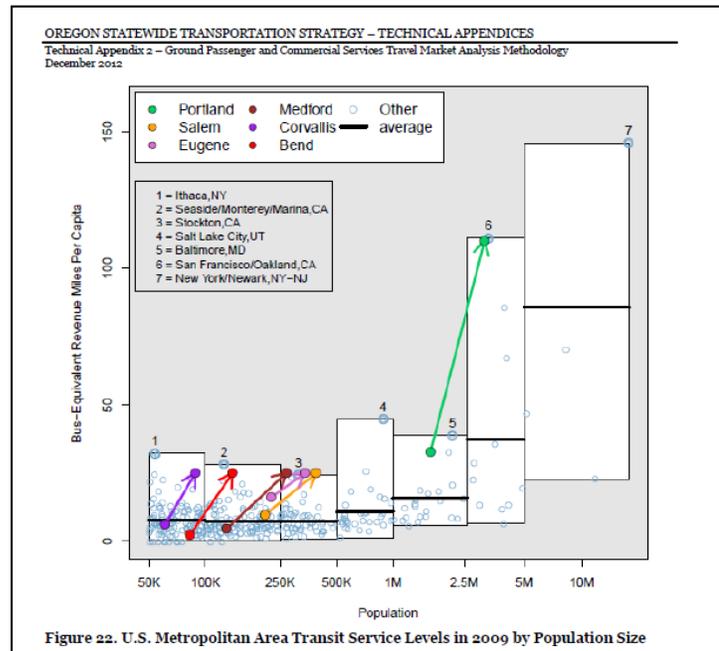
17-007 Best Mix of Transportation Options for Mid and Small Size Communities

II. PROBLEM

Mid and Small Size Communities in Oregon and across the nation are increasingly looking to provide non-auto options to reduce GHG and Air Quality emissions and VMT, as well as reduce household travel costs through reduced auto ownership, and improve health with more use of active modes. However, the benefits found in the literature for “Transit Oriented Development (TOD)” areas are based on transit service levels that may be out of reach for Oregon’s smaller MPOs and communities. However, compact land use and lower transit service supplemented by emerging modes such as bike or carsharing are more realistic for such communities and might garner many of the TOD benefits if planned in combination. Despite a good discussion of various individual strategies, there is a lack of practical guidance and case studies about what a successful multi-modal vision would look like in small and mid-sized communities, and the associated benefits relative to those documented for TODs in larger cities. A realistic vision of what is possible is important to effectively invest and implement the right mix of multi-modal infrastructure and promotion programs today that will result in these desired outcomes long-term.

III. PROPOSED RESEARCH, DEVELOPMENT, OR TECHNICAL TRANSFER ACTIVITY

This research would begin with a literature review of what is available on this topic for smaller communities. This includes the Oregon Sustainable Transportation Initiative (OSTI) toolkit, which includes a database of various land use and alternative mode strategies, modeling and analysis tools to quantify benefits, accompanied by Oregon-specific case studies; Analysis of service levels per capita by city size based on the National Transit Database data and used in the ODOT Statewide Transportation Strategy (see figure); and work at PSU to supplement the Bike/Ped, Transportation Options, and Public Transit Statewide Plans using the Oregon Household Activity Survey (OHAS). Related ODOT tools for eventual use of the findings from this research include the Regional Strategic Planning Model (RSPM), various urban travel demand models, and the Transit Network Analysis (TNA) Tool The project would start with a review of these efforts and anything new in the literature and propose a research plan, adjusted set of products/deliverables that would extend those sources in a more integrated vision for communities of various sizes.



As currently envisioned, the project would propose a set of best practice integrated land use-transport visions quantifying likely benefits by community size, and supported by US case studies. The analysis would attempt to adjust the TOD impacts found in the literature to reflect smaller community characteristics, such as lower land use densities, lower travel delays, average trip lengths, and differing demographics (e.g., age, income, household size, auto ownership). As well as understand the attributes of small communities across the globe that have successfully implemented multi-modal strategies. Gaps in understanding might need to be

supplemented with evaluation of travel behavior in such communities i.e., through survey data in Oregon and elsewhere (e.g., OHAS, National Household Travel Survey-NHTS) and/or collection of new survey data (e.g., demographics and travel behavior in use of emerging modes, such as in ODOT/NITC Research Project 788). The resulting typology of multi-modal visions would be stratified by community size and/or other attributes and implementation issues required to ensure success. For instance some visions might be bike focused; others walk focused; others focusing on vehicle sharing reflecting the conditions and values of the community. Similarly concepts of what might be integrated in a successful “Bike Hub” concept, etc. The likely range of benefits of successful implementation of these combined multi-modal visions, such as changes in trip making and VMT, use of alternative modes, auto ownership, household travel costs, congestion mitigation, and other benefits would be quantified. Case studies across the globe would highlight best practices in integrating the modes most effectively to achieve the upper level benefit estimates.

IV. POTENTIAL BENEFITS

It is anticipated that some or all of the TOD benefits noted for larger communities in the literature can be gained in smaller communities through supplementing transit service with a concerted multi-modal system that includes compact development, and a mix of modes, such as bike and car sharing, and traditional home and work-place demand management programs. Understanding various successful mixes for smaller communities will enable these areas to plan for and capitalize on unanticipated opportunities, such as multi-modal bike hubs underway in the Columbia River Gorge. Without this guidance, smaller communities are often unrealistically counting on benefits of their TOD development that are unrealistic for their conditions. The ability to identifying successful concentrations of multi-modal services in smaller communities may help to target Transportation Options program (TDM) investments in those areas. This can increase awareness and use of existing multi-modal options. From an analysis point of view, this leads to disappointment in analysis results and questioning tool credibility. From a planning perspective,

V. IMPLEMENTATION

The product of this research would be more realistic expectations of what can be achieved in developing multi-modal communities of various sizes within Oregon. This would be in the form of guidance documents that note recommended multi-modal visions, where different proposed approaches vary by community size, values, demographics, and other attributes. An expected range of benefits for each approach would be estimated. Unlike previous efforts, this would assess how modes interact, talking about integration issues and collective benefits when successfully implemented in concert. Better understanding conditions for successful concentrations of multi-modal options in smaller communities can assist in more effective targeting of Transit and Transportation Options program resources.

The following groups would be involved in implementing the results of this research effort:

- **Planning Unit-** Provide information to include as guidance in statewide Mode & Topic Policy Plans, and efforts to implement these policies into practice within Oregon communities of various sizes in partnership with ODOT region planning staff.
- **Rail and Public Transit Division-** Realistic expectations of multi-modal community visions for guiding funding appropriations for transit service, coordinating transit and alternative modes (including emerging modes), and administering the Transportation Options Program and other local travel demand management programs. The findings could be integrated with the OSU/ODOT Transit Network Analysis, which enables understanding levels of fixed route transit service in Oregon Communities and the number of people with access to specified service levels.
- **TPAU-** Improved planning analysis, e.g., use in strategic planning for state and metropolitan communities using the RSPM tool, support of MPO Regional Transportation Plans and analysis of project implementation of other tools, as well as highlighting needs for future tool development (e.g., on emerging modes).
- **Oregon MPOs, Local Jurisdictions and Transit Agencies -** Local Transportation and Land Use Plans, STIP Project Selection.

VI. LIST OF REFERENCES *(optional)*

1. Oregon Sustainable Transportation Initiative (OSTI) Toolkit,
 - Database of various land use and alternative mode strategies:
<http://www.oregon.gov/ODOT/TD/TP/pages/database.aspx>
 - Oregon Case Studies: http://www.oregon.gov/ODOT/TD/TP/Pages/ghgtoolkit_casestudies.aspx
 - Modeling & Analysis Tools:
<http://www.oregon.gov/ODOT/TD/TP/pages/modelanalysisreport.aspx>
 - Scenario Planning: http://www.oregon.gov/ODOT/TD/OSTI/Pages/scenario_planning.aspx
2. ODOT Statewide Transportation Strategy (STS), Technical Appendices Figure 22. U.S. Metropolitan Area Transit Service Levels in 2009 by Population Size:
http://www.oregon.gov/ODOT/TD/OSTI/docs/STS/STS_TechAppendices.pdf
3. Supplemental work at PSU using OHAS to support the following Statewide Policy plans:
 - Bike/Ped Plan
 - Transportation Options Plan
 - Public Transit Plan
4. ODOT/NITC RSPM Mode Shift/Emerging Modes Research (under development)
 - ODOT Research 788-Performance-Based Planning and Decision Making - Understanding Mode Choices: http://www.oregon.gov/ODOT/TD/TP_RES/pages/listofactiveprojects.aspx
 - NITC Project 881-Incorporating Emerging Travel Modes in the RSPM Tool:
[http://trec.pdx.edu/research/project/881/Incorporate_Emerging_Travel_Modes_in_the_Regional_Strategic_Planning_Model_\(RSPM\)_Tool](http://trec.pdx.edu/research/project/881/Incorporate_Emerging_Travel_Modes_in_the_Regional_Strategic_Planning_Model_(RSPM)_Tool)
5. ODOT/OSU Transit Network Analysis (TNA) tool research:
<https://tnasoftwaretool.engr.oregonstate.edu/TNAtoolAPI-Webapp/wiki/#!index.md>

VII. CONTACT INFORMATION

Your name: Tara Weidner

Affiliation: ODOT TPAU, Salem

Telephone: 503.986.4226

Email: Tara.J.Weidner@odot.state.or.us

Person Responsible for Implementation: Amanda Pietz

Affiliation: ODOT Planning Section, Salem

Telephone: 503.986.4227

Email: Amanda.PIETZ@odot.state.or.us
