2022 Northwest Transportation Conference

Stop and Go – Providing Transportation Services and Infrastructure in Uncertain Times

MONDAY, March 7, 2022		
10:30 to Noon	**Moderation and Introduction** **Amy Wyman, Transportation Engineering Ph.D. Student, School of Civil and Construction Engineering, Oregon State University** **Welcoming Remarks –** **Scott Ashford, Ph.D., PE(CA), Dean College of Engineering/Professor, Oregon State University** **David Hurwitz, Ph.D., Director Kiewit Center for Infrastructure and Transportation Research/Professor, Oregon State University** **Doug Hecox, MPA, Deputy Division Administrator , Oregon Division, Federal Highway Administration** **Guest Speaker U.S. Rep. Peter DeFazio (OR-04)**	
Noon to 1:00	Lunch Break	
1:00 to 2:30	**Session 1**	**Session 2**
	Transformative Technologies for a Modern Transportation System ***ODOT Broadband Strategy*** ***Connected Vehicle Ecosystem*** ***Over Dimension Permitting System Replacement***	**Infrastructure – Pavement Innovation, Project QA/QC, and Wildfire Recovery** ***Wildfire Recovery and Corridor Planning along OR State Route 224*** ***A More Sustainable Future for the Pavement Infrastructure*** ***ODOT's Project Delivery QA/QC program: What's the Goal and What's Your Part?***

TUESDAY, March 8, 2022		
10:30 to Noon	**Session 3**	**Session 4**

jon.m.lazarus@odot.oregon.gov

	Probe Data Applications for Transportation System Operations ***Probe-based and Broader Crowdsourced Data Applications for Advancing Operations*** ***The New Frontier in Traffic Signal Performance with Trajectory Data*** ***Probe Data Applications for Traveler Information, Work Zone Delay, and Queue Detection***	**Safety – Systemic Analysis and Improvements** ***Safety benefits of the All Roads Transportation Safety (ARTS) program systemic curve signing and intersection project for Clackamas County*** ***Intersection Safety Analytics, StreetSimplified Pilot Study*** ***Marked Crosswalk Updates at ODOT***
Noon to 1:00	Lunch Break	
	Session 5	**Session 6**
1:00 to 2:30	**ODOT Investing for a Data Driven Decision Making Future** ***ODOT Region 1 Before-and-After Project Analysis*** ***The use of RITIS for Transportation Analysis and Monitoring*** ***Data quality evaluation of probe-based vehicle traffic volume estimates from INRIX*** ***Oregon Travel Survey Role in Data Driven Decision Making***	**PedBike Data and Analysis Leads to Policy** ***Assessment of Bicycle Detection Confirmation and Countdown Devices*** ***Using Bicycle and Count Data to Support Decision Making*** ***Safety Investigations Manual (SIM) Update***

WEDNESDAY, March 9, 2020		
	Session7	**Session 8**
10:30 to Noon	**National Transportation System Operations Initiatives & Best Practices** ***National Operations Center of Excellence*** ***AASHTO Transportation Operations Manual*** ***FHWA Office of Operations Initiatives***	**New Approaches to Evaluating the State of the Transportation System** ***Enhancing ODOT crash data through data linkage: Findings from a pilot project linking DMV, ODOT, and Emergency Medical Service data*** ***Expanding The Oregon Motor Carrier Safety Action Plan: Best Return on Investment*** ***Ensuring Consistency for Local Agency Transportation Impact Studies***
Noon to 1:00	Lunch Break	
1:00 to 2:30	**Session 9**	**Session 10**

	Data Driven Performance Reporting of Pandemic Traffic Conditions ***COVID-19 Impacts of Vehicle Class Distribution*** ***Oregon DOT Traffic Monitoring During COVID-19 Pandemic*** ***Portland Region Impacts of COVID-19 on Traffic*** ***Post Pandemic Impacts to Travel Behavior and Long Range Forecasting***	**Transit Keeps Moving Forward** **GTFS-ride: A Unifying Standard for Fixed-Route Ridership Data** **Rose Lanes Project – Implementing Enhanced Transit Corridors in Portland** **Red Pavement Markings: Implementing Enhanced Transit Corridors in Portland**

Detailed Breakout Session Information

Monday, March 7, 1:00 pm-2:30pm

Session 1. Transformative Technologies for a Modern Transportation System

- Kevin Haas, P.E., State Traffic Standards Engineer & Unit Manager, ODOT, Session Moderator

The Oregon Transportation Commission adopted a Strategic Action Plan with three priorities: Equity, Modern Transportation System, and Sustainable and Reliable Funding. One of the outcomes to address the modern transportation system priority is to implement transformative technologies. This session will report on progress on three projects that were identified in the plan to modernize Oregon's transportation system.

ODOT Broadband Strategy

- Jim Peters, National Director of Transportation Technology, DKS

Access to high-speed broadband communications is essential for Oregon communities' economic vitality and prosperity. It is also essential for transportation. Technologies such as telemedicine, distance learning, and remote work all reduce demand on the transportation system. Adequate broadband service is important for ODOT employees working across the state as our work becomes increasingly digital. Broadband is also important for operation of the transportation system as it is an enabling technology for today's intelligent transportation system applications and the backbone for future applications supporting connected and automated vehicles. ODOT is currently developing a Broadband Strategy and Implementation Plan to address steps it should take to pursue this important technology for transportation as well as support the State of Oregon's goals to expand broadband access for its citizens.

Connected Vehicle Ecosystem

- Maureen Bock, Chief Innovation Officer, ODOT
- Galen McGill, P.E., System Operations & ITS Manager, ODOT

The connected vehicle ecosystem project is an innovative project designed to prepare ODOT for a connected future that requires a partnership with the automotive industry. The resulting system will be a cloud based, data aggregation platform that will gather data from vehicles and from relevant ODOT systems and process that data for specific applications. As envisioned, it will both gather data from vehicles and have the ability to deliver information back to those same vehicles.
There are two primary application categories. The first is to implement road usage charging (RUC) at scale. By implementing Original Equipment Manufacturer (OEM) applications and leveraging the cellular connectivity that manufacturers have to modern vehicles, we can eliminate the need for aftermarket equipment and simplify large scale implementation of road usage charging as a replacement for the gas tax. The second application area will be to develop operations and safety related applications that assist existing drivers and future autonomous vehicles with safe and efficient use of the transportation system as well as to assist ODOT with situational awareness about real-time transportation system conditions.

Over Dimension Permitting System Replacement

- Audrey Lawson, Motor Carrier Services Manager, ODOT

The Over-Dimension (OD) Permit Unit within the ODOT Commerce and Compliance Division (CCD) issues permits to motor carriers that need to haul loads that exceed maximum size and weight limits established in statute and rule. The OD Permit unit reviews and routes loads as requested by motor carriers to safely transport over height, over width, over length, and overweight freight through Oregon. The majority of permitting work is dedicated to single-trip permit ("STP") issuance; a manual and time consuming process that requires reliable, in depth roadway information, and lengthy staff training.
This project will implement a statewide automated routing and permitting system for single-trip permit issuance. The new system would have several benefits. It would integrate new vertical clearance and infrastructural data which would, increase customer service levels, by aligning multiple work units throughout the agency to make fully informed, data driven decisions. The new system would be integrated with other ODOT work units, such as bridge engineers, transportation economists, and the state's counties to minimize risk of damage to critical highway infrastructure.

Session 2. Infrastructure – Pavement Innovation, Project QA/QC, and Wildfire Recovery

- Laura Wilt, Librarian, ODOT, Session Moderator

A More Sustainable Future for the Pavement Infrastructure

- Erdem Coleri, Ph.D., Associate Professor Civil & Construction Engineering, Oregon State University

Pavement engineering has been continuously evolving within the last several decades to address the challenges related to the increasing cost and variety of paving materials, increasing traffic levels and truckloads on roadways, changes in vehicle and vehicle tire technologies, and increasing environmental impact of the transportation sector of the economy. The paving budgets of the state Department of Transportations (DOT), Federal Highway Administration (FHWA), cities, and counties cannot keep up with the current demand for paving. This issue became apparent with the aging transportation infrastructure, increasing road user costs (in terms of vehicle maintenance, tires, and fuel consumption), reduced user comfort and safety, and increased damage to the environment from the pavement life-cycle. Pavement engineering plays a vital role in this equation by developing and implementing methods and technologies to reduce pavements' economic, societal, and environmental impacts. In today's world with limited agency budgets, the need for maintaining, rehabilitating, and constructing new roadways to achieve the highest level of mobility and road user satisfaction can only be met by developing and implementing innovative methods and strategies in pavement engineering. This presentation will cover innovative methods and strategies that were developed and implemented by my research group and other research partners to address: major issues in pavement engineering; research ideas that will support the development of more sustainable materials (future vision); and potential methods and strategies for teaching the importance of pavement research and sustainability to the public.

ODOT's Project Delivery QA/QC Program: What's the Goal and What's Your Part?

- Kristie Gladhill, P.E., Project Delivery QA/QC Program Manager, ODOT

ODOT's mission is to provide a safe and reliable multimodal transportation system that connects people and helps Oregon's communities and economy thrive. Project Delivery's part in that is to deliver high quality, successful projects, to meet the needs for Oregon's transportation system. ODOT is establishing the Project Delivery QA/QC Program to lead the development, management, communication, and implementation of the ODOT Project Delivery quality management system to ensure that products and services meet or exceed customer requirements and expectations. The mission for the Project Delivery QA/QC Program is to instill a culture of quality into every aspect of project delivery, and develop and standardize statewide project delivery quality management practices to facilitate continuous quality improvement in each discipline and phase of project delivery. We are working to improve statewide consistency by developing documented quality standards of practice with consistent quality practices for project delivery statewide across the Agency, in all Regions. We are working to establish consistent quality expectations for internal work as well as work outsourced to consultants. We are putting in place a quality management system framework, which will foster continuous improvement in the ongoing quest to meet customer expectations, provide high quality engineering and technical services, and make efficient use of resources. We want everyone working on project delivery efforts for ODOT to understand the benefits of the quality program and their part in it. Kristie Gladhill, the Project Delivery QA/QC Program Manager, will introduce the program: why we set it up, what is currently in place, what is planned, what we are learning, and what it means for you. We will conclude with a summary of the tools available to help you connect with the quality program and access the quality standards of practice.

Wildfire Recovery and Corridor Planning along OR State Route 224

- Jamie Lemon, AICP, FHWA Western Federal Lands Highway Division
- Sandra Hikari, Major Projects Planner, ODOT
- Jackie Groce, MS, Assistant Director for Natural Resources, Pacific NW Region, US Forest Service

In 2020, the Mount Hood National Forest experienced catastrophic wildfire events that damaged transportation assets along the Clackamas River corridor. A 19-mile segment of OR 224, the primary route connecting travelers from the Portland metro area to the forest, has been closed due to hazardous conditions and ongoing rehabilitation work. Post-fire assessments and emergency repairs have been completed over the past year to determine the scale of damage, anticipate high-risk areas in the changed landscape, and stabilize the roadway. FHWA is developing an Existing Conditions Assessment of the OR 224 corridor to better understand the extent of post-wildfire conditions as they relate to future use and transportation system resiliency within the National Forest. The Phase 1 Existing Conditions Assessment is the first of a two-phase Corridor Study for OR 224 and its purpose is to evaluate and document current baseline conditions along the closed portion of the corridor with a focus on safety, traffic operations, unstable slopes, and hydrology features.

This presentation will offer an overview of the Phase 1 study process, technical recommendations, and areas of further study for a Phase 2 OR 224 Corridor Master Plan. Phase 2 will develop a long-term, coordinated vision and related goals for the impacted

area, further investigate high risk areas along the corridor, develop initial site designs for priority transportation improvements, and identify a comprehensive suite of capital projects and policy recommendations that support the many uses of the Mount Hood National Forest while enhancing transportation access.

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Tuesday, March 8, 10:30 am-Noon

Session 3. Probe Data Applications for Transportation System Operations

- Nick Fortey, FHWA Oregon Division, Session Moderator

Probe-based and Broader Crowdsourced Data Applications for Advancing Operations

- James Colyar, Transportation Specialist, FHWA Office of Operations

Crowdsourcing is the practice of addressing a need or problem by enlisting the services of a large number of people via technologies. The crowdsourced landscape for local and state transportation operations has matured through emerging vehicle probe, mobile application, and social media data. By leveraging free or vendor-provided crowdsourced data, agencies have improved their decision-making at tactical, real-time, and more strategic programmatic levels to improve safety, trip reliability, and operations costs. An overview of the Every Day Counts, Round 6 (EDC-6) "Crowdsourcing for Advancing Operations" initiative will be provided, including discussion of available resources to help agencies advance their use of crowdsourced data. An overview of how various public agencies across the U.S. are currently leveraging probe-based data to advance their operational capabilities will also be covered.

The New Frontier in Traffic Signal Performance Measures with Trajectory Data

- Howell Li, Principal Research Analyst, Joint Transportation Research Program, Purdue University
- Enrique Daniel Saldivar-Carranza, Ph.D. Candidate, Program, Purdue University

Connected vehicle trajectory data has emerged as an important asset for automated traffic signal performance metrics (ATSPM) with the potential to scale across thousands of signals without vehicle detection infrastructure. The data are three seconds temporal resolution and three meters spatial fidelity, and can be provided across an entire jurisdiction in historic or real-time. Some of the metrics developed during the evolution of ATPSM such as arrival-on-green (AOG), split failure, and downstream blockage, and more traditional metrics such as Level of Service (LoS) and travel time, have now been developed and implemented using trajectory data for over 2,000 intersections nation-wide and growing. The key benefit of the methodology is that all of the metrics can now be provided to intersections whether or not they are connected, have vehicle detectors, or have the latest controllers or firmware upgrades. We will touch briefly on cloud technologies that warehouse and curate the data into analytics and dashboards that can be quickly accessed by agency stakeholders.

Probe Data Applications for Traveler Information, Work Zone Delay, and Queue Detection

- Brent Atkinson, Traveler Information & Operations Performance Measures Coordinator, ODOT

There are a lot of applications for use of probe data for measuring the transportation system performance, but this presentation will examine real-time application of probe data in ODOT's system operations applications. Topics to be covered will be use of probe data in ODOT's TripCheck traveler information system, use of probe data for situational awareness during emergency events, use of probe data for measuring and reporting real-time delay in work zones, and integration of probe data based queue detection into ODOT's active traffic management system.

Session 4. Safety – Systemic Analysis and Improvements

- Kristie Gladhill, P.E., Project Delivery QA/QC Program Manager, ODOT, Session Moderator

Safety benefits of the All Roads Transportation Safety (ARTS) program systemic curve signing and intersection project for Clackamas County

- Rachel Vogt, MEng, Transportation Engineering Associate, DKS Associates,
- Scott Mansur, P.E., PTOE, Principal/Office Manager, DKS Associates,
- Christian Snuffin, P.E., PTOE, Senior Traffic Engineer, Clackamas County Department of Transportation and Development
- Mallorie McDowell, Traffic Engineering Technician, Clackamas County Department of Transportation and Development

The Clackamas County ARTS Systemic Safety Design project was one of the first large scale, countywide design projects that aimed to improve the safety of approximately 80 rural intersections and 110 miles of rural roadway (21 corridors) through improved signing and pavement markings. There were two categories of systematic rural countermeasures, one that targeted roadway departures along roadway segments and one that targeted intersections. These improvements are associated with a 20%-30% reduction in intersection crashes depending on the number of countermeasures used. This presentation will include discussions of the safety benefits of the systemic curve signing and intersection projects and lessons learned from design and construction process.

Intersection Safety Analytics, StreetSimplified Pilot Study

- Christina McDaniel-Wilson, P.E., RSP1, State Traffic Safety Engineer, ODOT Traffic Roadway Section
- Jiguang Zhao, Ph.D. P.E., RSP1, Traffic Safety Engineer, ODOT Traffic Roadway Section

The emergence of video safety analytics is an exciting expansion of the tools transportation practitioners can use to gain even more insight into troublesome intersections that continue to have safety or operations related issues even after traditional safety and operational countermeasures are applied. Over the last year, ODOT conducted a region wide pilot study at selected intersections on state highways. The goal was to explore a more proactive and efficient way (compared to the traditional approach) of assessing intersection safety. More specifically, a tool that could help improve safety at signalized intersections for all road users; identify road user behavioral attributes associated with unsafe driving; evaluate signalized intersection characteristics; identify potential intersection safety improvements that reduce crashes; determine signalized intersection crash patterns associated with different intersection geometries; identify the human economic benefits of making various safety improvements; Prioritize potential signalized intersection improvements; and help quantify risk. The purpose of this presentation is to share the results, lessons learned, and next steps regarding the pilot study.

Marked Crosswalk Updates at ODOT

- Eric Leaming, P.E., State Traffic Investigations Engineer, ODOT Traffic-Roadway Section

The presentation will cover recent updates related to ODOT's traffic engineering process and guidance for marked crosswalks. It will highlight where to find updated resources and how to apply them on ODOT's highway system.
The Traffic-Roadway Section made significant updates in the 2022 ODOT Traffic Manual related to this topic. Goals of the update were to support ODOT's Strategic Action Plan, Oregon Bicycle and Pedestrian Plan, and ODOT's Blueprint for Urban Design. Updates include new treatment guidance, deliverables for engineering studies, and updated discussion on human factors and treatment effectiveness. This included new forms to help implement these updates, which are available on ODOT's forms page. ODOT staff and engineering consultants will be using these updates in project delivery. This will also show city engineering staff ODOT's process for marking crosswalks on state highways in their city. Ongoing work for the Traffic-Roadway Section in 2022 includes shifting how ODOT manages its existing inventory of uncontrolled marked crosswalks from an approvals-based process to a prioritized investigations-based process similar to SPIS. The presentation will touch on this to highlight a systemic way to manage existing crossing facilities.

Lunch Break Noon-1:00

Tuesday, March 8, 1:00 pm-2:30pm

Session 5. ODOT Investing for a Data Driven Decision Making Future

- Becky Knudson, Senior Transportation Economist, ODOT TPAU, Session Moderator

The use of RITIS for Transportation Analysis and Monitoring

- Chi Mai, P.E., Transportation System Analysis Engineer, ODOT TPAU

ODOT has a contract with INRIX to use their probe data through the Regional Integrated Transportation Information System (RITIS) platform and has access to historical data going back to 2016 for the state of Oregon and Clark County in Washington. Public agencies (all state agencies, local government agencies, and universities) within Oregon and Clark County in Washington can freely use the data for planning and analysis. Consultants in contract with these government agencies can also have access to

RITIS. In addition to the probe speed data, RITIS also houses other ODOT traffic data which allows for the calculation of traffic performance measures, cost of delay, and cause of congestion pie chart just to name a few, all within the RITIS platform. A demonstration of the RITIS tool and highlights of various performance measures and different case studies will be shared.

ODOT Region 1 Before-and-After Project Analysis

- Scott Turnoy, Senior Planner, ODOT R1;
- Chi Mai, P.E., Transportation System Analysis Engineer, ODOT TPAU

With a future of shrinking revenues, Oregon Department of Transportation continually searches for strategic, cost-effective ways to invest in the transportation system. We look onto recently completed projects to evaluate how these investments are improving the system so we can better understand which improvements are providing the most benefit relative to cost. By studying the performance of projects, we can make more informed decisions about which investments to prioritize going forward, and we can report to our customers, the traveling public, how we are investing our limited funds to make travel safer and more efficient. A Before-and-After study is a way of evaluating a completed construction project. It involves selecting measures of effectiveness, evaluating data for the time period both before and after project implementation, and reporting on how travel performance changed due to the project. Region 1 has evaluated four freeway projects completed within 2018-2019 and the operational comparison results of the before and after conditions will be presented. The use of commercial probe data as well as ODOT data were used in the evaluation of these projects.

Data quality evaluation of probe-based vehicle traffic volume estimates from INRIX

- Josh Roll, MUS, Research Coordinator, ODOT Research Section

ODOT now has access to high quality measures of travel speeds through its subscription to the Regional Integrated Transportation Information System (RITIS). These estimates of speed are based on GPS enabled devices that collect the location of vehicles operating on the transportation system and summarized for use in monitoring speed and congestion. These data can also be combined with other sources to estimate vehicle volumes. Collecting traffic volumes using traditional technologies like permanent traffic recorders and pneumatic tubes are expensive and are limited in both spatial and temporal coverage. The use of probe based vehicle volume estimates has the potential to significantly increase the coverage of traffic volume estimates. This presentation will compare the vehicle traffic volume estimates from INRIX based sources with ODOT traffic counts to help practitioners understand the opportunities and challenges with using these data for project planning, system monitoring, and safety analysis.

Oregon Travel Survey Role in Data Driven Decision Making

- Becky Knudson, Senior Transportation Economist, ODOT TPAU

The three previous presentations focus on using new sources of observed data to make more informed decisions, reducing the time and cost of collecting data ourselves. These data sources are based on proprietary data designed to preserve privacy and anonymity of individual persons. In order to evaluate behavioral responses to new policy, land use and transportation system conditions, tools based on detailed observations of people making daily decisions that generate travel activity are utilized. Most people are familiar with Stated Preference surveys, which ask people direct questions about what they would do under specific conditions. An example would be asking if they would ride the bus once a week if a transit stop was nearby. This reflects peoples' intentions, but not necessarily the actual decisions made most days. Travel decisions often come together the last hour as people strive to meet multiple objectives day-to-day. Revealed Preference surveys passively document what people do, collecting actual observed human behavior. At the same time, household characteristics are documented in order to establish statistical relationships between travel patterns and household demographics, something we cannot access through sources such as RITIS and INRIX. This includes characteristics such as age, size of household, income, vehicle ownership, number of drivers, number of workers, presence of children and others. This data is used to develop travel simulation models that do a good job simulating behavior in a way that results in accurate travel forecasts. Predicting the human response to new conditions is complex, which is why we must rely on sophisticated statistical tools based on real-world human behavior. Household survey data can be used for purposes beyond forecast models and are key to monitoring how people are adapting to changing times.

Session 6. PedBike Data and Analysis Leads to Policy

- Sirisha Kothuri, Ph.D., Senior Research Associate, Portland State University, Session Moderator

Assessment of Bicycle Detection Confirmation and Countdown Devices.

- Chris Monsere, Ph.D., PE, Professor and Associate Dean, Portland State University

- David Hurwitz, Ph.D., Professor, Oregon State University
- Sirisha Kothuri, Ph.D., Senior Research Associate, Portland State University

Presentation contributing authors: Monsere, C., Kothuri, S., Cobb, D., Jashami, H., and & Hurwitz, D.

While motor vehicles are almost always automatically detected at signalized intersections due to their size and predictable stopping location, this is not the case for bicyclists. If a cyclist does not position themselves optimally for detection, they may experience unnecessary delays, which will lead to a lower quality experience and increased risk-taking behavior. Improved detection of bicyclists at signalized intersections can improve the cycling experience. Recently there has been interest in the adoption of bicycle detection confirmation devices. This research examined alternate designs for bicycle detection feedback confirmation devices using a mixed methods approach as part of ODOT SPR 825. Two types of blue light feedback confirmation devices were installed in Portland, Eugene and Corvallis and tested with nearside and farside placement along with a nearside countdown timer. Quantitative data from video review and responses from intercept surveys were used to study how the information provided by the confirmation and feedback device affects the overall cycling experience. Results from the online survey revealed that comprehension of the blue light detection confirmation devices by themselves was generally poor and improved when a supplemental sign explaining the blue light was added. The countdown timer elicited high comprehension. Some changes to bicycle compliance and waiting location were observed but they were site-specific. Findings from the nearside location were limited due to the single location. Results from the countdown timer indicate high comprehension rates. Overall, cyclists indicated that the devices improved their waiting experience.

Using Bicycle and Count Data to Support Decision Making

- Hau Hagedorn, Associate Director, TREC at Portland State University
- Tammy Lee, Ph.D., Transportation Data Program Administrator, TREC at Portland State University

BikePed Portal is a national non-motorized count data archive used by public agencies, researchers, educators, and other curious members of the public to view and download bicycle and pedestrian count data. It includes automated and manual counts from across the country, and supports screenline and turning movement counts. BikePed Portal, a one stop shop for storing, managing, and visualizing pedestrian and bicycle count data, continues to evolve with new tools and applications to help transportation agencies and other users effectively utilize their data. It includes visualization of count locations and data, user management and access to an organization's data, data sharing permissions, dashboard providing a summary of count data and metadata (e.g. facilities, count type, functional classification), and an online tool to QA/QC count data. Our most recent tool is providing annual average non-motorized traffic counts for continuous count locations. New features and tools are being developed such as estimates for Annual Average Daily Nonmotorized Traffic (AADNT) to help users learn to understand and use their data.

Safety Investigations Manual (SIM) Update

- Chris Monsere, Ph.D., PE, Professor and Associate Dean, Portland State University
- David Hurwitz, Ph.D., Professor, Oregon State University
- Jason C Anderson, Ph.D., Research Faculty, Portland State University

Across the state, safety investigators have developed a wide variety of tools and techniques for highway safety investigation procedures. It is important to promote consistent methods for statewide evaluation to assure safety investigations are conducted in similar manners for all ODOT evaluations. The Oregon DOT's Highway Safety Investigations Manual is one such tool that promotes a systemic screening process for proper highway safety investigations and document the procedures used for this assessment. The purpose of this presentation is to share the results of the recent update to the ODOT Highway Safety Investigation Manual (HSIM) and accompany worksheets and how they can be applied to safety investigations statewide.

Wednesday, March 9, 10:30 am-Noon

Session 7. National Transportation System Operations Initiatives & Best Practices

- Galen McGill, P.E., System Operations & ITS Manager, ODOT, Session Moderator

National Operations Center of Excellence

- Adam Hopps, Communications and Program Manager, National Operations Center of Excellence

The National Operations Center of Excellence (NOCoE) is a partnership of the American Association of State Highway and Transportation Officials (AASHTO), the Institute of Transportation Engineers (ITE), and the Intelligent Transportation Society of America (ITSA) with support from the Federal Highway Administration (FHWA). The NOCoE offers an array of technical services related to transportation system operations such as peer exchange workshops, webinars, web site/knowledge center, and publication of case studies highlighting best practices in the field. Learn how the NOCoE can help you connect with the best resources available related to system operations.

AASHTO Transportation Operations Manual

- Les Jacobson, Vice President – Transportation Operations Strategies, WSP

This presentation will provide an overview of progress on the NCHRP 03-126 project to develop the first edition of a "Transportation Operations Manual," for publication by AASHTO under the sponsorship of the AASHTO Transportation System Operations Committee. The manual will be a companion to the AASHTO Green Book and will provide a holistic view of the operation and management of the transportation system, covering both urban and rural settings and the movement of people and goods. The primary audiences will be staff at state, regional, and local transportation agencies responsible for implementing operations solutions and strategies.

FHWA Office of Operations Initiatives

- Tracy Scriba, Team Leader - Planning & Organizing for Operations, FHWA Office of Operations

The Federal Highway Administration's (FHWA) Office of Operations provides national leadership for the management and operation of the surface transportation system. The office is responsible for FHWA's efforts in the areas of congestion management, Intelligent Transportation Systems (ITS) Deployment, traffic operations, emergency management, and freight management and operations. In this presentation you will learn about the numerous initiatives going on at the federal level to advance the state of practice for transportation system operations.

Session 8. New Approaches to Evaluating the State of the Transportation System

- Antony Knudson, Research Coordinator, ODOT Research Section, Session Moderator

Enhancing ODOT crash data through data linkage: Findings from a pilot project linking DMV, ODOT, and Emergency Medical Service data

- Josh Roll, MUS, Research Coordinator, ODOT Research Section

ODOT manages a rich and detailed database on traffic crashes that is used to understand traffic safety across the state and make decisions on projects, programs and policies. This presentation will offer findings from a pilot project that linked ODOT's crash data of record with information about drivers and vehicles stored by Oregon DMV as well as linking to emergency medical service (EMS) traffic incidents data. Linked data from DMV expands our knowledge about how the weight and vehicle type impact injury severity and how driver citation history impacts the likelihood of being involved in a serious crash. By linking data with Oregon EMS records, we can better understand the nature of the injury and determine whether our crash reporting protocols are adequately accounting for nonmotorized crash incidents.

Expanding The Oregon Motor Carrier Safety Action Plan: Best Return on Investment

- Sal Hernandez, Ph.D., Associate Professor, Oregon State University
- Russ Russell, Compliance and Regulatory Manager, ODOT Motor Carrier

This study presents some key findings from an analysis on the impact of increased law enforcement on truck driver-at-fault crashes in Oregon. Specifically, the impact of the Oregon Motor Carrier Safety Action Plan program (OMCSAP). The work was accomplished though a descriptive analysis of collected inspection data and Oregon crash data. In addition, a survey was administered to law enforcement in Oregon to gauge their perception and willingness-to-adopt such a program in their jurisdiction. The presentation concludes with a summary of recommendations and future work.

Ensuring Consistency for Local Agency Transportation Impact Studies

- Scott Mansur, P.E., P.T.O.E., Transportation Engineer, DKS Associates
- Jenna Bogert, P.E., Transportation Engineer, DKS Associates

Local agencies throughout Oregon & Washington all require Transportation Impact Studies (TIS), which play an important role in the development review processes and the successful management of the agency's transportation system. Developer-led transportation impact studies can lead to inconsistent analysis and findings, causing transportation operations and safety issues to be overlooked. The City of Wilsonville has a TIS process that ensures consistency is applied to each development and to the management of their transportation system. This presentation will include a history of traffic studies in Wilsonville, including why developer-led traffic studies were not successful, as well as Wilsonville's solution to have a TIS process that provides a consistent approach to evaluating and tracking developments, using cutting-edge transportation tools, monitoring performance and growth, and identifying transportation infrastructure needs.

Lunch Break Noon-1:00

Wednesday, March 9, 1:00 pm-2:30pm

Session 9. Data Driven Performance Reporting of Pandemic Traffic Conditions

- Becky Knudson, Senior Transportation economist, ODOT TPAU Session Moderator

Impacts of COVID-19 on Vehicle Class Distribution

- Don Crownover, P.E., Transportation Systems Monitoring Unit Team Leader, ODOT TSM
- Ali Jafarnejad, E.I.T., Engineering Specialist, ODOT TSM

The Transportation Systems Monitoring (TSM) Unit is part of the ODOT Transportation Data Section. This unit is responsible for the Traffic Monitoring Program, which provides vehicle class and traffic volumes for Federal, State, local and private decision makers. This effort supports project development (design and construction), operations, maintenance, planning, state and regional modeling, and the Highway Performance Monitoring System. The purpose of this presentation is to review the impacts of the Covid-19 on traffic vehicle class distribution in Oregon. After Covid-19, TSM unit noticed significant drop in daily traffic volume on Oregon highways. ODOT has Automated Traffic Recorders (ATRs) and Automated Vehicle Classifications (AVCs) stations on major highways throughout the state which capture traffic volumes, length and vehicle classes 24 hours and 365 days. Processing and reviewing 2020 traffic data shows significant changes on traffic volumes and vehicle class distribution comparing to the previous years. This presentation highlights changes on vehicle class distribution on major highways after Covid-19.

Oregon DOT Traffic Monitoring During COVID-19 Pandemic

- Katie Brown, E.I.T., Transportation Systems Analyst/Modeler, ODOT TPAU

The Oregon Department of Transportation (ODOT) began monitoring statewide traffic volumes since COVID-19 pandemic restrictions were put into place by Oregon Governor Kate Brown in March 2020. Monitoring involves using traffic data from permanent automatic traffic recording stations representing 13 major highway corridors, including the use of vehicle length counters to track truck volumes, and speed monitoring in the Portland region using vehicle probe data available via the RITIS data platform provided by the University of Maryland CATT Lab. Information related to COVID impacts on traffic was in high demand from a variety of customers – Office of the Governor, Oregon Health Authority, ODOT leadership and reporters. ODOT developed one report designed to provide information to cover a broad set of informational needs. This report requires close collaboration with several different departments within the agency. Timelines are short, visibility is high and troubleshooting issues takes time and careful consideration. Each report is posted online and available to the public. This project highlights Oregon DOT work in the areas of performance monitoring and reporting, statewide analysis, access to timely data, reporting and data visualization**.**

Portland Region Impacts of COVID-19 on Traffic

Kerrie Franey, Planner, ODOT R1

- Chi Mai, P.E., Transportation System Analysis Engineer, ODOT TPAU

ODOT Region 1 has been monitoring the impacts of the COVID-19 Pandemic on traffic in the Portland region. Beginning March 14, 2020, ODOT traffic analysts noted a significant drop in daily traffic volume on major freeways and a substantial decrease in total travel time. After Governor Brown's stay-at-home order was issued March 23, 2020, traffic volumes continued to decrease,

with the lowest average weekday volumes occurring the week of March 30-April 3, 2020. Since then, there has been a gradual increase in average weekday traffic volumes on freeways, with the exception of locations impacted by construction closures. Analysis included monitoring weekend patterns, number of crashes, incidents, traffic speeds and hourly traffic volumes across multiple highways in the region. Decision makers rely on these data reports to make decisions on construction hours allowed. Project teams follow each report release to understand the pace of traffic recovery (and return of congestion) to communicate to the public. This helps inform the public on updated congestion times as traffic patterns re-establish in a post-pandemic era.

Post Pandemic Impacts to Travel Behavior and Long Range Forecasting

- Becky Knudson, Senior Transportation Economist, ODOT TPAU

For nearly three years COVID-19 restrictions have impacted traffic patterns, which raises questions on what changes to travel behavior will be permanent and which will fade away. Oregon has many transportation projects, long range plans, and policies under development. The question has been raised internally and externally of whether the impacts of COVID-19 require a substantial change in transportation planning and project design. Projects, long-range plans and policy development rely on travel model forecasts to evaluate investment options to meet agency goals and objectives. Long-range transportation forecasts rely on historical trends and current behavior to understand future conditions and evaluate areas of uncertainty. It is important to observe behavior patterns over a significant period of time to reveal long-range trends and avoid misinterpreting short-term changes, such as business cycles or random shocks to the system (wildfires, COVID-19), as changes in long-range behavior. This presentation will highlight how long range forecasts will include considerations related to permanent change in travel behavior and demands on the transportation system.

Session 10. Transit Keeps Moving Forward

- Ana Jovanovic, Senior Project Manager, Jacobs, Session Moderator

GTFS-ride: A Unifying Standard for Fixed-Route Ridership Data

- David Porter, Ph.D., Professor of Industrial & Manufacturing Engineering, Oregon State University

In public transit, ridership data is critical to service providers, because it allows them to understand the utilization of their systems, as well as providing insight into where changes to the structure of their network (e.g., adding or removing a stop, trip or a route) could result in improved services. Besides the internal benefits of ridership data to a transit agency, many possibilities exist for creating compelling and informative visualizations of ridership transit data to communicate the positive benefits of transit services to external entities such as transportation planners, marketing professionals, lawmakers, and the public in general. Until recently, no standard data description of detailed fixed-route ridership existed in the United States forcing transit agencies to develop their own system of collecting, storing, and analyzing ridership and related data.This presentation introduces and explains the structure of GTFS-ride, the first public transit ridership data standard for fixed-route services. Additional support elements developed to facilitate the promotion and adoption of GTFS-ride will also be discussed, along with lessons learned from pilot implementations of GTFS-ride at several Oregon public transit agencies.

Rose Lanes Project – Implementing Enhanced Transit Corridors in Portland

- Jamie Snook, Director of Major Projects, TriMet
- April Bertelsen, Modal Coordinator, Portland Bureau of Transportation

Since 2016, the Portland Bureau of Transportation (PBOT), TriMet and Metro have collaborated to plan, design, and build improvements that help buses move more quickly and efficiently through Portland. The Enhanced Transit Corridors (ETC) Program and subsequent Rose Lanes Project have focused on increasing transit speed and reliability to achieve the region's transportation and equity goals. Working in partnership with PSU and consultants, this presentation will present concepts all three agencies reached consensus on to identify improvements to the most needed corridors. The agencies came together to identify corridors needing most improvement, weight trade-offs, workshop concepts with stakeholders, and leverage funding opportunities. Their goal was to implement bus priority lanes, using experimental red pavement markings, within two years. Today, they are ready to share initial results from the program implementation and from the PSU-led evaluation of red pavement markings used for the priority transit lanes. The presentation will cover the project conception and goals, and then discuss project implementation, design considerations, and progress to date.

Red Pavement Markings: Implementing Enhanced Transit Corridors in Portland

- Nathan McNeil, MURP, Research Associate, Portland State University
  Jamie Jeffrey, PE, Traffic Design Section Manager, Portland Bureau of Transportation

Continuing the discussion from the ***Rose Lanes Project presentation,*** the PSU and PBOT team will discuss the data driven approach used to identify and evaluate corridors, implementation, and user compliance. PSU will describe evaluation efforts designed to assess how well people understand and are complying with the transit lanes, and present preliminary findings from the evaluation. We will have time for questions for all panelists in this session.

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jon.m.lazarus@odot.oregon.gov