

Transportation Data Sharing

Oregon Metro Perspective

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Special thanks to: Kristin Tufte, PSU

v2



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Disclaimers

Metro is just beginning new data strategic plan

Everyone's data & institutional environments are *rapidly* evolving

Federal rules (still TBD) will determine some of Metro's Vision

Metro still has work to do to become a compelling model to emulate





Agenda

The vision

Existing data & systems arrangements

Existing institutional arrangements

Emerging factors

Existing Transportation Data & Systems Arrangements

Metro Uses

- Mobility Corridors Atlas (CMP)
- Crashmap (<https://crashmap.oregonmetro.gov/file/index.html>)
- MetroPulse (in development)
- Regional Snapshots (communications products)
- State of the Centers (land use atlas)
- Model calibration & validation

Sources

- Regional Land Information System (RLIS)
- Regional Travel Demand Model
- Metro and other agency-specific sources
- Portal
- ODOT-supplied INRIX data

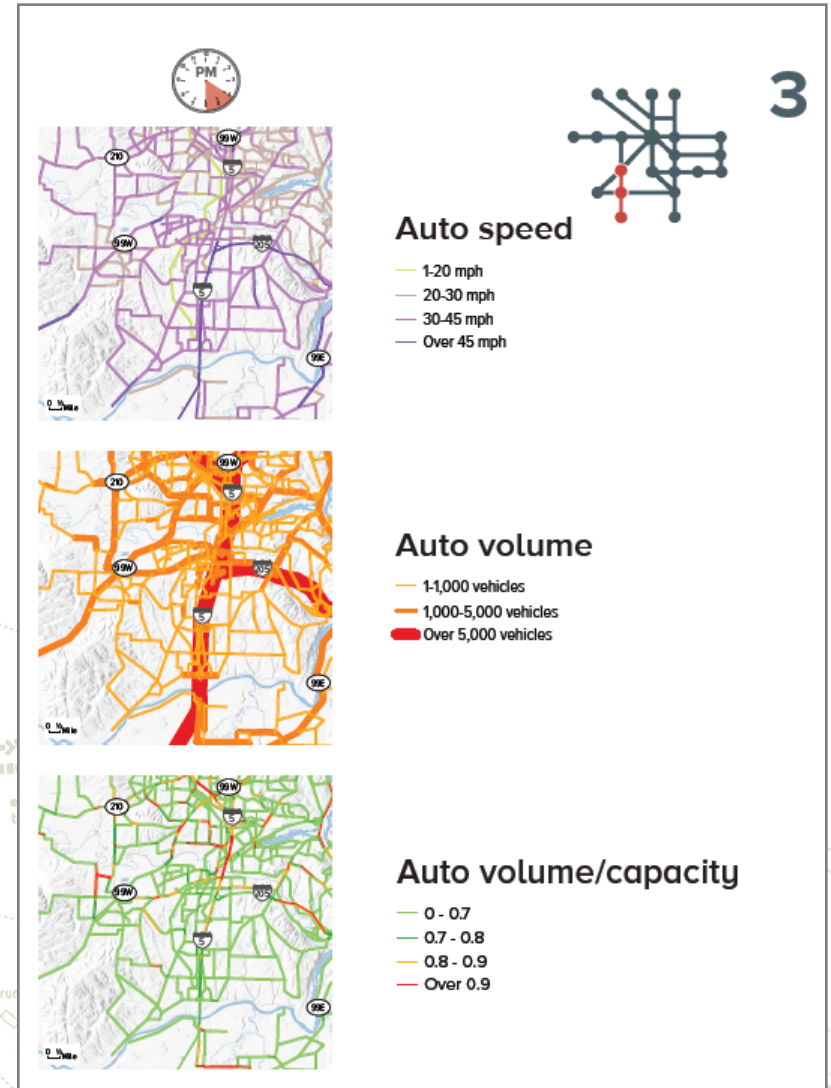


Use Case: CMP

Metro CMP = Mobility Corridor Atlas

Atlas of 25 mobility corridors displays existing conditions

- Transportation facilities
- Land uses, demographics and jobs
- Roadway speeds and volumes
- Transit coverage and volumes
- Truck volumes
- Crashes and fatalities
- Bikeway and sidewalk gaps



www.oregonmetro.gov/mobility-corridors-atlas



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Use Case: CMP

Data Sources

Travel model (evolving to monitoring) =>

TriMet data =>

Census/ACS =>

RLIS =>

- Framework
- Land Use

Internal Metro data (bike counts, etc.) =>

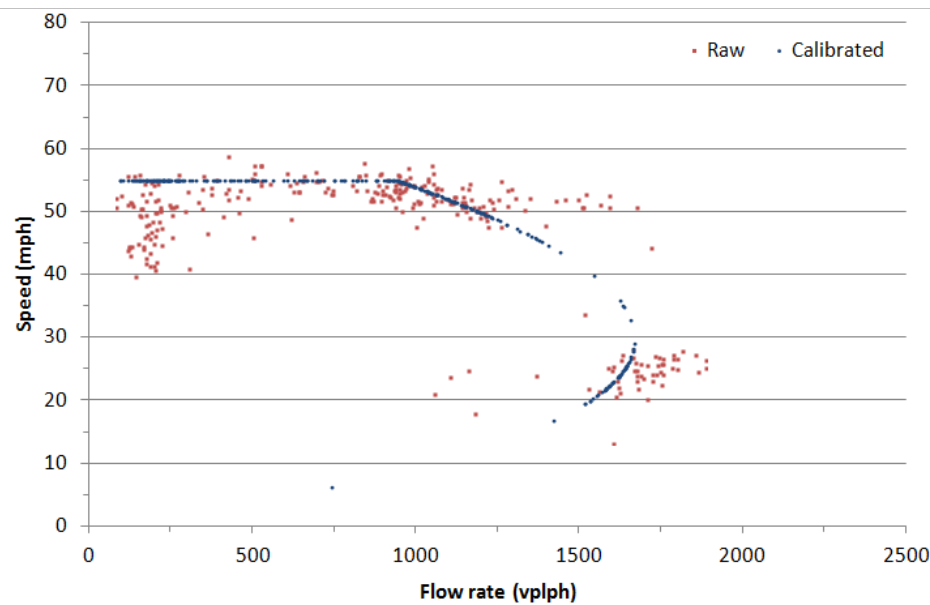
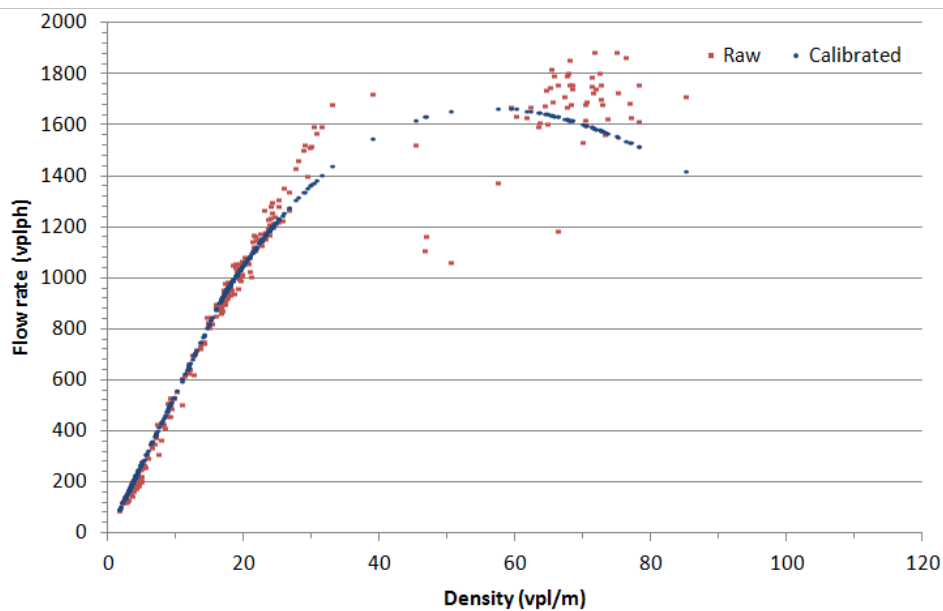
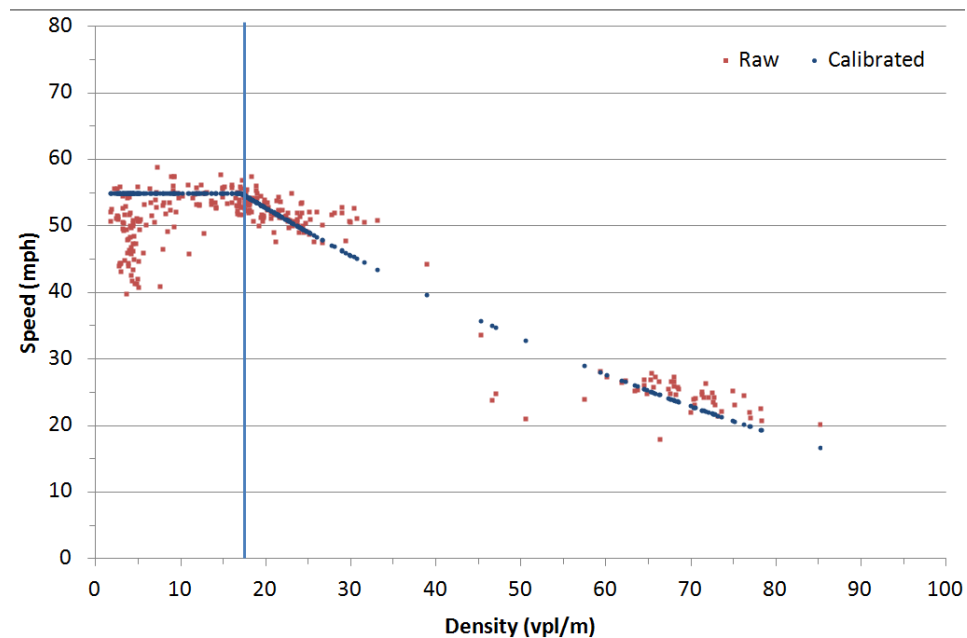


Use Case: DTA calibration

Portal speed/volume data used in model calibration of speed/density relationships

PORTAL StationID 1025
Name I-5 NORTH at Jantzen Beach

		7	v0
1888	Max Q (Flow)	17	kb
58.9	Max V (Speed)	62.0	vf
13.2	Min V (Speed)	180	kj
51.1	Avg V (Speed)	2.51	alpha
122.3	Max K (Density)	2.511926	actual alpha
		0.935	R-square



Use Case: Model & DTA calibration/validation

Data Sources

- Oregon Household Activity Survey =>
- Portal =>
- INRIX =>
- TriMet=>
- Census/ACS =>
- RLIS =>
- Metro & local agency data =>
 - traffic & bike counts
 - model networks



Data Repository: RLIS

Regional Land Information System

RLIS

Application
and tools

Data development,
coordination and distribution

Context
Tool

MetroMap

RLIS Live

RLIS
Discovery

Enterprise
Data

Regional
Photo
Consortium

<http://www.oregonmetro.gov/rlis-live>



RLIS Business Model

Geometric data:

- Cities, counties, districts provide data
- Metro aggregates & standardizes
- Metro funds 8/9 of costs, subscriptions 1/9 (about to change)

Imagery (orthophotos, LiDAR):

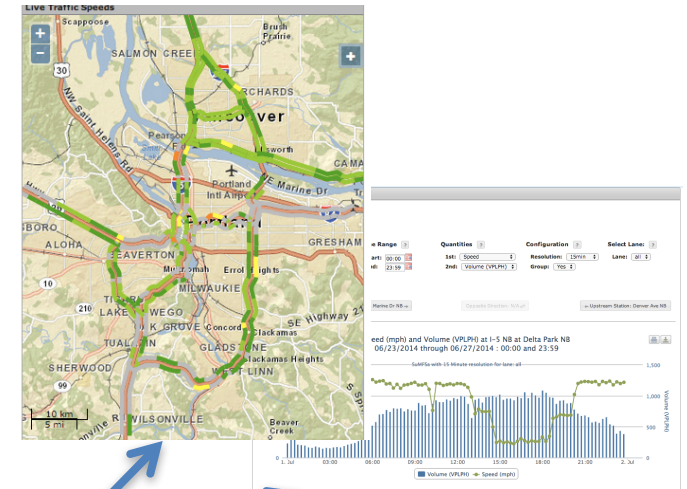
- Metro facilitates consortium & cost-sharing (Metro buys one region-wide “share”)

Host: Metro

<http://www.oregonmetro.gov/rlis-live>

Data repository: Portal *(courtesy Kristin Tufte)*

- Portland-Vancouver Transportation Data Archive
 - Policy of Open Data
 - Publicly-funded (Thanks to NSF, FHWA, Metro, RTC, TREC)
 - Focus on open-source software
 - ~3 TB PostgreSQL Database



Speed, Count, Travel Time,
Weigh-in-Motion,
Variable Speed

Freeway
ODOT, WSDOT,
Lane County



Travel Time, Traffic
Signal, Bicycle Count,
Pedestrian Push-Button

Arterial

City of Portland, Clark County,
Clackamas County,
*Washington County, Gresham,
Tigard, Beaverton, Vancouver*



Ons, Offs,
On-Time Performance

Transit
TriMet
C-TRAN



Other
Weather,
Weigh-in-
Motion





Portal Business Model

Governance: TransPort (Regional ITS working group)

Current funding:

- Metro regional TIP \$

- RTC (Vancouver, WA, MPO)

- PSU TREC-Transportation Research and Education Center

Host: Portland State University TREC

Data contributors: ODOT, TriMet, some but not all local agencies

Note: Metro is still assessing its ROI on Portal

<http://portal.its.pdx.edu/home>

Existing Institutional Arrangements

Metro (Planning & Development and Research Center)

ODOT

PSU

Local Jurisdictions

WSDOT

SWRTC



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Transportation Data Contributors by Repository

- PORTAL (Current / Historical)
 - ODOT + WSDOT + TriMet + Local
- INRIX (soon to be Here)
 - ODOT purchases
- Metro count data (vehicle + bike)
 - ODOT (via Portal) + Local + Metro
- Crash Data
 - ODOT + Local
- RLIS
 - Local + Metro

Decision-Making Venues

- ODOT departments & committees (e.g. Oregon Model Steering Committee)
- Metro units
 - Planning & Development
 - Research Center
 - Council
- Local agency venues
 - TransPort (Regional ITS partners)
 - RLIS partner agencies
- PSU TREC



Emerging Factors

Federal rule-making

Federal resources evolution (HPMS, TMAS, NPMRDS)

State resources evolution (permanent instrumentation, INRIX/Here data)

CV/AV evolution

Metro strategic repositioning in light of all above

MetroPulse – One-stop monitoring shopping





Metro Strategic Questions

- What data will Metro actually need?
- What governance model will best serve Metro and our partners?
- What technical and business process architectures will maximize utility and minimize cost?
- How will Metro fund its share?
- What is Metro's ROI for Portal, RLIS, and other current systems?
- What would be the optimal collective business model?

Questions?

Jeff Frkonja, Metro Research Center Director

{reserve slides follow}



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Portal Funding and Governance *(courtesy Kristin Tufte)*

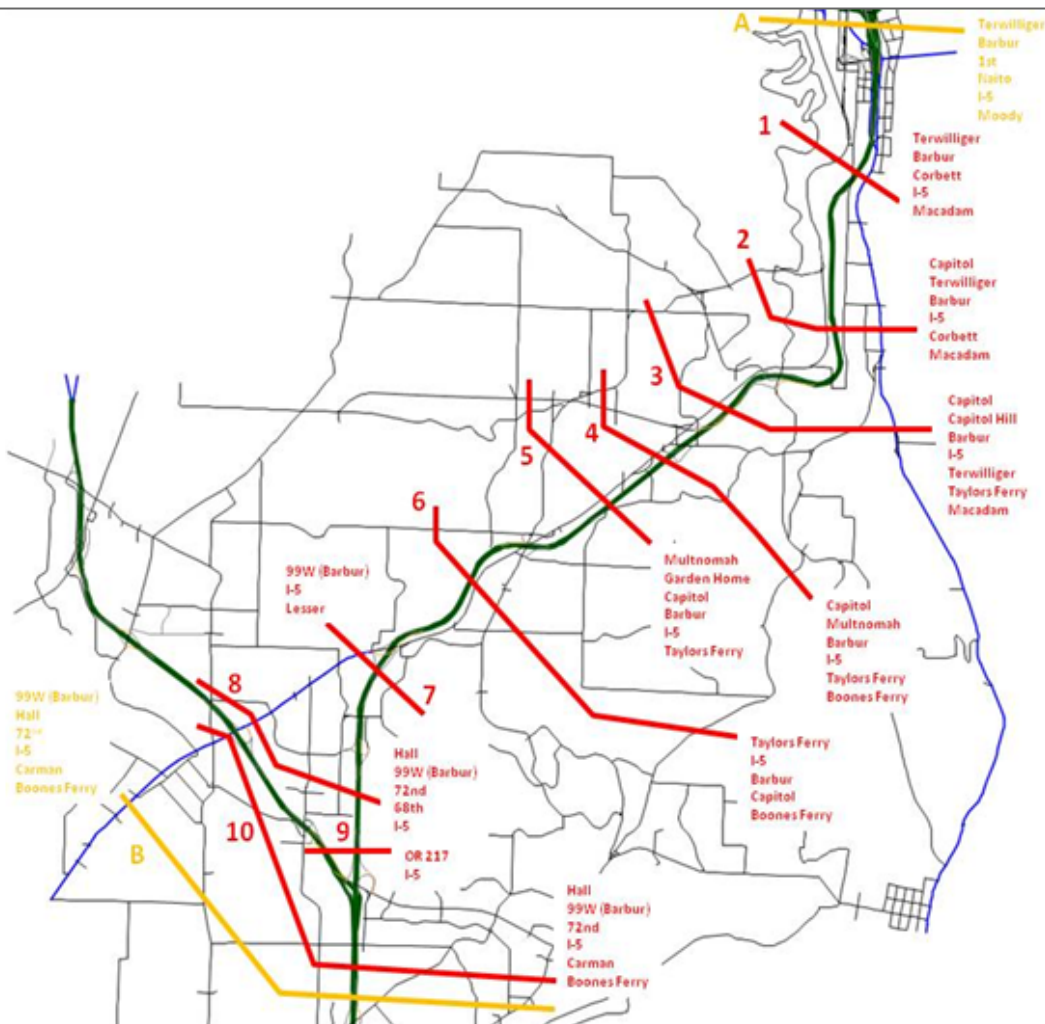
Ongoing funding support from:

- Metro (Portland, OR)
- RTC - Regional Transportation Council (Vancouver, WA)
- TREC-Transportation Research and Education Center (PSU)

Governance

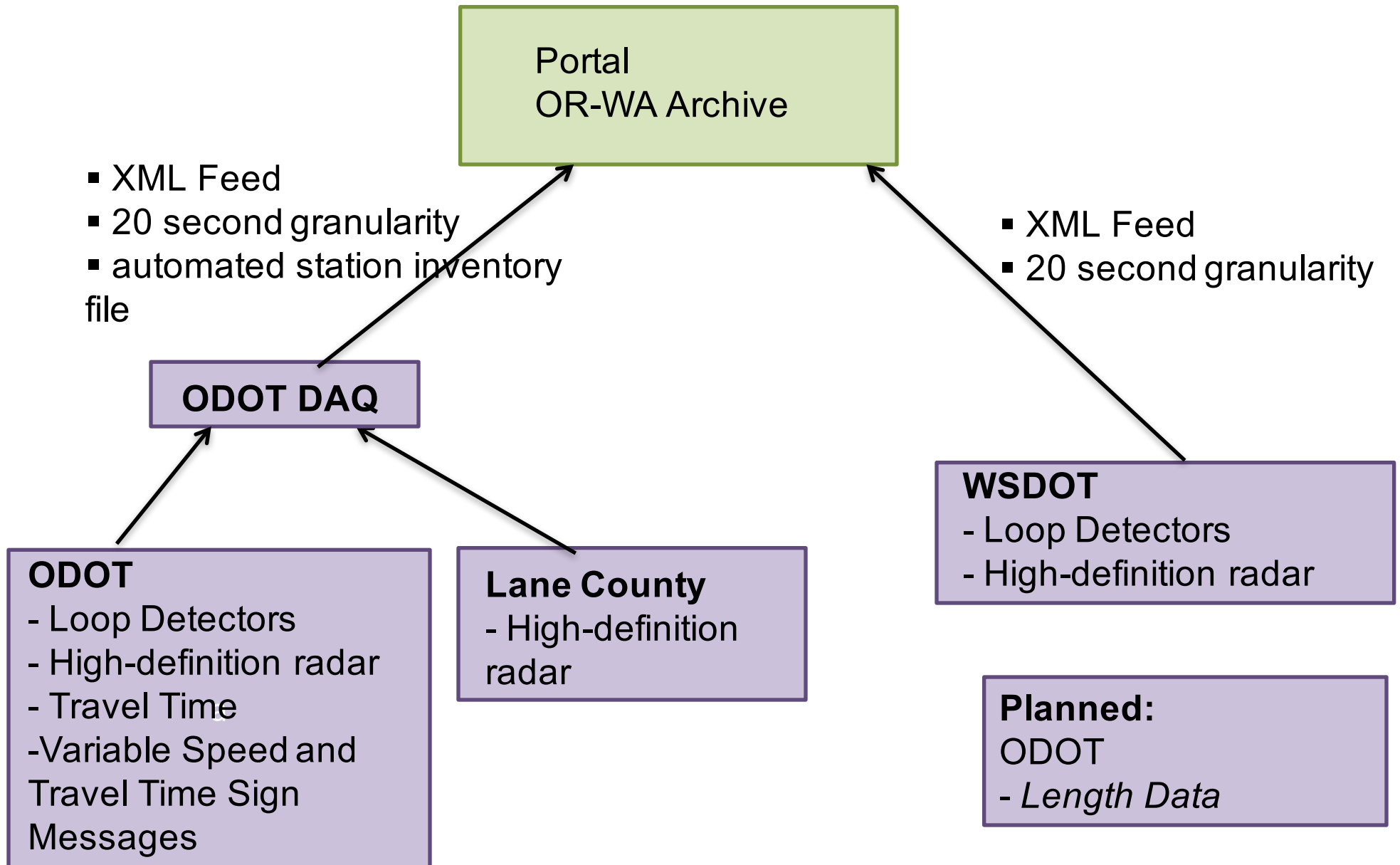
- TransPort (Portland, OR)
 - Regional system management committee
 - Metro, ODOT, City of Portland, TriMet, Wash. Co.
- VAST – Vancouver Area Smart Trek (Vancouver, WA)
 - ITS, TSMO
 - RTC, WSDOT, Clark County, C-TRAN, City of Vancouver
- Portal Technical Advisory Committee

Count data used in model validation of cutline-level volumes

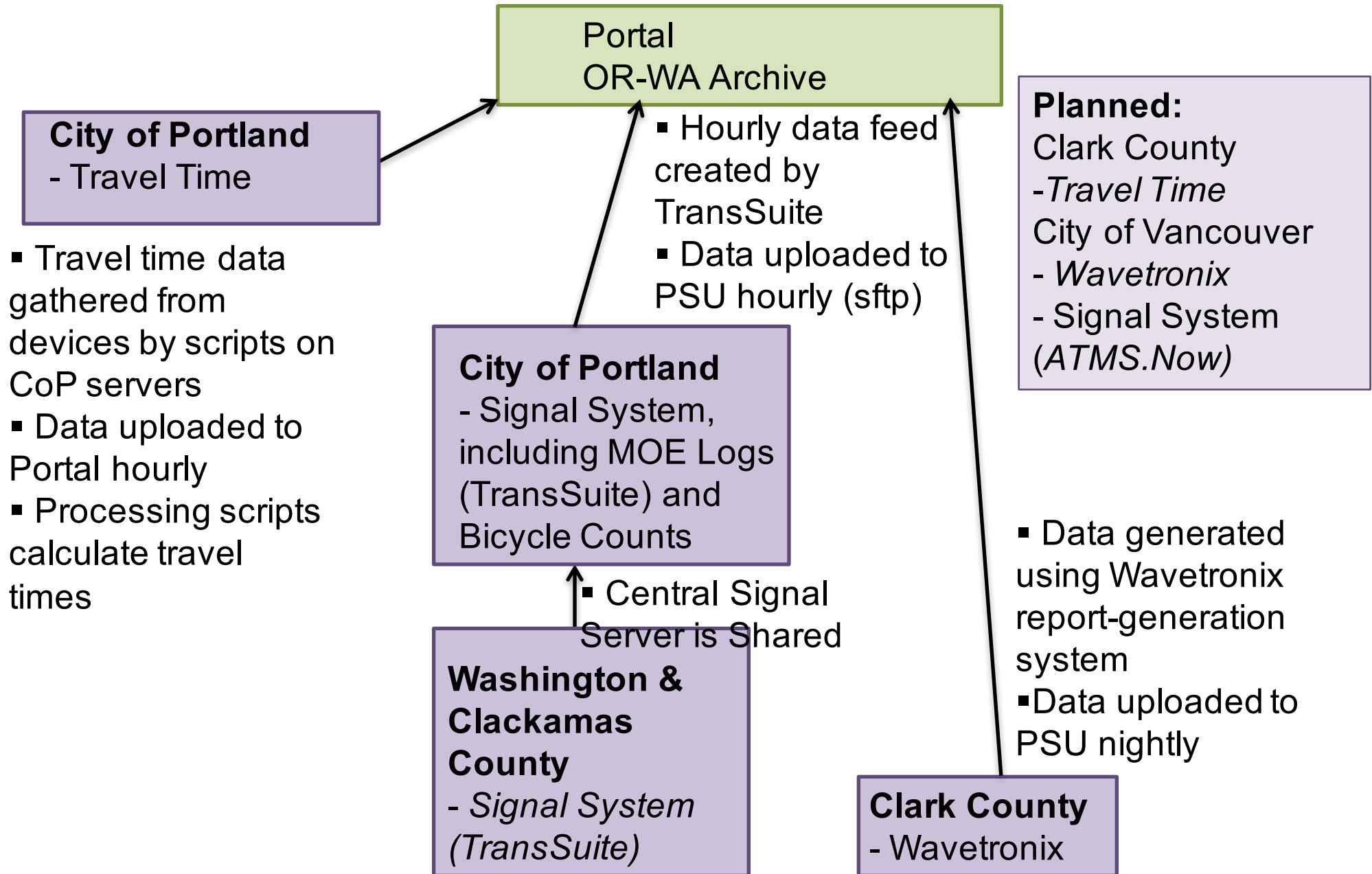


S/W 2010 PM vs. Transposed PM				
	2010	2010	Difference	%
	2010 PM	TransPM	(TransPM - PM)	Difference
Cutline A				
Terwilliger	5125	6924	1799	35%
1st	304	592	288	95%
Naito	7629	4186	(3443)	-45%
Barbur	1166	1373	207	18%
I-5	16645	18182	1537	9%
Moody	1036	749	(287)	-28%
Total	31905	32006	102	0%
Cutline 1				
Terwilliger	5761	3504	(2257)	-39%
Barbur	7183	4719	(2465)	-34%
Corbett	530	344	(186)	-35%
I-5	27540	26916	(623)	-2%
Macadam	6482	5492	(990)	-15%
Total	47496	40975	-6521	-14%
Cutline 2				
Capitol	5394	3842	(1552)	-29%
Terwilliger	2317	1621	(696)	-30%
Barbur	3129	1362	(1767)	-56%
I-5	27539	26916	(623)	-2%
Corbett	776	951	175	23%
Macadam	6114	4119	(1995)	-33%
Total	45271	38813	-6458	-14%
Cutline 3				
Capitol	1657	1134	(523)	-32%
Capitol Hill	943	1361	418	44%
Barbur	3314	2265	(1049)	-32%
I-5	26564	25437	(1127)	-4%
Terwilliger	3094	2494	(600)	-19%
Taylor's Ferry	4504	3984	(519)	-12%
Macadam	8218	6244	(1974)	-24%
Total	45694	40424	-5270	-12%

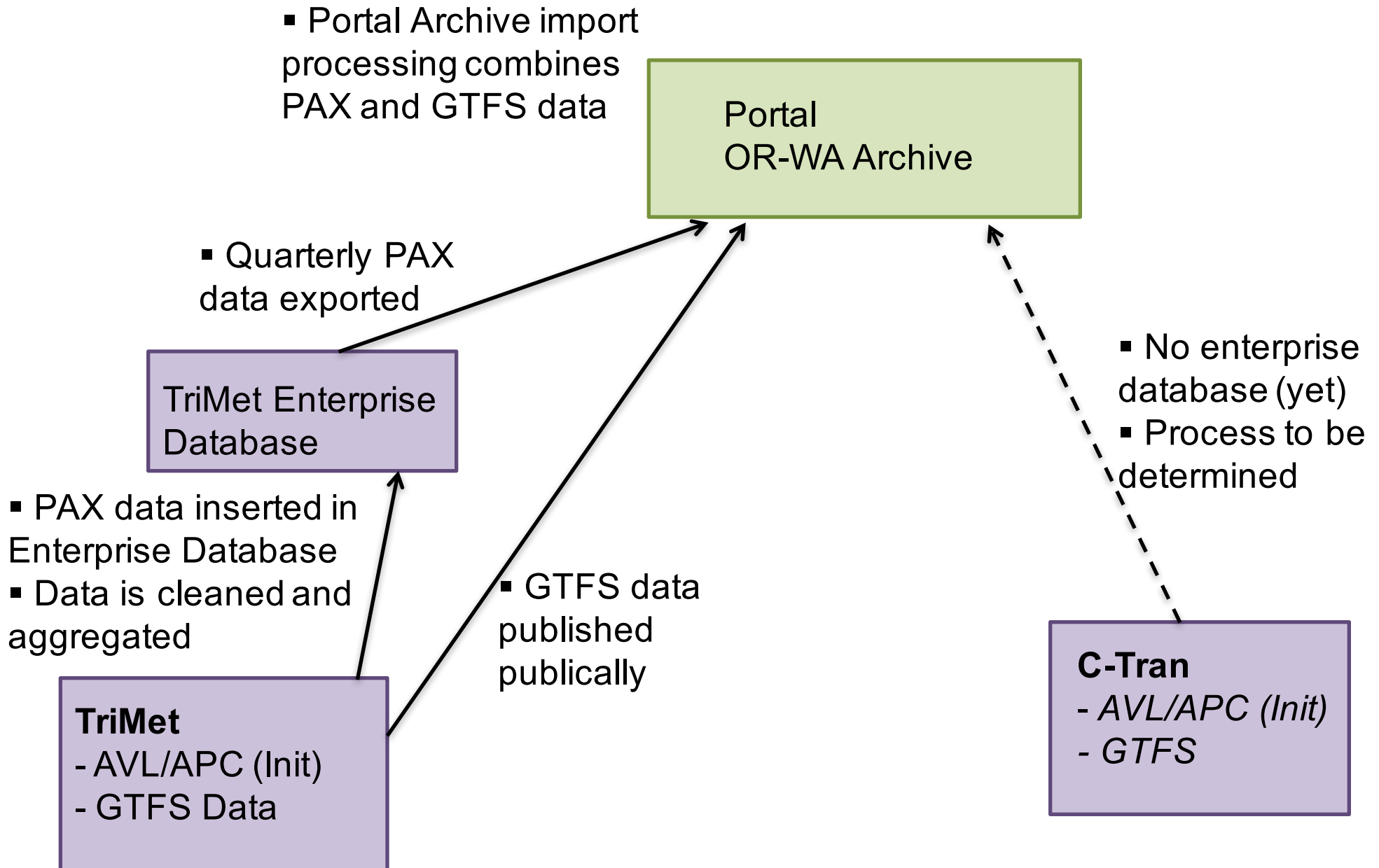
DOT Data Sources (Freeway)



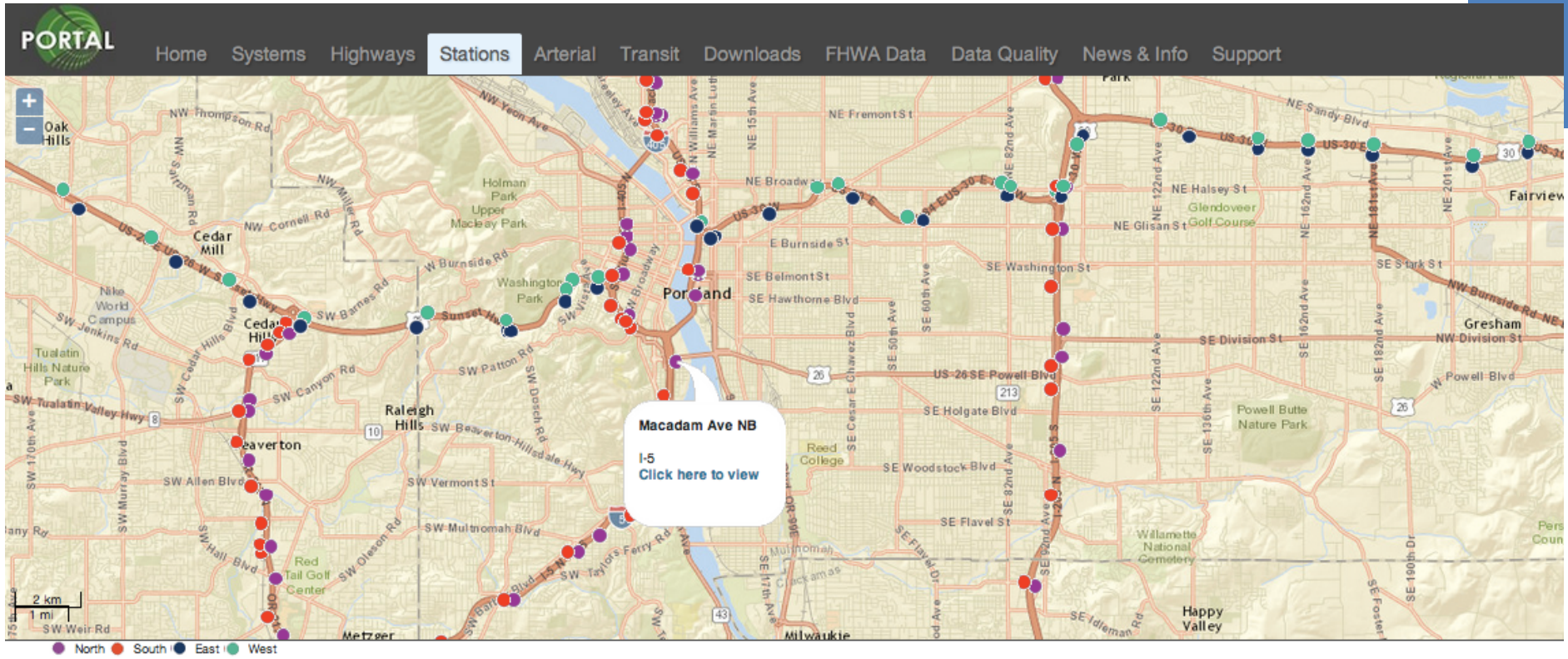
Arterial Data Sources



Transit Data Sources



Portal: Freeways



[Portland State University | Maseeh CECS | ITS Lab | Oregon DOT | Federal Highway Administration | National Science Foundation]

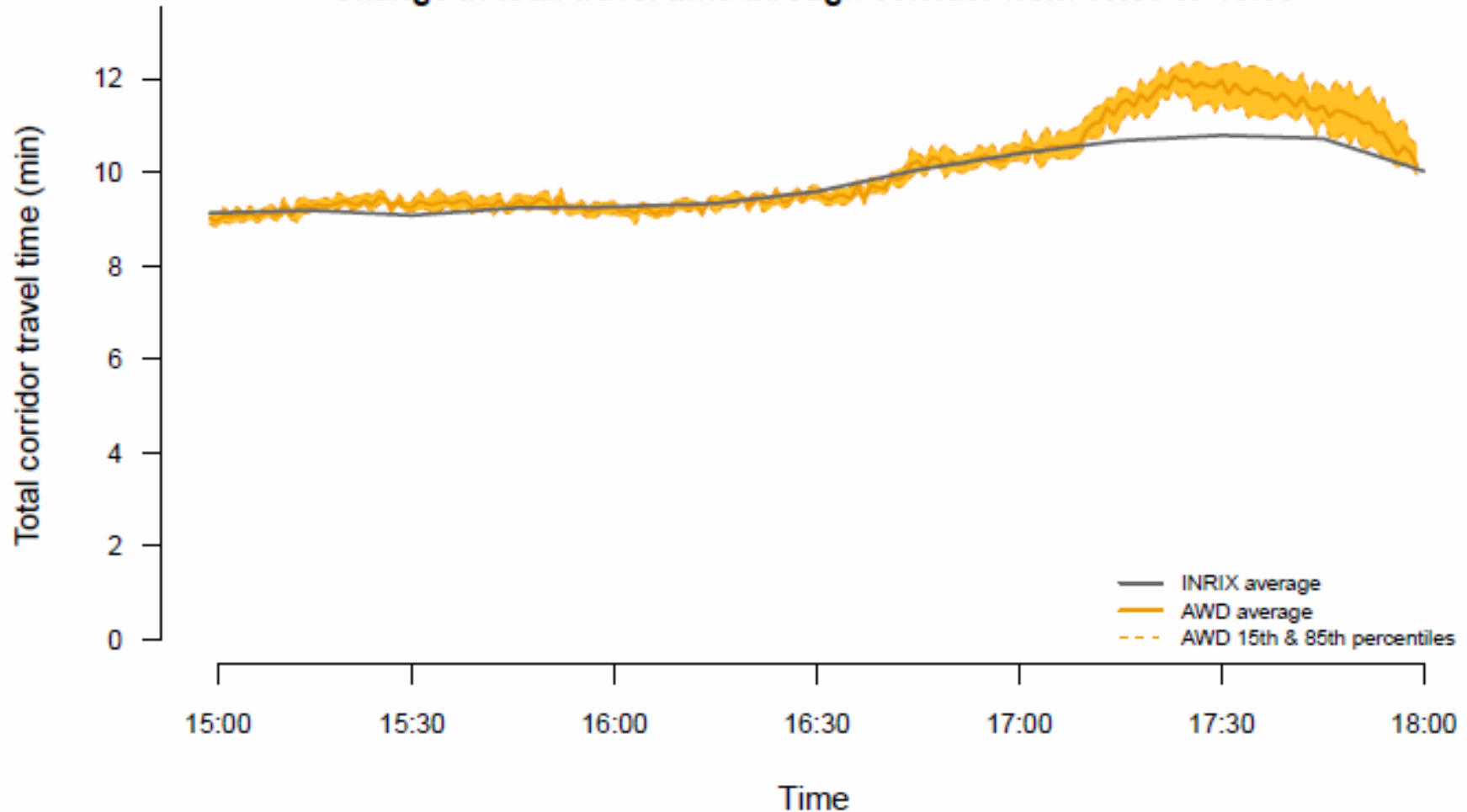
This material is based upon work supported by the National Science Foundation under Grant No. 0236567, the Oregon Department of Transportation, the Oregon Transportation Research and Education Consortium, the Southwest Washington Regional Transportation Council, the Federal Highway Administration and by grants distributed through Metro. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the funding organizations.

Corridor diurnal travel times – Arterial
Comparison of INRIX data and DynusT dynamic traffic assignment model results

North SW Barbur Blvd SB : SW Sheridan St and SW Capitol Hwy

Corridor travel profiles for one month of Average Weekdays (20 days)

Change in total travel time through corridor from 15:00 to 18:00



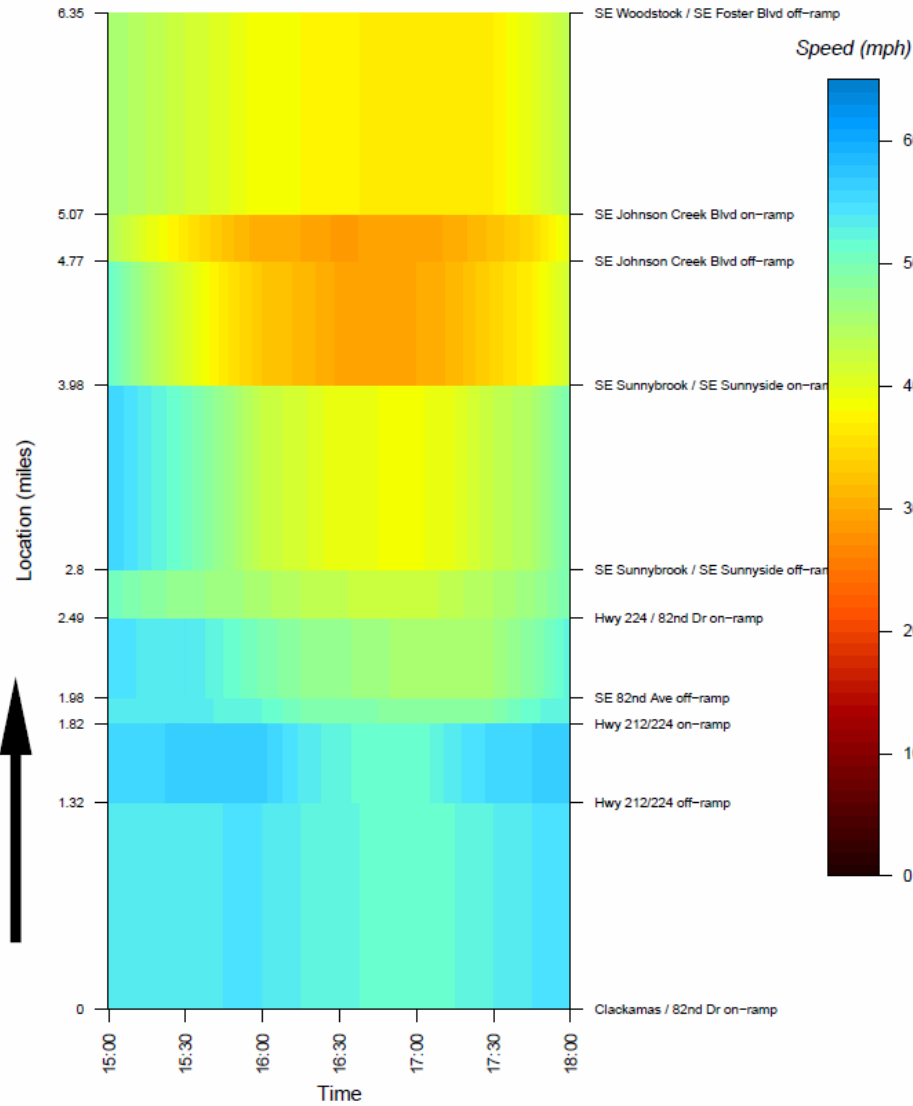
DynusT corridor: 4.91 mi INRIX corridor: 4.93 mi

Space-Time-Speed diagrams – Arterial

Comparison of INRIX data and DynusT dynamic traffic assignment model results

INRIX

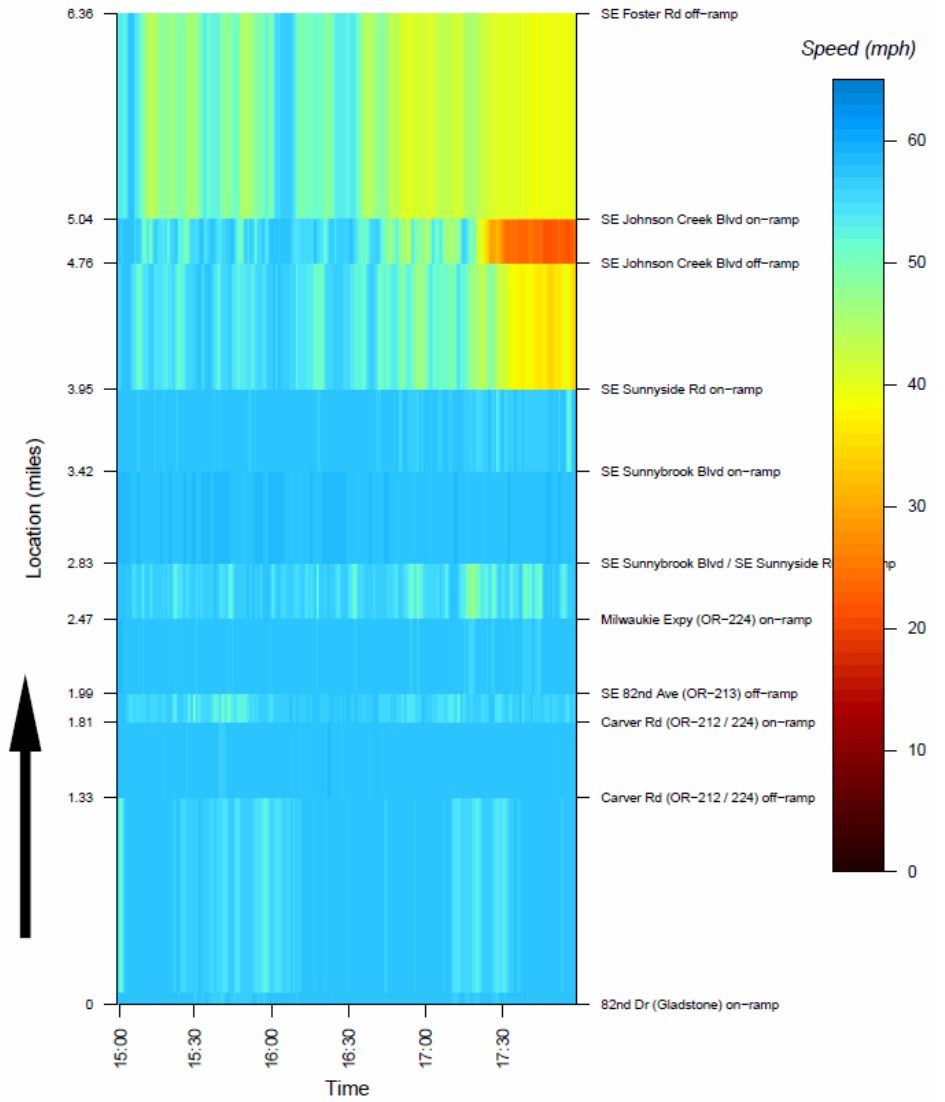
I-205 NB : Clackamas / 82nd Dr and SE Woodstock / Foster Blvd
 Space-time diagram of speeds between 15:00 to 18:00



Max speed : 56.7 mph Min speed : 28.7 mph
 Source: INRIX – Average of Tues, Wed, Thurs in 2010

DYNUST

I-205 NB : Clackamas / 82nd Dr and SE Woodstock / Foster Blvd
 Space-time diagram of speed from 15:00 to 18:00



Max speed : 58 mph Min speed : 46.6 mph