

# Regional Origin Destination and Urban Freeway Corridor Operations Studies: Update

*June 4, 2019*

# Overview



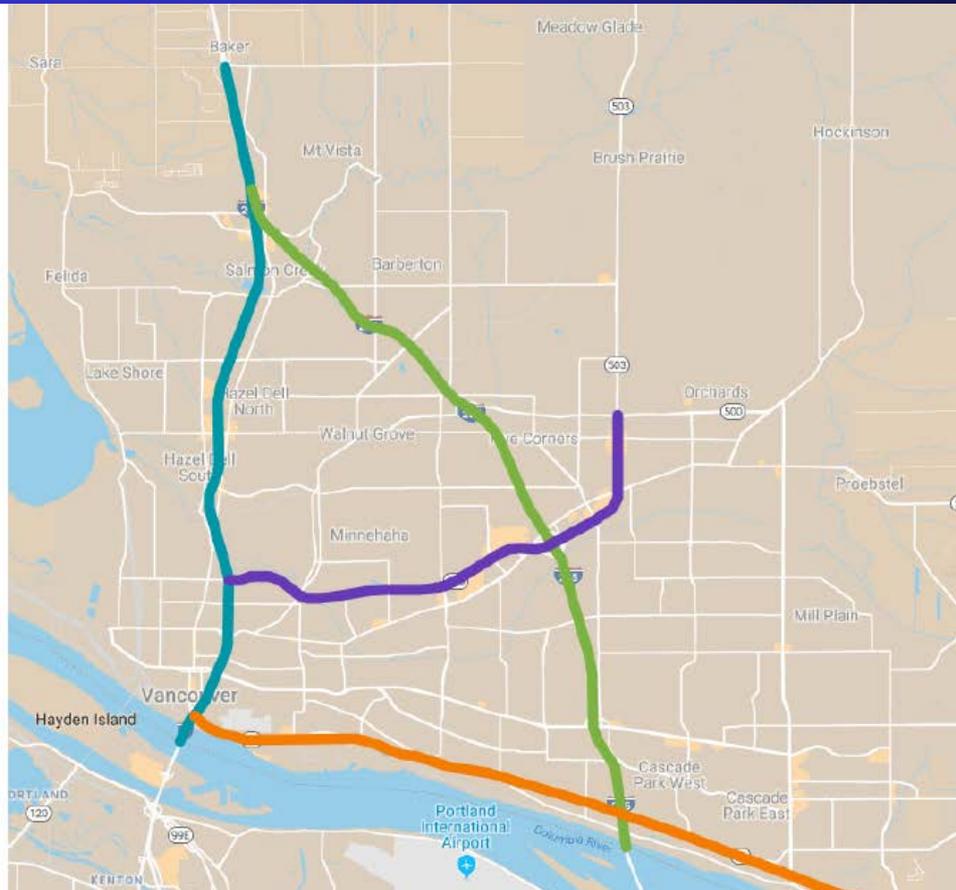
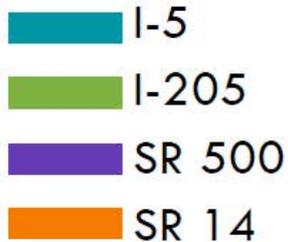
- ◆ Active traffic management and low cost capital improvements can defer the need for major capital projects and supplement them by improving system efficiency and reliability
- ◆ UFCO Study is analyzing existing freeway operational needs; it will identify near term strategies to address them and evaluate their effectiveness
- ◆ ROD Study supports the operational analysis by providing an understanding of access to and from the freeways and supplements other traffic data collected for the UFCO Study

# UFCO Study Area



## UFCO STUDY AREA

- Urban freeway corridors in SW Washington



# Current Status

- ◆ Origin destination data options were analyzed. Moonshadow, a 'big data' provider was selected
- ◆ Existing conditions analysis completed
- ◆ Includes data on roadway geometrics, speeds, hours of congestion, and collision density

# UFCO Workshop

- ◆ Planners and traffic engineers from WSDOT, Clark County, Vancouver, and RTC
- ◆ A 'toolbox' of operational strategies has been developed that can smooth traffic flow, improve safety, and manage congestion
- ◆ Workshop attendees identified a set of promising operational and low cost improvements for the study corridors

# Operational Projects/Strategies Toolbox

Operational Projects/Strategies Toolbox	
<i>Active Traffic Management (ATM)</i>	
Adaptive Ramp Metering	Allows vehicles to merge smoothly onto the mainline. Eliminates vehicle platooning and reduces merging conflicts from on-ramp. Metering rate changes based on current traffic conditions.
Queue Warning Systems	Notifies motorists of upstream congestion, incidents, or closures.
Variable Speed	Recommended freeway speed changes based on real time traffic, road and weather conditions.
Traveler Information	Web based or roadside real-time information on travel time, incidents, closures or other transportation related events.
Off Ramp Queue Management	Flushes off-ramp when needed to prevent queueing onto the freeway mainline.
Integration of Freeway and Arterial Systems	Integrated real-time management of the freeway with parallel arterials to improve reliability and reduce congestion. Effective during freeway incidents to reroute traffic and change signal timing to manage traffic flow.
<i>Operational Changes</i>	
Restriping Roads, Lanes or Ramps	Maximizes efficiency and capacity; reduces vehicle conflicts.
Part-Time Shoulder Use (PTSU)	Provides extra capacity during peak congestion.
Static Signing and Marking	Ensures motorists are aware of downstream roadway features, conditions or slow areas.
Lane Assignment	Redirects traffic to balance lanes or to avoid congested or closed lanes. Can be dynamic or static.

# Operational Projects/Strategies Toolbox (continued)



<i>Lower Cost Capital Projects</i>	
Merge and Diverge Extension	Extended sections provide more distance for vehicles entering or exiting the freeway reducing turbulence, merging and concentration of weaving traffic.
Auxiliary Lanes or Extensions	Constructed between on and off ramps; provides more room to speed up or slow down preventing bottlenecks caused by weaving.
Recovery Lanes	Provides additional length for vehicles to weave or merge beyond an exit only lane.
Widening On and Off Ramps	Improves ramp capacity and storage; limits queueing onto the freeway mainline and arterial facilities.
Sight Distance Improvements	Geometric modifications to ensure that motorists have sufficient length along the highway to avoid collisions with other vehicles and objects that conflict with their path.

# I-205 Corridor Southbound:

## PEAK HOUR HCS V/C RATIO

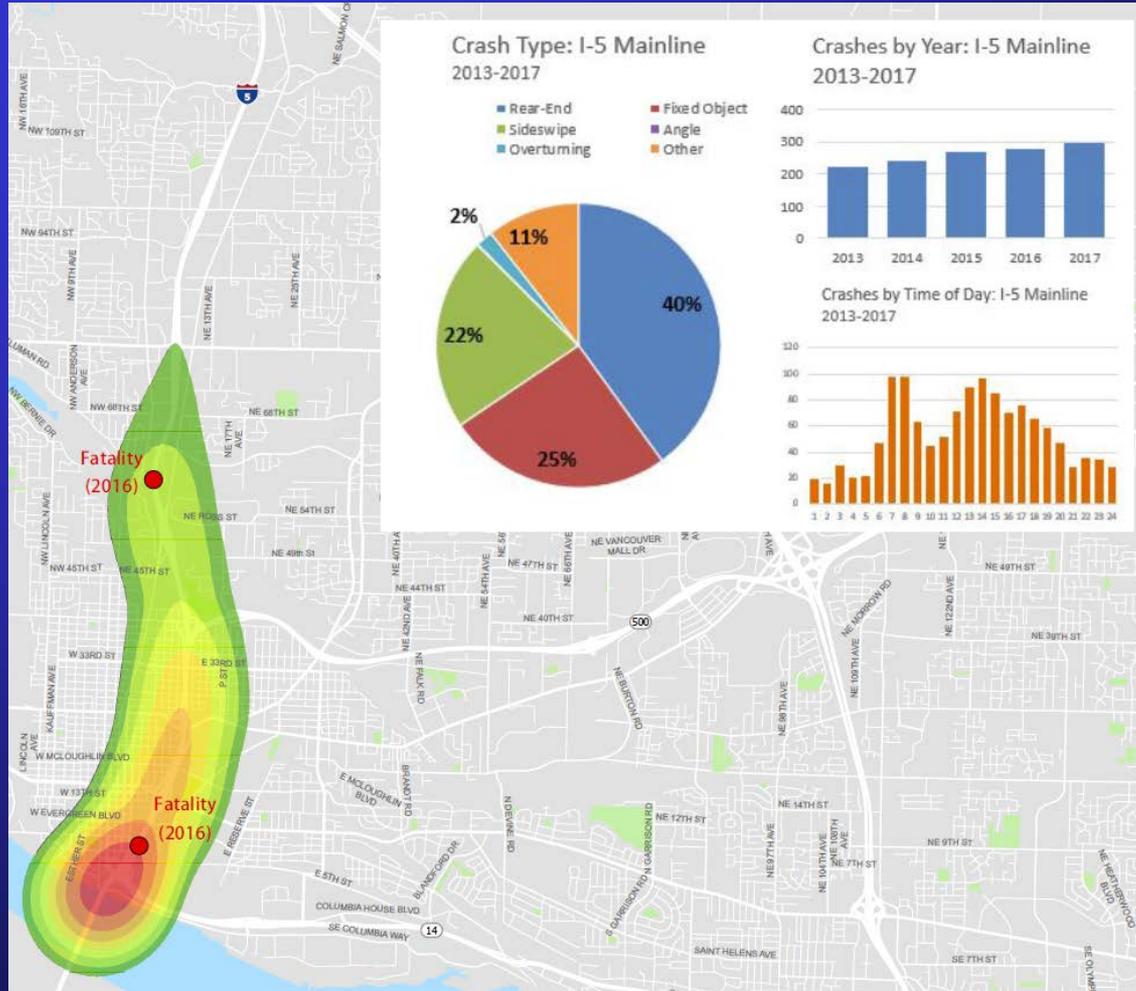
I-205 SOUTHBOUND MAINLINE

DRAFT

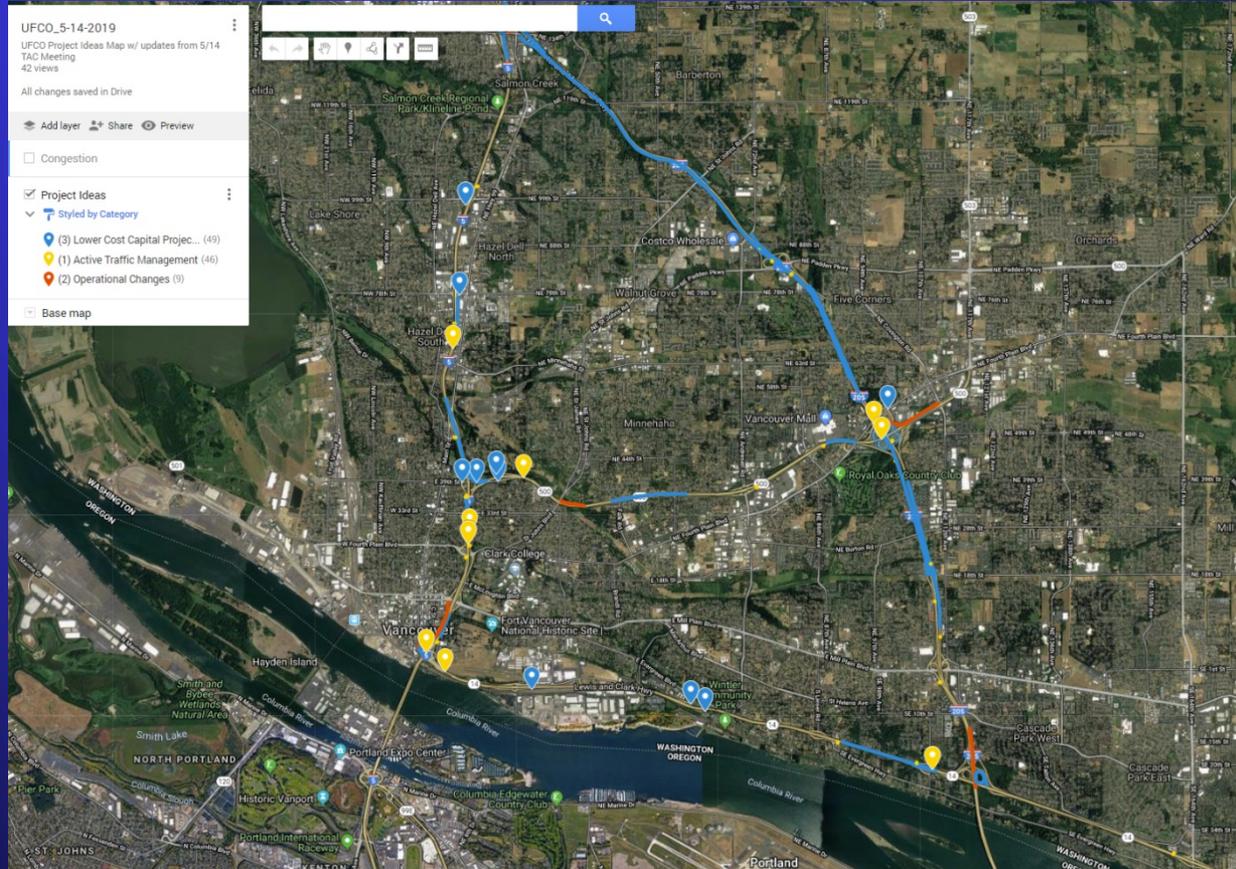


Direction of Travel	AM Peak		PM Peak		
	2018 Existing	2035 Forecast	2018 Existing	2035 Forecast	
	0.66	0.68	0.79	0.98	
0.66	0.68	0.79	0.98		
0.53	0.60	0.67	0.82	134th Street	
0.84	0.84	1.03	1.27		
0.84	0.84	1.03	1.27		
0.84	0.84	1.03	1.27		
0.65	0.69	0.82	0.99		
0.81	0.94	0.90	1.14		
0.81	0.94	0.90	1.14	Paden Parkway	
1.08	1.24	1.11	1.43		
1.08	1.24	1.11	1.43		
1.12	1.20	1.16	1.50		
0.85	1.03	0.83	1.08	SR 500	
0.96	0.69	0.55	0.70		
0.85	1.03	0.90	1.13		
0.64	0.78	0.68	0.85		
0.64	0.78	0.68	0.85		
0.65	0.88	0.70	0.88		
0.81	1.11	0.78	0.99		
0.81	1.11	0.78	0.99	Mill Plain / 18th	
0.61	0.83	0.59	0.74		
0.78	1.01	0.73	0.91		
0.78	1.01	0.73	0.91		
0.89	1.14	0.70	0.75	SR14	
0.67	0.86	0.63	0.96		
1.00	1.21	0.81	0.91		

# Crash Density: I-5



# UFCO Workshop: Improvement Ideas

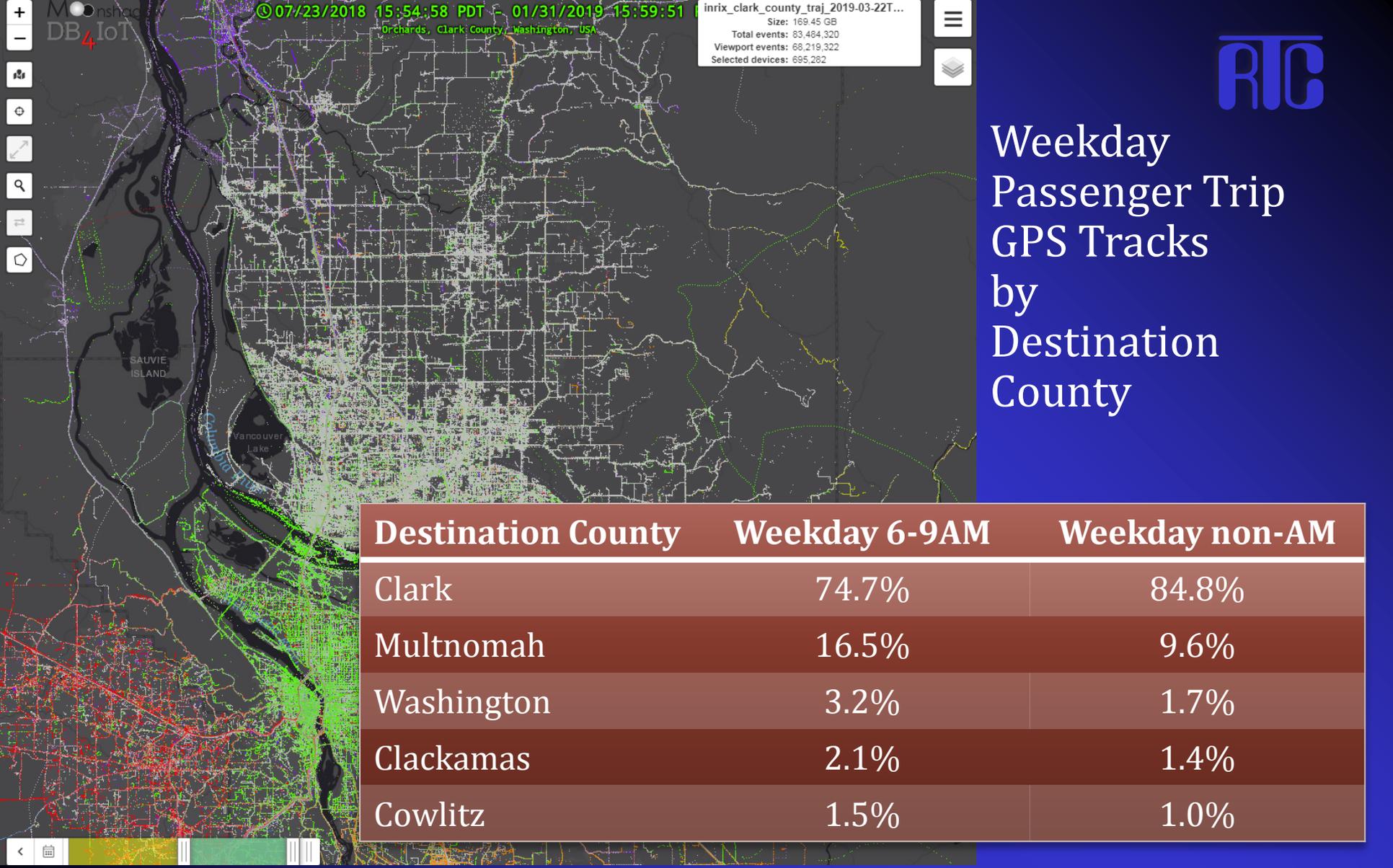


# UFCO: Next Steps

- ◆ Review and confirm workshop ideas.
- ◆ Initial set of strategies identified at the workshop will undergo detailed analysis and evaluation to determine impacts, benefits, costs, and implementation timeline.
- ◆ Based on the assessment, the UFCO TAC will work to develop a set of draft projects/strategies to be recommended for the study.

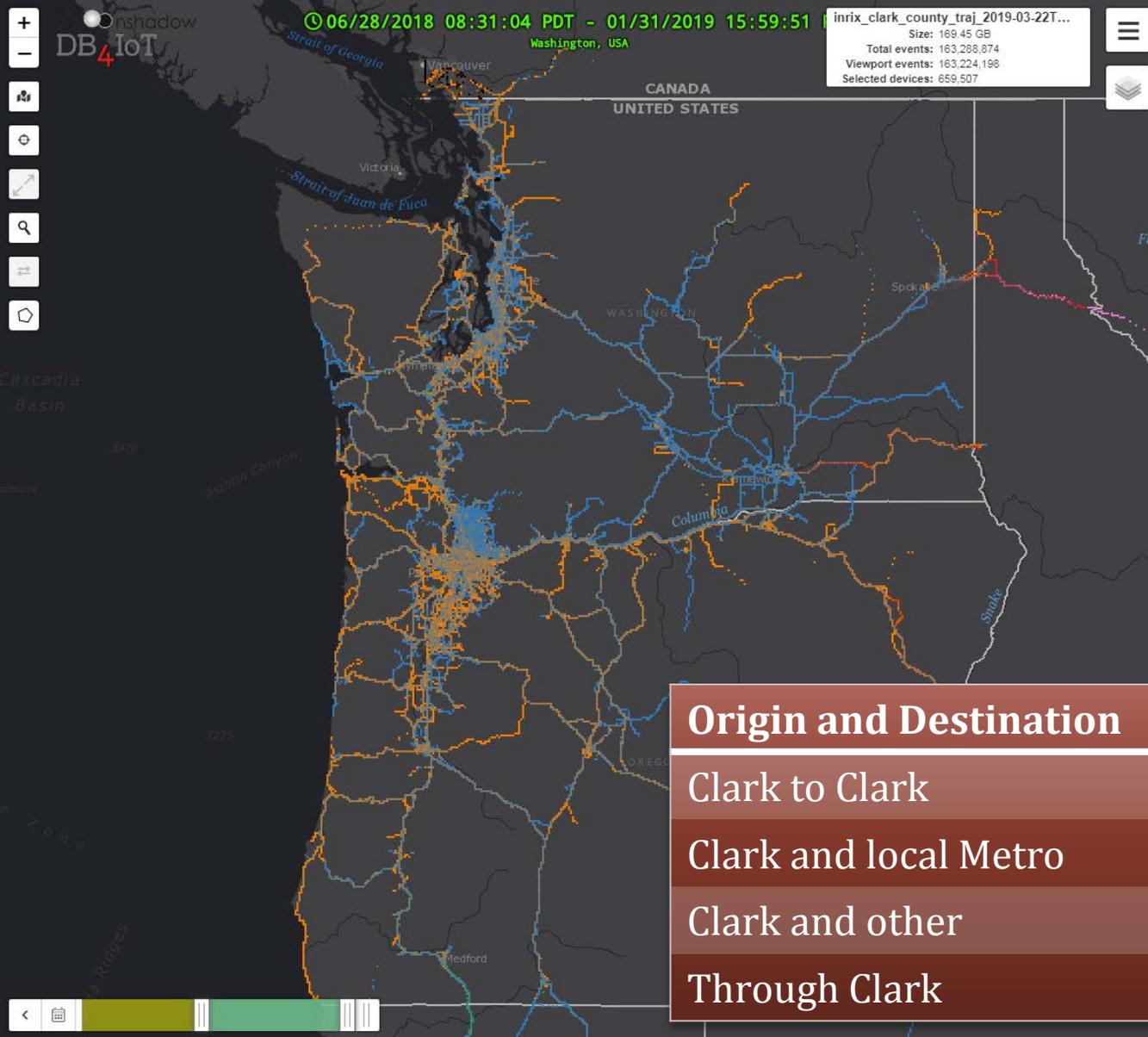
# Origin Destination Study & Data

- ◆ Moonshadow Mobile's - DB4IoT
  - ◆ Web-based data analysis tool
  - ◆ Anonymous GPS data from INRIX
  - ◆ 13 months
  - ◆ 5 million trips - trips beginning, ending or through Clark County
  - ◆ 1 billion way points
  - ◆ Passenger vehicles and freight trucks



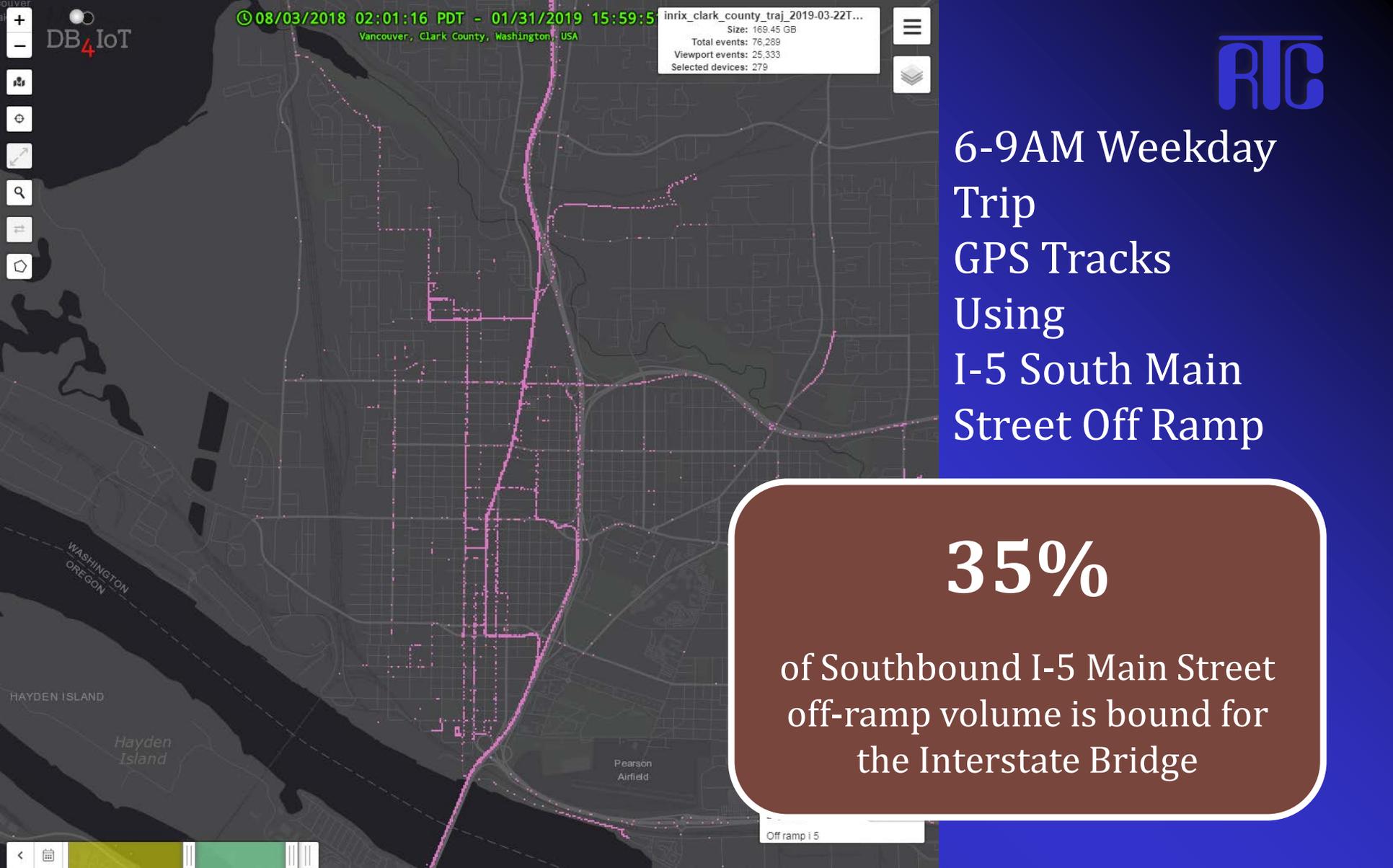
# Weekday Passenger Trip GPS Tracks by Destination County

Destination County	Weekday 6-9AM	Weekday non-AM
Clark	74.7%	84.8%
Multnomah	16.5%	9.6%
Washington	3.2%	1.7%
Clackamas	2.1%	1.4%
Cowlitz	1.5%	1.0%



# Weekday Heavy Truck Trip GPS Tracks by Destination State

Origin and Destination	% of Heavy Truck Trips
Clark to Clark	17.9%
Clark and local Metro	25.3%
Clark and other	10.9%
Through Clark	45.9%



6-9AM Weekday  
Trip  
GPS Tracks  
Using  
I-5 South Main  
Street Off Ramp

**35%**  
of Southbound I-5 Main Street  
off-ramp volume is bound for  
the Interstate Bridge

Off ramp i 5

# ROD: Next Steps

- ◆ Continue support of the UFCO Study
- ◆ Final Regional Origin/Destination Report
- ◆ Support RTC members with OD analysis for local planning, studies and projects