

RITIS Causes of Congestion - Identifying & Quantifying the Causes of Congestion for the Heartland

➤ Data-driven mobility insights from the CATT Lab

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Today's Topics

- Motivation & Objectives
- Data & Methodology
- Use Cases, Results and Demo
- New Release – Causes of Congestion Graphs (for corridor analysis)

Web App Link

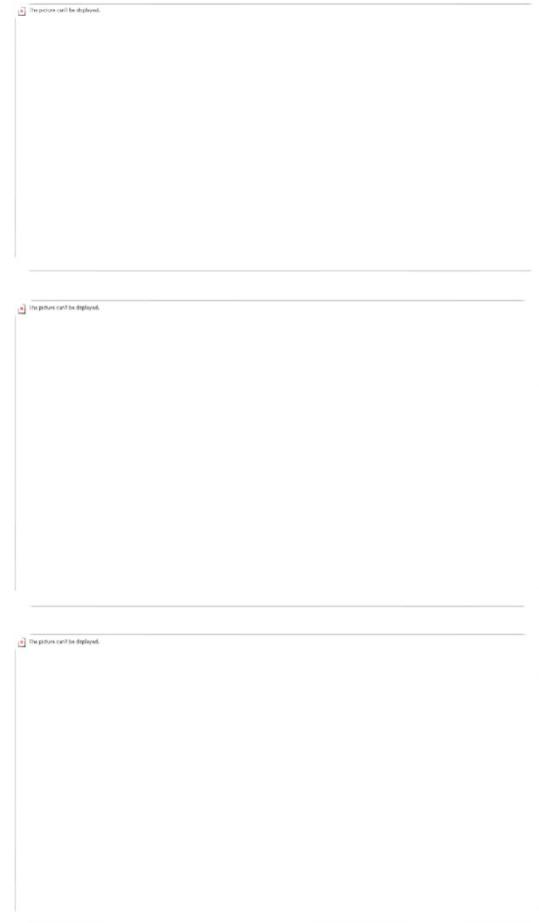
- National, State and County App:
<https://go.umd.edu/congestion>



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cattlab.umd.edu	<input type="checkbox"/>

CATT Lab (Who we are)

- The CATT Lab operates the world's largest mobility-driven data archive and analytics platform
- We are the industry leader of applied big-data analytics for transportation applications (operations, planning & research)
 - Mobility big data analytics
 - Information/data visualization
 - Mobility research
 - Data science
 - Performance management

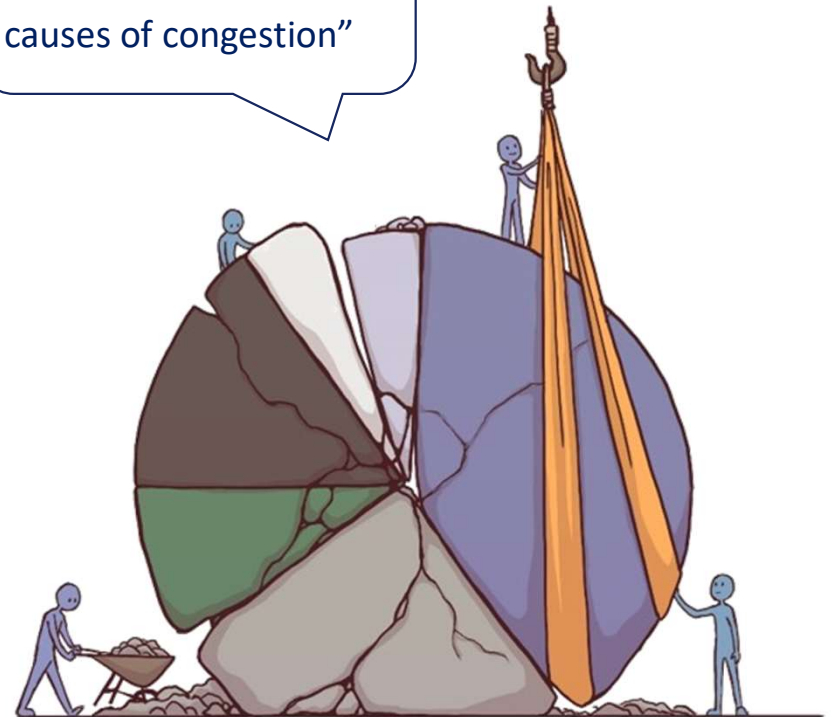




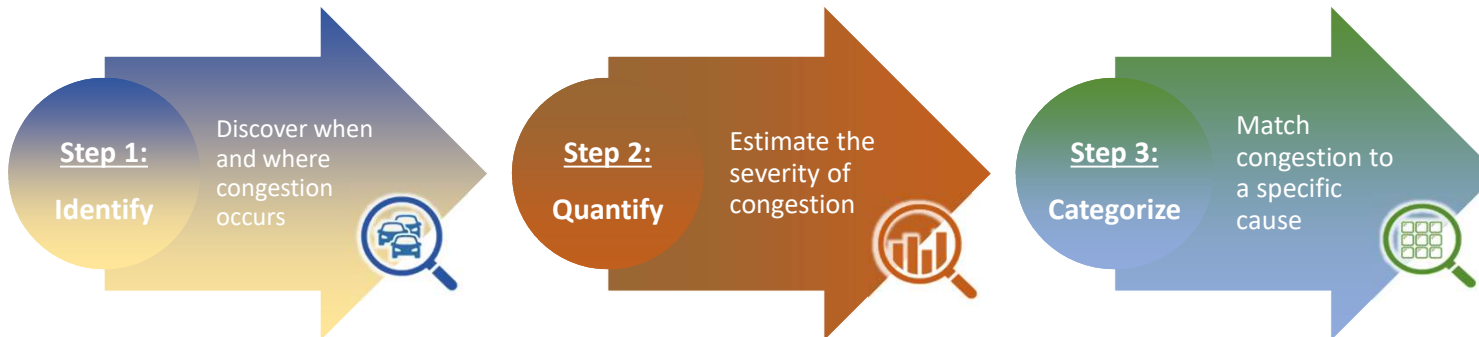
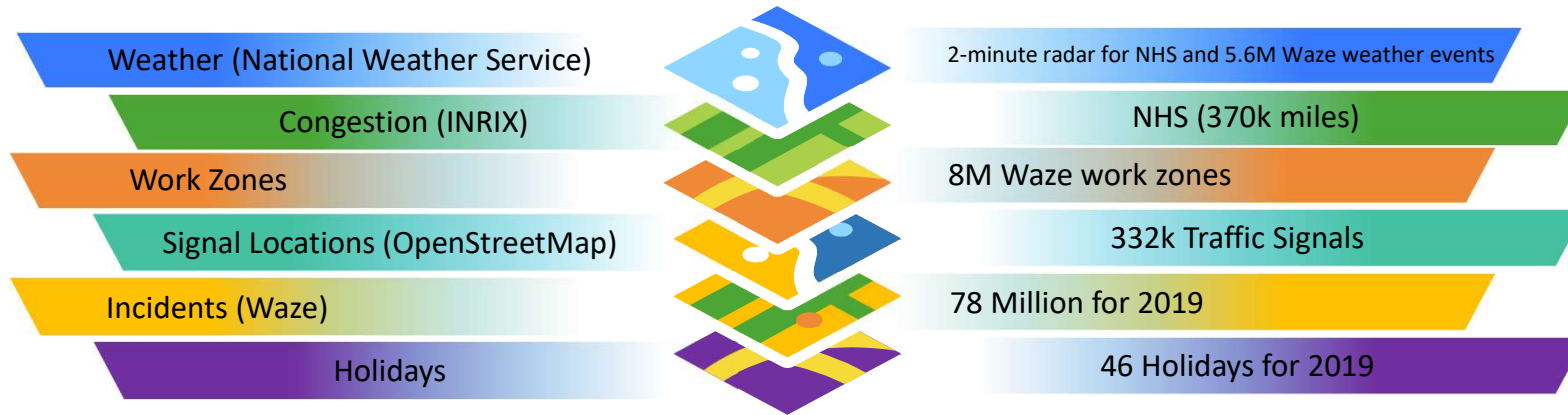
Objectives

1. Upgrade the outdated “pie chart”
 - Across entire NHS
 - Use consistent data sources
 - Develop research-backed methodology
2. Evaluate congestion causes
3. Create interactive, easily-accessible tool for decision makers
4. Open web-based solution

“We need to build a new tool to determine causes of congestion”



Data and Methodology Summary



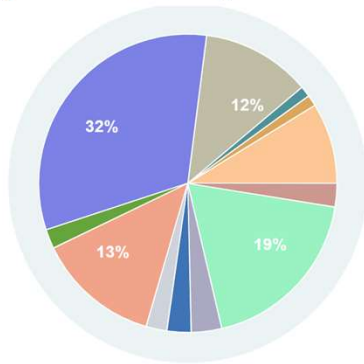
Results –2019 National vs 2004 National

Sources of Disruption Nationwide 2019

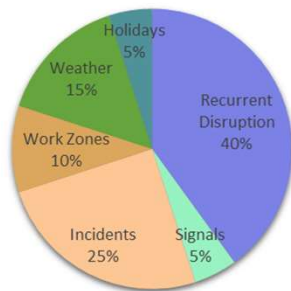
No weather radar data was included for the states of AK and HI

\$45.84b User Delay Cost
1.75b Vehicle Hours of Delay

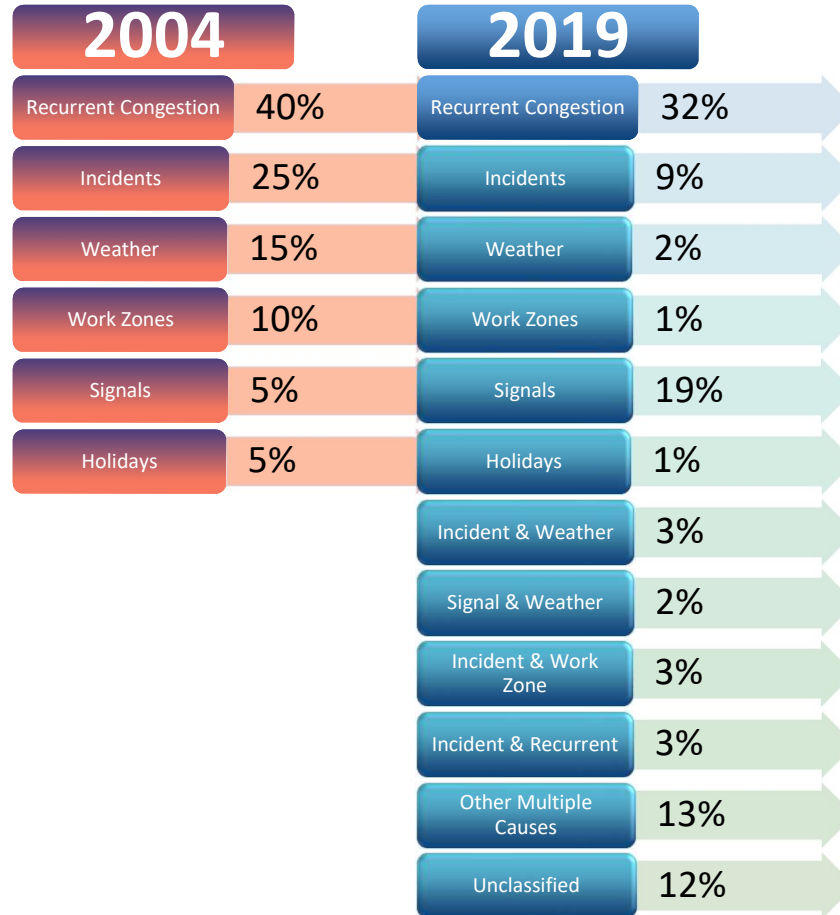
- Recurrent
- Incident
- Weather
- Work Zone
- Signals
- Holiday
- Incident & Weather
- Signal & Weather
- Incident & Workzone
- Recurrent & Incident
- Other Multiple Causes
- Unclassified



National Congestion Pie Chart (2004)



■ Recurrent Disruption ■ Signals ■ Incidents ■ Work Zones ■ Weather ■ Holidays



Causes of Congestion – Use Cases

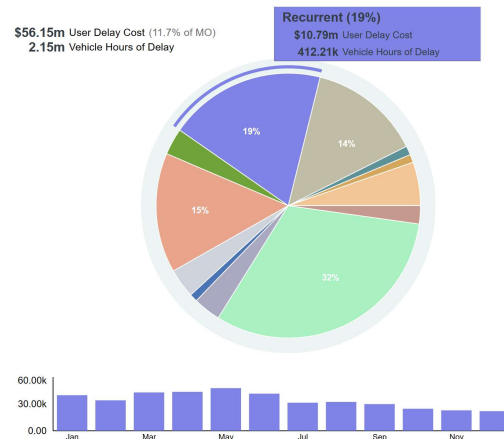
- Causal variations in congestion between urban and rural areas

- St. Louis (City), MO vs.
- Camden County, MO

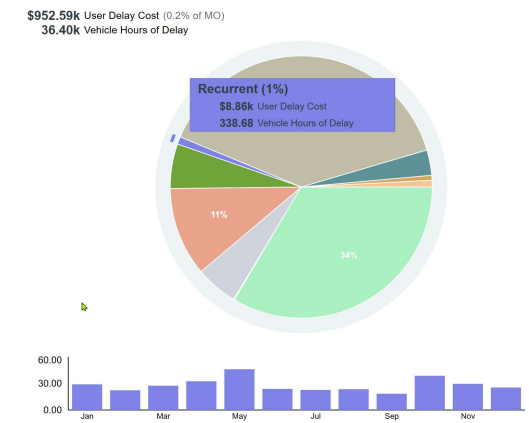
- Illustrate how weather impacts traffic flow

- Benton County, IA vs.
- Pocahontas County, IA

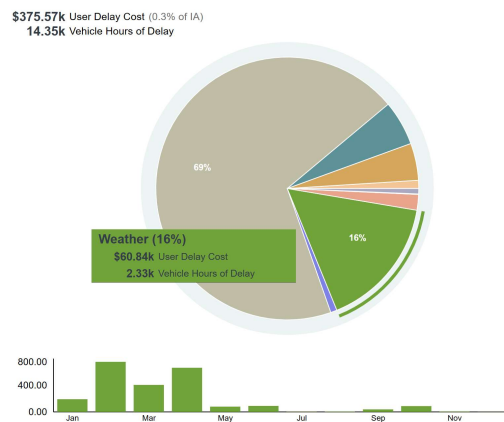
St Louis (City), MO 2019



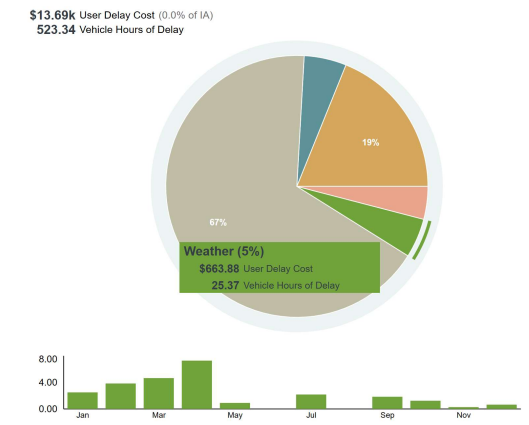
Camden, MO 2019



Benton, IA 2019

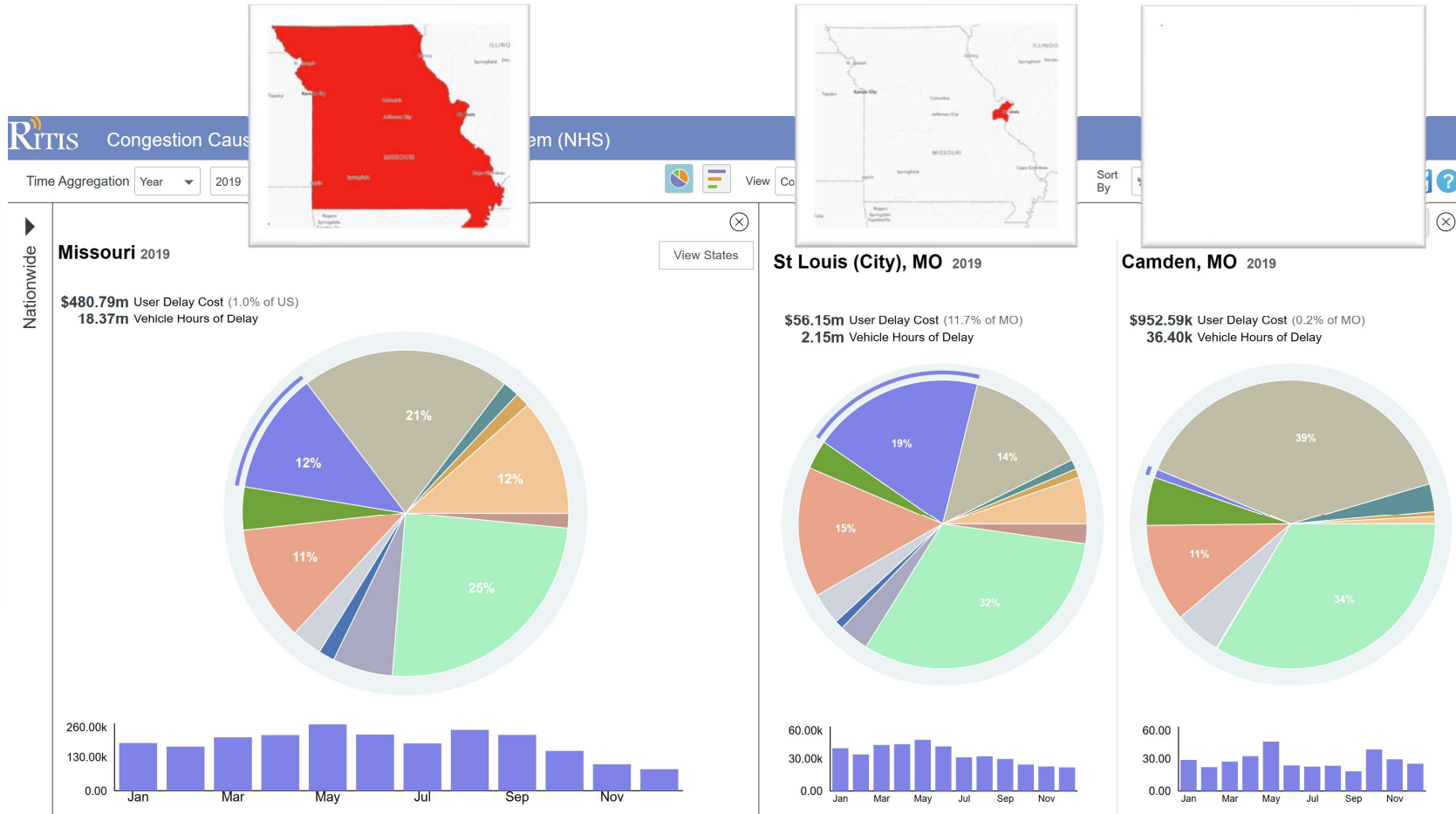


Pocahontas, IA 2019

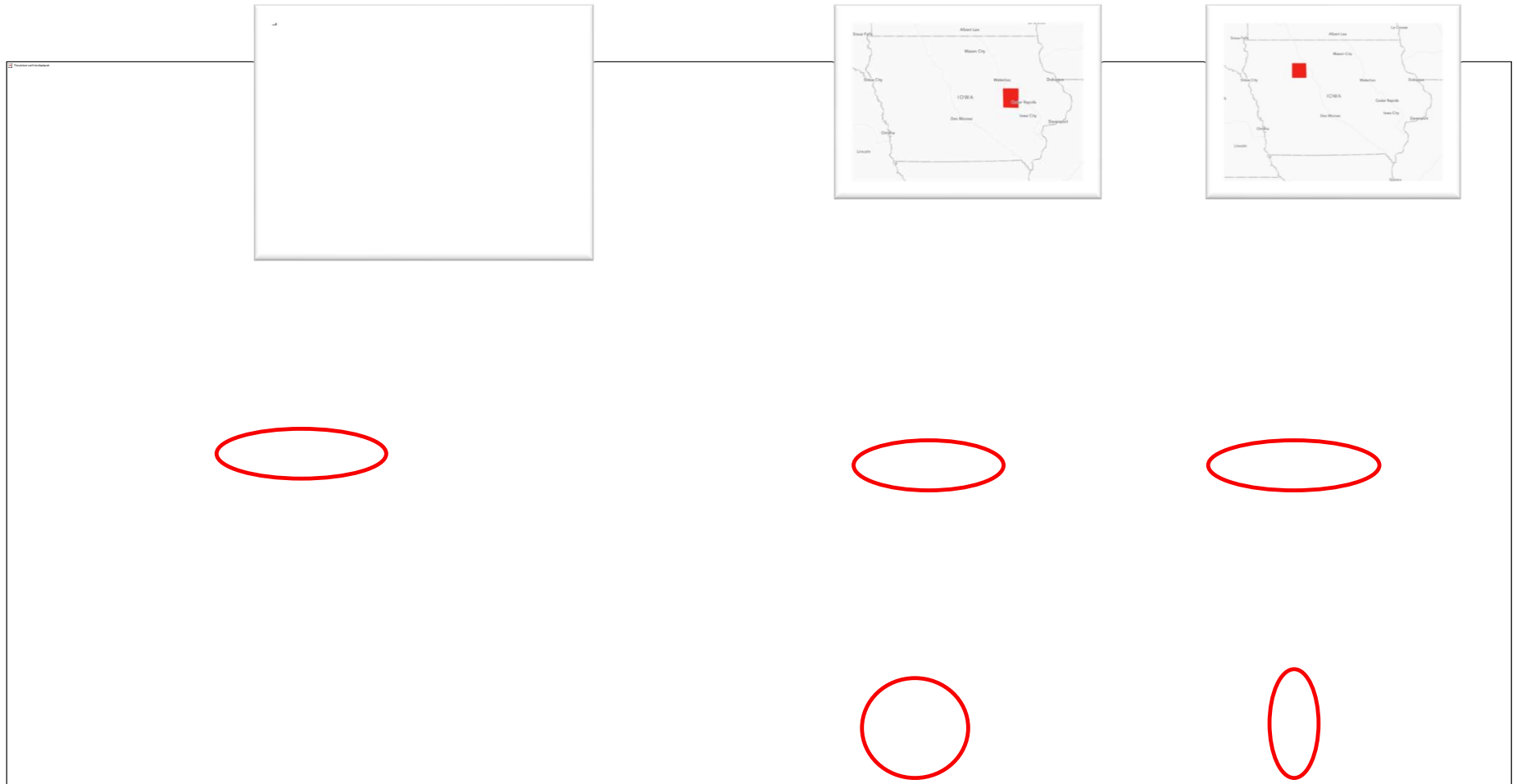


Missouri - Annual Pie Charts with Monthly Recurrent Congestion

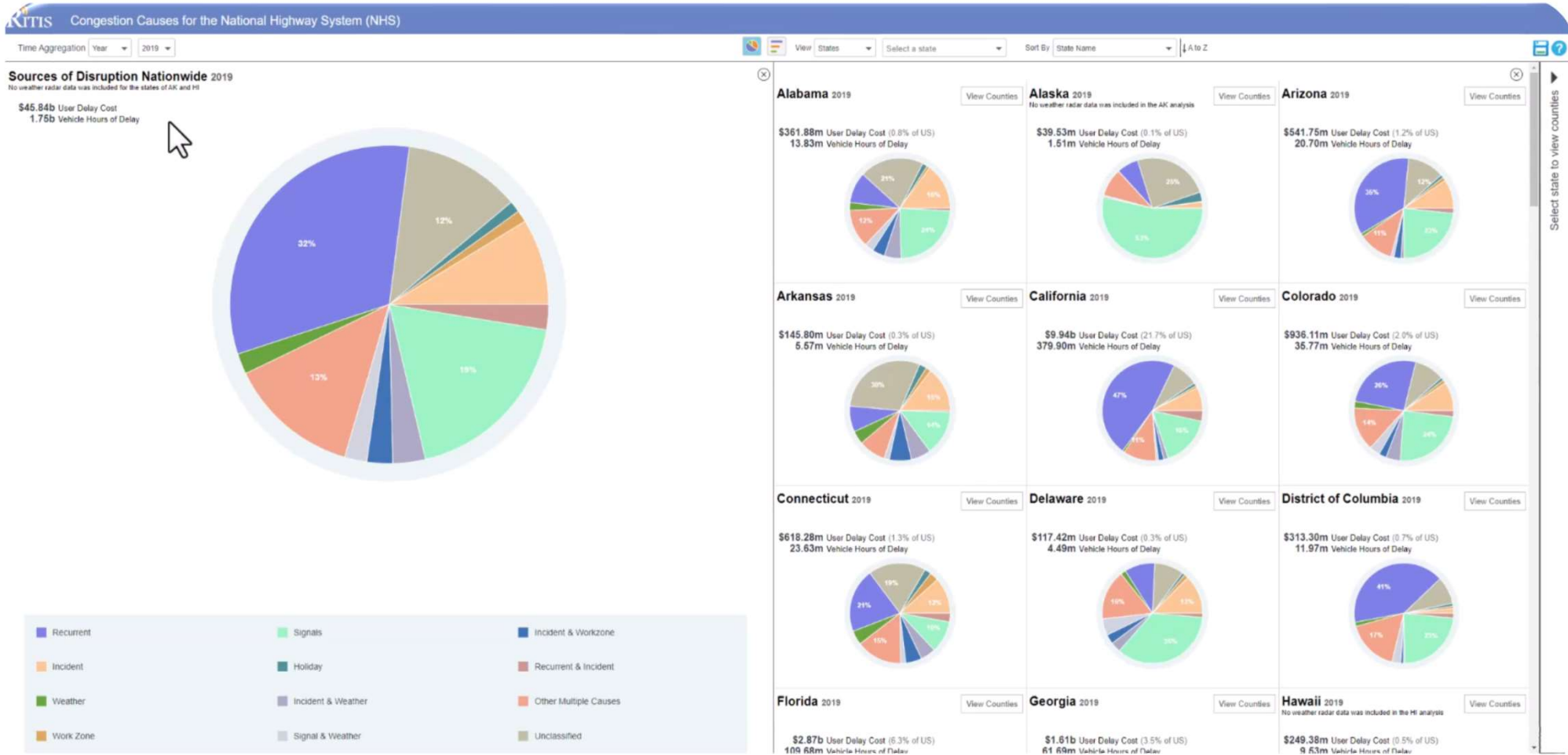
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Iowa - Annual Bar Charts with Monthly Weather Congestion



Demo of National Web App



Other Potential Use Cases

- Justification of continued funding for various operational strategies and/or requesting additional funding for new countermeasures related to a "Cause"
- Did the new transit line reduce recurrent congestion?
- Did the increased road plowing decrease delay during seasonal snow events?
- Did Safety Service Patrol (SSP) staging reduce incident induced delay?
- How much delay occurs at signalized intersections in rural regions?
- Does inclement weather make work zone delays more severe? If so, by how much?



CORRIDOR ANALYSIS NOW AVAILABLE

in *RITIS Probe Data Analytics*

Causes of Congestion Graphs

CORRIDOR SPECIFIC Analysis



CORRIDOR SPECIFIC Analysis - (Missouri)

1. Select roads

TMC segments from INRIX

Regions: Oregon

Directions: All

Zip Codes: Example: 20742, 20904

Road Classes: State Route

+ Add region

Your selected roads: Remove all

US routes in Oregon (1,561 TMC segments)

State routes in Oregon (3,092 TMC segments)

Show segment IDs Save as segment set

2. Select a date range to analyze

08/01/2023 - through - 08/31/2023

3. Select days of week

Sun Mon Tue Wed Thu Fri Sat

4. Select one or more times of day

12:00 AM 12:00 PM 12:00 AM

6:00 AM 9:00 AM

12:00 AM 12:00 PM 12:00 AM

3:30 PM 7:30 PM

+ Add another time of day

5. Choose the average hourly cost for passenger and commercial vehicles

Passenger vehicles: \$ 22.39

Commercial vehicles: \$ 100.49

6. Provide a title for this report (optional)

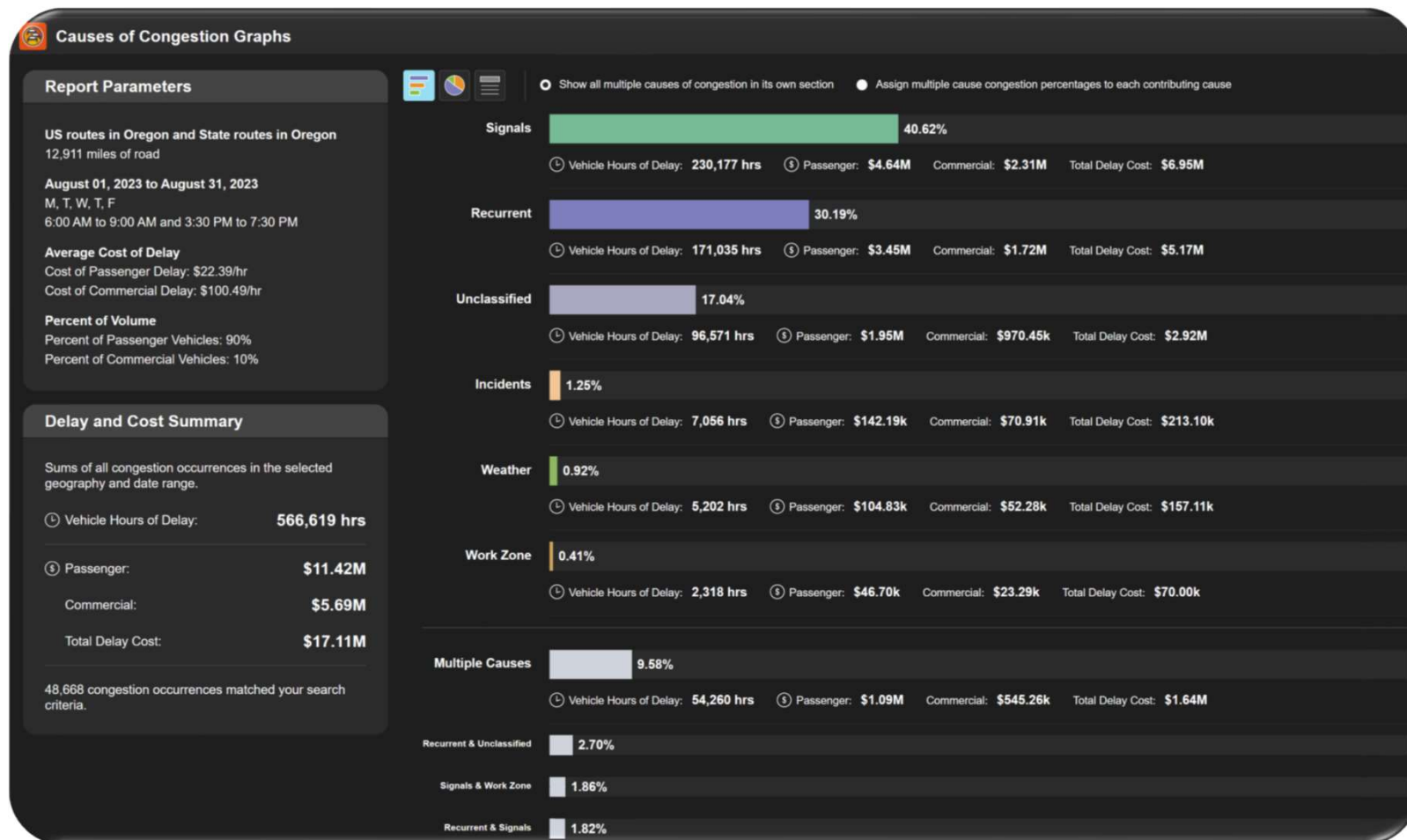
Enter a title for the report that will appear in the results page and My History

7. Notes (optional)

+ Add notes

The main map area displays a geographical view of Oregon with a network of roads overlaid. The roads are color-coded: some are black, some are light blue, and some are dark blue. The map includes labels for major cities like Seattle, Tacoma, Spokane, Boise, and various national forests such as Gifford Pinchot, Willamette, and Klamath. The interface also features a zoom control on the left side of the map.

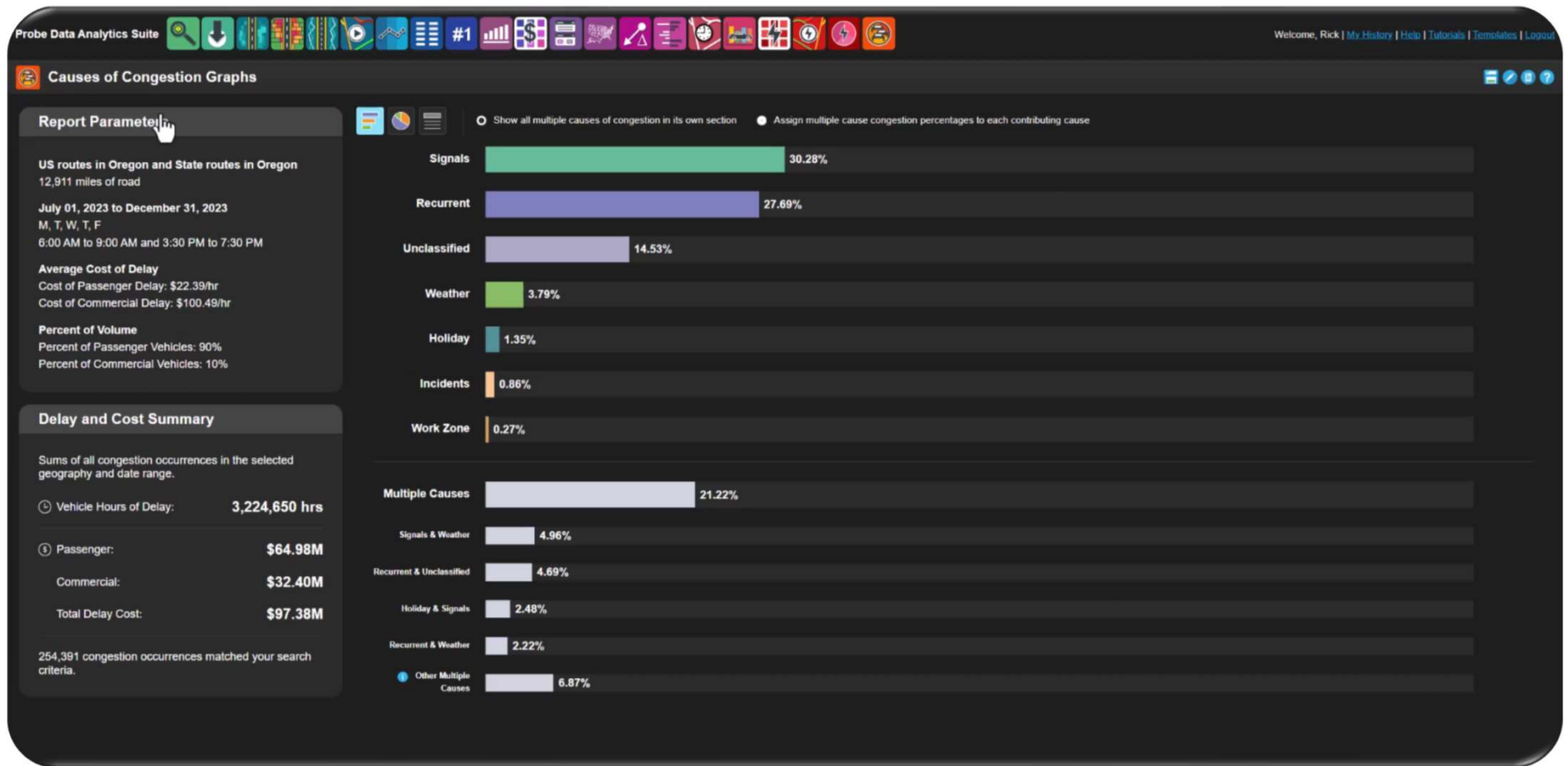
CORRIDOR SPECIFIC Analysis (Oregon)



CORRIDOR SPECIFIC Analysis (Oregon)

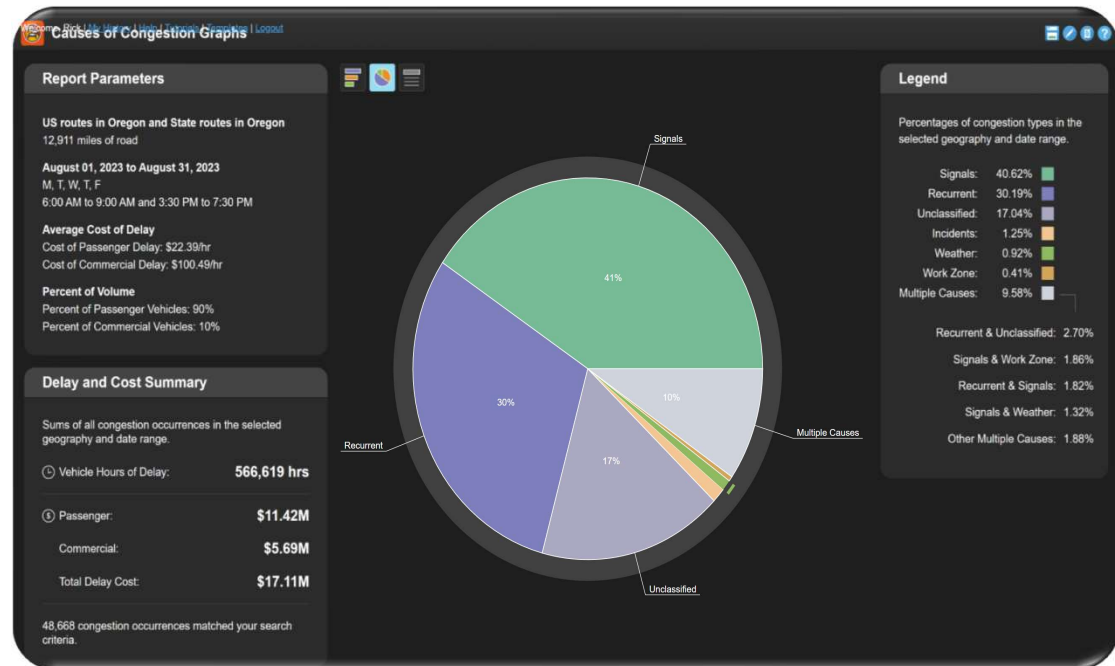


CORRIDOR SPECIFIC Analysis - Demo



Conclusions

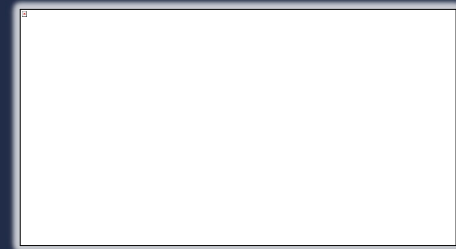
- New Connected Vehicle probe data and crowd sourced content is delivering new insights to what factors impact congestion
- Open, web solution to explore national, state and local causes of congestion
- RITIS users have industry exclusive access to corridor-specific causes of congestion graphs
- Questions are welcome



Thank You!

Resource Links

- National, State and County App: <https://go.umd.edu/congestion>
- PDA Causes of Congestion Tool: <https://pda.ritis.org>
- Tutorial: <https://ritis.org/tutorials/videos/634641555>
- Help Page: <https://congestion-causes.ritis.org/help>



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