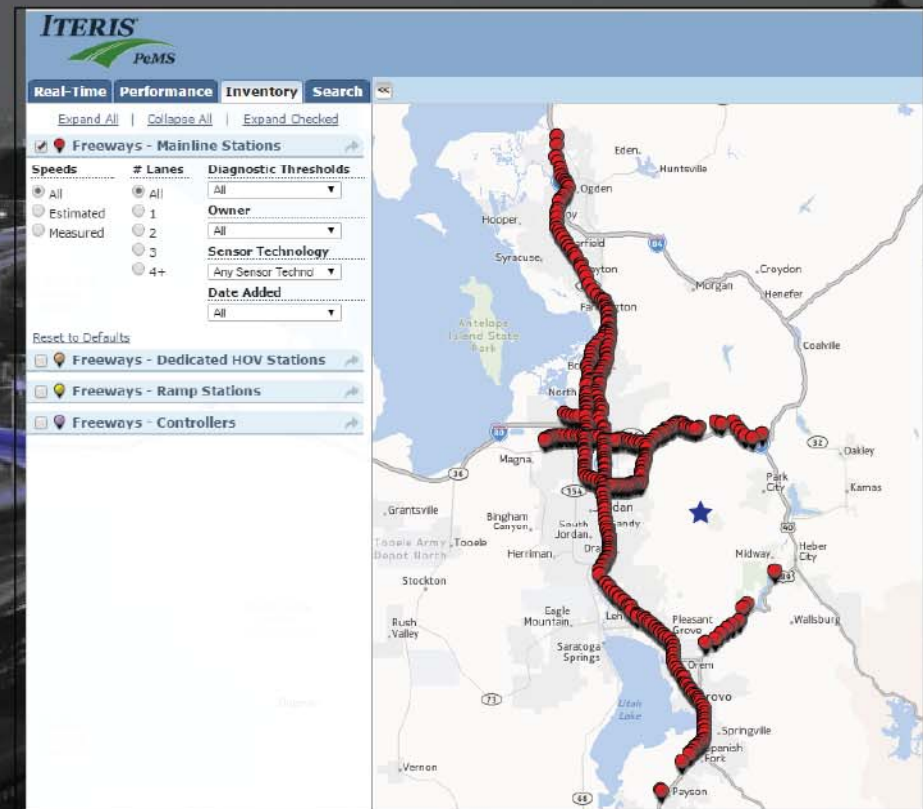# MAKING DECISIONS BASED ON DATA

Kelly Burns, P.E.
Grant Farnsworth, P.E.

AUTOMATED FREEWAY PERFORMANCE METRICS

UDOT
udot.utah.gov

UDOT'S FREEWAY DETECTION SYSTEM

UDOT'S FREEWAY DETECTION SYSTEM
Configured on PeMS

- 1,272 Stations

- 3,070 Detectors
  - 94% Operational

- Types of Detection
  - Wavetronix SSM 105, 125, 126
  - Inductive loops
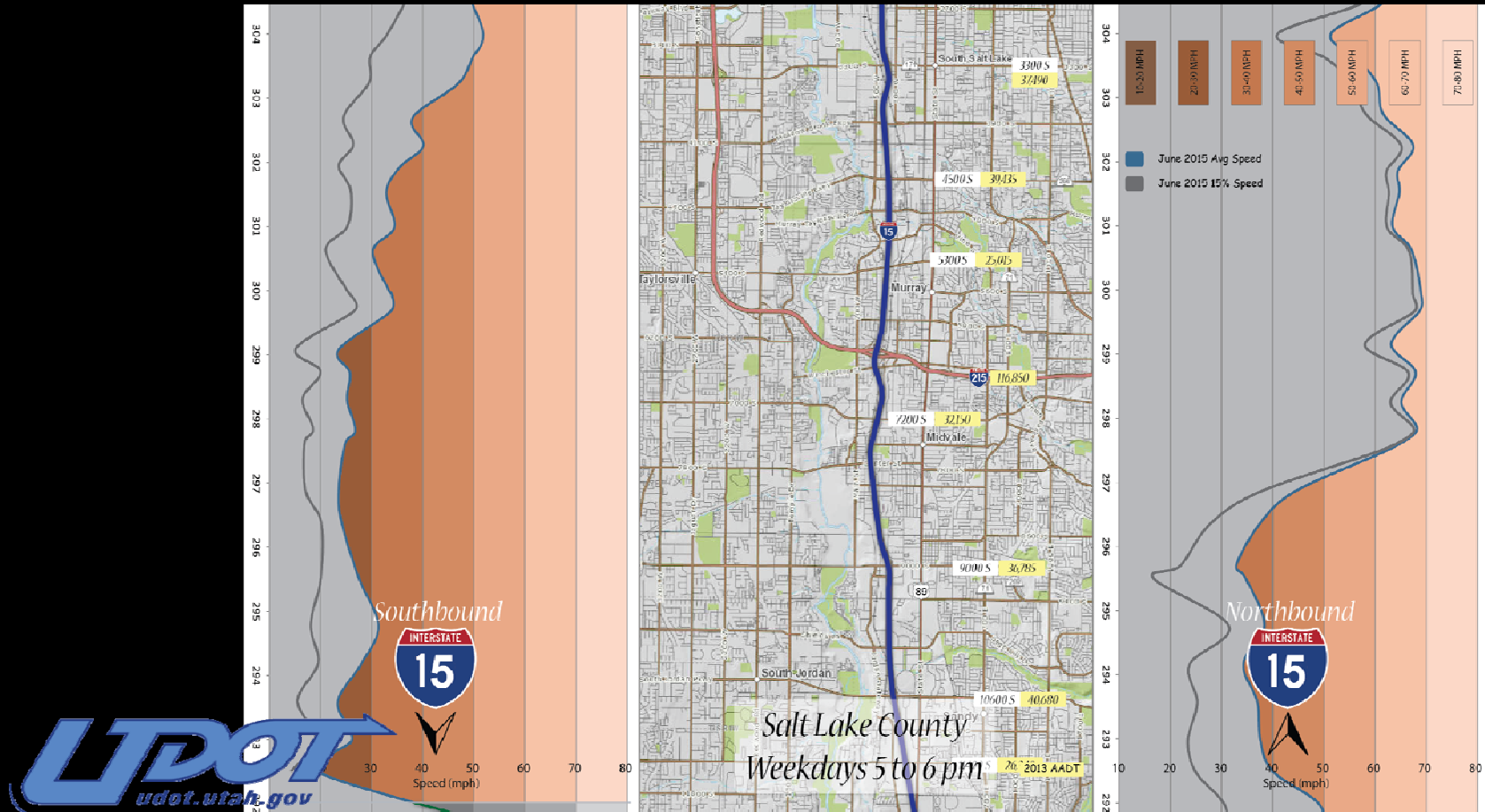 - Sensys pucks
  - Microloops

UDOT'S FREEWAY
Performance Measures

- Project Concept Phase
  - Comparison of overall freeway performance
  - Objective data vs. perception
  - Data driven decisions

- Initial Freeway Performance Measures
  - Speed Report
  - Driving Experience
  - Travel time
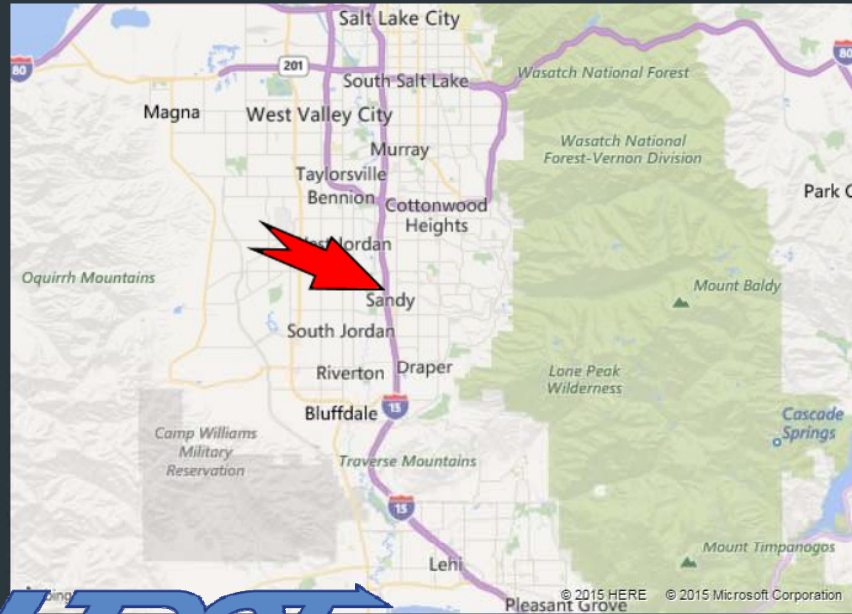 - Time Lapse
  - Mobility Cake

SPEED REPORT

Southbound
Northbound
Salt Lake County
Weekdays 5 to 6 pm

AUTOMATED SPEED REPORT
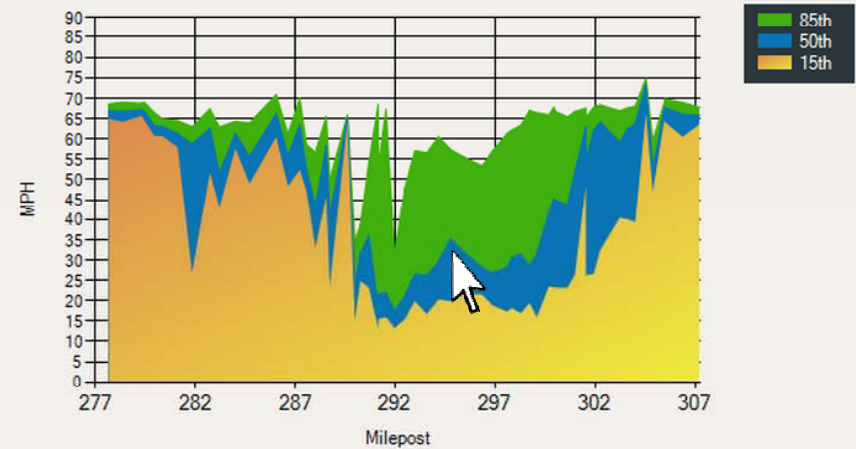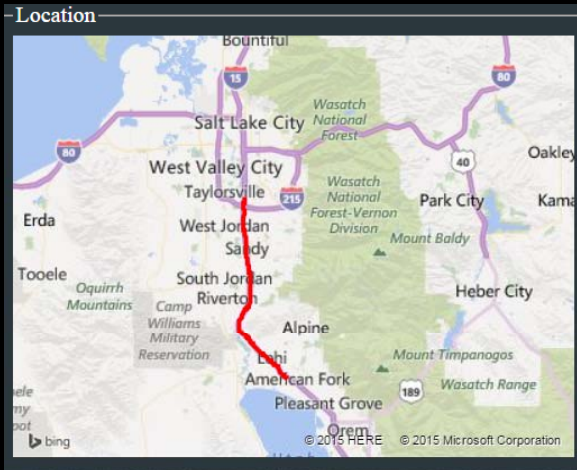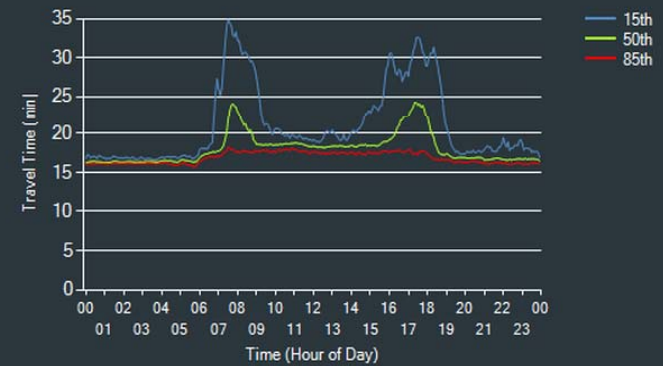
TRAVEL TIME
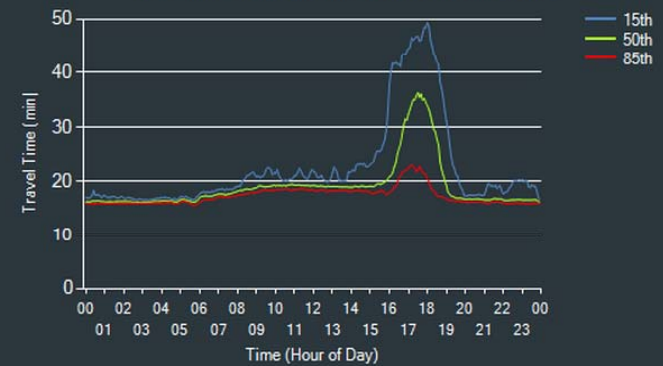
UTAH DRIVING EXPERIENCE
I-15 SB: SALT LAKE COUNTY
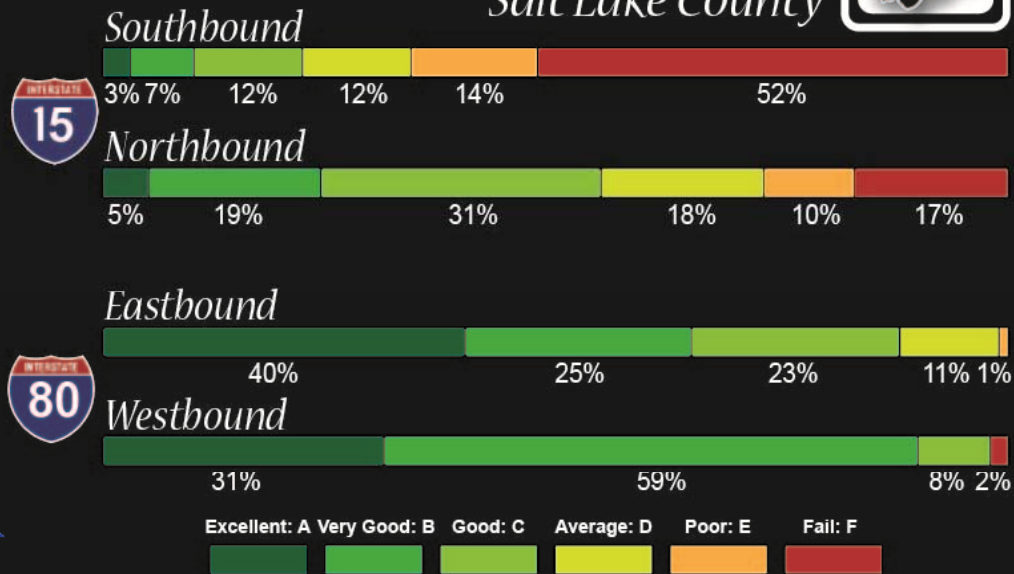
TRAFFIC PERFORMANCE METRICS WEBSITE

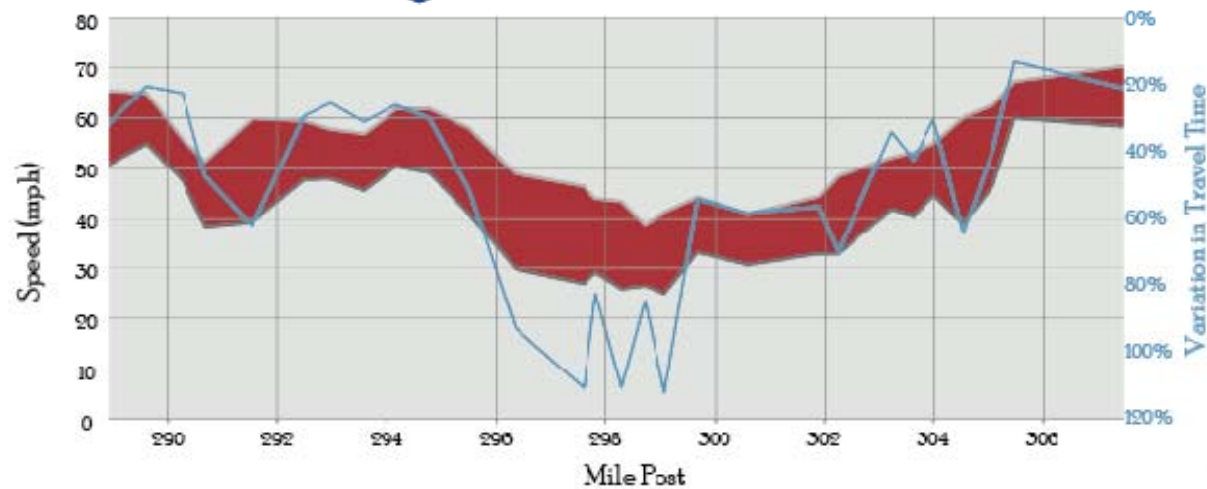www.UDOTtraffic.utah.gov/PerformanceMetrics
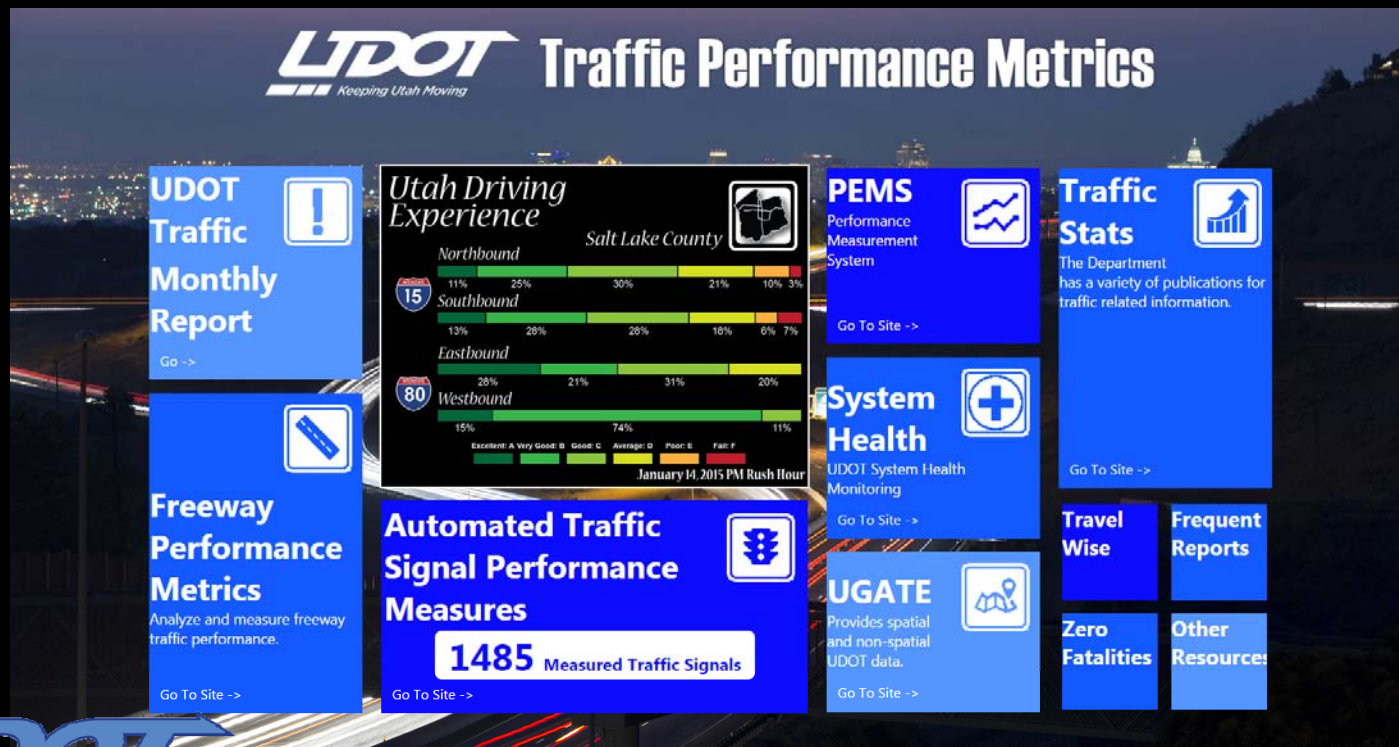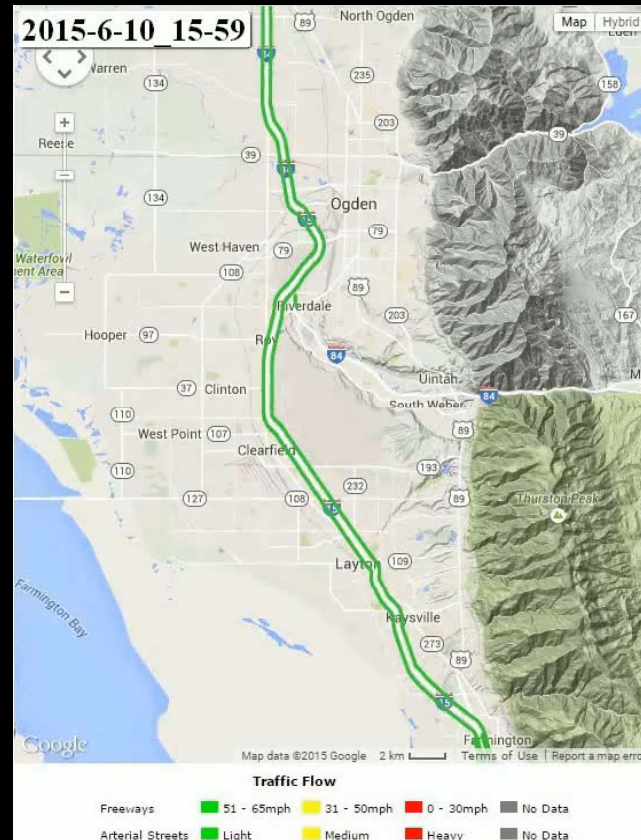
UDOT FREEWAY PERFORMANCE MEASURES WEBSITE
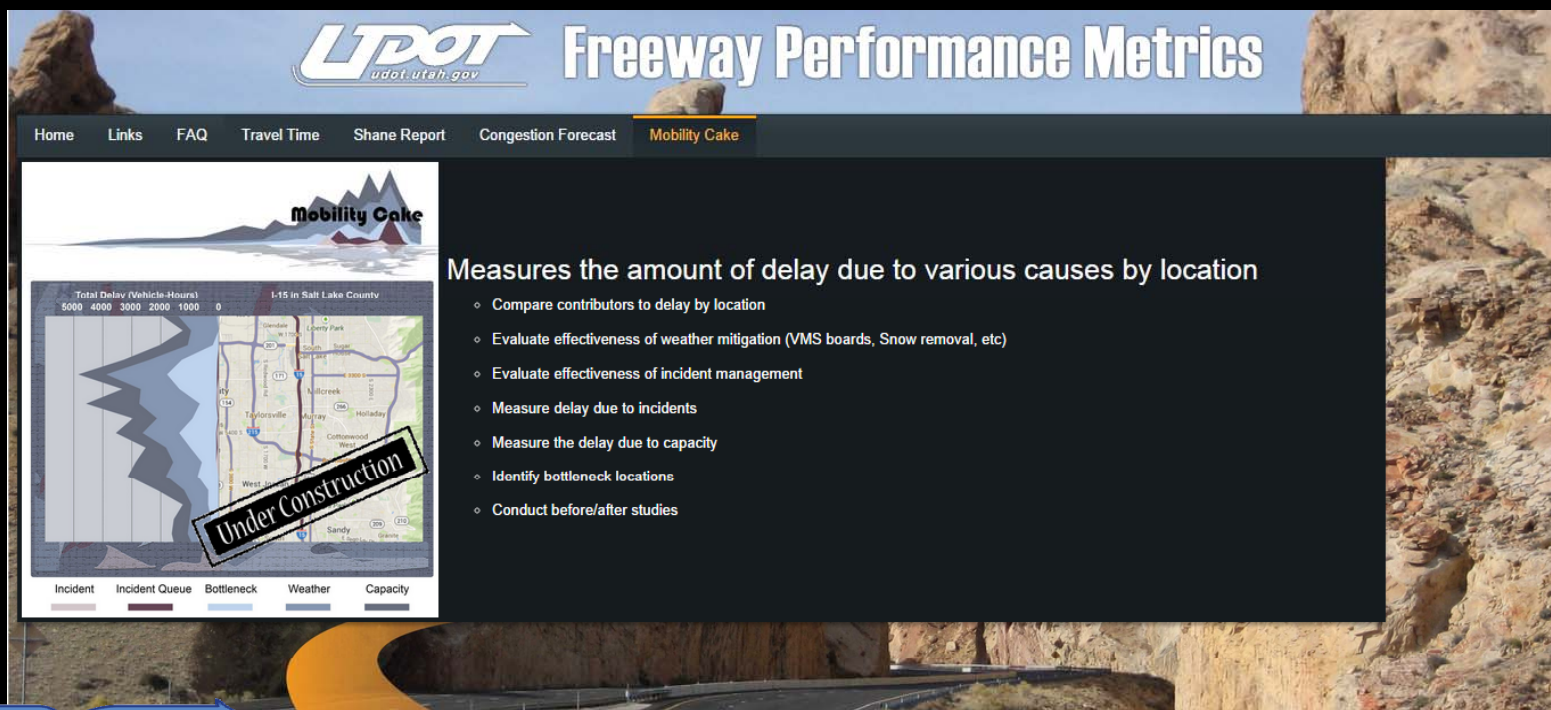
RELIABILITY

Southbound I-15 Mainline Reliability 5-6 PM
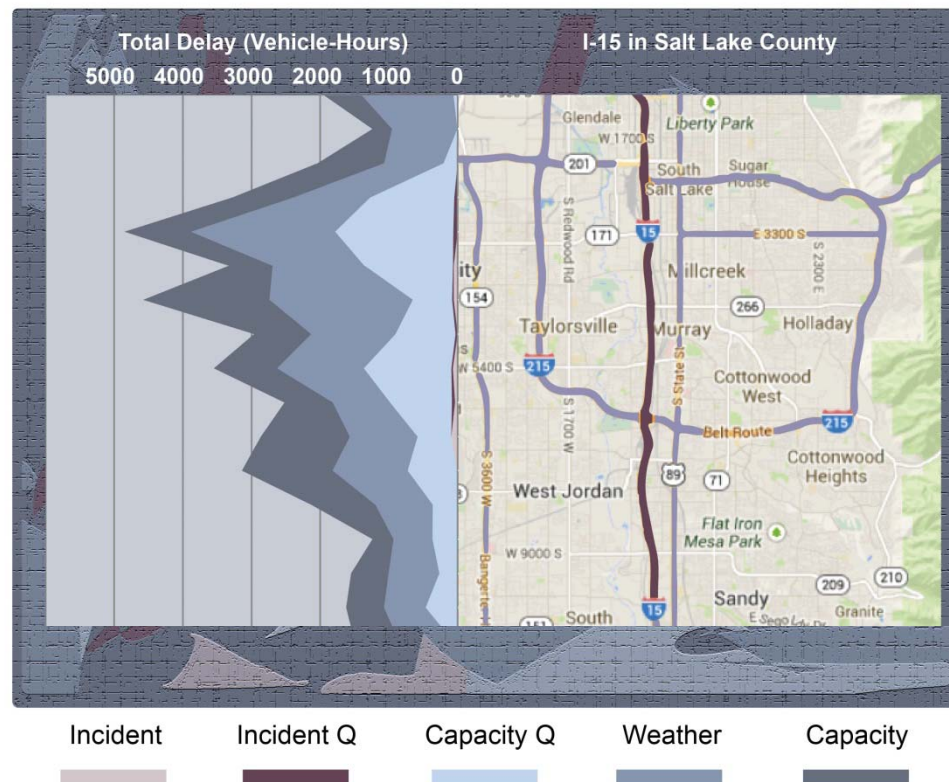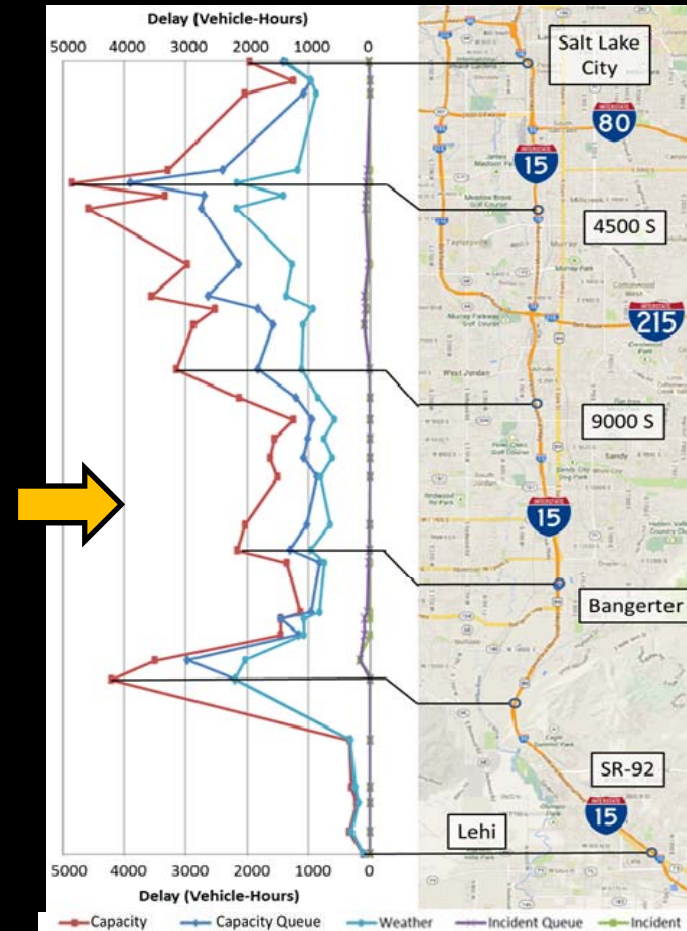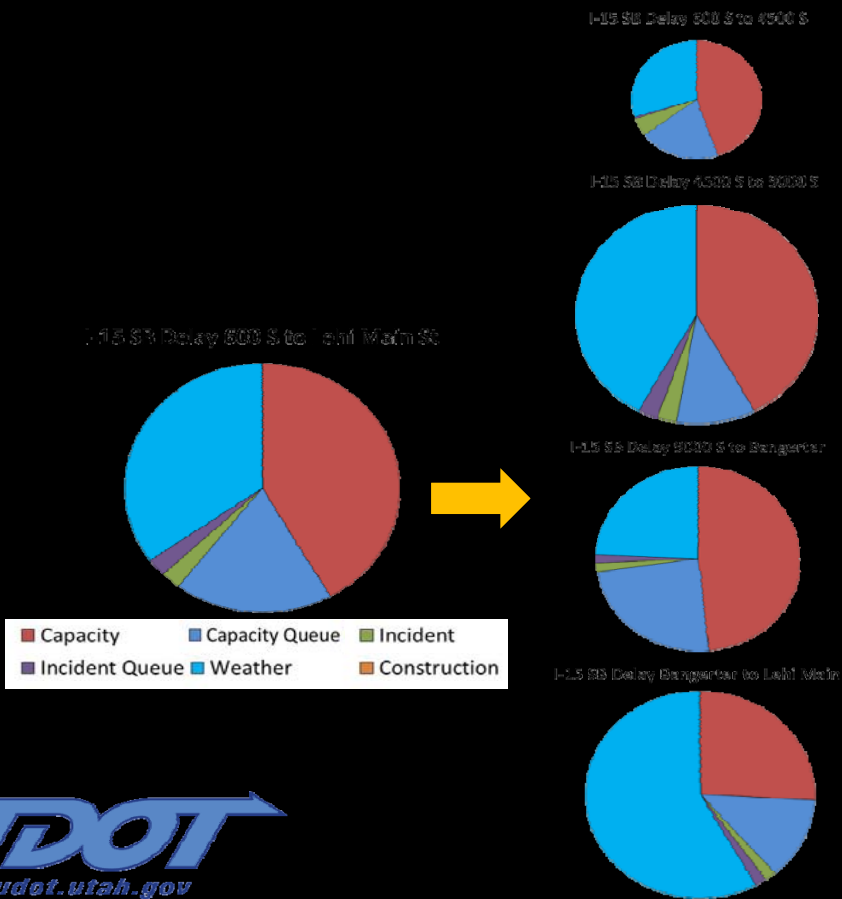
TIME LAPSE VIDEO

MOBILITY CAKE

- Show the delay that can be attributed to the incidents, construction, and weather.

- Show where the delay is occurring on a corridor.

- Make assumptions that can be easily understood - don't be a black box algorithm.

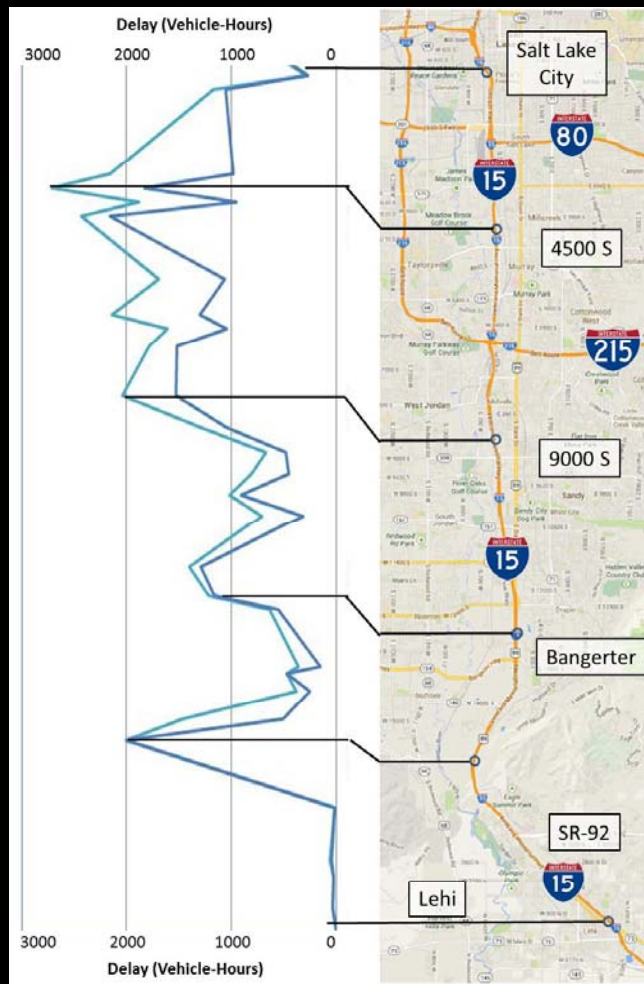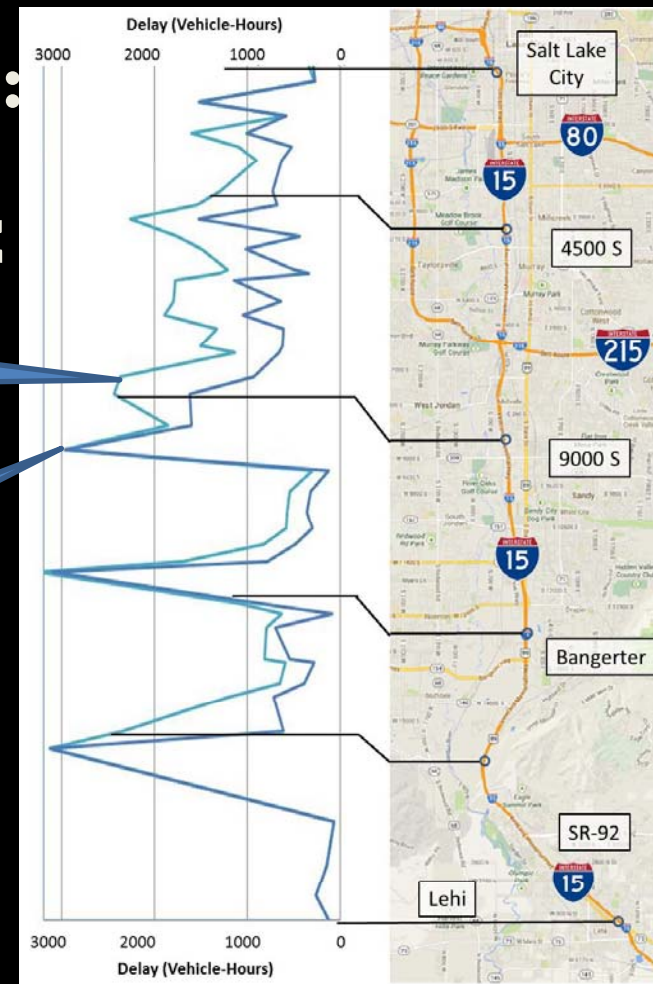- Leverage existing databases and ITS infrastructure

Mobility Cake

Total Delay (Vehicle-Hours) — I-15 in Salt Lake County

5000 4000 3000 2000 1000 0

Incident | Incident Q | Capacity Q | Weather | Capacity

PROGRESSION OF MOBILITY CAKE

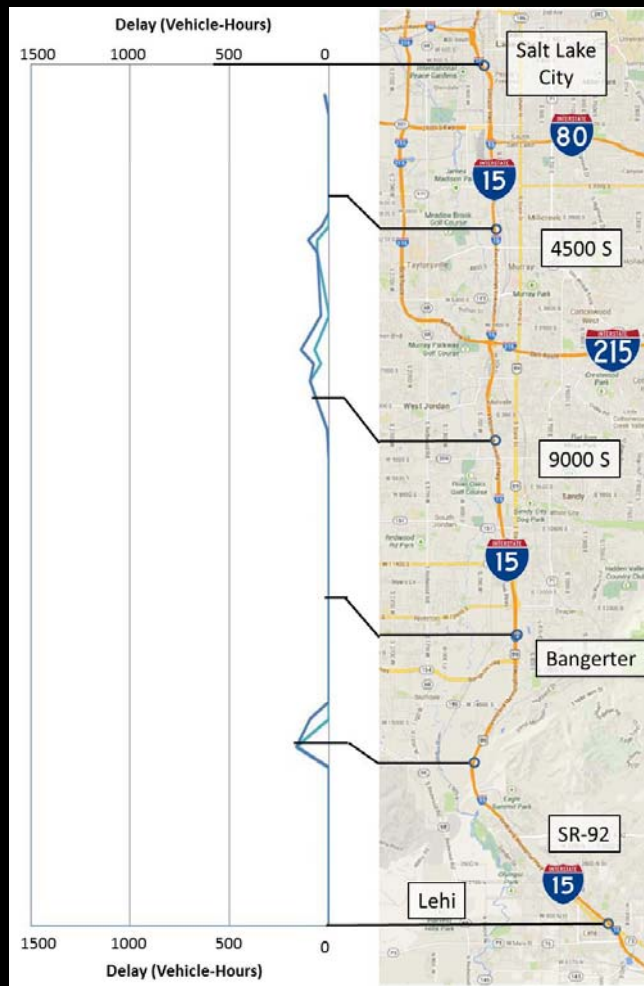# MOBILITY CAKE: CAPACITY & CAPACITY QUEUE

DECEMBER 2013
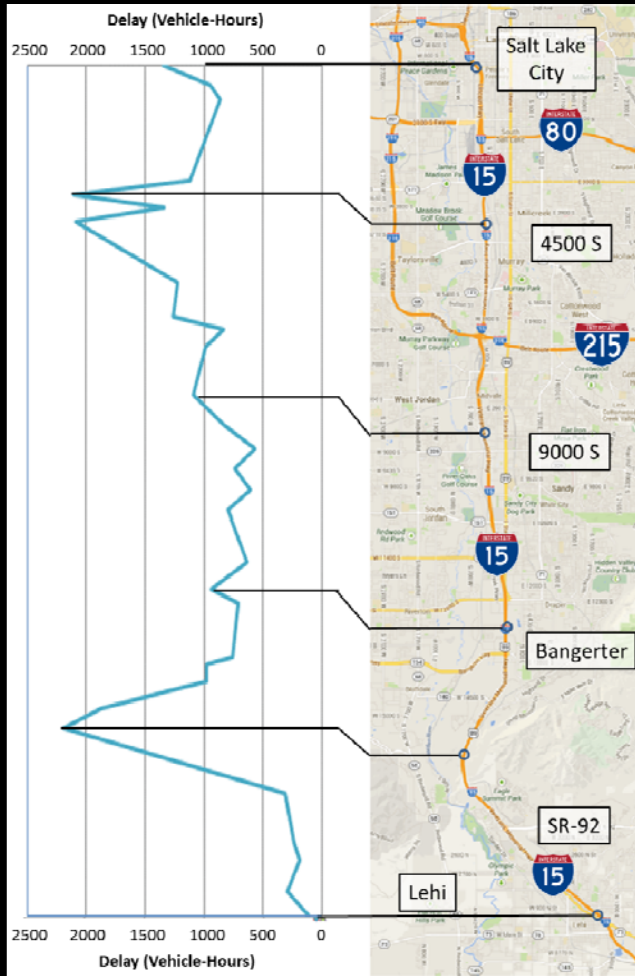
JULY 2014

MOBILITY CAKE:
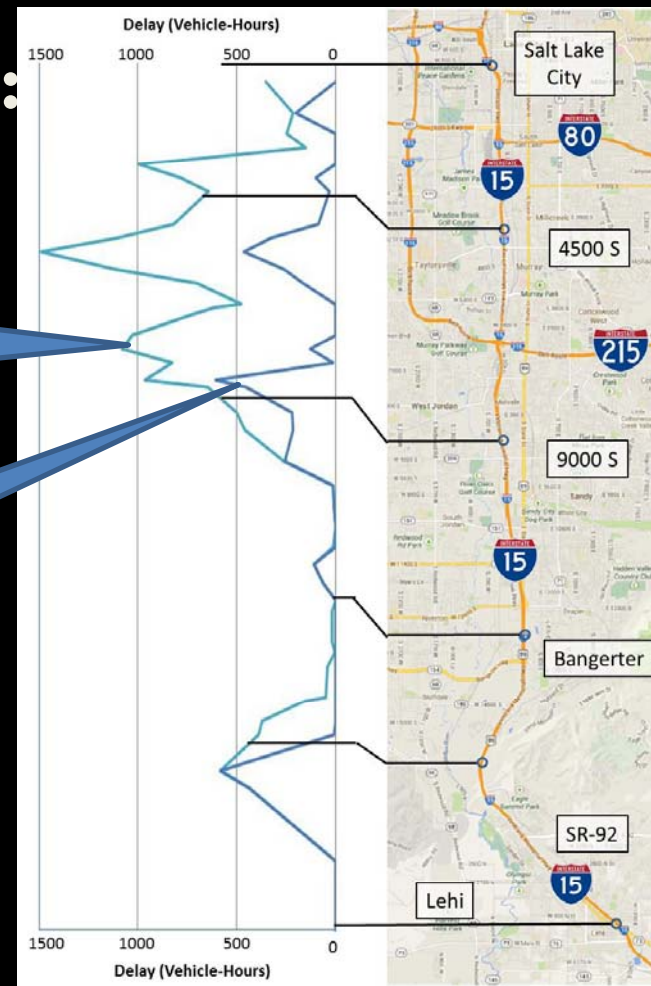## WEATHER
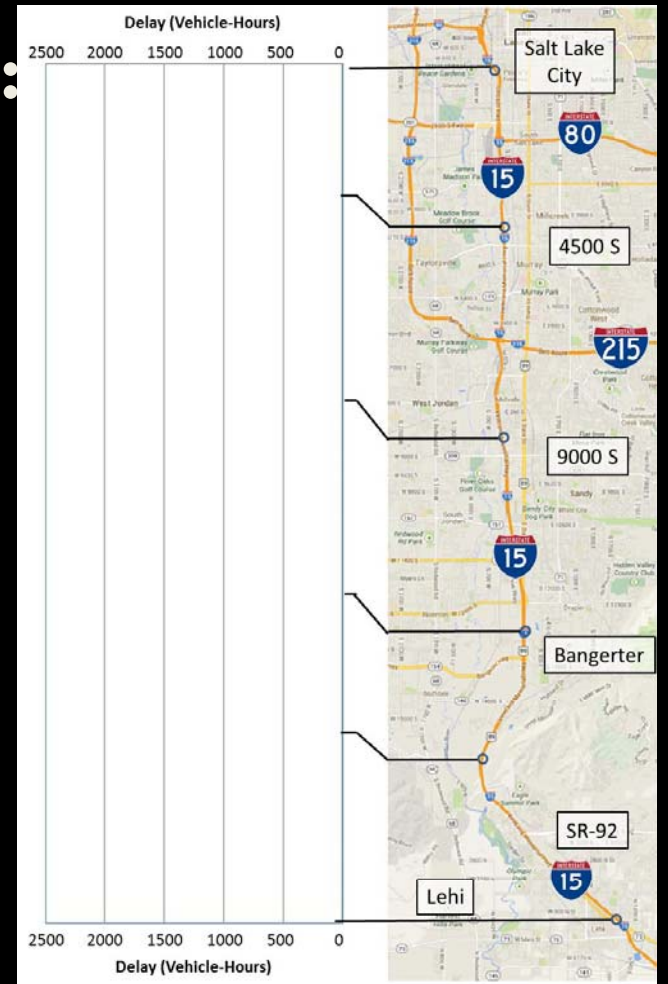
DECEMBER 2013

JULY 2014

MOBILITY CAKE: INCIDENTS & INCIDENT QUEUE

Delay upstream from incidents

Delay from incidents

DECEMBER 2013
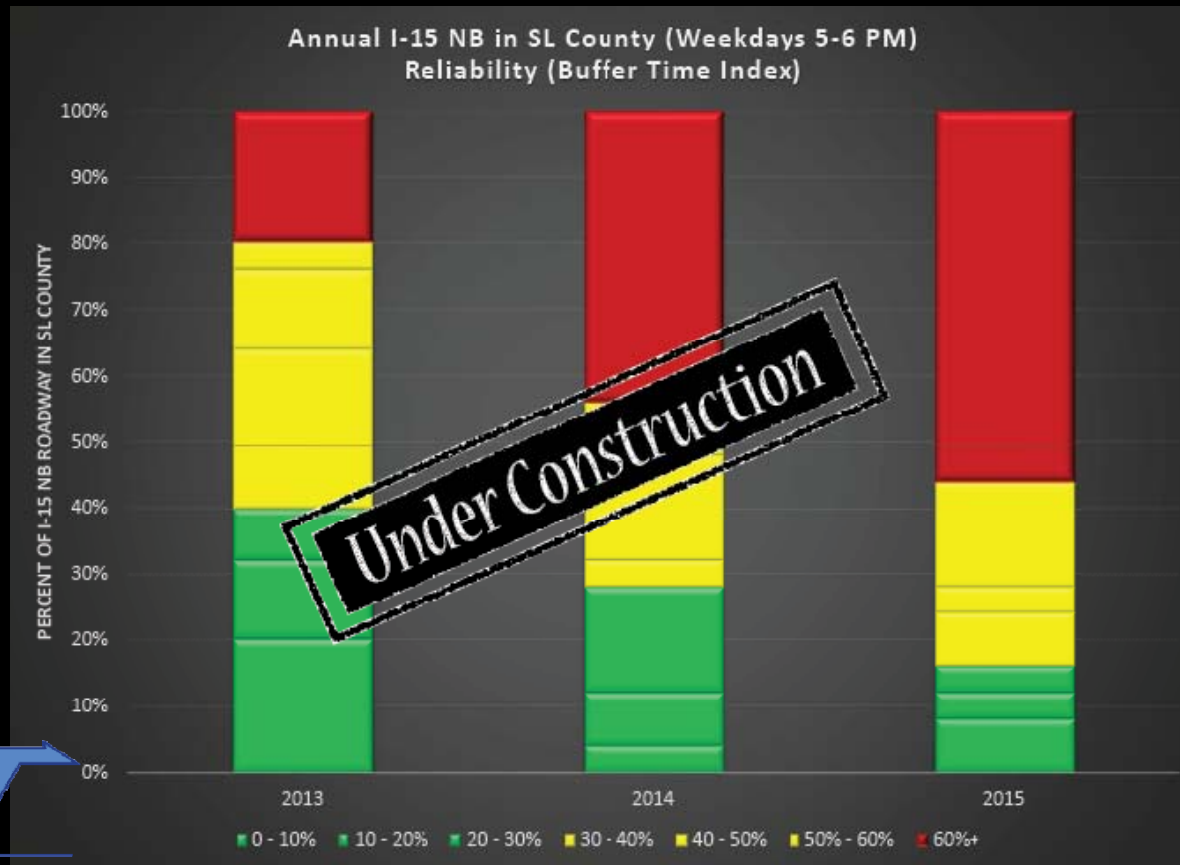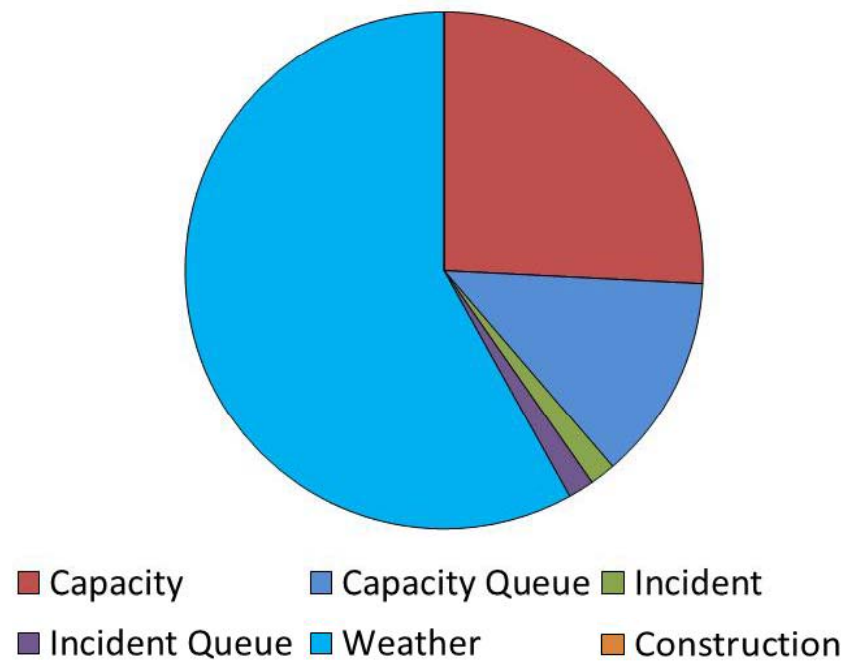
JULY 2014

18

DELAY FOR SALT COUNTY
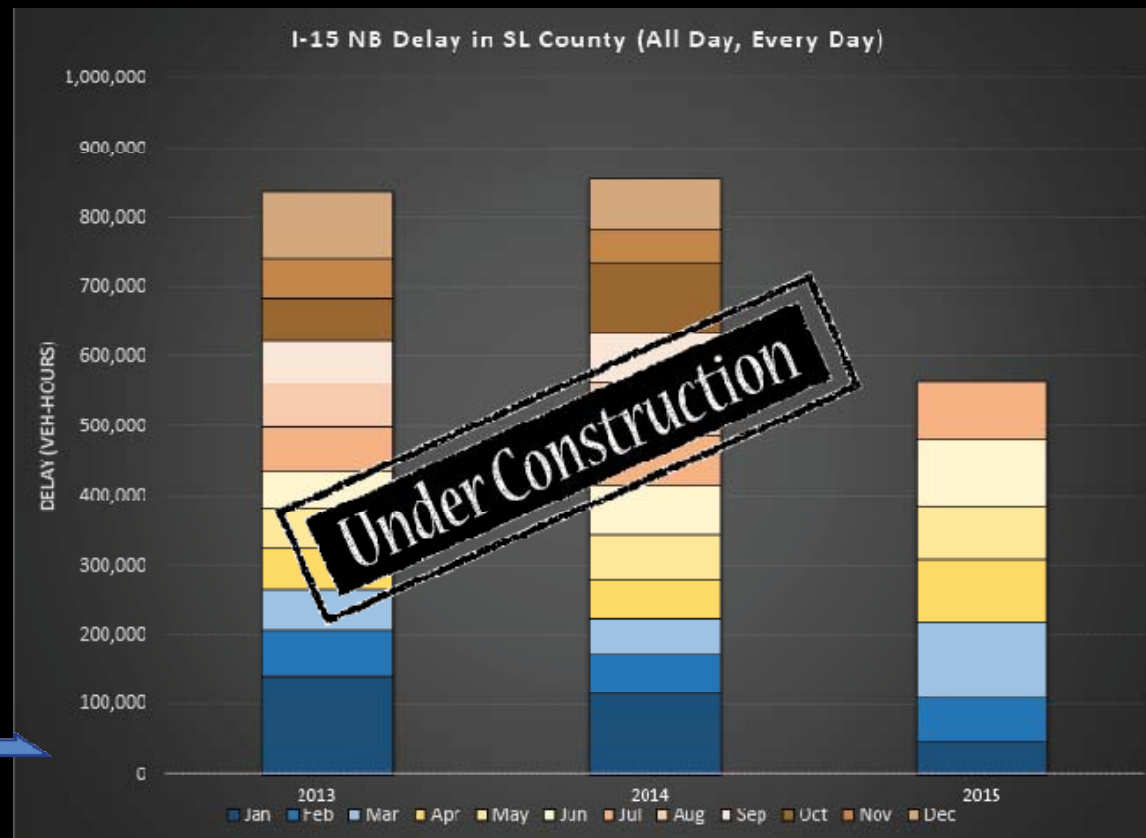
RELIABILITY (BTI) GRAPH

Progression of the Mobility Cake

I-15 SB Delay 600 S to Lehi Main St

- Capacity
- Capacity Queue
- Incident
- Incident Queue
- Weather
- Construction

Delay Hierarchy

DELAY RECORDED

Weather Present

Incident Present

Construction

Incident Queue

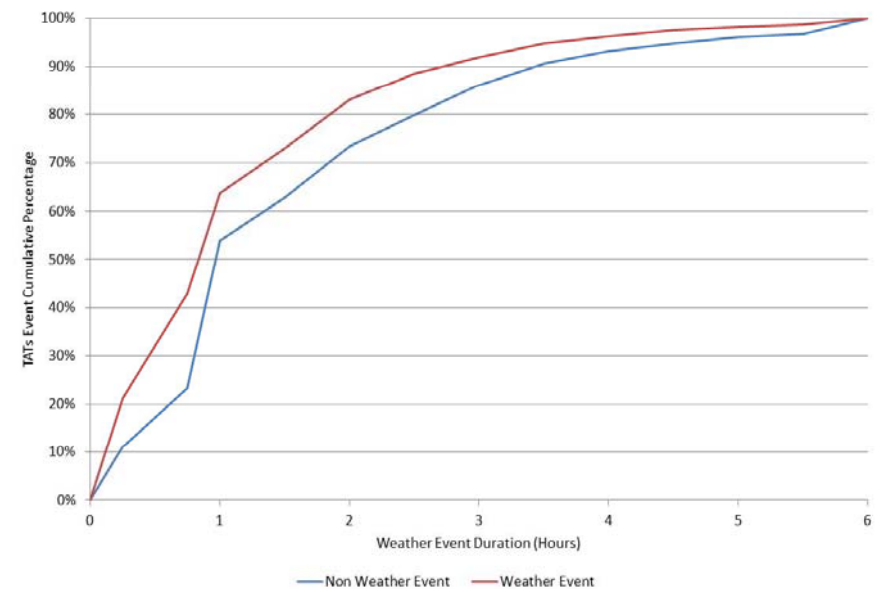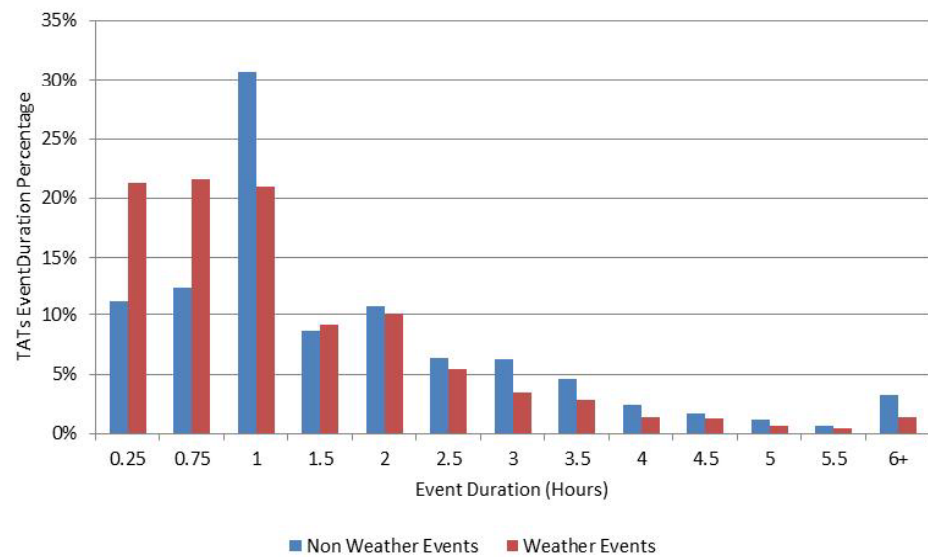Construction Queue

Capacity Queue

Capacity

22
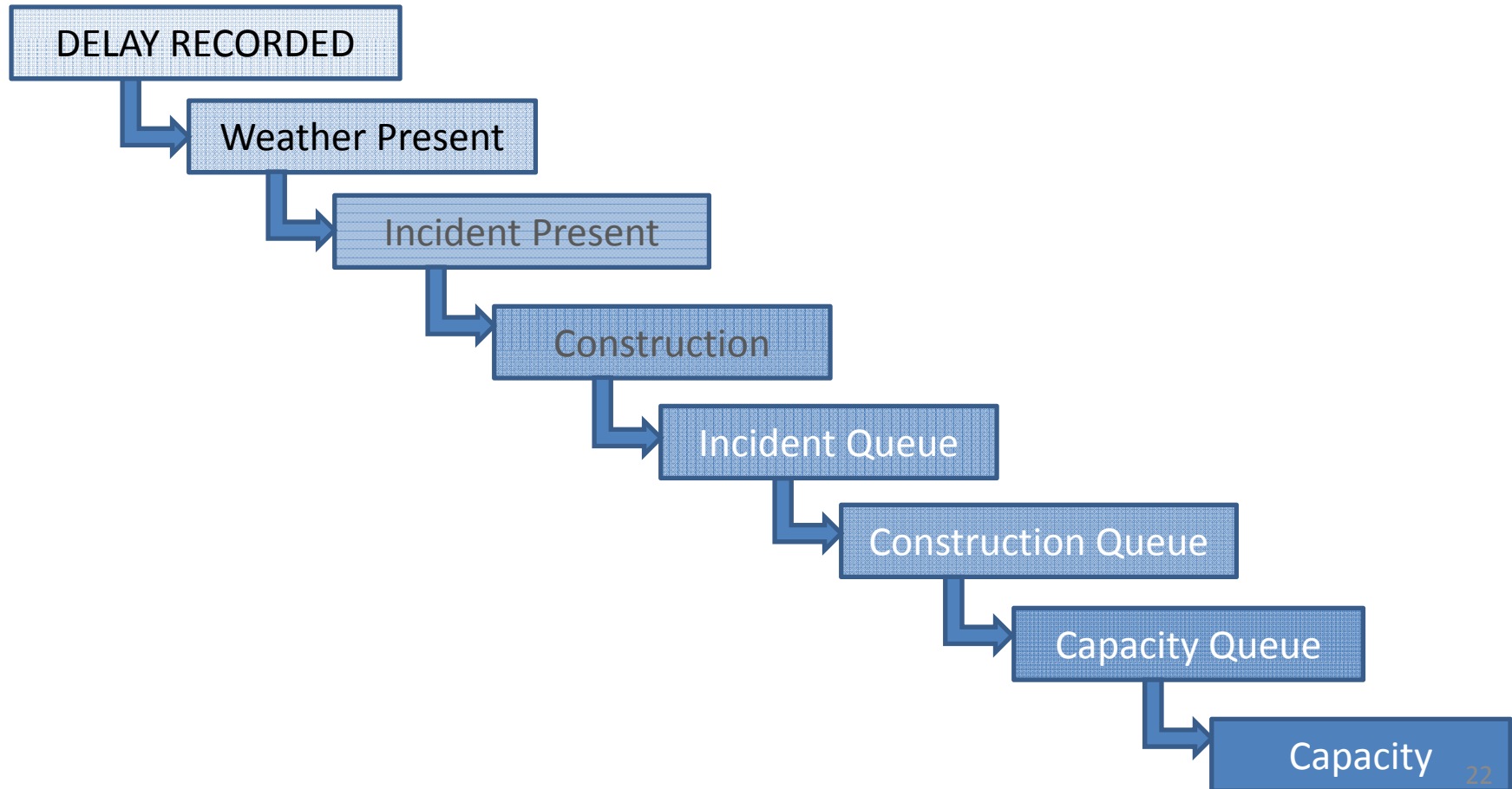
Layers (Databases) in the Cake

- Delay – PeMS speed and volume data (5 min)

- Event Manager – Incidents

- Travel Advisory Telephone System (TATS) – Weather

- Lane Closure Log - Construction

Weather Entry Duration

Incident Record

Incidents Flow Chart

8/14/2015