

Southern Transportation & Air Quality Summit

Intelligent Transportation Systems



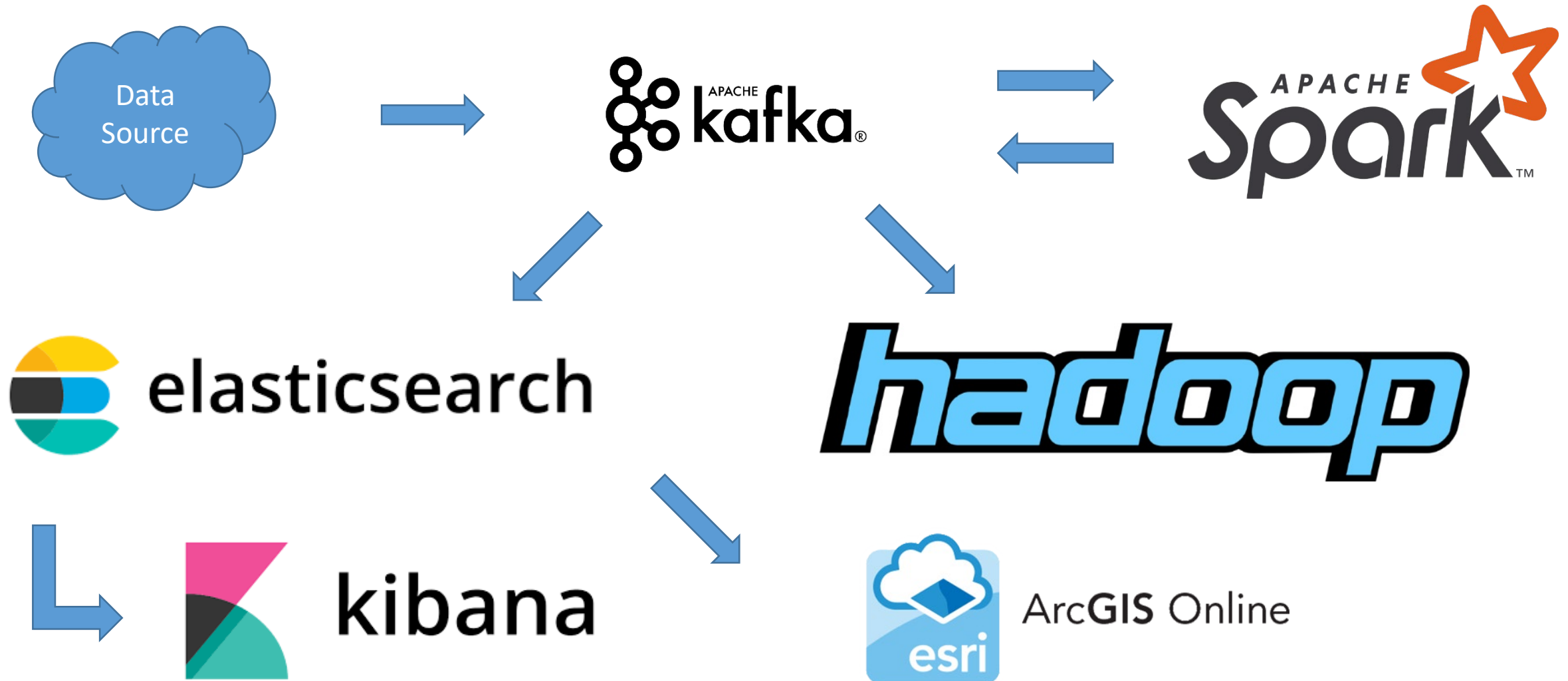
Data Challenges: Third Party / KYTC

- HERE Traffic Speeds
- Waze Incident Reports
- Waze Traffic Speeds
- iCones Speeds
- KYMesonet
- CoCoRahs
- Doppler Radar
- TOC Reports
- TRIMARC Reports
- Snow Plows (AVL)
- Roadway Weather Stations
- County Activity Reports
- Dynamic Message Signs
- Truck Parking
- Twitter

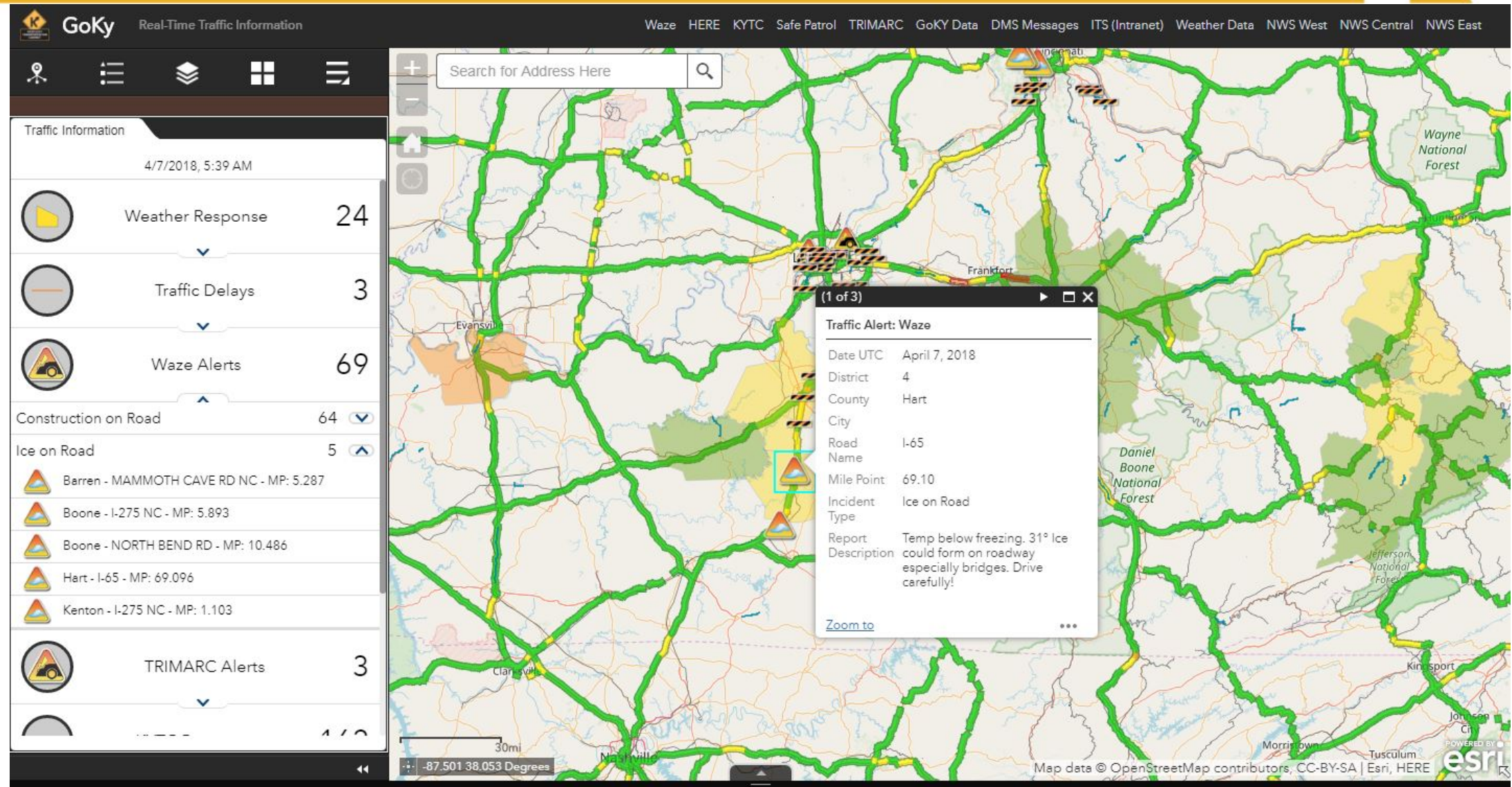
When you say “Big Data”?

Source	Records per Year
HERE	2.5 billion
Waze Jams	128 million
Waze Incidents	180 million
AVL (Snow Plows)	175 million
All Others	123 million
Total Records and Storage:	3.1 billion and 3TB _(x3)

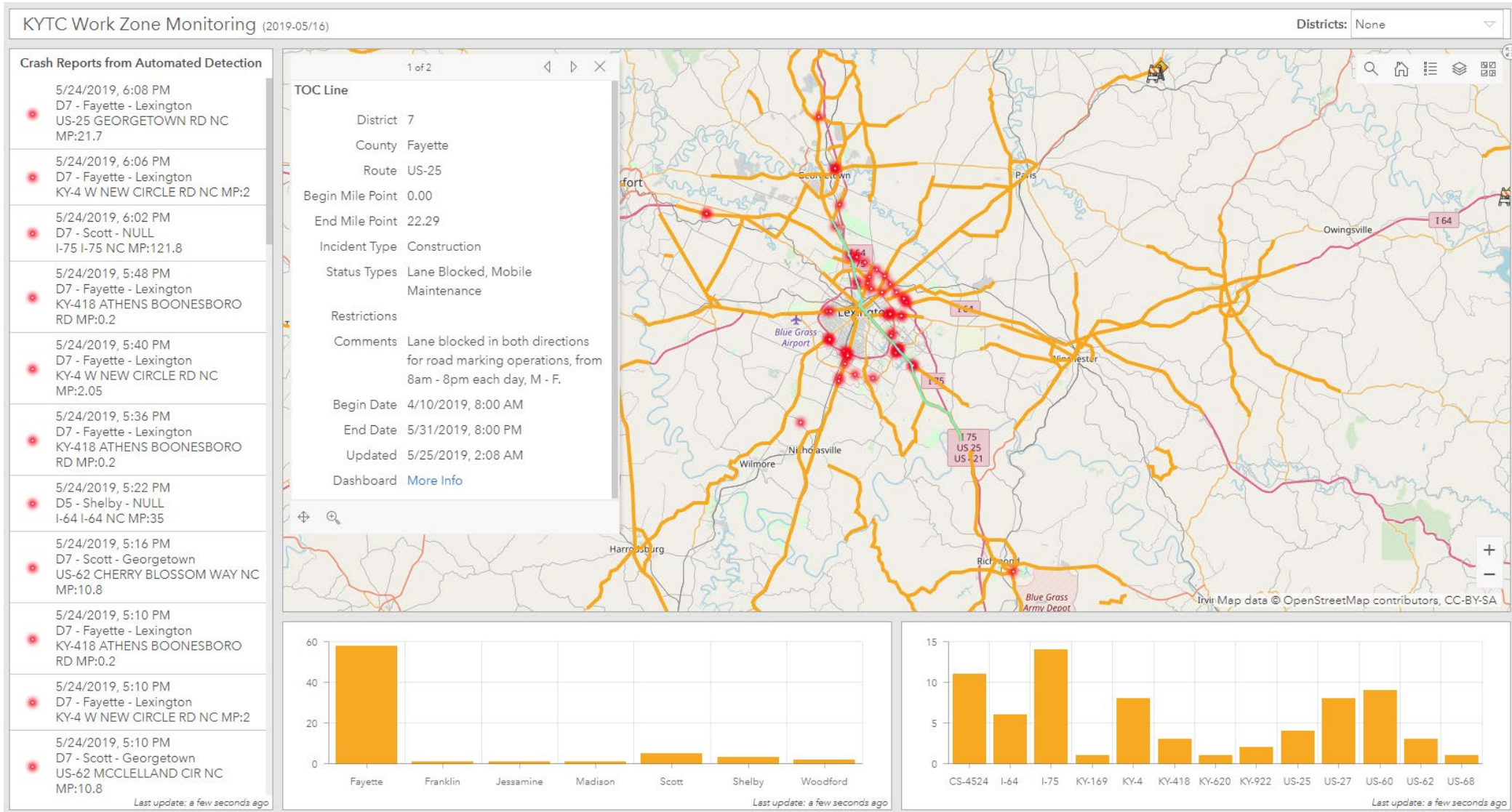
General Data Workflow



Public Information



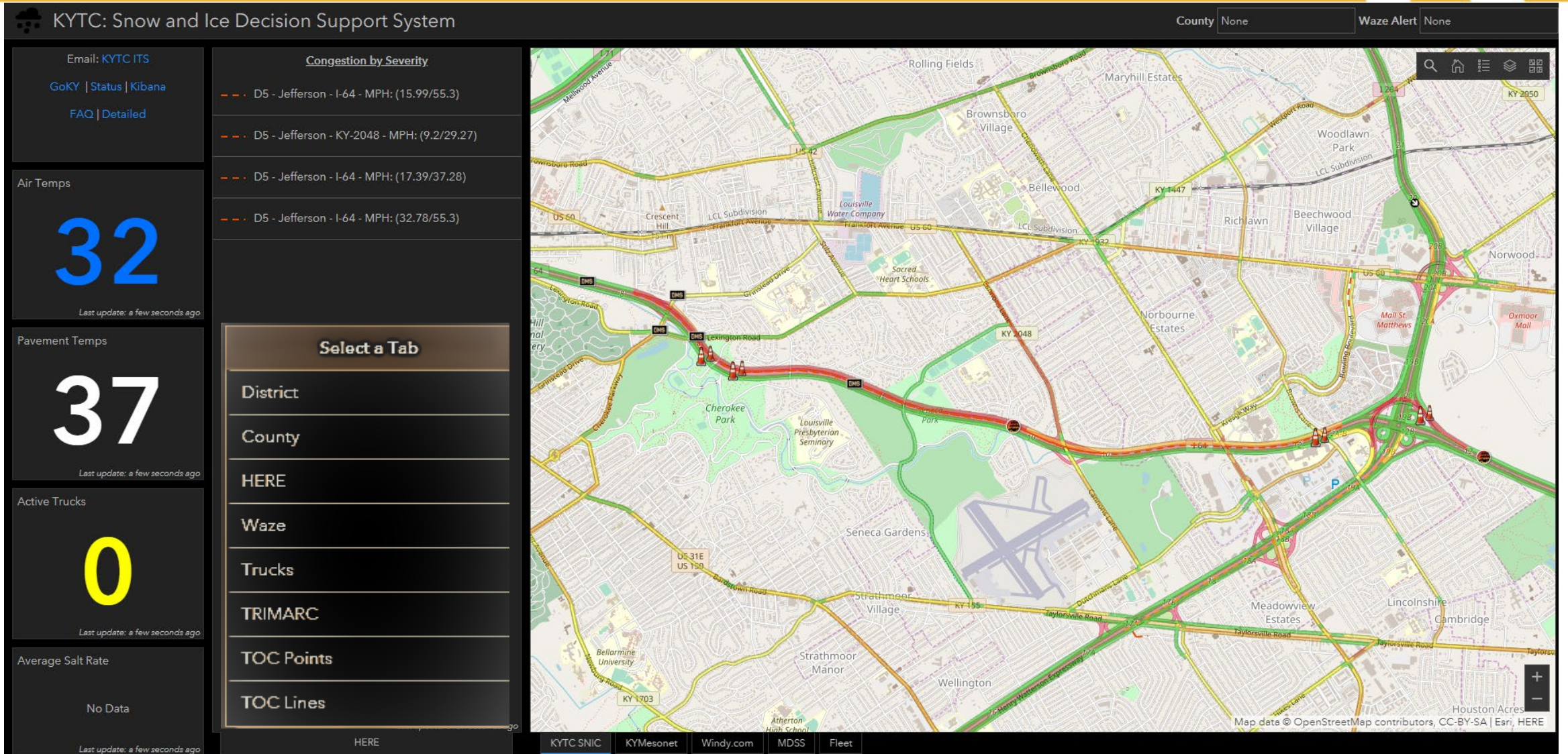
Work Zone: US-25



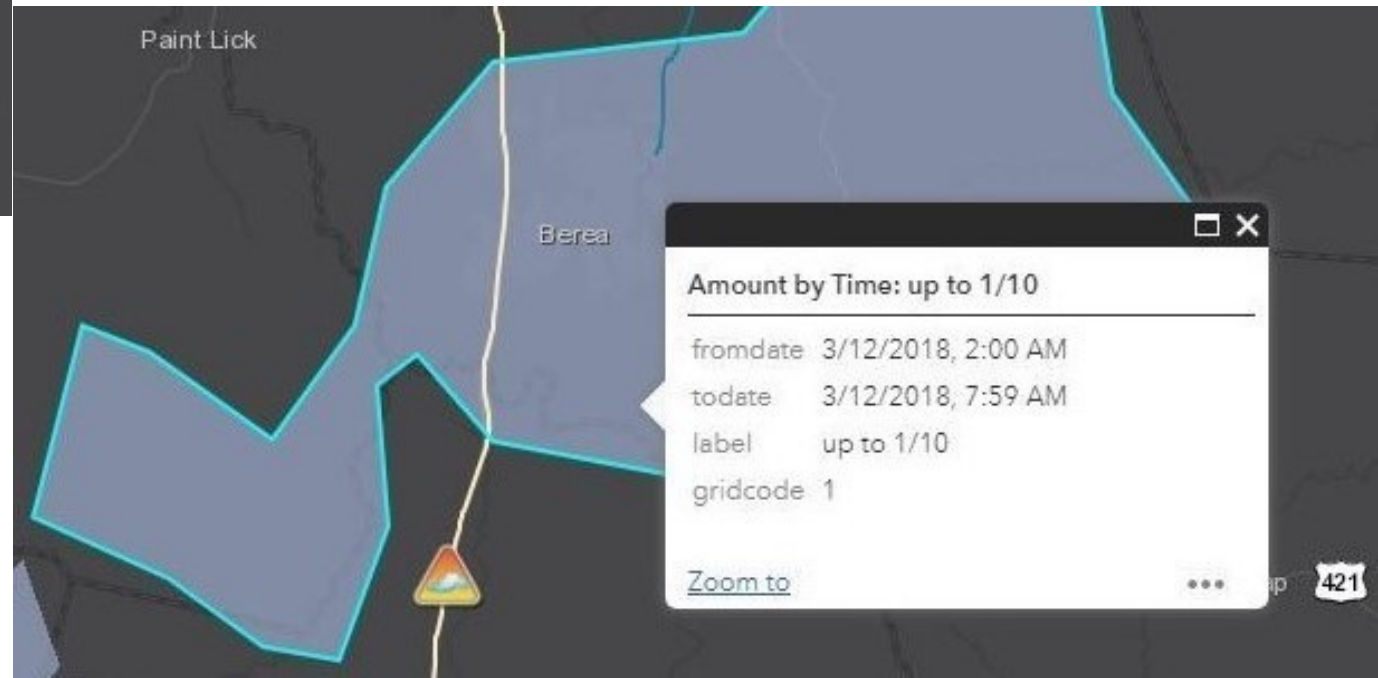
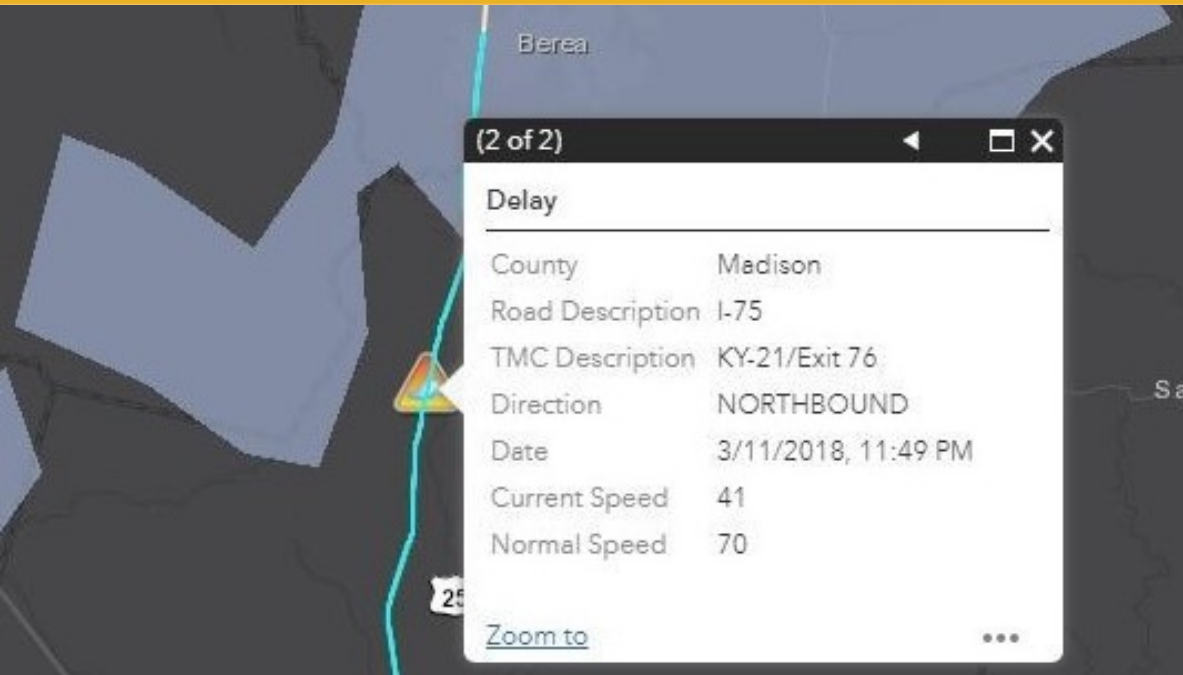
Congestion: US-25 Work Days



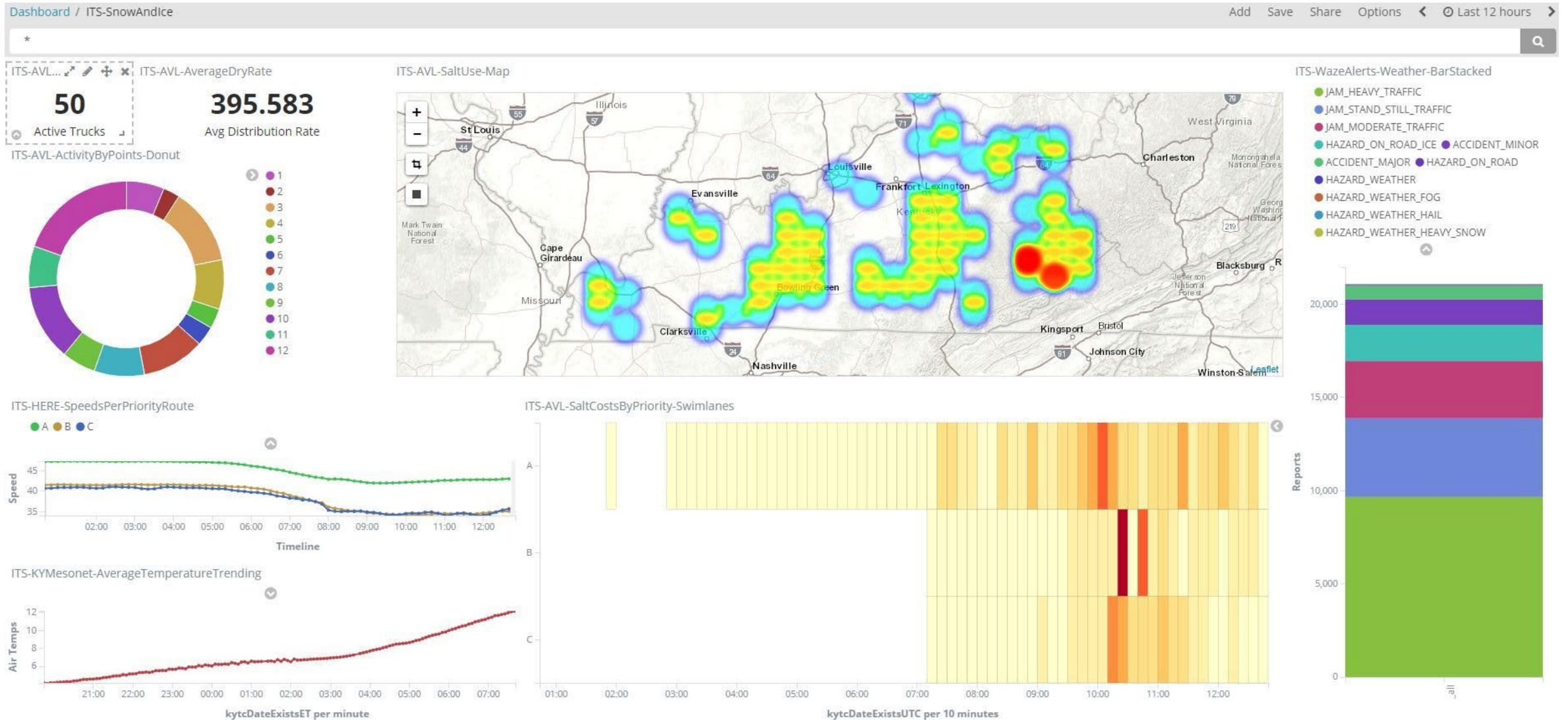
Roadway Weather: Snow and Ice



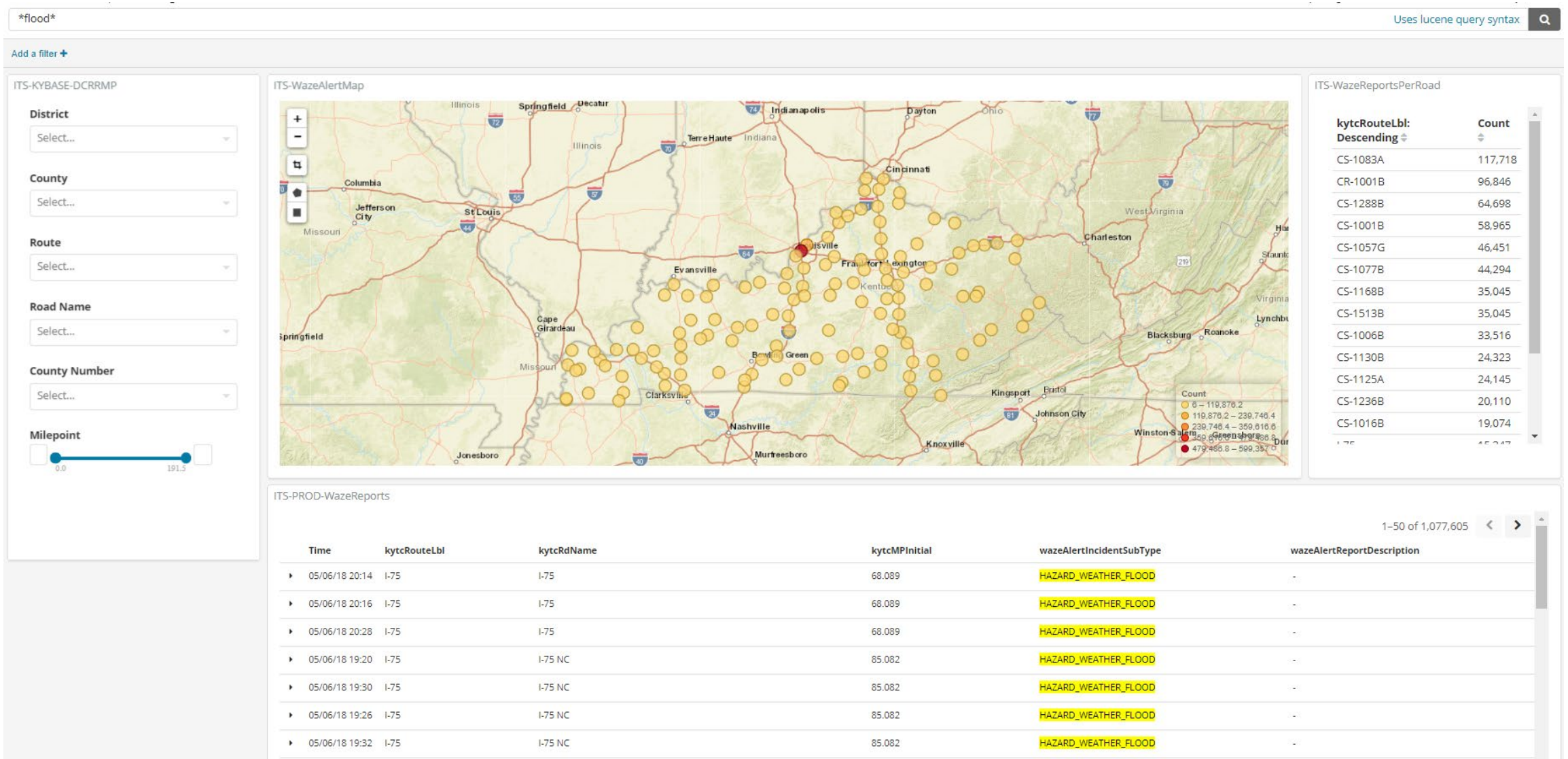
Roadway Weather: Snow and Ice



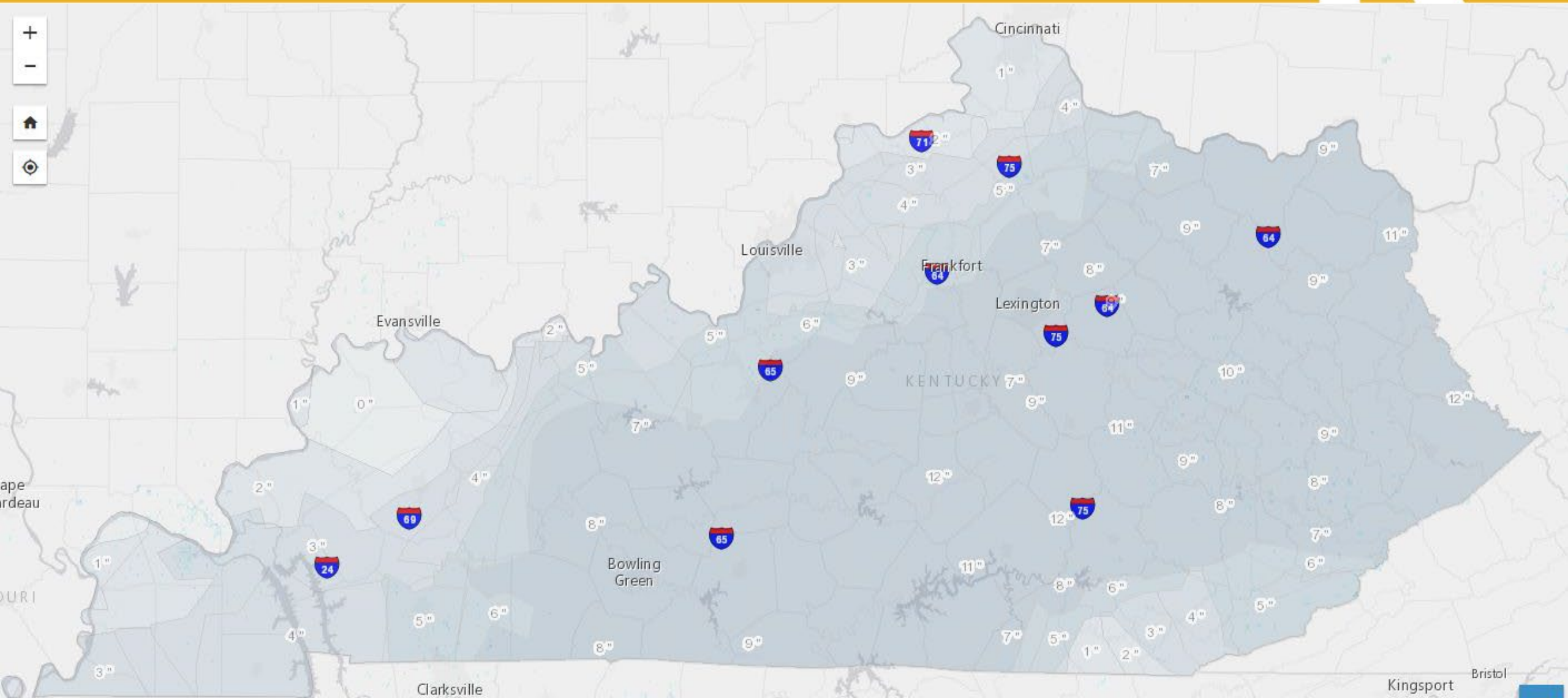
Roadway Weather: Snow and Ice



Roadway Weather: Individual Reports



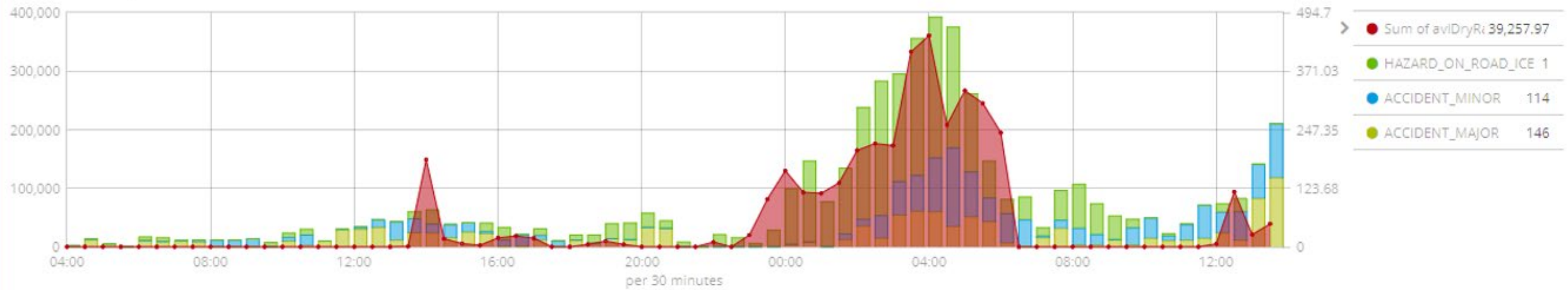
Roadway Weather: Interpolated Areas



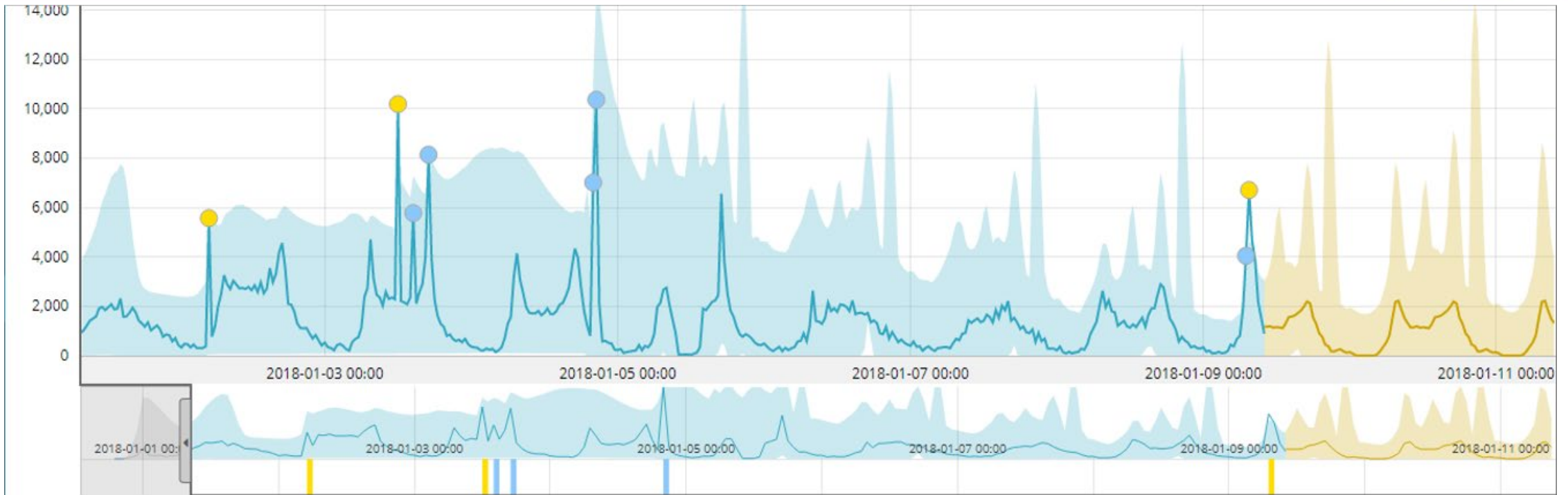
Roadway Weather: Correlations



Time Series Metric Top N Gauge Markdown Table



Roadway Weather: Machine Learning



Anomalies

Severity threshold:

warning

Interval:

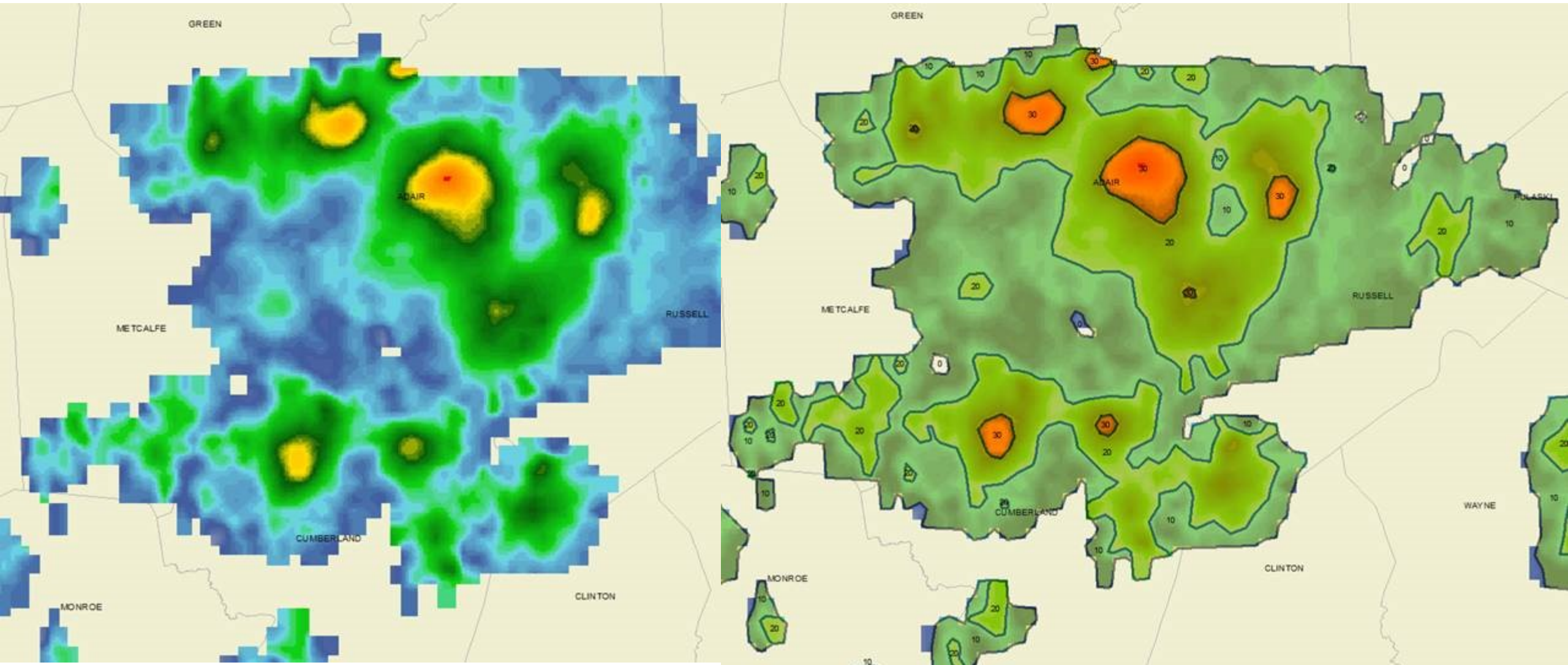
Auto

time	max severity	detector	actual	typical	description	job ID
January 9th 2018	39	high_count	6936	1441.1	5x higher	waze
January 3rd 2018	36	high_count	18503	1053.2	18x higher	waze
January 2nd 2018	25	high_count	10710	649.9	16x higher	waze
January 4th 2018	16	high_count	19655	974.9	20x higher	waze

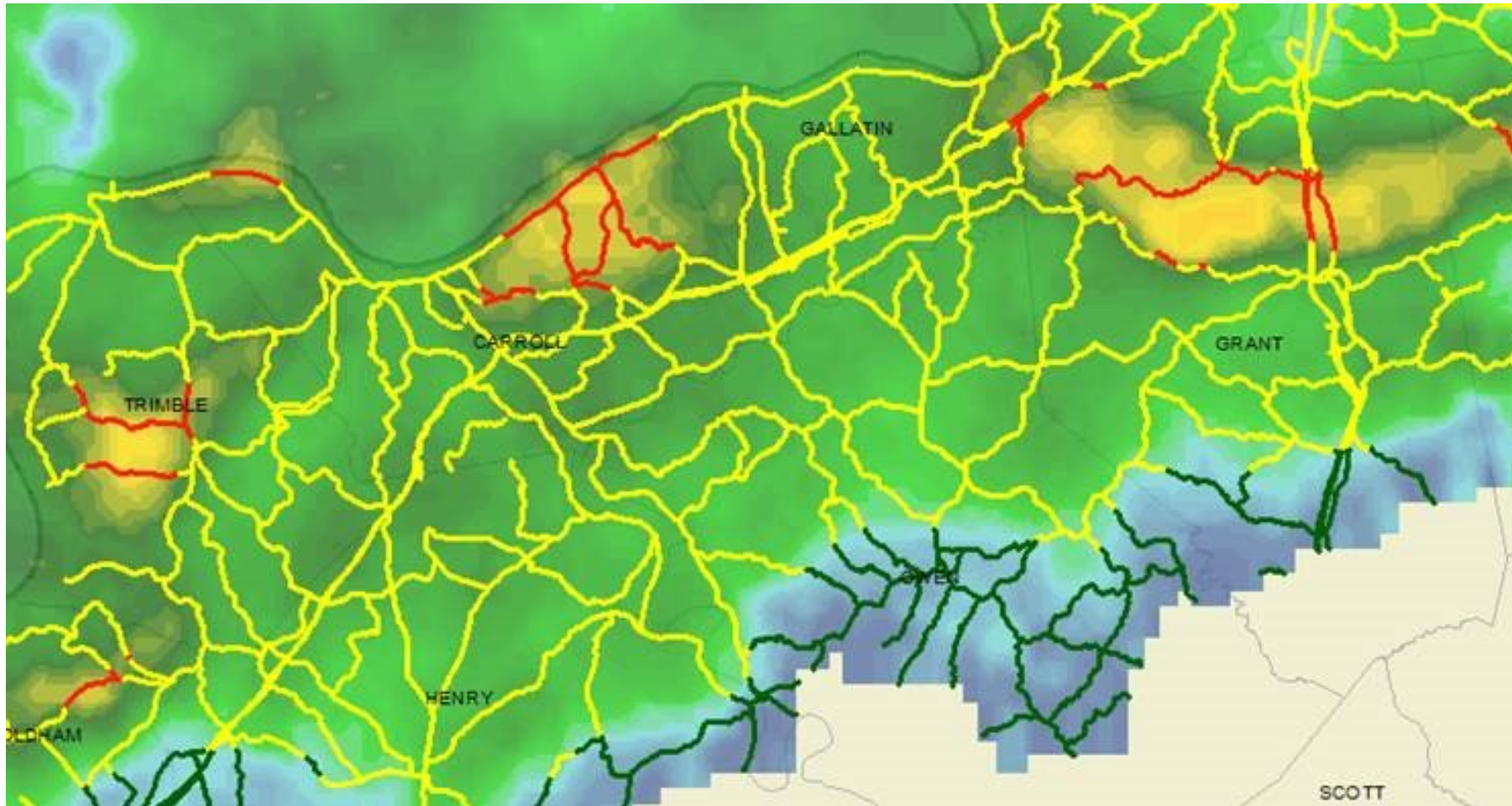
What About Weather or Air Quality?!

- Air Temperatures
- Pavement Temperatures
- Wind Speeds
- Dew Point
- Forecasted Precipitation
- Observed Precipitation
- KYTC Doppler Index
- KYTC Severity Index

Roadway Weather: Doppler



Roadway Weather



County	LengthMiles	avgSeverity
Adair	308.358659	20
Allen	215.2119128	19.22807018
Anderson	59.21847224	10.54794521
Barren	203.73989	12.85024155
Bath	59.34193065	10
Bell	237.1932553	14.30157262
Boone	308.2549445	19.48369565
Bourbon	49.58318889	10
Boyd	66.31752369	10.22988506
Boyle	168.8615479	20
Bracken	166.9391689	16.6875
Breathitt	281.9087188	10.61674009
Bullitt	100.1204791	11.42284569
Butler	10.24478975	15
Caldwell	113.0378296	13.36
Campbell	247.7356661	20
Carroll	37.8340777	12.64367816
Carter	270.012051	10.40733198
Casey	248.3658403	19.78835979

QUESTIONS?

Jeremy Gould, jeremy.gould@ky.gov

Randi Feltner, randi.feltner@ky.gov

Chris Lambert, chris.lambert@ky.gov

Twitter: @KYTC

Facebook: /kytc120