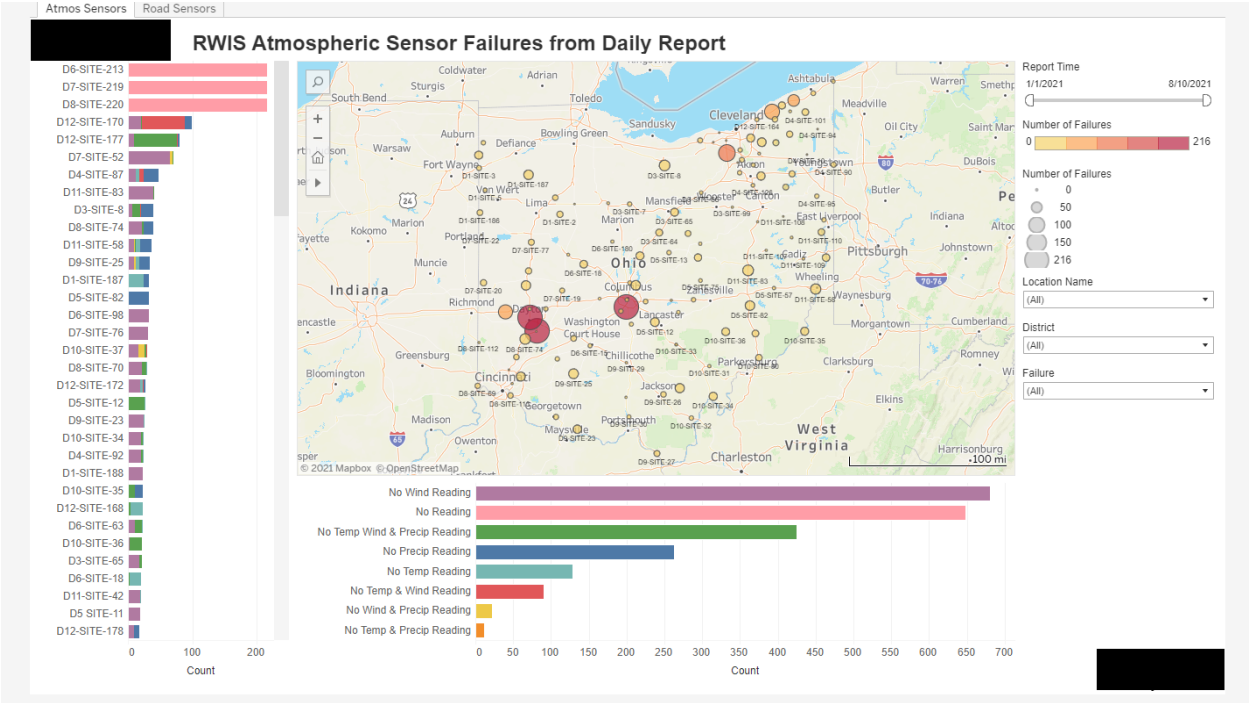
Kyle Vertin
Internship for DTS
May 2021 - August 2021

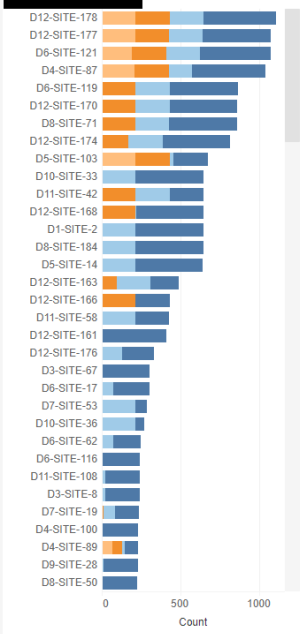
The main focus of my responsibilities were assisting in the ETL process for daily reports and RWIS API data. Both data sources came from a technology called RWIS (road weather information system); which recorded different variables related to road and atmospheric conditions that can be used for assessing their impact on traffic. This data is also useful for the managers and technicians out in the field who are responsible for the sensors when they are experiencing outages. We also used this data for cross referencing purposes with what ODOT was recording to make sure they weren't being overcharged so DTS was getting paid properly for the contract work they were providing. All of the relevant data was cleaned and processed with specified time intervals and stored into a database. The data was used for Tableau visualizations and hosted on a server for stakeholders of interest to use.

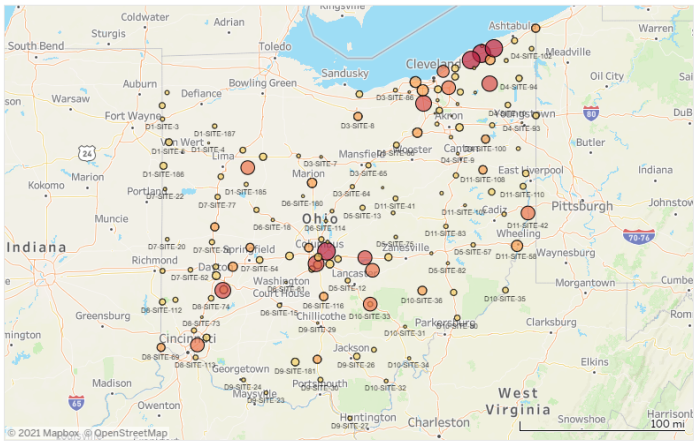
Dashboards:



Atmos Sensors | Road Sensors

RWIS Road Sensor Failures from Daily Report





Report Time
1/1/2021 8/10/2021

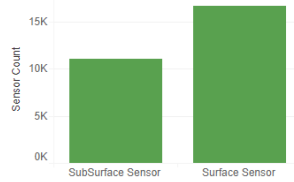
Number of Failures
0 1,108

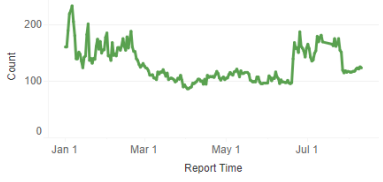
Number of Failures
0
200
400
600
800
1,000
1,108

Location Name
(All)

Road Sensor Type
(All)
SubSurface Sensor
Surface Sensor

Sensor
0
1
2
3





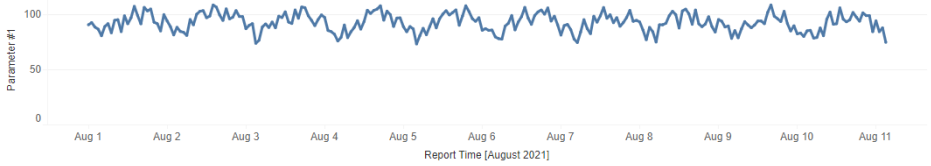
[redacted]

Atmos Hourly | Atmos Hourly Sites | Road Hourly | Road Hourly Sites

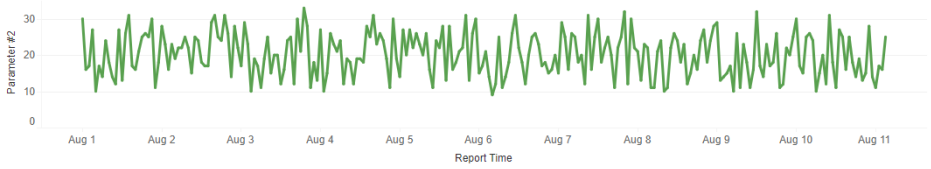
[redacted]

RWIS Atmospheric Sensors - Hourly Measurements

Graph 1: Temperature



Graph 2: Wind Speed



Graph 3: Precipitation Rate

Report Date
2021-08-01 2021-08-11

Location Name
D1-SITE-1

Parameter #1
Temperature

Parameter #1
Temperature

Parameter #2
Wind Speed

Parameter #2
Wind Speed

Parameter #3
Precipitation Rate

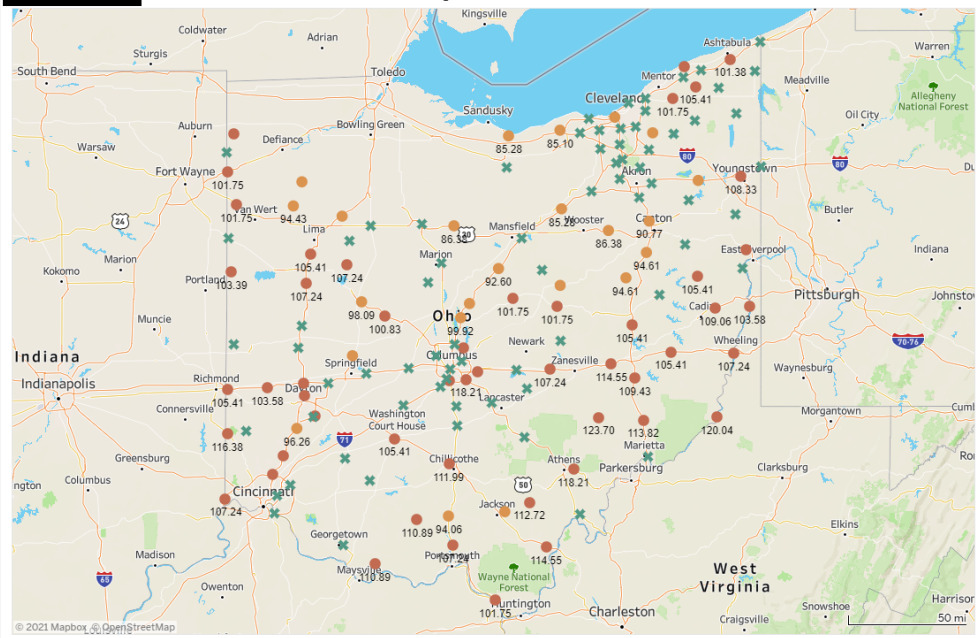
Parameter #3
Precipitation Rate

[redacted]

Atmos Hourly | Atmos Hourly Sites | Road Hourly | Road Hourly Sites

[redacted]

RWIS Road Sensors - Hourly Measurements for All Sites



Report Date: 2021-08-10

Hour of Report Time: 0

Marker Color: -50.0 — 130.0

Parameter: Road Temp

Location Name: (All)

District: (All)

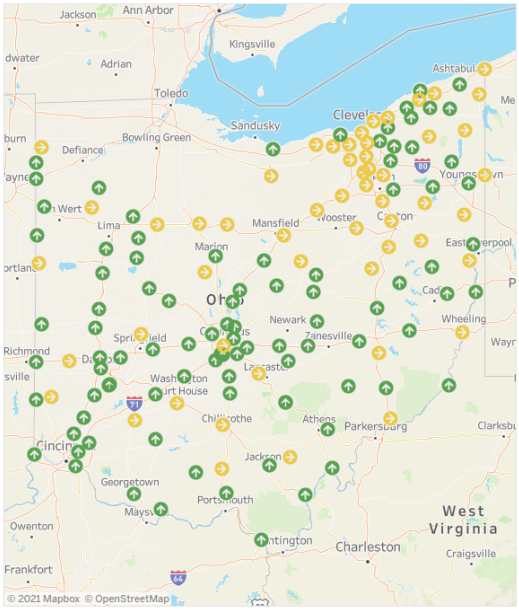
Sensor Number: (•) 0 ( ) 1 ( ) 2 ( ) 3

[redacted]

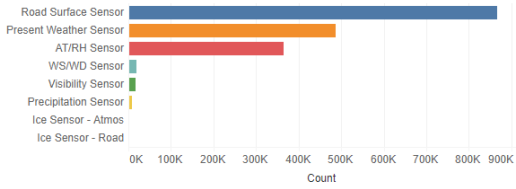
[redacted]

RWIS Device Availability

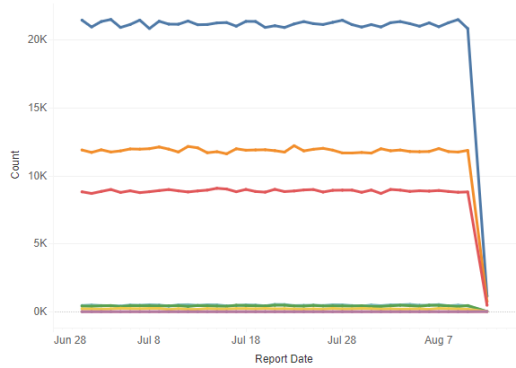
Status for Date Range



Number of Sensor Failures



Trend Line



Report Date: 8/1/2021 — 8/10/2021

Location Name: (All)

District: (All)

Route: (All)

Failure: (All)

Status (>1 Reading/24 hrs): ☑ (All) ☑ Operational ☑ Down

Sensor Failure:
- Road Surface Sensor
- Present Weather Sensor
- AT/RH Sensor
- WS/WD Sensor
- Visibility Sensor
- Precipitation Sensor
- Ice Sensor - Atmos
- Ice Sensor - Road

[redacted]

Sample Code: