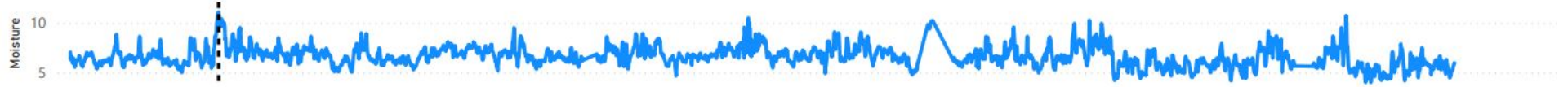
TREC Moisture Scans - Sample Road Analysis

Moisture vs Chainage | All graphs | Data divided by Road ID

Chainage vs Moisture | Road ID: 002-0533

Chainage vs Moisture | Road ID: 002-0544

Chainage vs Moisture | Road ID: 002-0562



Chainage vs Moisture | Road ID: 002-0577

Chainage vs Moisture | Road ID: 002-0592

Chainage vs Moisture | Road ID: 002-0608

Denoised Moisture vs Chainage | All graphs | Data divided by Road ID

Chainage vs Moisture | Denoised | Road ID: 002-0533

Chainage vs Moisture | Denoised | Road ID: 002-0544

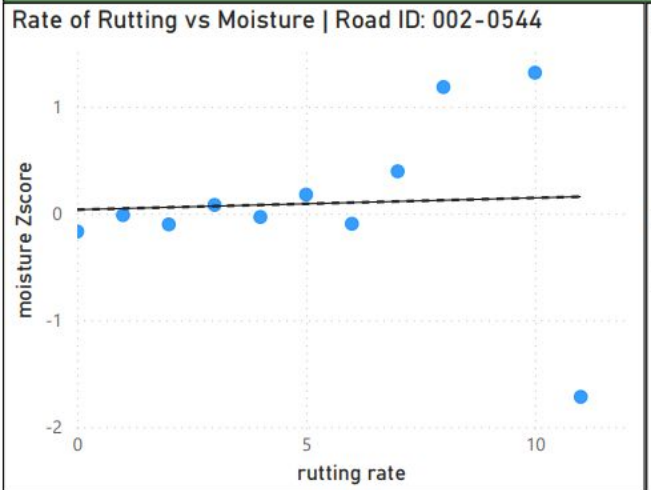
Chainage vs Moisture | Denoised | Road ID: 002-0562

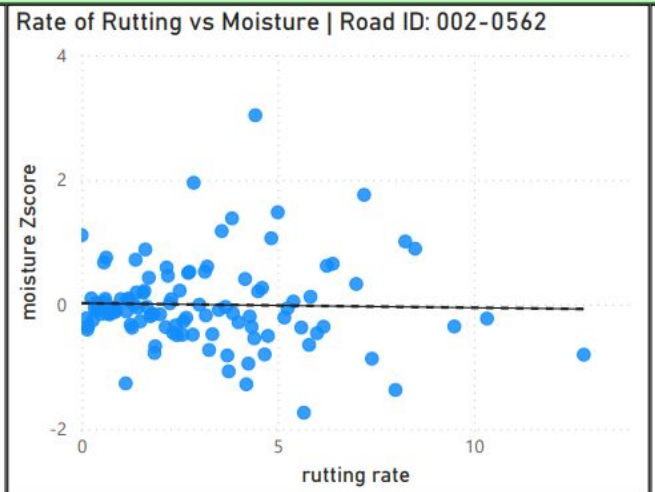
Chainage vs Moisture | Denoised | Road ID: 002-0577

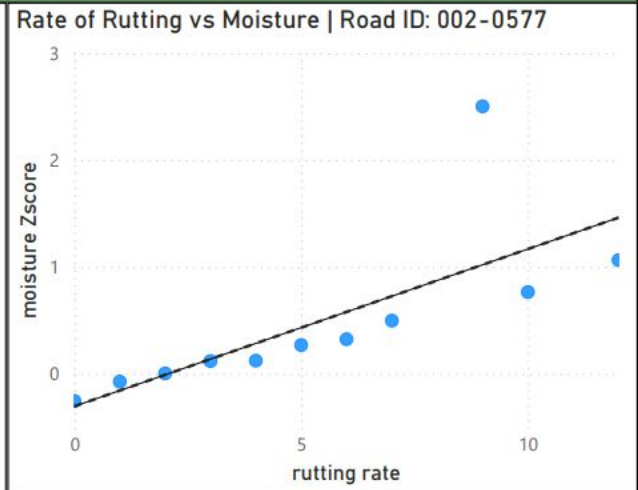
Chainage vs Moisture | Denoised | Road ID: 002-0592

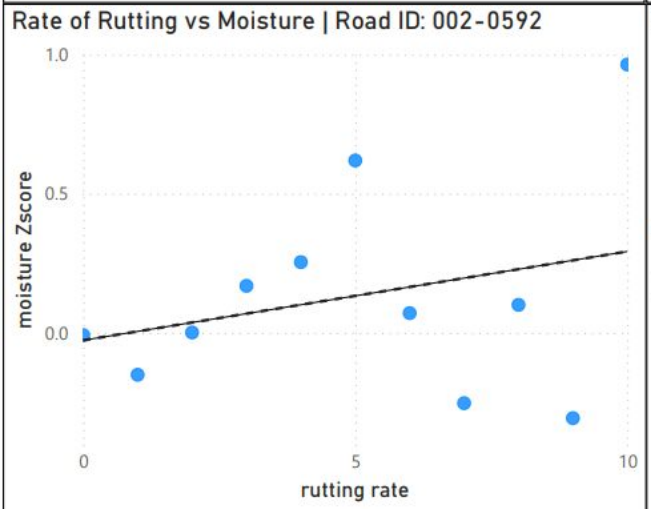
Chainage vs Moisture | Denoised | Road ID: 002-0608

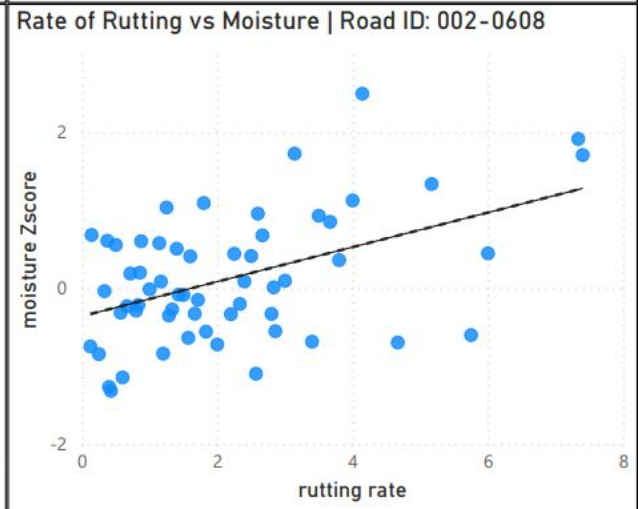
Moisture vs Rutting Rate | All graphs | Data divided by Road ID







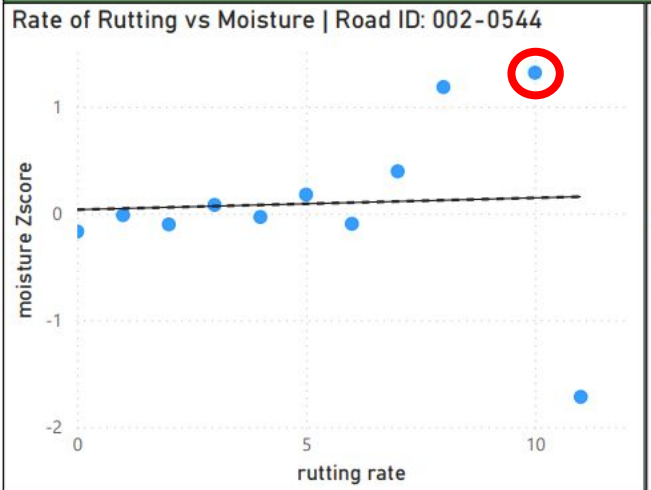


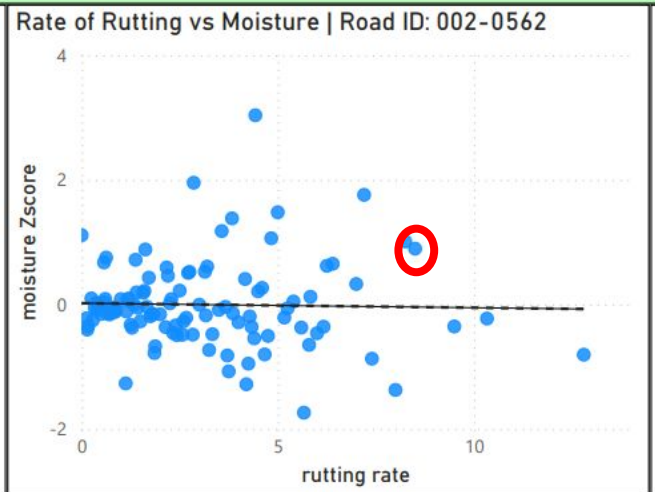


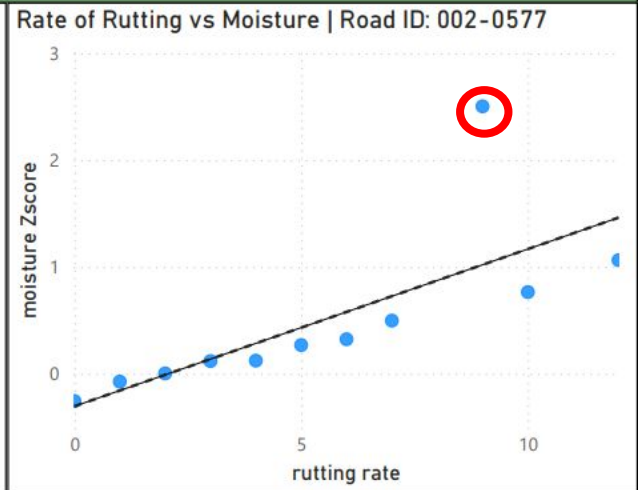
Moisture and Rutting Rate vs Maintenance Frequencies

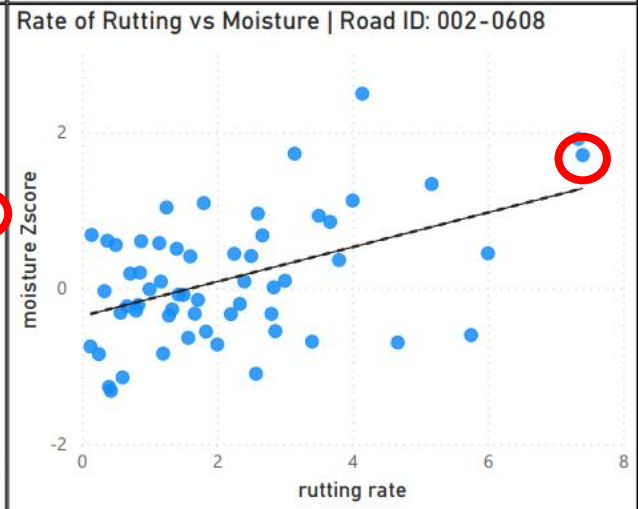
- On plots of moisture readings vs rutting rates, the points with the highest moisture and rutting rate were selected; the most top-right points
- These points have been highlighted on the following slide
- A different point was chosen for each road
- Each point represents a section of road 20m long
- The maintenance frequencies of these points have been compared to the average for the road that point is on
- Of the six points selected, four had higher than average maintenance frequencies

Moisture vs Rutting Rate | All graphs | Data divided by Road ID







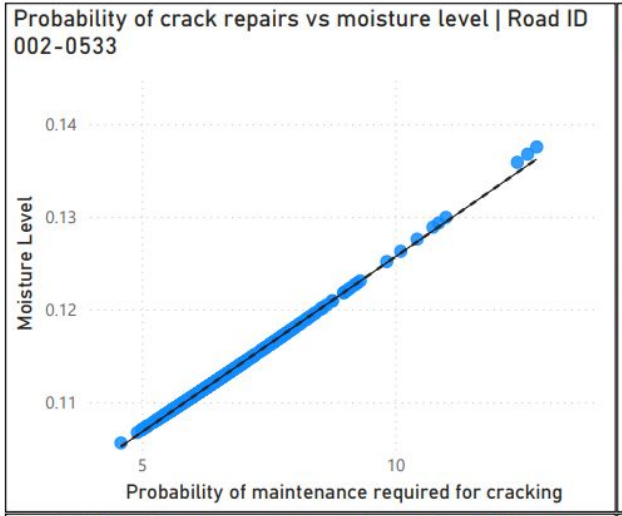


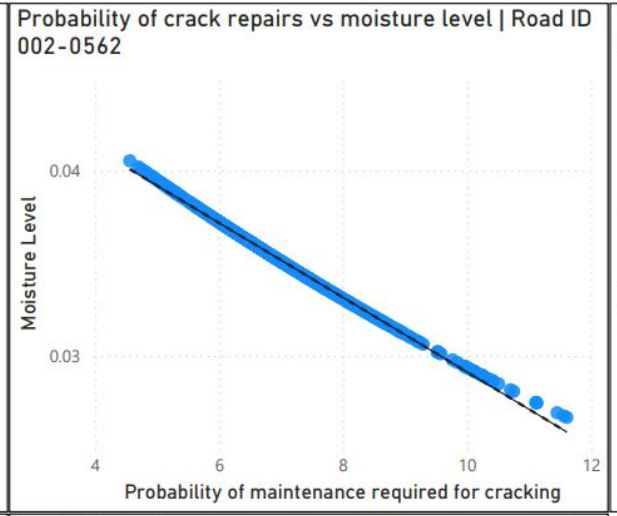
Maintenance Frequencies

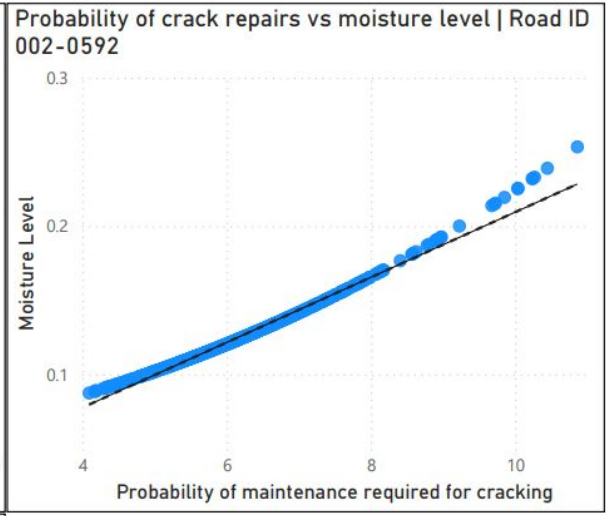
Road ID	002-0533	002-0533	002-0533	002-0533	002-0533	002-0533
Chainage of highlighted point	5280m	9440m	11200m	10230m	720m	1160m
Average pothole repairs	1.04	0.55	0.25	0.49	0.65	0.67
Pothole repairs at highlighted point	0	1	0	3	2	1
Average rut repairs	0.35	0.18	0.16	0.18	0.20	0.25
Rut repairs at highlighted point	0	2	0	3	3	0

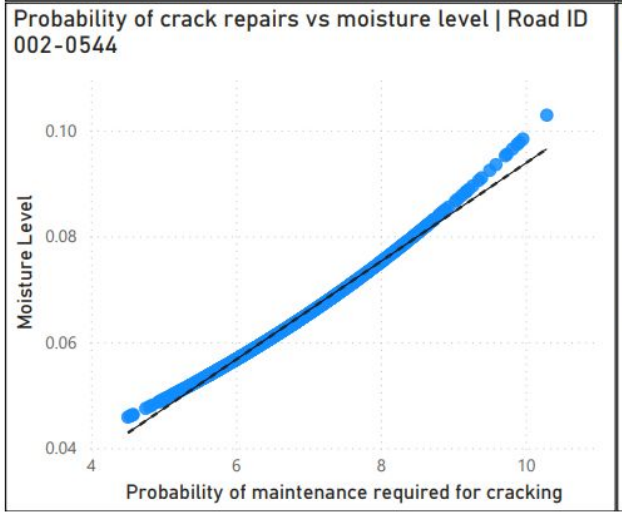
Logistic Regression

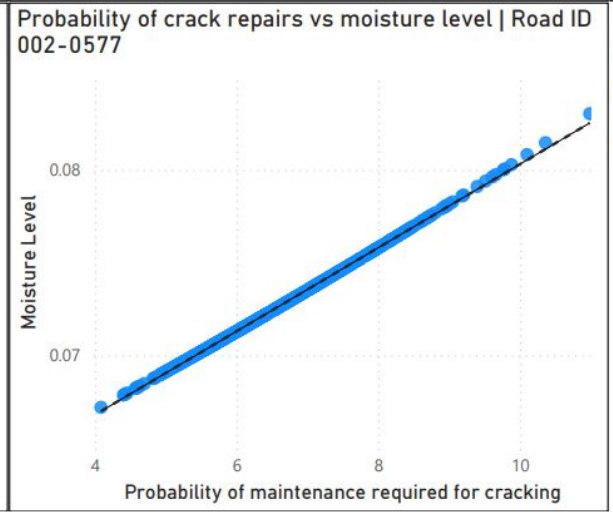
- The final three slides show a logistic regression of the probability of maintenance events having occurred in the last decade, plotted against moisture
- A logistic regression was chosen as the most appropriate statistical model due to the scarcity of positive data (most road sections hadn’t had any maintenance in the last decade, with a “section” being a 20m stretch of road)
- The results show that for most types of maintenance and most roads, the probability of maintenance having been required increases with moisture level



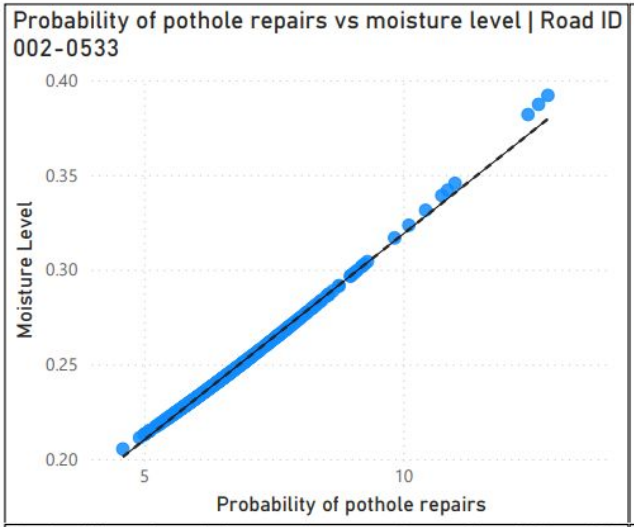


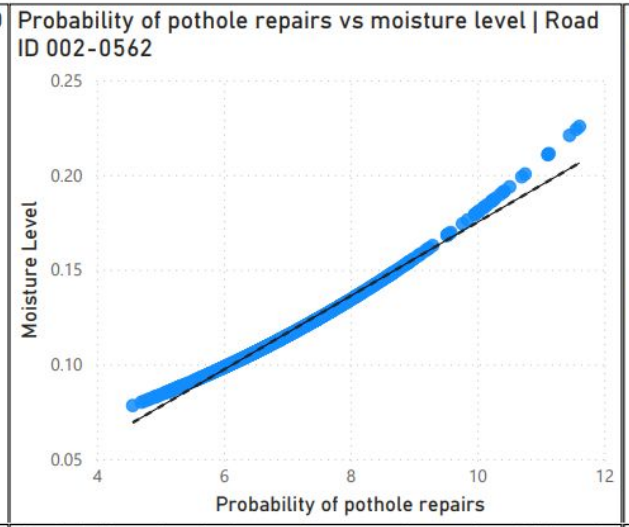


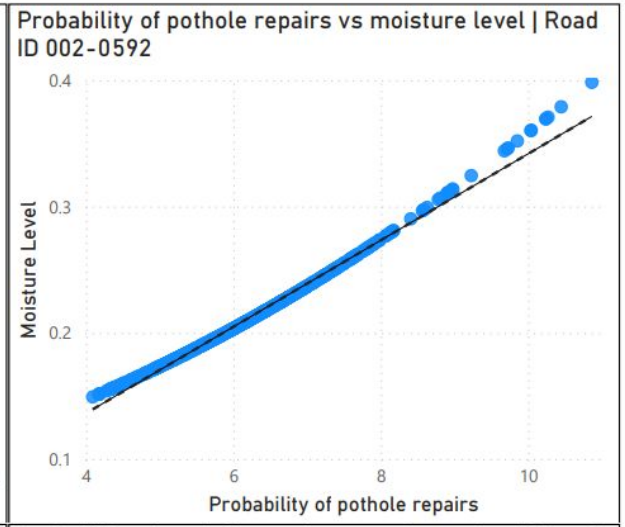


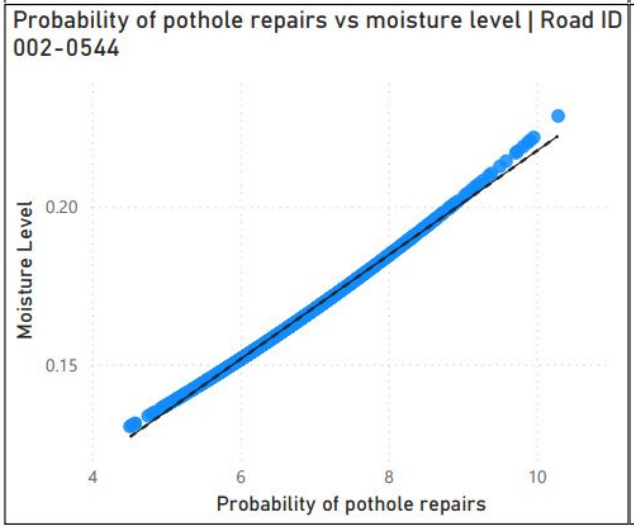


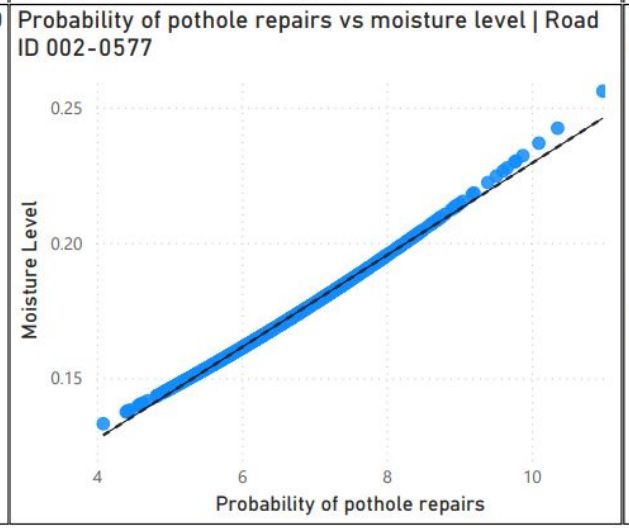
Road 002-0608 had very little cracking so there isn't enough data to run a logistic regression

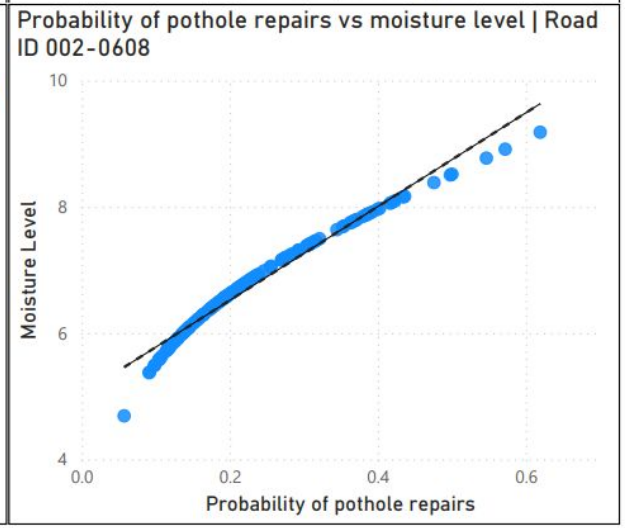

Probability of pothole repairs vs moisture level | Road ID 002-0533
Moisture Level
0.40
0.35
0.30
0.25
0.20
5
10
Probability of pothole repairs

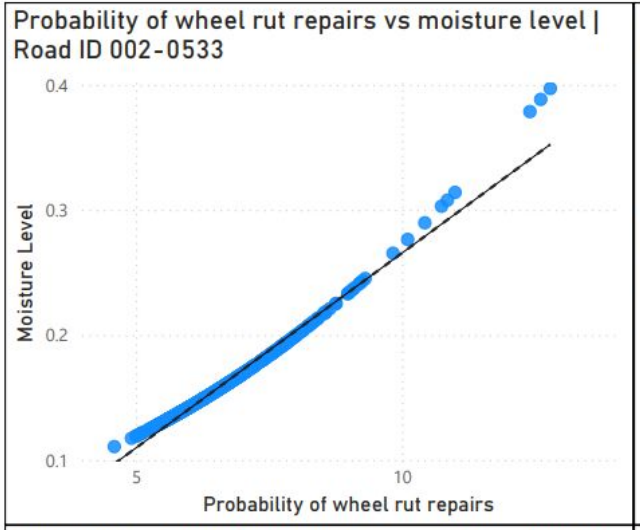

Probability of pothole repairs vs moisture level | Road ID 002-0562
Moisture Level
0.25
0.20
0.15
0.10
0.05
4
6
8
10
12
Probability of pothole repairs

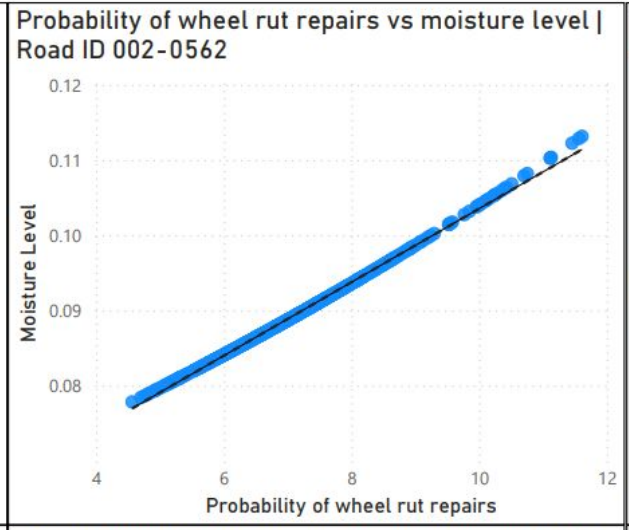

Probability of pothole repairs vs moisture level | Road ID 002-0592
Moisture Level
0.4
0.3
0.2
0.1
4
6
8
10
Probability of pothole repairs

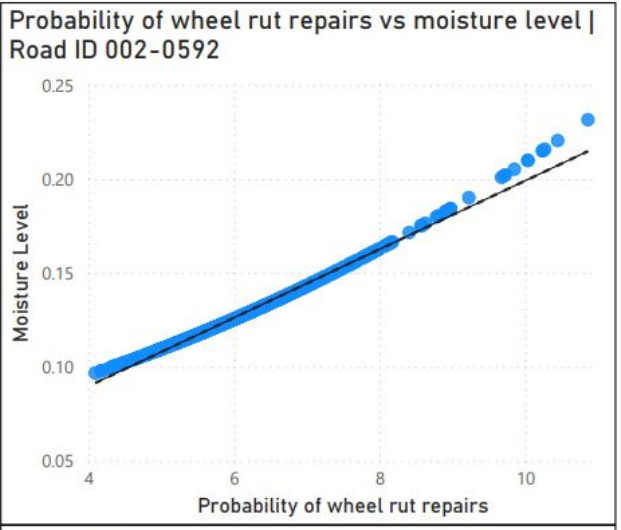

Probability of pothole repairs vs moisture level | Road ID 002-0544
Moisture Level
0.20
0.15
4
6
8
10
Probability of pothole repairs

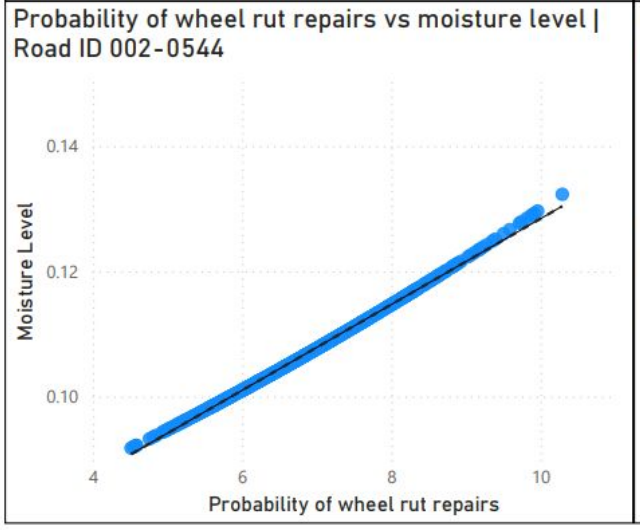

Probability of pothole repairs vs moisture level | Road ID 002-0577
Moisture Level
0.25
0.20
0.15
4
6
8
10
Probability of pothole repairs

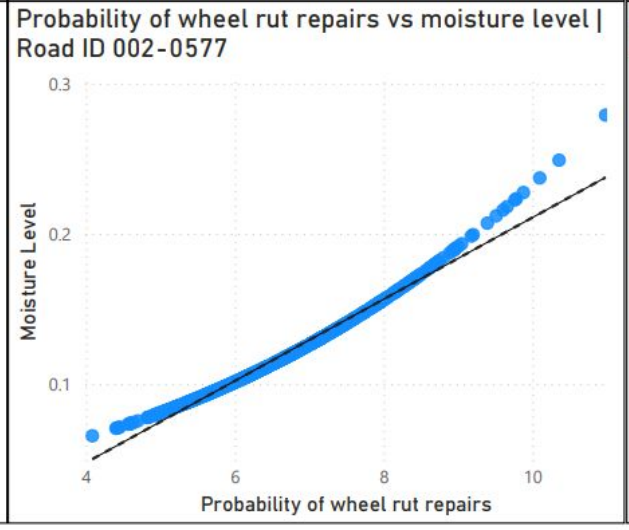

Probability of pothole repairs vs moisture level | Road ID 002-0608
Moisture Level
10
8
6
4
0.0
0.2
0.4
0.6
Probability of pothole repairs

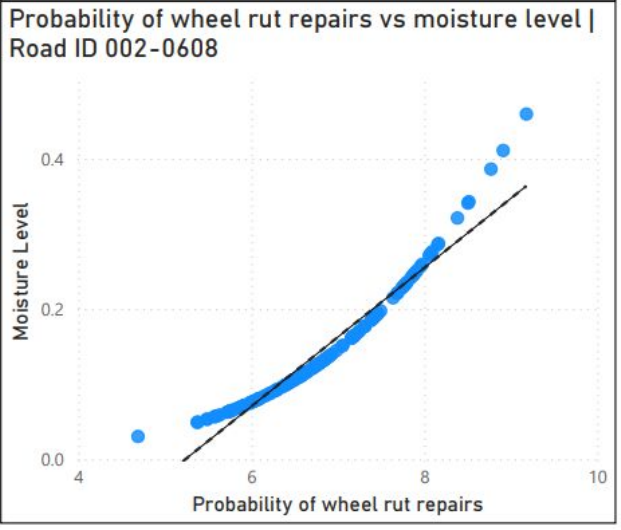

Probability of wheel rut repairs vs moisture level | Road ID 002-0533
Moisture Level
0.4
0.3
0.2
0.1
5
10
Probability of wheel rut repairs


Probability of wheel rut repairs vs moisture level | Road ID 002-0562
Moisture Level
0.12
0.11
0.10
0.09
0.08
4
6
8
10
12
Probability of wheel rut repairs


Probability of wheel rut repairs vs moisture level | Road ID 002-0592
Moisture Level
0.25
0.20
0.15
0.10
0.05
4
6
8
10
Probability of wheel rut repairs


Probability of wheel rut repairs vs moisture level | Road ID 002-0544
Moisture Level
0.14
0.12
0.10
4
6
8
10
Probability of wheel rut repairs


Probability of wheel rut repairs vs moisture level | Road ID 002-0577
Moisture Level
0.3
0.2
0.1
4
6
8
10
Probability of wheel rut repairs


Probability of wheel rut repairs vs moisture level | Road ID 002-0608
Moisture Level
0.4
0.2
0.0
4
6
8
10
Probability of wheel rut repairs