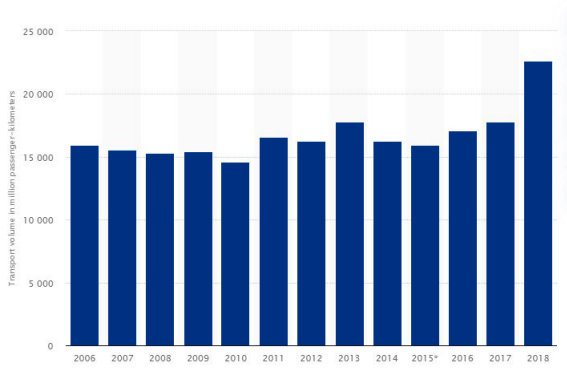

Vertrek
Naar / Opmerkingen
Spoor
Trein
09 57
10:08 Maastricht
Rijdt niet
15
Intercity
sein- en wisselstoring
10:08 Nijmegen
Rijdt niet
14
Intercity
sein- en wisselstoring
10:10 Almere Oostvaarders
Rijdt niet
3
Sprinter
sein- en wisselstoring
10:10 Den Helder
Rijdt niet
5
Intercity
sein- en wisselstoring
10:11 Breda
Rijdt niet
19b
Sprinter
10:13 Schiphol
Rijdt niet
7
Intercity
sein- en wisselstoring
10:14 Den Haag Centraal
Rijdt niet
9
Intercity

CASTAWAY NL

NS (Nederlandse Spoorwegen)

- 1 million travelers per day
- 4,800 train journeys per day
- 3,000 railway cars
- Over 260,000 seats
- 380 stations
- 35 million passengers in September 2018
- 36,7 million passengers in September 2019



Volume of passenger rail transport in the Netherlands 2006-2018 (in million passenger-kilometers)
Source: Statista 2020

INSIGHTS

All NS train stations in The Netherlands

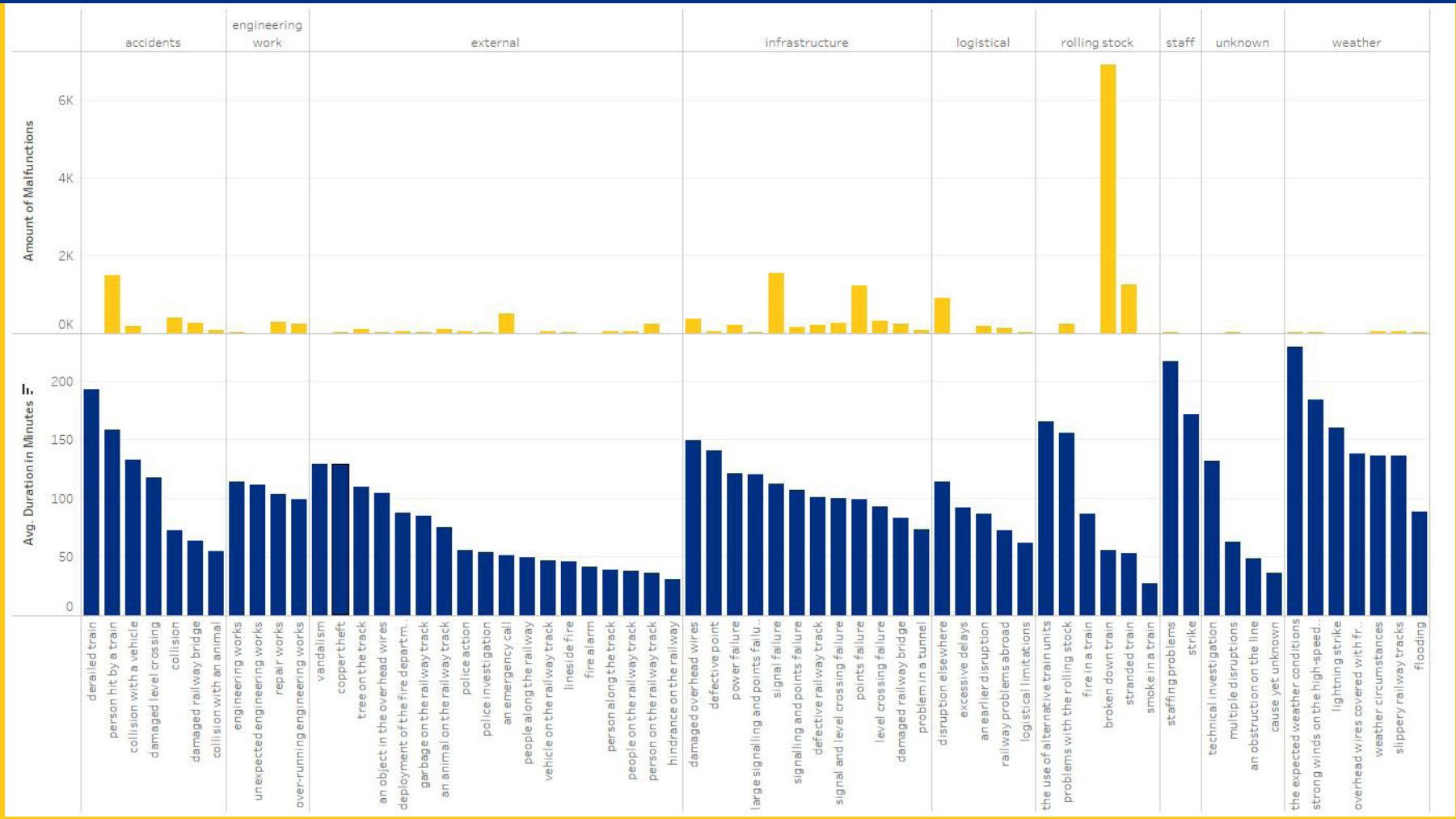
INSIGHTS

Accumulated time taken to solve a malfunction (2019)

INSIGHTS

Average duration of malfunction
35min. - 180min.

INSIGHTS



Malfunction Groups

PRODUCT

Features used:

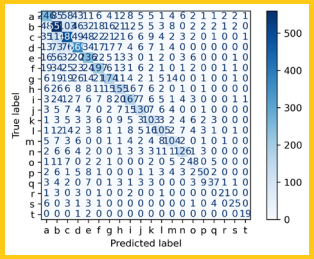
- Station Name
- Month
- Day of the Week
- Holiday (is it a national holiday or not?)
- Time Type (peak or off-peak)
- Malfunction Cause
- Rain
- Wind
- Temperature

PRODUCT

CASTAWAY DEMO

NEXT STEPS

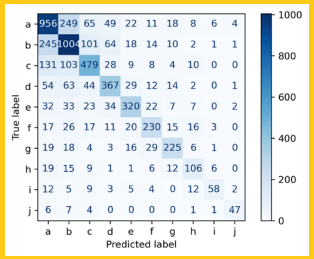
Improve results of models



Classification Strategy:

- **Random Forest Classifier (duration grouped into 15 minute intervals)**

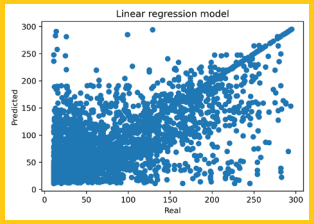
  Accuracy = 0.59
  Kappa = 0.55



- **Random Forest Classifier (duration grouped into 30 minute intervals)**

  Accuracy = 0.66
  Kappa = 0.59

Regression Strategy:



- **K Neighbors Regressor**

  R2 = 0.52
  MAE = 27 (minutes)
  MSE = 2169.97
  RMSE = 46.58

Improve data collection

- Get historic data from as far back as possible.
- Connect to NS API to update the dataset with new data every day or week.
- Collect data that allows to dismiss programmed malfunctions, such as engineering projects.
- Collect data on distributions of passenger amounts throughout the day, the week, and the year.
- Find new features that influence the duration of a malfunction.

Data sources:

• Rijden de Treinen. “Open data”. RIJDENDETREINEN.nl. https://www.rijdendetreinen.nl/ (accessed November 28, 2020).

• Koninklijk Nederlands Meteorologisch Instituut. “Daggegevens van het weer in Nederland”. KNMI.nl. http://projects.knmi.nl/klimatologie/daggegevens/selectie.cgi (accessed November 28, 2020).

THANK YOU