Under Pressure

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Challenge: Identify if a Truck Needs Inspection

- Scania trucks is a Swedish manufacturer of commercial vehicles

- Proposed a classification challenge in 2016 to identify failures in a heavy truck's Air Pressure System

- The APS allows trucks to break

- Missed checks on the APS have human and capital costs

Using Machine Learning Reduces Costs by 20x

- Cost of checking APS status for every truck:

€10 / truck

- Random Forest Classifier to identify APS failures:

€0.50 / truck

False Negatives 50x costlier than False Positives

	Predict No Failure	Predict Failure
No Failure	✓	Waste Mechanic's Time
Failure	Broken Truck	✓

Apply Supervised Learning to 60,000 Examples

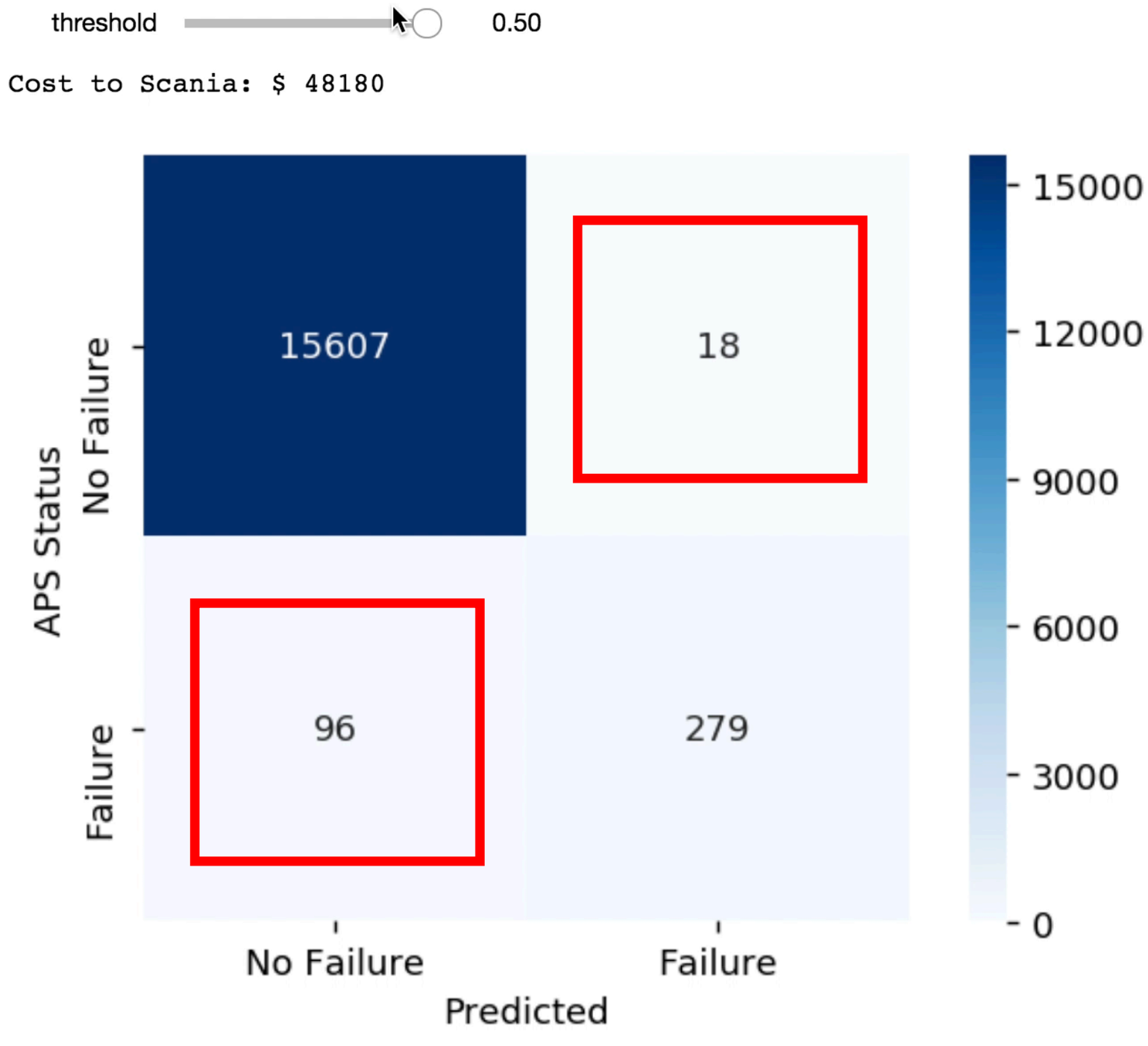
- APS Failures represent <2% of cases

Process Anonymized Data

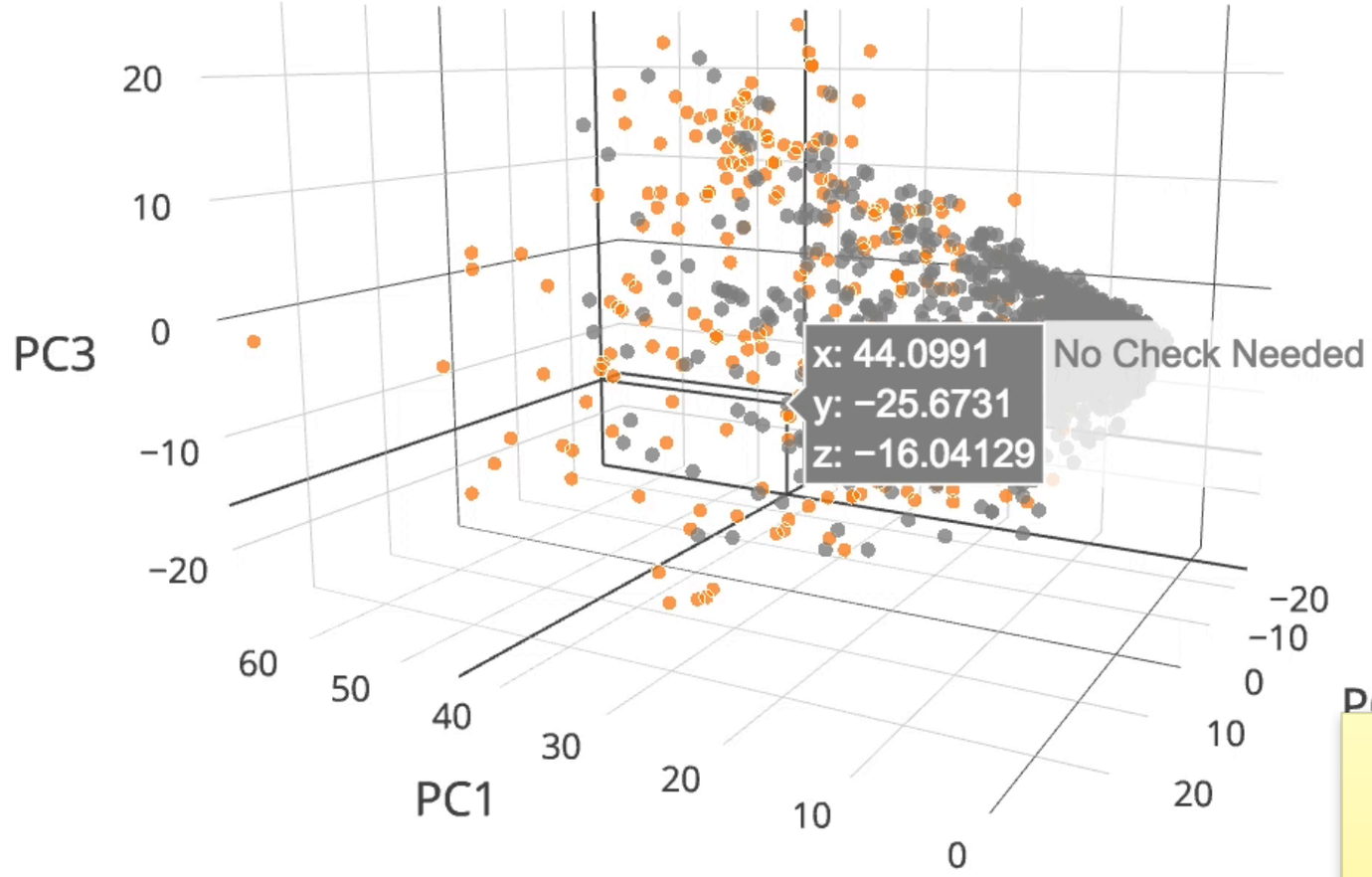
Feed Data to Classifiers

Adjust Model to Minimize Cost

Minimize Costs by Tuning the Prediction Threshold



Data Reduced from >140 Features to 3



Data represents:
375 Failures
5000 Non Failures

Identify dots by “failure”
Instead of “class”. Don’t add any more confusion.

APS Failure No Check Needed

Model Results

- Random Forest Classifier:
  - Test set: 16,000 trucks
  - Cost savings: €150,000
- Favoring false positives over false negatives reduces cost of APS failures in moving trucks
- Outperforms top submissions from the 2016 challenge