

Predicting Rain in Australia

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Introduction

Problem:

- Australia's contrasting weather conditions from 2019 until today
- Loss of life and property due to fires and floods

Solution:

- Classification model which can predict if it rains tomorrow or not

Almost 3 billion animals affected by Australian bushfires, report shows

Heavy rains pummel Australia's east, bringing worst floods in 50 years

ECONOMY

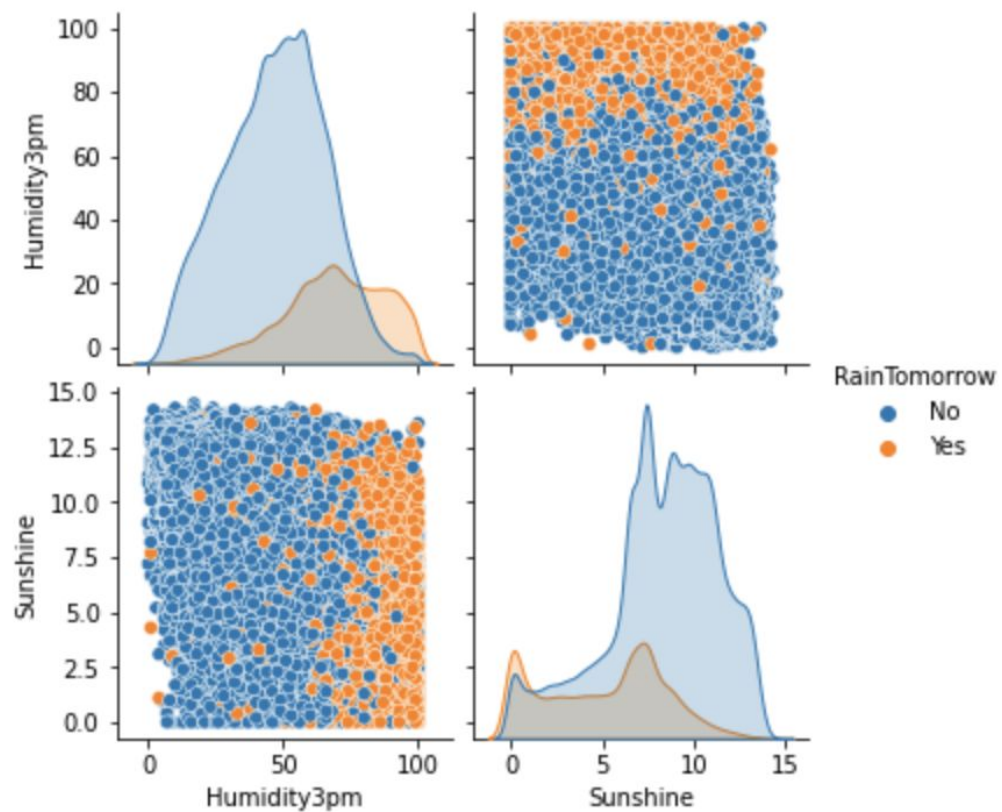
“We need resilience”: The hidden economic effects of floods and bushfires

Data

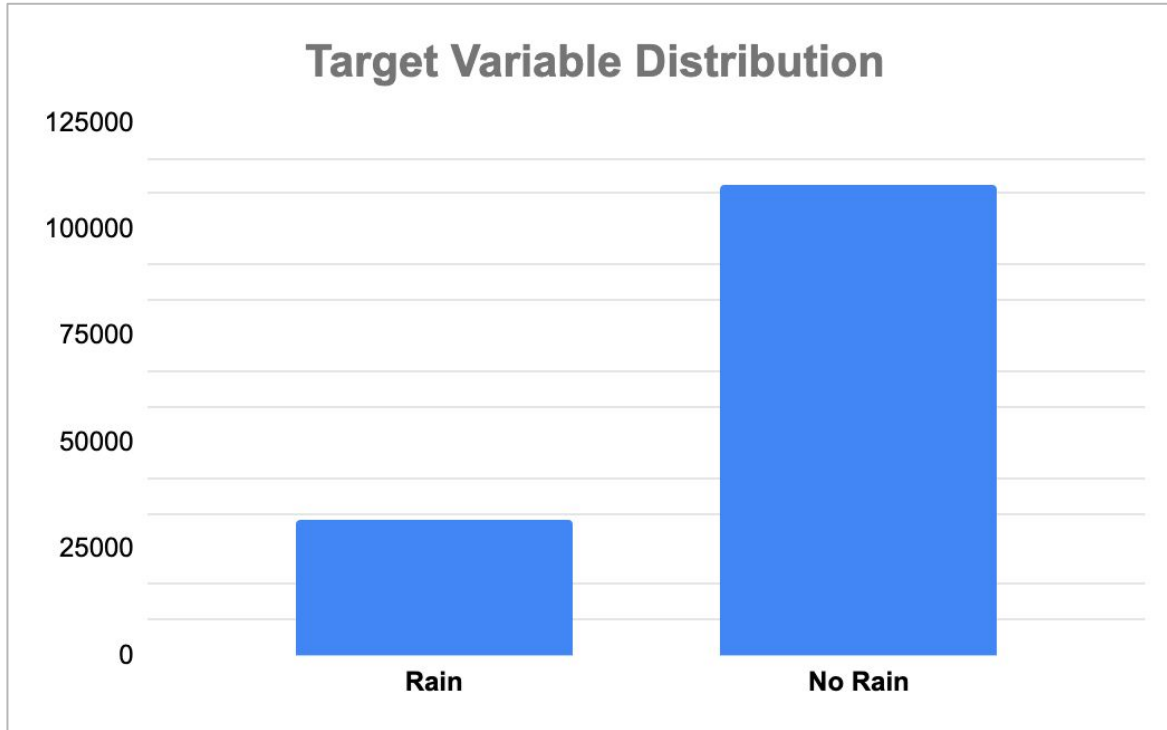
- Downloaded from Kaggle-
<https://www.kaggle.com/jsphyg/weather-dataset-rattle-package>
- 10 year rain prediction data
- 145460 rows and 23 columns
- Features include location, min/max temperatures, pressure, humidity, windspeed, wind direction and rain tomorrow(Y/N)



EDA



EDA



Imbalanced

Metric Selection

F1 Score -

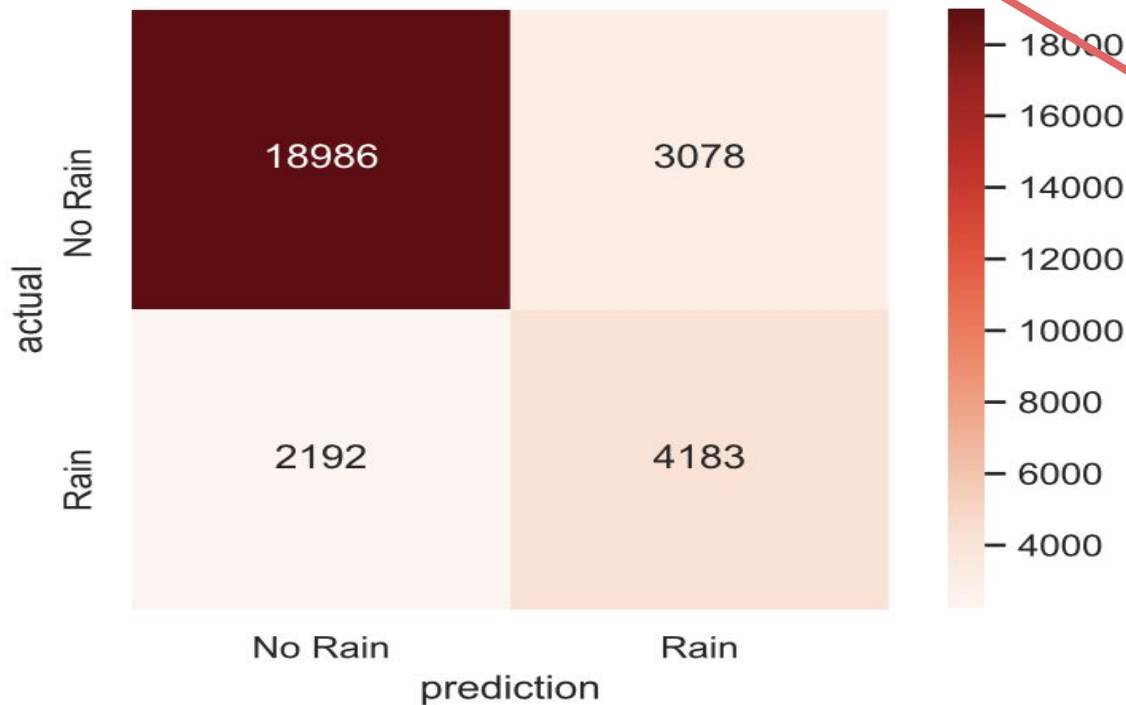
- **Precision** - Minimizes False positives
 - Predicting Rain when it won't
- **Recall** - Minimizes False Negatives
 - Predicting No Rain when it will



KNN

n_neighbors = 34

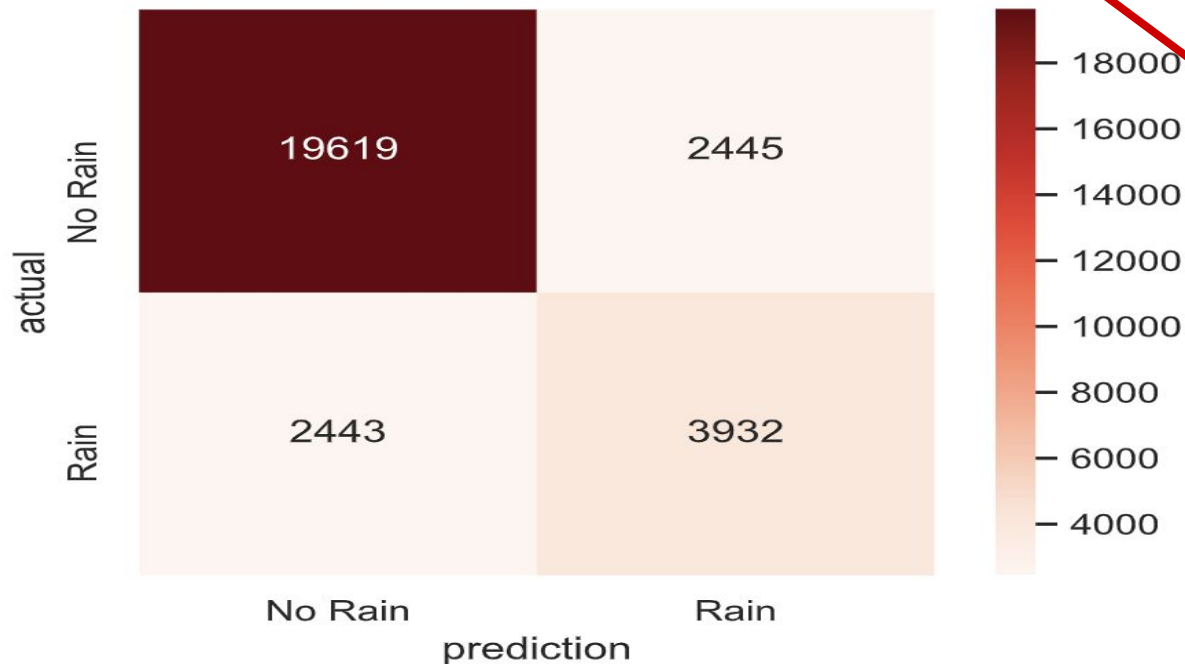
	precision	recall	f1-score	support
0	0.90	0.86	0.88	22064
1	0.58	0.66	0.61	6375
accuracy			0.81	28439
macro avg	0.74	0.76	0.75	28439
weighted avg	0.82	0.81	0.82	28439



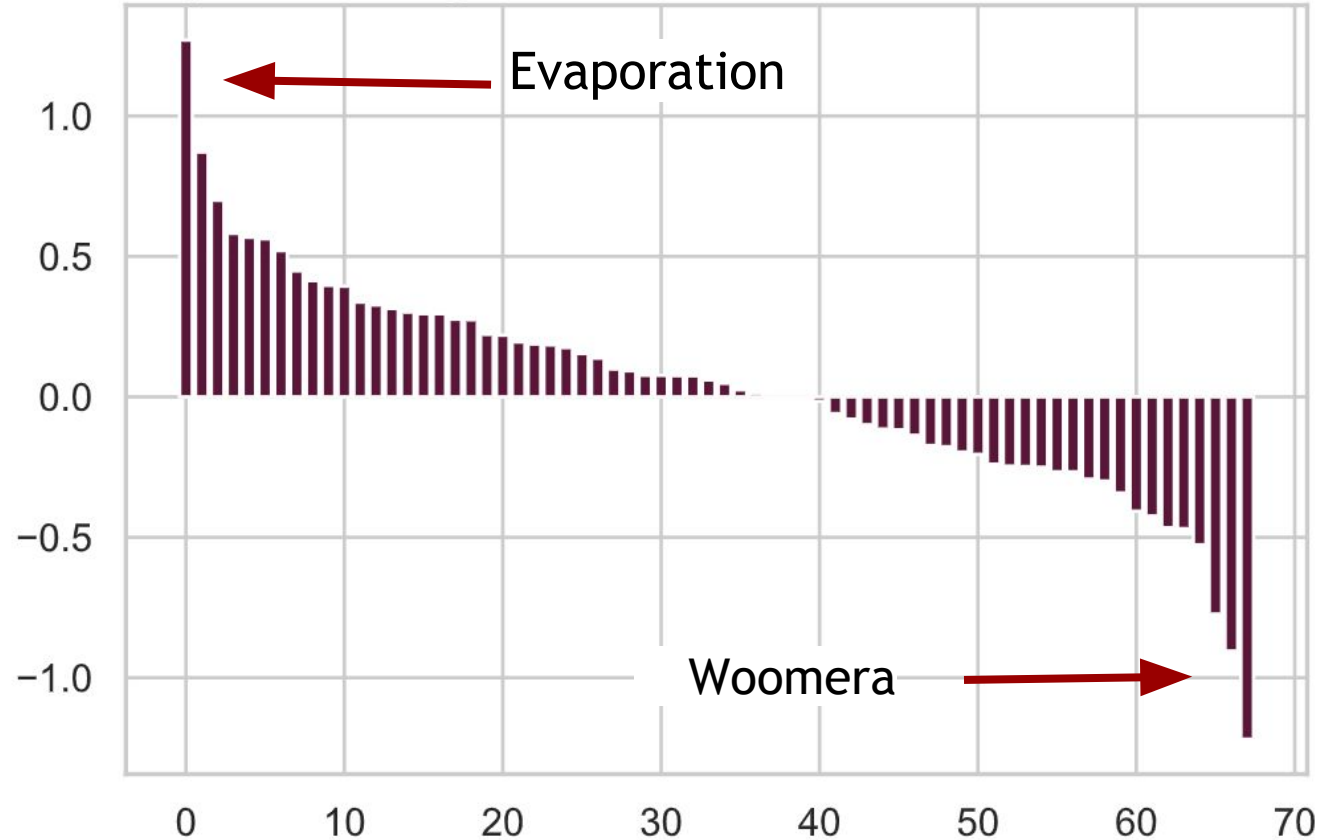
Logistic Regression

	precision	recall	f1-score	support
0	0.89	0.89	0.89	22064
1	0.62	0.62	0.62	6375
accuracy			0.83	28439
macro avg	0.75	0.75	0.75	28439
weighted avg	0.83	0.83	0.83	28439

- C: 10
- penalty: l2



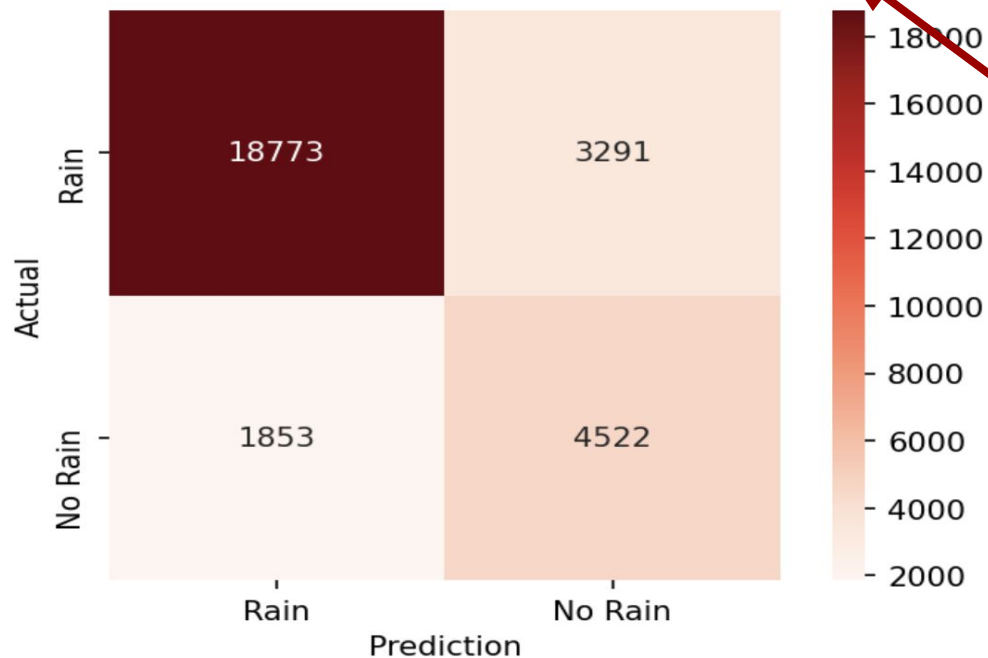
Logistic Regression Feature Importance



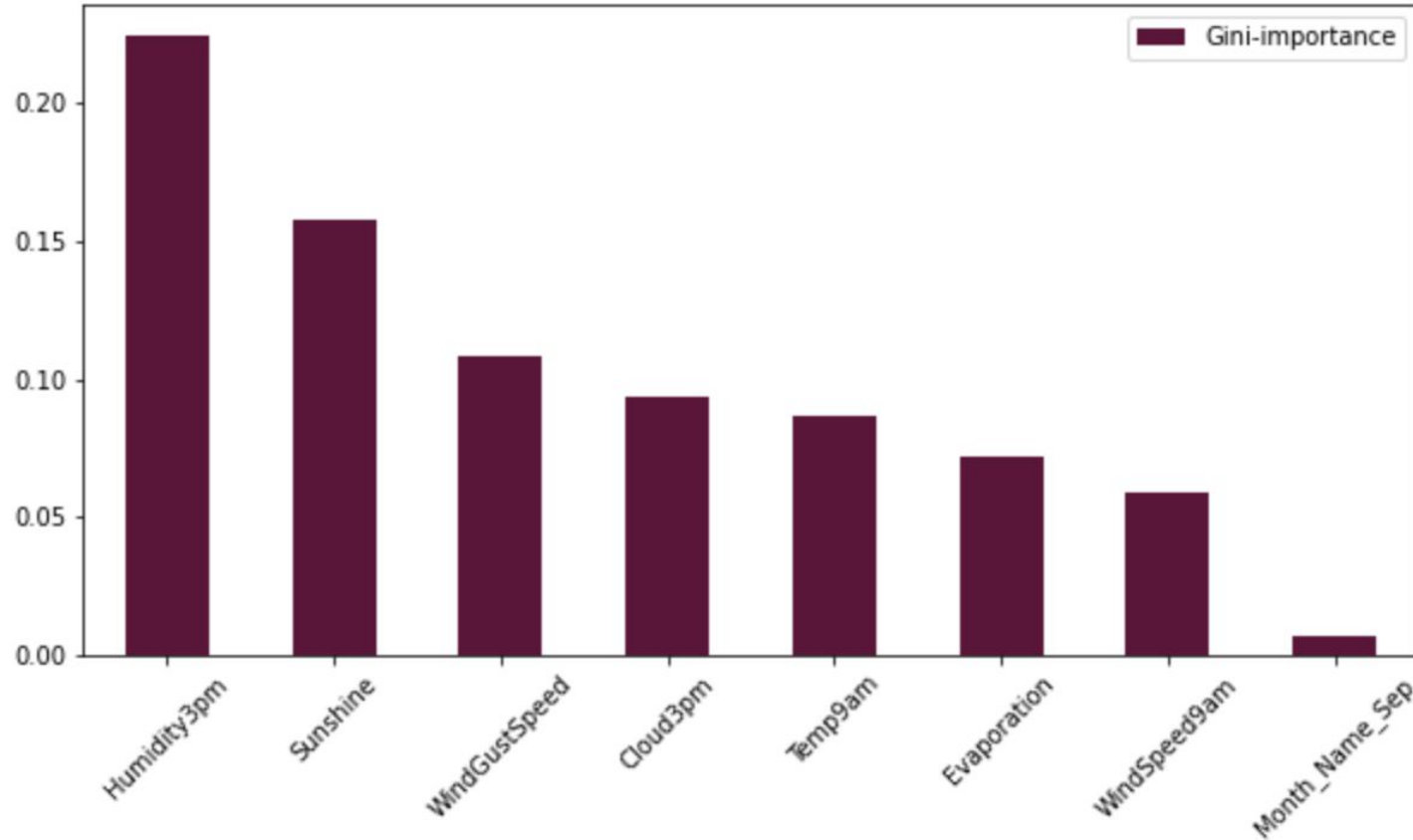
Random Forest

		precision	recall	f1-score	support
	0	0.91	0.85	0.88	22064
	1	0.58	0.71	0.64	6375
accuracy				0.82	28439
macro avg		0.74	0.78	0.76	28439
weighted avg		0.84	0.82	0.83	28439

- max_depth: 35
- min_samples_leaf: 1
- min_samples_split: 2
- n_estimators: 800



Random Forest Feature Importance



- Try other classification models like XGB
- More research and data related to populated, pollution and landscape of the country
- Data for Regression models to predict the amount of rain

Future Work

Appendix Tableau Dashboard

[Click here](#)

