

WHAT'S THE 3-1-1?

PREDICTING SPEED OF
RESPONSE TO 311 CALLS.

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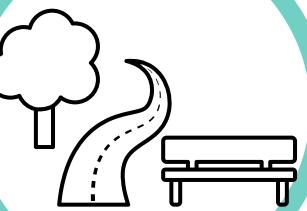


AGENDA

OVERVIEW



PREPARING



EXPLORATION



MODELING



CONCLUSION



QUESTIONS

Does the type of call in an area effect the level of response?

Does the specific location effect the response time?

Does category and department affect response time?

Is there a link to which form of reporting is responded to quickest and slowest?

EXECUTIVE SUMMARY



GOALS

Make a model to predict the level of response time in response time for a 311 call in San Antonio.

See how response time is affected by different key features.

Find the main drivers of delayed response time.

EXECUTIVE SUMMARY





Acquired data from the City of San Antonio Website.

THE PROCESS

Created a prepare function to ready the data for exploration.

Explored each initial question we aimed to answer.

Created 6 different models with different hyper-parameters to see which would beat out baseline.

EXECUTIVE SUMMARY



KEY FINDINGS

Department, call reason, and number of days given for a resolution were found to be major drivers of response time.

District was a driver, but only when paired with department or call reason.

Random Forest model performed best beating our baseline by 9.9%.

EXECUTIVE SUMMARY



RECOMMENDATIONS

When assessing a due date, we need to make sure that we have realistic expectations based on department, call reason, and how the call is being reported.

EXECUTIVE SUMMARY





Acquired data from the City of San Antonio Website.

ACQUIRE



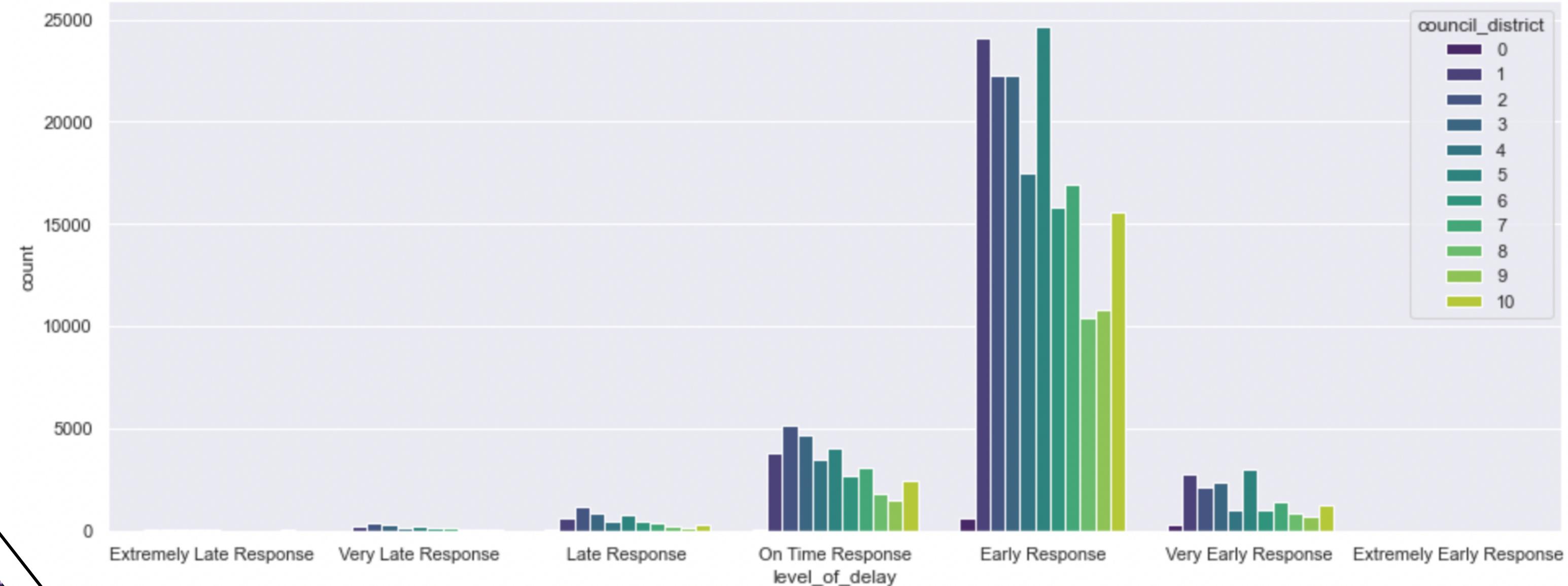
- Make reason type easier to manage by combining some of the reasons
- Change column names to make it easier to read
- Set index
- Drop Columns
- Change case status to case open as a bool 1 for yes 0 for no
- Drop nulls
- Make new features
- Create target variable



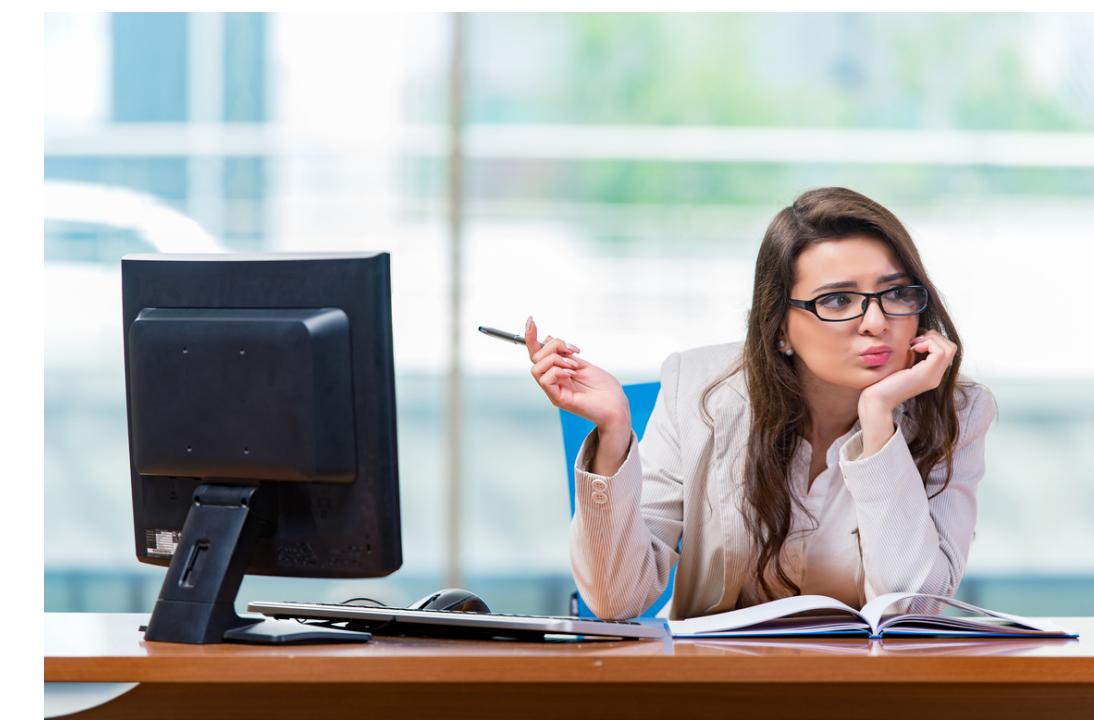
PREPARE

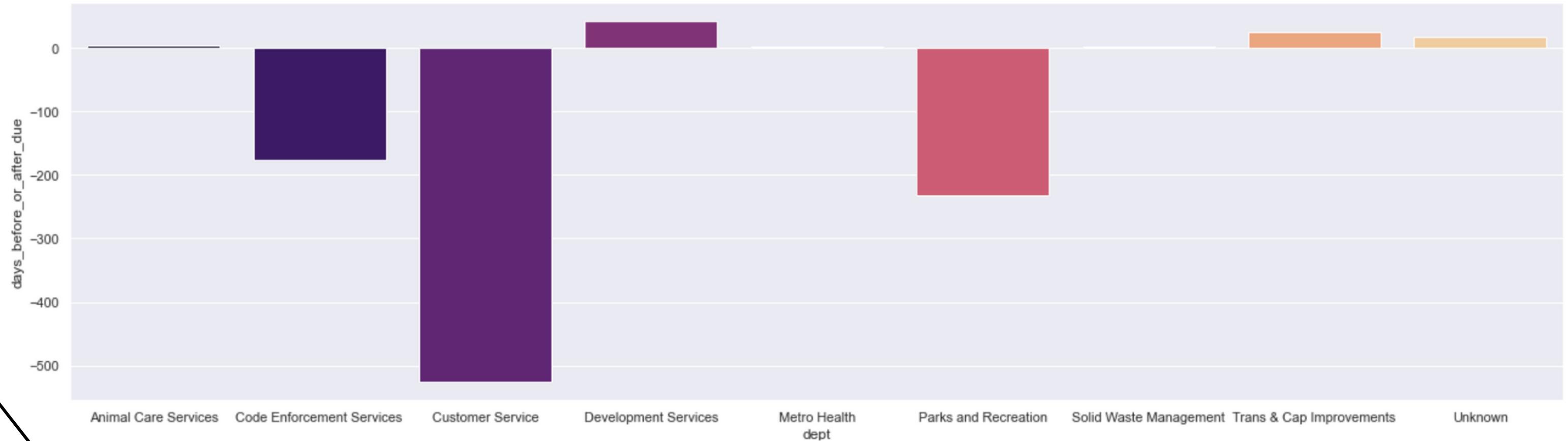


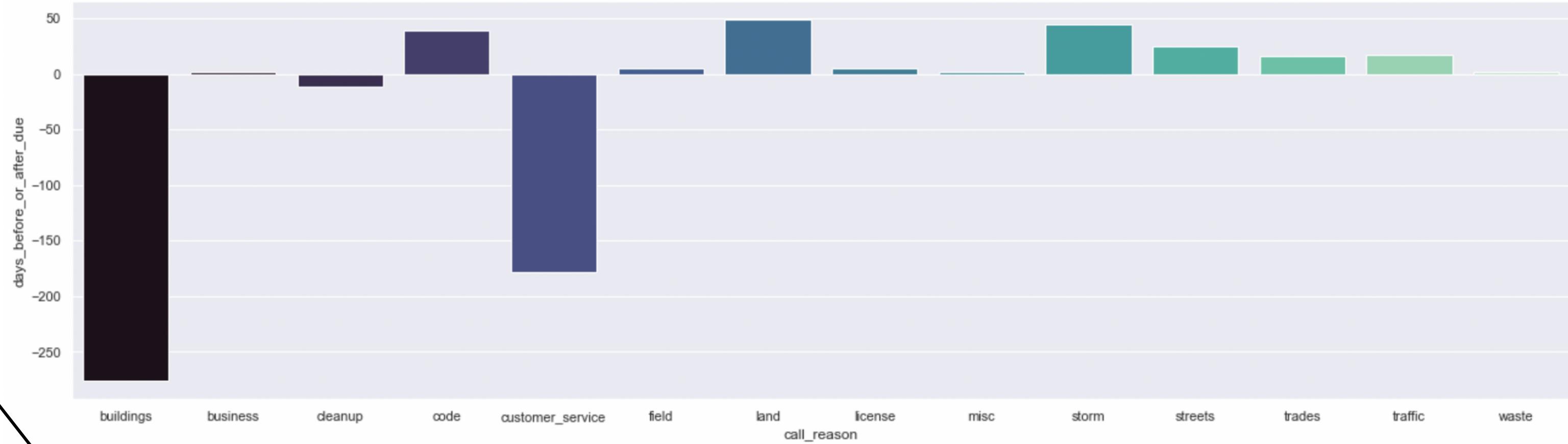
Delay Levels Accross Districts



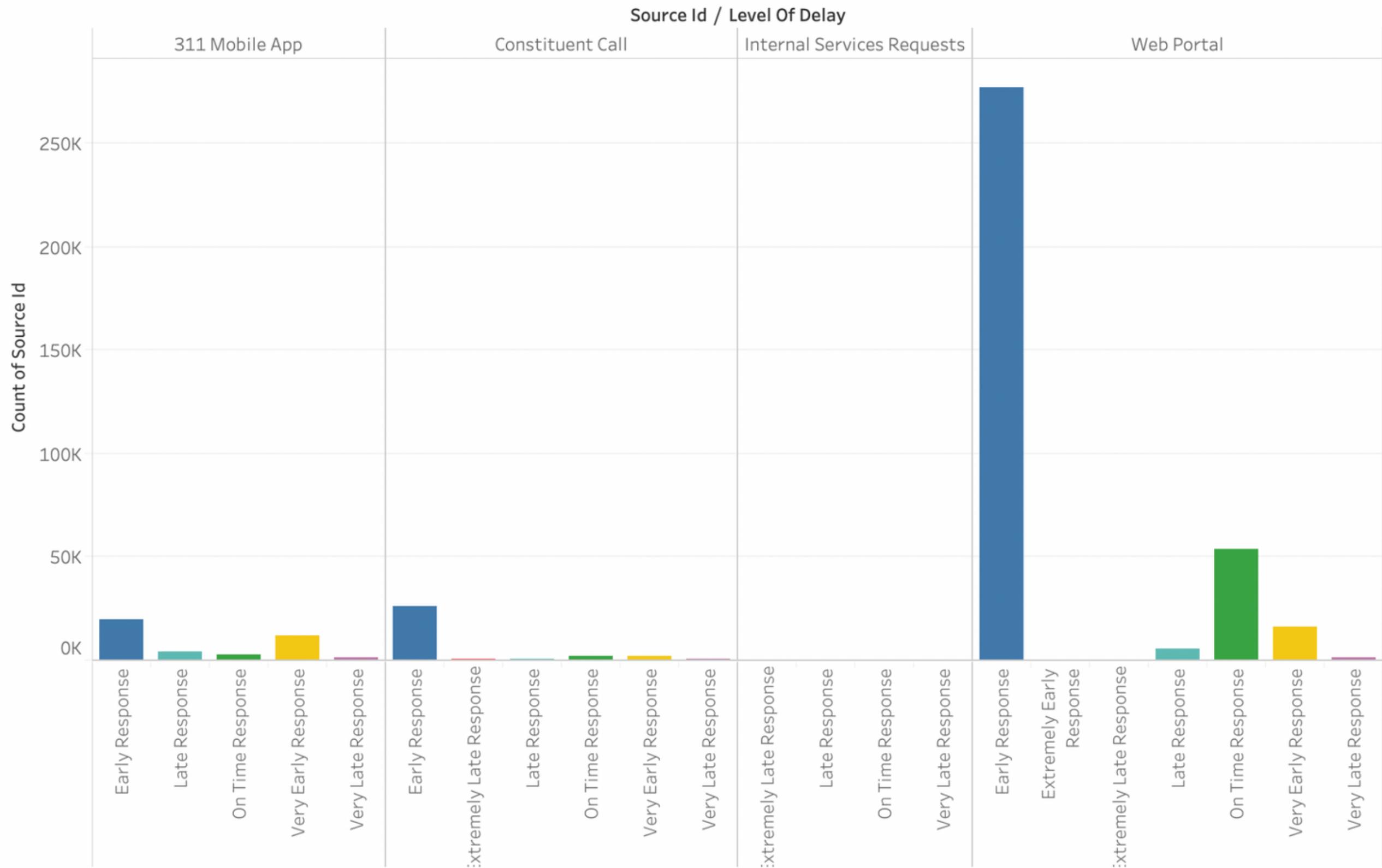
EXPLORE







Response by Source



EXPLORE



There is a correlation of 0.40 between days until due data and response time .

Reason for calling and the response time level are dependent upon one another

Form of reporting and the level of response time depend on each other.

Council district and response time are dependent on one another.

Department and level are also dependent on each other.

STATISTICAL TESTING





I made my baseline:

74.2%

Tested train on 6 models. My top models were:

Decision Tree

84%

Random Forest.

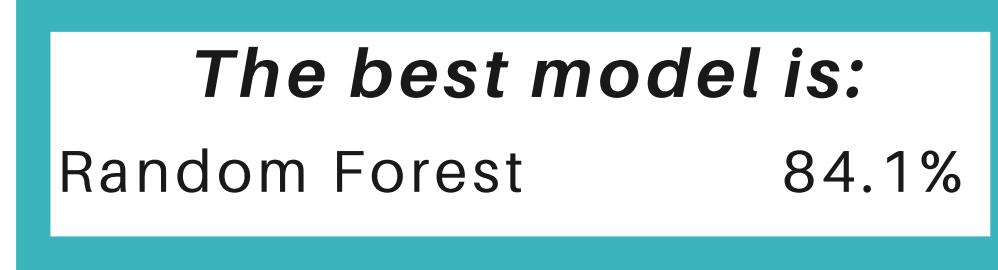
84.2%



Decision Tree
Random Forest

84%

84.3%



The best model is:

Random Forest

84.1%



MODEL





Each department is better in certain areas about being on time/early and late in others.

The more calls a department had the better they were at getting issues resolved on time.

Internal requests were generally late in comparison to other forms of reporting.

Animal Services usually only gave a day to complete a case and those cases usually took months to close.





WE RECOMMEND

San Antonio needs to asses their timelines for handling issues different issues across departments.

Specifically take a look at customer service and animal care services to rectify latency issues.

CONCLUSION

