

An Analysis of 311 Services in Miami-Dade

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INTRODUCTION

Originally, if a person had a problem in their area of Miami-Dade county and needed help, they could simply dial 311 on their phone. Although much has changed since its inception, the core idea of the 311 system remains in place: a one stop shop to bring your issue to the local government. The aim of our research was to find ways to improve the efficiency of the 311 system in Miami-Dade county and the city of Miami.

PURPOSE

- Is the variable department significant when it comes to handling emergency ticket requests?
- Is the method used to report an emergency issue significant for the resolution of these requests?
- Is there a trend that highlights an increment in the ticket requests in the last few years?

METHODOLOGY

- 9 years of Miami-Dade county data from 2013 to 2021 were cleaned, transformed, and manipulated using Excel and SQL Server Management Studio. Our dataset contained over 2.5 million records of 311 tickets.
- During our research, over 20 visualizations were made, ranging from pie charts and bar graphs to heat maps, tree maps, and more.
- Analysis of variance was performed to determine if there were any statistically significant differences between the mean ticket completion times for both departments and submission methods.
- Tukey's Honest Significant Difference test was performed on our departmental and submission methods' means to determine which specific relationships were statistically significant.
- Forecasting was done using additive modeling and forecasting metrics via Tableau software.

RESULTS

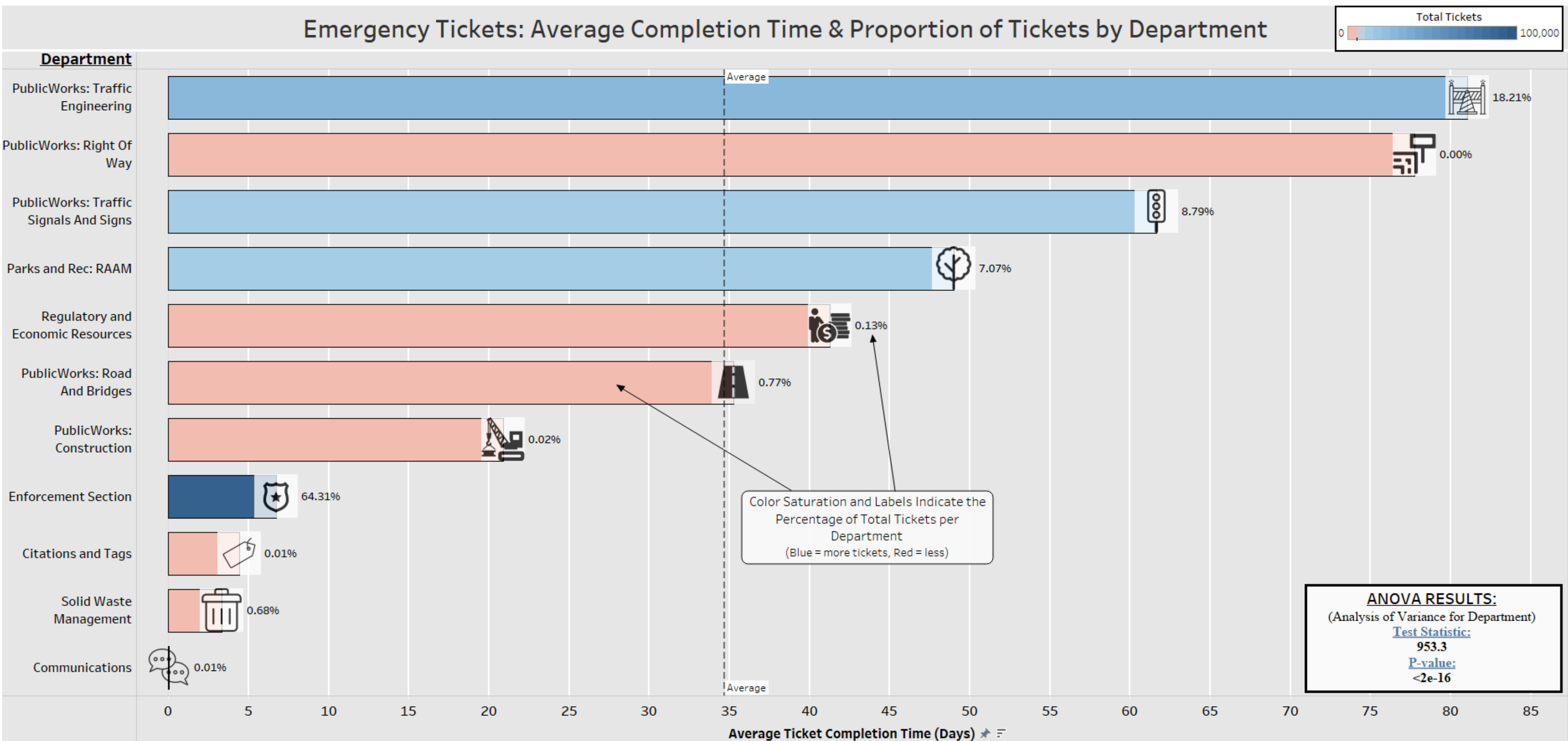


Figure 1.
The independent variable, Department, has statistically significant effect on the dependent variable, Ticket Completion Time, with an extremely large test statistic of 953.3.

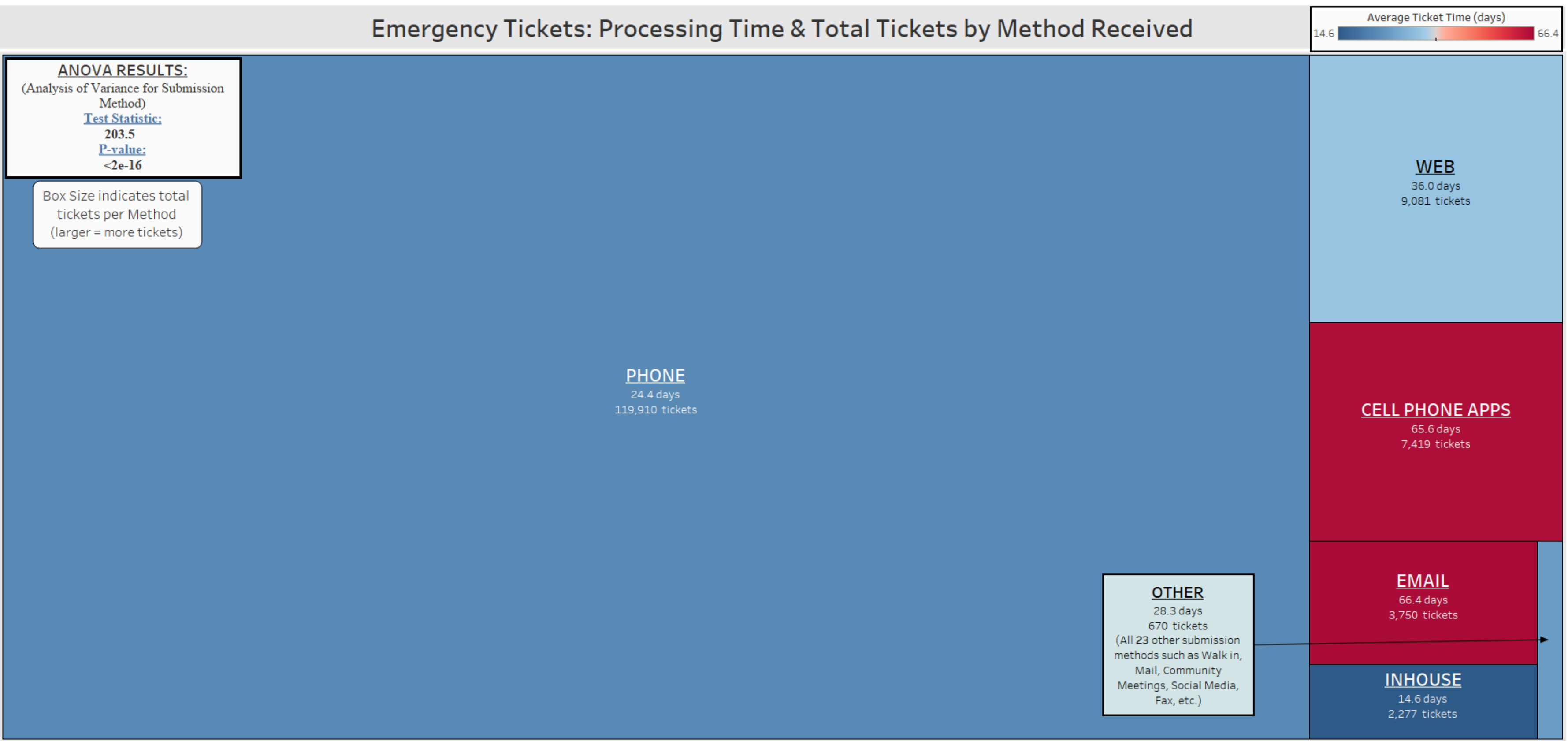


Figure 2.
The independent variable, Submission Method, has statistically significant effect on the dependent variable, Ticket Completion Time, with a probability value of <2e-16.

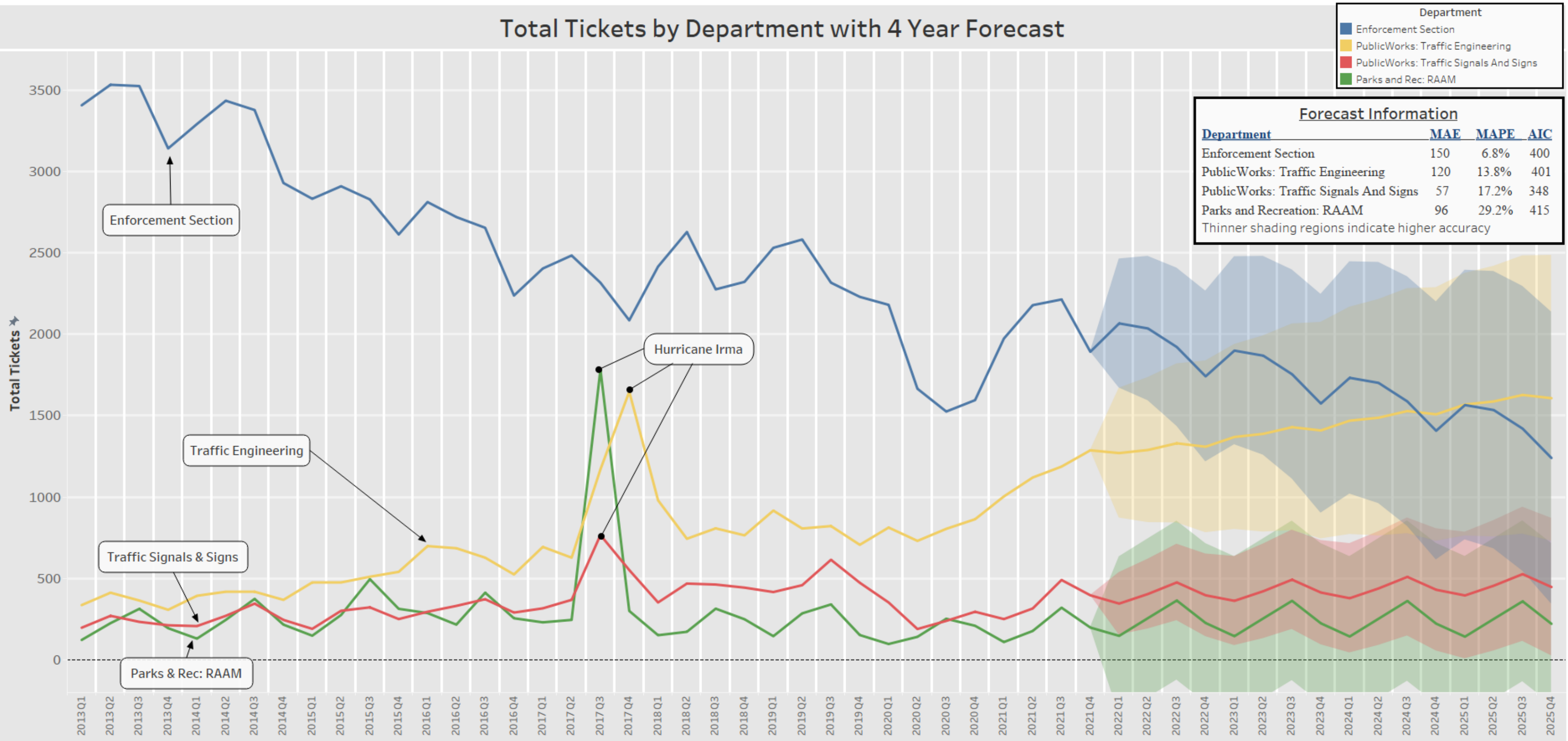


Figure 3.
Enforcement Section's downward trend of total tickets and Public Works: Traffic Engineering upward trend forecast to be close to equal in 3-4 years. There is clear seasonality in the Public Works: Traffic Signals and Signs and Parks and Recreation: Right-Of-Way Aesthetic & Assets Management (RAAM) with tickets peaking in each year's third quarter and falling in the first quarter.

DISCUSSION

- The Public Works: Traffic Engineering department has the second most emergency tickets and the longest ticket completion time.
- Despite handling over three times the number of tickets of the next closest department, the Enforcement Section has one of the lowest average ticket completion times.
- Tickets submitted via Phone are completed in over half the time of those via the 311 Cell Phone App and Email.
- There are 23 submission methods that only account for .47% of total tickets.

CONCLUSIONS

- Public Works: Traffic Engineering needs some attention to determine the cause and solution to their long ticket times.
- Enforcement Section needs to be properly supported. They field almost 2/3rds of the emergency tickets.
- The best way to report an emergency issue to the 311 service is via Phone (aside from Inhouse).
- There are too many different submission methods to be efficient.
- Due to seasonality, Public Works: Traffic Signals & Signs, and Parks & Recreation: RAAM departments need to be at full strength during quarter 3 while scaling back during quarter 1.
- Public Works: Traffic Engineering service requests are trending upward. With Enforcement Section's downward trend, resource allocation might need to be reevaluated in the future.

REFERENCES

“311 Service Requests - Miami-Dade County - 2013-2021.” Miami-Dade County Open Data Hub. Open Data Hub. Retrieved July 11, 2022, from <https://gis-mdc.opendata.arcgis.com/search?q=311>

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