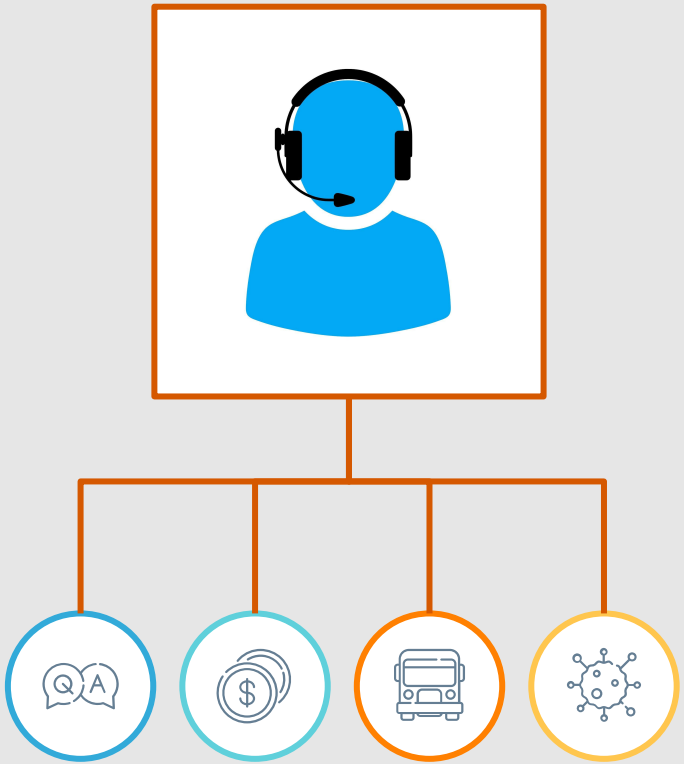
Montgomery County 311 (MC311) Service Requests Volume Analysis

Ibrahim Pinzon Perez



Presentation Contents

Introduction to MC311

What is the MC311 Service Request Dataset?

Prompt and Research

Introduction to our data and questions to be answered

Findings and Forecast

What the data shows us & predictive modeling

Summary

Importance of the analysis and summary

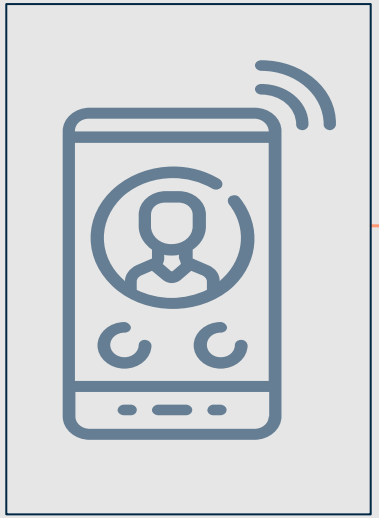
Introduction to MC311

What is the MC311 Dataset?

What is the MC311 Service Requests Dataset?

Contains records of all 311 service requests received in Montgomery County (both via phone and web).

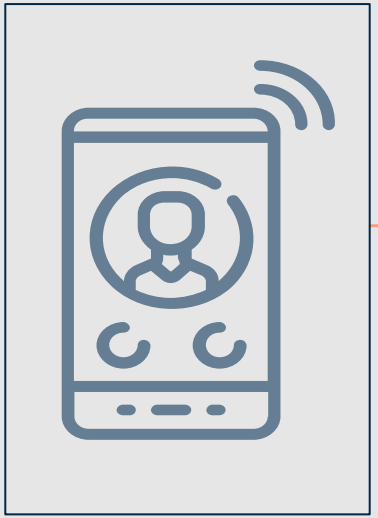
311 service requests are non-emergency municipal services such as inquiries on permits, scrap metal pickup, and road damage.



What are the MC311 Service Requests Dataset Variables?

Pertinent Variables:

Opened - Date & Time the service request was opened (created)
Department - Code for the County Department assigned to resolve the service request
Area - Area within the County Department assigned to resolve the service request
Sub-Area - Sub-Area in the County Department/Area assigned to resolve the service request
Attached Solution (Topic) or AST - Description of solution selected to resolve the service request
Source - Source for receiving the Service Request (Ex: Web, Phone)



Department	Area	Sub Area	AST
DEP	Solid Waste	Scrap Metal Request	Scrap Metal Pickup Request

Prompt and Research

There has been a decrease in call volume for service requests over the past 5 years. Which areas have seen the biggest decreases?

Surface Analysis: Biggest Decreases in 2019 vs. 2023 Call Volume

DOT

Department of Transportation calls are down by 34.05%

Year	2019	2023
Total Calls	69,553	45,870

Transit

Continual decrease in ridership from FY'19 to FY'23

Non-MCG

Non-MCG (Non-Montgomery County) Calls are down by 3.67%

Year	2019	2023
Total Calls	44,585	42,950

Non-MCG

Positive trend, may be due to increased public awareness

FIN

Calls associated with the Department of Finance are down by 6.84%

Year	2019	2023
Total Calls	42,650	39,733

Department of Finance

County residents may call Maryland Department of Assessments and Taxation

DPS

Department of Permitting Services Calls are down by 32.10%

Year	2019	2023
Total Calls	73,697	50,043

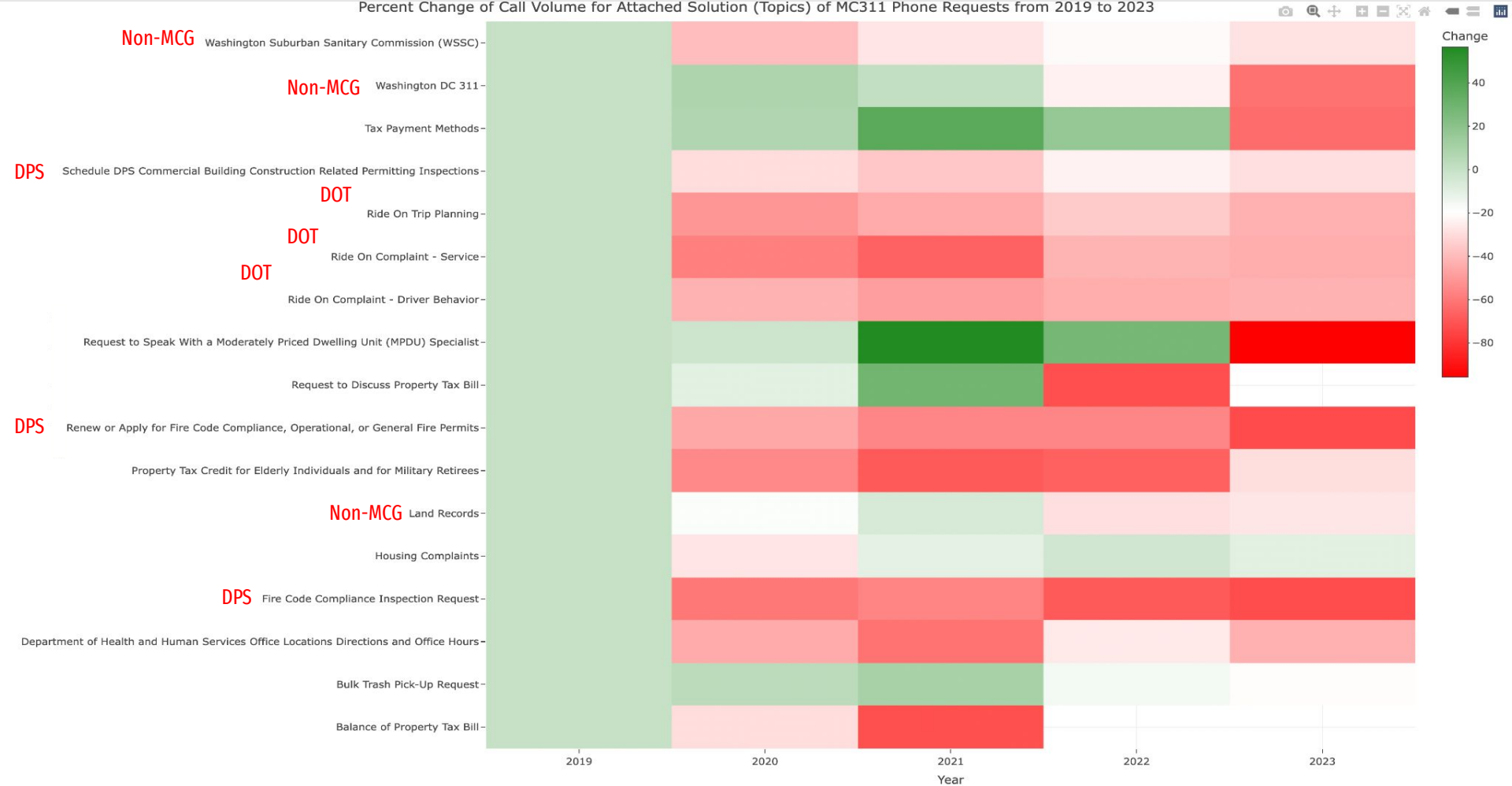
Permitting Services

Expansion of DPS online services along with direct phone number

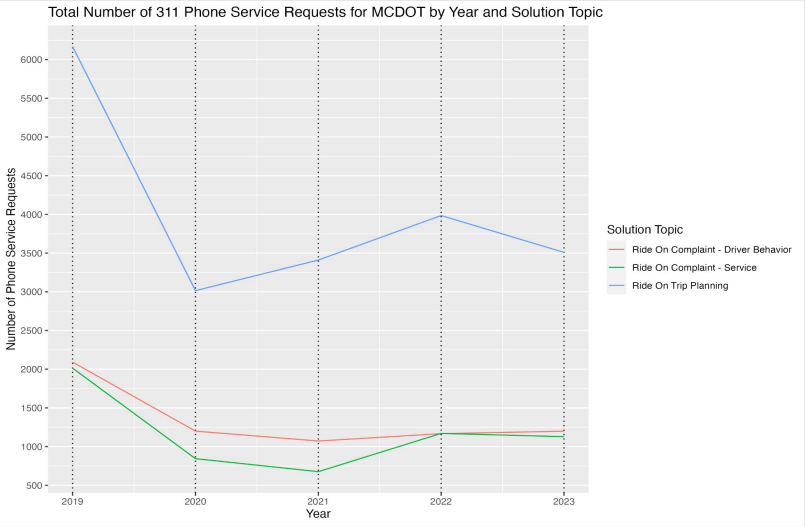
Findings and Forecast

What the data shows us & predictive modeling

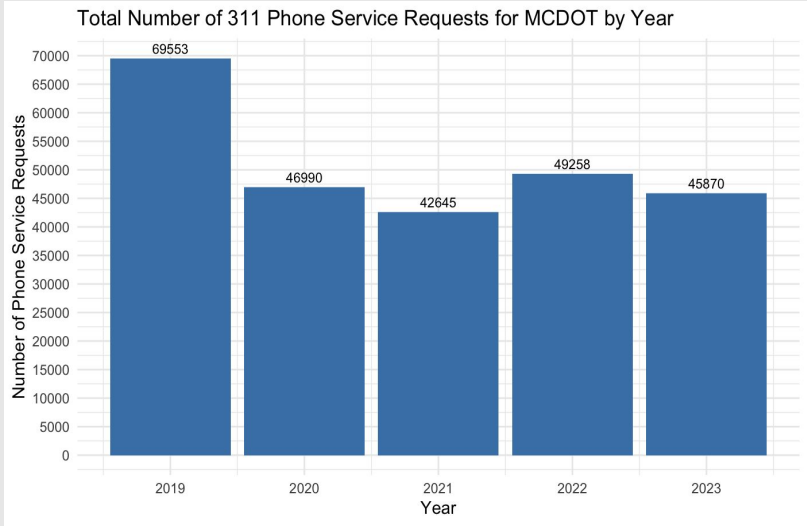
Plotly Link (One Drive)



The Biggest Decreases of Solution Topics within DOT Accounted for 18.7% of Total Decrease of DOT Calls

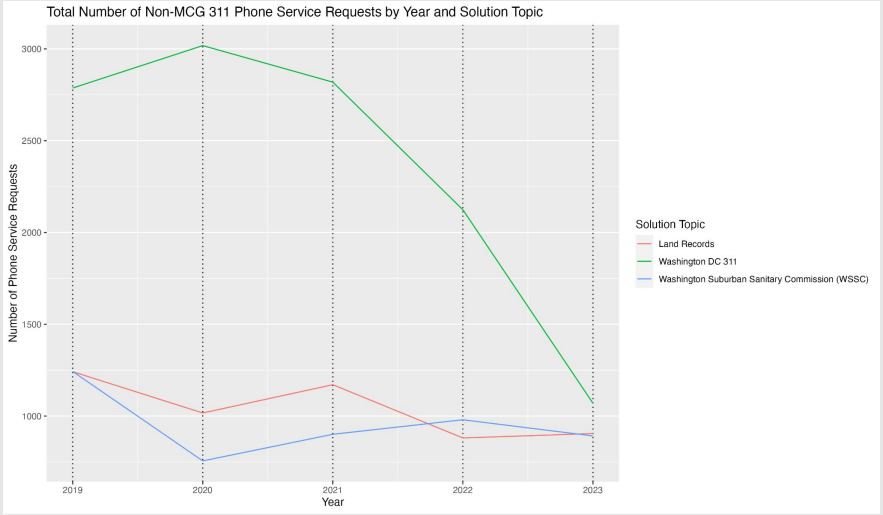


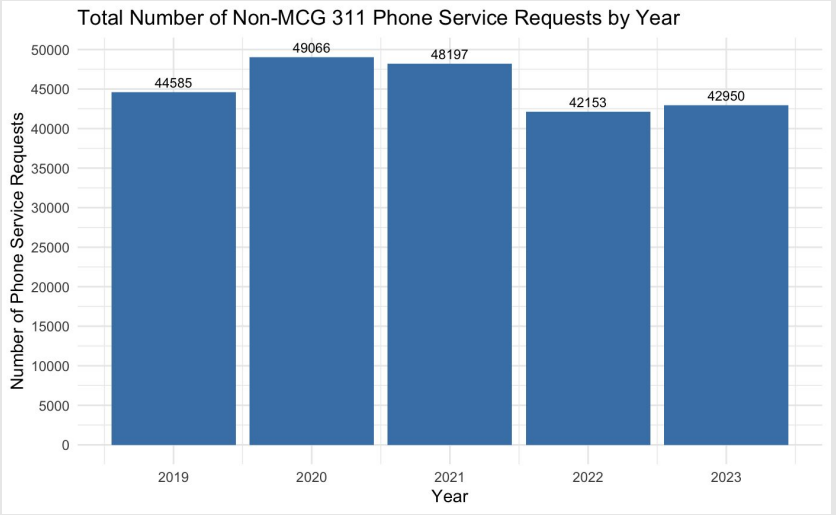
Attached Solution Topic	Ride On Complaint - Driver Behavior	Ride On Complaint - Service	Ride On Trip Planning	**Total**
Decrease in Call Volume (2023 vs. 2019)	-892	-885	-2,658	-4,435
DOT 2023 vs. 2019 Call Decrease	-	-	-	-23,683



34.05% Decrease in Call Volume for Entire DOT Department from CY2019 to CY2023

The Largest Reduction in Non-MCG Solution Topics Exceeded the Overall Decrease in Non-MCG Calls, Indicating an Increase in Calls for Other Solution Topics

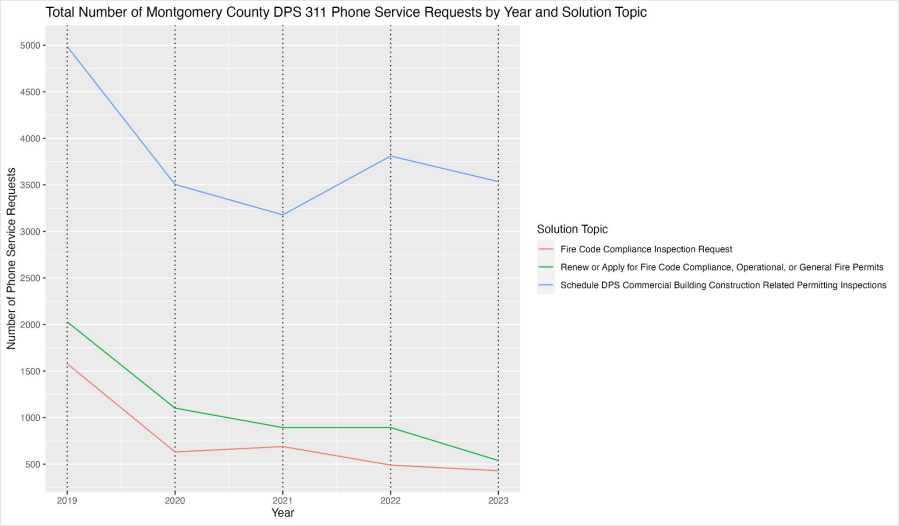


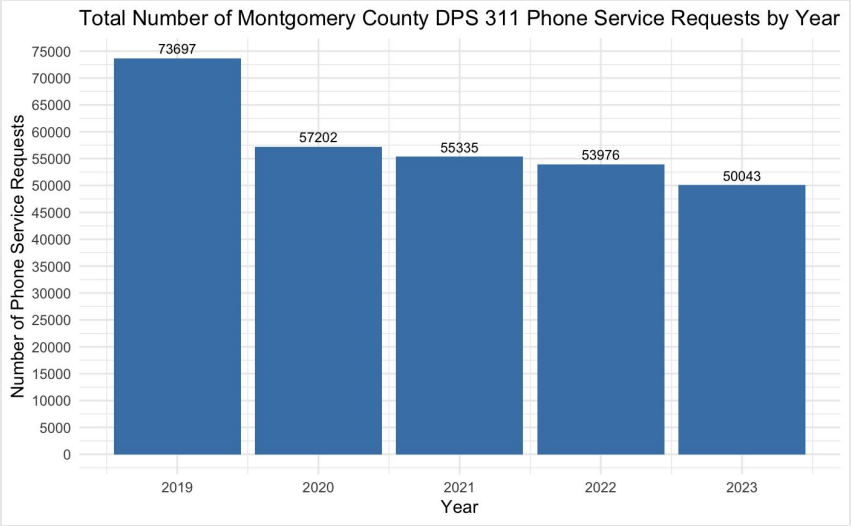


Attached Solution Topic	Land Records	Washington DC 311	Washington Suburban Sanitary Commission (WSSC)	**Total**
Decrease in Call Volume (2023 vs. 2019)	-337	-1,717	-351	-2,405
Non-MCG 2023 vs. 2019 Call Decrease	-	-	-	-1,635

3.67% Decrease in Call Volume for all Non-MCG Calls from CY2019 to CY2023

The Biggest Decreases in Solution Topics within DPS Accounted for 17.3% of the Total Decrease of DPS Calls

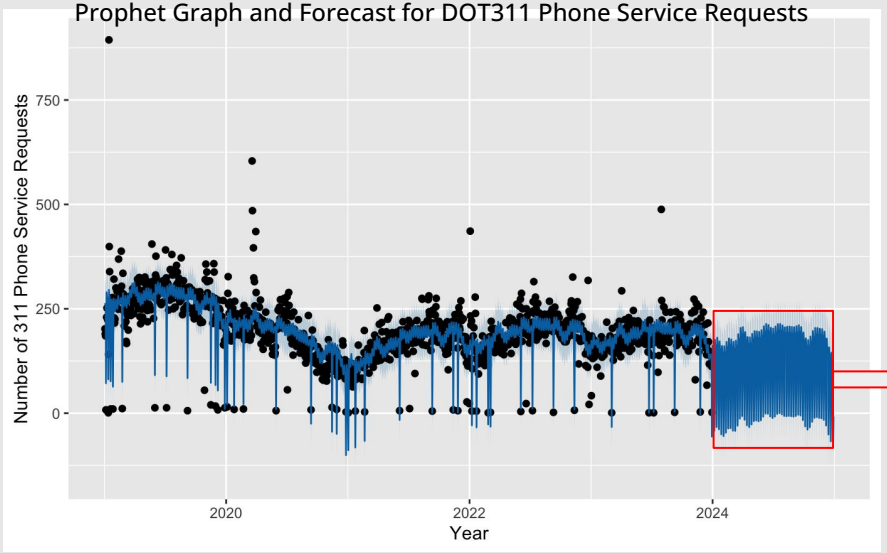


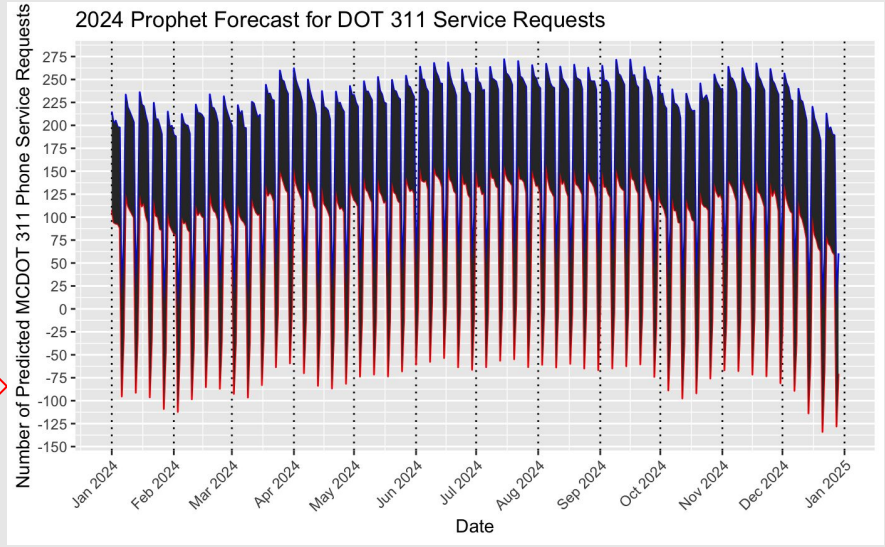


Attached Solution Topic	Fire Code Compliance Inspection Request	Renew or Apply for Fire Code Compliance, Operational, or General Fire Permits	Schedule DPS Commercial Building Construction Related Permitting Inspections	**Total**
Decrease in Call Volume (2023 vs. 2019)	-1,150	-1,489	-1,451	-4,090
DOT 2023 vs. 2019 Call Decrease	-	-	-	-23,654

34.05% Decrease in Call Volume for Entire DPS Department from CY2019 to CY2023

Forecasting Call Volume (DOT)





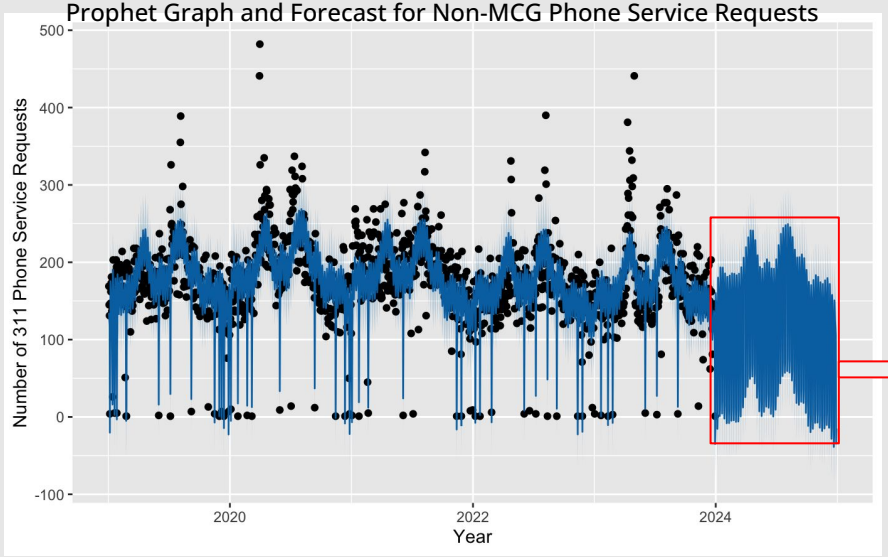
Legend:
- Actual Values
- Predicted Values

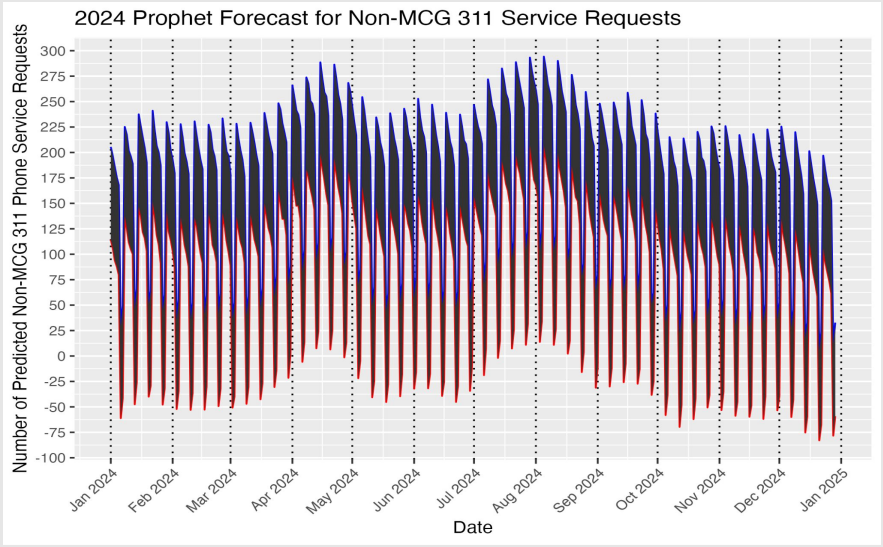
Legend:
- Lower Bound
- Upper Bound
- 95% Confidence Interval

Anticipated 2024 DOT Calls (95% Confidence Interval using Bootstrapping):

(44,628 - 47,091)

Forecasting Call Volume (Non-MCG)





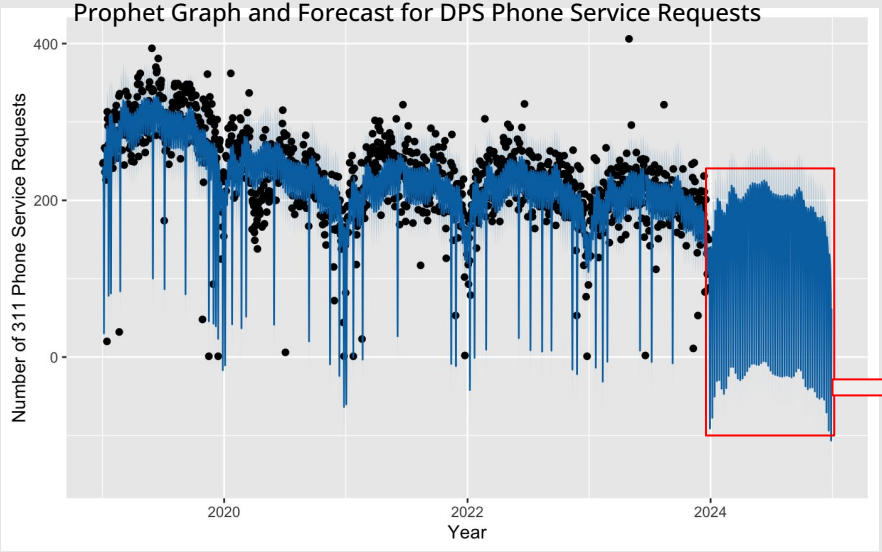
Legend:
- Actual Values
- Predicted Values

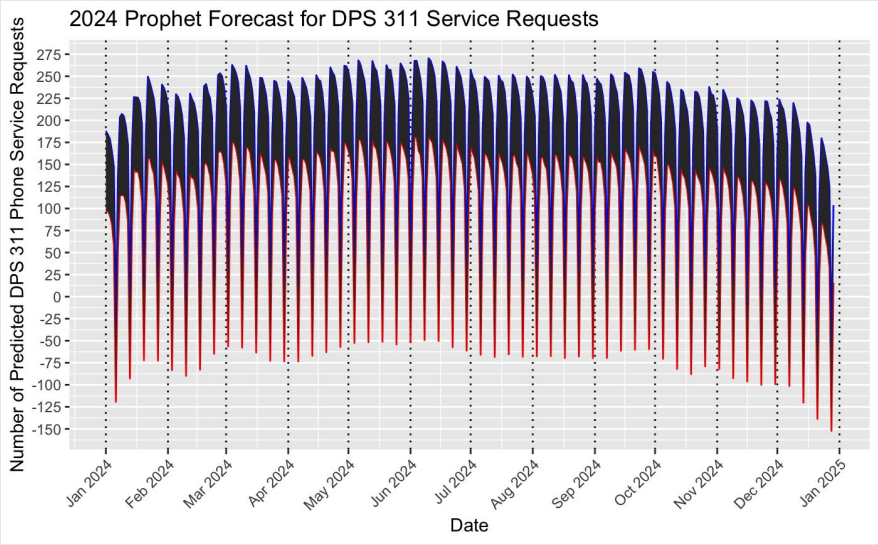
Legend:
- Lower Bound
- Upper Bound
- 95% Confidence Interval

Anticipated 2024 Non-MCG Calls (95% Confidence Interval using Bootstrapping):

(42,326 - 44,299)

Forecasting Call Volume (DPS) - Predicting First Yearly Increase in Call Volume





Legend:
- Actual Values
- Predicted Values

Legend:
- Lower Bound
- Upper Bound
- 95% Confidence Interval

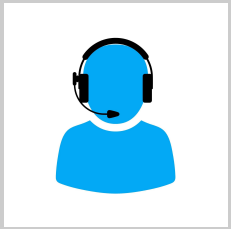
Anticipated 2024 DPS Calls (95% Confidence Interval using Bootstrapping):

(58,035 - 60,480)

Summary

Importance of Analysis and Summary

Summary - Key Findings



MC311 Service Requests Dataset

Decrease in Service Requests for the Department of Finance	Calls associated with the Department of Finance are down by 6.84% from CY2019 to CY2023 - This particular analysis did not dive deeper into this decrease
Drastic Decrease of DOT & DPS Call Volume from 2019 to 2023	DOT and DPS saw decreases in call volume of 34.05% and 32.10% respectively, with the top 3 decreases in solution topics in each department accounting for over 17% of the total decrease
Minimal Change in Non-MCG Call Volume	From CY2019 to CY2023, Non-MCG Calls Decreased by only 3.67%
DOT Prophet Model	Prophet model predicts a decrease of DOT calls between 36.1% and 39.4% for CY2024 compared to CY2019
Non-MCG Prophet Model	Prophet Model Predicts very minimal decrease in call volume for Non-MCG calls for CY2024 vs. CY2019 (-0.6% to -5.1 %)
Prophet Model Predicts Rise in DPS Calls	Model predicts increase in DPS calls for CY 2024, which would be its first increase

The Importance of this Analysis

Next Steps for Montgomery County

Continue departmental call volume analysis and probable causes/factors as part of county stat meetings with departments and 311

Improve Decision-Making

Tying call volume trends to demand for County services and budget decisions

Data-Driven Seasonal Insights

Ability to locate seasonal trends affecting call volume

Thank You

Victoria Liu - *Information Technology Expert* - Montgomery County Government

Victoria Lewis - *Data Innovation Manager* - Montgomery County Government

Stephen Heissner - *Senior IT Specialist* - Montgomery County Government

Michael Iapalucci - Capstone Project Professor - Montgomery College