

*Analysis of All Municipal Services Requested by
people in Windsor city by Jankiben Patel*

SUMMARY OF RESEARCH QUESTIONS

1. For municipal services and information, a city service number 311 is provided to the people of Windsor. How many and what are the departments that provide services through 311? One department is responsible for which services so that the right department can be contacted when necessary?

Answer: There are in total 16 departments, and the number of services provided is 56 overall. The figure below shows the list of all departments and services provide by each department.

All Service Request	
Department	
Bylaw Enforcem..	Dirty Yard Dog Complaint - Bylaw Garbage Preparation Keeping of Animals Noise Portable Sign Issue Protection of Parks --
Contracts and Fi..	Downspout Disconnect Sewer Project Sewer Project Restoration
Contracts, Field ..	Alley Maintenance Curb Maintenance Downspout Disconnect Drainage Pothole Public Property Obstructions Road Cave-In Road Maintenance --
Environmental S..	Dead Animal Removal Garbage Not Collected Illegal Dumping Public Property Litter Bin - Request New Litter Bin - Service Recycling Not Collected --
Facilities	Parks - Lighting
Forestry and Hor..	Tree Request
Forestry and Nat..	Tree Request
Humane Society	Dead Animal Removal - Humane Society Dog Complaint - Humane Society
Infrastructure C..	Public Property Obstructions
Inspections	Building Accessibility Building Conditions Building/Land - Improper Use Construction Site Conditions Fence & Hedge Private Parking Lot --
Maintenance	Alley Maintenance Curb Maintenance Drainage Pothole Road Cave-In Road Maintenance Sewer Maintenance Shoulder Maintenance --
Parking Enforce..	3-Day Parking Infraction Abandoned Vehicle
Parks Operations	Graffiti Parks - Playground Issues Parks Maintenance
Traffic	Parking Meter
Traffic Operatio..	Municipal Parking Garage Municipal Parking Lot Parking Meter
Transportation ..	3-Day Parking Infraction Abandoned Vehicle

Service Request Description broken down by Department. The view is filtered on Department, which keeps 16 of 16 members.

Fig 1: List of Department providing services.

2. Customers make a request for a service as per the situation and necessity. Which services were mostly in demand and which were requested the least during the year 2016, 2017, 2018 & mid-2019 in Windsor city? This information can guide in assigning workforce for each service so that demands can be met without delay.

Answer: In the year 2016 and 2018, requests for Tree maintenance were received the most. During 2017 and in the current scenario (mid-2019), Dirty Yard Requests are maximum. Whereas, service for Municipal Parking Lot was least requested in 2016 and for Sunk Inspection has been minimum from the years 2017, till now. These suggest that more workforce would be required in the departments addressing Dirty Yard & Tree services and quit few for sunk Inspection.

- 3. How do people of Windsor contact the 311 city services? Which mode of contact was used the most and least for requesting the services or service from the year 2016 to mid-2019? Is there any need to upgrade or spread awareness about the mode of contact?**

Answer: In 2016, 2017 and mid-2019, people contact city services center through E-Mail, Phone, Text, and Websites only. They mostly contacted 311 through phone, followed by E-mail and least by text. In 2018, nine new modes of contact were used. However, the majority of requests were still made by phone call and E-mails. 311 received only 1 service request which was Mobile Created and Other. As the phone calling method is used the most, each department may need to keep phone system upgraded as well as encourage people for other modes of contact.

- 4. Was Citizen Mobile App used in order to request the service? For which service requests do the citizens used the app? And which service was requested the most by Citizen Mobile App?**

Answer: Yes, in the year 2018, citizens used the app for requesting the following services: 3-day Parking Infraction, Alley Maintenance, Dead Animal Removal- Human Society, Dirty Yard, Downspout Disconnect, Pothole, Public Property Obstructions, Sidewalk Construction & Repair, Tree Request. Among all, Citizen mobile app was used the most for pothole request.

- 5. What is the total number of services requested by the City of Windsor each year? Was there an increase or decrease of request from year 2016? What type of trend is seen in citizen's need for municipal services each year? Does this trend play an important role?**

Answer: The table below shows the statistic of services requested each year. Every year there is a considerable increase in request for service and there has been continuous growth in demand among citizens. This trend shows that more request means more resources may be required in the future.

Year	Total requests for Services
2016	12,630
2017	29,978
2018	36,923
2019-now	16,600

Table 1: Total number of services requested, each year from 2016 to 2019-now.

- 6. Are there any outliers in data collected by the 311 customer management system? Which area requested the most for Dirty Yard Service? During which period of day, morning or afternoon, it is likely that request for services will be made?**

Answer: The data collection contains outliers. There exist missing entries where values like street and ward number are not available. This ultimately makes it difficult to identify from which area service is requested more. Moreover, it becomes hard to predict whether morning or afternoon period will be busy, as the prediction models give accuracy of 55.7% which can not be accepted.

DATASET

The dataset is collected from available City of Windsor open data. The dataset contains information on customer-initiated service requests entered into the City of Windsor 311 system from various channels (phone, email, online self-serve, text). 311 manages the service request data for City of Windsor departments and divisions represented in this dataset. As such, 311 consulted the participating divisions and subject matter experts for this release. This data set is extracted electronically from the 311-customer request management system.

Dataset URL: <https://opendata.citywindsor.ca/opendata/details/11>

Dataset name:

1. AllServiceRequests_Aug01-Dec31_2016:
https://opendata.citywindsor.ca/Uploads/AllServiceRequests_Aug01-Dec31_2016.csv
2. AllServiceRequests_2017:
https://opendata.citywindsor.ca/Uploads/AllServiceRequests_2017.csv
3. AllServiceRequests_2018:
https://opendata.citywindsor.ca/Uploads/AllServiceRequests_2018.csv
4. AllServiceRequests_YTD:
https://opendata.citywindsor.ca/Uploads/AllServiceRequests_YTD.csv

CHART

There are 7 total charts which were created while performing analysis. The first six are results from tableau and the seventh shows the result of built-in models in the rapid miner. The charts are as follows:

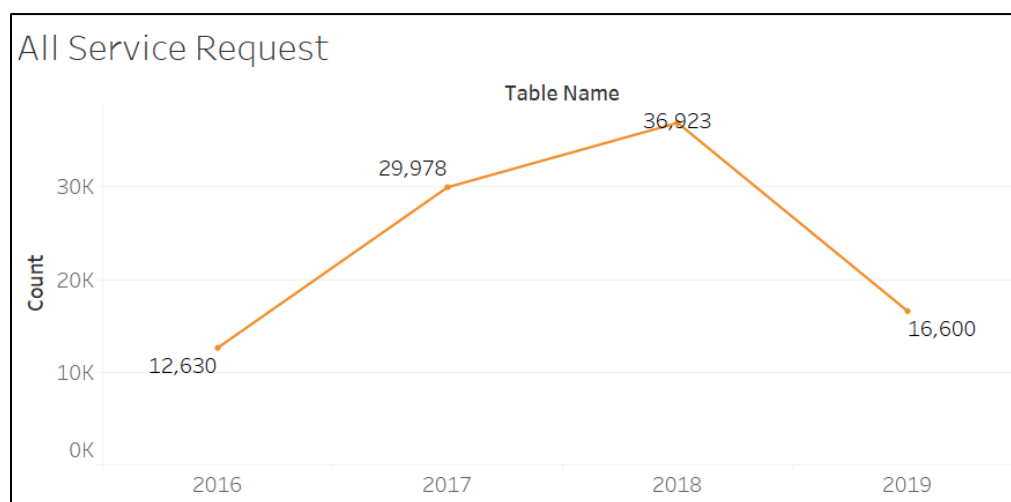


Chart 1: Total number of services requested, each year from 2016 to mid-2019.

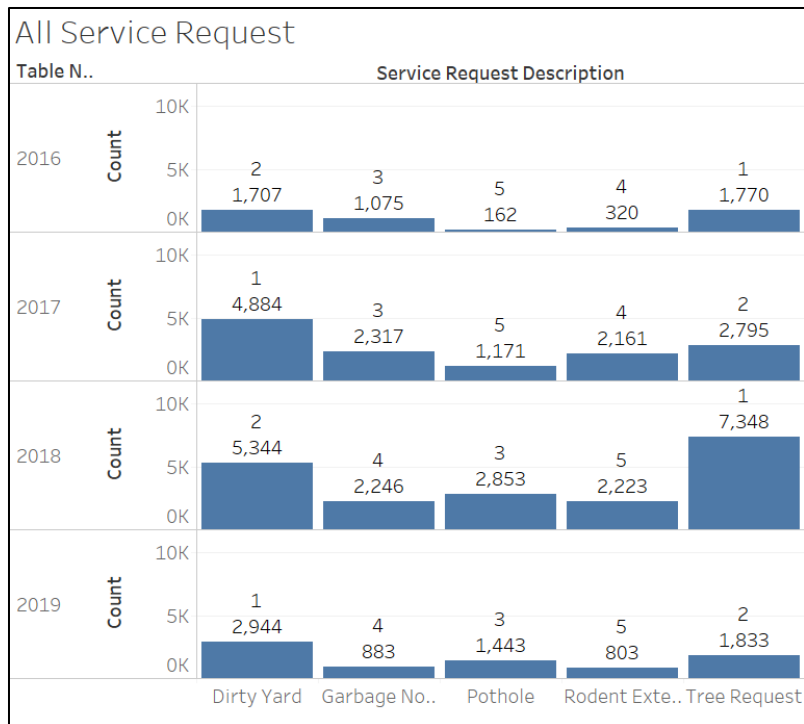


Chart 2: The top 5 services requested in the year 2016 to mid-2019. The first mark is rank, and second mark is count of services. Counts are ranked in order to identify most requested service

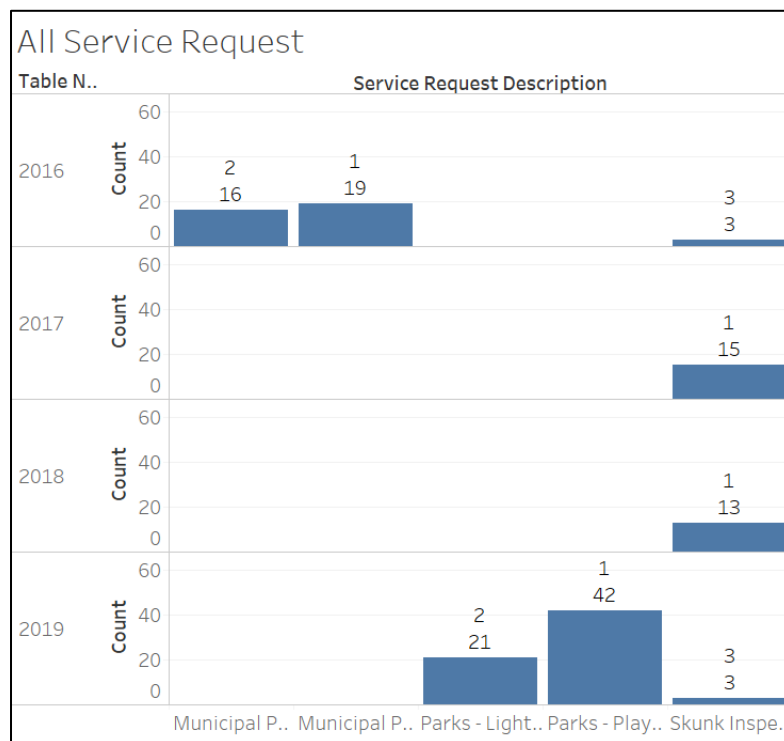


Chart 3: The bottom 5 services requested in the year 2016 to mid-2019. The first mark is rank, and second mark is count of services. Counts are ranked in order to identify least requested serviced

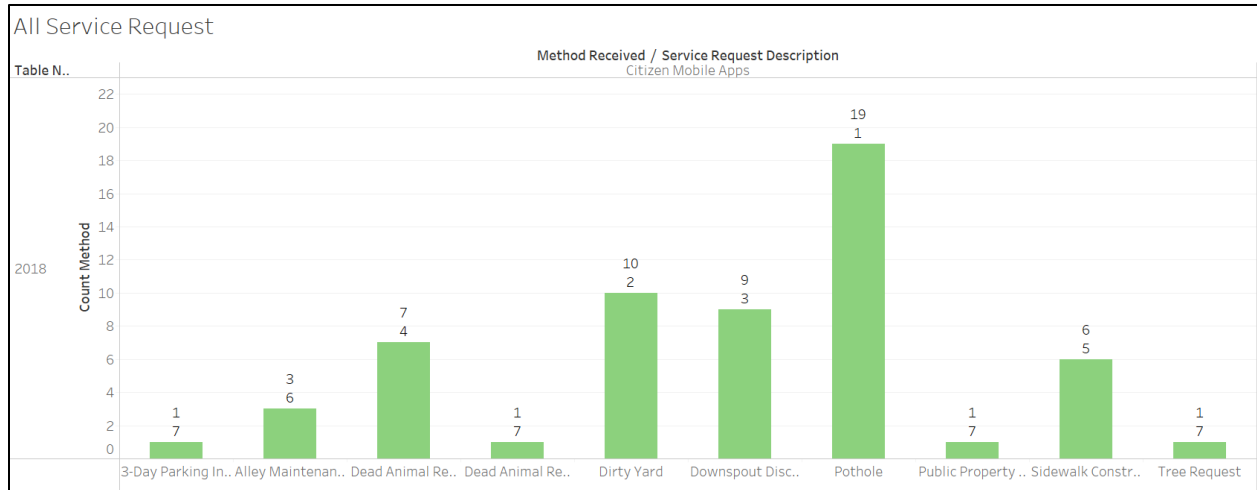


Chart 4: All the services requested through the Citizen Mobile App. The first mark is count, and second mark is rank, which shows that Pothole service was requested the most by app in 2018

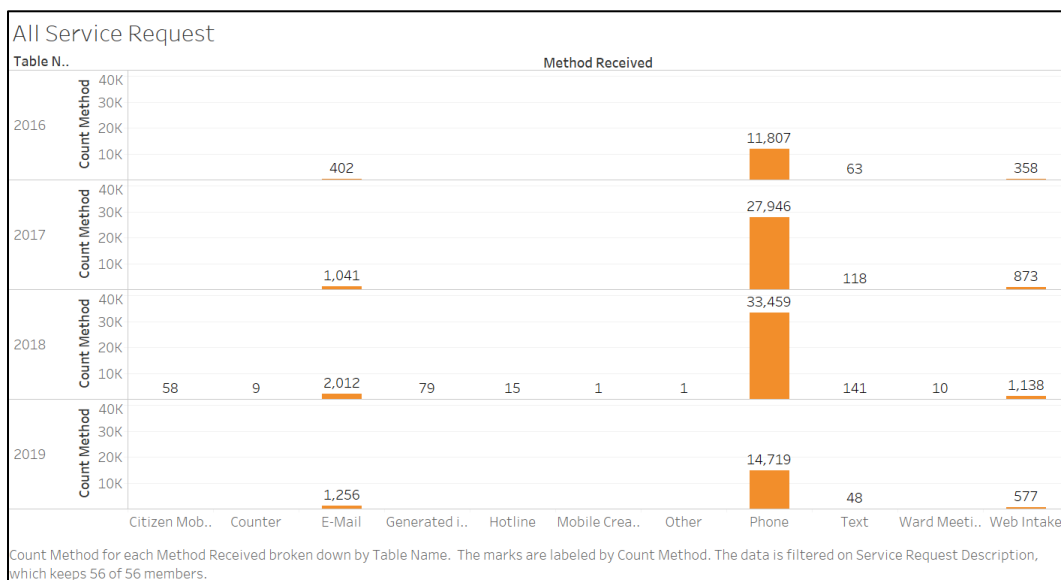


Chart 5: The methods used for contacting 311 city services and count of all services requested by each method. The phone is used the most

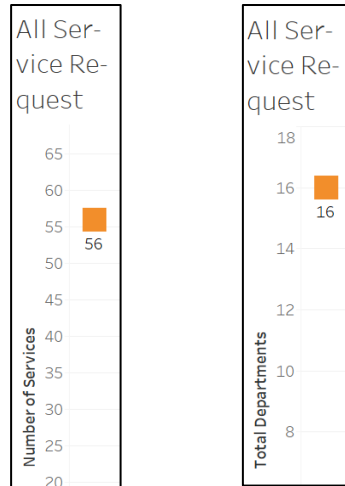


Chart 6: Total number of Services (65) provided and the total number of municipal Departments (16) in City of Windsor

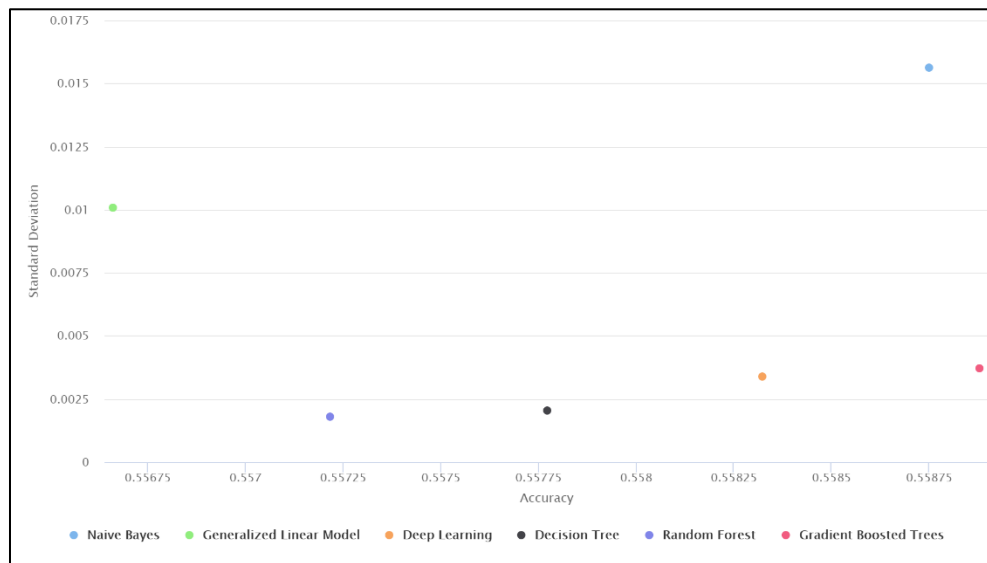


Chart 7: Predictions by six different models with accuracy around 55%

CONCLUSION

From the analysis, it is to be concluded that city of Windsor provides more than 50 services, distributed among various departments, and citizens utilize these services at a great extent. Request for services is increasing every year. Thereby, necessary steps should be taken to efficiently manage and address them in timely manner. As per the data from 2016 to mid-2019, the demand for same services (Dirty Yard & Tree Request) has remained high, so management should/can focus on that and plan accordingly. Furthermore, it also reflects that phone is used the most for contacting 311 services. All departments telephone system requires to be up to date. If municipal centers are facing extra load due to this, people can be made aware of alternate mode of contact and benefits as well. If it is possible to collect street information accurately, one can know which area frequently requests for which service. It may help in taking some decisions like where new service center should be located. More useful analysis can be done on data if information is not missing, or all dataset have same type of attributes.