

October 18th, 2024

2003A Introductory Data Storytelling

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Midterm Project: Exploratory Data Analysis (EDA)

Analysis of City of Ottawa Dataset on Garbage and Recycling Service Requests

Foreword

This assignment explores the analysis of a dataset from the City of Ottawa, aiming to uncover insights and narratives that reflect the community's dynamics. By examining the data, I hope to highlight important trends and patterns that can inform decision-making and contribute to a better understanding of urban life in Ottawa. Through this analytical journey, I aim to enhance my skills in data storytelling and provide a clearer picture of the factors influencing our city.

1. Introduction

In this assignment, I will be analyzing a dataset from the **City of Ottawa**, focusing specifically on service requests related to **garbage and recycling** issues during the month of **August 2024**. The dataset includes information on various service request types, such as missed garbage pick-up, overfull recycling bins, and street cleanliness concerns. Additionally, it records the geographical location of each request, as well as the dates and times these requests were submitted. The data was collected through the City of Ottawa's public service reporting system, which allows residents to file complaints and requests regarding waste management issues.

This dataset was updated on October 3, 2024, and it forms part of a broader set of service requests made throughout the year. The purpose of this analysis is to clean and explore the data in order to uncover patterns, trends, and potential areas for improvement in the city's waste management system. By analyzing the frequency and distribution of these requests, I hope to gain insights into the nature of waste management issues across Ottawa's neighborhoods, especially during peak months like summer.

The report will be divided into several sections: first, I will describe how I imported the data into Google Sheets and conducted an initial review; second, I will perform a detailed VIMO (Verifiability,

Integrity, Methodology, Objectivity) analysis to evaluate the quality of the dataset; third, I will outline the steps taken to clean the data; and lastly, I will conduct an exploratory data analysis (EDA) to visualize trends and insights from the cleaned data.

2. Getting Data

To begin the analysis, I downloaded the dataset from the **City of Ottawa's open data portal**, which provides a comprehensive list of service requests filed by residents in Ottawa. The dataset was made available as a **CSV** file. Below is a step-by-step guide for importing the dataset into **Google Sheets**:

Download the Dataset:

Visit the City of Ottawa Open Data Portal and download the "2024 Service Requests" dataset in CSV format. Once downloaded, save the file on your computer.

Open Google Sheets:

Launch Google Sheets and create a new blank spreadsheet by clicking on **"Blank Spreadsheet"**.

Import the Dataset:

Click on **File** > **Import**.

Select the **Upload tab**, then click **Select a file** from your device and choose the **downloaded CSV file**.

Ensure that the separator type is set to **Comma**, which is the delimiter used in the CSV file.

Select **Replace spreadsheet** to replace the current empty sheet with the imported data.

Zoori_Sandy_City of Ottawa open data portal

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M:M	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	Service Request Status État	Type Type	Description Description	Opened Date C	Closed Date D	Address Adresse	Latitude Latitud	Longitude Long	Ward Quartier	Channel Voie de service				
2	202457155060	Resolved	Garbage and Re Organics - SWC	2024-09-12	2024-09-13	IN	IN	IN	23	Web				
3	202457104764	Resolved	Parking Control Overtime Parkin	2024-07-22	2024-07-23	IN	IN	IN	6	Web				
4	202457136033	Resolved	Garbage and Re Recycling Bins N	2024-08-24	2024-09-17	IN	IN	IN	9	Web				
5	202457034769	Resolved	Bylaw Services Animals - Dog B	2024-05-16	2024-05-16	IN	IN	IN	21	Web				
6	202457099127	Resolved	Garbage and Re Organics - SWC	2024-07-17	2024-07-30	IN	IN	IN	19	Web				
7	202457086810	Active	Garbage and Re Garbage - SWC	2024-07-05	IN	IN	IN	IN	22	Web				
8	202457101748	Resolved	Parking Control Laneways Allée	2024-07-19	2024-07-19	IN	IN	IN	8	Dispatch				
9	202457053913	Resolved	Bylaw Services Property Standa	2024-06-03	2024-06-03	IN	IN	IN	3	Dispatch				
10	202457017715	Cancelled	Recreation and (Park Maintenanc	2024-04-29	2024-07-08	688 Birchland Ci	45.25039928	-75.92744313	6	Web				
11	202457073499	Resolved	Bylaw Services Care of Streets -	2024-06-21	2024-08-03	IN	IN	IN	2	Dispatch				
12	202457006078	Resolved	Recreation and (Park Maintenanc	2024-04-16	2024-07-09	215 Owl Dr	45.35464759	-75.66403166	16	Web				
13	202457094963	Resolved	Bylaw Services Animals - Dog Li	2024-07-12	2024-07-29	IN	IN	IN	13	Dispatch				
14	202457175249	Resolved	Recreation and (Park Maintenanc	2024-10-03	2024-10-04	580 Smyth Rd	45.39730108	-75.64547965	18	Dispatch				
15	202457019662	Resolved	Roads and Tran Road Maintenan	2024-05-01	2024-07-08	400 Sparks St	45.4185314	-75.70693154	14	Web				
16	202457102467	Resolved	Parking Control Overtime Parkin	2024-07-19	2024-07-21	IN	IN	IN	9	Web				
17	202457108809	Resolved	Bylaw Services Zoning - Site Pla	2024-07-25	2024-08-26	IN	IN	IN	14	Web				
18	202457067932	Resolved	Roads and Tran Road Maintenan	2024-06-16	2024-06-17	9341 Mitch Owe	45.33097744	-75.44635438	20	Dispatch				
19	202457049644	Resolved	Garbage and Re Leaf and Yard W	2024-05-29	2024-05-30	IN	IN	IN	9	Web				
20	202457163342	Active	Bylaw Services Property Standa	2024-09-20	IN	IN	IN	IN	12	Dispatch				
21	202457144057	Resolved	Parking Control No Parking Sta	2024-09-03	2024-09-03	IN	IN	IN	7	Web				
22	202457151838	Resolved	Bylaw Services Animals - Dog af	2024-09-10	2024-10-23	IN	IN	IN	17	Web				
23	202457054610	Resolved	Parking Control Overtime Parkin	2024-06-03	2024-07-08	IN	IN	IN	17	Dispatch				
24	202457043345	Resolved	Bylaw Services Property Standa	2024-05-24	2024-05-31	IN	IN	IN	3	Web				
25	202457121981	Resolved	Garbage and Re Organics - SWC	2024-08-09	2024-08-09	IN	IN	IN	1	Dispatch				
26	202457179549	Resolved	Bylaw Services Parks - Unautho	2024-10-08	2024-10-08	IN	IN	IN	4	Dispatch				
27	202457109203	Resolved	Garbage and Re Organics - SWC	2024-07-26	2024-07-26	IN	IN	IN	19	Web				

Review the Imported Data:

Once the data was imported, I saw that the first row had the column headers, and the data included **11 columns** in total. Here's a quick breakdown:

A: Service request

B: Status

C: Type

D: Description

E: Opened Date

F: Closed Date

G: Address

H: Latitude

I: Longitude

J: Ward

k: Channel

There are **273,844 rows** in the dataset, so it's pretty big. Here's what I noticed after importing the data:

Status: Most of the requests are marked as "Resolved," but there are also a lot of "Active" and "Canceled" statuses.

Description: There's a lot of repetition in the description column, with things like "Garbage and Recycling," "Parking Control," and "Bylaw Services." Since I'm focusing on garbage and recycling, I'll need to filter out the other stuff.

Address, Latitude, and Longitude: There are a lot of \N values in these columns, which means missing data. I'll have to decide how to handle those.

Channel: A lot of requests come from "Walk-In" and "Voice-In," and some come from "Data-In." This tells us how people submitted their service requests.

You can view my dataset in Google Sheets [here](#).

3. Understanding Data

3.1. VIMO Analysis

Status Column (e.g., Resolved, Active, Cancelled)

Verifiability: The "Status" column seems fine. It mostly has "Resolved," "Active," and "Cancelled," which are logical. But I need to double-check if "Active" really means the issue is still open or if it's just an outdated status.

Integrity: There aren't any missing values in this column. But, some of the "Active" statuses might be outdated, and I'm not sure if all the "Resolved" ones mean the issue was completely fixed.

Reliability: It's generally reliable for understanding how many requests are still open vs. completed, but I'll need to dive deeper to see if the "Active" ones are truly active.

Type Column (e.g., Garbage and Recycling, Bylaw Services)

Verifiability: The "Type" column has categories like "Garbage and Recycling," "Parking Control," and "Bylaw Services." Since I'm only looking at garbage and recycling, I'll need to filter out the irrelevant categories.

Integrity: The "Type" column has some unrelated categories, so I'll clean those out to make sure the analysis only includes garbage and recycling requests.

Reliability: Once I filter out the irrelevant categories, it'll be reliable for tracking garbage and recycling requests.

Description Column (e.g., Description of Request)

Verifiability: The "Description" column is a bit repetitive with a lot of entries like "Garbage and Recycling," "Parking Control," and "Bylaw Services." I'll need to clean this up and focus only on the garbage and recycling descriptions.

Integrity: The descriptions are mostly accurate, but again, I'll need to remove the ones related to parking and bylaws.

Reliability: Once I clean up the column and keep only the garbage and recycling-related descriptions, it'll be great for identifying trends.

Channel Column (e.g., Walk-In, Voice-In, Data-In)

Verifiability:

The "Channel" column tells us how the requests came in (e.g., "Walk-In," "Voice-In," "Data-In").
This is useful but not essential for the core analysis.

Integrity: The data seems pretty accurate, but there are a lot of "Walk-In" and "Voice-In" channels. Some "Data-In" entries might need more explanation to understand exactly how they were submitted.

Reliability: This column is good for understanding how people submitted their requests, but it won't be the main focus of my analysis.

3.2. Cleaning Data

Here’s how I cleaned the data to make it ready for analysis:

Step 1: Removed Unnecessary Columns

I didn’t need some columns in my dataset, like:

Address

Latitude

Longitude

Closed Date

I just deleted these columns because I’m only focusing on the Status, Type, and Open Date columns for my analysis. This helped clean up the sheet and made it easier to work with.

Zoori_ Sandy_ City of Ottawa open data portal

	A	B	C	D	E	F	G	H	I	J
1	Service Request	Status État	Type Type	Description Description	Opened Date Date ouverte	Ward Quartier	Channel Voie de service			
2	202457155060	Resolved	Garbage and Recycling	Organics - SWC	2024-09-12	23	Web			
3	202457104764	Resolved	Parking Control	Overtime Parking	2024-07-22	6	Web			
4	202457136033	Resolved	Garbage and Recycling	Recycling Bins Missing	2024-08-24	9	Web			
5	202457034769	Resolved	Bylaw Services	Animals - Dog Barking	2024-05-16	21	Web			
6	202457099127	Resolved	Garbage and Recycling	Organics - SWC	2024-07-17	19	Web			
7	202457086810	Active	Garbage and Recycling	Garbage - SWC	2024-07-05	22	Web			
8	202457101748	Resolved	Parking Control	Laneways Allées	2024-07-19	8	Dispatch			
9	202457053913	Resolved	Bylaw Services	Property Standards	2024-06-03	3	Dispatch			
10	202457017715	Cancelled	Recreation and Culture	Park Maintenance	2024-04-29	6	Web			
11	202457073499	Resolved	Bylaw Services	Care of Streets -	2024-06-21	2	Dispatch			
12	202457006078	Resolved	Recreation and Culture	Park Maintenance	2024-04-16	16	Web			
13	202457094963	Resolved	Bylaw Services	Animals - Dog Litter	2024-07-12	13	Dispatch			
14	202457175249	Resolved	Recreation and Culture	Park Maintenance	2024-10-03	18	Dispatch			
15	202457019662	Resolved	Roads and Transportation	Road Maintenance	2024-05-01	14	Web			
16	202457102467	Resolved	Parking Control	Overtime Parking	2024-07-19	9	Web			
17	202457108809	Resolved	Bylaw Services	Zoning - Site Plan	2024-07-25	14	Web			
18	202457067932	Resolved	Roads and Transportation	Road Maintenance	2024-06-16	20	Dispatch			
19	202457049644	Resolved	Garbage and Recycling	Leaf and Yard Waste	2024-05-29	9	Web			
20	202457163342	Active	Bylaw Services	Property Standards	2024-09-20	12	Dispatch			
21	202457144057	Resolved	Parking Control	No Parking Stop	2024-09-03	7	Web			
22	202457151838	Resolved	Bylaw Services	Animals - Dog at Large	2024-09-10	17	Web			
23	202457054610	Resolved	Parking Control	Overtime Parking	2024-06-03	17	Dispatch			
24	202457043345	Resolved	Bylaw Services	Property Standards	2024-05-24	3	Web			
25	202457121981	Resolved	Garbage and Recycling	Organics - SWC	2024-08-09	1	Dispatch			
26	202457179549	Resolved	Bylaw Services	Parks - Unauthorized	2024-10-08	4	Dispatch			
27	202457109203	Resolved	Garbage and Recycling	Organics - SWC	2024-07-26	19	Web			
28	202457149245	Resolved	Roads and Transportation	Traffic Operation	2024-09-07	16	Dispatch			
29	202457000000	Resolved	Garbage and Recycling	Organics - SWC	2024-08-17	10	Web			

Step 2: Removed Duplicates

I checked to see if there were any duplicate rows (meaning the same data repeated). I did this by

selecting the data and using the Remove Duplicates tool in Google Sheets. There weren't any duplicates, but it was a good check to make sure the data wasn't repeating itself.

The screenshot shows a Google Sheets interface with a spreadsheet titled "Zoori_Sandy_City of Ottawa open data portal". The spreadsheet has columns labeled A through J, with headers: Service Request ID, Status | État, Type | Type, Description | Description, Opened Date | Date ouverte, Ward | Quartier, and Channel | Voie de service. A "Remove duplicates" dialog box is open in the center, displaying the message "No duplicate rows were found." and "273844 unique rows remain." with an "OK" button.

	A	B	C	D	E	F	G	H	I	J
1	Service Request ID	Status État	Type Type	Description Description	Opened Date Date ouverte	Ward Quartier	Channel Voie de service			
2	202457155060	Resolved	Garbage and Re	Organics - SWC	2024-09-12	23	Web			
3	202457104764	Resolved	Parking Control	Overtime Parking	2024-07-22	6	Web			
4	202457136033	Resolved	Garbage and Re	Recycling Bins N	2024-08-24	9	Web			
5	202457034769	Resolved	Bylaw Services	Animals - Dog B	2024-05-16	21	Web			
6	202457099127	Resolved	Garbage and Re	Organics - SWC	2024-07-17	19	Web			
7	202457086810	Active	Garbage and Re	Garbage - SWC	2024-07-22	23	Web			
8	202457101748	Resolved	Parking Control	Laneways All						
9	202457053913	Resolved	Bylaw Services	Property Stand						
10	202457017715	Cancelled	Recreation and	Park Maintena						
11	202457073499	Resolved	Bylaw Services	Care of Streets						
12	202457006078	Resolved	Recreation and	Park Maintena						
13	202457094963	Resolved	Bylaw Services	Animals - Dog						
14	202457175249	Resolved	Recreation and	Park Maintena						
15	202457019662	Resolved	Roads and Tran	Road Maintena						
16	202457102467	Resolved	Parking Control	Overtime Parki						
17	202457108809	Resolved	Bylaw Services	Zoning - Site Pla	2024-07-23	14	Web			
18	202457067932	Resolved	Roads and Tran	Road Maintenan	2024-06-16	20	Dispatch			
19	202457049644	Resolved	Garbage and Re	Leaf and Yard W	2024-05-29	9	Web			
20	202457163342	Active	Bylaw Services	Property Stand	2024-09-20	12	Dispatch			
21	202457144057	Resolved	Parking Control	No Parking Sta	2024-09-03	7	Web			
22	202457151838	Resolved	Bylaw Services	Animals - Dog al	2024-09-10	17	Web			
23	202457054610	Resolved	Parking Control	Overtime Parkin	2024-06-03	17	Dispatch			
24	202457043345	Resolved	Bylaw Services	Property Stand	2024-05-24	3	Web			
25	202457121981	Resolved	Garbage and Re	Organics - SWC	2024-08-09	1	Dispatch			
26	202457179549	Resolved	Bylaw Services	Parks - Unautho	2024-10-08	4	Dispatch			
27	202457109203	Resolved	Garbage and Re	Organics - SWC	2024-07-26	19	Web			
28	202457149245	Resolved	Roads and Tran	Traffic Operation	2024-09-07	16	Dispatch			
29	202457000000	Resolved	Garbage and Re	Organics - SWC	2024-08-17	10	Web			

Step 3: Trimmed Whitespace

Sometimes there are extra spaces before or after the text in the cells, which could mess up sorting or filtering. So, I used Google Sheets' Trim Whitespace feature to clean up any extra spaces in the Columns.

To do this, I selected all the columns by left clicking on the white box, went to Data, and clicked on Data cleanup > Trim Whitespace. This cleaned up the spaces that I couldn't see but could cause problems when analyzing the data.

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273846 Service Request ID | Numéro de demande

	A	B	C	D	E	F	G	H	I	J
	Service Reques	Status État	Type Type	Description Des	Opened Date C	Ward Quartier	Channel Voie de service			
2	202457155060	Resolved	Garbage and Re	Organics - SWC	2024-09-12	23	Web			
3	202457104764	Resolved	Parking Control	Overtime Parkin	2024-07-22	6	Web			
4	202457136033	Resolved	Garbage and Re	Recycling Bins M	2024-08-24	9	Web			
5	202457034769	Resolved	Bylaw Services	Animals - Dog B	2024-05-16	21	Web			
6	202457099127	Resolved	Garbage and Re	Organics - SWC	2024-07-17	19	Web			
7	202457086810	Active	Garbage and Re	Garbage - SWC	2024-07-05	22	Web			
8	202457101748	Resolved	Parking Control	Laneways All						
9	202457053913	Resolved	Bylaw Services	Property Stand						
10	202457017715	Cancelled	Recreation and	(Park Maintena						
11	202457073499	Resolved	Bylaw Services	Care of Streets						
12	202457006078	Resolved	Recreation and	(Park Maintena						
13	202457094963	Resolved	Bylaw Services	Animals - Dog						
14	202457175249	Resolved	Recreation and	(Park Maintena						
15	202457019662	Resolved	Roads and Tran	Road Maintena						
16	202457102467	Resolved	Parking Control	Overtime Parkin	2024-07-10	3	Web			
17	202457108809	Resolved	Bylaw Services	Zoning - Site Pla	2024-07-25	14	Web			
18	202457067932	Resolved	Roads and Tran	Road Maintenan	2024-06-16	20	Dispatch			
19	202457049644	Resolved	Garbage and Re	Leaf and Yard W	2024-05-29	9	Web			
20	202457163342	Active	Bylaw Services	Property Stand	2024-09-20	12	Dispatch			
21	202457144057	Resolved	Parking Control	No Parking Sta	2024-09-03	7	Web			
22	202457151838	Resolved	Bylaw Services	Animals - Dog af	2024-09-10	17	Web			
23	202457054610	Resolved	Parking Control	Overtime Parkin	2024-06-03	17	Dispatch			
24	202457043345	Resolved	Bylaw Services	Property Stand	2024-05-24	3	Web			
25	202457121981	Resolved	Garbage and Re	Organics - SWC	2024-08-09	1	Dispatch			
26	202457179549	Resolved	Bylaw Services	Parks - Unautho	2024-10-08	4	Dispatch			
27	202457109203	Resolved	Garbage and Re	Organics - SWC	2024-07-26	19	Web			
28	202457149245	Resolved	Roads and Tran	Traffic Operation	2024-09-07	16	Dispatch			
29	202457060000	Resolved	Garbage and Re	Organics - SWC	2024-06-17	10	Web			

Trim whitespace

Trimmed whitespace from 5,499 selected cells.

OK

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Step 4: Standardized Text (Find and Replace)

There were some inconsistencies in the Status column. For example, "resolved" was sometimes written as "Resolved" with an uppercase letter, and "cancelled" was written in different ways. To fix this, I used the Find and Replace tool to make everything uniform.

I found all instances of "resolved" and changed them to "Resolved", "active" to "Active", and "cancelled" to "Cancelled". This made sure the text was consistent, which is important for sorting and analysis.



↶ Undo

⌘Z

↷ Redo

⌘Y

✂ Cut

⌘X

📋 Copy

⌘C

📄 Paste

⌘V

📄 Paste special

↕ Move

🗑 Delete

🔍 Find and replace

⌘+Shift+H

3:B

				E	
1	Service				n Des Opened Date C Wai
2	20245			SWC	2024-09-12
3	20245			Parking	2024-07-22
4	20245			Bins M	2024-08-24
5	20245			Dog B	2024-05-16
6	20245			SWC	2024-07-17
7	20245			SWC	2024-07-05
8	20245			Allée	2024-07-19
9	20245			tanda	2024-06-03
10	20245			enanc	2024-04-29
11	20245			reets -	2024-06-21
12	20245			enanc	2024-04-16
13	202457094963	Resolved	Bylaw Services	Animals - Dog Li	2024-07-12
14	202457175249	Resolved	Recreation and (Park Maintenanc	2024-10-03

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Find and replace

Find

resolved

Replace with

Resolved

Search

This sheet ▾

☐ Match case

☐ Match entire cell contents

☐ Search using regular expressions [Help](#)

☐ Also search within formulas

☐ Also search within links

Replaced 179,377 instances of resolved with Resolved

Find

Replace

Replace all

Done

	A	B	C	D	E	F	G	H	I	J
1	Service Request	Status État	Type Type	Description Description						
2	202457155060	Resolved	Garbage and Recycling Services	Organics - SWC						
3	202457104764	Resolved	Parking Control	Overtime Parking						
4	202457136033	Resolved	Garbage and Recycling Services	Recycling Bins Missing						
5	202457034769	Resolved	Bylaw Services	Animals - Dog Barking						
6	202457099127	Resolved	Garbage and Recycling Services	Organics - SWC						
7	202457086810	Active	Garbage and Recycling Services	Garbage - SWC						
8	202457101748	Resolved	Parking Control	Laneways Allées						
9	202457053913	Resolved	Bylaw Services	Property Standards						
10	202457017715	Cancelled	Recreation and Parks Maintenance	(Park Maintenance)						
11	202457073499	Resolved	Bylaw Services	Care of Streets - Sidewalks						
12	202457006078	Resolved	Recreation and Parks Maintenance	(Park Maintenance)						
13	202457094963	Resolved	Bylaw Services	Animals - Dog Litter						
14	202457175249	Resolved	Recreation and Parks Maintenance	(Park Maintenance)						
15	202457019662	Resolved	Roads and Transportation	Road Maintenance						
16	202457102467	Resolved	Parking Control	Overtime Parking						
17	202457108809	Resolved	Bylaw Services	Zoning - Site Plans						
18	202457067932	Resolved	Roads and Transportation	Road Maintenance						
19	202457049644	Resolved	Garbage and Recycling Services	Leaf and Yard Waste						
20	202457163342	Active	Bylaw Services	Property Standards						
21	202457144057	Resolved	Parking Control	No Parking Stop Signs						
22	202457151838	Resolved	Bylaw Services	Animals - Dog at Large						
23	202457054610	Resolved	Parking Control	Overtime Parking						
24	202457043345	Resolved	Bylaw Services	Property Standards						
25	202457121981	Resolved	Garbage and Recycling Services	Organics - SWC	2024-08-09	1 Dispatch				
26	202457179549	Resolved	Bylaw Services	Parks - Unauthorized Use	2024-10-08	4 Dispatch				
27	202457109203	Resolved	Garbage and Recycling Services	Organics - SWC	2024-07-26	19 Web				

Step 5: Split Columns (SPLIT function)

Some of the data in the Type column had both English and French descriptions, separated by a "|". To make this easier to work with, I used the SPLIT function to separate the English and French descriptions into two columns.

I used this formula in a new column:

=SPLIT(D2, "|")

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=SPLIT(D2, "|")

	A	B	C	D	E	F	G	H	I	J
	Service Request	Status État	Type Type	Description Description	Opened Date Date ouverte	Ward Quartier	Channel Voie de service			
	202457155060	Resolved	Garbage and Recycling	Organics - SWC	2024-09-12	23	Web	Organics - SWC	Biologiques-CDS	
	202457104764	Resolved	Parking Control	Overtime Parking	2024-07-22	6	Web	Overtime Parking	Contrôle du stationnement - Surs	
	202457136033	Resolved	Garbage and Recycling	Recycling Bins	2024-08-24	9	Web	Recycling Bins	Bacs de recyclage - Nouvelle ma	
	202457034769	Resolved	Bylaw Services	Animals - Dog B	2024-05-16	21	Web	Animals - Dog B	Animaux - Aboiement	
	202457099127	Resolved	Garbage and Recycling	Organics - SWC	2024-07-17	19	Web	Organics - SWC	Biologiques-CDS	
	202457086810	Active	Garbage and Recycling	Garbage - SWC	2024-07-05	22	Web	Garbage - SWC	Déchets - Collecte des déchets	
	202457101748	Resolved	Parking Control	Laneways Allée	2024-07-19	8	Dispatch	Laneways	Allées	
	202457053913	Resolved	Bylaw Services	Property Stand	2024-06-03	3	Dispatch	Property Stand	Norme d'entretien des biens - Pe	
	202457017715	Cancelled	Recreation and	Park Maintenan	2024-04-29	6	Web	Park Maintenan	Entretien des parcs - Trottoir/sen	
	202457073499	Resolved	Bylaw Services	Care of Streets -	2024-06-21	2	Dispatch	Care of Streets -	Entretien des rues - Déchargeme	
	202457006078	Resolved	Recreation and	Park Maintenan	2024-04-16	16	Web	Park Maintenan	Entretien des parcs - Opérations	
	202457094963	Resolved	Bylaw Services	Animals - Dog Li	2024-07-12	13	Dispatch	Animals - Dog Li	Animaux - Permis de chien	
	202457175249	Resolved	Recreation and	Park Maintenan	2024-10-03	18	Dispatch	Park Maintenan	Entretien des parcs - Poubelle - F	
	202457019662	Resolved	Roads and Trans	Road Maintenan	2024-05-01	14	Web	Road Maintenan	Entretien des Routes - Revêteme	
	202457102467	Resolved	Parking Control	Overtime Parkin	2024-07-19	9	Web	Overtime Parkin	Contrôle du stationnement - Surs	
	202457108809	Resolved	Bylaw Services	Zoning - Site Pla	2024-07-25	14	Web	Zoning - Site Pla	Règlement de zonage - Applicati	
	202457067932	Resolved	Roads and Trans	Road Maintenan	2024-06-16	20	Dispatch	Road Maintenan	Entretien des Routes - Revêteme	
	202457049644	Resolved	Garbage and Recycling	Leaf and Yard W	2024-05-29	9	Web	Leaf and Yard W	Feuilles et des résidus de gardina	
	202457163342	Active	Bylaw Services	Property Stand	2024-09-20	12	Dispatch	Property Stand	Norme d'entretien des biens - Ins	
	202457144057	Resolved	Parking Control	No Parking Sta	2024-09-03	7	Web	No Parking	Stationnement interdit	
	202457151838	Resolved	Bylaw Services	Animals - Dog al	2024-09-10	17	Web	Animals - Dog al	Animaux - Chien en liberté aupar	
	202457054610	Resolved	Parking Control	Overtime Parkin	2024-06-03	17	Dispatch	Overtime Parkin	Contrôle du stationnement - Surs	
	202457043345	Resolved	Bylaw Services	Property Stand	2024-05-24	3	Web	Property Stand	Norme d'entretien des biens - Pe	
	202457121981	Resolved	Garbage and Recycling	Organics - SWC	2024-08-09	1	Dispatch	Organics - SWC	Biologiques-CDS	
	202457179549	Resolved	Bylaw Services	Parks - Unautho	2024-10-08	4	Dispatch	Parks - Unautho	Parcs - Activités interdites	
	202457109203	Resolved	Garbage and Recycling	Organics - SWC	2024-07-26	19	Web	Organics - SWC	Biologiques-CDS	
	202457149245	Resolved	Roads and Trans	Traffic Operation	2024-09-07	16	Dispatch	Traffic Operation	Opérations de la Circulation - Fe	

This split the text at each pipe symbol ("|"), creating two separate columns with the English and French text.

Step 6: Freezing Rows and Columns

To make it easier to navigate my big dataset, I froze the first row (the column headers) and the first column (for the service request numbers). This way, when I scroll down or across the sheet, I can always see the headers and the row numbers.

I did this by going to **View > Freeze > 1 row and 1 column**.

Zoori_ Sandy_ City of Ottawa open data portal

3.3. Exploratory Data Analysis (EDA)

For this analysis, I created a **pivot table** to see how service requests related to garbage and recycling are doing in Ottawa. I looked at three main categories: Active, Cancelled, and Resolved requests. Here's what I found:

Pivot Table Summary:

Active Requests: There are 3,008 active requests for both Garbage and Recycling. These are requests that are still open and haven't been completed yet.

Cancelled Requests: There are 1,352 cancelled requests, meaning either the issue was fixed before the service was completed, or the request was removed for some reason.

Resolved Requests: Most of the requests (68,582) have been resolved, showing that a large portion of the service requests have been taken care of.

Grand Total: The total number of requests for both Garbage and Recycling combined is 72,942.

Figure 1: Pivot Table:



Zoori_Sandy_City of Ottawa open data port

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	A	B	C	D
1	<i>COUNTA of Type Type</i>			
2	<i>Status État</i>	Garbage and Re Grand Total		
3	Active	3008	3008	
4	Cancelled	1352	1352	
5	Resolved	68582	68582	
6	Grand Total	72942	72942	
7				
8				
9				
10				

Exploratory chart:

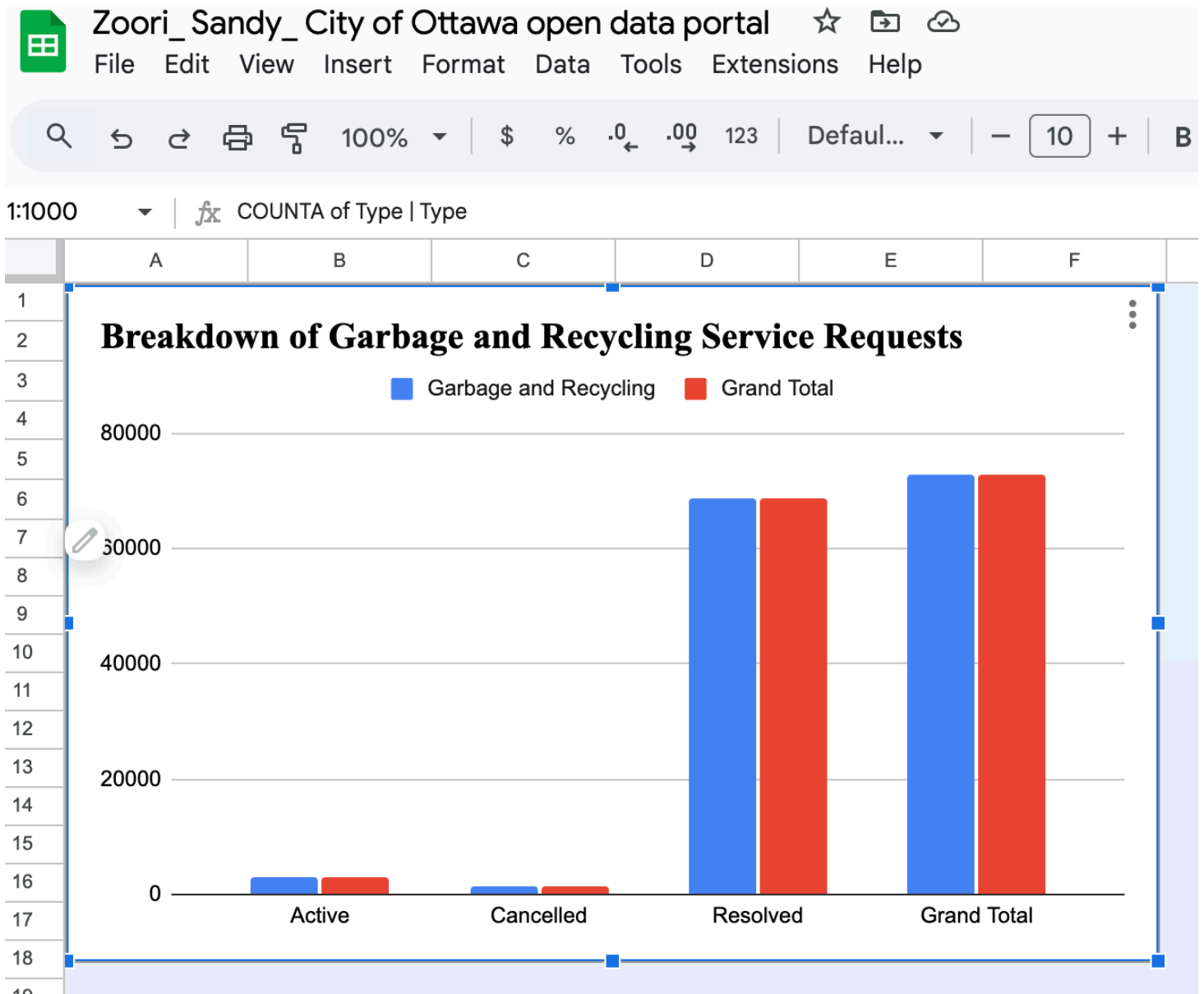


Figure 2: This exploratory chart shows...

The exploratory chart shows the breakdown of garbage and recycling service requests in Ottawa. Most of the requests (68,582) are marked as **Resolved**, meaning the issues have been addressed. There are fewer **Active** requests (3,008), which are still being worked on, and even fewer **Cancelled** requests (1,352), which were either withdrawn or no longer needed. This suggests that while most problems are being resolved, there are still some requests that remain open or are canceled for various reasons. The chart helps us see the overall trend and gives a glimpse into how the city is managing these issues. Further analysis could help understand why certain requests are taking longer to resolve.

4. Potential Story

Looking at the garbage and recycling service requests in Ottawa for August 2024, it seems like the city has some issues with missed garbage pick-ups and overfilled recycling bins. A lot of these problems happen in certain neighborhoods, which could mean that the city's waste collection system needs to be adjusted, especially in busy areas where there are more people.

To dig deeper into this story, I'd want to find out more about the areas where these complaints are happening. Are they in neighborhoods with higher population density? Are these issues happening more often during the summer months, when people are at home more and generating more waste? It would also be helpful to talk to people working in Ottawa's waste management, like city workers or public services staff, to get their take on why these issues are happening. Residents could also give useful feedback, so I'd consider reaching out to them through surveys or social media.

Additionally, looking into how other cities handle waste collection during peak months could give some ideas on how Ottawa can improve. A few articles or studies on waste management systems in other cities might provide some good context.

By learning more about these issues, we can better understand how to improve Ottawa's waste management system.

5. Conclusion

This assignment gave me a chance to dive deep into analyzing real-world data, focusing on Ottawa's garbage and recycling service requests. I started by cleaning the data, which was probably the most time-consuming part of the process. With so many rows and different columns, I had to use multiple methods in Google Sheets, such as removing empty spaces, fixing errors, and splitting combined data into separate columns. This part was challenging because there were a lot of inconsistencies, and I had to make sure everything was properly organized before moving on to the analysis.

The most rewarding part of the project was creating the pivot table and the chart to explore trends and patterns in the data. Seeing how certain neighborhoods had more complaints than others helped me visualize the problem better and sparked ideas for potential solutions.

One gap I realized is that I could have included more advanced data-cleaning techniques, like using OpenRefine for clustering, to streamline the process. Also, I could have looked deeper into the geographical side of things to see if location has a bigger impact on the number of complaints. If I could do this project again, I'd explore using more advanced tools like OpenRefine and try to gather more context about the data sources. Overall, it was a great learning experience, and I now feel more confident with data analysis and storytelling.

6. References

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