

Analyzing a Local Idaho Foodbank

Introduction

The Idaho St. Vincent de Paul Food Bank is a local food bank with 5 different locations across the treasure valley. The reason for this project is to discover any trends that would help the organization's outreach to those in need. The different ways this project could help the organization is potentially helping to know which groups of the community are being underserved, when they need to have most items in stock, and knowing the most important hours the food bank should be open to serve the most people.

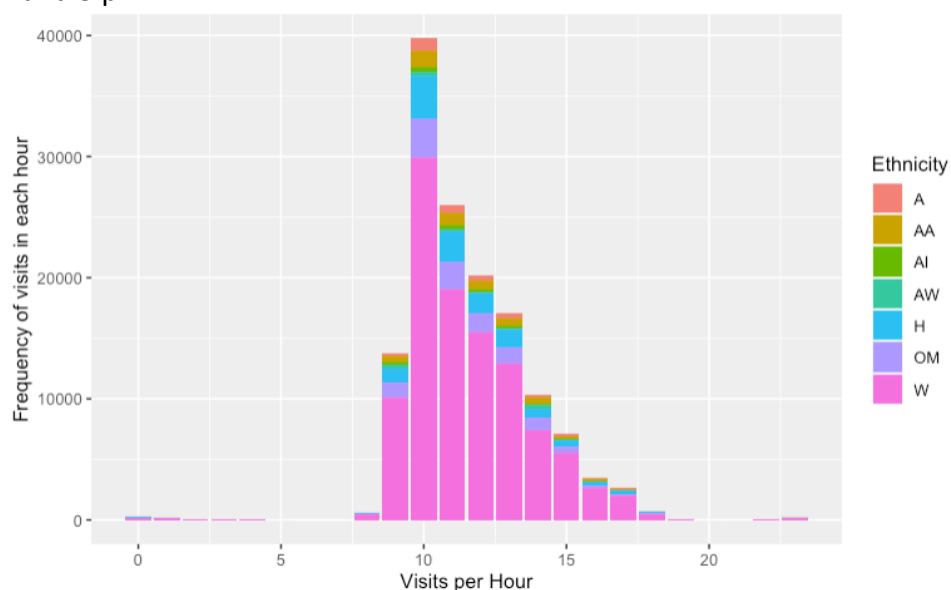
Methods

The data is provided by Idaho St. Vincent De Paul and is summarized into two sets: demographics of each visitor and time stamped data of their arrival to the food bank. For me, I wanted to try and use the demographics to figure out more information about potentially underrepresented groups utilizing the food bank and if there were any trends for usage.

To do some data cleaning, I first subtracted the birth year column by 2021 to get people's age. I had to subset the data frame though for errors in the age column which I explain further in the overview.

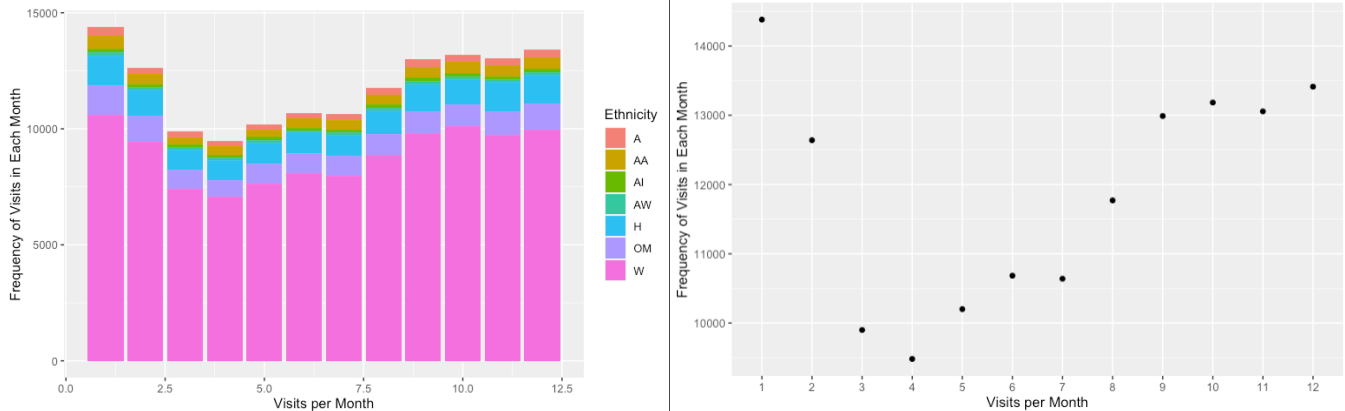
To address the time element, I first changed it from a character variable to actual date variables using the lubridate library. I also added three columns for month, year, and hour of each visit to help with visualizing.

After making a column for hours of each visit from 0-24, I constructed a bar plot to show the trend of visits per hour. In the visualization it is clear to see that the most visited hours of the food bank are between 10 am and 3 pm.



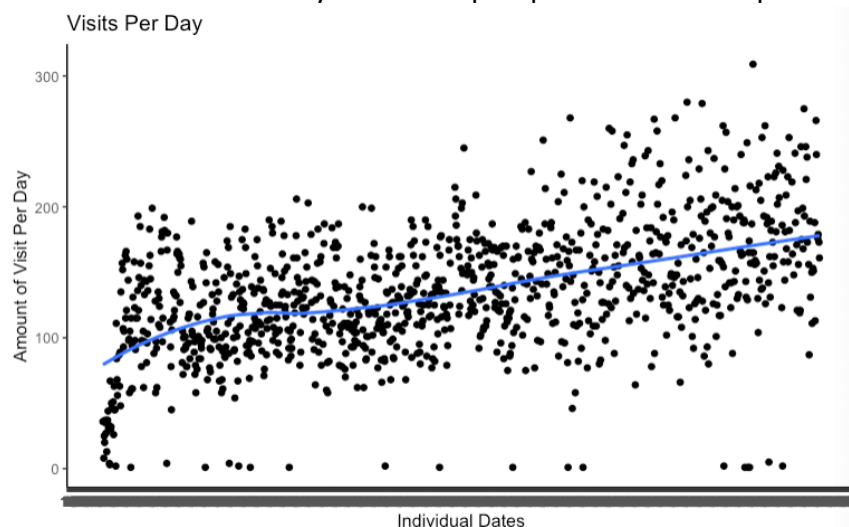
The previous visualization is also backed up by doing a simple summary report of the data that shows the average hour in which people visit the bank is 11.56 so between 11 and noon.

There is also a clear dip in the visits per month going into summer months and an increase as it reaches winter months. This could be due to demand of resources typically seen more in colder months.



Finally, I wanted to see if there was any type of linear trend in the frequency of visits. To do this, I made a separate data frame of just the date a person visited. Then I created a tibble so that the dates were grouped and counted with a frequency column. After that, I turned the tibble back into a data frame and changed the variable of the date column to a date for visuals.

I then used ggplot to create a point plot of dates by frequency. I plotted a loess function over this which can be seen below. To read the analysis of each plot please see the implications section.



Overview of Data

The limitations of this data are essentially up to the provider. If the person enters incorrect information, then it may cause incorrect results. For example, with years that people were born there were quite a few errors in the data. To combat these errors, I had to limit the data to drop any rows where age was above 150 (because if someone was 150 or older that's be a record!), and where the age was below 0 because if the data is used up until 2021 it is unlikely someone would be visiting the food bank is they're -2 years old since they haven't been born yet.

Implications

From the analysis I did on the timely visits there are clear trends to when people need access to the food bank resources. From my hourly figure plot, we can see that the bulk of visitors are between 10 am and 3 pm so, this means the food bank will want to make sure and remain open at those times in order to serve as much of the public as possible.

In the loess function plot, there is a pretty significant upwards trend in frequency of visits as time goes on. This can indicate that as time goes on, the food bank is becoming more popular, or there are more people being faced with food insecurity. This could be especially true of the 2020 COVID pandemic where many people lost their jobs. If the trend continues upwards like projected, it will be important for the food bank to do food drives or other charitable events to receive donations to keep up with the demand.