Pittsburgh Regional Transit Utilization
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This project visualizes the ridership and route utilization of Pittsburgh Regional Transit (which includes busses, light rail, rail, and inclines) from 2017 to the present. I choose this topic because I thought it would be interesting to visualize the effects of Covid-19 on ridership. I also live in the city and ride the bus occasionally and wanted to see route usage variations.
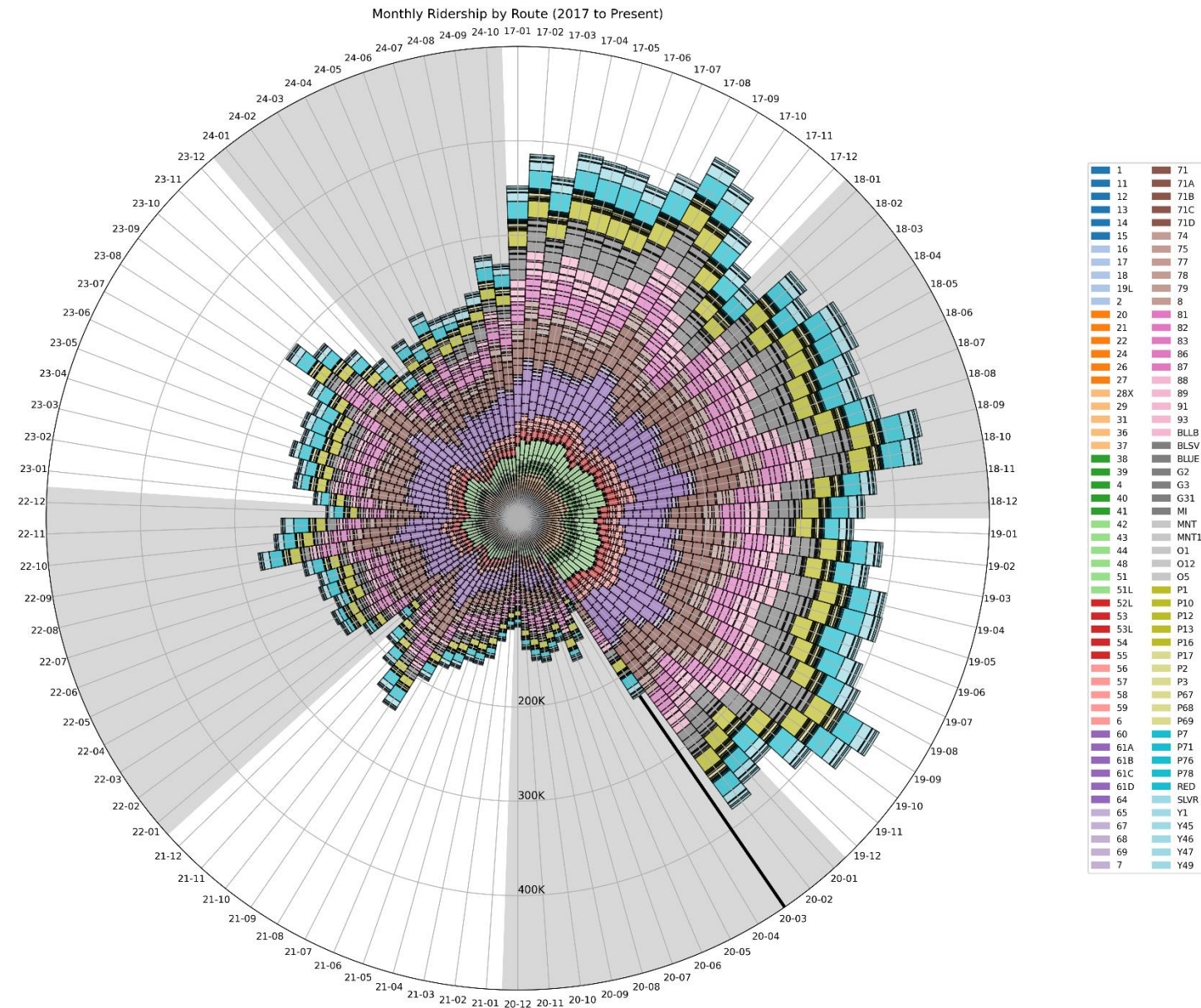

Monthly Ridership by Route (2017 to Present)

Legend:
- The outer circle denotes the month, going clockwise from Jan 2017 to Oct 2024
- Each large pie slice (alternating gray and white) represents the entire year
- The small radial lines represent a month
- The length of the bar is the total monthly ridership
- Each bar is divided into the individual routes by color
- The segment size of each bar is the total ridership on that route for that month
- The bar color groupings generally align with the various routes and make it easier to see
- The radius of the circle denotes the total ridership in intervals of 100,000, going to a maximum of 500,000
- The thick black line on the 20-03 radii indicates the start of the Covid-19 pandemic

Findings:
- The graph shows how much the ridership dropped during the pandemic, starting March 2020.
- The graph also shows how the ridership has only recovered to approximately 65% of pre-pandemic levels.
- Also of note is that ridership peaks each year around August and September, which correlates with the start of school.

Data:

 Source: https://data.wprdc.org/dataset/prt-monthly-average-ridership-by-route

 The dataset is the Western PA Regional Data Center Pittsburgh Regional Transit Monthly Average Ridership by Route, published monthly and contains all transit usage since 2017.

 The data currently consists of 22,318 lines of information.

 The columns in the data are as follows: _id, route, ridership_route_code, route_full_name, current_garage, mode, month_start, year_month, day_type, avg_riders, day_count

 The method used was as follows: reading the csv file into a dataframe via Jupyter notebook, filtering the data by month and route, creating a matrix where each row is month and a column is a route, creating a polar projection plot, defining the angles and bar width based on the number of months / 360, generating color map for the routes, plotting the background color for each year, plotting the ridership for each month as a stacked bar in polar coordinates, highlighting the radial for 20-03 as the start of covid, adding labels for the month-year along the outside radials axes, aligning the data to start at the north position and move clockwise around the plot, adding the radial tick labels indicating ridership in hundreds of thousands, creating a title and legend and displaying the plot.

Significance:

This graphic is important because it shows the utilization of the various routes, both before, during and after the pandemic. The bus routes are an important method of transportation for many people in the city, and visualizing their usage makes it easier for the county to make planning decisions on which routes and times of the year to prioritize. It's especially relevant now as the county is planning a massive redesign of bus routes as seen here: https://engage.rideprt.org/buslineredesign/buslineredesign-home

I also included an experimental version of the same graph in an interactive format in the jupyter notebook on my Github, which allows you to hover over each block in the bar graph to see the individual data for that route number, month, and ridership.

Github: https://github.com/erl67/prt-utilization

As further reference, this was a simple line graph of only the total ridership numbers for each month. It also shows how ridership dropped during the pandemic and not completely recovered.