**Graph 1: Top 10 Subway Routes and Their Top 4 Issues**
- Marks
  - Bars
    - Each bar represents the number of complaints for a specific issue type on a subway route. The length of the bar indicates the complaint count.
- Channels
  - Horizontal Axis (Complaint Count)
    - Shows the number of complaints for each issue, making it easy to compare the frequency of complaints within each route
  - Vertical Axis (Issue Types)
    - The types of issues are listed on the vertical axis for each route to categorize the data clearly
  - Faceting (Routes)
    - Each route is displayed as a separate plot, allowing the viewer to focus on individual routes and compare them side by side. This prevents confusion from having too many thing going on a single plot and makes it easier to the viewer to understand the differences between routes.
- Reason for Visualization
  - We chose this type of visualization because bar charts are simple but effective for comparing the frequency of complaints across different categories. By breaking the data into separate plots for each subway route, it's easier to focus on individual routes. The faceted layout makes side-by-side comparisons between routes clear while also allowing us to identify overall trends (lack of maintenance and cleanliness). Excluding vague complaint types like "Other" keeps the visualization focused on actionable data

**Graph 2: Normalized Complaint to Commendation Ratio on NYC Buses vs Subways**
- Marks
  - Bars
    - Each bar represents the ratio of complaints to commendation for the given complaint subject matter.
- Channels
  - Color
    - Used to differentiate categories. Blue bars correspond to buses, while orange ones correspond to subways.
  - Horizontal axis (Subject Matter)
    - Represents the different complaint subject matters, such as "Customer," "Employee," or "Vehicle."

- ○ Vertical axis (Normalized Complaint to Commendation Ratio)
  - ■ Encodes the normalized ratio value, with taller bars indicating higher ratios.
- ● Reason for Visualization
  - ○ The grouped bar chart was chosen to allow a direct side-by-side comparison of the normalized ratios for each subject matter between buses and subways. This layout makes it easy to observe patterns or differences across the two modes of transportation while maintaining focus on specific subject matters.

**Graph 3: Proportional Employee Complaint Breakdown by Agency**
- ● Marks:
  - ○ Bars
    - ■ Stacked bars represent the proportion of complaints for each agency, divided into segments by complaint categories (e.g., "Vehicle Operator," "Customer Service").
- ● Channels:
  - ○ Horizontal Axis (Agency)
    - ■ Represents the different agencies (e.g., NYC buses, subways, etc.).
  - ○ Vertical Axis (Proportion of Complaints)
    - ■ Encodes the proportion of total complaints for each agency, normalized to sum to 1 (100%).
  - ○ Color
    - ■ Encodes the complaint categories within each stacked bar (e.g., "Vehicle Operator" might be blue, "Customer Service" green, etc.), making it clear what proportion of complaints each category contributes.
- ● Reason for Visualization:
  - ○ The stacked bar graph is used because it provides a clear picture of the distribution of complaint categories within each agency while also showing the total proportion of complaints. This allows the viewer to compare both the relative and absolute proportions across agencies. The stacked layout highlights the breakdown of complaint categories, making it easy to identify trends, such as whether certain categories dominate complaints for a specific agency.

**Graph 4: Top 10 Complaints over the years**

- ● Marks
  - ○ Lines
    - ■ The likes show how the complaints change over time and connect all the years together.
- ● Channels:
  - ■ Horizontal axis (Year)

- ● Is the years that we have the data for
        - ■ Vertical axis (Number of complaints)
            - ● Is the number of complaints we have for that specific complaint
        - ■ Color:
            - ● Each color represents a different issue that is being showcased in this graph
- ● Reason for Visualization:
    - ○ This graph is used specifically because we want to see the trends of the complaints over the years. By using a line plot, we can actually see what is happening over the course of the last couple of years and see if it increased or decreased. By stacking them as well, you can see all the top complaints in relation to each other so you can see how bad each complaint really is in relation to another complaint. If each complaint was done on a separate graph, there would be confusion and it would be misleading because the range of complaints would vary widely. In this scenario, it is much better to have the visualization include all of the complaints.

## Graph 5: NYC Transit System Reports by Season

- ● Marks
    - ○ Bars
        - ■ Each bar represents the number of reports for a specific season.
- ● Channels
    - ○ Horizontal axis (Season)
        - ■ Represents the different seasons (e.g., Winter, Spring, Summer, Fall).
    - ○ Vertical axis (Number of Reports)
        - ■ Encodes the number of transit system reports for each season, with taller bars indicating a higher number of reports.
    - ○ Color
        - ■ Each color represents a different season. This is done to add clarity and make it easier to distinguish each bar as a season from a distance.
- ● Reason for Visualization
    - ○ The bar chart effectively communicates seasonal trends in transit system reports by emphasizing the number of reports per season. The straightforward layout allows for easy comparison across seasons, helping to identify peaks and troughs in reporting activity over the year. This visualization is particularly useful for spotting patterns, such as whether certain seasons (e.g., winter) consistently see more reports.

## Graph 6: Complaints by Quarter

- Marks
  - Bars
    - Each bar represents a new quarter and is made through a rectangular appearance on the grid.
- Channels
  - Horizontal axis
    - The horizontal axis represents the quarter that the issue is found in (Q1, Q2, Q3, Q4)
  - Vertical axis:
    - Represents the count for the number of complaints that happened in each of the quarters of the year
  - Color:
    - All the bars are initially blue and then when you hover your mouse over 1 of them, it turns red to draw attention to that specific graph.
- Reason for Visualization
  - This visualization is used because since we only have 4 pieces of categorical data, we wanted to be able to show them how prominent it is in a way that is easy to understand for the audience. It could not be a line chart as it does not show continuous data.