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## Exercise 2.2

Project Planning and Sourcing Data with an API

### Planning My Dashboard for New York CitiBike Analysis

#### Objective:

- I will be creating a dashboard to analyze the usage patterns and bike station placement of CitiBike in New York City. The goal is to understand when and where bike shortages occur and how new bike stations can be strategically placed to meet demand.

#### Dashboard Elements:

- Station popularity: Visualize with a map and location points where each station is, and which bike stations are the most popular.
- Seasonal trends: Plot the number of trips by month and include temperature to help identify when trips occur the most frequently.
- Day and time of day: Plot the number of trips by day and time of day using bar charts to help identify what days and times are the most popular for bike trips.
- Trip routes: If possible, highlight popular routes between stations to help identify areas of high traffic and demand between specific locations.

#### Questions for Analysis:

- What are the most popular bike stations in New York City?  
Funneling questions:
  - Which stations have the highest number of bike rentals overall?
  - Are there specific times of day or week when certain stations become particularly crowded?
  - Where are there little to no bike stations that could benefit from having stations placed there?

Visualization: I would like to portray the popular stations on a map and use bar charts to distinguish popular days and hours.

- What time of year are most trips taken? Does weather play a role in bike usage?  
Funneling questions:
  - Which months have the highest bike usage?
  - Is there a clear correlation between temperature and bike usage?

Visualization: I would like to create a line chart to track bike usage over time and show how temperature plays a role in bike usage.

- What are the most popular routes between stations?

Funneling questions:

- Are certain routes more popular than others/
- Are there recurring routes that people take daily?
- How far do people typically travel between stations? Is it mostly short-distance or long-distance travel?

Visualization: A map would be suitable for plotting common bike routes and distinguishing between them.

- What are the key factors influencing bike demand?

Funneling questions:

- What is the impact of weekday vs. weekends on bike trips?
- How do holidays or events where tourism is more likely affect bike usage?
- Does weather impact people's preference for biking over other modes of transportation?
- Do people choose biking over driving in areas with high traffic congestion or parking challenges?

Visualizations: Scatter plots would be useful to examine correlations between bike usage and temperatures or other variables, and a heatmap could be useful to show bike usage by day of the week or specific dates.