

Taxonomy of visualization

Writing plotting code is hard

Picking the right plot can be even harder

How to get ideas for plots

- Google search similar plots

Google

revenue and costs per quarter

X

AllImagesNewsBooksVideosMapsFlightsMoreTools

Economics

Gross

Loss statement

Accounting

Revenue run rate

Diagram


Big tech

Mba

Template

Am...


How to Calculate Quarterly Revenue Growth



FasterCapital

Calculate Quarterly Revenue Growth ...


How to Calculate Quarterly Revenue Growth



FasterCapital

Calculate Quarterly Revenue Growth ...


Cost of Revenue



Investopedia

Cost of Revenue: What It Is, How It'...

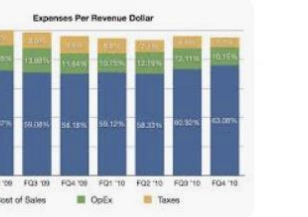
Cost of Revenue



Mosaic.tech

Cost of Revenue vs. Cost of Go...

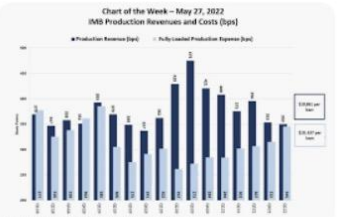
Expenses Per Revenue Dollar



Posts At Eventide

Costs and Cost Ratios To Revenue


Chart of the Week - May 27, 2022



US REO Partners

MBA Chart of the Week: IMB Productio...


Revenue & costs for three local businesses in 2018



Numerical Reasoning Tutor

Worked Solutions - Test 17 | Numeracy ...


Fiscal Quarters



Investopedia

What Is a Fiscal Quarter (Q1, Q2, Q3, Q...

Cost of Revenue



Mosaic.tech

Cost of Revenue vs. Cost of ...

Quarter

Quarter	Revenue (millions of \$)	Costs (millions of \$)
1	1.2	1.9
2	1.1	1.4
3	1.0	1.6
4	0.2	1.2

Homework.Study.com

total costs for Big House ...

How to get ideas for plots

- Google search similar plots
- Ask an LLM

Consider the dataset sample below:

Month	Revenue	Costs
January	50000	35000
February	52000	36000
March	54000	38000
April	58000	39000
May	62000	41000
June	65000	43000
July	67000	45000
August	71000	47000

What are some ways I might plot this data?

Expand on the data and use code interpreter to make some sample plots.

Analyzed ^

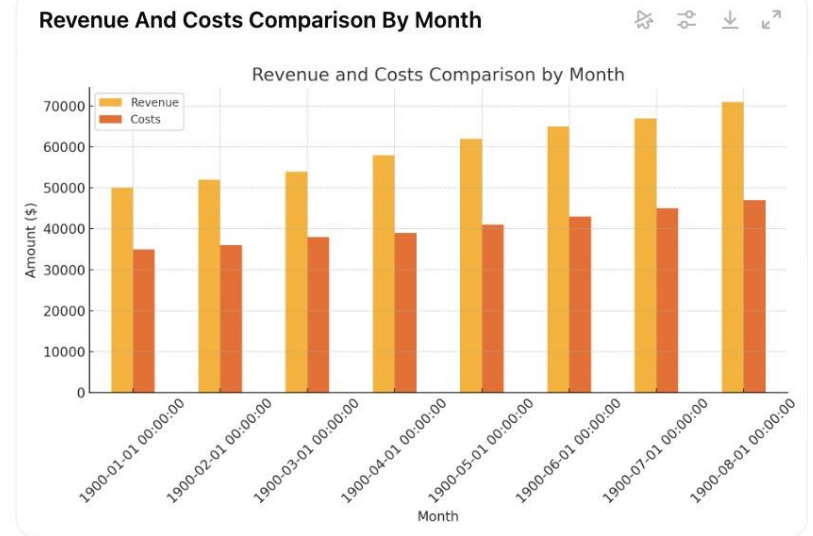
```
python
import pandas as pd
import matplotlib.pyplot as plt

# Create a DataFrame for the given data
data = {
    "Month": ["January", "February", "March", "April", "May", "June", "July", "August"],
    "Revenue": [50000, 52000, 54000, 58000, 62000, 65000, 67000, 71000],
    "Costs": [35000, 36000, 38000, 39000, 41000, 43000, 45000, 47000]
}

df = pd.DataFrame(data)

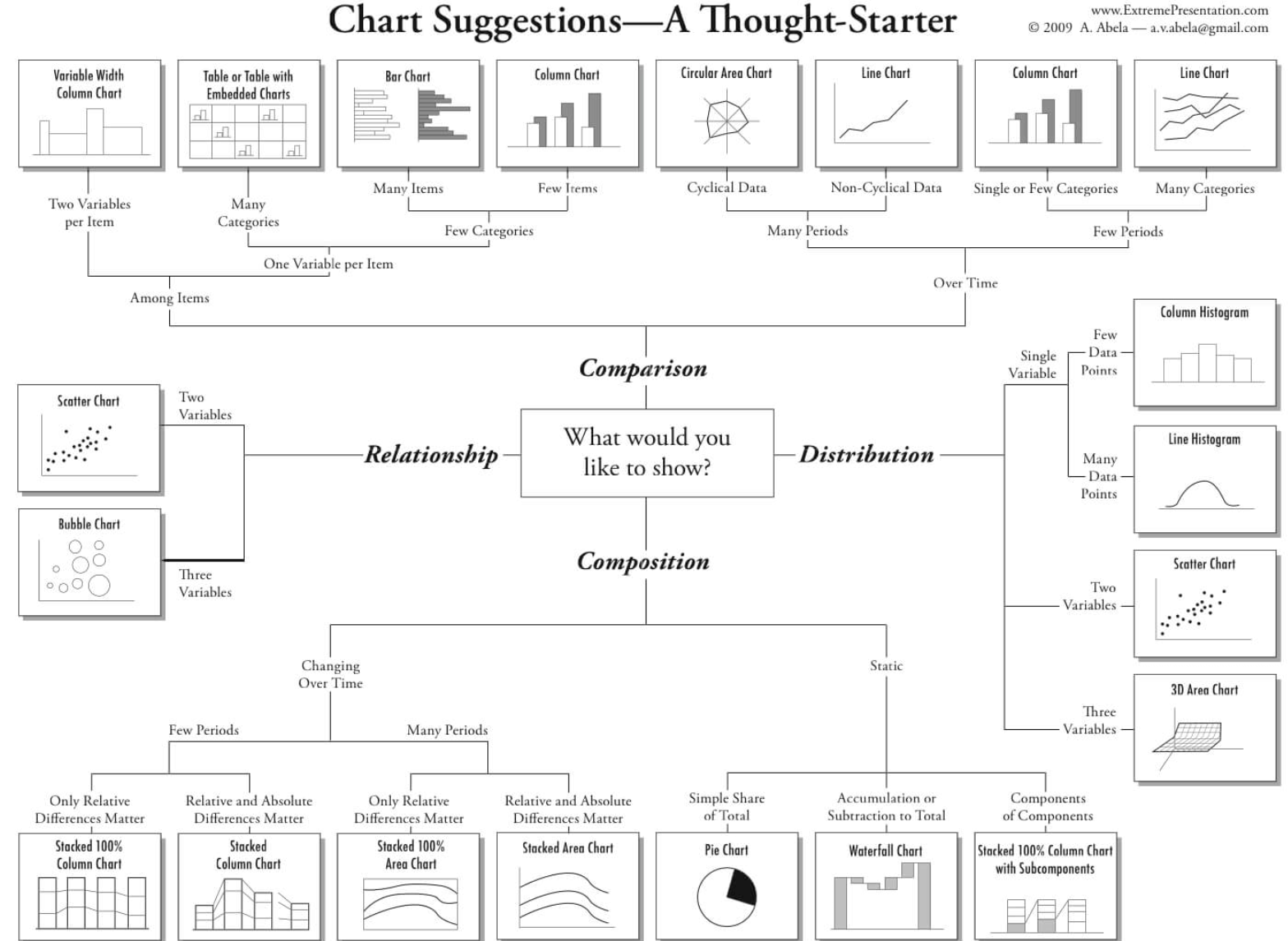
# Convert "Month" to a pandas datetime object for better plotting
df['Month'] = pd.to_datetime(df['Month'], format='%B')

# Plot 1: Line plot showing both Revenue and Costs over time
plt.figure(figsize=(10,6))
plt.plot(df['Month'], df['Revenue'], label='Revenue', marker='o')
plt.plot(df['Month'], df['Costs'], label='Costs', marker='o')
plt.title('Revenue vs Costs Over Time')
plt.xlabel('Month')
plt.ylabel('Amount ($)')
plt.legend()
plt.grid(True)
plt.xticks(rotation=45)
```



How to get ideas for plots

- Google search similar plots
- Ask an LLM
- Look through a taxonomy chart



A simple (and limited) data viz taxonomy with the tips dataset



Questions that can be answered with this data

One Variable (Univariate)

Numeric

- What is the distribution of tips?
- (Guess the second)

Categorical

- Are there more male or female diners?
- (Guess the second)

Two variables (Bivariate)

Numeric vs. Numeric

- Does tip amount go up with bill amount?

Categorical vs Numeric

- Which sex has higher bills/tips more?
- (Guess the others)

Categorical vs Categorical

- How does sex ratio differ by day of week?

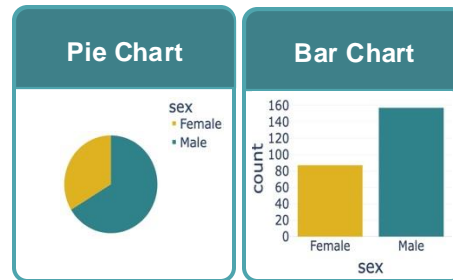
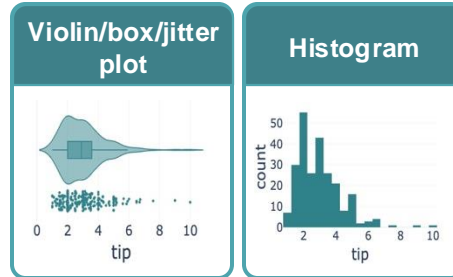
total_bill	tip	sex	day
16.99	1.01	Female	Sun
10.34	1.66	Male	Sun
21.01	3.5	Male	Sun
23.68	3.31	Male	Sun
24.59	3.61	Female	Sun
17.82	1.75	Male	Sat
18.78	3.0	Female	Thur
...

240 rows

A simple (and limited) data viz taxonomy with the tips dataset



- What is the distribution of tips?



- Are there more male or female diners?

Numeric

Categorical

One Variable

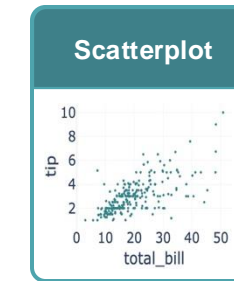
Two Variables

Numeric vs Numeric

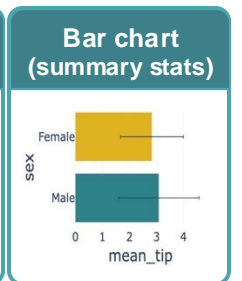
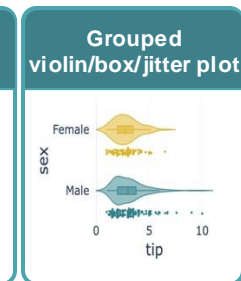
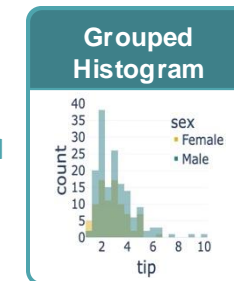
Numeric vs Categorical

Categorical vs Categorical

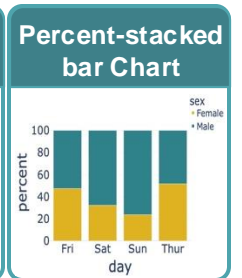
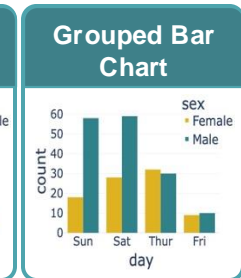
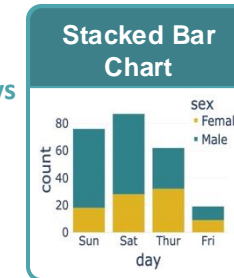
- Does tip amount go up with bill amount?



- Which sex tips more?



- How does sex ratio differ by day of week?

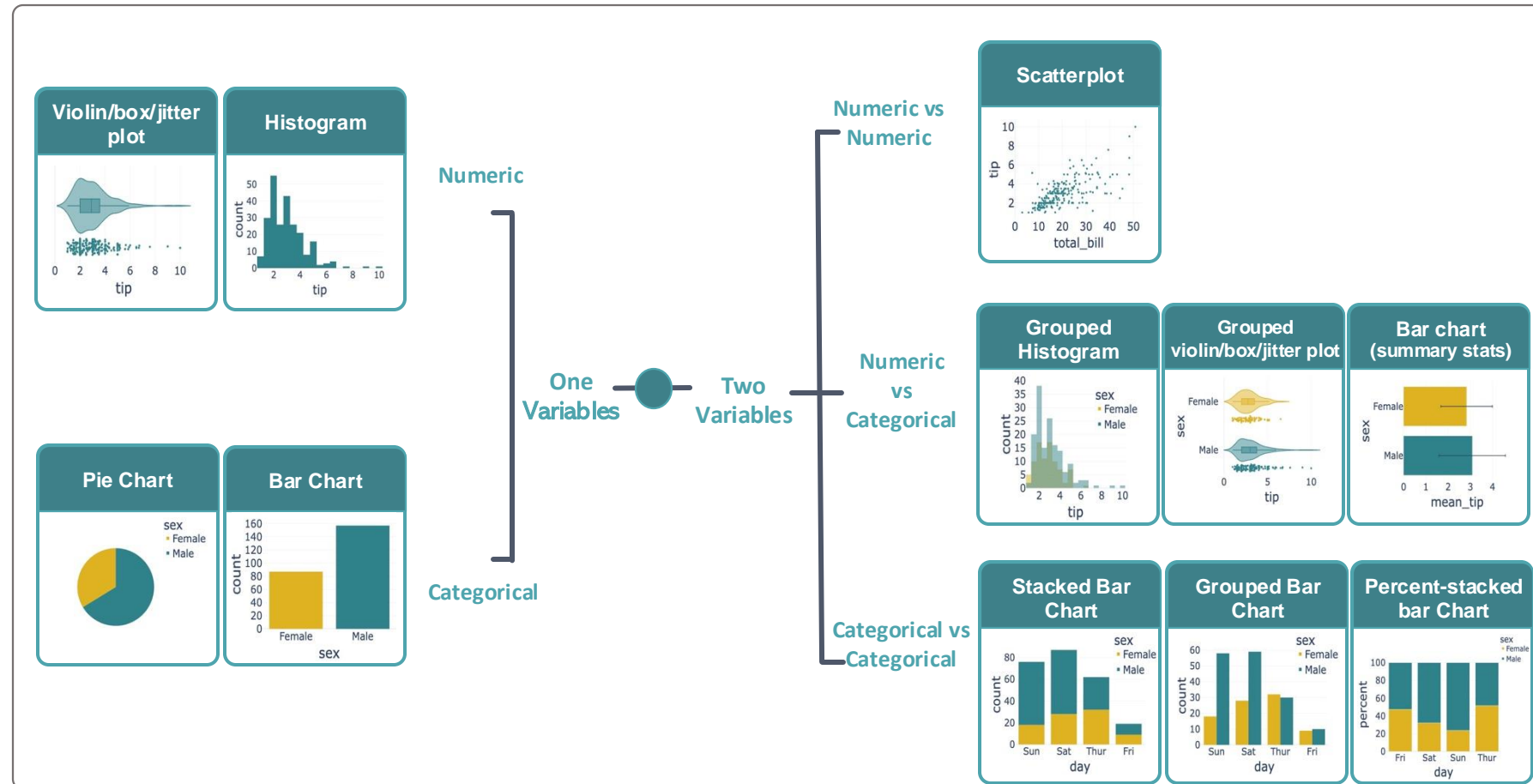


total_bill	tip	sex	day
16.99	1.01	Female	Sun
10.34	1.66	Male	Sun
21.01	3.5	Male	Sun
23.68	3.31	Male	Sun
24.59	3.61	Female	Sun
17.82	1.75	Male	Sat
18.78	3.0	Female	Thur
...

Practice: Identify visualization

1. How does country GDP per capita vary across continents?
2. Is there a relationship between country GDP per capita & life expectancy?
3. How does life expectancy vary between the country income groups?
4. What is the relationship between continent & income group?

country	continent	lifeExp	gdpPercap	income_group
Afghanistan	Asia	43.828	974.58033	Low & Middle Income
Albania	Europe	76.423	5937.0295	Low & Middle Income
Argentina	Americas	75.32	12779.379	Low & Middle Income
Austria	Europe	79.829	36126.4927	High Income
Bahrain	Asia	75.635	29796.04	High Income

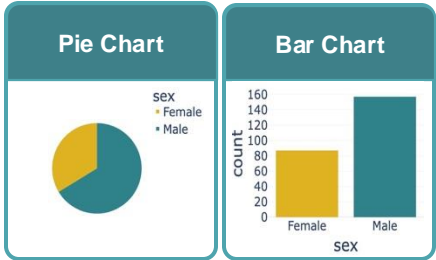
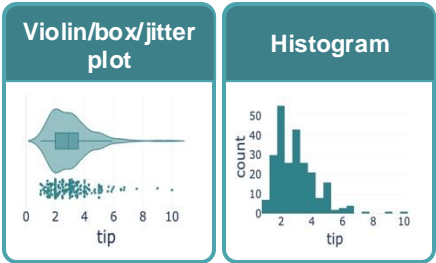
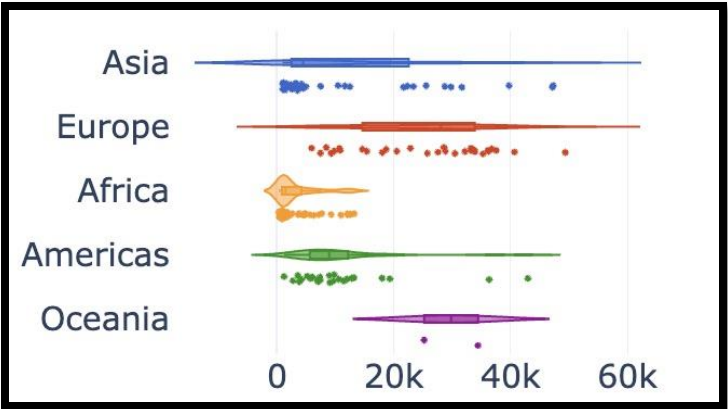


Practice: Identify visualization

1. How does country GDP per capita vary across continents?

country	continent	lifeExp	gdpPercap	income_group
Afghanistan	Asia	43.828	974.58033	Low & Middle Income
Albania	Europe	76.423	5937.0295	Low & Middle Income
Argentina	Americas	75.32	12779.379	Low & Middle Income
Austria	Europe	79.829	36126.4927	High Income
Bahrain	Asia	75.635	29796.04	High Income

1.



Numeric

Categorical

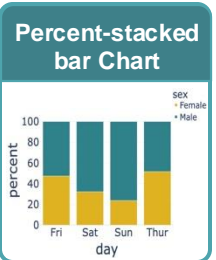
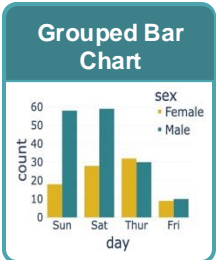
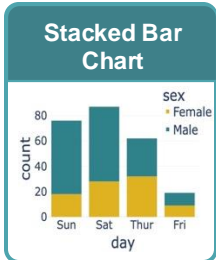
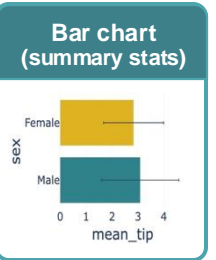
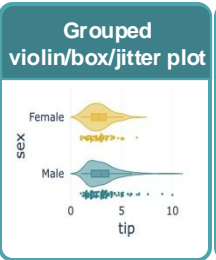
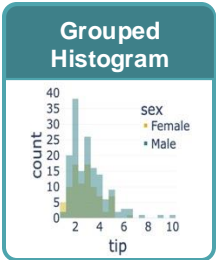
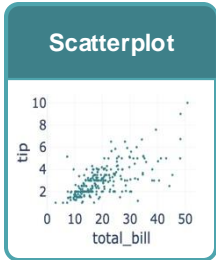
One Variables

Two Variables

Numeric vs Numeric

Numeric vs Categorical

Categorical vs Categorical

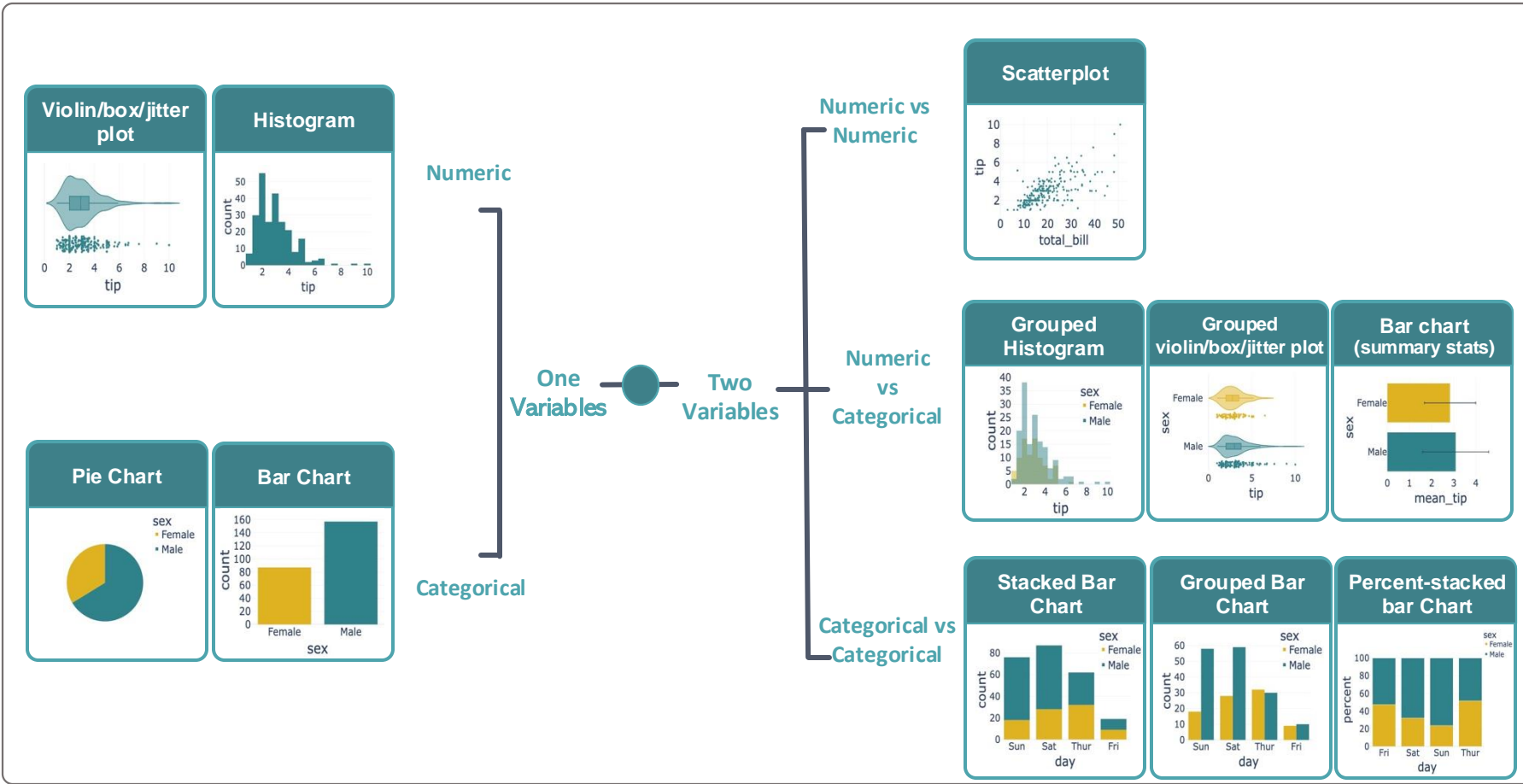
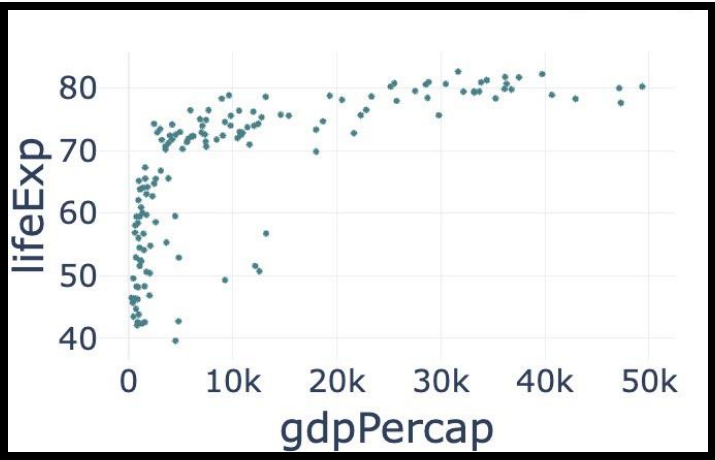


Practice: Identify visualization

- 1. How does country GDP per capita vary across continents?
- 2. Is there a relationship between country GDP per capita & life expectancy?

country	continent	lifeExp	gdpPercap	income_group
Afghanistan	Asia	43.828	974.58033	Low & Middle Income
Albania	Europe	76.423	5937.0295	Low & Middle Income
Argentina	Americas	75.32	12779.379	Low & Middle Income
Austria	Europe	79.829	36126.4927	High Income
Bahrain	Asia	75.635	29796.04	High Income

2.

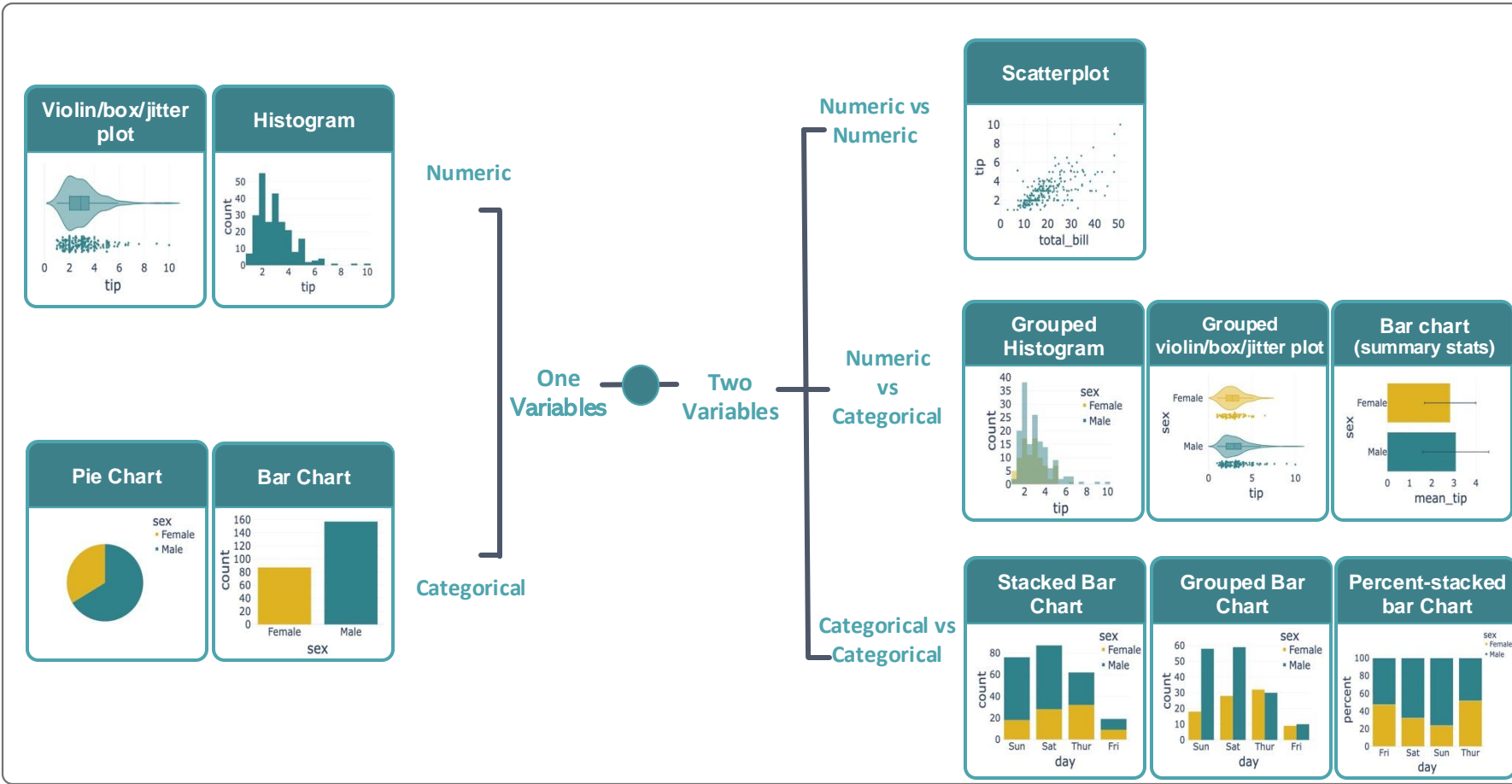
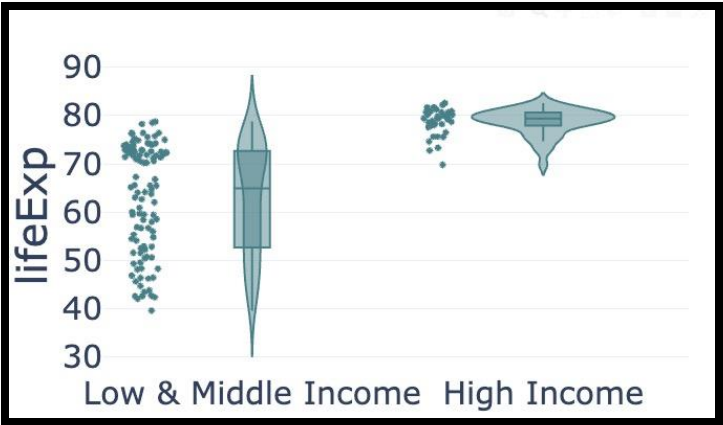


Practice: Identify visualization

- 1. How does country GDP per capita vary across continents?
- 2. Is there a relationship between country GDP per capita & life expectancy?
- 3. How does life expectancy vary between the country income groups?

country	continent	lifeExp	gdpPercap	income_group
Afghanistan	Asia	43.828	974.58033	Low & Middle Income
Albania	Europe	76.423	5937.0295	Low & Middle Income
Argentina	Americas	75.32	12779.379	Low & Middle Income
Austria	Europe	79.829	36126.4927	High Income
Bahrain	Asia	75.635	29796.04	High Income

3.

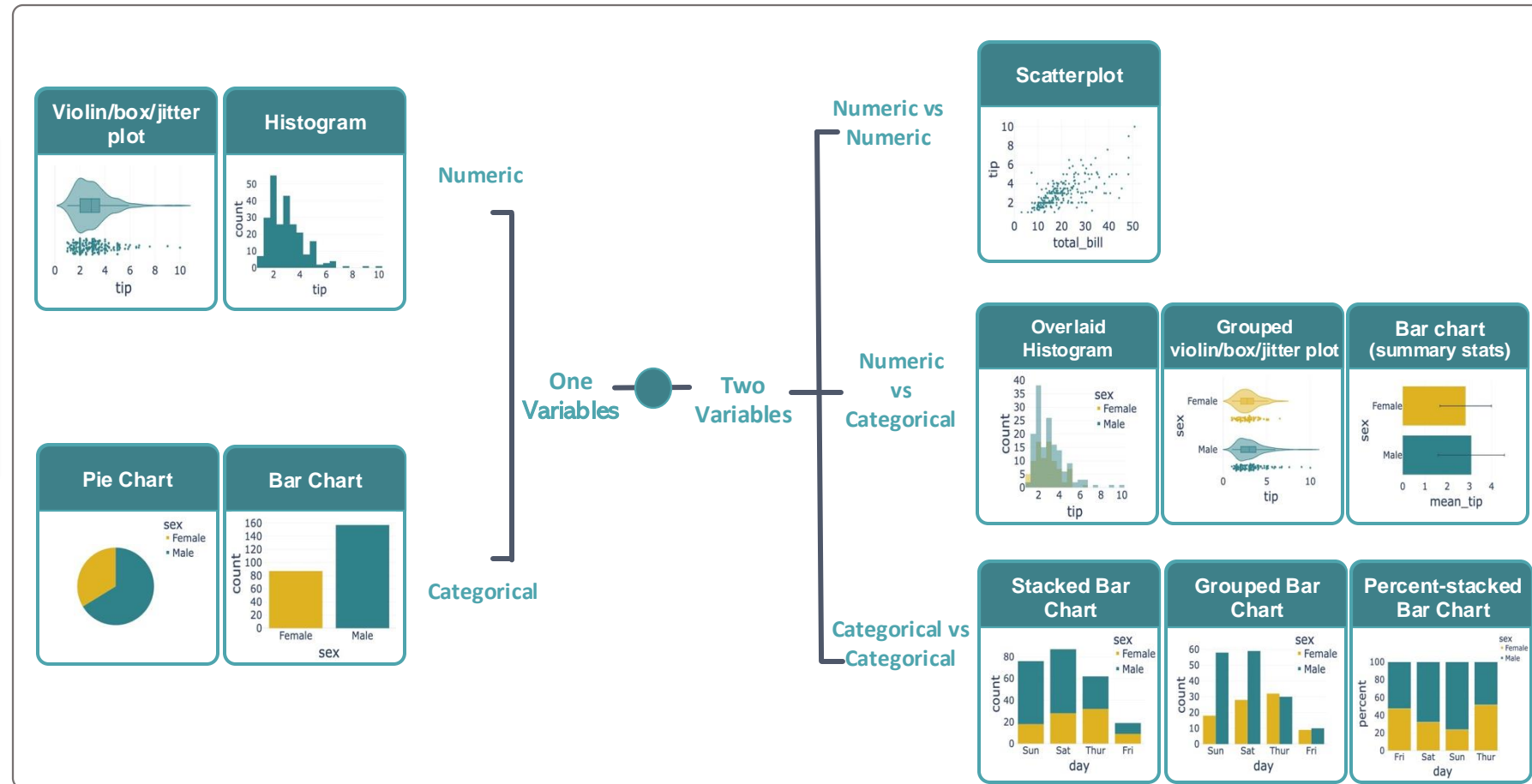
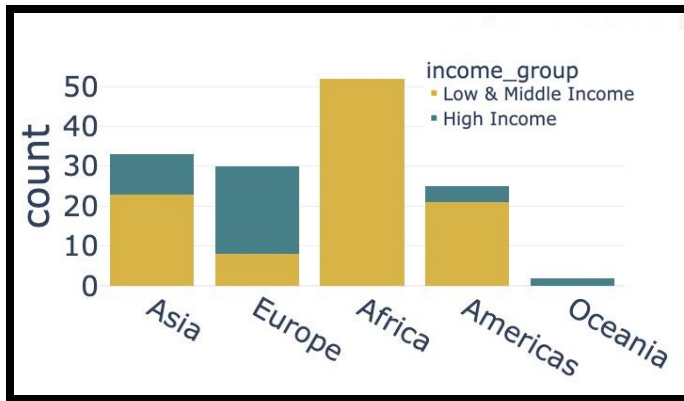


Practice: Identify visualization

1. How does country GDP per capita vary across continents?
2. Is there a relationship between country GDP per capita & life expectancy?
3. How does life expectancy vary between the country income groups?
4. What is the relationship between continent & income group?

country	continent	lifeExp	gdpPercap	income_group
Afghanistan	Asia	43.828	974.58033	Low & Middle Income
Albania	Europe	76.423	5937.0295	Low & Middle Income
Argentina	Americas	75.32	12779.379	Low & Middle Income
Austria	Europe	79.829	36126.4927	High Income
Bahrain	Asia	75.635	29796.04	High Income

4.

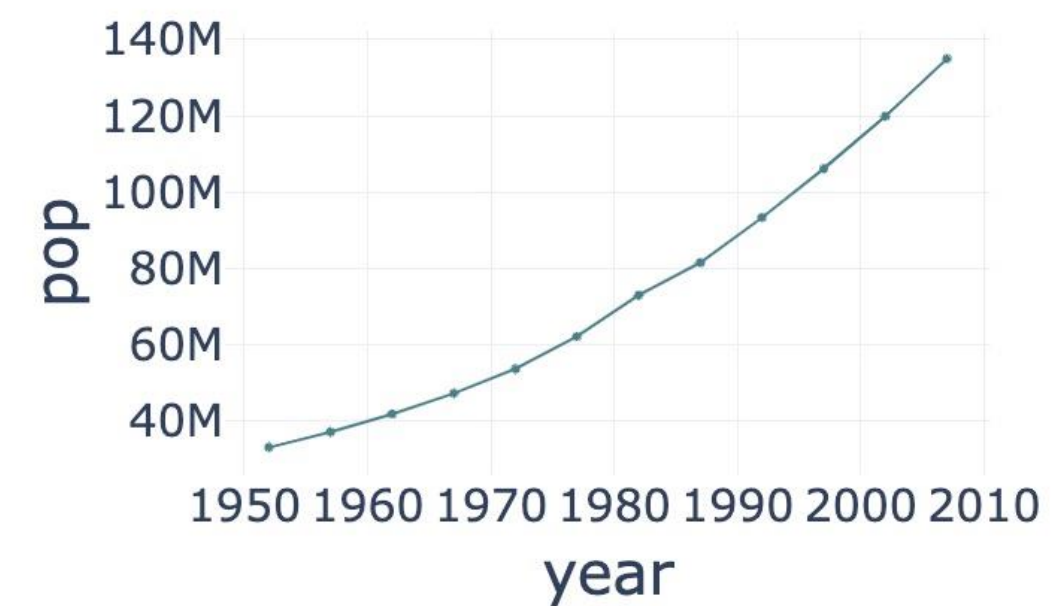
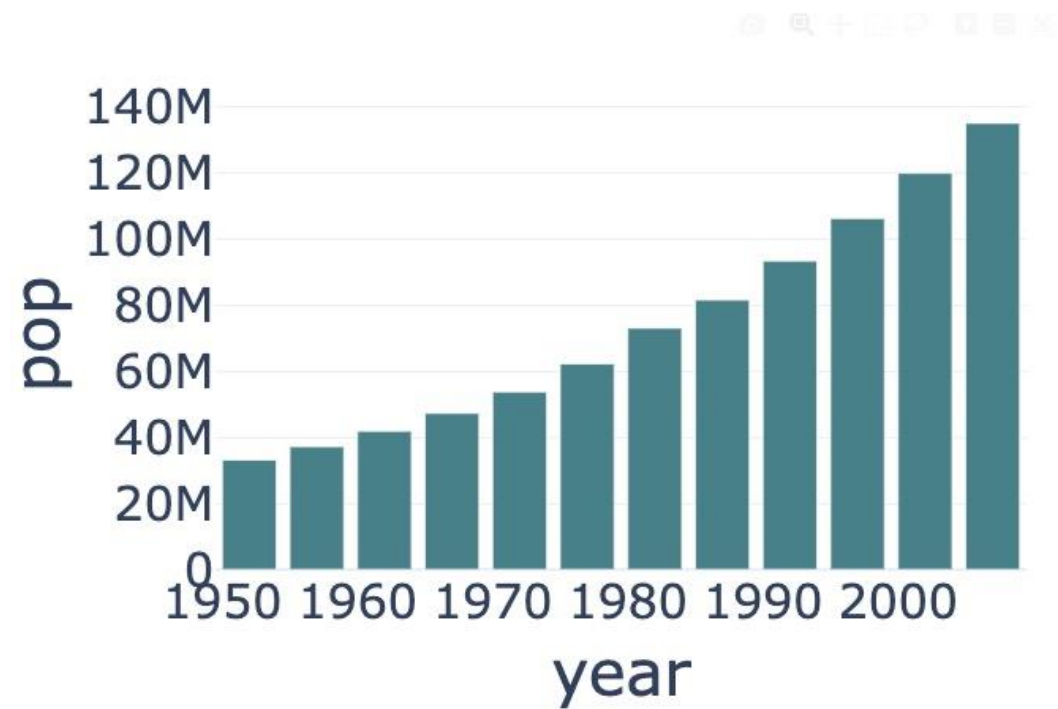


Time series

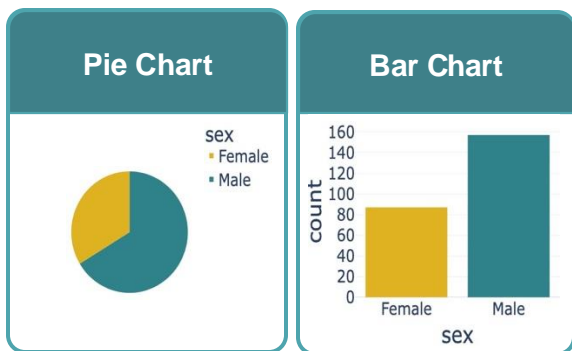
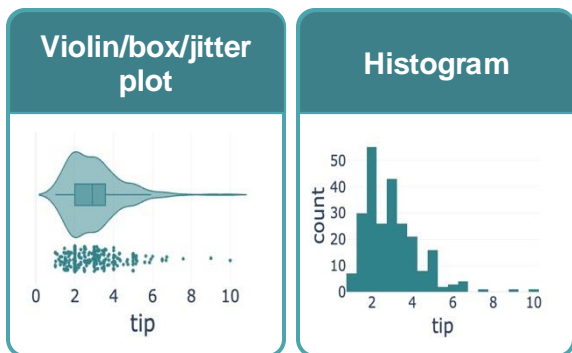
Usually bar charts or line charts with markers.

Nigerian population over time

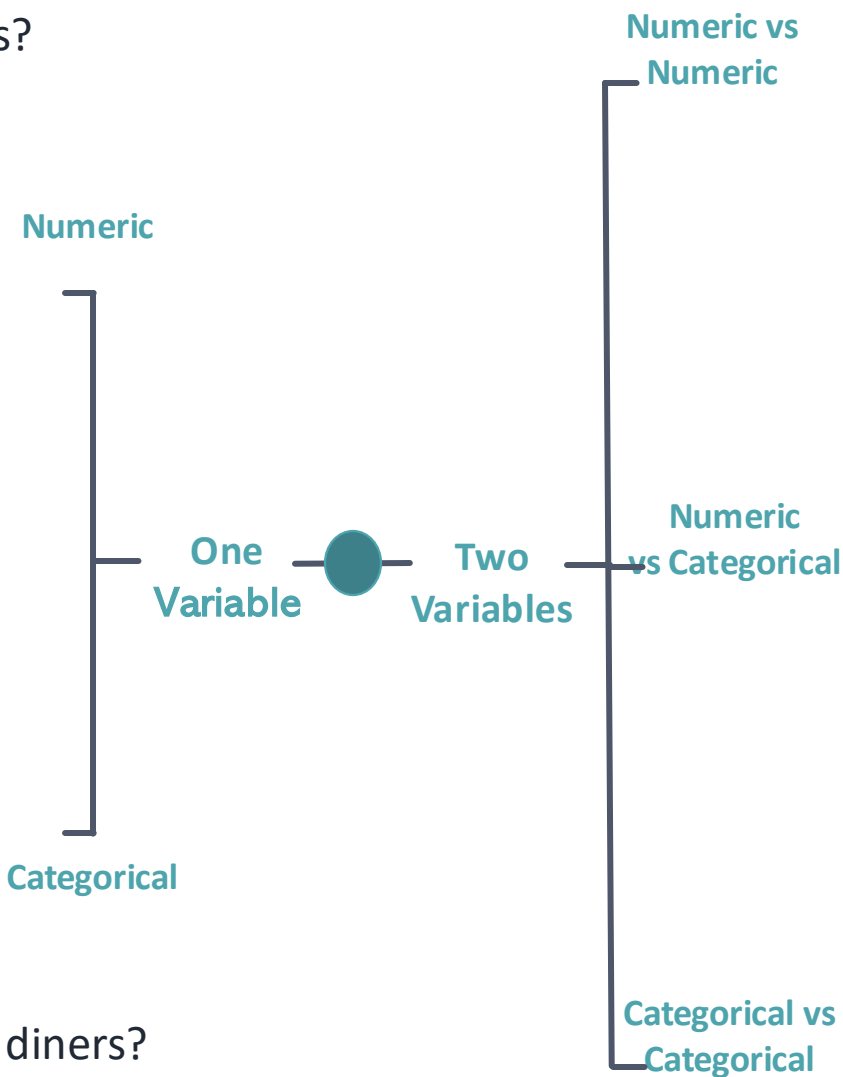
Year	Population
1952	33119096
1957	37173340
1962	41871351
1967	47287752
1972	53740085
1977	62209173
1982	73039376
1987	81551520
1992	93364244
1997	106207839
2002	119901274
2007	135031164



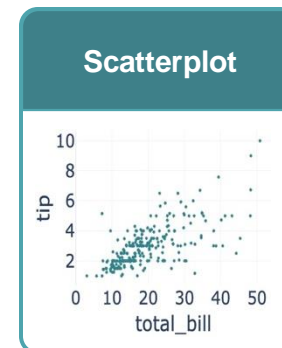
- What is the distribution of tips?



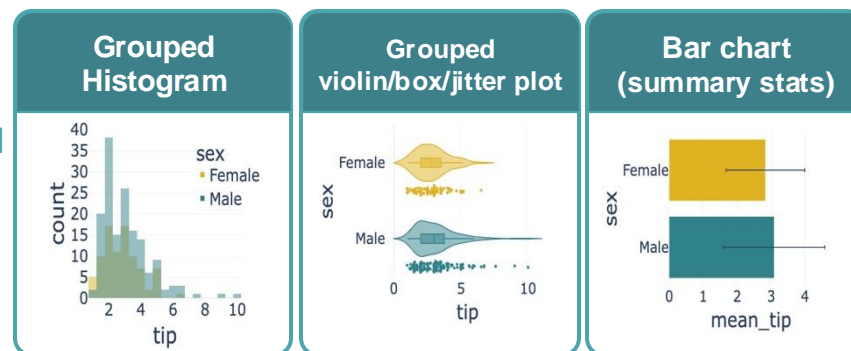
- Are there more male or female diners?



- Does tip amount go up with bill amount?



- Which sex tips more?



- How does sex ratio differ by day of week?

