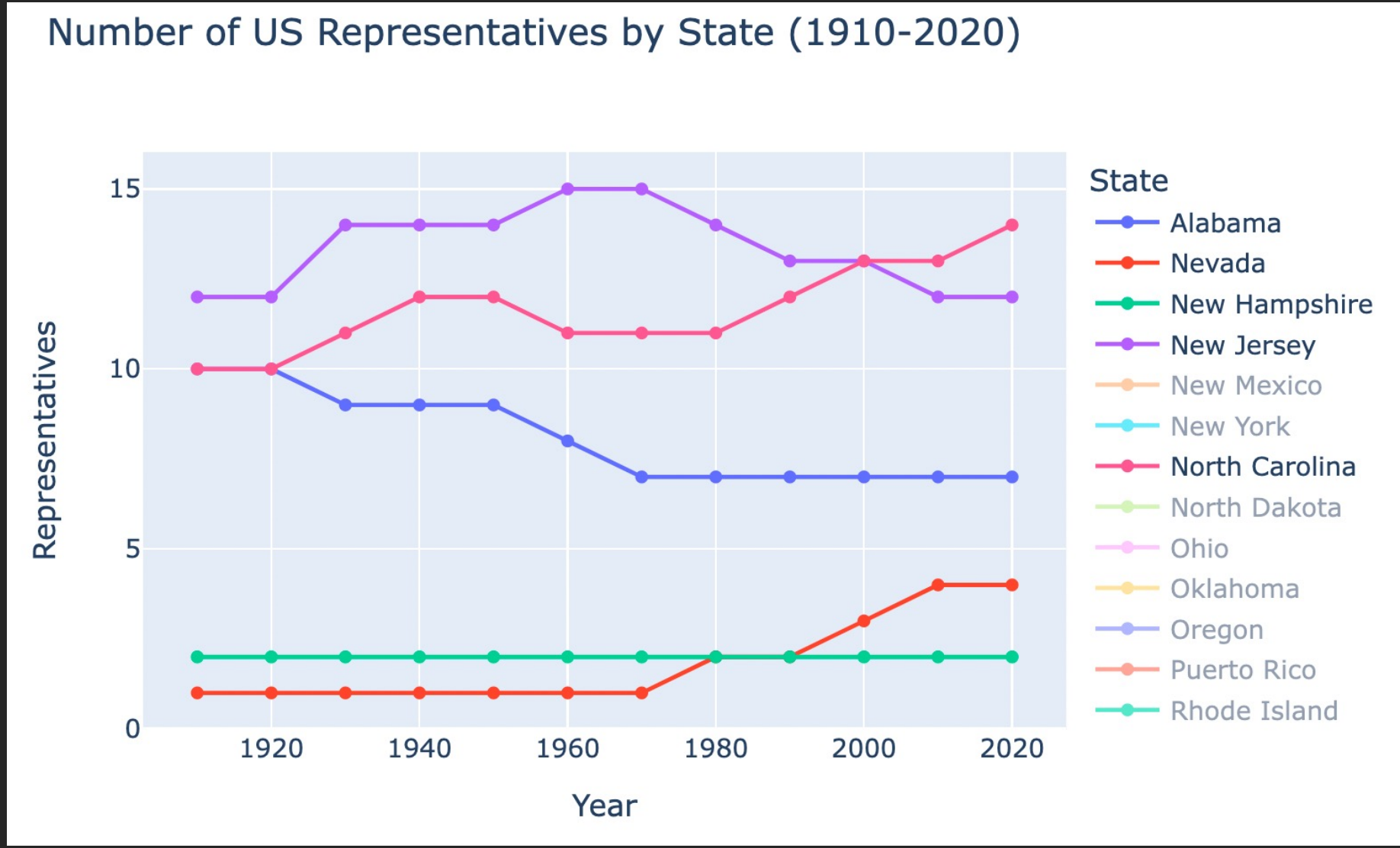
Line Charts

How to Plot Change Over Time

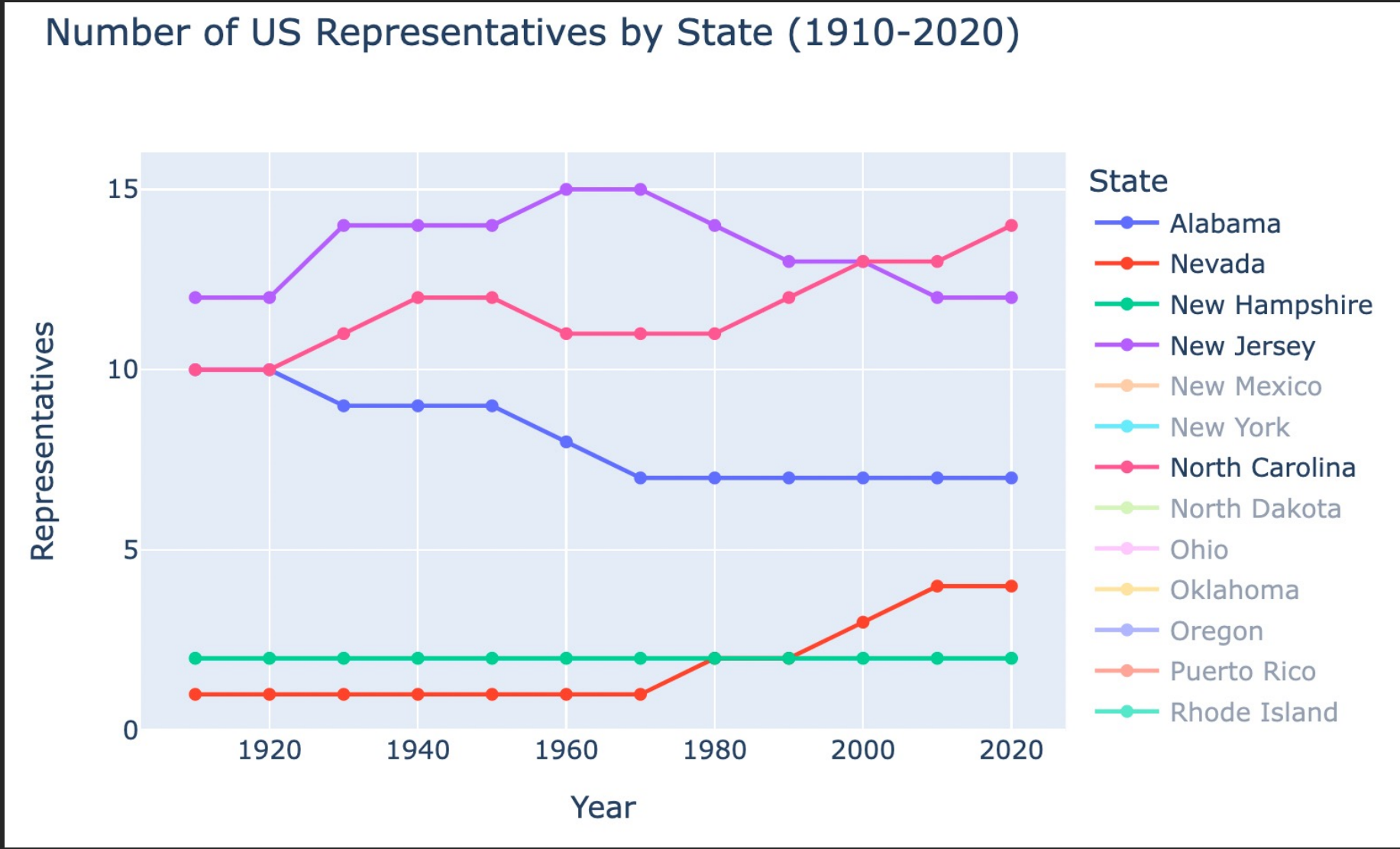
Think Share Activity

- What are the parts of the chart?

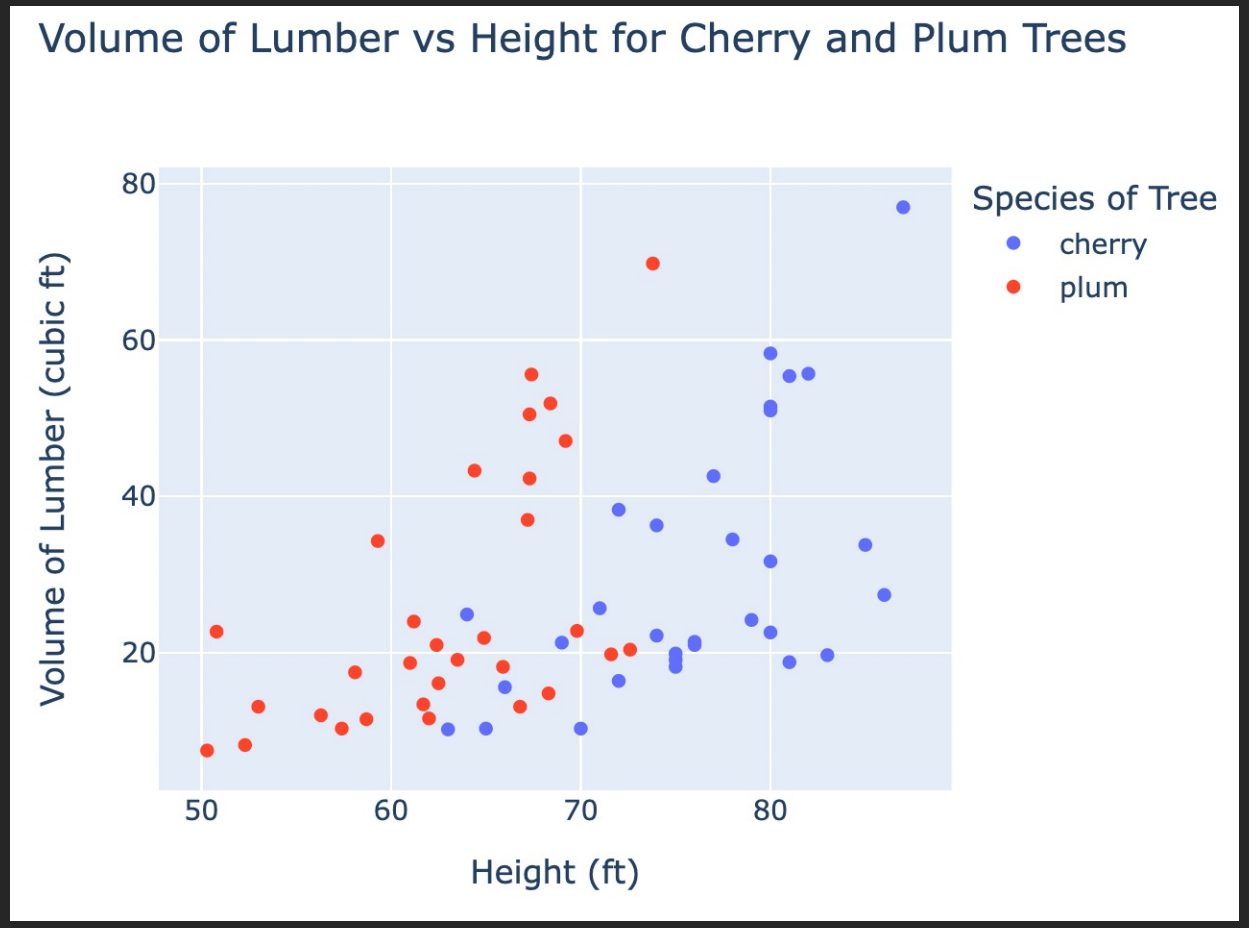


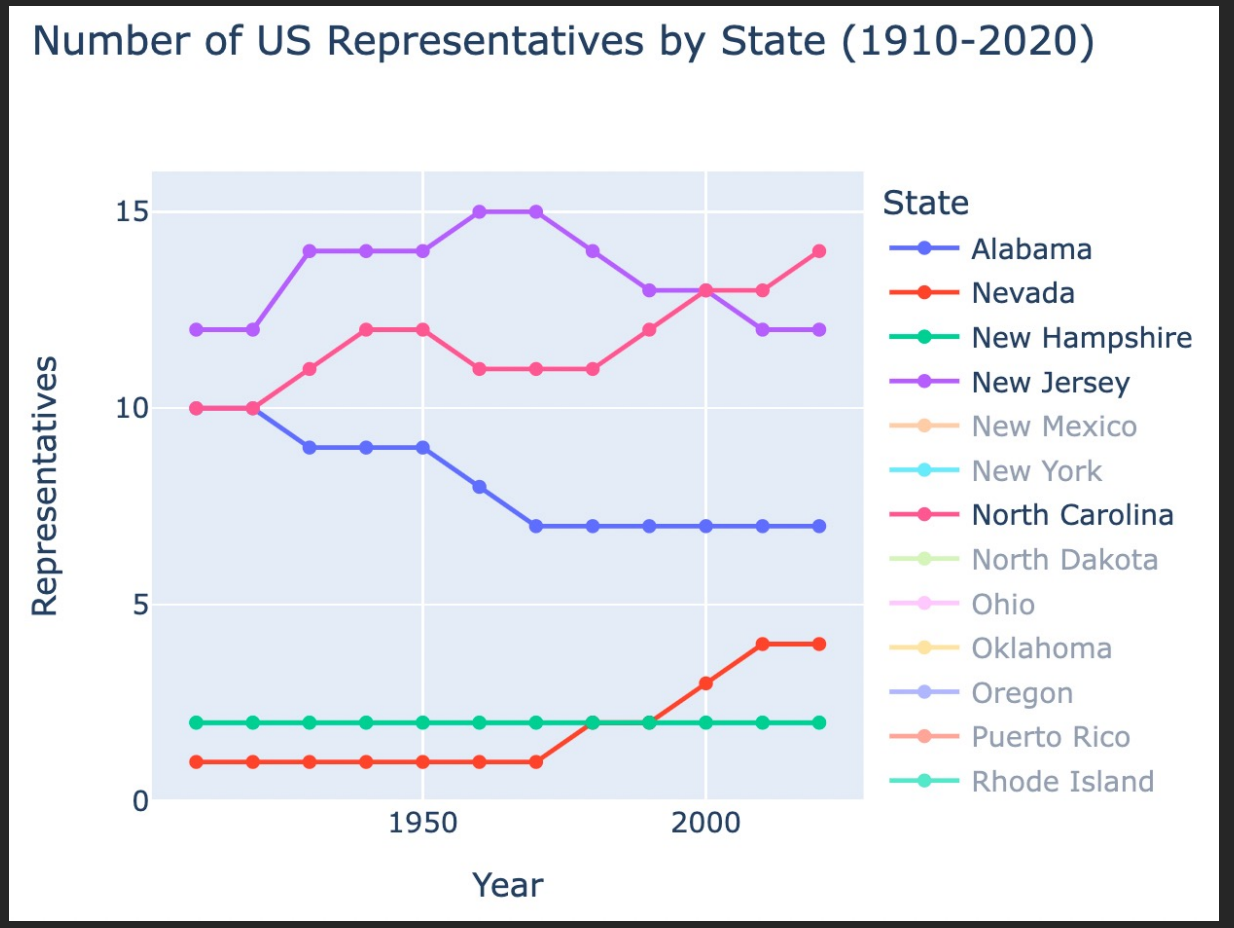
Parts of a Chart

- Title
- Chart body
  - Axes
  - Coordinate space
  - Points, lines
- Axis labels
- Color legend



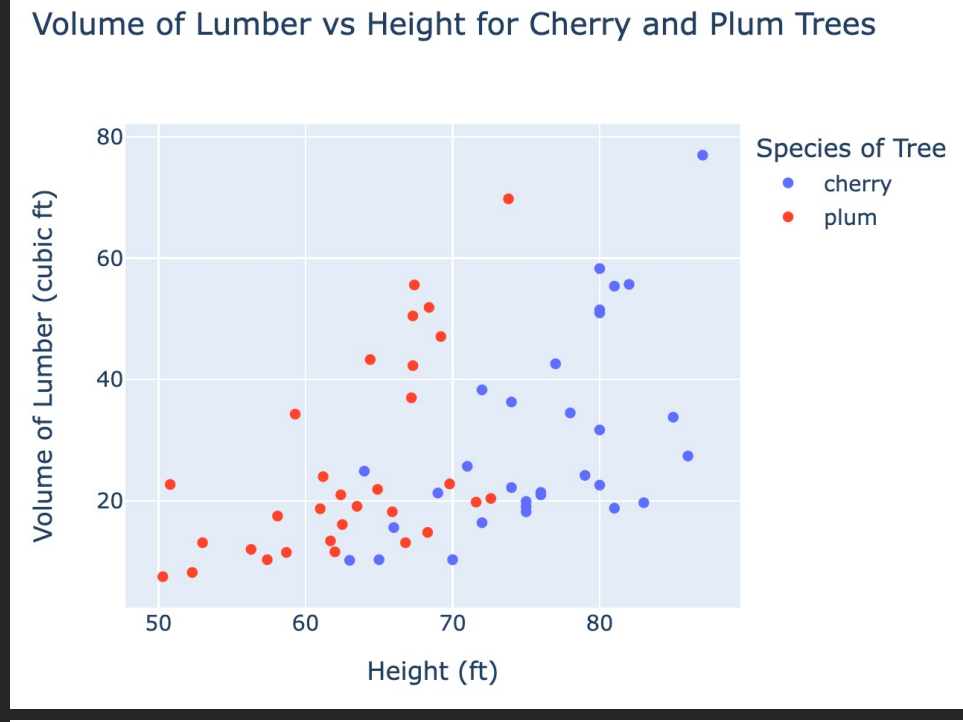
Think Share: Scatter Plots vs Line Charts

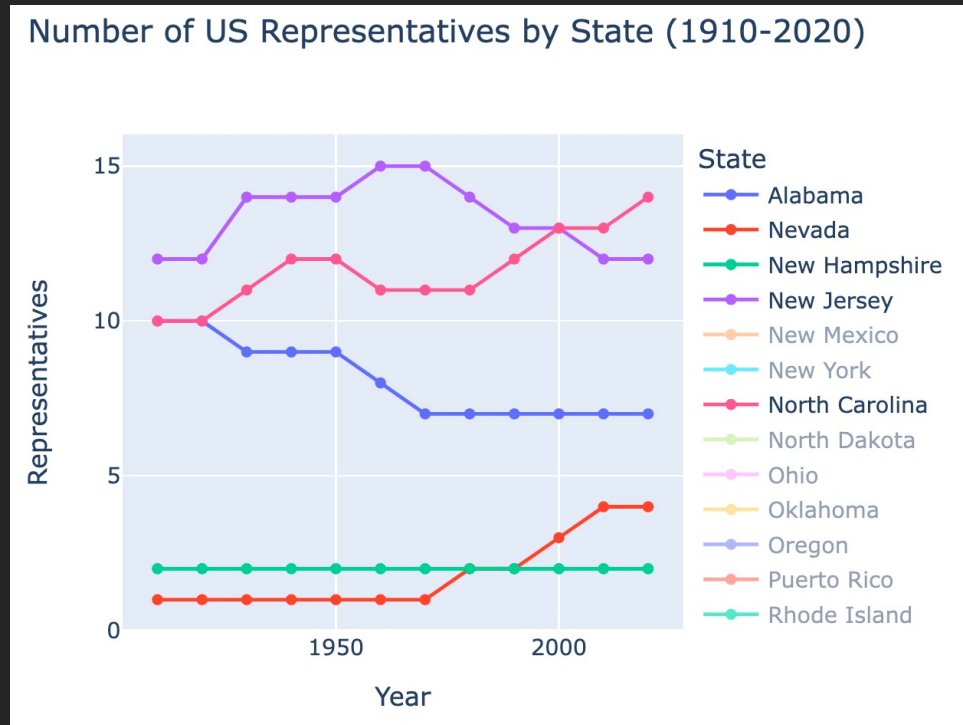




Scatter Plots vs Line Charts

- Independent variable
  - Scatter: any numerical value
  - Line: unit of time
- Number of y values for each x
  - Scatter: as many as have been observed
  - Line: only one y for each x
- Connected points
  - Scatter: no connections
  - Line: connected by line

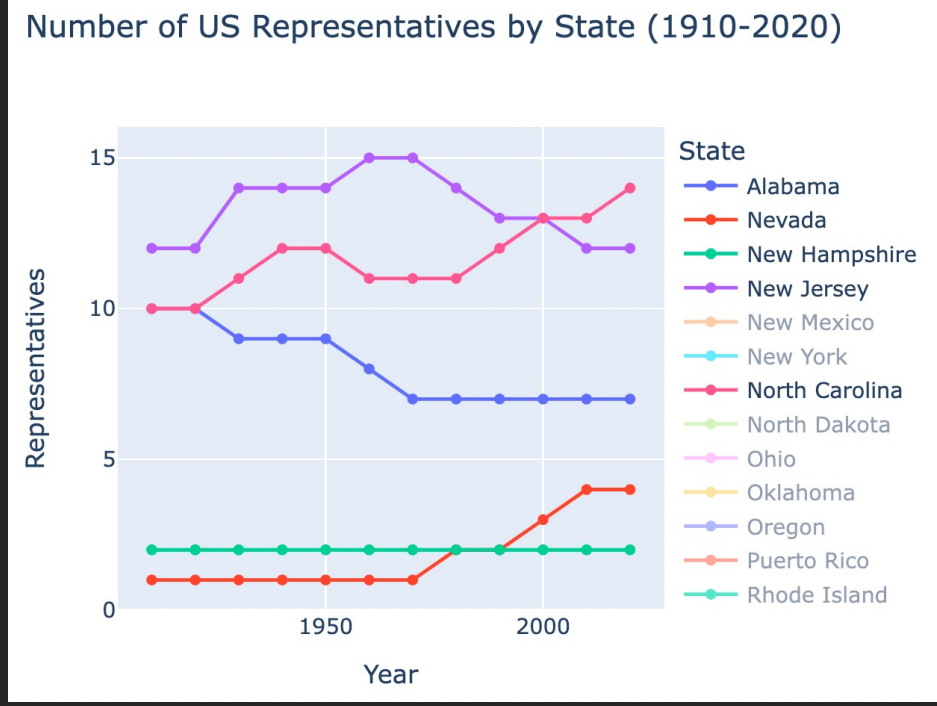


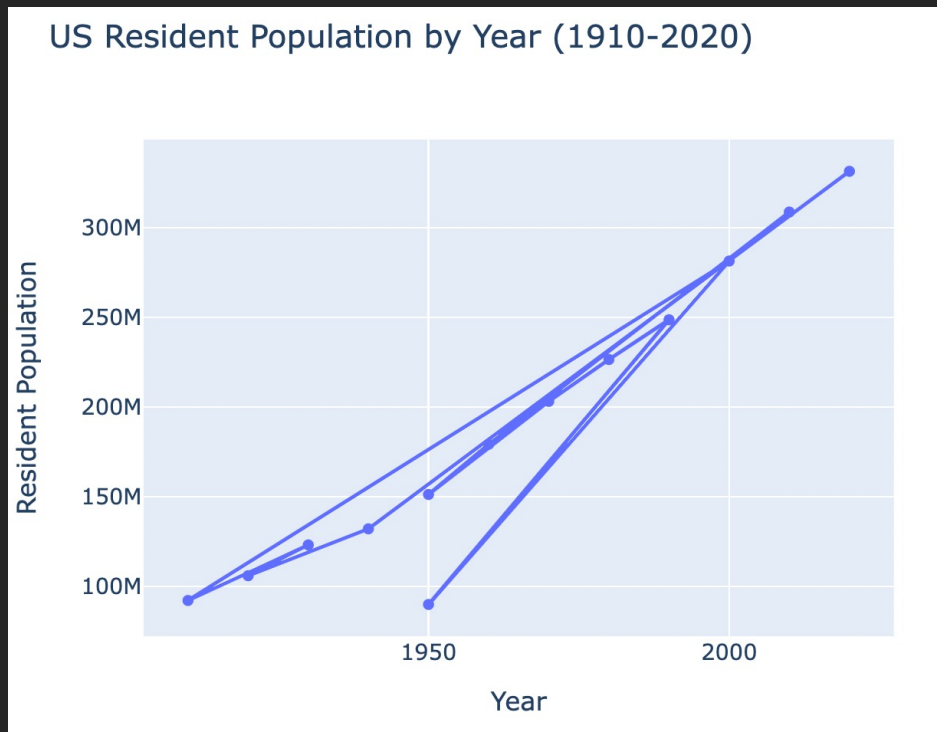


Line Charts

- Important! Lines should connect points in order by x axis value so the data must be sorted first!

- If we have unsorted data … yikes



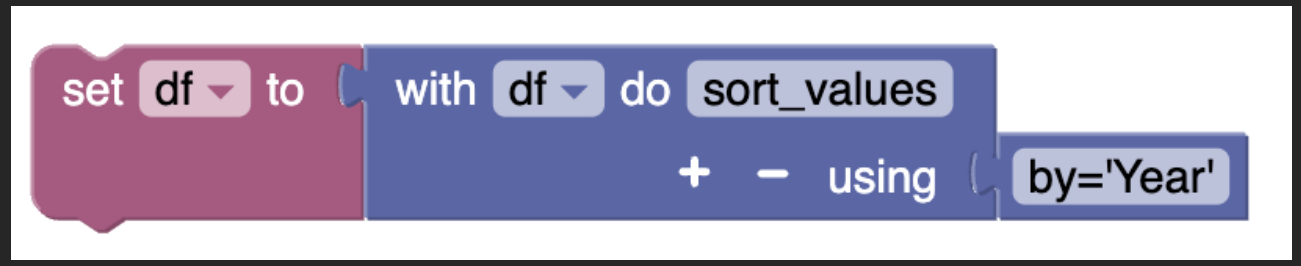


How-to: Make Line Charts in Jupyter

1. Read CSV Data into Pandas Dataframe
   - Import Pandas Library
   - Read CSV data and Save in Variable
   - Sort Data
   - Display Dataframe Contents
2. Generate Plotly Line Chart
   - Import Plotly Express Library
   - Set Columns as x and y
   - Set Additional Plot Options (Optional)
   - Generate Chart

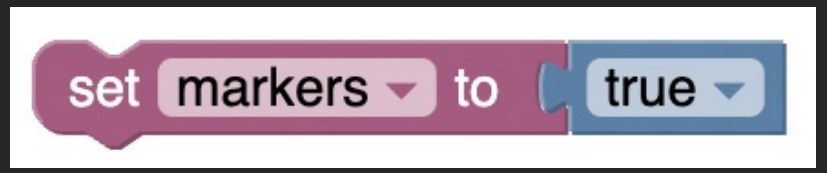
How-to: Sort Data with Blockly

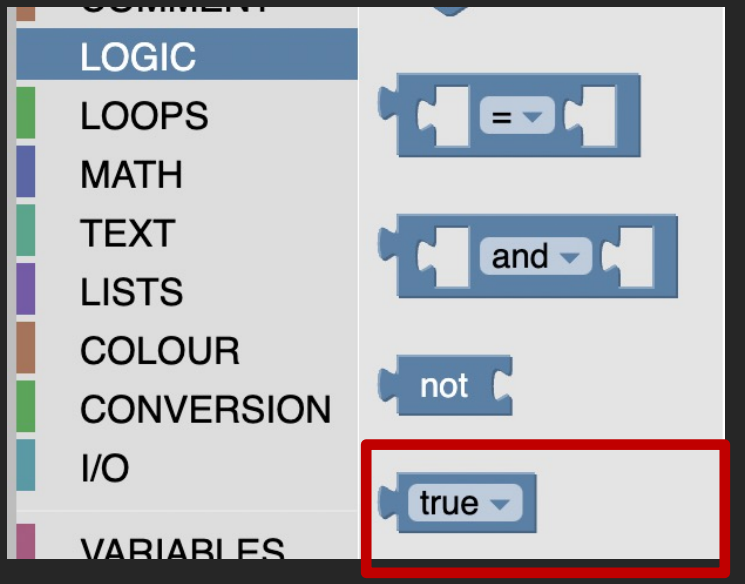
```
df.sort_values(by="Year")
```



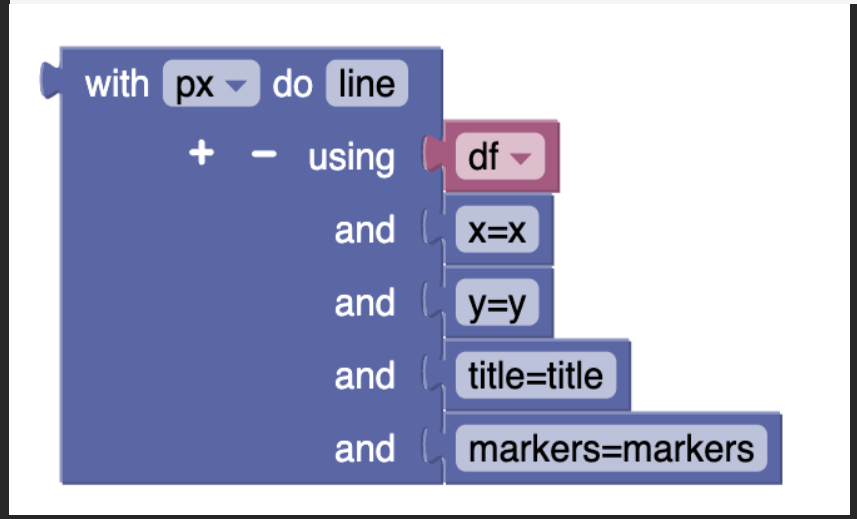
How-to: Adding Datapoints on Line Chart

```
markers = True
```






```
px.line(df, x=x, y=y, title=title, markers=markers)
```



Summary

- Parts of a chart
- Line charts
- Line charts vs scatter plots
- Plotly line charts with Blockly