

MLDS 411

DATA VISUALIZATION

Winter 2024 Labs

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Schedule

Week	Date	Time	Tableau Topics	Python Topics
1	January 12	11am	Tableau Review	Library Overview
2	January 19	12pm	Joining, Blending & Relationships	Plotly, Dash
3	January 26	11am	Hierarchies, Groups & Sets	Bokeh
4	February 2	11am	Filters, Parameters & Tooltips	Wordcloud
5	February 9	11am	Dashboards, Stories & Actions	NetworkX
6	February 16	11am	Maps	GeoPandas, Folium
7	February 23	11am	Calculated Fields, Calculations	Plotnine
8	March 1	11am	Forecasting, Clustering	Python + Tableau

Lab 3 Follow Ups

- Confirm how to make a set
 - **What you cannot do:**
 - Start with a measure
 - Create a set
 - **What you should do instead:**
 - Move the measure to a dimension
 - Create a set

Today's Theme: Filtering

Filters

- Allows you to filter data in your visualization

You will use this all the time

Parameters

- Allows you to create variables in Tableau
- Can use alongside filters and sets

Nice to have: allows for dynamic filters & calculations

Tooltips

- Allows you to see details within your visualization
- Can show details from another sheet!

Nice to have: makes your visualizations more interactive

Demo: Filters

Why create a filter?

- Filter the data in your visualization
- Allow the user to filter the data in your visualization

Common applications of filters

- Filter card
- Interactive filters

How can you create a filter?

- Drag dimension to Filter card
- Right click on dimension >> Show Filter
- Highlight data points and choose to Keep Only or Exclude

Demo: Parameters

Why create a parameter?

- Allows you to create a variable in Tableau instead of hardcoding values

Common applications of parameters

- Filter by top n instead of top 5
- Filter by greater than n instead of greater than 10k

How can you create a parameter?

- Edit Filter >> Create a New Parameter
- Right click on a field>> Create Parameter, Edit Set >> By Formula

Demo: Tooltips

Why create a tooltip?

- Allows you to see details about each data point

Common applications of tooltips

- Hover to see the details of a data point
- Hover to see another sheet with the same filters as the data point

How can you create a tooltip?

- Drag a field on top of the Tooltip square in the Marks card
- Double click Tooltip >> Insert >> Sheets

Exercise: Filtering Superstore Data

- Filters
 - View the sum of sales by subcategory
 - Show a filter for subcategory and a filter for sales
- Parameters
 - Display the top n most profitable subcategories (hint: use a filter)
 - Highlight the top n most profitable subcategories (hint: use a set)
- Tooltips
 - Create a scatter plot that compares profit vs sales for each state
 - Add a tooltip to show the total orders for each state
 - Create a map of all the states
 - Add a tooltip to the above scatter plot show where the state is

Filtering Data Summary

1. If you'd like to filter your data

- Create a filter

2. If you'd like to dynamically filter your data

- Create a parameter

3. If you'd like to show a filtered visualization on a hover

- Edit the tooltip

Data Visualization in Python Overview

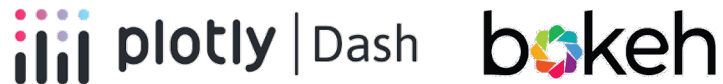
Standard Libraries



Mapping



Interactive Visualizations



Specialty



Wordcloud

Wordcloud

- Visualization library that allows you to create word clouds

Word cloud gallery

- https://amueller.github.io/word_cloud/auto_examples/index.html#example-gallery

Demo

- Examples: word cloud & masked word cloud
- Notebook: Wordcloud_Demo.ipynb

Tableau examples

- https://public.tableau.com/app/profile/robert.mundigl/viz/bruce_springsteen_lyrics/WordCloudorsthelse
- <https://public.tableau.com/app/profile/datasaurus.rex/viz/TEDTalkswordcloud/Dashboard1>