Project 2: Happiest Cities in America

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Theme Overview

Wallethub.com's Happiest Cities in America Report

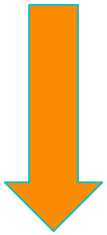
- Looks at 150 most populated U.S. cities, plus at least two of the most populated cities in each state.
- Uses three key dimensions:
  1. *Emotional & Physical Well-Being*
  2. *Income & Employment*
  3. *Community & Environment.*
- These categories evaluated using 30 different relevant, weighted metrics (e.g. life expectancy, unemployment, crime, etc.)

Data collected from:

US Census Bureau, FBI, CDC, Bureau of Labor Statistics, and many more.

Sourcing & Munging the Data

WalletHub



Sourcing (Extract)

- Used WalletHub.com - published data since 2017 that measured happiness across the USA
- Wayback Machine Internet Archive used to access previous years
    - The Wayback Machine is a digital archive of the World Wide Web

Munging (Transform)

- Cleaned the data in to CSVs
- Each Group Member then utilized these CSVs to produce the data visuals for their portion of the project

Bootstrap

Coding Approach

Languages, Database, Website, and other decisions

- FLASK restful API - power/ mobilize
- PostGRE SQL DB - define and access the Database
- HTML/ CSS/ Bootstrap - front end
- Javascript - multiple libraries used to show visuals
    - Leaflet
    - D3
    - C3
- Python/ Plotly/ Pandas - visuals

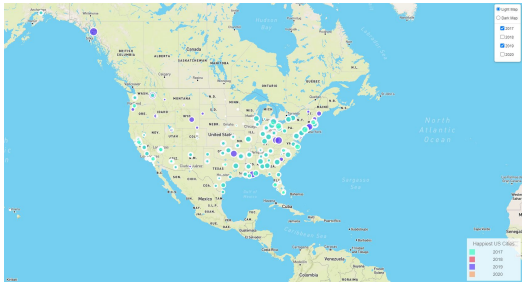
Visualizations - Leaflet Map

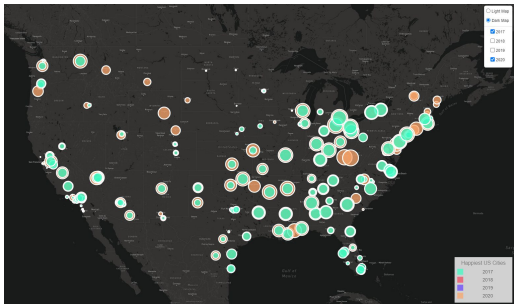
Coding

- Leaflet map with multiple layers
- Circle markers used
- Color and size used to represent difference in years and ranking

Features

- Toggle between light and dark map layers
- Toggle between years
- Pop-up details on click
- Legend





Visualizations - D3 Scatterplot

Process

- Pandas used to read and clean the data, exported to csv
- Relative_Score column was created (normalized to highest score)
- D3 Scatter Mapbox data for visualizations

Conclusions

- A cluster of ‘least happiest cities’ can be seen in the midwest region (bible belt)
- Residents of West coast and East coast are among the happiest in the USA
- Latitude and longitude do not have a direct affect on happiest cities score

Visualizations - Table Subplots

Coding

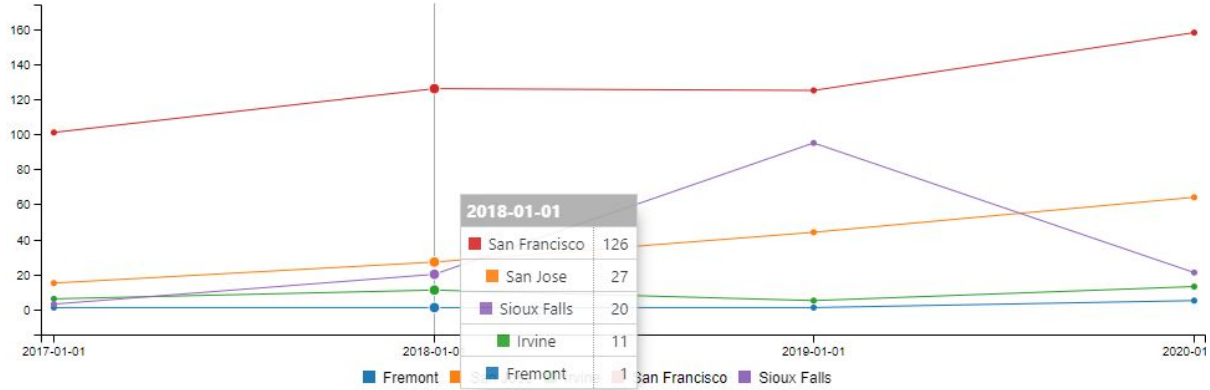
- Used Python and Pandas to clean the dataset, exported the file into a CSV
- Created columns for each ranking over the 4 years
- Plotly - Table Subplots was used to graph EP, IE, & CE ranks from 2017-2020 based on the 5 happiest cities from 2017

Features & Conclusions

- Table and graphs
- 4 of the 5 happiest cities from 2017 are in California
- As the rankings change each year, some go up while others go down - based on the formula that is used
- EP Rankings account for 50% of the overall ranking so that is why San Francisco has a low CE Ranking

Visualizations - C3

- New JavaScript Library - C3, which is a D3-based reusable chart library - C3 CDN
- Time-series plot on Community and Environment Rankings
- San Francisco has a low CE ranking
- Fremont was ranking #1 from 2017-2019



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