

SI 507 FINAL PROJECT DOCUMENT

FitStroke

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Project Code

<https://github.com/Drorion/SI507FinalProject>

(Includes README and Packages information)

Data Sources

1. Fitbit API

- a. Origin: <https://dev.fitbit.com/build/reference/web-api/>
- b. Format: JSON
- c. Access: The data was accessed using the Fitbit API's OAuth2 authentication and the user's access token. Caching was used to limit API calls and improve performance.
- d. Summary of data:
 - # records available: Varies depending on the user's Fitbit history
 - # records retrieved: One day's worth of data for each selected health metric (steps, heart rate, sleep, activity levels)
 - Important fields: 'value' (steps), 'restingHeartRate' (heart rate), 'totalMinutesAsleep' (sleep), 'activeMinutes' (activity levels)
- e. Evidence of caching: The 'get_cached_data' and 'store_data_in_cache' functions were used to implement caching in the code.

2. Stroke Mortality Data

- a. Origin: https://catalog.data.gov/dataset/stroke-mortality-data-among-us-adults-35-by-state-territory-and-county-2018-2020-befd3/resource/fab2af6f-ef62-4bcd-aff5-cc30850ac24d?inner_span=True
- b. Format: CSV
- c. Access: The data was accessed by downloading and importing the CSV file using Python's 'CSV' module. Caching was not necessary as the data was stored locally.
- d. Summary of data:
 - # records available: ~50,000
 - # records retrieved: ~10,000
 - Important fields: 'LocationDesc' (location), 'Data_Value' (mortality rate)
- e. Evidence of caching: Not applicable for this data source

Data Structure

1. Description and creation of the trees: The data will be organized into two trees - one for the user's Fitbit health data and another for the regional stroke mortality data.
2. Data assembly plan: The FitStroke.py python file constructs the tree using classes. The user's health data will be fetched from the Fitbit API and stored in a dictionary. The stroke mortality data will be imported from the CSV file and stored in another dictionary. The two dictionaries will be combined to create a comprehensive tree structure containing both user health data and regional stroke mortality data.
3. The repository contains standalone (.py) and (.json) files.

```
{
  "fitbit_health_data": {
    "data": "Fitbit Health Data",
    "children": [
      {
        "data": "user: {'age': 25, 'ambassador': False, 'avatar': 'https://static0.fitbit.com/images/profile/defaultProfile",
        "children": []
      }
    ]
  },
  "stroke_mortality_data": {
    "data": "Stroke Mortality Data",
    "children": [
      {
        "data": "Illinois: 76.7",
        "children": []
      },
      {
        "data": "Indiana: 78.3",
        "children": []
      },
      {
        "data": "Alcona County: 83.9",
        "children": []
      },
      {
        "data": "Alger County: 65.9",
        "children": []
      },
      {
        "data": "Allegan County: 66.6",
        "children": []
      },
      {
        "data": "Alpena County: 81.4",
        "children": []
      },
      {
        "data": "Antrim County: 93.9",
        "children": []
      },
      {
        "data": "Arenac County: 73.8",
        "children": []
      }
    ]
  }
}
```

Figure 1 – Tree Data Structure

Interaction and Presentation Options

1. Description of user-facing capabilities: Users will be able to input their Fitbit access_token and location, fetch data from the Fitbit API, see their Fitbit data summary, calculate their stroke risk score and their stroke mortality rate and compare this with regional stroke mortality data.

2. Interactive and presentation technologies: The project will use a command-line interface with text prompts for user interaction and give the user a bar plot comparison of the two/three-stroke mortality rates.
3. Instructions for use:
 - Get your access token from the Fitbit website or use my data.
 - Enter yes or no to use FitStroke.
 - View your Fitbit Data
 - Get your Stroke Risk Score calculated and know your risk.
 - Get your Stroke Mortality Rate based on your risk score.
 - Enter your Michigan county location and view its Stroke Mortality Rate
 - Exit the app and see bar plots of the two rates.
 - Choose one of the 5 Midwestern States for further comparison.
 - View the rate of that state.
 - Exit the app to see bar plots of all three rates.

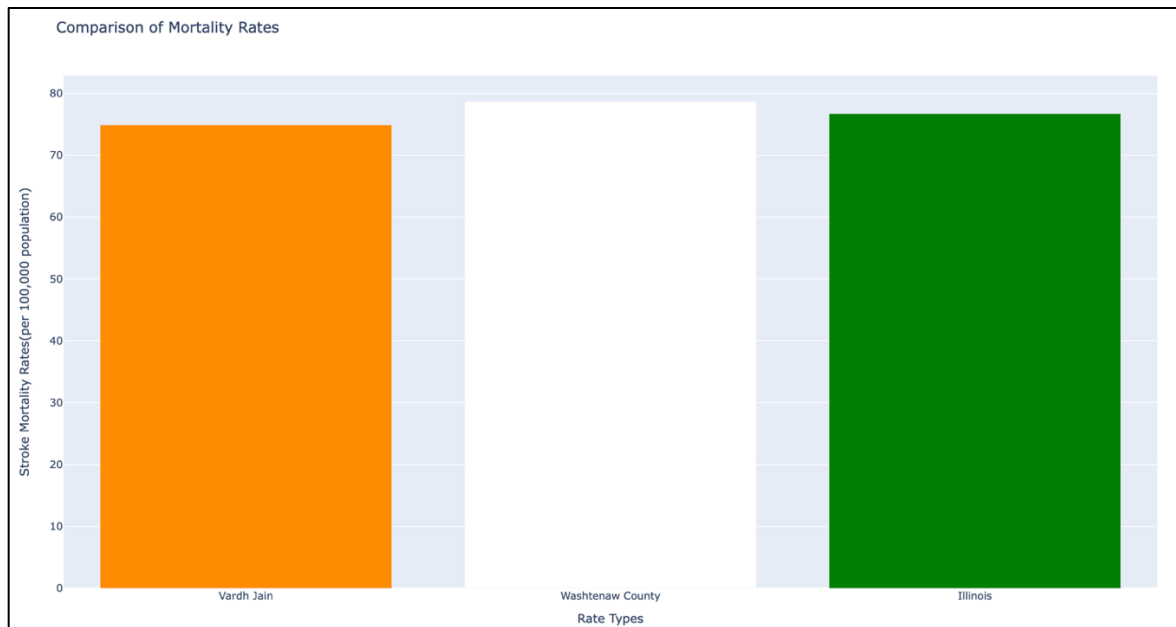


Figure 2 – Bar Plot showing a comparison of stroke mortality rates

Demo Link

https://umich.zoom.us/rec/share/l26tL8Pf9W4a6wi_uC8QdsNtljzqhjq9XpPUNoMNSp5PIGUyxBhSbCM7JA2imqsf.nsKYC5PA3moVmslG?startTime=1681944868000