CAPPYFOODIES

GROUP MEMBERS

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OUR PROJECT'S MENU

PROJECT OVERVIEW

According to the United States Department of Agriculture, food insecurity is “a household-level economic and social condition of limited or uncertain access to adequate food” (USDA). For our project, we visualize and explore patterns between the following key components affecting food insecurity:

- Food Access (Proximity to food)
- Food Quality
- Food Type
- Restaurant Cleanliness
- Socioeconomic Factors

Our project centers on Cook County and uses data from Yelp Fusion’s API, scraped emergency pantry data from the Sheriff’s Office’s, and downloaded demographic data from the US Census Bureau.

On our dashboard application, users can observe the spatial patterns of restaurants and pantries and interact with the graphs to:

- Filter locations of restaurants and pantries
- Display the main topics in Yelp reviews of a specified zip code
- View the average cleanliness of a zip code
- View the demographic data of a specified zip code

Since **1 in 4 children** in Cook County are at risk of hunger, we hope that our application can help educate people about food accessibility as it is a critical health issue.

OUR PROJECT'S INGREDIENTS

(PROJECT STRUCTURE)

In ***cappyfoodies:***

app.py: Contains functions to run the dash interface of our application, scrape data and interact with the Yelp API, and clean data depending on the user's input.

cleaned_data: Contains the cleaned datasets for restaurants in Cook County, their reviews, and their restaurant category, demographic data for each zip code, emergency food pantry locations, and food inspections from the City of Chicago.

clean_func: Contains functions to clean the raw datasets in data.

dashboard: dash interface containing the heatmap of food riskiness and restaurant locations, the map of restaurants and food pantries, the demographic data bar chart, and Yelp review word cloud for each Cook County zip code.

data: Contains the raw demographic and yelp datasets downloaded from the US Census Bureau and Yelp's Fusion API.

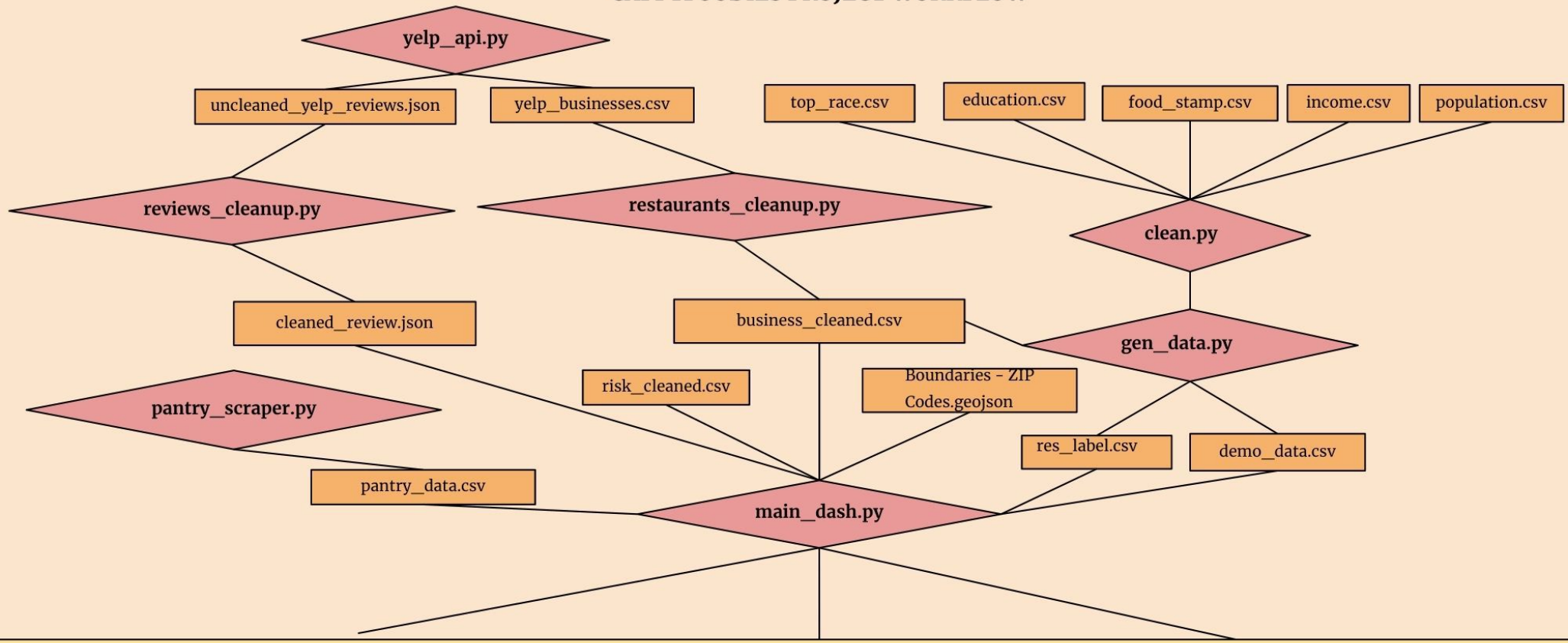
scraping_data: Contains the functions needed to scrape the emergency food pantry data from the Sheriff's Office's website and interact with Yelp's API to get restaurant reviews.

poetry.lock, poetry.toml, pyproject.toml: Building dependencies of our virtual environment

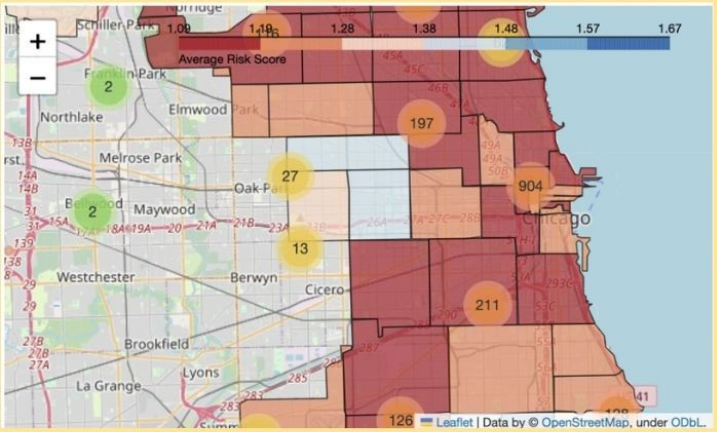
README.md: Instruction to install the poetry virtual environment and run our application

```
cappyfoodies
├── app.py
├── cleaned_data
│   ├── Boundaries - ZIP Codes.geojson
│   ├── business_cleaned.csv
│   ├── cleaned_review.json
│   ├── demo_data.csv
│   ├── pantry_data.csv
│   ├── res_label.csv
│   └── risk_cleaned.csv
├── clean_func
│   ├── category_dict.py
│   ├── clean.py
│   ├── gen_data.py
│   ├── restaurants_cleanup.py
│   └── reviews_cleanup.py
├── dashboard
│   ├── __init__.py
│   └── main_dash.py
├── data
│   ├── education.csv
│   ├── food stamp.csv
│   ├── income.csv
│   ├── plate2.jpeg
│   ├── population.csv
│   ├── uncleaned_yelp_reviews.json
│   └── yelp_businesses.csv
├── __init__.py
├── __main__.py
└── scraping_data
    ├── __init__.py
    ├── pantry_scraper.py
    ├── yelp_api.py
    └── yelp_simulation.py
├── poetry.lock
├── poetry.toml
├── pyproject.toml
└── README.md
```

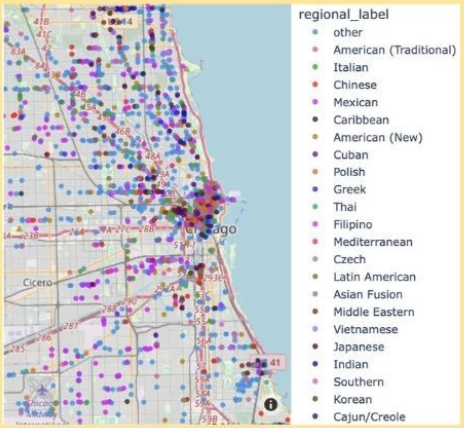
CAPPYFOODIES PROJECT WORKFLOW



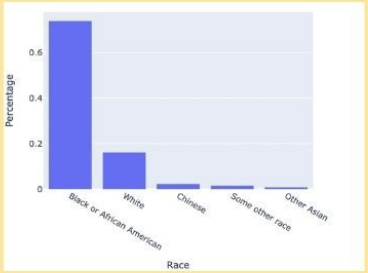
FOOD ACCESSIBILITY DASHBOARD



Interactive heatmap depicting the location of restaurants (pins) in Cook County, with each zip code being classified by average food risk.



Interactive heatmap depicting the location of restaurants (dot) or emergency food pantries in Cook County, with each dot being classified type of restaurant or service area, respectively.



Drop down menu to view a zip code's demographics and the yelp review word cloud of the restaurants in the specified zip code.

COOKS IN THE KITCHEN

(CODE RESPONSIBILITY)

Data Collection

- Yelp API: Maxine Xu
- Scraping Emergency Pantry Data & Google Maps API: Maxine Xu
- Demographic Data & Restaurant Risk Data: Miao Li

Data Cleaning

- Cleaning Demographic Data & Restaurant Risk Data: Miao Li
- Cleaning Yelp Data: Jariel Yang

Analysis

- Food Risk and Restaurants Heatmap: Yueyue Wang
- Restaurants and Pantry Map: Yueyue Wang
- Demographic Data Bar Charts and Information: Miao Li
- Word Cloud: Jariel Yang

Interactive UI

- Dashboard: Yueyue Wang, Miao Li, Jariel Yang

Other

- Paper: Maxine Xu, Yueyue Wang

DINING EXPERIENCE

(SOFTWARE INTERACTION)

Interacting with the Application (README.md)

1. Clone the repository.
git clone git@github.com:uchicago-capp122-spring23/30122-project-cappyfoodies.git

2. Navigate to the repository.
cd ./30122-project-cappyfoodies

3. Install Dependencies.
poetry install

4. Activate the virtual environment.
poetry shell

5. Launch the App
python3 -m cappyfoodies

- Options of the App.
    - Users can enter the number to interact with the App

(1) For the Dashboard,
(2) For Data Cleaning,
(3) Download New Data(web scraping),
(4) Quit the program.

Interacting with the API

- Option 3 has sub-options.
    - Users can input the number to interact with the App

(1) Scrape the list of emergency pantries from Cook County's Sheriff's Office,

(2) Simulate interacting with Yelp's API,

(3) Gather the full dataset of reviews for restaurants in Cook County using Yelp's API

OUR MICHELIN STARS

(GOALS AND ACCOMPLISHMENTS)

In regards to our initial proposal, there were several changes made to ensure we were providing useful information to our users, a key one being the replacement of the food accessibility data from the USDA with the the emergency pantry data from the Sheriff's Office. We believe that the inclusion of the food pantry data and the visualization of the pantry locations with the corresponding service areas are ultimately more relevant and helpful to the end user.

In the same vein, we decided to replace the time series graph we had initially planned with a second heat map of restaurant cleanliness and location of restaurants, as it is directly related to food quality.

Lastly, we decided not to do the regression analysis graphs as we believe that our targeted end user may not fully understand it. Instead, we made sure to include detailed descriptions on our other graphs to help them navigate our dashboard and grasp what each graph represents.

OUR MICHELIN STARS CONT.

(GOALS AND ACCOMPLISHMENTS)

While working on our project, there were several interesting insights that we found when studying food accessibility in Cook County.

The first was the levels of food risk in the South Side of Chicago. As seen in our dashboard, this area had lower food risk in comparison to the North and downtown areas. This contradicted our initial hypothesis that Southern zip codes of Chicago would have higher food risk averages because of the lower socio-economic states of these zip codes; however, this could be attributed to the higher number of restaurants located in the North and downtown areas.

There was also a surprisingly low variation in restaurant type when looking at 5-star rated restaurants. This could indicate what types of food people most value.

We also found that restaurants and pantries are clustered in the downtown area, even though the median incomes are lowest in the South Side zip codes. This finding could expose a gap in the food provided and food needed.

With these changes and insights, our team believes that we have accomplished in our initial goals of bridging the various factors of food accessibility and creating a platform in which a user can become better informed about food accessibility in Cook County.