HONR 39900 – Midterm Project Guidelines

Justin A. Gould
gould29@purdue.edu

April 7, 2021

DUE DATE: 2021/10/11 23:59 EDT

Midterm Submission Instructions

To receive credit for the project, do the following:

1. Submit Postgres database (following proper database design principles): Documentation of the database you created including descriptions of your database's tables, the columns within the tables and the relationships between the tables. An ERD and/or screen captures may be effective ways to convey this information.

2. Submit map(s) showing U.S. county-level vaccine numbers/distribution, as PNG or PDF.

3. Submit Short (2-3-pages) write-up of justifying your distribution plan and a demonstration of how your database solves the problem, and explaining your analysis approach (e.g., data used, preprocessing, feature engineering, PostGIS queries, etc.).

All details *w.r.t.* project description, expectations, etc. will be outlined on the following pages.

Project Topic and Description: *Topic:*

- Equitable COVID-19 vaccination distribution

- **NOTE:** This is not a public health course, so the distribution plan is not graded as much as the **map content** are!

Description:
As COVID-19 vaccines continue to roll out, CVS Pharmacy has offered all of its stores as functioning vaccination sites. Throughout the pandemic, we have seen the disproportionate impact COVID-19 has had on minority communities-—exacerbating a preëxisting problem in disparate access to, and quality of, medical care. Your job is complex: leveraging U.S. county geospatial data (shapefile), vaccination site locations (all U.S. CVS Pharmacy locations), demographic data (at county level), vaccine distribution information (from CDC), and estimated immunity data (using NYT COVID-19 case count as proxy (i.e., assuming those who have been infected have some degree of immunity)), please create a plan of where to send a finite number of vaccines-ensuring equitable access to vaccines (previously-specified communities) and high-risk individuals (e.g., age, disease, etc.). You can assume you are distributing the single-dose Johnson and Johnson vaccine, so delivering 2 doses to vaccination locations is not needed.

Important: Not every county has a CVS pharmacy location, and therefore access to vaccination sites will be limited in certain areas of the country. This is a challenge which mirrors real-world vaccine distribution. Your plan will need to handle this.

Deliverables:

1. Postgres database (following proper database design principles): Documentation of the database you created including descriptions of your database's tables, the columns within the tables and the relationships between the tables. An ERD and/or screen captures may be effective ways to convey this information.

2. Map(s) showing U.S. county-level vaccine numbers/distribution

3. Short (2-3-pages) write-up of justifying your distribution plan and a demonstration of how your database solves the problem, and explaining your analysis approach (e.g., data used, preprocessing, feature engineering, PostGIS queries, etc.).

4. 4-5-minute presentation to be completed in class: outlining data you used, approach, and map(s)

Available Datasets:
You can use any data you would like (i.e., choose to use or not to use the below sources), but these data are available for you on our GitHub:

1. U.S. county geospatial data (Shapefile): `UScounties`

2. Vaccination site locations: `vaccine_locations.csv`

3. Demographic data: `population_data.csv`

4. Vaccine information: `COVID-19_Vaccine_Distribution_Allocations_by_Jurisdiction.csv`

5. Estimated immunity data (using COVID-19 case data as a proxy): `covid_us_counties.csv`

Grading Scale:
The midterm project is worth a total of 300 points, or 30% of your final grade. You will earn points based on the following:

- Project Content: 260 points...

    – Postgres DB: 180 points (Acceptable ERD, based on principles discussed in class, and write-up containing requested information)

    – Map(s): 50 points (Quality of map(s): following the map design principles discussed in class)

    – Write-up: 30 points (Quality of write-up, in terms of containing requested information, grammar, spelling, and flow)

- In-class Presentation: 40 points...

    1. Knowledge of Subject Matter (Maximum of 5 points, as outlined in rubric)
    2. Communication Skills/Clarity (Maximum of 5 points, as outlined in rubric)
    3. Poise/Confidence (Maximum of 5 points, as outlined in rubric)
    4. Method of Presentation (Maximum of 5 points, as outlined in rubric)
    5. Voice (Maximum of 5 points, as outlined in rubric)
    6. Visual Contact (Maximum of 5 points, as outlined in rubric)
    7. Evidence of Preparation (Maximum of 5 points, as outlined in rubric)
    8. Orderly Sequence (Maximum of 5 points, as outlined in rubric)