

How Should We Reopen Schools?

- Name of the group members and CNetID
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- A brief overview of the final project (200 words maximum)
 - Our project reflects on how schools should consider broadband availability and attendance rates in reopening decisions during the Covid pandemic. We've collected data on broadband availability, schools' 2019 attendance rates, and neighborhood covid rates for NYC, Chicago, and LA and used these values to create a classifier indicating whether (and how) the school should consider reopening. Our software interface allows the user to search from one of the three cities, specify communities and schools, and choose any month from the 2020-2021 school year. Using the inputs, we return all schools matching the query, the school grade level and neighborhood, the 2019 attendance rate, the percentage of households in the neighborhood with broadband, the community's covid rate per 100,000 people, and our final suggestion on whether the school should reopen, remain virtual or attempt a hybrid format. Alongside the results, we provide a map of the community showing the surrounding covid rates and the selected schools. Our software should not be taken as a firm recommendation, but rather as a consideration on how areas with lower broadband and attendance rates might require different priorities than others.
- The overall structure of the software (1-page maximum)
 - Web scraping, APIs, or direct downloads to files stored in data/ folder and load into sqlite3 database.
 - `chicago_covid_clean.py`, `chicago_geom_geopandas.py`, `clean_chi_attendance.py`, `clean_chicago_broadband.py` for Chicago
 - `scrape_ny_schools.py` for New York
 - `scrape_la_schools.py`, `convert_la_data.py` and `clean_la_covid_data.py` for LA
 - Data/
 - Contains all CSV/JSON/geoJSON/SHP files from previous web scraping, APIs, or downloads
 - `create_table.py` for creating sql tables
 - Converts CSV/JSON/geoJSON files to tables in SQL
 - `school_access.sqlite3` database that contains all tables
 - Data Analysis
 - `reopening_guide.py`
 - Calls to SQL to create new CSV file: `categorized_schools.csv`, CSV file(then added to SQL using `create_table.py`)

- Combines 2019-2020 metric across all three cities to produce a recommendation for whether schools should reopen.
 - Note: LA did not have accessible attendance data, so created an alternative scale using schools' percentage of excellent attendance minus their percentage of chronic absenteeism, which was then standardized to the same curve as Chicago and NY
 - UI (django)
 - create_map.py for creating maps
 - Based on Django args_to_ui user inputs, pulls in and filters categorized_schools.csv, then joins onto school location data for chosen city
 - Joins covid and neighborhood/zip geographic data for specified city
 - Creates map with covid levels by neighborhood/zip and schools with suggested reopening classification
 - Creating search engine
 - Query_schools.py file that connects to the school_access.sqlite3 and call create_map.create_viz()
 - morden-nayers-ssedovic/ui/res contains csv files that provide options for the django drop downs
 - Updating/Installation
 - install.sh
 - reopening.py
 - Runs web scrapers to update data, adds to SQL table and updates reopening guide
 - Can select what to update from dropdown menu (LA takes a bit longer, so can choose not to scrape that if time is a concern)
- What the project tried to accomplish and what it actually accomplished (200 words)
 - Currently, the CDC's recommendation for school reopenings relies solely on the status of transmission rates within the community (recently changed from transmission rates in schools) and grade level. Our original goal was to look at how available broadband has affected students' attendance during the pandemic and whether that has affected a district's attempt at reopening. When gathering data, however, it became apparent that recent attendance data would not be available. We then changed course to create a tool that incorporates previous attendance data, grade level, broadband accessibility, and covid levels into a school's reopening plan. We believe this information can still provide important insights for school and district administrators in making reopening decisions, as the impact of virtual schooling on areas with poor broadband connectivity and

poor pre-covid attendance is likely more severe than the impact for highly connected areas with students who had the capability to attend classes regularly. While we in no way mean to suggest our classifications should be taken as actual health guidance, we do hope our software will prove the value of considering factors in addition to covid rates when determining how we can best help the students most affected by this pandemic.

- Instructions of use:
 - `$./install.sh`
 - `$ source env/bin/activate`
 - `$ python3 reopening.py`
 - `$ cd ui/`
 - `$ python3 manage.py runserver`