

# REEU 2021 – Homework 1

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## Instructions

All files and data you need to complete this assignment are:

- **UScounties**: A folder containing a shapefile (and supporting files) for the **POLYGON** of every U.S. county.
- **covid\_us\_counties.csv**: A CSV of county-level COVID-19-related data from January 2020 through February 2021.
- **co-est2019-alldata.csv**: A CSV of the population of every U.S. county, organized by FIPS code.

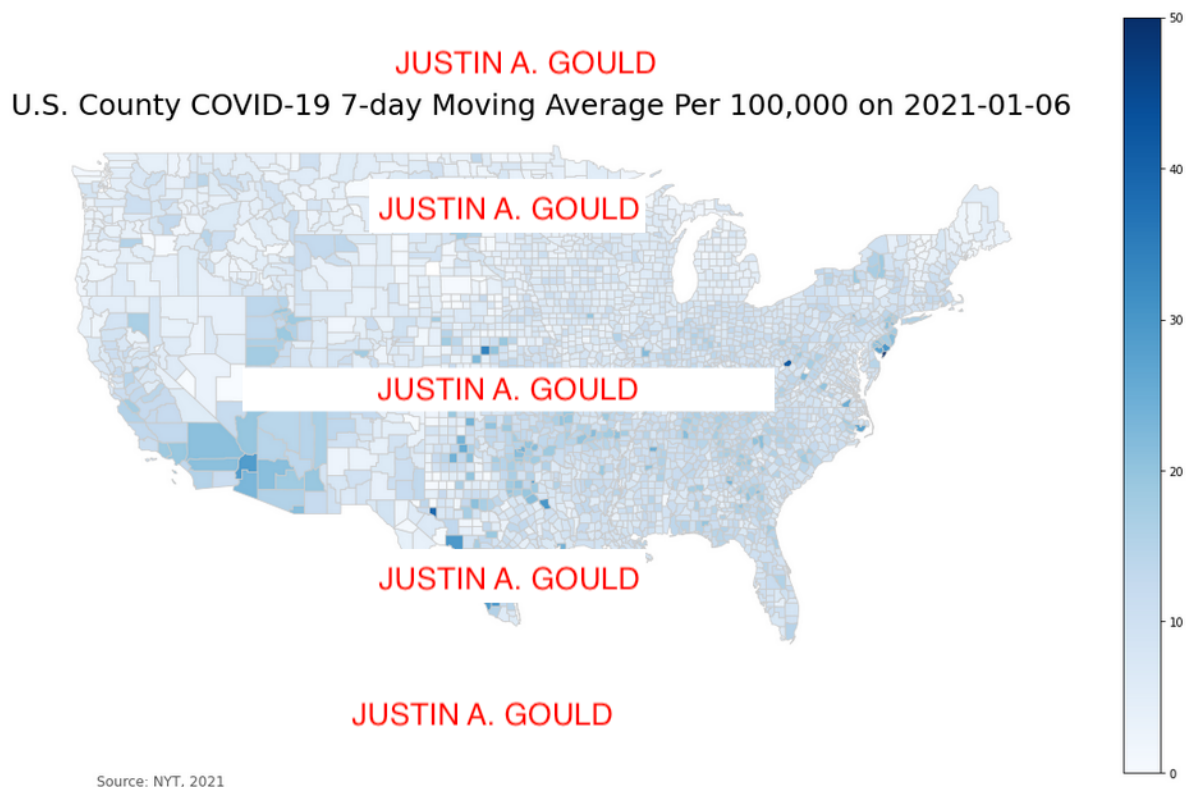


Figure 1: Example map output

### Data Overview and Task Requirements

Your task is to create a choropleth map of COVID-19 case data for the domestic United States. Specifically, you're tasked with calculating and mapping the 7-day moving average of new cases per 100,000 residents on November 03, 2020.

**HINT:** I suggest working in Python first, as we did in class, to do the preprocessing, before moving to QGIS for the second question.

Your final map should look something like Figure 1.

### Preprocessing Steps:

- Remove counties from Hawaii and Alaska from the shapefile.
- Calculate daily case increases at the FIPS code level.
- Calculate 7-day moving average of daily increase in cases at the FIPS code level...**HINT:** There is a built-in function in the `pandas` package you can use to do this!
- JOIN the following data into one Pandas DataFrame: FIPS geometry, NYT COVID-19 case data (your calculations), FIPS population data.
- Finally, be sure to filter the final DataFrame to show only the target date.

**Problem 1****Visualizing a COVID Map via Python**

Create a choropleth map of 7-day average of new cases per 100,000 residents on November 03, 2020, via `pandas`, `geopandas`, and `matplotlib`.

**Input:** The data and files described on page 2.

**Desired Output:** Please submit your `.ipynb` and image of the map (either as `.png` or `.pdf`). Your notebook **must** show the `GeoDataFrame` used to generate the map.

**Problem 2****Visualizing a COVID Map via QGIS**

Create a choropleth map of 7-day average of new cases per 100,000 residents on November 03, 2020, via `QGIS`.

**Input:** The data and files described on page 2.

**Desired Output:** Please submit your `QGIS` project as a `.qgz` file and image of the map (either as `.png` or `.pdf`).