SPRINT

Student Pandemic Researchers – Interventions
Methodology

Luka Gabitsinashvili, Finn Mokrzycki, Nicholas Telesca, Lauren Xue, and Maryann Xue

Advisors: Benjamin Hurt and Erin Raymond

Methodology

Who We Are

We are a team of five UVA undergraduates with broad interests, from data science and public policy to law and commerce. Our team works independently to gather and analyze data, meeting periodically to share efficient collection strategies and discuss findings from our analyses.

Data Collected

We gather data on non-pharmaceutical interventions (NPIs) against COVID-19 from counties and independent cities in Virginia. NPIs are methods for reducing the spread of a disease that do not involve vaccines or drug treatments. Specifically, we look for dates when closures or mandates were implemented or lifted in the following five categories:

Masks
Start date for mandated face coverings, and end date when mandates were removed.
Data includes executive orders from the governor, school board rulings, and government facility ordinances.

Businesses
Start and end dates for forced business closings or government-sponsored economic aid.
Data includes executive orders, city mayor orders, press releases, and county ordinances.

Schools
Start and end dates for forced in-person school closings. End dates based on first date students from any grade (Pre-K –12) were able to come in-person for at least one day a week.
Data includes school board rulings, school social media announcements, and messages from school officials.

Colleges
Start and end dates for forced in-person college campus closings. End dates based on the first day students were able to come to class in-person for at least one day a week (not based on move in date). Colleges with the largest student body in the region were selected.
Data includes school official messages, news articles, and social media announcements.

Religious Organizations
Start and end dates for forced closings of religious activities. Churches with the largest congregation in the region were selected. Date based on when in-person gatherings became allowed. Includes worship outside but does not include drive-in service.
Data includes executive orders, religious leader communications, social media, and congregants' statements.
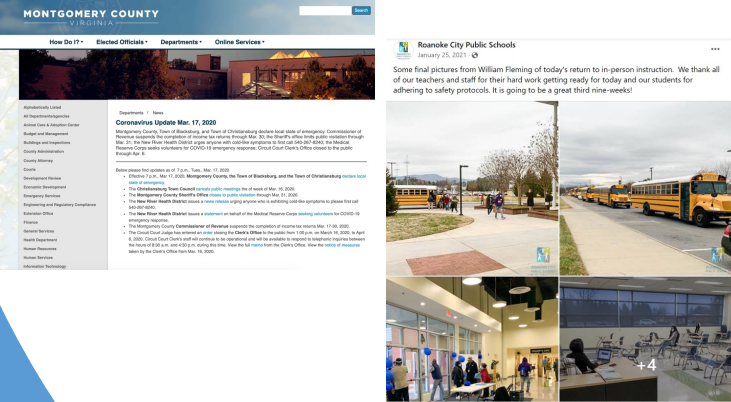
Lockdowns

Start and end dates for any restrictions on residents' abilities to leave their homes or declarations of local emergencies. Data includes executive orders, press releases, news articles, and ordinances.

480+ MANDATES

38 INDEPENDENT CITIES

95 COUNTIES

Assigning Areas and Initial Learnings

We based county and city information on FIPS codes and randomly assigned them between ourselves. We then gained a general understanding about each – learning about population size, its location within the state, and other details that could inform where to find or how to collect the data.
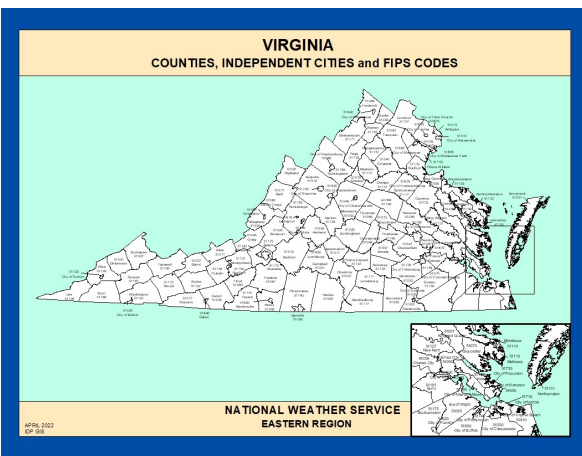
Image source: weather.gov

Collecting the Data

We retrieved data on interventions from sources such as news articles, social media, and government websites. We did this through online searches filtered by dates, web-scraping APIs for social media, and contacting officials within local governments, along with religious and political leaders. We saved links from each online source in addition to saving a picture for future verification.

Verifying the Data

Then, we randomly assigned the counties and independent cities again amongst ourselves in order to verify the intervention dates. We corrected any information that was inputted incorrectly. All data was inputted onto an excel sheet with intervention start and end dates and the sources from which we obtained the information.

Future Uses for Data

The goals for this project are twofold: the first is to collect this data at the county level to enable better decision making for future pandemics. The data gives us another pillar to help measure the effect of interventions through time. The second purpose is to evaluate the effectiveness of NPI measures to prevent or limit the spread of the disease. By focusing on the individual responses of each local county or independent city, particularly the steps that were taken despite or in addition to statewide orders, we can more accurately examine the efficacy of each intervention.

Network Systems Science and Advanced Computing

UNIVERSITY of VIRGINIA
BIOCOMPLEXITY INSTITUTE

SPRINT
## Student Pandemic Researchers – Interventions
Data Analysis

Luka Gabitsinashvili, Finn Mokrzycki, Nicholas Telesca, Lauren Xue, and Maryann Xue

Advisors: Benjamin Hurt and Erin Raymond

Data Analysis
We show various initial views of analysis on the collected NPI data both over time and per county.

Count of mandates by county. This includes the state-mandates for each county (thus the minimum of two mandates). Despite generally similar counts, there is a diversity of mandate types between counties.
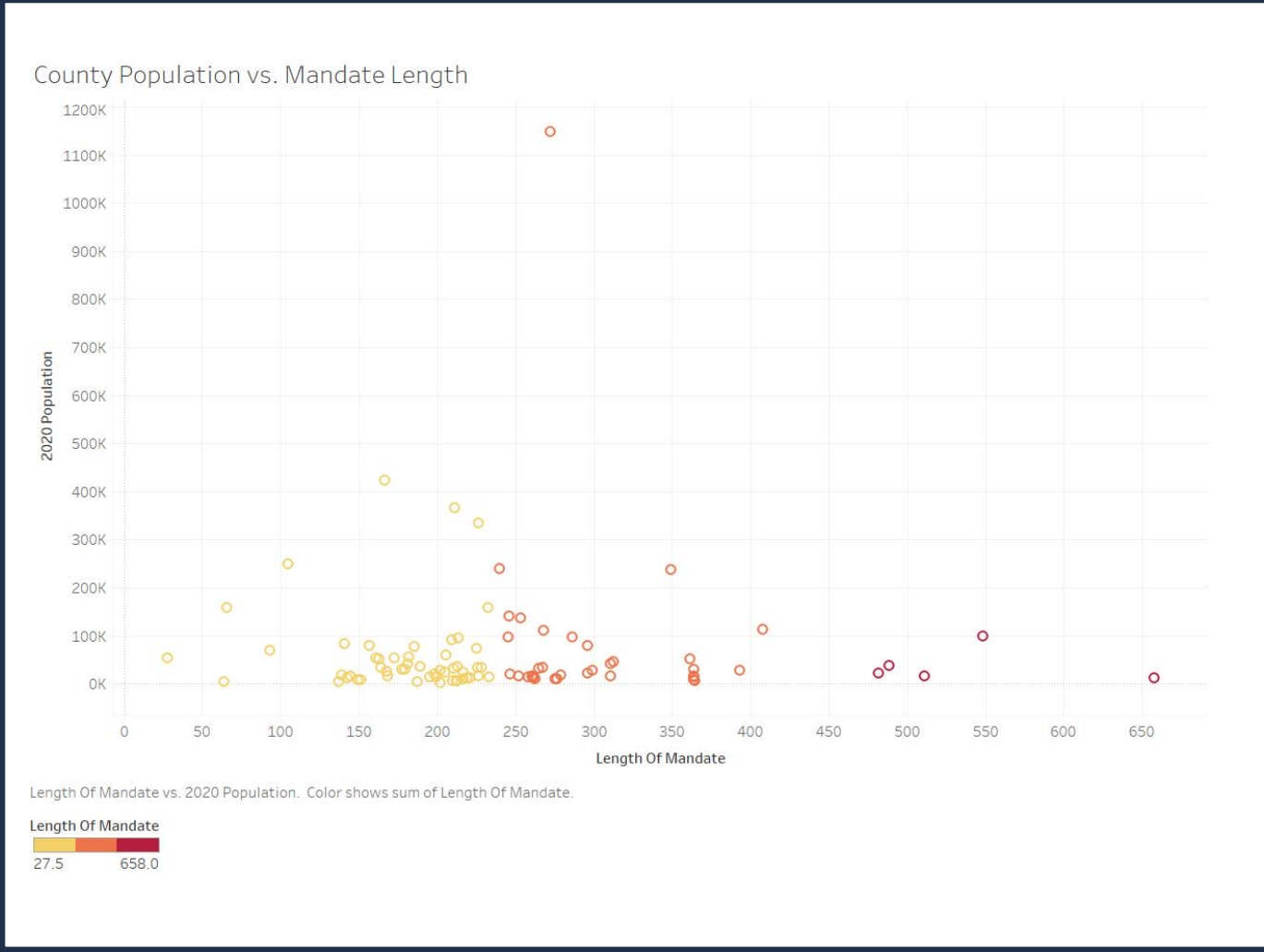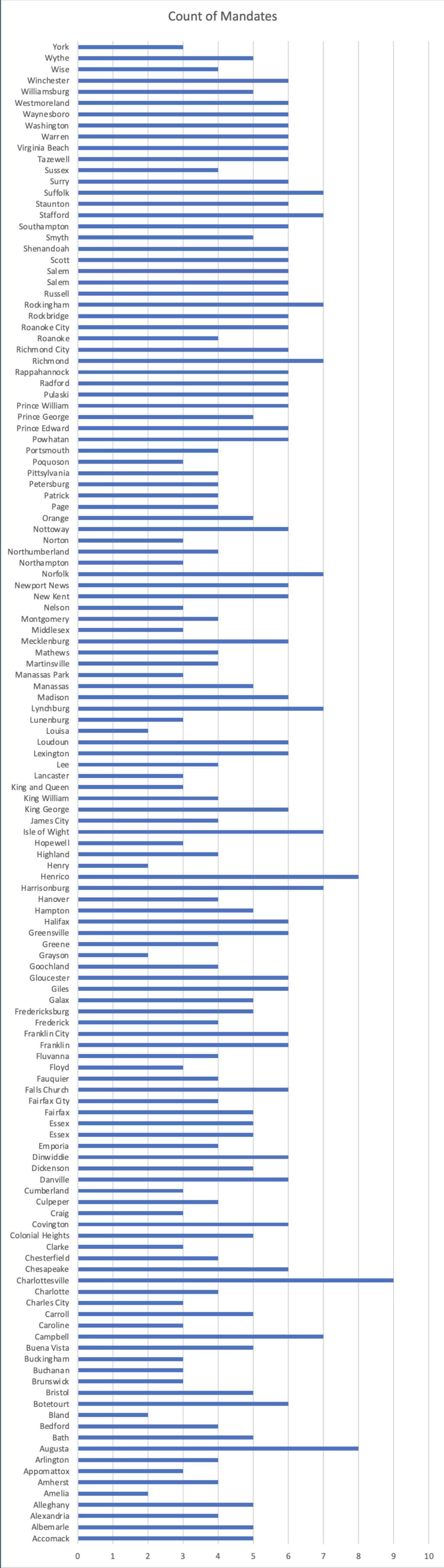
County population in 2020 (Census data), is plotted against average length of mandates per county. Generally, population does not greatly affect the length of mandates, though highly populated counties tend to trend on shorter mandates.
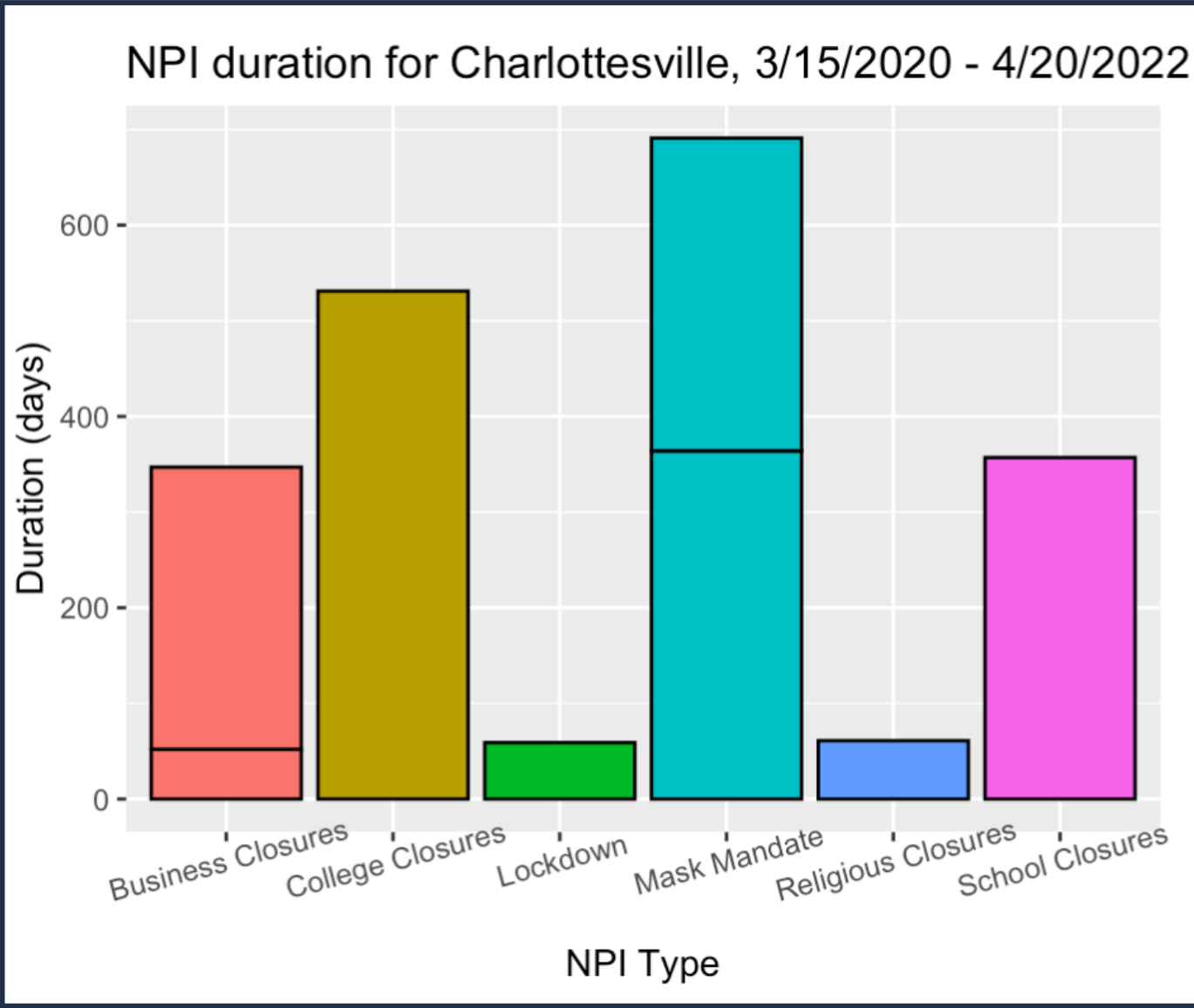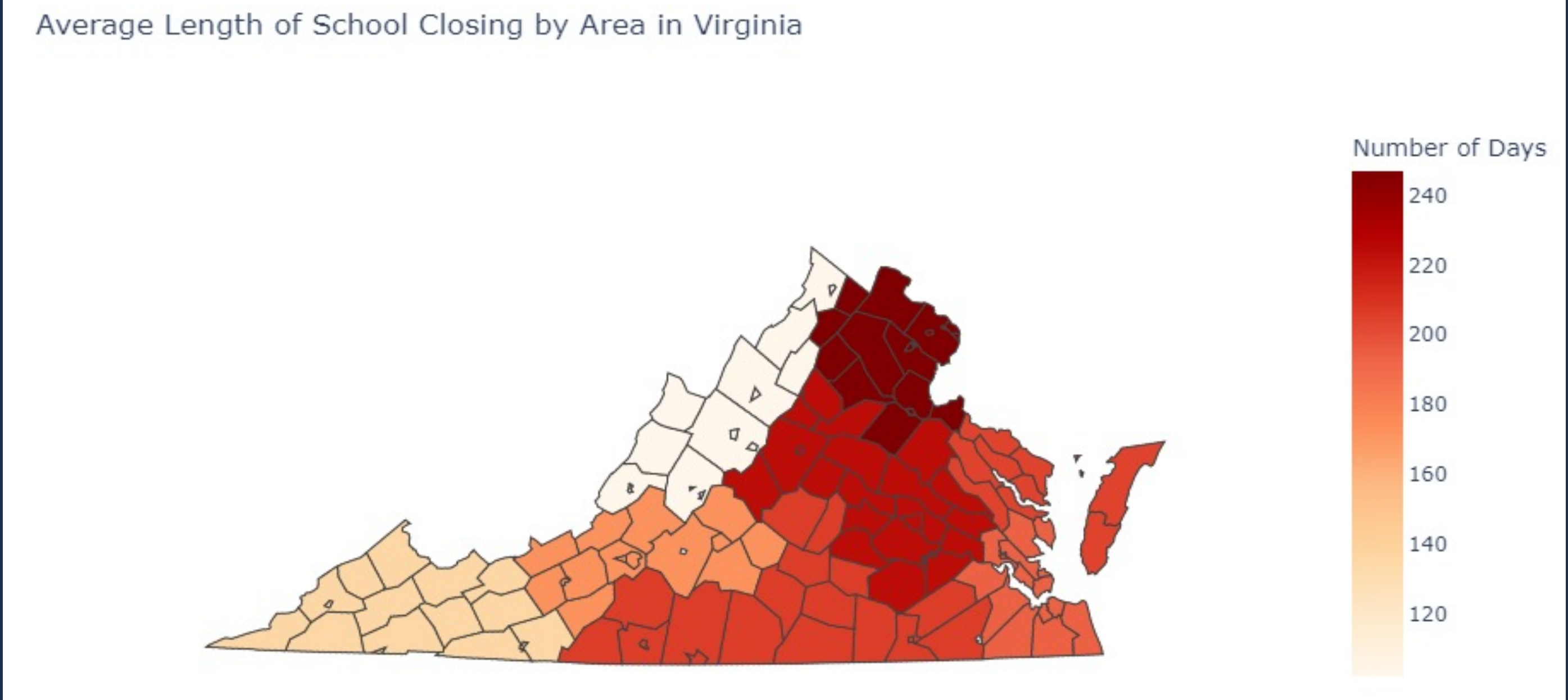

Example view of mandate breakdown for the City of Charlottesville (shows stacked bars where there were multiple mandates
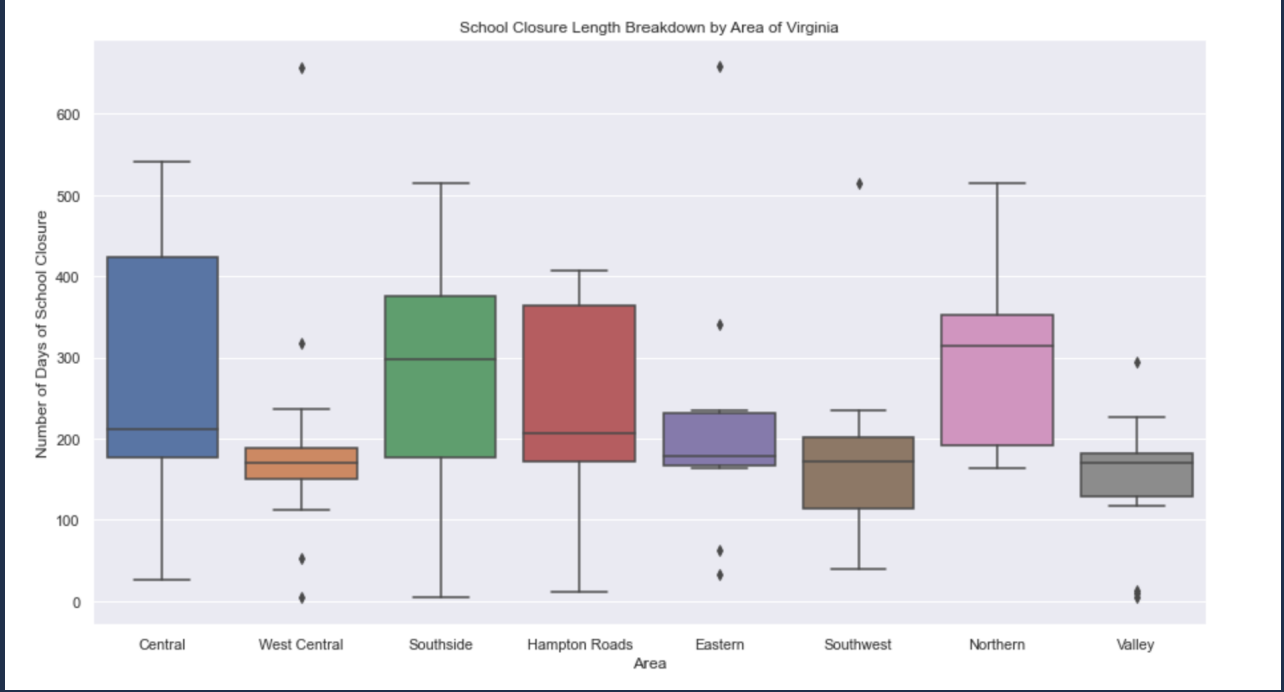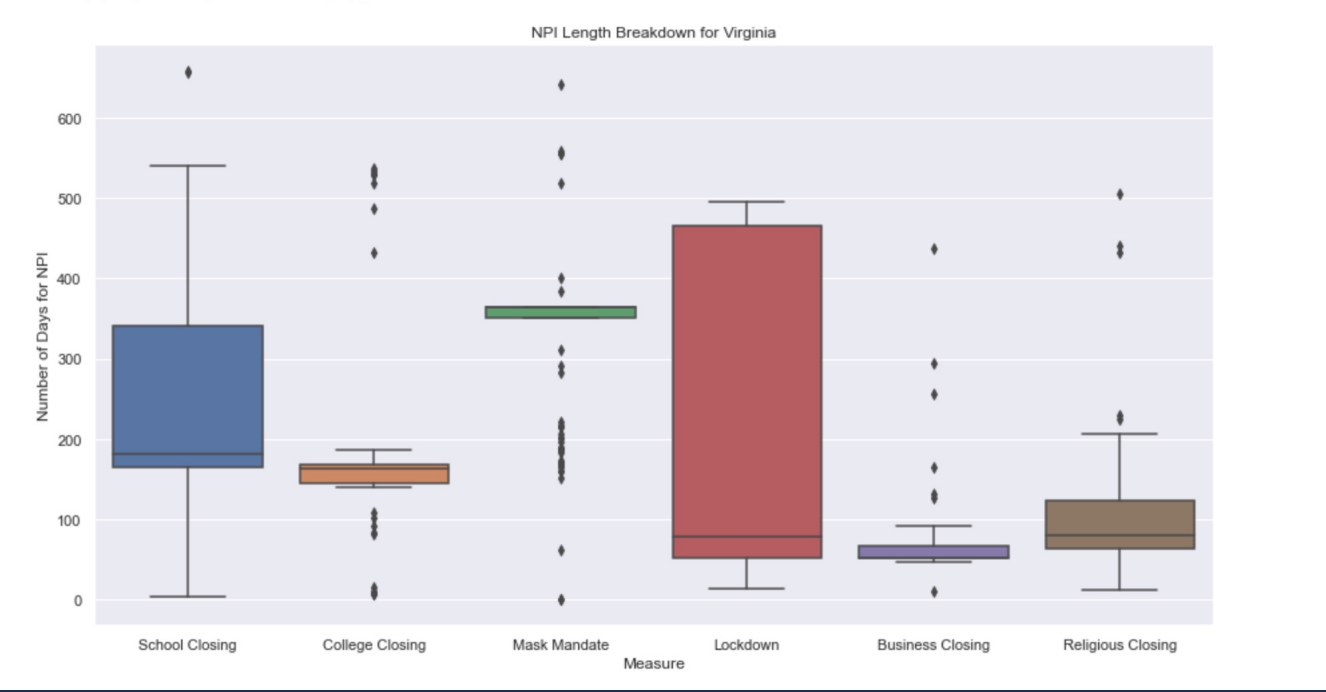
On the whole, counties in western Virginia have a fewer number of mandates, with Charlottesville being a notable exception. Schools in northern Virginia generally had the longest length of school closures, with some schools being closed for up to 240 days.

Average Length of School Closing by Area in Virginia

Network Systems Science and Advanced Computing

UNIVERSITY of VIRGINIA
BIOCOMPLEXITY INSTITUTE