COVID-19 and its Effects on the Environment

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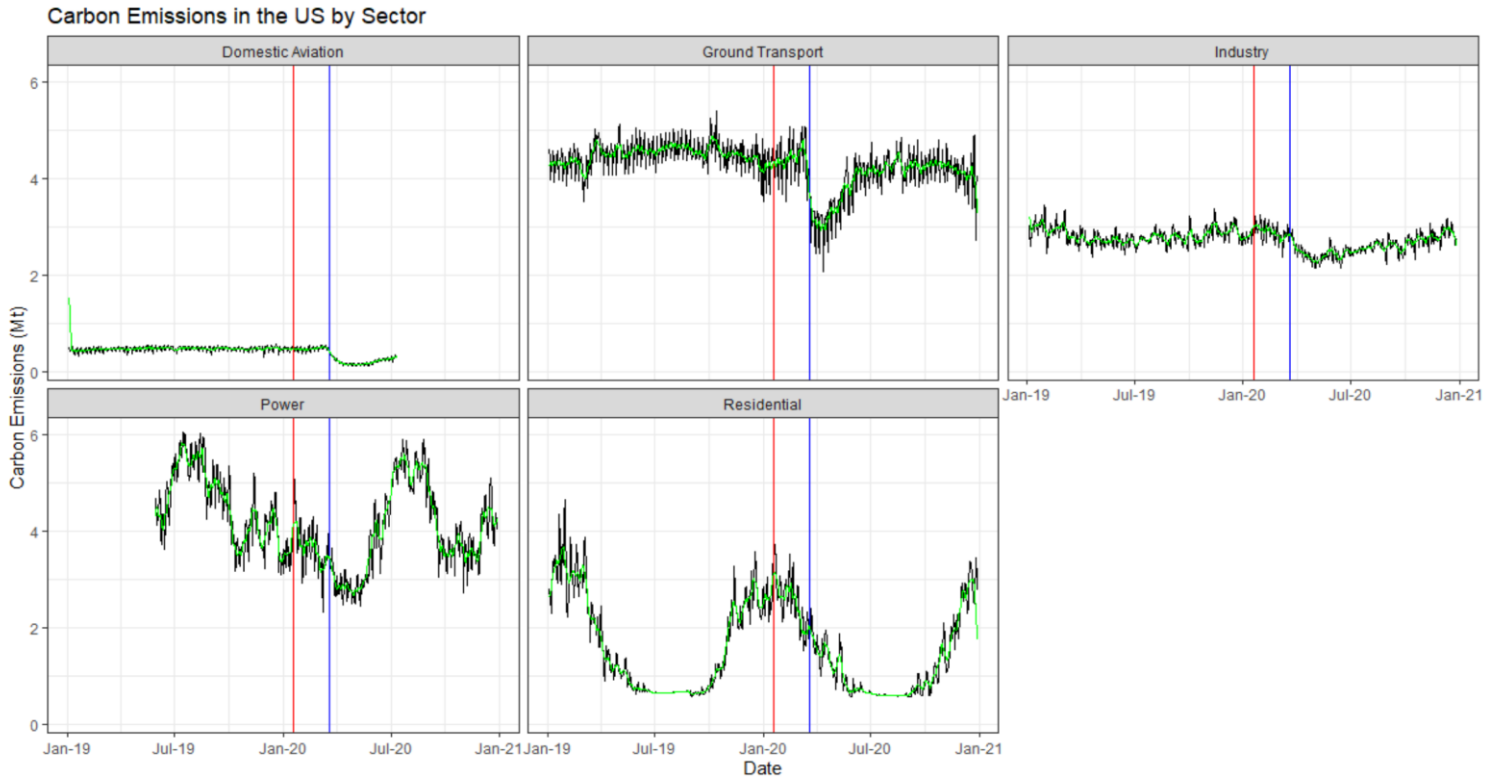
Context

- Since the COVID-19 breakout in 2019, there have been many unforeseen effects of the disease and subsequent fallout
- We intend to investigate one of the specific side-effects, which is whether COVID-19 has impacted the environment and pollution rates in the United States

Goal

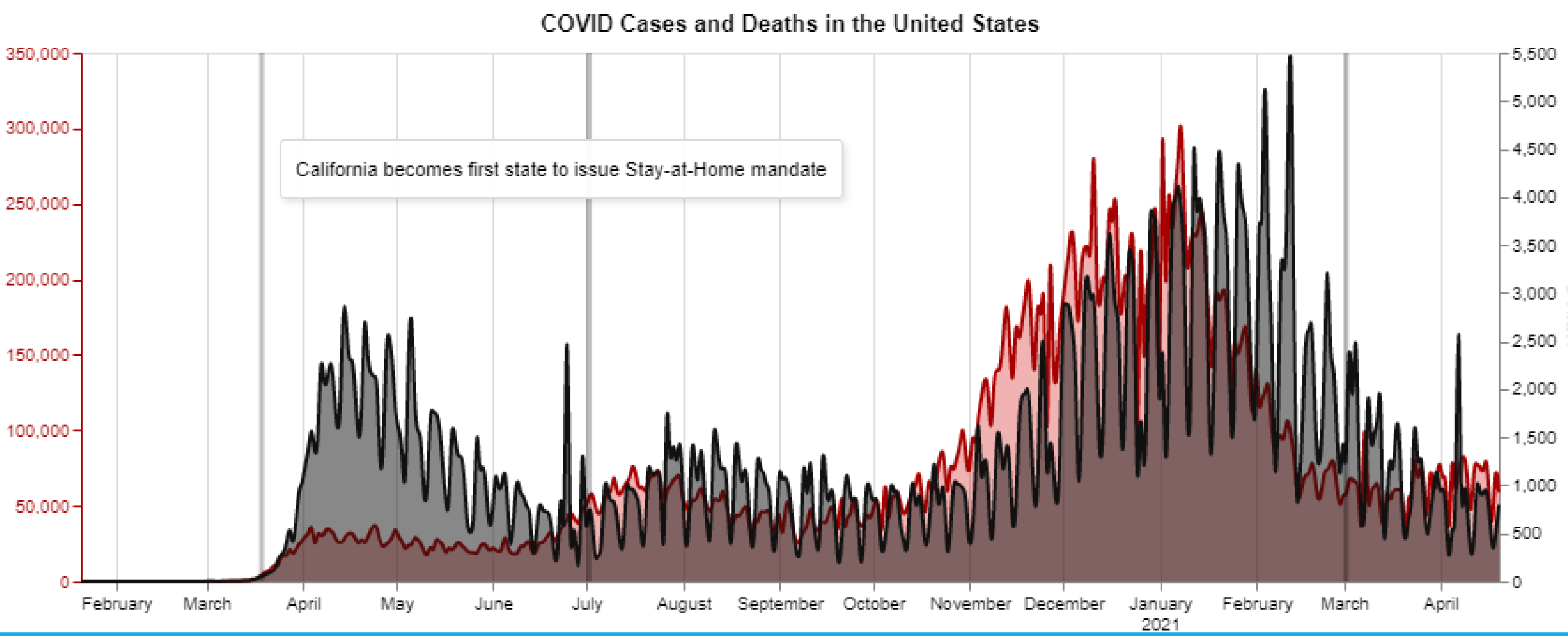
- To explore the possible benefits for the environment due to the unique remote environment that the pandemic has provided and the amount of people who stayed home for an extended period, as this is something very uncommon in history
- We intend to specifically look at how carbon emission rates changed over time since the beginning of the pandemic and investigate whether there is a relationship between phases of the COVID-19 pandemic and carbon emissions

Carbon Emissions Visualization



Revisions To Carbon Emissions Visualization

- Faceted the plot by sector and then added a line for the running average
- Included a label for the red line, which indicates the outbreak of the first COVID case in the United States - previously, the line was described in the explanation but not in the plot
- Added another line indicating when the stay-at-home orders began in the United States
- Altered the month names to correspond more closely to the other visualization



Visualization: COVID-19 Cases

Revisions to Graphic #2

- Added timeline markers to important COVID events throughout the year
- Tested out graph layouts
- Removed unnecessary labels

Interpretation

- Carbon dioxide emissions from various sectors appeared to respond differently to the social and economic changes brought by the COVID-19 pandemic
  - There was a clear definition of emissions decreased in the power, ground transport, and especially residential sectors after the outbreak began and stay-at-home orders were put into place
  - This makes sense as business for many companies lagged at this time, and the residential sector likely experienced the steepest decrease in emissions due to the number of people in the United States staying home in quarantine
- The industry and domestic aviation sectors retained essentially the same pattern in 2019 and 2020

Interpretation

- The COVID-19 visualization exhibits two peaks in positive cases and mortality rates, one at the beginning of the pandemic in March and April 2020 and one in January 2021
  - With the initial peak, there is a significant decline in carbon emissions in the ground transportation, power, and residential sectors - the other sectors have a noticeable decrease as well around April of 2020, though not as a significant
- Unfortunately, the Carbon Emissions data were not recent enough to properly compare the data with the second peak in coronavirus cases, around January 2021
- The COVID cases and mortalities visualization was used to solidify when the COVID-19 outbreak began and when the different phases of the pandemic occurred, specifically with multiple peaks of cases and subsequent stay at home orders
- *While our visualizations may connect an increase in positive cases to a decrease in carbon emissions, we would like to reiterate that the pandemic has negatively impacted much of the population, and we are not making light of this tragedy in any way*

Conclusion

- Overall, we can see there is a relationship between the COVID-19 pandemic and the resulting stay-at-home orders and the environment
- Through our visualizations, we can see that for power, ground transport, and residential sectors, carbon emission rates tended to decrease when more people were stay at home
- This suggests that people and corporations do contribute negatively to the environment and specifically to carbon dioxide rates