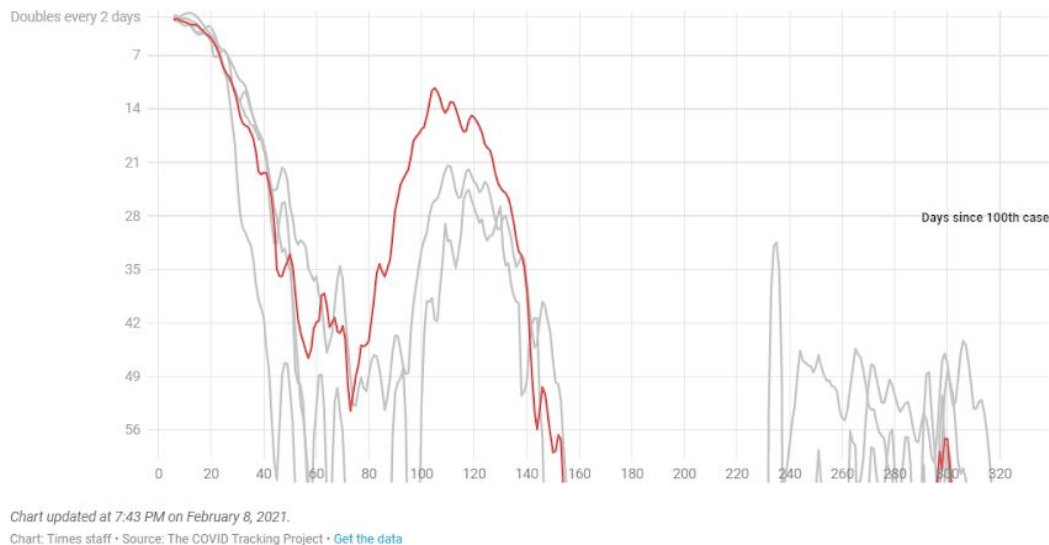


Assignment 2: Critique and Redesign

How, exactly, is the growth rate changing?

We can measure growth by looking at the last week of data and seeing how long it is taking for the number of cases to double. If the line is going down, that means it's taking longer and growth is slowing. The more quickly the line goes down, the better. Here's the chart for cases:



[Link to original story \(graph appears about halfway down the page\)](#)

For my critique and redesign, I chose a graph published in the Tampa Bay Times in April 2020 which detailed coronavirus trends in Florida. This visualization aims to show how the rate at which COVID-19 spread has changed over time by tracking the time it takes for cases to double, and appears to have been updated regularly since its original publication (as of the time of my redesign, the most recent update was Feb. 8, 2021).

Visual clutter/readability

My first impression of this visualization was that it was difficult to interpret any message from it. Since several lines are overlaid on top of each other, distinguishing between individual lines was somewhat difficult. Although the graph specifically highlights Florida trends, the overlapping lines make it difficult to compare Florida's growth rate to the other states. Since the non-Florida lines are the same color, it is difficult to distinguish between them and they all blend together, which makes the overall trends difficult to decipher.

The grid lines in the background of the chart also add a layer of chartjunk that serves to distract the reader, especially since they are a very similar color to the light gray lines on the chart. Aside from that chartjunk, however, the data-ink ratio in this graph is fairly high, with few

redundant or unnecessary elements. There is a strong reliance on the graph's interactive aspect, since the user has to hover over individual lines to see which state they correspond to, which reduces its effectiveness as a static visualization.

Storytelling

Since the lines fluctuate quite heavily, I found it difficult to pick out overall trends across the entire visualization. For example, while Florida's doubling rate hit a peak around Day 74, it quickly lowered over the following month. I would have liked to see an indicator of the general difference in doubling rate over time.

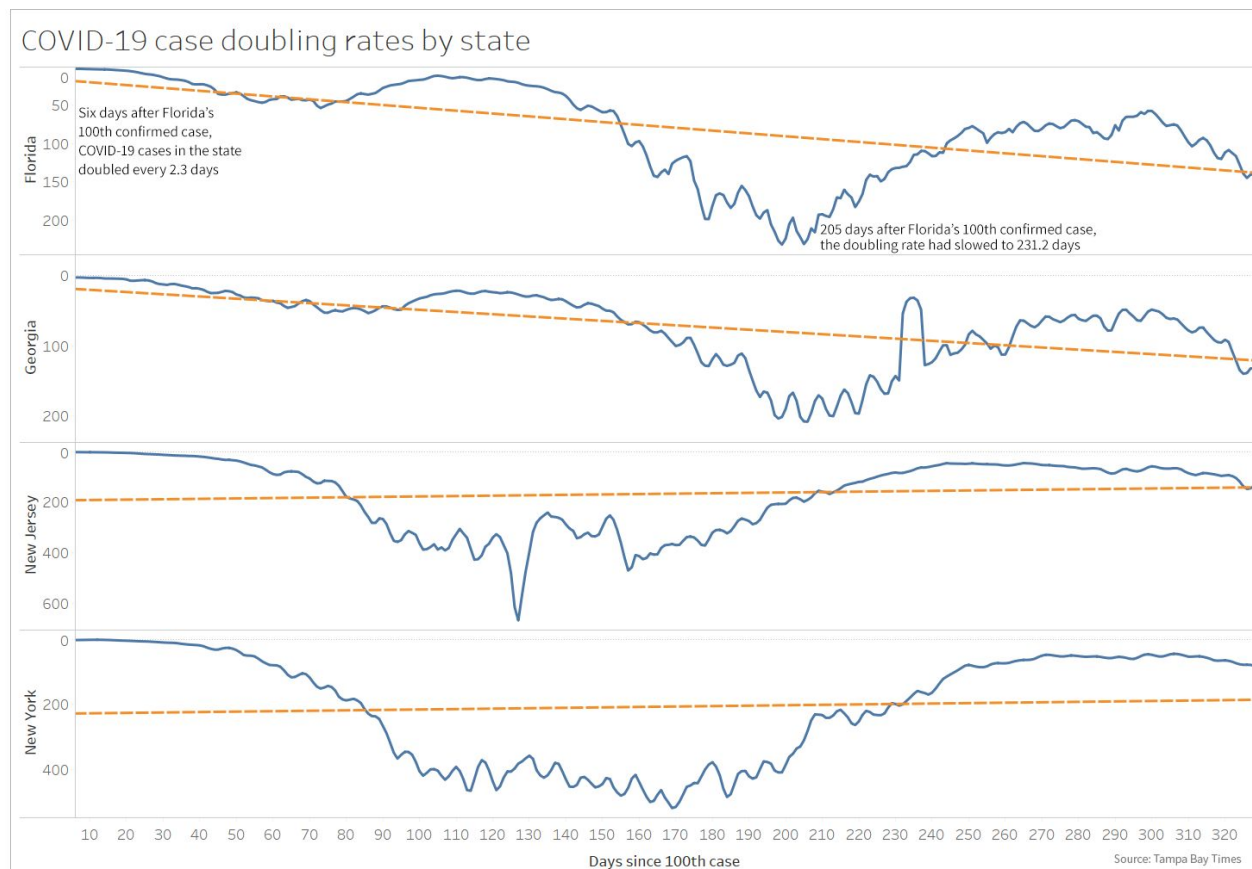
Another major flaw with this chart that seems to have arisen as the data was updated is the gap in the visualization that begins around Day 153. I believe this occurred because the chart's y-axis scale was not updated as more data were added to the graph, which caused doubling rates above a certain range to get cut off. This results in a large portion of the data being hidden from the user, which makes it impossible to see the full story over time.

Visual encodings

The main visual encodings in this chart (mapping doubling rate to y position and time to x-position) work well. I also appreciated the reversed y-axis that placed lower values on top, because in this case the lower values indicated a faster spread and a more severe impact of the coronavirus.

However, there are some issues with the visual encodings used in this graph. The nominal value of the names of each state is mapped to color for Florida, but every other line has the same color. As previously mentioned, this was done to specifically highlight Florida's trends, but it makes it difficult to follow any other lines.

Another poor choice with regards to visual encoding was the placement of the x-axis label in the vertical center of the graph. Since y-position has a defined encoding in this graph, I initially thought there was some significance to the placement of the axis title, when it actually seems to be placed arbitrarily. This also violates the gestalt principle of proximity, since the title for the x-axis is not visually grouped with the x-axis at all.



For my redesign, I separated the data into a trellis chart that allowed each individual line to be read effectively. This addresses the original chart's issue of lines blending together and allows the user to see the trends for each state. I also omitted the data from Los Angeles, which I decided to exclude since it was data from a single city whereas each other line represented a state. Finally, I added trend lines to allow readers to see the overall trends for each state over the given period of time.

Similarly to the original chart, I mapped time to x-position and doubling rate (the most important variable) to y-position with a reversed scale from 0 to the maximum value of each chart. In order to provide context and allow the reader to understand what doubling rate meant, I added annotations on the first graph which explained that a lower doubling rate value indicated faster spread of the coronavirus. I chose to specifically annotate the data from Florida to preserve the emphasis the original visualization placed on Florida.

Overall, in my redesign I preserve the emphasis on doubling rate as a measure of the spread of COVID-19 but place a greater emphasis on the trends across the entire period of time via the use of trend lines. I reduce the emphasis on Florida's data in order to effectively visualize the other data provided, which I believe actually makes it easier to compare Florida to the other states.