**Introduction**

Why is this analysis interesting or important (to people besides you)? Does it solve a real problem or tackle an unresolved research question?

**Background/Related Work**

What other research has been done in this area? How does this research inform your hypotheses, your analysis, or your system design? What are your hypotheses or research questions?

For these COVID related questions there may not be peer-reviewed publications that are directly related to your hypothesis. There may be anecdotal claims in the popular press (blogs, newspapers) related to your analysis.

**Methodology**

Not just your analytical methods, but also, why you chose them, and how human-centered considerations such as ethics informed the way you designed your study.

**Findings**

What did you find? Use words and figures, don’t just point to code.

**Discussion/Implications**

Why are your findings important or interesting; how could future research build on this study?

This section should include a thoughtful reflection that describes the specific ways that human centered data science principles informed your decision-making in this project.

The analysis that I performed above is significant because it is important for educators and education policymakers to understand the impacts of school closures, to help them with better decision making in the future. This also helps guide educators and education policy makers to understand what efforts will be needed in order to help students reach their benchmarks after a leave of absence, such as more assistance and tutoring fors specific subjects or investment in helping student graduation.  
Although I was not able to find any significant results in the impact of COVID-19 on education, when comparing the 2019-2020 school year to previous years, the analysis that I performed can be applied in the future, as more data becomes available. Incorporating the 2020-2021 and future academic years into my dashboard would allow users to investigate the long term impacts of school closures and pandemics.

**Limitations**

This is a required section for your report. There are often many, many limitations for any study. If you honestly tried to list them all, this might end up being the longest section. You should prioritize and list the ones that are most likely to have a significant impact on your results. Specific license issues could be a limitation, depending on what data sources you used. Flaws in the data, data cleaning techniques, potential assumptions and/or how you handled missing values could be a limitation. Statistical techniques often have specific assumptions and preconditions; if you’re not certain all of the data meets those requirements - this is a good place to make that clear.

There were many potential issues and limitations to the dataset that I used. Due to the COVID-19 pandemic, there were cancellations of several tests and changes in testing requirements. Unfortunately, this was not well documented and varied significantly between schools. Another known issue in the dataset is delays in graduation and changes in graduation requirements due to COVID-19. This is also not well documented, and varies greatly between school, and individuals. Overally, schools administered different policies when it came to how they handled the pandemic, and it is difficult to take into account these variances when aggregating to an average level for the county.

Ideally this analysis would contain data from the 2020-2021 school year and beyond, to review how COVID-19 continues to impact education. Currently, the only data publicly available goes up to the 2019-2020 school year. Another limitation to the data is this only reviews the public school data, as private and homeschooled students do not have their data so easily available.

**Conclusion**

Restate your research questions/hypotheses and summarize your findings.  Explain to the reader how this study informs their understanding of human centered data science.

**References**

A list of publications (blogs, articles, research papers) that you refer to in your text.

**Data Sources**

A list of links to the relevant data sources that you used.

Correlation:

Sliding window correlation

Before estimating the time-varying correlation, we checked the dynamic conditional correlation versus constant correlation using two diagnostics: the E-S and the LM tests. These tests use Chi-square fit values and check if dynamic conditional correlation should be used rather than constant correlation. Table [3](https://www.nature.com/articles/s41598-021-93836-y#Tab3) shows that the constant correlation hypothesis should be rejected for all of the series at p < 0.01. We suggest using a time-varying correlation to monitor the co-movement of symptom search and new cases emergence.