My experience with a one quarter research project in the
Program in Quantitative Social Science at Dartmouth College

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I spent a lot of time the spring and summer before senior year considering whether to complete a senior thesis or a one quarter project. I wanted to make sure I was able to do an interesting and meaningful analysis, but I did not have an idea for a year-long research question. I was worried that not writing a thesis might impact my job prospects (it didn't!), but I also wanted to have time available to work on a few different research projects I was already involved in. I eventually settled on doing a one quarter project in my senior spring and I benefitted a lot from the experience.

At the beginning of the term we had the opportunity to develop our own research question. We could research almost anything we wanted (assuming reasonable scope and data availability). I wanted to do something relevant and I had spent most of my break reading about COVID-19 vaccine equity. So, I chose to investigate whether or not there was any quantitative evidence that wealthy people were taking vaccines intended for poorer communities.

Prof. Cooper (who supervised the 2021 one quarter projects) gave us weekly checkpoints, but much of our work was self-directed. Our group initially met twice a week over Zoom to discuss analysis techniques and provide peer-to-peer feedback on our project ideas. After we all settled on topics, we had weekly meetings to review quantitative methods and our second class was reserved for individual meetings with Prof. Cooper. The most challenging part of my project was deciding how to answer the question. I spent a lot of time talking to Prof. Cooper during Zoom office hours about how to provide the best answer to my research question given data and time limitations – the back and forth was collaborative, because I knew a lot about vaccine distribution and equity while Prof. Cooper was very knowledgeable about possible analysis options. All of these conversations allowed me to feel confident that I was doing high quality research. Prof. Cooper also supported me by providing example R scripts for some of the more complicated analysis pieces to ensure that I could finish my project by the end of the term.

Although I had done similar analysis projects in the past, this project was the first opportunity I had to take complete ownership of my work and to spend a whole class focusing on just one question (rather than rushing to complete and write up an analysis at the end of the course). I have no "counterfactual" for what the class would have been like if it was taught in person, but I thought the virtual learning experience was particularly effective in this course. It allowed me to be more independent and afforded me a lot of autonomy in how I spent my research time. I certainly ran into roadblocks along the way, but I am proud of my paper and I am very grateful to Prof. Cooper for all of his help. Although my project took less time and had a smaller scope than a thesis, I think I learned about similar things: developing a research question, determining an analysis plan, wrangling data from many different sources, refining data visualization skills, and writing a journal article style quantitative research paper.

Here is my abstract, in case you are interested in learning more about my specific project!

In the United States, COVID-19 vaccine scarcity presents a key question for federal and local governments: how can vaccines be distributed most equitably? Federal guidelines recommend prioritizing vaccine access for those at highest risk of severe COVID-19 and for those most affected by the pandemic. Many local governments try to follow these recommendations. However, anecdotal evidence suggests that wealthy people travel to poorer areas in order to get a vaccine before it is available to them in their own community. In this analysis, I employ a series of ordinary least squares models to examine whether there is quantitative evidence for this phenomenon on a nationwide scale. My analysis demonstrates no evidence that wealthy people were taking vaccines from poorer people at the county level from March 27, 2021 to April 29, 2021. Instead, it provides some evidence that local efforts to ensure
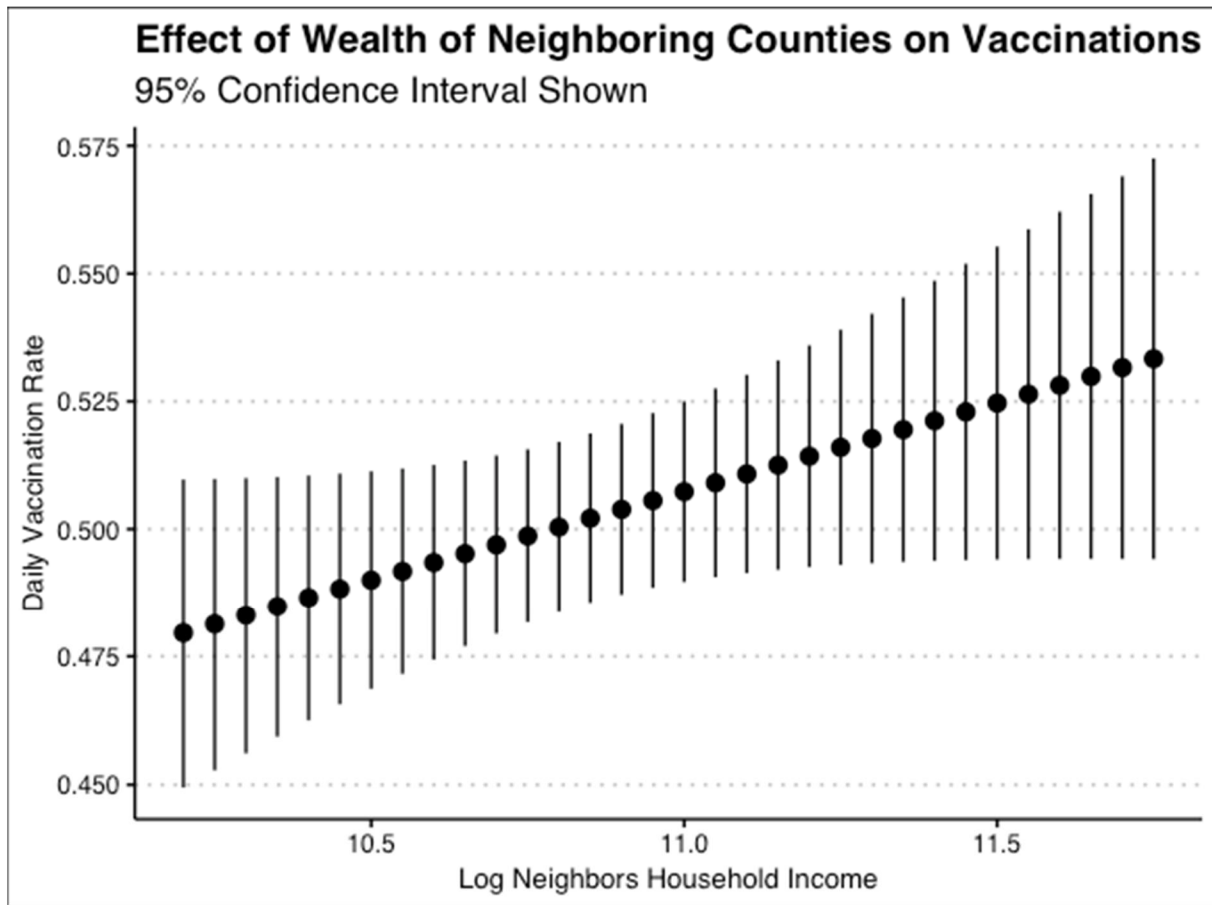
vaccine equity are working. Additionally, it suggests that vaccine uptake is related to a number of unmeasurable factors.

Figure 5: This graph shows expected values for the percent of people newly fully vaccinated each day in each county based on model 3 of Analysis 1: basic OLS regression including all key variables). Neighbors with a larger household income have a small, significant positive effect on the daily vaccination rate. Neighbors household income ranges from $26,900 to $126,750