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

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I was drawn to the Quantitative Social Science major because of the opportunity to develop skills in quantitative techniques and apply them to my interests in public health. I was excited (and admittedly nervous) to apply these skills to my own research question, and it was both challenging and rewarding to traverse the full arc of a research project. For my project, my goal was to gain a more holistic understanding of the impact of childhood obesity on healthcare utilization and expenditure. I focused on the effects of a secondary diagnosis of obesity on the length of stay and cost of hospitalization for the most common surgical, malignant, infectious, and chronic non-communicable principal diagnoses which affect children. My objective was to create national estimates of hospital use and the economic burden of childhood obesity to support the need for more public health spending towards primary prevention of obesity. Overall, I found a secondary diagnosis of obesity resulted in a statically significant increase in the expected log count of days in the hospital by between 0.13 and 0.14 and cost of hospitalization by between $5,281 and $5,748 for all primary diagnoses.

I confronted several challenges as I worked on my research project. The first challenge I encountered was understanding what research had already been done and how I could contribute something new and valuable. I found it very helpful to conduct some preliminary literature review and exploration of data sources over Winterim. When the term began, I already had an idea of what I might want to do for my project and what I could realistically achieve in ten weeks. Finding data was particularly difficult as healthcare data is highly regulated due to privacy concerns. After completing an online training and sending verification of my student status I was finally able to access data from the Healthcare Cost and Utilization Project. My data set contained over 1.2 million discharges which had to be collapsed into meaningful clinical categories using the ICD-10-CM diagnoses and Clinical Classification Software tool. A big learning point from this was it is important to get your data as soon as possible as you don't know what other hurdles or extra steps you will face once you have it!

Once I had cleaned my data, I found it very helpful to speak to the data scientists in the library, particularly Jianjun Hua, as well as my professors to figure out which were the best statistical tests to estimate and how to most effectively present my data. This was the most difficult part of the project for me. Initially, I was hesitant to ask for help because it felt like I needed to figure it out on my own. However, I would recommend asking for help and asking early. These resources exist to help you and I learned so much from asking questions. Asking lots of questions and explaining my project to others also helped me develop confidence. By the time the presentation came around, I felt like I could answer the questions of my peers and professors as I had spent so much time on the project—I had become an expert on my topic.

Although it was initially daunting to have to complete a "mini-thesis" in one term, I grew a lot from this project. I would highly recommend finding a topic you are interested in (and not just a topic with easily available data) as it makes the work far more enjoyable. Get started identifying a research question and data early so that you are able to spend the bulk of the term on analysis and writing. Finally, and most importantly, create personal deadlines and hold yourself accountable so that you are not scrambling to finish at the end! Overall, the one-quarter project was a great way to strengthen my research and communication skills and learn more about a topic that I am very passionate about.