My experience with a one quarter research project in the

[Program in Quantitative Social Science](#) at [Dartmouth College](#)

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The quarter project truly lived up to its description as a culminating experience. Over the course of Winter 2019 I was able to pull together concepts from quantitative courses as varied as probability and network analysis to create a piece of original research. Quantitative methods aside, I found it very rewarding to start a project with a broad research question and answer the question in a meaningful way using real-world data.

I have played chess most of my life and was thus interested in conducting research regarding the Elo rating system, which uses wins and losses to measure the abstract concept of innate ability. The Elo system was originally designed for chess, though I learned through my literature review that it has been the subject of much research and applied to areas as diverse as soccer and cybersecurity. My QSS project builds on prior papers and analyzes results from chess tournaments to identify whether the Elo rating system can become less accurate when applied on a sparse network.

After identifying a research topic, the next step was to collect data. Most statistics classes come with neat, prepackaged datasets, but the real world is not as nice. In order to do anything meaningful, I first had to build a parser to process raw input (and learn how to build a parser), which in and of itself was a very valuable experience. While carrying out my research, I also learned how to effectively manage, merge, and clean large amounts of data, which, while a valuable skill, is not the focus of many intermediate statistics classes.

Analyzing the chess tournament data I collected was conceptually straightforward but nonetheless posed another computational challenge that ultimately expanded my coding ability. With some initial guidance from the course professor and the QSS statistical consultant, I learned to create clean regression tables and graphics that effectively highlight key results. That coupled with our weekly seminars on communicating social science research led to the final product, which you can read [here](#).

I would describe the QSS one quarter research project as an intense process of self-teaching. I faced many new challenges while working on my project, and I learned a new skill each step of the way. Google was able to answer most of my questions, and for the ones it could not, there was a network of QSS faculty that was happy to help. Creating a paper from scratch in nine weeks sounded daunting at first, but the QSS program set many internal deadlines to help everyone complete their projects piece by piece. Looking back, this project improved both my data science skills and my ability to write clearly about statistics.