Kreslyn Hinds
Mentor: Rrita Zejnullahi
Decisions in Risky Situations SPA-DRP
Spring 2023

This quarter I participated in the SPA directed reading program where I completed a basic walkthrough of an ongoing research project being carried out by faculty and higher-level students. There are 2 main research questions: 1) How can we optimize a budget to alleviate poverty in a population? 2) What is the best way to present research findings so that policymakers are encouraged to update their beliefs and make educated decisions based on new information. Through discussion with my mentor and several different readings I was able to grasp the purpose and background of the research project. As a first year most of my classes don't focus on practical applications, by working through the readings I could feel my knowledge stretching to its limit.

The curriculum started with an overview on different poverty measurements and defining a poverty line. Using income and a poverty line we can come up with many different measures to estimate and show poverty differently. For example, the headcount ratio gives the proportion of households that have incomes below the poverty line, whereas the poverty gap shows the gap between the income of an average household below the poverty line as a proportion of the poverty line. In addition, I learned how to fill gaps in a data set, overcoming the monetary constraints put on data collection. To fill in the data I learned about different imputation methods. This included extending assumptions from a sample data set to a population using linear regression and joining two different data sets together. One notable example of joining different datasets for poverty estimation is poverty mapping. This requires combining a large geographical dataset (like the decennial census in the US) to a smaller income survey to come up with income estimates for each geographical sub-group. After poverty measurement and imputation, we moved on to budget allocation and optimization. This included exploring how much of the budget each sub-group of the population should receive to maximize poverty alleviation. Finally, we finished with how people make decisions based on how information is presented. Through the readings I discovered that people may update their beliefs significantly more depending on how information is conveyed.

Overall, this has been a valuable experience, increasing my knowledge and renewing my passion for my studies. By reading papers on actual projects and research it showed me how the theoretical concepts in my classes connect to real world policies and ideas. Integrals are now much more than a mathematical concept; they are a useful tool to measure poverty and optimize budget allocations. As an aspiring actuary coming into this program, I was excited to learn about this specific project. As a health actuary, one of my main tasks in the future will be analyzing the effects of healthcare policy. Healthcare can be used as a proxy for poverty, indicating the strong relationship between these two areas. So having learned about policy related to poverty, I'll be able to apply the same ideas to healthcare policy. I feel so lucky that my first research opportunity expanded my knowledge in a general sense while being relatable to my future career.