Clark Paolini '25

Research Assistant Position – Dartmouth Sociology Department
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With the help of Byrne funds, I was able to spend this summer working as a research assistant for Professor Gregory Sharp from the Sociology Department. I contributed to work on the NIH-R03 grant project, "Racial/Ethnic Disparities in Housing Instability, Extended Kin Resources, and Late-Life Health." This project examines the long-term health consequences of housing instability, and how these stressful experiences contribute to racial/ethnic disparities in late-life health. The research project uses nationally representative longitudinal data from the Panel Study of Income Dynamics (PSID) to investigate the impact of experiences of housing instability such as eviction, home foreclosure, and homelessness on several older adult health outcomes such as cognitive functioning, dementia risk, and psychological distress.

By leveraging panel data, the research project is able to move beyond traditional approaches to regression analysis to marginal structural models (MSM). By calculating inverse probability of treatment weights (IPTW), MSMs can create a "pseudo population" that is not muddled by time-varying confounders. This allows MSMs to construct a counterfactual framework which isolates and then estimates the causal effects of housing instability on health outcomes. Time-varying confounding is a major challenge when dealing with quantitative analyses of social determinants of health. This is largely because socioeconomic factors such as race, employment status, and educational attainment can impact both the probability of receiving the "treatment" of experiencing housing instability and the "outcome" of select health measures. Due to the statistical power of the PSID data, the MSM approach can be used to sidestep this issue entirely and produce robust causal estimates.

This approach, however, requires careful specification of the model, including deciding what time-varying confounders exist and how to control for them in the analysis. As a research assistant, I focused my energy on conducting a literature review of roughly 200 articles to clarify the conceptual framework of our research project and confirm existing relationships within the data. This task created a strong foundation moving into the data analysis phase, which I will assist with in future terms. My experience conducting this literature review built off of the knowledge I obtained in Econometrics, Linear Algebra, Sociological Research Methods, and Health Disparities courses. I was able to combine my theoretical study of Sociology with my practical study of Applied Mathematics together into one coherent project, and in doing so I learned about how these fields intersect in existing social science research. This project confirmed my interest in working in the field of public service to use evidence-based approaches to improve socioeconomic and health outcomes for Americans. I look forward to continuing this project in the future and continuing to build my quantitative skills. Thank you so much to the Byrne family for giving me the opportunity to apply my mathematics skills to the field of health disparities research.