

PhD Academy Scholarship and Research Fund Application



Overview

I am seeking support from the PhD Academy Scholarship and Research Fund to finance cloud computing costs needed for my summer research project. I am studying the impact of local minimum wage policies on housing affordability and stability outcomes. This project involves a large dataset (10s of millions of observations), machine learning for sample selection and high dimensional regression models. Because of the big data nature of the project, a large amount of computing power is needed, which I access through the Google Cloud Computing platform. On Google Cloud Computing, I pay for credits redeemed for storage used and the amount of computing power employed each time I estimate an equation. I estimate that \$500 worth of Google Cloud credits will cover the computing power needed to test and build the estimation models and implement analyses need to reach a final working draft of the study by the end of this summer.

Project Proposal

Minimum wages have been hotly debated by economists for the past decades, and renewed calls for a national \$15 minimum wage in the US has brought the debate back to the forefront of public discourse. Beyond discussion of the federal minimum wage, over 30 states have enacted a minimum wage and the past decade has seen a rapid increase in cities enacting their own wage policies. Economists tend to disagree on the impact of a minimum wage on employment (Neumark & Shirley 2021), but the most recent evidence suggests that there are only modest, if any, disemployment effects (Cengiz et al. 2019, 2020) and negative effects are likely concentrated among young, inexperienced workers (Jardim et al. 2018). But examination of impacts beyond employment have been somewhat neglected.

Although the stated intent of raising the minimum wage usually includes descriptions of providing a “livable wage,” there is very little evidence on the impact of minimum wages and housing affordability—the largest component of what a livable wage should cover. The impact on rent burden (the proportion of an individual’s income spent on rent) is not immediately clear. If the minimum wage raises incomes, housing demand could increase and push up housing rents, as suggested by Agarwal et al. (2019), which leaves the net impact on rent burden ambiguous. If the policy decreases employment, the outcome will depend on the strength of the disemployment vs the increase in incomes among the still employed. Moreover, if disemployment disproportionately impacts teens, any negative impact on housing affordability will depend on the composition of the household since this population is less likely to be a household head.

I will fill this gap by studying the impact of local (state and city level) minimum wage rates on rent burden and housing stability using American Community Survey data from 2005-2019. I will use a machine learning model to predict the minimum wage status of individuals based on demographic information, which vastly improves on previous common methods of sample selection using subpopulations by education or age. I will use a triple differences design to estimate the causal impact of minimum wage increases on rent burden and stability outcomes. The triple differences design compares the difference between affected vs non-affected workers, in treated vs untreated cities, before and after the policy change. Finally, I will examine heterogeneity by in treatment effect by gender, age, race, and household composition using a machine learning causal tree approach.

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Budget

Google Cloud Computing credits: \$500

Timeline

Description	Completion date
Literature review	April 15
Data acquisition and preparation	April 20
Preliminary analyses and model development	May 15
Primary analyses	July 1
First draft of paper (for advisor)	July 15
Revised draft of paper	August 1
Final draft	August 15

References

Agarwal S, Ambrose B, Diop M (2019). Do Minimum Wage Increases Benefit Intended Households? Evidence from the Performance of Residential Leases. *Federal Reserve*.

Cengiz D, Dube A, Lindner A et al. (2019). The Effect of Minimum Wages on Low-Wage Jobs. *The Quarterly Journal of Economics*. 134(3):1405-1454.

Cengiz D, Dube A, Lindner A et al. (2021). Seeing Beyond the Trees: Using Machine Learning to Estimate the Impact of Minimum Wages on Labor Market Outcomes. *NBER Working Paper*.

Jardim E, Long M, Vigdor E et al. (2017). Minimum Wage Increases, Wages, and Low-Wage Employment: Evidence from Seattle. *NBER Working Paper*.

Neumark & Shirley (2021). Myth or Measurement: What Does the New Minimum Wage Research Say about Minimum Wages and Job Loss in the United States? *NBER Working Paper*.