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Understanding Philanthropy and Inequality in the United States
through Probabilistic Regressions

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Bachelor of Science degree in Economics
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Abstract

This paper seeks to analyze and understand the dynamics between charitable donations and income inequality in the United States. Through the theoretical lens of financialization and income inequality, we analyze data from the Panel Survey of Income Dynamics. We utilize probabilistic regression models to find and compare the impact of demographics on the likelihood of an American household donating to charity. Our results show that age, sex, and income have positive impacts on donation likelihoods, while non-white racial groups can be seen having a lower probability of donation. Analyzing household data from lower-income groups allows for a recognizing of the impacts that income inequality has on philanthropy from a donor side population that has scarcely been looked at before.

Keywords

Nonprofit economics, endogenous growth theory, philanthropy, income inequality, probit, probabilistic regressions

Introduction

The previous literature on philanthropy in economics is wide, however, when refined down to analyzing the impact of income inequality on philanthropy, it is quite brief. Granted, there is previous research that establishes charitable giving based on certain demographics, the literature surrounding this topic is not as thorough due to limitations that have only been mitigated in the past decade. Previous literature, along with public opinion, has been dictated through historical narratives set by major philanthropic figures such as Andrew Carnegie or John Rockefeller. These narratives have been criticized in recent years due to their use of philanthropy to destabilize democracy (Reich, 2016). Yet, despite these criticisms, the public opinion regarding philanthropy has stayed practically steady. Dominant public opinion and theory holds that philanthropic efforts exist to combat world matters mostly stemming from socioeconomic issues, such as income inequality. However, certain research has shown that charitable donations can be seen having a negative relationship with rising income inequality in the United States. Unfortunately, the majority of this research has been through the lens of tax-deductible charitable donations, with the most common subject being ultra-wealthy tax units. This leads to a lack of literature regarding non-ultra-wealthy donors and the charitable giving behavior of 'regular' Americans. This paper seeks to fill this gap in philanthropic analysis through the understanding of charitable contributions and its connection to rising inequality in the United States for the bottom 5 deciles of American households by income, surveyed in the Panel Study of Income Dynamics.

Theoretical Framework of Charitable Donations

The prevailing theoretical framework of charitable donations has been discussed since Adam Smith's *Theory of Moral Sentiments* (1759) in which he loosely describes warm glow giving. The first detailed model of this sentiment explained by Smith is from James Andreoni. Andreoni explains this idea through terms of altruism. Specifically, the warm glow giving theory lies in that people derive satisfaction from not only the impact of their giving, but also from the self-derived pleasure of "doing good" (Andreoni 1990). Andreoni describes those who receive a "warm glow" from giving as impurely altruistic. This description is apt for what seems to be most numbers developed by different philanthropic organizations and reporters. Although warm-glow giving can be seen as an explanatory variable for private charitable giving, individual motivations for giving are too complex for this to be a sufficient explanation of giving behavior. Another motivation that can be described is 'public' giving, where donors are motivated by helping others. This motivation has been defined as pure altruism (Becker 1974). Despite two separate motivations, donor behavior can be a mixture of the two types of altruism described above, one or the other, or separate beliefs altogether. A more modern approach to describing charitable behavior is through tax policy and implications.

Charitable Deductions and Tax Policy

The culture of charitable giving in America can be correlated to charitable deductions in relation to income tax. The birth of charitable deductions came in 1917 and has evolved from "a short statutory provision into a complex set of rules." (Lindsey 2003). This charitable deduction amount has grown from 15% to a temporary 60% in 2020. The impact of these tax policies is most aptly described by Charles Clotfelter

(2012:34) when he explains the “sense of participation” that citizens gain from charitable giving. This sense of participation relates to both types of altruism described previously. However, Clotfelter also notes that “tax policy towards charitable giving is vulnerable to inadvertent modification”. This inadvertent modification can come through multiple avenues but is mostly commonly observed in tax evasion and complex legal workings. Such examples are offshore bank accounts, legal loopholes, and other ‘activities’ reserved for the ultra-rich. The connection between tax policy and charitable giving is clear, however, it does not explain changes in charitable giving by households who do not itemize their taxes or donate to non-deductible entities. This lack of itemized deductions has led to a skew in previous literature regarding the changing charitable landscape of America.

Evolution of Charitable Giving

American’s charitable giving patterns have changed over the years in response to economic shocks, societal changes, and other influences. However, the percentage of GDP donated in the United States has been stable at approximately 2% for a few decades (Wing et al., 2008; Giving USA, 2018). In 2017 alone, Americans donated more than \$400 billion, and 70% of this number came from households (Giving USA, 2018). However, these broad numbers fail to recognize the previously established “U-shaped” relationship between percentage of income contributed to philanthropy and household income levels (James and Sharpe 2007), as well as a changing outlook on giving for most of America, and even Canada. “The U-shaped income-giving profile... those in the lower and higher income brackets give higher percentages of their income to charity” (James and Sharpe 2007:218). Adding to this, research has shown that the

percentage of households donating has fallen in both Canada (Payne and Smith 2015) and the United States (Osili and Clark 2019). The causes of this decrease have been researched mostly in terms of The Great Recession, with findings that “the fraction of American donors has declined by 11% since the Great Recession” (Osili and Clark 2019). This research begs the question of which households are continuing to donate, and why have those who have altered their donor behavior done so. As income inequality continues to increase and charitable behavior changes, charitable organizations have also seen a change in their operations.

As well as charitable giving patterns, charitable organizations have also evolved in the United States. The financialization of the US economy has influenced charitable organizations through the increased emphasis on financial intermediaries (Laskowski 2012). Financialization “refers to the increasing importance of financial markets, financial motives, financial institutions, and financial elites in the operation of the economy” (Epstein 2002). This financialization can be attributed to over “half of the decline in labor’s share of income, 10 percent of the growth in [executives’] share of compensation, and 15 percent of the growth in earnings dispersion between 1970 and 2008” (Lin et al. 2011). This trend has found its way into the nonprofit sector, with major foundations receiving larger shares of charitable donations. Although the previously established number of charitable giving per share of GDP has stayed steady, the distribution of charitable giving towards foundations has increased substantially since the 1970s. In 1978, foundations received 4% of total giving; by 2017, foundations received 11% of total giving (Giving USA, 2018). The amount of giving to foundations has reached its highest inflation-adjusted value ever in 2017, totaling \$45.89 billion.

These charitable foundations are not necessarily poor recipients for donations, but this trend of emphasis is worrying for a multitude of reasons. With an increase in emphasis on financialization and marketization, charitable organizations are forced to spend a larger amount on their overhead costs. These overhead costs include financial intermediaries, but also professional fundraisers, as well as increased 'old' costs that existed before financialization. With more money going to overhead, there is an argument to be made that concerns the distribution of these funds and the benefit that comes from increased overheads. As much as charitable organizations have changed, public opinion has stayed steady regarding philanthropy and inequality.

Public opinion holds the idea that philanthropy often seeks to resolve inequality, with major foundations being key components of modern-day philanthropy. "Historical narratives and prevailing theory, both of which imply that high-income households donate rising income shares when inequality increases" (Duquette 2018). Adding credibility to the prevailing narrative of inequality and charity, Payne and Smith (2015) found a positive relationship between neighborhood-level inequality and total charitable giving in Canada. Despite this, the two concede that this "effect on donations is smaller in areas with high levels of inequality at both neighborhood and municipality levels" (Payne and Smith, 2015). However, experimental research that has been done regarding examining the effect of income inequality in terms of endowments on contributions has found that greater inequality decreases contributions (Chan et al. 1996; Buckley and Croson 2006). Their experimental results found that less wealthy subjects give the same absolute amount (and more as a percentage of their income) as the more wealthy. It has also been found that, with randomized endowments,

participants who were awarded more funds contribute lower in terms of a percentage of income (Anderson et al. 2008; Chan et al. 2008). Buckley and Croson (2006) found experimental results that are not in line with their own models, and all these results go against prevailing historical narratives of philanthropy, suggesting the necessity for more research.

Such research has been done, such as by Nicolas Duquette, a leading figure of nonprofit economics. Duquette (2018) focuses on the relationship between income inequality and high-income philanthropy in the United States from 1917-2012. Duquette (2018) finds that the charitable behavior of high-income donors, defined as the top 1% of tax units, has a negative relationship with income inequality. Although Duquette analyzes the top tax units by income in America, his research does not touch on the changes in charitable giving that American households have seen in recent years. The analysis of charitable giving behavior of American households in tax return data only allows for those who itemize their tax returns to be observed. This paper seeks to fill this gap in literature of charitable behavior and its evolution for the general American population while tying these changes in with income inequality.

Theoretical Framework of Income Inequality

A theory developed regarding income inequality was done so by Simon Kuznets when he introduced what is now known as the 'Kuznets curve'. The Kuznets curve graphically defines the theory that inequality should follow an inverse U shape. This theory is understood through the idea of market industrialization in that as an economy develops, income inequality will first increase and then decrease as the economy reaches its steady state. Industrialization in this sense relates to the idea that as

industry becomes a larger part of an economy, inequality will increase as those in the industry sectors see higher income gains. Kuznets describes the shift in income inequality as happening when most of these poor workers move to wealthier cities and enter the industrialized economy. Put simply, this theory purports the idea that the more unequal an economy is, the higher the rate of growth should be. The idea of beta-convergence closely matches this idea, and the two theories in conjunction have previously helped to explain growth trends and their relationship with inequality. Up to the 1970s, the American economy was thought to have entered a state of declining income inequality, which at the time lent credibility to Kuznets' theory and convergence theory. However, in more recent publications, this theory of economic inequality has been criticized and even claimed to be refuted (Fields, 2001). A major component of these criticisms is the relationship between inequality and growth. One theory that has been discussed in the place of both theories described above is called the new growth theory, or endogenous growth theory, developed mostly by Paul Romer.

Endogenous Growth Theory

The new growth theory developed by Paul Romer is coined as Endogenous Growth Theory. This theory upheaves one of the base arguments for Kuznets theory through a transformation of models of economic growth. Before this theory, the idea of economic growth was seen through two variables: capital and labor. This theory introduces a new factor of growth: technology. This theory posits the idea that real GDP per person will continually grow due to the now 'natural' pursuit of profits in modern markets. With an increase in emphasis on competition and change, markets are theorized to grow and transform continuously. Thus, the idea that an economy will

eventually converge, leading to a disappearance of inequality, is unfounded from a logical standpoint. Another key component of this theory is the criticism of previously established relationships between economic growth and external forces. This key criticism directly targeted previously accepted models of economic growth, specifically exogenous growth theories. The relevance of changing growth theories to economic inequality can be seen through the evolving literature in developmental economics. Through the lens of growth theory, the financialization of markets can be fully realized as well as connected to income inequality.

Financialization & Inequality

The increasing emphasis on financialization of economies and its impact on the nonprofit sector has been previously discussed. However, the connection between this financialization and income inequality must be made clear to understand the potential impacts this trend will have on the United States. Endogenous growth theory and its outline of the increase in growth and competition in markets directly relates to financialization of the nonprofit sector through the increase in 'marketization'. Charitable organizations may no longer focus solely on their mission but must also devote time and resources into marketing and financial intermediaries to stay in the public lens. This change in focus has created a shift in charitable donors. Through the previously mentioned increase in overhead costs, organizations utilize financial intermediaries to find fruitful investments of their money. With increasing income inequality, organizations rely on professional fundraisers and financial intermediaries to increase their own incomes, while failing to market to or support lower-income Americans. Although these shifts in charitable behavior are not entirely attributable to financialization in the United

States, the pair of rising income inequality and changes in charitable giving must be analyzed further. The avenue in which I have undertaken to analyze these charitable giving changes and connect them with income inequality is through data analysis of the Panel Survey of Income Data from the University of Michigan.

Data Source

The ongoing research in the field of philanthropy and nonprofit economics has seen a massive benefit with the creation and continuation of the Philanthropy Panel Study (PPS), a subset of the Panel Survey of Income Data (PSID). The PSID is the longest running longitudinal household survey in the world, with a nationally representative sample of approximately 8,000 households in the United States. The PPS subset of this data was added in 2001 and as of today has data collected up to 2017 regarding philanthropic behavior in the year before release (i.e., 2001 for 2000).

The PSID encompasses both charitable donations and volunteering, however, this paper seeks to only analyze the data regarding charitable giving. The PSID measures giving in terms of money, assets, and property/goods to organizations with different goals. These organizations are defined within the dataset through eleven different categories. These categories are defined as: arts/culture, combined-purpose, educational, environmental, for the needy, health, international aid, neighborhood/community, youth/family, other, and religious organizations. Households are surveyed and asked the uniform question, “did you or anyone in your family donate money, assets, or property with a combined value of more than \$25 to religious or charitable organizations?”

As well as containing philanthropic data, the PSID contains detailed demographic information on each household surveyed. The four demographic statistics utilized in my model are age, sex, race, and income. These questions and the data incorporated into the model were all answered by the household head.

Data Adjustments and Separation

The dataset utilized in this paper is directly gathered from the PSID, however, I omit the year 2001 due to limitations of incomplete data that can otherwise be found in the years after. As well as omitting 2001, data is only analyzed from the Family Public Data Index for the sake of uniformity. All data points with omitted or otherwise incompatible answers were removed from the data for the sake of calculations. Such data removed was race defined as 'other', household income below 0, age listed as 999, or the respondent was not head of household.

Groups are separated by income decile to gain a deeper understanding of the differences between households as well as to organize a connection to income inequality. The creation of fixed boundaries for income deciles is established from 2003 data for the sake of uniformity and ease of modelling. The bottom 5 deciles are analyzed and compared in this paper, giving insight on the charitable behavior of households at and below the fifth income decile of the PSID. As well as analyzing income groups, demographic variables are chosen to gain a deeper understanding of how charitable giving behavior has changed for different socioeconomic groups. The model seeks to find which of these demographic variables have a statistically significant impact on the probability of donating, as well as how the direction in which these variables impact donation probabilities.

Regression Model

This paper utilizes a probit model regression to determine the probability that a household will donate given demographic information. Within my own model, these probabilities are compared to analyze changes in charitable giving behavior by age, race, sex, and income decile. The equation depicted below is an explicit enumeration of my probit model utilized in my analysis.

$$\text{Pr}(\text{Donate} \mid \text{LoggedIncome}, \text{Race}, \text{Age}, \text{Sex}) = \Phi(\beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4)$$

The reference group for this model is a white, male, head of household. Each Beta corresponds with the respective variable of: Logged Income (β_1), Race(β_2), Age(β_3), and Sex(β_4). Each regression is run utilizing this model but for different income quintiles. In total, there are 5 income quintiles for each year of data, depicted out below in Table 1.

Quintile #	1	2	3	4	5
Income	\$0 to	\$11,001 to	\$18,801 to	\$27,001 to	\$34,796 to
Range	\$11,001	\$18,801	\$27,001	\$34,796	\$43,301

Table 1

Through this model I can test the potential impacts of these variables and their severity on the probability that a given household will donate.

Results

From 2003 to 2017, the percentage of households that donate to charitable causes has fallen. As seen in Figure 1, below, charitable giving rates have decreased from approximately 64% to just 45% of households surveyed in the PSID.

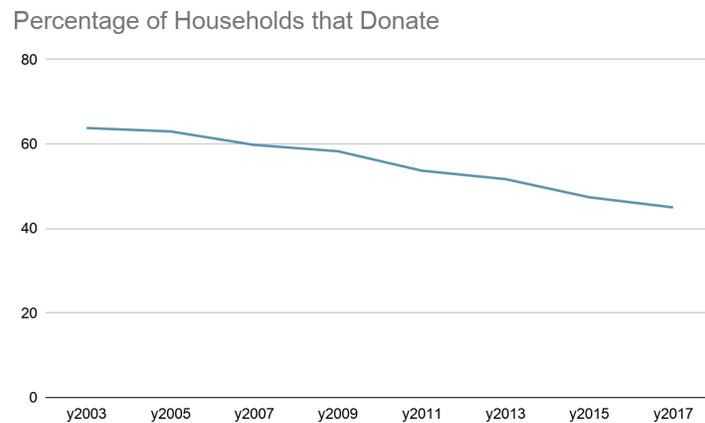


Figure 1

While this information encompasses all households, a distinction must be made for differing behavior between the variables utilized in my model. Namely, the difference between black and white heads of household is stark in their numbers, though the changes in behavior observed are quite similar. As displayed below in Figure 2, both black and white heads of households can be seen declining in terms of percentage donating from 2003 to 2017. The two races both decline by 17% of households donating, however, the gap between the two races is obvious when looking at this figure.

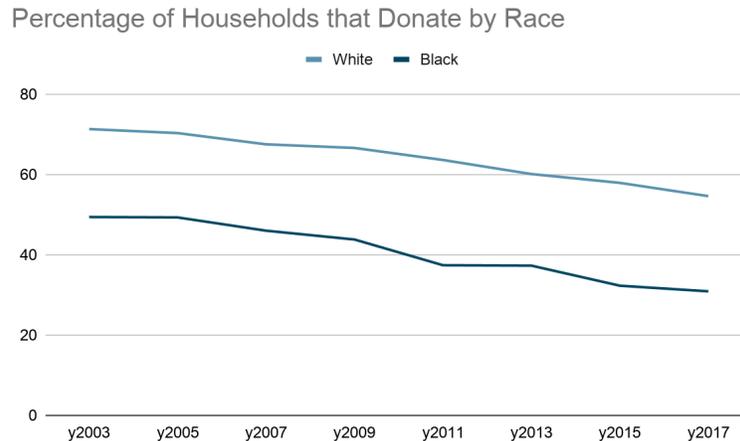


Figure 2

As seen in this graph above, both white and black households face a similar decline to overall households depicted in Figure 1. However, the gap between the two racial groups amounts to a near 20% difference. This disparity between racial groups clearly shows a difference in charitable giving behavior. Past this, the probabilistic regression model shows that when white male head of households are placed as the reference group, equal households that are instead black will see a statistically significant decline in the probability of donating. Out of all regressions ran, being black had a negative probabilistic impact on donation likelihood every time, with most of these results being statistically significant. A breakdown of regression variables and their significance can be found in Table 2, below.

Variable	Age	Sex	LoggedIncome	Race2 (Black)	Race3 (Alaskan/Native)	Race4 (Asian)
Significance (% regressions significant)	85%	30%	20%	68%	28%	10%
Coefficient (% positive of significant results)	100%	100%	100%	0%	37.5%	45%

Table 2

Through the probabilistic regression model, a clear impact on charitable donations is found in age. For all regressions ran, age returns a positive coefficient with nearly all results holding as statistically significant at the 5% level or below. Specific numerations of significance and sign can be seen in Table 2 above. This result shows that as a head of household grows older, they are more likely to donate. This impact on probability can be explained by a multitude of factors. Specifically, data shows that the older a person is, they have a larger amount of savings, time, and motivation to help others than when compared to their younger counterparts. All these contributing factors supports the idea that as one grows older, their likelihood of donating increases. When refined down to by income quintile, the results stay the same, cementing this idea. Moving forward, I will discuss the other variables that are not as clearly laid out in regression results but still paint a strong picture.

Of all regressions ran, LoggedIncome had an 85% positive rate, meaning that logged income has a positive impact on the probability of donating for households analyzed 85% of the time. Of these results, all that were statistically significant were positive, which is displayed above in Table 2. Through 2003 to 2017, there is not a clear change in the impact of logged income in either terms of percentage or coefficient, indicating that this relationship is steady in the population surveyed. The connection here makes sense logically, as a household increases their income by a percentage, their likelihood of donating will increase as well. Moving forward, nearly every single regression said the same for female heads of households – that they would be more likely to donate. The only two regressions that did not have females having a higher likelihood of donating was within the first income quintile. Despite these two anomalies, the relationship between sex and charitable behavior is clear – women are more likely to donate than men.

Race as a variable in these regressions paints a clear difference between white and black household's charitable giving behavior. In each case analyzed, black households were less likely to donate than their white counterparts. Of these cases, a large majority were statistically significant, solidifying the idea that there is a difference between these two races. This difference of racial groups can be seen starkly in the white-black gap, which in media has been talked about as the 'white-black wealth gap'. This gap between white households and equal black households shows a clear difference, but without a clear answer as to why it exists. Within regressions ran regarding other races, defined as 'race3' and 'race4', there is not a clear result either

way, as can be seen in Table 2. These results show the open avenue for further analysis of the relationship between race and charitable behavior.

Implication of Results

In recent years, financialization of the nonprofit sector has increased, while income inequality has also increased. A growth in charitable giving numbers overall is not representative of the change in charitable giving behavior that has been observed in this paper and other literature like it. The ever-increasing levels of inequality in America and the financialization of the nonprofit sector have both impacted the behavior and outlook on charitable giving for regular Americans. As discussed before, these nonprofit organizations that have been 'financialized' may no longer focus solely on their mission, but must also devote time, resources, and funding into marketing and financial intermediaries to stay successful as well as in the public lens. This trend of increasing importance can be seen directly in the changing share of money donated going directly to charities versus the covering the costs of the organizations and professional fundraisers that host and solicit donations. These shares of money can be coined as the 'overhead' of a charitable organization. As overhead increases, donations from those with lesser amounts of wealth or income are decreasing in their impact, while charitable organizations must respond and react to the wealthier donors with more and more emphasis. With the increasing marketization, it is of growing importance that charitable organizations stay responsible and transparent in the disclosure of donation distribution.

Another connection to inequality and charitable giving behavior that is seen in this behavior stems from income inequality by race in the United States. Inequality, either observed through comparisons of real median household income or net worth,

has stark differences between groups broken down by race and ethnicity. While the median household income for a black family in 2017 is approximately \$43,000, a white family has a median household income of approximately \$71,000. These numbers show that for every dollar a median white household earned, a median black household will earn approximately 61 cents. This ridiculous disparity brings insight into the difference between white and black households that were observed in the previous section. Even when income is controlled for, black households act significantly different from their white counterparts. Moving forward, further research could analyze these differences to find a solid numerical link between income inequality and household behavior at all levels.

Conclusion

This paper aimed to identify differences and impacts of charitable giving behavior for middle-income and below households surveyed in the Panel Survey of Income Dynamics. Through evidence outlined in this paper, we find that charitable donation behavior for households has shown a steady decline in the percentage of households giving from 2003 to 2017 despite an increase in charitable giving numbers. Based on theoretical analysis, we both explain and tie these findings in with increases in income inequality, explained through the idea of financialization and endogenous growth theory. Taking a deeper analysis, we find, through probabilistic regression modelling, that increases in age and income, as well as being a female, increase a household's likelihood of donating to charity in any given year of data collected. On the other hand, we find that non-white racial groups, specifically those identifying as black, have a lower probability of donating to charity. When controlling for variables included in this

modelling, there is evidence that these relationships are steady and significant. On top of these points, the introduction of endogenous growth theory rejects previously held beliefs regarding philanthropy, inequality, and the growth of the U.S economy. With endogenous growth theory in mind, it is of utter importance to recognize the differences found in this paper and to understand that they will not disappear on their own. With the growth of technology in all aspects of life, inequality will no longer follow a Kuznets curve, and instead should be dealt with directly and urgently before this problem overrides our societies. This paper addresses a population of charitable donors that has been limited in review due to previous limitations in data that is also most heavily impacted by income inequality. Though these limitations still exist and are discussed in more length in the next and final section, this paper clearly shows an evolution in charitable behavior and its connection to inequality and financialization of the nonprofit sector.

Limitations

Although the dataset and regressions utilized in this paper have accomplished their goal in filling a gap in nonprofit economics literature, there are still limitations that can be mitigated moving forward. This section seeks to discuss these limitations and offer a starting point for further research for those interested.

The first set of limitations can be seen in the dataset utilized, the PSID. Although the PSID is a nationally representative sample of the United States, the data collected on races other than white and black is lackluster for the purposes of research like this. With American Indian/Alaska Natives making up approximately 1.3% of the U.S. population, it is understandable that there will be less than 100 responses in an 8,000-person survey that identify as this race. However, when the data and regressions are utilized to look at the variables 'race3' and 'race4', corresponding to Alaska Natives/American Indians & Asians, respectively, there is not a clear hypothesis to be made either way. This problem of low representation has the possibility of skewing results and impacts the lack of clear results in my regressions. A possible mitigation of this would be a minority-focused survey to collect fuller data on these minority groups. On the other hand, a direction that could be undertaken to further this literature comes with the removal of racial and ethnic variables.

The possibility of removing racial and ethnic demographics comes with an increased focus on variables not included in my regression. Such variables that could be seen having a significant impact on charitable behavior are education, parental education, family make-up, field of work, wealth, etc. Utilizing these variables within a probabilistic model can create the opportunity for a more refined analysis of changing

behaviors. Along with the inclusion of more variables that are available in the PSID, the inclusion of income inequality as a numerical factor in regression modelling is a large avenue for supplemental research. The ability to include income inequality past theoretical workings will solidify findings as well as give a deeper insight on the connections established in this paper. Recommendation for this furthering comes with the inclusion of the Gini coefficient, which is a famous measure of income, and sometimes wealth, inequality for countries. The inclusion of this variable allows for the possibility of recognizing and including wealth disparities as a replacement or an accompaniment to income inequality in a similar future paper.

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