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What's the Difference? Wage  
Differentials and the Donative-Labor  
Hypothesis in Non-Profit Firms

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**What's the Difference?**  
*Wage Differentials and the Donative-Labor Hypothesis in Non-Profit Firms*

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The release of the November fifth employment numbers by the federal government did not leave Americans with confidence about their employment as the nation heads into the second holiday season during this recession. The rate of unemployment held steady at 9.6 percent. Yet, there is one area of American job market that has some glimmer of hope in it. Johns Hopkins University reported in September 2010 that the non-profit sector is the only place in the American job market that seems to be having any steady growth over the past few years.<sup>1</sup>

It is easy to forget that the non-profit sector makes up a robust slice of the American economic pie. Far too often the only image that one can conjure of a non-profit is that of a young, early twenty-something adult standing on a street corner trying to arouse our senses of morality for his or her particular cause. On the other hand, it is seemingly difficult to conjure up images of the accountants who work for PETA. Yet, those who work in the non-profit industry all have word of caution for the would-be jobseekers: You will not get rich working for a non-profit.

Is this statement true? If it is true then it leads to the inevitable question: Why would anyone accept lower wages? This is particularly troubling when drawing upon some basic economic framework: higher wages create a higher income, which means more acquisition of goods and services, which allows individuals to obtain higher utility in their lives. Thus, no rational individual would choose to put themselves in a lower economic class and subsequently there would be no one employed at a non-profit.

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<sup>1</sup> (Bilzor 2010)

With a bit of investigation it becomes clear that labor economics supplies several reasons why an individual would choose to accept a lower wage. Some of these reasons are: the atmosphere at that particular job, some sort of utility gained from working, some benefits package associated with that job, etc. Economists studying this phenomenon have been focusing their research on proving that the reasons hypothesized correlate with the lower wages actually observed in the for profit and non-profit industries. The dominant literature states that individuals take lower wages because of particular phenomenon called the donative labor hypothesis.

From the very basic overview above, there are three objectives in this paper. First is to show the existence of wage differentials. The second objective is to investigate the reasons why individuals would take lower wages at a non-profit and try to show that these reasons exist empirically. Thirdly, to prove or disprove the postulate that the donative labor hypothesis is not as important as other factors when explaining wage differentials.

To facilitate achieving these goals, this paper will begin by laying out the economic theory behind wages. Then it will move to looking at the current research on the topic of wage differentials, which will be followed by an econometric model. Lastly, to conclude there will be a discussion of the results.

## **Labor Theory**

Firstly, there needs to be a discussion about economic labor theory, as it provides most of the backbone to this paper. Significantly, standard labor theory assumes that all jobs are the same. Each individual worker is indifferent to working between one firm and

any another, assuming wages are the same. Although this is nice for simple modeling, we want to go a bit deeper. Thus we must amend our model. What will happen when a worker must choose between two firms offering the same wage? The answer requires a more realistic model, which takes into account the characteristics of the particular job when an individual considers taking that particular wage rate. These characteristics can be things the individual considers good or bad characteristics. For example, a risk adverse worker would demand a higher wage rate of a job that is unsafe, compared to a similar job that does not exhibit those characteristics.

The characteristics that we will examine are the ones that increase utility. The reason for this is because people employed by non-profits must gain some sort of utility to make up for the fact that they receive diminished wages relative to those received at a comparable job. With the increased utility received from working at the non-profit, this creates incentives such that some individual will choose to work for the non-profit firm. In order to know what these characteristics are, we will turn to scholarly literature surrounding this topic.

## **Literature Review**

Interest in wage differentials can trace its scholastic origins to Handsmann's 1980 article on the non-profit sector. Since then, two dominant camps have developed to explain the wage differentials.

The first major explanation is the donative labor hypothesis. This particular theory states that employees willingly take a pay cut in order to donate to the non-profit. The reason why an individual would do this is because they believe that the particular product

produced by the non-profit is different from that in the for-profit sector. Therefore, the non-profit serves to correct a market failure of some sort.

The second category of explanation for wage differentials does not have an easily referable name similar to the donative labor hypothesis. Simply, this theory states that there are a number of observable and unobservable differences in the characteristics of the non-profit job. Some of these characteristics are quality of life, decreased pressure to cut costs, a particular set of benefits associated with that job (such as education benefits at a university), and anything else that could be used to describe increased utility.

There have been empirical articles written about wage differentials as early as 1983. Yet, as Christopher Ruhm and Carey Borkoski pointed out in their 2003 article, there have not been many definitive results from these studies.<sup>2</sup> Examining the most recent studies available we can see that the scholarly literature lacks several aspects, which this paper brings to this topic.

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<sup>2</sup> (Ruhm and Borkoski, Compensation in the Nonprofit Sector 2003, 995)

**Table 1: Literature Review Table**

Study	Data	Results	Comments
Laura Leete (2000)	Five Percent Public Use Microdata Sample of 1990 census	Postulated that intrinsically motivated people work for non-profits and further showed wage differentials between the for-profit and non-profit industries. The areas which had the most concentrated differentials were in the managerial and professional industries.	There is no inclusion of any other factors other than standard social capital explanation. This article does do an excellent job of breaking down the workers by race, occupation, and industry.
Laura Leete (2001)	Five Percent Public Use Microdata Sample of 1990 census	Negative differentials in legal services, broadcasting, publishing, entertainment, elementary and secondary schools, job training firms, vocational training firms, and research facilities could be explained by the donative labor hypothesis. While the paper rejects an economy wide donatives labor explanation for all non-profits.	Breaks it down by industry, sector, and whole economy. Yet, does not have any sort of proxy to measure some of the intrinsic utility gained from employment (i.e. benefits, working environment, etc.)
Christopher J. Ruhm & Carey Borkoski (2003)	1994-1998 Current Population Survey Outgoing Rotation Groups. Specifically 25-55 year olds.	Disproves the donative labor hypothesis, postulating that the lower non-profit wages are due to most of these firms situated in low paying industries. Further the transition from non-profit to for profit and vise-versa there are very little changes to earnings.	This paper does an excellent job at showing not only industry break-downs over time but also tracking worker movement between industries. What is lacking is any sort of inclusion of intrinsic and hard to observe factors of the job.
Lester M. Salamon & S. Wojeiech Sokolowski (2005)	The Quarterly Census of Employment and Wages Program 1995-2003 data	Non-profit wages were generally lower. Although, in industries where non-profits compete with for profit industries, the wages in non-profits are larger.	The authors do not make any mention of comparing non-human capital attributes of the workers, nor the jobs in this study.
Haruko Noguchi & Satoshi	Statistical Survey on Nursing	Non-profit wage premium in Japan's long-term care market. Certain factors such	Tried to filter out unobservable qualities of each job via Heckman's two-stage approach.

Shimizutani (2005)	Home Employee 2000 data.	as worker's age contribute to said premium.	Included things like benefits and whether the individuals received healthcare.
Matthias Benz (2005)	American National Longitudinal Study of Youth years 1994, 1996, 1998, and 2000. Also British Household Panel Survey from 1991-1999	Found that employees are more satisfied with their work, and that working for a non-profit was the strongest statistically significant variable. Leading the authors to postulate that non-profit firms attract altruistic people	This data incorporates all of the possible standard human capital explanations for wage differentials. What is lacking is anyway to tell which industries were involved in these surveys or if the effects varied between industries.
Thomas Cornille, Ronald Mullis, Ann Mullis, and Michael Shriner (2005)	Surveyed 558 different faith based, non-profit, and for profit childcare centers in one south eastern state.	Primarily used survey questions to investigate intrinsic attributes of childcare centers. These survey questions covered benefits, education, and work environment. They found that there was no difference in satisfaction between for profit and non-profit workers. Further, Cornille et al. found that they both received similar working conditions	This data only looks at education and none of the other standard factors when used to describe wage differentials.

As illustrated in Table 1, the seven most recent articles on wage differentials have made no attempt to use any data that is before the economic crisis. In addition, it becomes evident that most of the variables used in these studies do not include any sort of measurement of non-standard human capital variables. Thus this paper attempts to lend to the debate about wage differentials by using an updated data source and include some variables to try and measure the other intrinsic utility producing aspects of employment.



## **Data**

The particular data that were used for this paper are from the 2009 American Community Survey Public Use Microdata Sample (ACM PUMS). This data were collected via the US Census Bureau's program called DataFerrett, which is a new data analysis and extraction tool. Out of the 376 possible answers to the survey, this paper focuses on eight responses. Those responses are: age, race, wage/salary, income, sex, insurance through a current or former employer/union, the particular industry that the individual worked in, the educational attainment, and the class of worker. All of these variables are being used to try and predict wage/salary income.

From the eight explanatory variables: sex, age, race, and educational attainment are the standard human capital explanations for wage and salary income. It would be expected to see that being female and non-Caucasian have a negative effect on wages, while education and age should have a positive effect. The remaining variables are intended to explain some of the different hypotheses behind wage differentials.

## **Model**

In trying to measure non-profit wages, we have identified eight main variables and had to alter the responses from the survey. From the raw data, non-profit wages, for-profit wages, and industry level non-profit and for profit wages were created.

The class of worker variable describes what type of firm the respondent is employed at. Answers to this could be: private firm, non-profit, any level of government,

self-employed, working for family without pay, or unemployed. This variable will be used to help us distinguish non-profit wages as well as non-profit industries. To achieve this, the model will have to create a dummy variable where one represents non-profit and zero represent for profit. Then using these transformed variables to filter out for profit and non-profit wages

The purpose behind choosing the industry variable is to try to prove the donative labor hypothesis. If the hypothesis is correct, then a non-profit industry should be statistically significant. This is because the product that is offered, as well as the market failure that is corrected by the non-profit is important to the individual. Thus this particular variable should have a negative effect on the wage for non-profit industry if the donative hypothesis is correct.

Out of the hundreds of different industries that were listed in the responses for the AMC PUMS survey, only 8 particular industries were chosen. The eight industries are: medical and hospitals, museums/art galleries/entertainment, medical nursing care facilities, individual and family social services, community food and housing services, childcare and daycare services, religious organizations, and periodical/book/directory publishing companies. This particular collection is supposed to represent both social and human services, commonly referred to 501 (c) 3 organizations, as well as other sector, of the non-profit industry.

The last variable chosen was whether or not the individual received insurance from his or her job. This will help represent the benefits that the individual can receive by working for a non-profit. Although health insurance is not the only benefit that an

individual can receive, it was the only one that was available with the data. This particular variable should be negative as an increase in benefits would be acceptable in place of decreased wages.

Using the data set and industry classification information, it was possible to create a set of dummy industry variables. Since all of the responses were what industry the individual was employed in, eight separate categories were created for each different job. A one denotes them participating in the job that the category is measuring and a zero for every other industry. These dummy industries are: *Hospitals*, *Art*, *Nursing*, *Indivserv*, *Commserv*, *Childcare*, *Religious*, and *Publishing*. Then these eight variables were copied and transformed using the class of worker information to create dummy non-profit industry variables, e.g. *Non-Profit Hospitals*, *Non-Profit Art*, etc.

Lastly the sex, insurance, and race variables were turned into dummy variables. A one denotes a worker that was female, received insurance from their job, and is not white in the data set.

## **Analysis**

In order to try and understand wage differentials, this paper has fabricated four different types of models from the survey data. The four models are: one that tests the full market, one that sorts non-profit and for-profit wages, one that tests for the donative labor hypothesis, and the last model that separates non-profit wages and for-profit wages into the industries selected for this study.

The purpose of creating four separate models is to try and get a deeper understanding of wage differentials by approaching it in several ways. Logically the first model to examine is the full market wage model.

#### *Model Set 1*

The full market model measures all the wages from the PUMS survey and applies the standard human capital explanation; which are age, education, sex, and race. Race and sex are dummy variables in this model; with a one denoting the individual being a female and non-Caucasian, respectively. The last variable that was included was a dummy variable that gave a value of one if the individual worked for a non-profit.

It is important to address why sex and race are included in this full market model, even though these are not standard explanations for wage differentials. The reason why these variables were included is because when initial tests were done without these variables the model lacked explanatory power. Thus, since these factors are acknowledged to affect wages garnered by individuals, the decision was made to include them for the sake of explanatory power.

What is intended to be uncovered by this model is, when looking at the economy as a whole, does working for a non-profit actually decrease your wages? This is an important first question to be answered. As illustrated in the literature review, some economists postulate that there is no difference between wages received in the for-profit and non-profit industries.

Moving on to Table 2 we can see that, as predicted the COW (class of worker) variable has a negative coefficient. Thus, as we set out to prove, non-profit workers do make less on average in the market as a whole. Further, the coefficients on sex, race,

education obtainment, and age, behave as would be expected. What can also be observed from Table 2 is that all of the variables, excluding our non-profit variable, are significant at a .001 level. Lastly, what needs to be examined is the explanatory power of the model and if it has any symptoms of autocorrelation, heteroskedasticity, or multicollinearity.

**Table 2: Full market Test**

Variable	Mean	Standard Deviation	Coefficient	Significant at level	VIF
WAGE	33764.59	44088.65			
AGEP	44.64	14.829	215.684	0.001	1.016
SEX	0.77	0.419	-15669.7	0.001	1.016
RACE	0.24	0.429	1620.222	0.001	1.026
ED	18.89	2.977	4875.83	0.001	1.044
COW	0.37	0.484	-485.036	0.05	1.055

When looking at Table 3 it is evident that this model does not have a large amount of explanatory power. Further, it would not be expected from this type of data to have any issue with autocorrelation or multicollinearity. The model does not show signs of being plagued by either of the aforementioned ailments. This is illustrated by a Durbin-Watson statistic very close to 2 and variance inflation factor well below 4. Therefore, the only model-skewing affliction to be tested for is heteroskedasticity.

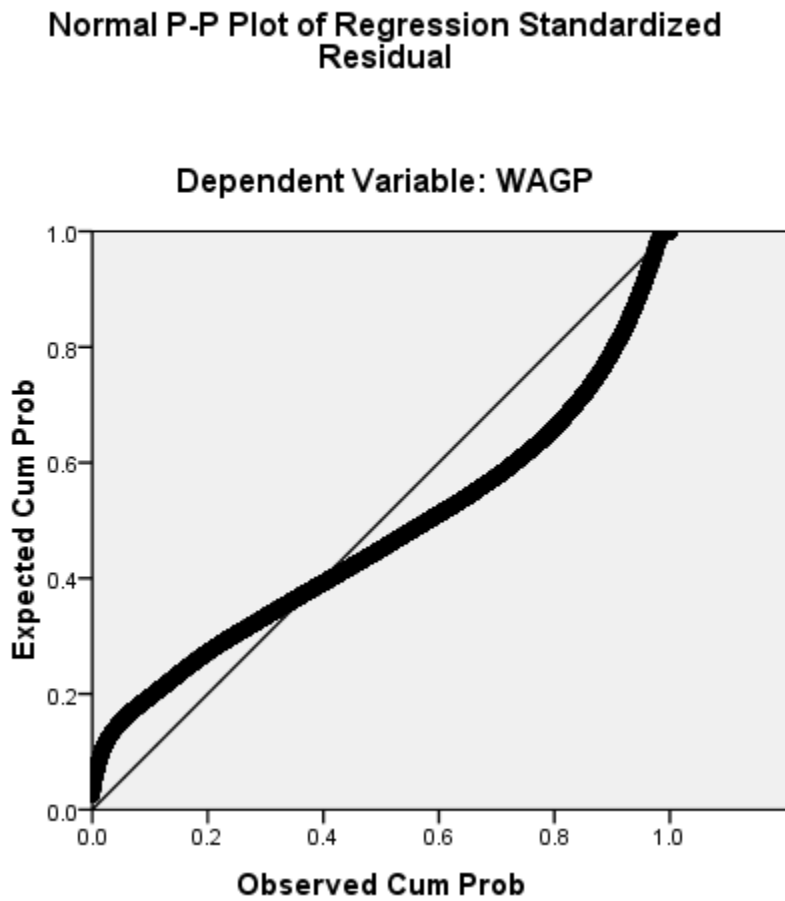
**Table 3: Full Market Predictiveness**

R <sup>2</sup>	Adjusted R <sup>2</sup>	Durbin-Watson
0.143	0.143	1.954

In order to test for heteroskedasticity, a normal probability plot of regressions was preformed. Labeled Table 4 in this paper, it can be seen that data points oscillate off of the line, indicating that there are issues with heteroskedasticity in the model. Since the

data are cross sectional wage data, it was very likely that this problem would be incurred. What this means for this model is that it is a possibility that the variables appear more significant than they actually are. Yet, this will not be a problem since the only concern of this model was to show that there is negative effect associated with working for a non-profit.

**Table 4**



*Model Set 2*

The second model set separates the for-profit and non-profit wages from the data sample and observes how the standard human capital variables affect the two sectors.

Thus there were two models created for the non-profit and for-profit industries. Both of these models measured wages against age, sex, education, and race for the two industries.

When comparing Tables 5a and 5b there are two conclusions that are immediately evident. First, the mean in the for-profit industry is larger by five thousand dollars. This fact confirms the conclusion from the previous model; namely, that wages in the non-profit industry are less than those received in the for-profit industry. A subsequent even more intriguing thought is that the means for age, sex, education, and race are all equivalent in both sectors. This equality of means leads to an interesting conclusion about the data set: an average individual has similar amounts of human capital and diversity in both industries.

The second observation that can be drawn comes from observing the two tables and the coefficients of each model. The coefficients on education and race in the for-profit industry are much larger than in the non-profit. Surprisingly, age and sex are larger in the non-profit industry than in the for-profit industry.

**Table 5a: For-Profit**

Variable	Mean	Standard Deviation	Coefficient	Significant at level	VIF
For Profit Wages	19655.7781	36866.12323			
Age	44.64	14.829	50.804	0.001	1.005
Sex	0.77	0.419	-6141.306	0.001	1.017
Ed	18.89	2.977	2315.575	0.001	1.009
Race	0.24	0.429	4671.828	0.001	1.021

**Table 5b: Non-Profit**

Variable	Mean	Standard Deviation	Coefficient	Significant at level	VIF
Non-Profit Wages	14108.8145	33754.11855			
Age	44.64	14.829	163.301	0.001	1.005
Sex	0.77	0.419	193.92	0.001	1.017
Ed	18.89	2.977	27.465	0.001	1.009
Race	0.24	0.429	190.254	0.001	1.021

When looking at Tables 6a and 6b, we see that neither model has much explanatory power. Though, when comparing the two adjusted  $R^2$ , it can be seen that the non-profit model has slightly more explanatory power.

What can be gained from these two models is that there is a need to add in additional factors to try and explain wages. Whether it is in the for-profit industry or the non-profit industry, the simple human capital explanatory variables are not enough.

**Table 6a: For-Profit Predictiveness**

$R^2$	Adjusted $R^2$	Durbin-Watson
0.043	0.043	1.939

**Table 6b: Non-Profit Predictiveness**

$R^2$	Adjusted $R^2$	Durbin-Watson
0.078	0.078	1.940

*Model Set 3*

As illustrated in the second model set, there is a need for the inclusion of other variables. Thus, model set three gets at the core question that was posed at the beginning of this paper, which is testing the donative labor hypothesis.



In testing for the donative labor hypothesis there were thirteen variables examined against non-profit wages. Five of the variables were age, sex, race, education, a dummy variables denoting insurance provided by the job, and eight dummy variables representing the different non-profit industries selected to be studied. As mentioned above, these industries were arts, publishing, community services, individual services, childcare, education, and religious organizations. Of these variables, we would expect the coefficients on everything excluding education and age to be negative.

The first thing that is notable from the model was the overall explanatory power is 40 percent of the data, as depicted by Table 7. Normally this would be a cause for concern, yet there are two reasons why this is actually a very good number. First, is that most of the empirical literature on this topic have models that range from 30 to 40 percent explanatory power. The second reason is that, by omission, this model does not have every possible factor that could be used to explain non-profit wages. Thus the fact that 40 percent is explained by essentially the donative labor hypothesis seems to not only show its importance, but also hint that it is certainly not the most important factor in explaining non-profit wages.

Turning to Table 8 we see that all of the variables are statistically significant at the .001 level. Though what is troubling is that the insurance variables, all of the industry variables, and race are not negative as was initially predicted.

**Table 7: Non-Profit Wages Predictiveness**

R <sup>2</sup>	Adjusted R <sup>2</sup>	Durbin-Watson
0.404	0.404	1.972

**Table 8: Non-Profit Wages**

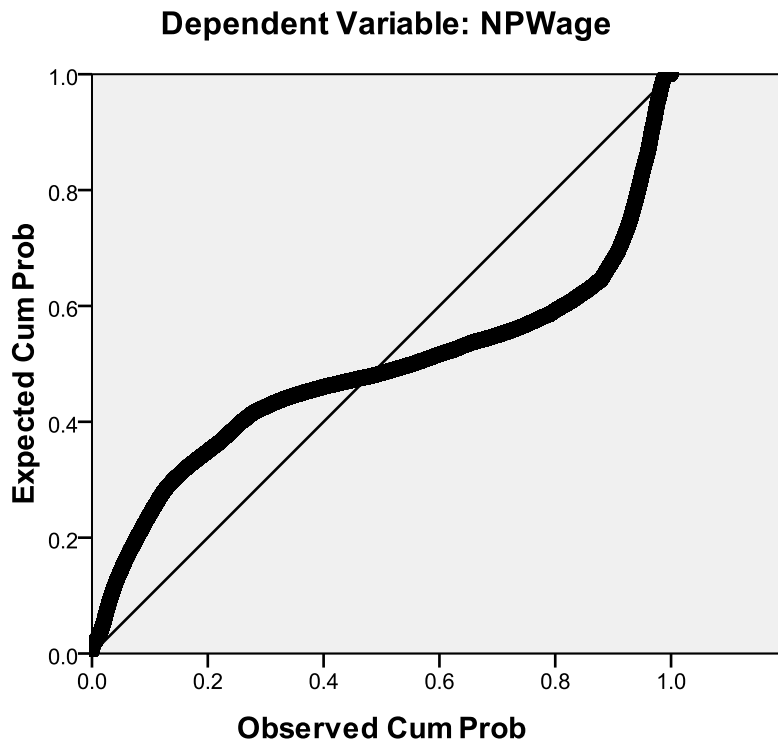
Variable	Mean	Standard Deviation	Coefficient	Significant at level	VIF
NP Wages	14108.8145	33754.11855			
Age	44.64	14.829	68.063	0.001	1.027
Insurance	.72	.448	4125.61	0.001	1.093
Race	.24	.429	743.558	0.001	1.034
Ed	18.89	2.977	1319.29	0.001	1.107
Sex	.77	.419	-7910.485	0.001	1.051
NP Art	.088	.09342	24000.084	0.001	1.009
NP Childcare	.0286	.16673	15755.395	0.001	1.02
NP Community Service	.0069	.08269	22106.665	0.001	1.006
NP Hospitals	.1665	.37256	51854.385	0.001	1.114
NP Individual Service	.0433	.20362	25911.583	0.001	1.028
NP Nursing	.0255	.15762	28884.931	0.001	1.016
NP Publishing	.0016	.03985	39836.949	0.001	1.002
NP Religious	.0931	.20062	19516.108	0.001	1.119

We can see from table 8 that the Durbin-Watson statistic is 1.972, which signals no autocorrelation. Similarly, the check for multicollinearity shows from the VIF column on table 7 that none of the variables are exhibiting multicollinearity.

Yet, when looking at table 9 of the normal probability plot of regressions, it can be extrapolated that there is a huge issue with heteroskedasticity. While the usual transformation to be applied to a model exhibiting this weakness is to create a weighted linear regression this was not done. The reason being that since this is data reflects the entire population of the United States it would be hard to divide it by a coherent factor. Thus, the only option that is left is to make a log-linear model. The new log-linear model is summarized in tables 10 & 11

**Table 9: Non-Profit Wages Probability Plot**

**Normal P-P Plot of Regression Standardized Residual**



When looking at the transformed model it is evident that two important events have happened. First, is that the models predictive power has decreased to about 35 percent. Secondly, the coefficients on the variables have changed to be in line with the theory. Further, it seems that non-profit childcare and non-profit religious firms have the largest coefficients, while publishing and nursing have the smallest effect upon non-profit wages. Lastly, non-profit hospitals have been excluded because of a lack of non-zero wages from those who work in the non-profit industry, reported by the data.

**Table 10: Natural Log of Non-Profit Wages**

Variable	Mean	Standard Deviation	Coefficient	Significant at level	VIF
LN NP Wages	10.1105	1.20923			
Age	45.94	14.300	0.012	0.001	1.037
Insurance	.80	.400	0.572	0.001	1.127
Race	.18	.385	0.089	0.001	1.029
Ed	19.59	2.656	0.132	0.001	1.077
Sex	.72	.451	-0.34	0.001	1.101
NP Art	.0230	.14995	-0.856	0.001	1.035
NP Childcare	.0741	.26197	-1.083	0.001	1.123
NP Community Service	.0176	.13159	-0.673	0.001	1.033
NP Individual Service	.1130	.31663	-0.558	0.001	1.107
NP Nursing	.0671	.25024	-0.308	0.001	1.006
NP Publishing	.0042	.06482	-0.029	0.001	1.332
NP Religious	.2440	.42952	-0.984	0.001	1.029

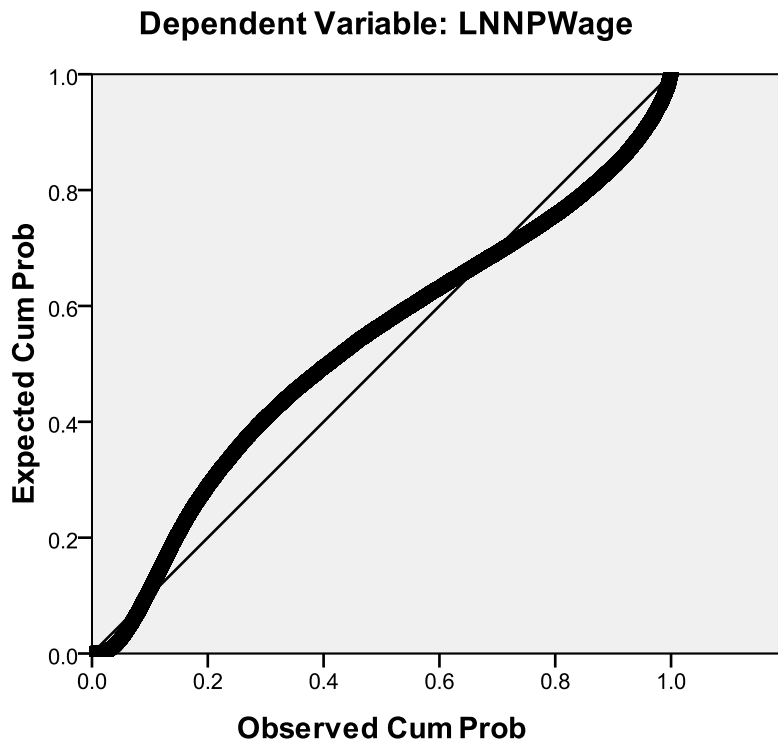
**Table 11: Natural Log of Non-Profit Wages Predictiveness**

R <sup>2</sup>	Adjusted R <sup>2</sup>	Durbin-Watson
0.353	0.353	1.982

Turning to the Normal Probability Plot, labeled Table 12, it is evident that the model has become more normally distributed. That said it still exhibits signs of heteroskedasticity. This is somewhat to be expected since the transformation that was used is not the strongest when dealing with this type of error.

**Table 12: Natural Log Probability Plot**

**Normal P-P Plot of Regression Standardized Residual**



From this model what conclusion can be drawn is that lower wages at a non-profit can be attributed to the donative labor hypothesis. Yet, because the insurance variable was statistically significant in both models coupled with the fact that the model only truly predicted about 35 percent of the data leads to the conclusion that there is something to the second hypothesis posed by the literature. This conclusion bring out the fourth and last set of models, which try to understand just how impactful the donative labor hypothesis truly is at an industry level.

#### *Model Set Four*

Model set four is very different from the three previous model sets. Model set four seeks to examine the donative effect upon each individual industry. The motivation behind this model set is to try and examine the question of if certain industries are more affected by the donative labor hypothesis than others. Thus, what was done in this model set was to separate all of the wages into for profit and non-profit for each of the industries in the data set. This resulted in fifteen separate models, rather than sixteen, because there were no for profit religious organizations.

The dependent variables of for profit wages of an industry were measured against age, sex, race, insurance, and education. Then a mirror model of the non-profit wages for that particular industry was created using the same variables as the for profit model, with the addition of a dummy variable that indicated its non-profit status. Similar to the previous model set, if the donative labor hypothesis is correct, then this non-profit indicator should be statistically significant and have a negative coefficient.

As with all of the other previous models, the means and standard deviations on the variables of age, race, sex, and level of education were constant throughout all of the models. Further, the dummy variables for insurance provided by the employer had a mean value of 0.72 throughout all of the models. This signals that most of the employers provided insurance as a benefit.

One of the first conclusions that can be drawn from these models is that the industry for profit models have extremely poor explanatory power. The lowest of these are the childcare and community service industries with an adjusted  $R^2$  of 0.001 and 0,

respectively. All of the non-profit models have strong explanatory power when compared to the previous model set. As seen from Table 13, the model with the lowest explanatory power is the non-profit art industry and the highest is the publishing industry.

This is particularly interesting because of the fact that the strongest model has only five percent explanatory power. The lack of explanatory power is troubling, especially because for profit wages should be mostly explained by the standard human capital variables included in the model. The fact that these standard variables do not even cover ten percent of the data observed indicates the importance of looking beyond the easily measurable human capital explanations.

**Table 13: Predictiveness of Each Industry Model**

Model	R	Adjusted R <sup>2</sup>	Durbin-Watson
For Profit Hospital Wages	0.242	0.058	1.937
Non-Profit Hospital Wages	0.659	0.434	1.969
For Profit Art Wages	0.104	0.011	1.945
Non-Profit Art Wages	0.624	0.39	1.971
For Profit Nursing Wages	0.064	0.004	1.956
Non-Profit Nursing Wages	0.699	0.489	1.996
For Profit Individual Services Wages	0.058	0.003	1.936
Non-Profit Individual Service Wages	0.696	0.484	1.974
For Profit Community Services Wages	0.019	0.00	1.987
Non-Profit Community Services Wages	0.667	0.445	2.001
For Profit Childcare Wages	0.094	0.009	1.954
Non-Profit Childcare Wages	0.647	0.419	1.991
Non-Profit Religious Wages	0.68	0.462	1.993
For Profit Publishing Wages	0.092	0.008	1.943
Non-Profit Publishing Wages	0.714	0.51	1.993

The next observation from this model set is derived from the means. Observing the results from Table 14 illustrates that the means of all non-profits are lower than the for profit firms in every industry; the only exception is in the community services industry. Interestingly, the individual services and hospital industries exhibit the closest means when comparing the for profit and non-profit wages. Further, the publishing and nursing industries exhibit the largest differences with at least a one thousand dollar difference between the for profit and non-profit firms. The conclusion that can be drawn



from this table is that the original intuition of the previous models is correct: non-profit workers make less on average. What is surprising is the varying degree of the difference between the industries examined in this paper.

**Table 14: Descriptive Statics of Dependent Variables for Each Industry Model**

Variable	Mean	Standard Deviation
For Profit Hospital Wages	12745.4506	33654.51670
Non-Profit Hospital Wages	9145.4543	31553.89574
Non-Profit Hospital	0.1665	0.37256
For Profit Art Wages	554.9700	5385.39489
Non-Profit Art Wages	235.9772	4013.25629
NP Art	0.0088	0.09342
For Profit Nursing Wages	2705.8175	11607.82093
Non-Profit Nursing Wages	720.6132	6387.21623
Non-Profit Nursing	0.0255	0.15762
For Profit Individual Services Wages	1416.3992	9144.01126
Non-Profit Individual Service Wages	1190.7395	8072.45453
Non-Profit Individual Service	0.0433	0.20362
For Profit Community Services Wages	54.2633	1806.05531
Non-Profit Community Services Wages	160.6318	2896.15407
Non-Profit Community Services	0.0069	0.08269
For Profit Childcare Wages	1001.8245	5828.43347
Non-Profit Childcare Wages	426.8096	3848.06092
Non-Profit Childcare	0.0286	0.16673
Non-Profit Religious Wages	2159.2525	10052.74025
Non-Profit Religious	0.0931	0.29062
For Profit Publishing Wages	1177.0526	12400.47955
Non-Profit Publishing Wages	69.3376	2433.95714
Non-Profit Publishing	0.0016	0.03985
Age	44.64	14.829
Race	0.24	0.429
Sex	0.77	0.419
Insurance	0.72	0.448
Education	18.89	2.977

Not surprisingly, model set four did not exhibit any signs of autocorrelation or multicollinearity. Similar to the previous model set, all of the models displayed significant issues with heteroskedasticity. Unlike the other models, the natural log transformation can not be applied to these model sets. This is because if one attempts to perform a natural log transformation, the dummy variables for non-profit status get excluded. The reason for this restriction is that the non-profit dummy variable in the data set will be equal to 1. Thus, this will cause the program to fail to run because it sees the equation as having two constants in the equation, which causes perfect collinearity. The result of the inability to deal with heteroskedasticity means that the standard errors of the variables will be biased. What this means is that significance tests on the coefficients are potentially biased.

Tables 15*a* through 15*h* display all of the coefficients of each of the nine industries. Yet, it is important to note that there is no table displaying the for profit religious industry. This is because, by definition of US tax code, there are no such organizations.

It is much harder to make generalizations from the information in Table 15. The reason is that there seems to be no common theme in the coefficients. For example, the theory dictates that the coefficients for sex, race, insurance and non-profit status be negative. From Table 15, it can be seen that there are very few instances where any of the variables display the correct sign, let alone the proper sign happening more than once in a particular industry model.

What can be said about Table 15 is that in the for profit industry every variable, other than race, was not statistically significant at least once. In the non-profit industry,

only sex and race status were statistically insignificant. Further, there was never any similarity in what variables were not statistically significant across industries. For example, in the for profit model of the publishing industry, age was statistically insignificant while in the non-profit model, only race was statistically insignificant.

Interestingly, when looking at the for profit side of the industries, age is statistically insignificant the most often, even at the 90 percent confidence interval. By comparison, sex was statistically insignificant twice, while race was insignificant three times at the 90 percent confidence interval.

**Table 15a: Hospital Industry Coefficients**

Variables of Model FP Hospitals Wage	Coefficient	Significance level	VIF
Age	42.969	0.001	1.005
Race	4621.214	0.001	1.023
Sex	-4785.205	0.001	1.009
Insurance	9576.835	0.001	1.069
Education	1838.736	0.001	1.080

Variables of Model NP Hospitals Wage	Coefficient	Significance level	VIF
Age	42.88	0.001	1.007
Race	617.651	0.001	1.024
Sex	-5047.09	0.001	1.009
Insurance	1707.796	0.001	1.089
Education	855.572	0.001	1.095
NP Status	53461.41	0.001	1.049

**Table 15b: Art Industry Coefficients**

Variables of Model FP Art Wage	Coefficient	Significance level	VIF
Age	0.86	0.342	1.005
Race	-179.264	0.001	1.023
Sex	-1256.154	0.001	1.009
Insurance	396.198	0.001	1.069
Education	-18.917	0.001	1.080

Variables of Model NP Art Wage	Coefficient	Significance level	VIF
Age	1.94	0.001	1.005
Race	9.926	0.001	1.023
Sex	-52.426	0.591	1.010
Insurance	154.642	0.005	1.069
Education	18.668	0.001	1.081
NP Status	53461.41	0.001	1.049

**Table 15c: Nursing Industry Coefficients**

Variables of Model FP			
Nursing Wage	Coefficient	Significance level	VIF
Age	10.345	0.001	1.005
Race	724.275	0.001	1.023
Sex	1048.791	0.001	1.009
Insurance	749.628	0.001	1.069
Education	-141.766	0.001	1.080

Variables of Model NP			
Nursing Wage	Coefficient	Significance level	VIF
Age	4.518	0.001	1.006
Race	12.057	0.654	1.023
Sex	-105.383	0.001	1.010
Insurance	426.723	0.001	1.069
Education	61.139	0.001	1.082
NP Status	53461.41	0.001	1.049

**Table 15d: Individual Service Industry Coefficients**

Variables of Model FP			
Individual Service	Coefficient	Significance level	VIF
Age	12.817	0.001	1.005
Race	830.698	0.001	1.023
Sex	34.558	0.527	1.009
Insurance	483.545	0.001	1.069
Education	101.781	0.001	1.080

Variables of Model NP			
Individual Service	Coefficient	Significance level	VIF
Age	7.329	0.001	1.005
Race	54.789	0.108	1.023
Sex	-187.596	0.001	1.009
Insurance	712.93	0.001	1.069
Education	99.879	0.001	1.082
NP Status	53461.41	0.001	1.049

**Table 15e: Community Service Industry Coefficients**

Variables of Model FP			
Community Service	Coefficient	Significance level	VIF
Age	0.293	0.337	1.005
Race	48.286	0.001	1.023
Sex	-64.964	0.001	1.009
Insurance	13.337	0.200	1.069
Education	-0.705	0.654	1.080

Variables of Model NP			
Community Service	Coefficient	Significance level	VIF
Age	-0.574	0.115	1.006
Race	-21.117	0.096	1.023
Sex	-33.073	0.01	1.009
Insurance	133.73	0.001	1.069
Education	12.76	0.001	1.080
NP Status	53461.41	0.001	1.049

**Table 15f: Childcare Industry Coefficients**

Variables of Model FP Childcare	Coefficient	Significance level	VIF
Age	-17.471	0.001	1.005
Race	233.19	0.001	1.023
Sex	816.379	0.001	1.009
Insurance	-627.371	0.001	1.069
Education	-15.064	0.003	1.080

Variables of Model NP Childcare	Coefficient	Significance level	VIF
Age	4.873	0.001	1.006
Race	101.875	0.001	1.023
Sex	-3.579	0.839	1.014
Insurance	146.867	0.001	1.069
Education	31.454	0.001	1.080
NP Status	53461.41	0.001	1.049

**Table 15g: Publishing Industry Coefficients**

Variables of Model FP Publishing	Coefficient	Significance level	VIF
Age	1.932	0.354	1.005
Race	-766.603	0.001	1.023
Sex	-1969.915	0.001	1.009
Insurance	718.815	0.001	1.069
Education	150.483	0.001	1.080

Variables of Model NP Publishing	Coefficient	Significance level	VIF
Age	0.563	0.050	1.005
Race	-8.731	0.384	1.023
Sex	-32.699	0.001	1.009
Insurance	33.587	0.001	1.069
Education	4.087	0.006	1.080
NP Status	53461.41	0.001	1.049

**Table 15h: Religious Industry Coefficients**

Variables of Model NP Religious	Coefficient	Significance level	VIF
Age	-2.423	0.053	1.021
Race	192.091	0.001	1.028
Sex	-2017.805	0.001	1.044
Insurance	788.532	0.001	1.074
Education	187.246	0.001	1.083
NP Status	22617.584	0.001	1.067

Therefore, what must be answered is what can be gained from this model set.

Overall there is not much that can be distilled from this model set. The for profit industry

models did a poor job at explaining the data, while the non-profit models all did better than the previous model set. What was also gained was further proof of mean wages of non-profits and for profits, which were in favor of the for profit industry; though they varied quite a bit between industries. Lastly, and perhaps most important to the thesis of this paper, is that the donative labor hypothesis and other intrinsic factors were proved to be present in all the industries sampled. What was somewhat odd was that neither had a negative coefficient like the theory predicted. Yet, this model shows that there needs to be an expansion of variables when looking at the industry level.

## **Conclusion**

What can be said of the results of the models? First and foremost is that proponents of the donative labor hypothesis are incorrect in assuming that the donative labor hypothesis is of ultimate importance in predicting non-profit wages. Even though in the test for the donative labor idea was statistically significant for the first two model sets, this was not enough to compensate for its failure to explain 50 percent of the data in model set three. Further, in model set four, the donative labor hypothesis was shown to be significant, explaining more at an industry level, but failing to have the correct coefficients.

Second, the framework of all the models had some very important drawbacks. The primary drawback is that all of the models exhibited heteroskedasticity, which leads to the possibility of the standard errors, and ultimately the significance test, being biased. Further, the models do not incorporate information that articulates worker satisfaction.

This is important because, if there was a more specific way of getting at this information, it would allow for a more adequate evaluation of the donative labor hypotheses.

Therefore leading to the conclusion that there needs to be an effort to collect more data or proxies on intrinsic utility increasing aspects of jobs.

Finally, it is important to discuss where to go from this point. Empirical studies such as this one cannot give the ultimate truth about this topic. Moreover, they should be taken as a litmus test telling scholars if the theory is heading in the right or wrong direction. We can see from this paper is that the direction being taken is sound and shows the usefulness of the ACS PUMS data survey, a completely new data system. Since DataFerrette was in its initial release phases when this research was done, it can be expected that using DataFerrette will become more useful to researchers in the future. Perhaps the best way to take this paper is as a method for how wage differential studies should be done in the future: with more variables, testing for both of the theories, and an eye to looking at the economy as a whole in addition to industry level results.

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