Does Universal Health Insurance Close the Racial Health Gap: Evidence from the Oregon Health Insurance Experiment

Abstract: According to my data, these results indicate that health insurance does have an effect on the total out of pocket costs for Whites and Blacks, but the data on Hispanics and Asians are inconclusive due to the standard error. The same applies for hospitalization, due to the standard errors; it is impossible to make a conclusion about the effect of health insurance on health.

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Introduction

In most European countries it is normal that every citizen has health insurance. However, this is not the case in the United States. There, many people pay for their own medical expenses and very often run into huge debts as many treatments, for example a CAT scan, can cost thousands of dollars. However, if someone is insured, the theory is that the personal out-of-pocket expenses will sink, and that people are more likely to seek treatment, go to the doctor and have their health checked. Thus, one could conclude that having health insurance should improve one's health in the long run and also decrease their out-of-pocket costs. As a result, the Oregon Health Insurance Experiment (OHIE) focused on exactly this issue. Finkelstein *et al*. (2012) looked at a cohort of people and checked the expenses and health changes of insured versus uninsured people over a longer period of time by dividing a randomized group into a treatment and control group.

After one year, the treatment group showed significant health improvements. Compared to the control group, the treatment group reported better physical and mental health. They were 25% more likely to assess their health as good to excellent, instead of fair or poor health. Finkelstein *et al*. also found that the financial strains of those who were insured declined significantly and these people were more likely to use health care services. The result was that the diagnosis and management of diabetes among the insured people has increased significantly and the rates of depression had shown a significant decrease. In addition, the treatment group was more likely to use preventive care, such as mammograms and cholesterol monitoring, and the visits at the general practitioner's office increased by 40%. Finkelstein's findings can be summed up with the following two results from the semi-annual questionnaire: An increase in the overall sense of self-reported well-being and overall happiness was observed (Finkelstein *et al*., 2012).

As the OHIE has shown some improvements among the insured subjects, I will further focus on the racial health disparities [1] within the study. I will look at

[1] Health disparities, in the context of this paper, are the gaps in the quality of health that mirror the differences in racial background (NIAID).

the following four races: White, Black, Hispanic, and Asian. Different literature shows that the health disparities among different races are significant and need to be considered when comparing test subjects. The National Institute of Allergy and Infectious Diseases (2013) offers the following examples on its website: First of all, African Americans have a 28% higher chance of being diagnosed with asthma than whites. Moreover, African Americans are more likely to develop diseases such as diabetes and cardiovascular diseases compared to whites, which ultimately can result in organ failure. Another clear example for health disparities among different races is tuberculosis. Approximately 83% of all registered cases are associated with racial minorities such as Hispanics, Asians and African Americans (The National Institute of Allergy and Infectious Diseases, 2013).

Even though genetics plays a big role when it comes to predisposition of certain health related issues, it is also important to mention that social and economic status plays a big role as well. There is a significant amount of literature that suggests that compared to higher socioeconomics standing, lower classes find it more difficult to have access to health insurance. In the paper by Brown *et al*. (2000), it is stated that the disparities in health insurance coverage lead to inequality in health care access and very often, reasons for that are language barriers and misunderstanding of the patient's culture. In the United States, health insurance coverage is mostly employment-based and among African Americans, this coverage is significantly lower than for Whites. While 53% of African Americans had employment-based coverage, compared to 73% for Whites, Brown argues that even if both races had the same job, Whites would still be more likely to be granted health insurance coverage. The same problem affects Latinos. They are the most disadvantaged minority when it comes to health insurance coverage. The problem here is that on average they are the least educated minority and thus the most likely to live near the poverty level. Approximately 37% of all Latinos are uninsured, compared to 17% of all Whites, and only 43% have employment-based health care. This is because Latinos are less likely to work in companies that offer any health insurance coverage, no matter what the race is, as employers who offer low-wage jobs are more likely to offer no benefits to the workers. The fourth minority this paper focuses on are

Asians. This minority is only slightly disadvantaged compared to Whites; the likelihood for an Asian to receive employment-based health insurance coverage is 64%. This slight difference becomes clearer when looking at the different backgrounds. For example, most Koreans purchase private health care insurance as they have high rates of employment in small companies or are self-employment (Brown, 2000).

As a result of such general and health related disparities among the different races, my research question is as follows: *"Does universal health insurance close the racial health gap?"* In order to answer my research question, I will use the Oregon Health Insurance Experiment data and compare various variables such as their income, health care related costs and general health during the duration of the study. Thus I can look at all the racial backgrounds separately and make an educated conclusion about the different health disparities and changes. Assuming that the abovementioned theories hold, I should observe that subjects from different backgrounds have different initial health statuses and varying health care related costs.

Oregon Health Insurance Experiment

The OHIE is a statewide research project that currently focuses on the potential costs and benefits of health insurance among a randomized sample of patients who are not automatically entitled to health insurance, but as a result of participation in this study receive coverage through OHIE, in the state of Oregon, USA. In Oregon, they have two different types of health insurance: The Oregon Health Plan (OHP) Plus is meant for those people that are generally eligible for health care insurance, for example low-income adults, low-income pregnant women and families enrolled in the Temporary Assistance to Needy Families. The OHP Standard covers those adults and families that were not categorically eligible for OHP Plus, but fulfilled certain criteria such as household income near the poverty level (Finkelstein, 2012). Finkelstein *et al*. tried to calculate how receiving OHP Standard would impact health care usage and the self-reported health, overall well-being and financial strain. The randomized sample consists of approximately 75,000 eligible people living in Oregon. With the help of a lottery, they divided their sample into two groups: approximately 1/3 of the

sample had the opportunity to apply for Medicaid and the rest became the control group; those who were not selected and thus not able to apply for Medicaid. For reasons of randomization, the lottery was evenly spread over a time period of 7 months with a total of 8 drawings. The subjects that were selected were then able to apply for the Medicaid program; the application was at the household level. Of all the selected subjects only 30% successfully applied. This was due to only 60% of applications for being sent back and of those applicants, half of them were not eligible due to not meeting the requirements such as household income (Finkelstein, 2012).

In order to assess self-reported health and other variables, the OHIE sent out a mail service, which was sent out in seven waves over a time period of 2 months. This survey was not only sent out to the selected subjects but also to the same amount of unselected subjects. Even though additional tracking efforts were attempted, the effective response rate was about 45%. In addition to the first survey, the OHIE sent out two more survey after 6 and 12 months of which the 6 months survey had a response rate of approximately 42%. The only problem that Finkelstein *et al*. faced with the survey was that even though it was a reliable method to gather data, it was subject to bias as the answers were relied on the respondent's subjective interpretation (Finkelstein, 2012).

Data

As previously discussed, the lottery allowed a lot of participants to enroll in the Medicaid healthcare program. The corresponding variable that was used to calculate the percentage was "ever enrolled in Medicaid from 1st notice date 10 March 2008 to 30 September 2009.

Percentage of People Selected/Not Selected and Enrolled/Not Enrolled

	Not enrolled	**Enrolled**	**Total**
Selected in the Lottery	21.336 (71,5%)	8.498 (28,5%)	29.834 (100%)
Not Selected in the Lottery	43.845 (97,2%)	1.243 (2,8%)	45.088 (100%)
Total	65.181 (87%)	9.741 (13%)	74.922 (100%)

In total, roughly 75.000 people applied for the program. Of these, approximately 30.000 subjects were selected in the lottery and of those, 30% successfully enrolled in the Medicaid program. As mentioned before, the state of Oregon has two different types of healthcare insurance plans, the OHP Standard and Plus. The OHP Standard was subject to lottery. As can be seen in the results, approximately another 3% enrolled in Medicaid. This is due to the fact that their household income decreased during the enrollment period and thus automatically got accepted to Medicaid (Finkelstein, 2012).

For the purpose of my research, I looked at the socioeconomic status of the subjects of the study and then compared their income and total costs for health related expenditures by race. About 82% of the total subject population is white. The minorities are Hispanic, Black, and Asian. According to the selected population, we can see that they are roughly proportional to the total population; this ensures randomization. In addition to that, we can see that 37% of the White and Black subjects enrolled in the Medicaid program. The enrollment rate for Hispanics and Asians are 23% and 34%, respectively.

Percentage of Subjects Divided by Race and Demographics

	White	Black	Hispanic	Asian
Percentage of Total Population	82,2 %	3,6 %	11 %	3,2 %
Percentage of People Selected	81,5 %	3,5 %	11,6 %	3,4 %
Percentage of Race Selected and Enrolled	37,1%	37,1%	22,9%	34,4%
Income at 0 Months[2]	6,16 (4,48)	4,98 (4,12)	7,05 (4,41)	5,96 (4,16)
Total Costs at 12 Months	3347,73 (47101,58)	2736,01 (10972,71)	1474,87 (8430,17)	402,48 (2006,38)
Hospital Visits at 12 Months	0,069	0,098	0,057	0,039

* Values by row, top to bottom starting from Income at 0 Months: Coefficient, Standard Deviation. Hospitalization has no Standard Deviation, as it is a binary variable.

When looking at the different income levels of the total subject population, one can identify clear differences between the races. According to Finkelstein *et al*, they classified income into several different groups. Here, it becomes clear that there are socioeconomic differences among the racial backgrounds. While Blacks only earn $5.000 to $7.500 per month, Hispanics earn on average around $12.500 to $15.000 a month. Even though the hypothesis states that non-English speaking races earn less than native speakers, this information could be affected by the household size. The variable "Income at 0 Months" looks at the entire household income and in the Hispanic culture it is normal to share a house with several generations, the average household size in this sample is about 4,1. As a result, the household income accumulates faster than when looking at other races such as Asians and Whites, where the average household size is 2,9 for both races. However, as Blacks have a more similar

[2] Classifications for Income: 1 = $0; 2 = $1-$2.500; 3 = $2.501-$5.000; 4 = $5.001-$7.500; 5 = $7.501-$10.000; 6 = $10.001-$12.500; 7= $12.501-$15.000; 8= $15.001-$17.500; etc.

household size to Hispanics with 3,6 people per household, we can see that there are still significant differences in the household income.

With respect to the Total Costs, I excluded several observations as they were outliers and significantly biased the outcome; some of the values exceeded $1,000,000,000. When looking at the results, we see that Asians had lower costs than any other race. Whites on the other hand, have the highest expenses with over $3300. This is also on par with the likelihood of going to the hospital. This variable is binary with 0 indicating that the subject did not go to the hospital and 1 that the subject did go to the hospital. Asians, who had the lowest total expenses, also were the least likely to go to the hospital. Blacks, with the highest total expenses, were the most likely race to go. However, when looking at the same variables, but distinguishing between those subjects that were selected for the Medicaid program and those who weren't, we see that the values change significantly.

Demographics divided by Race and Lottery Winners/Losers

	White Lottery Winners	**White Lottery Losers**	**Black Lottery Winners**	**Black Lottery Losers**
Income at 0 Months	6,56 (4,69)	6,18 (4,48)	4,74 (4,05)	4,98 (4,12)
Total Costs at 0 Months	4150,65 (43876,29)	5048,07 (88766,85)	4264,57 (30884,38)	3182,57 (2116,5)
Total Costs at 12 Months	2610,01 (17727,95)	4059,76 (63685,79)	1742,25 (5730,46)	3677,22 (14214,82)
Hospital Visits at 12 Months	0,072	0,066	0,097	0,099
	Hispanic Lottery Winners	**Hispanic Lottery Losers**	**Asian Lottery Winners**	**Asian Lottery Losers**
Income at 0 Months	7,03 (4,39)	7,05 (4,41)	6,18 (4,46)	5,96 (4,16)
Total Costs at 0 Months	2294,22 (16868,51)	1945,34 (16163,54)	686,34 (2416,13)	8196,05 (141911,4)
Total Costs at 12 Months	1470,12 (8919,44)	1479,86 (7889,52)	311,39 (1032,44)	509,09 (2736,72)
Hospital Visits at 12 Months	0,051	0,063	0,034	0,045

* Values by row, top to bottom: Coefficient, Standard Deviation, R-squared. Hospitalization has no Standard Error, as it is a binary variable.

First, we see that for each race the insured and uninsured subjects have roughly the same household income. For the scope of this study, we thus assume that these subjects have a similar socioeconomic status. First, we look at the difference between the total costs at zero and twelve months. Here, we see that the total out-of-pocket costs are approximately similar between the lottery winners and losers. While the White lottery winners had slightly lower costs at zero months than the White lottery losers, we see the opposite effect with the Black and Hispanic subjects. However, when looking at the Asian subjects, we see that the lottery losers had much higher total costs than the winners, however, the standard deviation for this result is rather high and thus might have affected the results so that they become inexplicable. However, the total out-of-pocket costs after twelve months have diverged for most of the races. Even though the costs for the Hispanic subjects have converged after twelve months, initially, the lottery winners had higher total out-of-pocket expenses, which means that their costs have decreased after 12 months. These numbers are on par with Finkelstein *et al.*'s results that also showed that the total costs for the insured subjects have decreased significantly. Nevertheless, even though the out-of-pocket costs for insured subjects are much lower than the overall average per race costs, there is no clear difference in hospital visits. The reason for this could be that the insured subjects are more likely to see their General Practitioner for medical check-ups and thus do not need to go to the hospital more often than they would have, had they not been insured.

Methodology

According to J. D. Angrist and J. S. Pischke (2008), one of the most significant problems with regressions is endogeneity. This phenomenon happens when the parameters of the regression are correlated with the error term. One way for this to happen is if the regression is missing an independent variable and all the explanatory power is captured by the error term, this is called the omitted variable bias; another reason for endogeneity is measurement error. If that is the case, the regression will incorrectly represent the data and bias the results. In order to overcome this problem, the error term needs to be uncorrelated with

the parameters. One way to do this is by introducing an Instrumental Variable. This variable is usually an artificially created variable that only directly correlates with the endogenous independent variables (Angrist, 2008).

Such an Instrumental Variable (IV) can best be implemented by looking at the Two-Stage Least Squares estimator (2SLS), thus the first and second stage least squares estimator. The first-stage estimator only looks at the effect an Instrumental Variable has on the instrumented variable. We use a variable that leads to variations in our independent variable of interest that are uncorrelated with the error term in our regression equation. The intuitive explanation is that we compare individuals with different values of the independent variables that are on average equal in all other aspects that determine the outcome variable. For the scope of this research, we look at whether or not the instrumental variable has direct effects on either hospital visits or the total out-of-pocket costs related to healthcare services. Thus, in the first-stage equation, the treatment variable is regressed on the instrumental variables. Assuming that the outcome is Y = f(X) and denoting the Instrumental Variable as Z, we can represent the first-stage equation as follows:

$$1)\ X = \alpha_1 + \pi_1 Z + \epsilon$$

In order to calculate the two-stage least squares estimator, we first need to look at the reduced form effect of Z on Y. This equation is often referred to as the Intention to Treat equation (ITT). It can be calculated by regressing the dependent variable Y on the Instrumental Variable. This equation can be represented as follows:

$$2)\ Y = \alpha_2 + \pi_2 Z + \epsilon$$

With the exclusion restriction, which states that the instrument is independent of potential outcomes, we can calculate the coefficient of interest ρ. This is the ratio of the second regression to the first regression:

$$3)\ \rho = Cov(Y, Z) / Cov(X, Z) = \alpha_2 / \alpha_1$$

Here, it is important to note that the first-stage should have instrument relevance which means that it should not be zero and if it is only marginally different from zero, then it is very unlikely that the IV estimate, ρ, is unlikely to be explanatory. In order to get from the IV estimate to the 2SLS, we need to take a look at the causal relation of interest:

$$4)\ Y = \alpha_3 + \rho X + \eta$$

The error term η is now the compound error term. With this equation, we can derive the reduced form equation by substituting the first-stage equation into the causal relation of interest. This becomes:

$$5)\ Y = \alpha_4 + \rho(\pi_1 Z + \epsilon) + \eta$$

Given that most researchers only deal with data from samples, one works with fitted values in the population. Thus, the final two-stage least squares estimator becomes:

$$6)\ Y = \alpha_5 + \rho X\hat{} + v$$

The reason this equation is called two-stage least squares estimator is because it can be done in two steps. First, one needs to estimate X^ with the help of the first-stage least squares equation and using the 6th equation (Angrist, 2008).

The only problem with manually calculating the 2SLS is that is possible to wrongly calculate the standard error. The reason for that is that when manually calculating the OLS standard error, we will calculate the variance of equation 6 even though the actual variance should only be η from equation 5. This problem can be overcome when using specialized software such as STATA (Angrist, 2008).

Instrumental Variables

With regards to the research question, the Instrumental Variable is the lottery, which decides whether or not a particular subject receives the Medicaid health insurance plan. The independent variable is the Medicaid health insurance plan and the dependent variable is either total out-of-pocket expenses related to healthcare services or the likelihood of going to the hospital. An IV has three distinguished characteristics that help estimating a causal relationship and simultaneously determines whether the IV is internally valid. In order to assess whether the lottery may be considered an IV, I will now discuss these three characteristics mentioned by Julian Reiss (2013) in his book Philosophy of Economics:

First of all, there is the instrumental relevance; this means that the IV causes the independent variable. Therefore, the lottery only determines whether or not someone receives health care. According to the OHIE, of the

approximately 90,000 people who signed up for the lottery, about 75,000 people were eligible and almost 30,000 people received the health insurance. The rest was used as the control variable. As a result, the lottery is the deciding factor when it comes to whether or not someone receives health care.

The second characteristic states that the only way the IV can possibly affect the dependent variable is through the independent variable. This condition is fulfilled if randomization worked perfectly and the winners and losers from the lottery were on average the same with respect to their characteristics that also affect their health outcomes. Previously, I have established that the lottery is the determining factor concerning the distribution of health care, and according to the OHIE, health insurance has an effect on health. Nevertheless, the question is whether participating in the lottery has a direct effect on someone's health. Logically speaking, there is no clear relation between these two variables and one can argue that filling out an application form in order to participate in the lottery should not cause anyone any physical harm.

The third characteristic of an IV is that it may not be caused by the dependent variable or any other variable that affects the dependent variable. As previously discussed, the lottery should not have any obvious relation with health or any variable that affects the dependent variable health. It could be possible that someone who is significantly sicker than the average participant is more likely to play the lottery, but since the decision whether or not someone receives health insurance is based on pure luck, one can assume that health and health related variables have no effect on the lottery outcome.

First-Stage Least Squares Equation

In the first-stage least squares equation, we look at the effect the Instrumental Variable has on whether or not someone receives Medicaid.

First-Stage Least Squares Results

	White	Black	Hispanic	Asian
Ever on Medicaid	0,323**	0,305**	0,223**	0,309**
	0,006	0,029	0,016	0,029
	0,125	0,104	0,061	0,122
	21.710	941	2.859	832

Values by row, top to bottom: Point Estimate, Standard Error, R-squared, Number of Observations. The constant is omitted from the results. ** Significant at a 5% level, * Significant at a 10% level

As we can see, all four coefficients are below the 5% significance threshold and therefore statistically significant. The results tell us that on average people were 30% more likely to have health insurance if they participated in the lottery. We therefore conclude that the instrument is relevant and that the Instrumental Variable has a direct effect on whether or not someone receives Medicaid Health Insurance. Given that even though someone was selected but did not enroll, the R-squared (the ratio between the explained variation and the total variation) is rather small but still significant. In addition to that, the variable "ever on Medicaid" includes OHP Standard and OHP Plus. This means that there were a lot of people who were on OHP Plus but did not have to participate in the lottery in order to receive health insurance.

Intention to Treat

As previously mentioned, the reduced form effect of Z on Y shows the effect of the Instrumental Variable on the dependent variable. Therefore, the total out-of-pocket costs related to healthcare services and the likelihood of going to the hospital, by race, are as follows:

Intention to Treat Results

	White	Black	Hispanic	Asian
Total Costs	-1449,762*	-1934,97*	-9,734	-197,70
	880,1	1087,9	444,6	185,4
	0,0002	0,0078	0,000	0,0024
	11.459	405	1.440	471
Hospitalization	0,0065	-0,0017	-0,0632	-0,0117
	0,0002	0,0000	0,0007	0,0009
	13.738	512	1.694	511

* Values by row, top to bottom: Coefficient, Standard Error, R-squared, Number of Observations. Hospitalization has no Standard Error, as it is a binary variable. The constant is omitted from the results. ** Significant at a 5% level, * Significant at a 10% level

With regards to the total out-of-pocket costs we see that the values for each race are negative and partially significant at a 10% level. Here, we can see that the total costs have decreased for Whites and Blacks. However, they have not decreased significantly for Hispanics and Asians. However, at the same time the R-squared values are extremely low. As R-squared represents the ratio between the explained variation and the total variation, we see that the Instrumental Variable has explanatory power for the explanatory variable and, as we can see here, no influence on the dependent variable, the total out-of-pocket costs related to healthcare services. The same counts for the hospitalization variable. As the R-squared is extremely low, the Instrumental Variable has no explanatory power for the dependent variable. These findings are on par with the requirements I mentioned earlier and that are necessary for a variable to be instrumental.

Final Results

After having established that the Instrumental Variable has a significant effect on the explanatory variable, whether or not someone has health insurance, and does not influence the dependent variables total out-of-pocket costs related to healthcare expenses and hospital visits, we can now look at the Two-Stage Least Squares Estimator.

2SLS Regression Results

	White	Black	Hispanic	Asian
Hospitalization	0,019	-0,005	-0,062	-0,039
	13,737	512	1.694	511
Total Costs	-4.469,30*	-5.965,03*	-47,79	-673,24
	2715,3	3415,2	2181,4	633,0
	11.459	405	1.440	471

Values by row, top to bottom: Point Estimates, Standard Error, Number of Observations. The constant is omitted from the results. ** Significant at a 5% level, * Significant at a 10% level

When looking at the results for all the subjects, we see that hospitalization has not changed significantly at a significance level of 10%. As the coefficient for White subjects is positive, we may assume that hospitalization visits have slightly increased, however not significantly. On the other hand, when looking at Black, Hispanic, and Asian subjects we see that the coefficient for the same variable has decreased. This decrease might have to do with the fact that different races have different genetic predispositions. However, this variable might be affected by other variables such as visits at the General Practitioner or the discrimination of doctors as well. Nevertheless, these decreases are not significant. The most important aspect to note about this variable is that the standard error is extremely high compared to the coefficient. As the standard error represents the standard deviation of the sampling distribution we may assume that the results are inaccurate.

When looking at the total out of the pocket costs related to healthcare expenditures, we can see that the total costs for Whites and Blacks have significantly decreased by $4.469 and $5.965, respectively. These findings are on par with the findings of Finkelstein *et al.* (2012) who stated that having health insurance does decrease the total out of pocket expenses. For Asians and Hispanics, the costs have only decreased by less than $1.000 and both results were not significant at a 10% significance level either. The fact that these results are not significant has to do with the standard error. As the standard error is larger than the point estimate, we may assume that the results are inaccurate

and thus we cannot make any assumptions about these results. One way to eliminate such an inaccuracy is to increase the sample size, the larger the sample size, the smaller the standard error. Nevertheless, according to the hypothesis previously mentioned, health care insurance did have an effect on the total out of pocket costs related to healthcare services. As health insurance covers some of the healthcare related costs, the treatment subjects did not suffer from as much financial distress as the control subjects (Finkelstein, 2012).

According to my data, these results indicate that health insurance does have an effect on the total out of pocket costs for Whites and Blacks, but the data on Hispanics and Asians are inconclusive due to the standard error. The same applies for hospitalization, due to the standard errors; it is impossible to make a conclusion about the effect of health insurance on health. As a result, my research question can only be answered partially: Health insurance does have an effect on Whites and Blacks when it comes to the total out-of-pocket expenses, which means it partially closes the racial health gap.

Discussion

Finkelstein *et al*. (2012) face several difficulties with regards to the data of the Oregon Health Insurance Experiment. First of all, they had to alter their data and assumptions when running their regressions. For example, they had to account for different variables such as household sizes and covariates that are correlated with the treatment probability; thus, they controlled for possible influences that might have affected the final results. This means that their models were not very robust and might fail under changing conditions. Within my research, I ran the regressions without many alterations, which means that I did not control for outliers or variables that might affect the outcomes of my regressions. Consequently, I found that my standard errors were particularly high, partly larger than my actual results, which resulted in my outcomes being inaccurate.

Another problem with the data was that the surveys they conducted might not have been as valid as they hoped for. As questions such as "How has your health changed over the past 6 months?" might be rather subjective questions, as there is not one specific way to understand this question and the

respondents might have interpreted the question differently. For example, someone who is chronically sick, but has felt better over a certain amount of time is more likely to state that his health has improved even though medically speaking it did not. Thus, the actual results may have been biased, as they did not show the actual change in health and thus led to inconclusive results. Consequently, one should be careful when analyzing the results. In addition to that, even though someone might have excellent health insurance, they can still die of various diseases. Health insurance only means that someone has guaranteed access to medical care, however, if the disease is fatal, no healthcare can save the patient. Thus, it is crucial to correctly distinguish health and health insurance in order to properly represent the impact of health insurance on health. With regards to Finkelstein *et al.*'s research, this distinction is not always very clear. In the case of the OHIE, the insured subjects had more access to the medical system and received additional check ups, consequently the subjects knew whether they were sick or not. The more aware someone is of their health, the more likely they are to critically assess they health status. The uninsured subjects, on the other hand, did not get checked as much and thus might have been less sure about their real health status. Thus, having health insurance could have influenced the subject's opinion of their true health.

With respect to my results, there were no clear racial health gaps; however, I only looked at the likelihood of being hospitalized, which is not a clear indicator of someone's initial health. Yet, in addition to the previously made distinction, even if everyone had access to health insurance, there could still be a continuing racial health gap. Reasons for this could be financial resources, low health literacy, or language barriers (Health Policy Institute of Ohio, 2004). For example Asian and Hispanic people could find it difficult to seek health care services if they do not fully understand and speak English. Clearly, this language barrier also shows when the living patterns of different races were observed. Especially in the USA, people have split up by race and live in their segregated areas leading to even bigger barriers between different races. As a result, there is less interaction between the groups, and some people fail to learn English and thus have difficulties to climb up the socioeconomic ladder. Given these predisposed requirements, for certain races to fall into a lower socioeconomic

class it is possible that such a situation can affect the results of the study. When someone has a lower socioeconomic status, they are more likely to be poorly educated about healthy lifestyles and the consequences of an unhealthy diet (Health Policy Institute of Ohio, 2004).

In addition to that, IOM's 2002 report "Unequal Treatment: Confronting Racial and Ethnic Disparities in Healthcare" suggests that healthcare providers offer unequal treatments among different racial and ethnic groups. The report states that with respect to cardiovascular diseases, diabetes, cancer and other diseases, there are clear differences in treatment. This still held true after they accounted for health insurance coverage and socioeconomic status. They explain these findings by citing Kevin Shulman's study (1999) saying that doctors were 40% less likely to offer Black patients treatment even though they showed the same symptoms as White patients. Supposedly, this has to do with the fact that many doctors rated Black patients as less intelligent, less educated and more likely to abuse drugs and alcohol. In addition to that, they found that providers were more likely to ask Black patients whether they were able to pay for treatments and less likely to receive payment allowances. Some doctors defend these accusations by saying that they treat racial minorities differently due to the fact that their genetic predisposition does not always allow for the same treatment. For example, 40% of Black patients metabolize anti-depressants much slower than White patients and thus do not receive the same treatment. Nevertheless, such racial and ethnic discrimination may lead to different health related and financial outcomes (Schulman, 1999).

Another problem that arises with health insurance is similar to the adverse selection theory. As soon as a subject is insured, they might start living unhealthier as healthcare has become cheaper and more accessible. Since the subjects did not pay for the Medicaid insurance, they knew they would be taken care of in case something happened to their health. Even though the study by Finkelstein *et al.* (2012) states that risky behaviors such as smoking and obesity have not changed, it is almost impossible to take all possible factors of risky behavior into account and certainly state that a subject's way of living stayed the same.

Limitations

Within the research, I encountered several limitations. First, the number of observations for the Hispanic and Asian subjects were significantly smaller than number of observations for Whites. This caused the findings to have high standard errors and be inaccurate and lead to no conclusion. In order to better assess the outcome of health insurance of out of pocket costs and health, it would be helpful to have more observations for the racial minorities.

Furthermore, as previously mentioned, the data needs to better distinguish between having health insurance and good health. If someone is chronically sick, the person's perceived health alters from that of a healthy person and very often self-assessed health can be affected by various exogenous factors. Thus, saying that feeling healthier over a period of time is inconclusive with regards to health insurance. Another reason for that is that health is not always directly affected by health insurance. Someone can get sick even though they go to regular check-ups and live a healthy lifestyle. A better way to measure health is by medically assessing someone's health over the time period of the study and checking whether health has actually improved or not.

Finally, it is important to note that this research is a yearlong experiment, which has not yet been completed. Health can be a slowly changing state that does not necessarily have to show its effects within one year. Thus, the results will become clearer as the study progresses and according to the hypothesis of health being a slowly changing state; the effect of health care on health should then become visible. As a result, it is difficult to make significant conclusions about health. This also means that the results of my research concerning health are not clear enough to make an educated conclusion. It would have been better to have results from a longer time period.

Policy Recommendations

First, as racial minorities are less likely to receive employment-based health insurance coverage, the government needs to close this gap and ensure equal treatment among all races. One way to do this is by enforcing stricter laws for employers so that they may not pick and choose which of their employees receive health insurance. Another possibility is to offer universal health

insurance coverage for all citizens. This way nobody will be left without health insurance and the state can regulate the premiums. However, there are a lot of obstacles, such as the 10th amendment of the U.S. Constitution, which states that there are certain powers that the government may not have; such powers should be reserved for the people or the states. One of these alleged powers reserved for the people is the right to choose whether they want to buy health insurance. Currently, there is a lot of discussion about this policy recommendation in the United States, as it is not entirely clear whether a statewide health insurance infringes on people's rights.

As a side note, it is also important to take care of the race disparities in the health care system. In my research I found that there are different income levels and different health care related out-of-pocket expenses for different races and according to the IOM's report, it also seems like doctors treat races differently. These facts could potentially lead to different healthcare-related health outcomes among the races. The state needs to monitor the way the doctors treat the patients more closely. In case one prescribes a lesser effective treatment for a racial minority, the doctor should be penalized so that these unequal treatments come to an end.

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