The Economic Effects of Occupation and Industry–Employee Personal Health Insurance Concerns

Evan A. Powell

Faculty Sponsor: Donna M. Anderson, Department of Economics

ABSTRACT

The objective of this study is to examine the factors that dictate the probable availability of personal health insurance as provided by employers. To determine how to best solve the problems of the current health care dilemma in this country, it is important to discover the relevance of individual as well as occupational and industry variables. To achieve this end, logistic regression analysis was completed using the 2002 National Study of the Changing Workforce (NSCW) dataset. Through the data analysis, and observance of the discovered odds-ratios, it became evident that variables such as education level, race and Hispanic origin, scheduled hours of work, years tenured, as well as a range of occupational and industry classifications, all have significant impact on the probability of health insurance being provided through the employer. The results suggest that higher levels of education, additional years tenured, as well as more hours worked, all increase the likelihood of available health insurance; and that certain occupational or industry choices by the employee increase the probable availability more than others. Further, even after controlling for all the other variables listed above, race and the self identification of Hispanic origin were still found to be significant predictor variables when determining the probability of heath insurance availability.

INTRODUCTION

The problems with the current health care system in this country are evident. And while government programs such as Medicaid certainly help to care and provide for the indigent, disabled, and elderly in this country, the broad outlook is not pleasing. The 2003 essay *The rising number of uninsured Americans: How adequate is our health system?* noted that, "As of 1997, 16.1 percent of the non-elderly population in the United States - an estimated 43.4 million people - lacked health insurance, meaning they were not covered by private health insurance and did not receive publicly financed health assistance. This represents an increase of approximately nine million uninsured persons since 1993. A primary reason for the increase is due to the rising costs of health care that has caused a decline of employment-based coverage." And furthermore, "According to the 1997 US Census Bureau figures, 43 percent of uninsured worked full-time, and eight out of ten of the uninsured *or* their dependents were full-time workers" (Glover, et al 2003). These facts illustrate an alarming state of affairs. There are several current theories and proposals of how to deal with the crisis of the uninsured and rising health care costs; many of the most profound and shrewd suggest that further subsidizing employer based health insurance is not commonly advantageous, and perhaps a different solution is necessary. Yet one state plan in Massachusetts may be too ambitious on this front, as legislators in Boston are completing work on a significant law that intends to provide health coverage for almost all the state's residents. The new law brings together an individual mandate that everyone attain coverage, with innovative insurance market reforms to cut the cost of buying insurance: subsidies for the poor and near-poor; and a fee on employers with 11 or more workers who don't provide health insurance (Dionne 2006). While this seems at least superficially beneficial, requiring everyone to purchase coverage might be an overstepping of government bounds (especially in a neo-classical economic sense), and fees imposed on non-providing employers could be construed as gross malfeasance, when it may be possible for government to try and augment employers' willingness to offer coverage. By determining worker characteristics that have strong correlation to the probability of offered coverage, the government may be able to either foster these worker characteristics, or focus on helping only those industries and controlling those characteristics that hurt the probability for coverage.

The objective of this study is to examine the economic factors that dictate the probable availability of personal health insurance as provided by employers. To determine how to best solve the problems of the current health care dilemma in this country, it is important to discover the relevance of individual as well as occupational and industry

variables. The current expansion of government subsidy programs that allows individuals and employers to buy coverage with pretax dollars and effectively socialize their premiums, still only benefits the most wealthy and prosperous, those for whom the tax deductions are of the most value. Yet over 160 million Americans rely on employer based coverage, and wholesale changes in the system, as the move towards the more personally responsible legislation that the Massachusetts health law embodies, could be perilous to this type of health care insurance, one of the only true systems of assisted coverage that exist in this country (Askt 2005). The theory of the effect of industry and occupation will be tested in this study. Importantly, the occupational and industry variables that help dictate economic success may be tied to characteristics for which the government can control. Assuming that certain occupational or industry positions, as well as other worker characteristics, raise or lower the probability of employer offered health coverage, the government can assist, and individuals themselves can endeavor to attain positions where offered health insurance is likely. Government could then attempt to mitigate the factors that hurt an individual's likelihood to secure insurance coverage through the employer.

The theories that motivated this study are also predicated on the idea that some employees seem to embody enough worth in the eyes of the employer so that the employer may choose to provide health insurance options along with normal wage compensation. Certain occupations and industries appear to have more of these workers than others. Many of the implications about this study relate to educational opportunities and skill building early in a worker's age-earnings profile, so that workers may have the characteristics that are correlated with high incidence of employer based coverage. However, certain other demographic variables are tested to demonstrate how purportedly unimportant factors such as race and ethnicity actually can have significant impact on the probability of employer offered health insurance.

Essentially, in this paper I explore the idea that certain occupational and industry variables, as well as certain employee characteristics, which likely relate at least somehow to ability and human capital, affect the probability of available health care coverage being offered through the employer. Please note that I only test for the availability, not necessarily the actual provision of health insurance, as the willingness of the employer to offer coverage based on the different variables was the paramount interest. The effect of occupation and industry are fundamental here, where they relate to lesser probability for health care available through the employer in certain jobs; yet it is also important to recognize variables that can serve as proxies for human capital and ability, such as education, years tenured, and scheduled hours worked per week. Interestingly, human capital matters might have nascent effects on occupational and industry placement.

METHOD

The main functions of econometrics are to investigate economic theory through the use of empirical content, and to then confirm or refute that economic theory based on the empirical findings. I use the 2002 National Study of the Changing Workforce (NSCW) to test my hypotheses. The NSCW is a survey that is administered every 5 years by the Families and Work Institute. The Families and Work Institute is a nonprofit research organization that collects data and conducts studies on the changing workforce, changing family and changing community. The survey is administered to a large, nationally representative sample of employed workers and provides valuable, timely information on the work and personal/family lives of the U.S. workforce (Families and Work Institute, 2005).

The variables I test are: *occupational positions* – executive, professional, technical, administrative support, production/operation, service, and sales; *industry* – agriculture, construction, manufacturing, transportation, trade, finance, services, and public administration; and the other variables that relate to *specific worker characteristics* – years tenured, education level, average hours scheduled work per week, race, and Hispanic origin. I use the null hypothesis that the all of the independent variables chosen for this study that refer to occupation and industry, and others such as education, years tenured, and number of hours scheduled to work, race, and Hispanic origin, are not related to the dependent variable, probability of health benefits supplied by employer. The alternative hypothesis is that all (or at least some) of these independent variables are related to the dependent variable, availability of health care. Summary statistics are reported in Table 1.

Table 1. Descriptive Statistics (NSCW Data)

	Sample	
Variable	*Valid %*	*Std. Deviation*
Personal Insurance Available Through Job	81.7 (yes)	-
Race of Respondent	79.1 (white)	-
Identify Self as Hispanic / Latino	9.8 (Hispanic)	-
Occupation:		
Executives, Administrators, Managers	13.7	-
Professional	19.3	-
Technical	4.0	-
Administrative Support	14.5	-
Production, Operators, Repair	26.7	-
Services	12.8	-
Sales	9.0	-
Industry:		
Manufacturing	13.2	-
Finance	5.5	-
Public Administration	4.8	-
Agriculture	2.5	-
Service	39.4	-
Construction	7.4	-
Trade	18.6	-
Transportation	8.7	-
Years Tenured	7.56	8.35
Level of Education	3.23	1.54
Response denoted as (1= less than HS, 2= completion of HS, 3= some college, no degree, 4= associate degree, 5= bachelor's degree, 6= graduate degree)		
Scheduled Hours Worked (excludes OT pay/unpaid)	37.23	8.99
Valid N (listwise)	2676	

Source: 2002 National Study of the Changing Workforce.

It is clear that 81.7% of the surveyed population had personal health insurance offered through the employer, and the valid percents of the industry and occupation variables indicate what percent of the representative population classified themselves as such. In reference to the variable *Race of Respondent*, 79.1% of the population identified themselves as "white" rather than "other", and only 9.8% of the population replied 'yes' to the question of whether they identified themselves as Hispanic or Latino.

The specific testing method used on the data is binary logistic regression. This is a method for determining the relationship between predictor variables and a dichotomously coded dependent variable. The dependent variable in this study is the availability of personal health insurance provided by the employer, where 0=not available and 1=available.

A common way of assessing the influence of an independent variable on the dependent variable, after determining the significance level, is to look at the odds-ratio, which is an index of how likely it is that the respondent replied to one of the two or more alternative values given of the independent variable. I examined the probability odds of availability of health care. The coefficient estimating the impact of a factor (one example for this study might be race) on the probability of health insurance availability, is expressed as a log odds-ratio. The odds-ratio, which is the exponentiated coefficient (e^{β}), permits a more direct evaluation of a variable's expected impact on the odds of availability, relative to the odds without the variable's influence. Interpretation of e^{β} is as follows: a factor changes the odds of an availability by a percent equal to e^{β} times 100. $e^{\beta} > (<) 1$ indicates a positive (negative) relationship. The testing uncovered that a respondent had either increased or decreased the odds of being offered health care coverage through their employer to e^{β} times 100%.

RESULTS

When using logistical regression with categorical variables such as the occupational and industry variables tested in this study, and subsequently attempting to predict with the determined odds-ratios, the only statement of effect about a particular category that can be made is in comparison to some other category. As such, it was necessary to exclude one category of the categorical variables of occupation and industry. These omitted variables of reference are *service* (occupation) and *service* (industry). The service category is omitted because it was thought to be the least likely category to show high probability for employer offered health insurance. Therefore, the e^β values in Table 2 give a probability in reference to what a service occupation or the service industry might offer. The continuous or non-binary variables of years tenured, scheduled hours worked, and education level, merely raise or lower the odds. The variables listed in the tables below are all found to have significant correlation to the probability for employer offered health insurance. However, some of the original tested variables are found to be insignificant and excluded from the tables. The occupation of Sales is not found to be significantly different from the Service occupation; additionally, the industries of Agriculture, Construction, Transportation, and Trade, are all not significantly different from the Service industry. These non-explanatory variables are not shown in the results, yet it is important to note that the statistical testing completed did control for these variables when testing the significance of the others.

Table 2. Logistic Regression Results, Only Significant Variables Listed. Dependent Variable: Personal Insurance Availability

Independent Variable	β Coefficient (P-value)	e^β
Years tenure	.055*** (.000)	1.057 [b]
Executive	.683** (.007)	1.981 [b]
Professional	.914*** (.000)	2.495 [b]
Technical	.750* (.038)	2.117 [b]
Administrative Support	.662** (.002)	1.938 [b]
Production, Operators, Repair	.426* (.044)	1.531 [b]
Manufacturing	.882*** (.001)	2.416 [b]
Finance	.960* (.014)	2.612 [b]
Public Administration	1.445** (.002)	4.243 [b]
Education Level	.300*** (.000)	1.349 [b]
Scheduled Hours Worked (excludes OT pay/unpaid)	.103*** (.000)	1.108 [b]
Race	.516*** (.001)	1.676 [b]
Identify Self as Hispanic / Latino	.921*** (.000)	2.512 [b]
N	2694	
Chi-square	655.143	

[a] Significance level denotation: ***$p \leq .001$, **$p \leq .01$, *$p \leq .05$.
[b] A factor's presence increases or decreases the odds of personal health insurance availability through the employer to e^β times 100%.

Table 2 illustrates the coefficient values (β) and the significance levels (p-value) of each tested variable, as well as gives an e^{β} value that demonstrates the increase in odds of personal insurance being offered through the employer. For the various categorical variables of occupation and industry, this increase in odds is relative to the likelihood of insurance coverage offered in the service occupations and in the service industry. For the other variables, this is simply an increase in odds, as education level, years tenured, and scheduled hours worked all increase. The race and Hispanic identity variables actually show an increase in odds, yet importantly it was for those who respectively responded 'white' rather than 'other', and 'no' rather than 'yes' to the corresponding questions.

DISCUSSION AND CONCLUSION

In Table 2 above, the odds-ratios show that each variable provides an increase in probability of health insurance offered through the employer. The results of the testing suggest that higher levels of education, additional years tenured, as well as more hours worked, all increase the likelihood of available health insurance; and that certain occupational or industry choices by the employee increase the probable availability more than others. This is, of course, all relative to the availability in the service industry or a service occupation. Also, even after controlling for all the other variables listed above, race and Hispanic origin were still found to be significant predictor variables when determining the probability of heath insurance availability. With respect to race, being white raises the odds of having health insurance available through the employer to 167% of the odds of availability when the employee is not white. And not identifying as Hispanic or Latino raises the odds of availability to 252% of when the employee does identify as Hispanic or Latino.

That race and ethnicity can have such significant impact on the probability of employer provided health care is alarming. Government should try and control or eliminate factors that should have no relevance to economic prosperity, such as race and ethnicity, yet remain perceptibly relevant. Sadly, racial discrimination and bigotry may provide some explanation for this discrepancy, though certainly other factors are also at work. Additionally, when observing the other e^{β} values, the industry variable of Public Administration shows far greater odds increase than any other industry or single occupation. Those individuals working in Public Administration had odds raised to 424% of the likelihood of the odds of availability of an individual in the service industry. The other variables ranged in odds increase only from 153% to 261%. Hopefully this is not further discovery of the pork laden spending of government, and preferably demonstrates that the government sees the need to supply workers with health benefits. Yet other private employers might need additional incentive, and by early public investment in schooling that guides towards high demand careers, future workers may become sufficiently valuable to such employers that the health care problem might be solved largely later on in the private sector, and there will be no need for supporting burgeoning government subsidies or comprehensive policy and system changes. In this testing manner above, it is possible to observe how occupation, industry, and other variables are empirically linked with further benefits for employees.

I do not believe that the government should be centrally responsible for all workers' concerns, yet through helping individuals make informed decisions about early human capital investment that may dictate occupation and industry employment choices, many subsequent problems in the labor market, such as the absence of health care insurance, can be assuaged. As such, if workers can be molded to possess and exemplify characteristics that are desired by employers that provide health insurance, our government should try to maximize these possibilities. Furthermore, there are certain problems that are difficult to overlook, and the dilemma of the health care system in this country should be addressed and fixed immediately, rather than continuously disregarded or merely patched up. The article "Public Policy and the U.S. Health Insurance Market: Direct and Indirect Provision of Insurance" makes this clear as, "The U.S. spends a larger fraction of its GDP on health care than does any other country and spends more on a per person basis as well. Not only are expenditures high, but for many decades they have increased faster than GDP. Even recently, after several years of stable spending, costs are once again rising faster than GDP. The joint problems of high and rising costs, coupled with a sizable uninsured population, are especially worrisome. With high costs, those without health insurance will have a difficult time affording quality care. Conversely, increases in health care costs will drive up the price of health insurance itself, potentially resulting in declines in coverage or a substitution to less generous (and less expensive) plans" (McGarry 2002). These facts make employer assisted health care even further valuable. Perhaps, if continuing discoveries are made about what variables are strongly correlated with employer provided health benefits, the health care situation will not devolve into a complete calamity. Also, early educational and human capital investment, and broadening opportunity for occupation choice may quell the current disparaging health care trends, as well as enormous wealth inequality that aggravates many economic situations. And perhaps most importantly, this study indicates that race and ethnicity continue to be

significant variables that can unfairly marginalize an individual's worth in a supposedly indiscriminate labor market, and this discrimination problem should also be confronted.

LIMITATIONS

This study cannot explain the discovered significance of variables such as race and Hispanic origin, which theoretically should have no predictor value on probability of employer offered health care. Of course the previously discussed racism and bigotry could cause these variables to hold significance beyond pure and strict economic importance. What's more, perhaps there is a concurrently moving explanatory variable that was not controlled for, however this variable will remain lurking until future testing uncovers it.

More to the point about policy implication, the question of whether the market system is fair when determining employee worth, and deserved benefits, brings about almost systemic unrest for any intellectual discipline that might claim to be judicious and autonomous enough to come to a consensus. The suggestions about policy change in this study are predicated on economic principles that may be completely extraneous in other disciplines. Problems will assuredly arise from deciding what set of values are going to be utilized to evaluate the market system's positives and negatives. To be fair, perhaps the field that created the market idea should be the first to help render verdicts on whether its system is detached enough from any gross prejudice to be considered "fair." This large and general criticism is the main critique of this economic study. Because economics assumes rationality and maximizing utility, there could be reasons unconnected to economics, so that even a seemingly sagacious policy change might not solve the problem of the medically uninsured in this country. Future studies can only be improved with this knowledge in hand.

ACKNOWLEDGEMENTS

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