THE EFFECTS OF COMMUNITY UNINSURANCE

ON HEALTH CARE QUALITY FOR

THE INSURED POPULATION

by

TUAN ANH NGUYEN

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Finally, I am forever indebted to my parents for their unconditional love. I have been fortunate enough to be raised by wonderful people who taught me valuable lessons in just about every aspect of life. I can only hope I will be to my children a fraction of what they have been to me.

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ABSTRACT

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Tuan Anh Nguyen, M.A.

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Supervising professor: Dr. Jeffrey DeSimone

An important aspect of the ongoing health care reform of 2010 is to provide health coverage to the uninsured, the rising population of which has remained a significant challenge to overcome. Previously, efforts to reduce the number of people without health insurance have been centered on a moral rationale that providing care for the medically indigent was "the right thing" to do. However, recent evidence suggests that it might be in the best interest of people who are already insured to be concerned about the rate of uninsurance in their communities because of a potential negative spillover effect. Using four waves of the Community Tracking Study (CTS) Household Survey, from 1996-1997, 1998-1999, 2000-2001, and 2003, this paper attempts to

investigate whether or not this type of spillover exists and to what extent it affects the insured population. The results show strong evidence linking the community uninsurance rate negatively to the quality of care available to the insured, specifically in terms of access to care and service utilization. Therefore, the issue of high uninsurance rates should not be overlooked by the insured population since they appear to bear some consequences of this issue themselves.

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CHAPTER 1

INTRODUCTION

On Tuesday March 23, 2010, President Barack Obama signed into law the Patient Protection and Affordable Care Act, part of a broader health care reform that has become an important goal of the current administration. After a year-long debate that was characterized by conflicting information and increasingly hostile politics, the bill narrowly made it past the House of Representatives, as well as the Senate, with very slim margins. A week later, on March 30, 2010, it was reconciled with the Health Care and Education Affordability Reconciliation Act. Together, they represent the most substantial effort to reform health care since the advent of Medicare and Medicaid in the 1960s.

As expected, the bill was met with immediate opposition from Republican lawmakers as well as several state governments. After failing to prevent its passage, Republicans promised to repeal the bill while 14 states filed suits in federal courts, claiming that it was unconstitutional and violated states' rights (Zengerle and Smith, 2010). "It forces people to do something -- in the sense of buying a health care policy or paying a penalty, a tax or a fine -- that simply the Constitution does not allow Congress to do," said Florida Attorney General Bill McCollum. Nevertheless, experts across the political spectrum agreed that this was not a realistic legal claim, and Washington and Lee University law professor Timothy Jost called the prospective lawsuits "political

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theater" (Totenberg, 2010). Regardless of the outcomes, it is clear that health care reform is a sensitive topic that evokes powerful reactions from the American people.

An important aspect of this reform is to reduce the number of residents without health insurance, the rising population of which has remained a significant challenge to overcome. According to the Kaiser Commission on Medicaid and the Uninsured, of the 263 million people under the age of 65 in 2008, 17%, or about 46 million, were without any kind of health insurance. The new legislation promises to improve this situation by requiring that people obtain health coverage or face a penalty while helping low-income families purchase insurance with federal subsidies (Zengerle and Smith, 2010). Moreover, it aims to provide coverage for 95% of all Americans (up from the current number of 83%) by a variety of methods, including individual and employer mandates along with state-operated insurance exchanges for small businesses and those self-employed or otherwise uninsured.

The effort to lower the number of uninsured Americans is closely related to this paper's main thesis. Our goal is to analyze the consequences of leaving a significant portion of the general population uninsured on the quality and delivery of health care to the insured living in the same community. We find that the local uninsurance rate is negatively related to some measures of the quality of health care available to the insured population, and these effects are significant even after taking into account community-specific characteristics. Thus, although it is costly to provide health care to the uninsured, there is evidence that this would benefit not only those without coverage, but people who are already insured as well.

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1.1 Who are the uninsured?

As noted above, about 46 million out of 263 million people under the age of 65 were without any kind of health insurance in 2008. Feldstein (2007) provides a closer look at the demographic and regional components of this population. About 18% of the uninsured are children, and many of the rest are young workers. 50% of the uninsured are white, although only 12% of all whites are uninsured, while 20% of African Americans and 35% of Hispanics are uninsured. Regionally, 42% of the uninsured lived in the South, 26% in the West, 19% in the Midwest, and 13% in the Northeast.

A substantial number of uninsured adults are employed, and they share two key characteristics:

- The size of their employer is related to the probability of obtaining insurance. Specifically, the smaller the firm, the less likely that it will provide health insurance to its workers. Health coverage is generally more expensive for smaller firms because insurers' inability to spread risk and lack of economies in administering and marketing health insurance. Interestingly, Bundorf and Pauly (2006) propose that affordability, as it is related to the uninsured's propensity to obtain coverage, is best measured not by some arbitrary threshold of income, but rather by the behavior of other consumers with similar characteristics.

- The employed uninsured tend to have low wages. 59% make less than $10.00 an hour, and 85% make less than $15.00 an hour. This low income may preclude the employed from purchasing health insurance because they have to spend their

money on other necessities and they can often rely on Medicaid should they need emergency medical services.

Overall, "the picture of the uninsured that emerges is of generally young people who work in small firms and earn low wages," and that "for low-wage workers and their families, Medicaid is their health insurance plan" (Feldstein, 2007, 478-480).

1.2 How do the uninsured obtain health care?

Before the 1960s, the uninsured mainly relied on the charity of physicians at local hospitals and community clinics, as they were expected to provide uncompensated care in exchange for tax-exempt status. No concrete effort was made to reduce the number of uninsured until Medicare and Medicaid were introduced in 1965 (Institute of Medicine (IOM), 2003). The passage of both programs marked a new era of health care in the U.S., as they brought about significant changes in how medical services were delivered as well as new methods of payment. Medicare is a federal program that provides health care for the elderly (age 65 and over), while Medicaid is a joint state-federal program providing coverage to the poor. Together, they helped many people get access to health care, but still left uninsured a substantial part of the population that did not qualify for either program. As was the case before 1965, this population frequently counted on charity care at "safety-net" providers such as community clinics and hospitals when they had medical emergencies. However, as these clinics faced increasing financial difficulties due to their inability to join a provider's network to compete for Medicaid's enrollees (Feldstein, 2007, 123), it has become more difficult for the uninsured to obtained health care. Coupled with the fact that this group has

grown in size since 1993 (IOM, 2003), the potential unmet medical needs of the uninsured have become substantial.

1.3 Why is uninsurance a problem?

At the heart of the issue is the seemingly contradictory notion that such a large portion of the population is uninsured the U.S., one of the most powerful and influential countries in the world. The media has recounted tragic stories about how people are unable to get adequate treatment because of the lack of insurance, and the implied lesson is that society as a whole is responsible for those who are most in need.

However, uninsurance is potentially problematic for reasons beyond equity and humanity. Leaving people uninsured can have negative consequences on the amount of fundings for state and local programs, the size of the federal budget deficit, and the quality of health care provided to insured people living in the same community.

How can the lack of insurance among some in a community affect others in the community who are insured? To understand this, one needs to take into account the fact that, as mentioned above, the uninsured rely on charity care from local hospitals when they have medical emergencies. As their reliance on these services increases, the quality of care offered to other insured residents in the community decreases. IOM (2003) provides an excellent explanation:

> When a local hospital can no longer absorb the costs of serving uninsured patients in need of care and cuts back on staffed inpatient beds as a result, all members of the community served by the hospital are likely to experience reduced access to care. The effects do not stop there. In an effort to keep beds

staffed, the hospital may contain costs by cutting staff in other departments, or, if the hospital cuts back its nursing staff, patient safety and the quality of care would be reduced for all patients. Alternatively, the hospital may turn to local, state, or federal governments for revenue to offset the costs of caring for uninsured persons, thereby increasing the tax burden on all residents or reducing other public services… As these scenarios illustrate, the effects of uninsurance can be wide ranging and significant (IOM, 2003, 20)

The IOM's explanation describes effects that are both pecuniary (increased tax burden) and non-pecuniary (reduced access to care for members of the community). Examples of other pecuniary effects include states crowding out other essential investments (such as education) because of increasing cost of caring for the uninsured, or, if the sources of those payments are from the federal government, an increase the budget deficit. Real spillover (non-pecuniary) effects are more difficult to detect, but their consequences are just as detrimental. As Pauly and Pagan (2007) note, "These non-pecuniary or real spillovers might well occur even if outside sources of revenues completely supported a community's charity care and bad-debt burden. Real spillovers only require that the uninsured demand a lower quantity and quality of health care than the insured and that the provision of health care is not perfectly segmented by health insurance status." In other words, because of lower quality demanded by the uninsured, the overall quality of care will decrease, in turn affecting the insured negatively.

CHAPTER 2

EMPIRICAL EVIDENCE OF A SPILLOVER EFFECT

Waldfogel (2003) provides an example of a spillover effect in the market for radio listeners. Through a mechanism he terms "preference externality," it is shown that, in a sample market with high fixed costs and heterogeneous preferences (the radio industry), an increase in the number of minorities among radio listeners raises the amount of white-targeted content across radio stations. This happens because minorities are not able to form their own channels due to their relatively small market share. However, as this population expands, new stations with minority-targeted content begin to grow while white-targeted content among other stations decreases.

Following this line of reasoning, one can see how the uninsured may have a negative spillover effect on the insured. As the number of uninsured increases, they bring forth products that are of greater value to themselves (perhaps lower quality health care) that could have damaging effects on the insured population. Waldfogel concludes that preference externalities may well exist in industries with high fixed costs and heterogeneous preferences, such as media markets and pharmaceuticals. The health care industry seems to fit this description aptly.

IOM (2003) was among the first to address the relationship between community uninsurance and a variety of health care indicators. Among the conclusions of IOM's Committee on Community Uninsurance are:

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- People with low to moderate income and the uninsured have worse access to health care in high uninsurance communities than their counterparts in low uninsurance communities, although the causal effect of the uninsurance rate is unclear.

- Servicing a high number of uninsured patients reduces a health center's ability to provide ambulatory care to its patients, insured and uninsured. Moreover, high uninsurance rates can overcrowd the local community's emergency room (ER) and worsen the ER's financial status.

Based on the framework of the IOM report, Mark Pauly and Jose Pagan have done extensive studies on the existence of negative spillover effects of community uninsurance. Pauly and Pagan (2007) use data from the 2003 Community Tracking Study (CTS) Household Survey to investigate the link between uninsurance and community health care provision. Specifically, they compare the differences in a number of healthcare indicators among residents of the ten sample communities with the highest and lowest proportion of uninsured adults in 2003 (for a total of 20 communities). Notable results among their findings are:

- Insured adults in high uninsurance communities are less likely to have a place to go when they are sick or in need of advice about health compared to their peers in low uninsurance communities.

- They are less likely to have a doctor's visit in the previous year and less likely to have regular physical exams or check-ups.

- They also, on average, have more problems getting a referral to see a specialist, are less satisfied with their health care provider, and less likely to trust that their doctors would put the patient's medical needs above all considerations.

- Logistic model estimation of the findings above, after adjusting for various factors such as health status, age, education, ethnicity/race, marital status and income, reveals that most of the differences between the high and low uninsurance communities are statistically significant at the 1% significant level (except the last result regarding doctor's trust). The results suggest that real spillover effects do exist in communities with high uninsurance rates.

Pauly and Pagan (2006) used the 2000-2001 CTS Household Survey to examine the relationship between the community uninsurance rate and the self-reported unmet medical needs of insured and uninsured adults in a community. They find that a five percentage point increase in the community uninsurance rate is associated with a 10.5 percent increment in the likelihood that an insured adult would report having unmet medical needs. Curiously, the results are not statistically significant among the uninsured population, which implies that the consequences of high community uninsurance are not felt among this population but are spilled over to the insured. However, the study did not address whether the effect is real or pecuniary.

Real spillover effects are not constrained to the demand side for health care; there is also evidence of their existence on the supply side as well (i.e. among physicians). Using the 2004-2005 CTS Physician Survey and the 2003 CTS Household Survey , Pagan et al. (2007) find a significant link between a community's uninsurance

rate and the ability of primary care physicians (PCPs), as well as specialists, to deliver high-quality care to their patients in the local markets:

- PCPs are less likely to be able to obtain referrals for their patients to high quality specialists in a community with a high proportion of uninsured adults.

- Similarly, specialists are also less able to deliver high quality care to their patients in high uninsurance communities.

- In addition, patients are less likely to be satisfied with the quality of their specialist when the community uninsurance rate is high. This is true regardless of whether or not the patient is insured or uninsured.

Partially related to the thesis of this paper, Pylypchuk (2009) examines the effects of immigration on the health insurance status of Americans using the Current Population Surveys (CPS) and Medical Expenditures Panel Surveys (MEPS) from 1995 to 2005. He finds that a 10 percent increase in the immigrant labor supply significantly reduces natives' rates of private coverage by about 0.6 percentage points, which translates to an elasticity of about 0.2. He suggests that the reduction of coverage is the result of employers cutting back on hiring natives as well as offering fewer medical benefits to them. Moreover, immigrants, citizens and non-citizens alike, are found to have weaker preferences for health care, which implies that they may have a negative spillover effect on the health status of American workers.

McMorrow (2009) analyses several data sets to determine the effects of local uninsurance rates on the quality of care received by Medicare beneficiaries. The results are mixed; local uninsurance rates have both negative and positive spillover effects, and

the estimated coefficients vary on the degree of statistical significance across specifications:

- Local uninsurance rates are associated with the provision of fewer medical services to Medicare recipients, specifically if the services are considered to be unprofitable. The effect is stronger in smaller markets, but becomes insignificant after adjusting for race.

- As the community uninsurance rate rises, Medicare beneficiaries in smaller markets see an increase in the probability of death (a negative spillover) while those in larger markets see a decrease in the probability of death (a positive spillover). Again, the results vary across specifications.

- Medicare beneficiaries appear to be compensated by health care providers with 'unique' care in response to a reduction in shared quality in communities with high uninsurance rates, as they are more likely to use the Intensive Care Unit (ICU) and certain diagnostic services. After controlling for the race distribution, however, the effect becomes statistically insignificant.

Overall, the empirical evidence seems to be in favor of the existence of a non-pecuniary effect of community uninsurance. Pagan et al. (2007) stress the importance of this existence: "Covering the uninsured is an important health policy concern but the political argument about the need to provide coverage to everyone is usually based on a moral rationale. We believe that a better approach is to make sure that the insured political constituents are fully aware about how uninsurance impacts the quality and availability of health care for everyone, not just the uninsured."

At the end of its report, IOM (2003) proposes several research agendas, one of which is to investigate whether the local uninsurance rate, independent of other factors, affects the availability and quality of health care services for the community's insured as well as uninsured residents. This paper tries to answer such question by building on the models of Pauly and Pagan (2006, 2007). We attempt to determine the effects of community uninsurance on a number of health care quality measures among the insured. By using all available data from four CTS Household Surveys between 1996 and 2003, we can control for variation across communities and years in addition to conventional demographic variables. The results support the claim that there are real spillover effects from the uninsured to the insured, particularly in access to care and service utilization, even after taking into consideration community characteristics as well as variation across time.

CHAPTER 3

ECONOMETRIC MODEL

Consistent with Pauly and Pagan (2006, 2007), we express some measures of the health care quality available to the insured adults from 18 to 64 years old (the dependent variables) as a function of several individual and community characteristics. The regression equation is:

$$Y = \alpha + \beta_0 \, UNINSUR + \beta_1 X1 + \beta_2 X2 + \beta_3 X3 + \beta_4 X4 + \varepsilon$$

where Y denotes a dummy variable related to the health care quality of insured adults, UNINSUR is the community uninsurance rate, X1, X2, X3, X4 are, respectively, vectors composed of individual control variables, community control variables, year and community dummies, and location-specific time trends and dummies. Specifically:

- Our dependent variables, Y, are chosen to reflect some sort of care quality available to the general population. We choose a variety of measures for this purpose and code them as binary variables.

- UNINSUR is the community uninsurance rate, generated in-sample for each community and year. This is the main independent variable.

- X1 is a set of individual demographic indicators including age, gender, race, education, income, family size, family type, general health status, and insurance type (excluding military insurance). These are fairly conventional control

variables. Squared terms for age, education, and income are included to control for possible diminishing effects.

- Since it is possible that health care quality is related not only to characteristics of the individual but also to those of the community, X2 is designed to capture this relationship. It consists of community-level control variables such as the percentages of the general population eligible for Medicare and Medicaid, percentage of children, percentage of people with bad health, community employment rate, and community average per capita income. Because there is no community-level data in the CTS Surveys, we recode the relevant variables and then generate community-level values in-sample for each year, just like the main explanatory variable UNINSUR.

- X3 is a set of community dummies (60 communities less one) and year dummies (four years less one) to control for time-invariant community unobservable effects and variation across four years in the surveys. The ability to hold these factors constant is what distinguishes this paper from the existing literature.

- Finally, even after controlling for X2 and X3, there could still be some unobserved location-specific variation over time that is correlated with both community uninsurance and the quality of an individual's health care. To control for this sort of variation, we add a time trend for each community as well as interaction terms between regions and years. These trends form the vector X4. Most sample communities overlap U.S. Metropolitan Statistical Areas (MSA), as defined by the Office of Management and Budget, and the remainder

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conforms to the nonmetropolitan area definition of the Bureau of Economic Analysis (CTS User Guide, 2000). Therefore, classification of regions, as defined by the U.S. Census Bureau, based on community location is relatively straightforward. Appendix 1 lists all 60 communities in the CTS Household Survey.

All dependent variables are dummy variables. Although results are similar using probit models, we use the linear probability model (LPM) because of its computational simplicity and ease in interpreting coefficients. A drawback of the LPM is that the predicted probability could exceed 1 (or fall below 0) due to extreme values. However, Wooldridge (2002) states that "even with [its] weaknesses, the LPM often seems to give good estimates of the partial effects on the response probability near the center of x [i.e. the explanatory variable mean]… If the main purpose is to estimate the partial effect of x on the response probability, averaged across the distribution of x, then the fact that some predicted values are outside the unit interval may not be very important. The LPM need not provide very good estimates of partial effects at extreme values of x."

CHAPTER 4

DATA

We use all four rounds of the CTS Household Surveys, conducted in 1996-1997, 1998-1999, 2000-2001 and 2003, to investigate the research question. The CTS, sponsored by the Robert Wood Johnson Foundation, "is a national study designed to track changes in the health care system and the effects of those changes on people. Fifty-one metropolitan areas and nine nonmetropolitan areas were randomly selected to form the core of the CTS and to be representative of the nation as a whole. Respondents provided information about household composition and demographic characteristics, health insurance coverage, use of health services, unmet health care needs, out-of-pocket expenses for health care, usual source of care, patient trust and satisfaction, last visit to a medical provider, health status and presence of chronic health conditions, risk behaviors and smoking, and employment, earnings, and income" (CTS Codebook, 2000). The surveys were conducted by the Center for Studying Health Care System Change (CSHCSC). Data are made available for public use through the Health and Medical Care Archive at the University of Michigan's Inter-university Consortium for Political and Social Research (www.icpsr.umich.edu).

A variety of sampling techniques are used to select respondents within the 60 communities to ensure statistically equal representation of each community's residents. In additional to the main sample, separate surveys were conducted using smaller supplemental samples after the first three rounds of the CTS in 1996, 1998, and 2000.

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Because these supplemental samples are not organized by communities, and none is available for the last year (2003), we exclude them from our analysis.

As the surveys do not attempt to track previous respondents due to poor tracking information, high costs, and low response rates from movers, the four rounds should not be treated as panel data, but rather as a series of cross-sections. This has no effect on our ability to control for community-specific unobservable factors by including site dummies in the regression, since the 60 core communities stay the same throughout the years. Appendix 2 lists all the variables used in this paper.

A valid concern about this study may stem from the fact that the data only extend to 2003, and thus cannot reflect recent changes in the health care system as well as consumers' adjustment in uses and preferences. There is a successor to the CTS Household Survey called the Health Tracking Household Survey, performed in 2007. Unfortunately, it retained few of the community features of the CTS Household Survey (hence, the word 'community' was dropped from the title), and therefore is not a suitable database for our analysis.

To adjust for differences across years in income due to inflation, we use the annual Consumer Price Index (CPI) to normalize income to a base year (2003). These data are available at the website of the Bureau of Labor Statistics (www.bls.gov).

CHAPTER 5

RESULTS AND ANALYSIS

Table 1 and table 2 list the summary statistics for selected variables by each year and on average across four years at the individual and community level. Although this paper focuses on adults from 18 to 64 years old, the community level statistics are generated with the full sample so that, as the name implies, "community level" statistics will reflect the characteristics of all of its residents. Therefore, children and the elderly are included in the process of generating those variables. Individual level statistics, on the other hand, are calculated only for the 18 to 64 years old group because this is population that we study.

The main independent variable, UNINSUR, exhibits a slight downward trend from 12% in 1996 to 10% in 2003, although the low rate in 2003 could be a result of a smaller sample size compared to previous years. On average, across all 60 sites and four years, the community uninsurance rate is about 11%. Except for the community employment rate, which falls from 72% in 2000 to 68% 2003, variables show little fluctuation over the sample period. The change in the employment rate could be a potential source of endogeneity since it could affect both the community uninsurance rate and the quality of health care. We address this problem later in the chapter.

Table 3 lists the first regression result of the analysis, in which we regress a dummy variable, intended as a proxy for access to care, on the community uninsurance rate and other control variables. The dependent variable takes on the value of 1 if the

respondents report having a place to go when they are sick or in need of medical help, 0 otherwise. If there exists a negative spillover effect from the uninsured to the insured, the coefficient on UNINSUR is expected to be negative.

We try various specifications for this regression. Specification (1) is just an OLS regression of the dependent variable on UNINSUR with standard errors robust to cluster sampling within each community and year. We obtain a rather large and significant coefficient for UNINSUR (-.814). The interpretation of this coefficient is straightforward: an increase of 1 percentage point in the local uninsurance rate decreases the probability that the insured will have a place to go when they are in need of medical help by about 0.8 percentage point. However, without controlling for other factors there is very little meaning in this interpretation since it's very likely that the estimator is biased.

In (2), we add individual-level demographic indicators (X1) to our previous model. Doing this decreases the size of the coefficient on UNINSUR substantially, to -.269, but it is still very significant. Not surprisingly, the demographic variables help explain quite a lot of variation in the dependent variables and allow for more realistic estimate of the UNINSUR coefficient. Due to the rather large number of these control variables, it is not possible to report all of the coefficient estimates in the tables, but most turn out to be significant at the 1% level.

As stated before, time-varying community-specific variables (X2) improve the model by controlling for community-level factors that change over time and are prospectively correlated with the dependent variables. Therefore, they are added to the

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regression in (3). The estimated partial effect of UNINSUR on the dependent variable increases in size to -.304, and some, but not all, of the new variables' coefficients are statistically significant. In the next step, we add community and year dummy variables to control for time-invariant community-specific unobservable characteristics as well as variation in time. This decreases the size of the UNINSUR coefficient to -.152, suggesting that the previous estimates likely overstated the value of this coefficient.

It is possible that both the community uninsurance rate and health care quality are related to other omitted factors that vary at the local level across time. To control for this potential endogeneity, we add a time trend for each community along with interaction terms between regions and years. In this specification, (5), the coefficient is estimated to be -.25: a 1 percentage point increase in the local uninsurance rate decreases the probability that the insured residing in the same area have a place to go when in need of medical help by 0.25 percentage point, a non-negligible effect. When the model is estimated among people who have private coverage, mostly through their employers, the coefficient is about -.23, suggesting that the impact for privately insured people is nearly as large as for the overall insured adults population. The fact that the results are significant in all specifications provides compelling evidence that there exists a strong negative spillover from the uninsured to the insured.

After establishing (5) as the preferred specification, we proceed by using it for the rest of the analysis. Table 4 provides regression output for another model, in which the dependent variable is a measure of health care utilization. This variable takes on the value 1 if the respondent visits the doctor during the last 12 months before the survey

(excluding emergency visits) and 0 otherwise. Again, if there is a negative spillover, the coefficient on UNINSUR is expected to be negative.

Using the preferred model, the coefficient is estimated to be -.337: holding other things constant, a 1 percentage point increase in the community uninsurance rate decreases the probability that the insured make a visit to the doctor by .337 percentage points. To put it differently, a 3 percentage point increase in the uninsurance rate decrease the likelihood of the insured visiting the doctor by about 1 percentage point. It is, once again, not a small effect, and similar to the previous estimation the coefficient is statistically significant at the smallest conventional value (1%). The effects are roughly the same for the whole insured population and the privately insured.

Table 5 and table 6 provide output for additional dependent variables that parallel those used in Pauly and Pagan (2006, 2007). The variables include whether or not respondents postpone getting needed medical care, have unmet medical needs, have problems getting a referral to see a specialist, and trust that doctors would put their needs above all else, respectively. Again, the regression model follows specification (5) as discussed above. Unlike the strong results established in Pauly and Pagan (2006, 2007), we did not find a statistically significant effect of UNINSUR on these dependent variables among both the insured adults and the privately insured adults population. In fact, all the coefficients carry unexpected signs, such that the uninsurance rate is inversely related to the probability that the insured postpone getting medical care, have unmet medical needs, and have problem seeing a specialist, but is positively related to the insured trusting doctors to put their needs above all else. However, given that the

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size of these estimated coefficients is very small and their p-values are very large, it is more appropriate to conclude that there does not exist a relationship between the uninsurance rate and these dependent variables. It appears that after controlling more fully for variation across years and communities, the effects on these variables found in Pauly and Pagan (2006, 2007) disappear.

It is a bit disappointing that we could not confirm all the results in the aforementioned studies. However, the fact that there are very strong relationships between the community uninsurance rate and both having a usual place to go for care and whether a nonemergency visit was made warrants additional examination of this topic. Further research could find more indicators of care quality to use as dependent variables and test the hypothesis using models similar to our preferred specification in (5). Moreover, it would greatly increase the robustness of the results if additional data during recent years could be incorporated into the study; unfortunately, we are not aware of another source with such thorough and complete data on health care measures, although another data set such as the Current Population Survey (CPS) could be used in analyzing the topic.

CHAPTER 6

CONCLUSION

Using data from the CTS Household Surveys in 1996, 1998, 2000, and 2003, we examine the impact of community uninsurance on several measures of health care quality received by the insured. We estimate that, holding other factors constant, a 1 percentage point increase in the local uninsurance rate decreases the probability that the insured have a place to go when in need and making a visit to the doctor by 0.25 and 0.33 percentage point, respectively. As these two measures can be considered proxies for access to care and utilization, the results confirm that community uninsurance can have a detrimental effect not only on the uninsured population but on the insured population as well. This carries important, non-partisan policy implications for health care reform. We reiterate the conclusion from Pagan et al. (2007) that it is thus in the interest of the insured to minimize the number of uninsured in their communities, since the insured themselves bear some adverse consequences of community uninsurance.

Table 1: Summary statistics of selected variables
Individual level statistics
Population: adults 18-64, N=145,260

Variable	Average	1996	1998	2000	2003
Age	40.292 (12.535)	39.410 (12.218)	39.711 (12.432)	40.526 (12.553)	41.755 (12.866)
% Male	.463 (.498)	.468 (.499)	.463 (.499)	.461 (.498)	.460 (.498)
% Caucasian	.737 (.440)	.749 (.433)	.740 (.439)	.729 (.444)	.728 (.444)
% African American	.116 (.320)	.116 (.320)	.115 (.319)	.118 (.323)	.115 (.319)
% Hispanic	.101 (.302)	.090 (.287)	.102 (.302)	.109 (.312)	.105 (.306)
% Single	.260 (.438)	.262 (.439)	.263 (.440)	.263 (.440)	.251 (.433)
% Married	.641 (.479)	.643 (.479)	.636 (.481)	.639 (.480)	.650 (.476)
Highest grade	13.564 (2.531)	13.555 (2.504)	13.528 (2.529)	13.561 (2.544)	13.622 (2.549)
Census family income	57,897.18 (39,382.40)	51,336.43 (36,117.33)	55,802.96 (38,475.89)	61,913.62 (40,839.13)	63,495.68 (41,047.89)
Number of persons per family	2.616 (1.419)	2.620 (1.415)	2.616 (1.423)	2.606 (1.424)	2.624 (1.412)

Table 2: Summary statistics of selected variables
Community level statistics
Population: all respondents, N=207,969

Variable	Average	1996	1998	2000	2003
Community uninsurance rate	.111 (.043)	.120 (.042)	.114 (.042)	.109 (.045)	.104 (.041)
Community employment rate	.719 (.042)	.732 (.038)	.733 (.037)	.723 (.036)	.682 (.038)
Community Medicaid enrollment rate	.044 (.020)	.043 (.020)	.042 (.020)	.041 (.016)	.049 (.023)
Community Medicare enrollment rate	.130 (.030)	.117 (.022)	.120 (.024)	.133 (.026)	.156 (.031)
Community percentage of children	.170 (.016)	.176 (.015)	.174 (.014)	.170 (.014)	.157 (.015)
Community rate of people in bad health	.129 (.029)	.118 (.025)	.124 (.025)	.134 (.026)	.143 (.034)

Table 3: Regression results
Dependent variable: have a place to go when in need (1=yes, 0=no)
Population: insured adults 18-64, N varies across specifications

Variable	(1)	(2)	(3)	(4)	(5)	(6) privately insured
UNINSUR	-.814 *** (.070)	-.257 *** (.041)	-.304 *** (.048)	-.152 ** (.076)	-.250 *** (.079)	-.229 *** (.084)
X1		✓	✓	✓	✓	✓
X2			✓	✓	✓	✓
X3				✓	✓	✓
X4					✓	✓

**: significant at 5%
***: significant at 1%
(standard errors robust to heteroskadasticity and clustering in community and year in parentheses)

Table 4: Regression results
Dependent variable: have any doctor visit during the last 12 months (1=yes, 0=no)
Population: insured adults 18-64, N varies across specifications

Variable	(1)	(2)	(3)	(4)	(5)	(6) privately insured
UNINSUR	-.843 *** (.051)	-.269 *** (.044)	-.275 *** (.049)	-.220 *** (.077)	-.337 *** (.087)	-.332 *** (.084)
X1		✓	✓	✓	✓	✓
X2			✓	✓	✓	✓
X3				✓	✓	✓
X4					✓	✓

**: significant at 5%
***: significant at 1%
(standard errors robust to heteroskadasticity and clustering in community and year in parentheses)

Table 5: Regression results with additional dependent variables
Population: insured adults 18-64, N varies across dependent variables

	Postpone getting medical help	Have unmet medical needs	Have problem getting specialist referral	Trust doctors to put needs above all else
UNINSUR	-.012 (.076)	-.044 (.058)	-.016 (.094)	.014 (.053)

Table 6: Regression results with additional dependent variables
Population: privately insured adults 18-64, N varies across dependent variables

	Postpone getting medical help	Have unmet medical needs	Have problem getting specialist referral	Trust doctors to put needs above all else
UNINSUR	-.032 (.077)	-.056 (.057)	-.016 (.087)	-.001 (.054)

APENDIX A

LIST OF ALL COMMUNITIES IN THE CTS SURVEY

Site number	Site	State	Region
1	Boston	MA	Northeast
2	Cleveland	OH	Midwest
3	Greenville	SC	South
4	Indianapolis	IN	Midwest
5	Lansing	MI	Midwest
6	Little Rock	AR	South
7	Miami	FL	South
8	Newark	NJ	Northeast
9	Orange County	CA	West
10	Phoenix	AZ	West
11	Seattle	WA	West
12	Syracuse	NY	Northeast
13	Atlanta	GA	South
14	Augusta	GA/SC	South
15	Baltimore	MD	South
16	Bridgeport	CT	Northeast
17	Chicago	IL	Midwest
18	Columbus	OH	Midwest
19	Denver	CO	West
20	Detroit	MI	Midwest
21	Greensboro	NC	South
22	Houston	TX	South
23	Huntington	OH/KY/WV	Midwest/South
24	Killeen	TX	South
25	Knoxville	TN	South
26	Las Vegas	NV	West
27	Los Angeles	CA	West
28	Middlesex	NJ	Northeast
29	Milwaukee	WI	Midwest
30	Minneapolis	MN	Midwest
31	Modesto	CA	West
32	Nassau	NY	Northeast
33	New York City	NY	Northeast
34	Philadelphia	PA	Northeast
35	Pittsburgh	PA	Northeast
36	Portland	OR/WA	West
37	Riverside	CA	West
38	Rochester	NY	Northeast
39	San Antonio	TX	South

40	San Francisco	CA	West
41	Santa Rosa	CA	West
42	Shreveport	LA	South
43	St. Louis	MO/IL	Midwest
44	Tampa	FL	South
45	Tulsa	OK	South
46	Washington DC	VA/MD/DC	South
47	West Palm Beach	FL	South
48	Worcester	MA	Northeast
49	Dothan	AL	South
50	Terre Haute	IN	Midwest
51	Wilmington	NC	South
52	West Central Alabama	AL	South
53	Central Arkansas	AR	South
54	Northern Georgia	GA	South
55	Northeast Illinois	IL	Midwest
56	Northeast Indiana	IN	Midwest
57	Eastern Maine	ME	Northeast
58	Eastern North Carolina	NC	South
59	Northern Utah	UT	West
60	Northwest Washington	WA	West

APPENDIX B

LIST OF ALL VARIABLES USED IN THE STUDY - WITH DESCRIPTION

Variable name	Description
YEAR	Year identifier
SITE	Site identifier
HEALTH STATUS	Respondent's general health condition, from excellent to poor
AGE	Respondent's age
SEX	Respondent's gender
HIGHEST GRADE	Respondent's highest level of education
CENSUS INCOME	Respondent's annual Census family income
RACE	Respondent's race – 4 categories (White, African American, Hispanic, Native/Asian/other)
FAMILY TYPE	Respondent's family type – 5 categories (Single, single with kid(s), married, married with kid(s), non-nuclear)
INSURANCE TYPE	Respondent's current insurance type
PERSON PER FAMILY	Number of persons in respondent's family
EMPLOYER TYPE	Type of respondent's employer
SOURCE OF CARE	Whether respondent has a place to go when in need of medical treatment
NUMBER OF VISIT	Number of doctor visit respondent made during the last 12 months
PUT OFF CARE	Whether respondent has put off getting needed medical care during the last 12 months
UNMET NEED	Whether respondent reports having unmet medical need
TRUST DOCTOR	Whether respondent trusts that doctor would put his/her medical needs above all else
REFERRAL PROBLEM	Whether respondent feels that doctor may not refer him/her to a specialist when needed

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BIOGRAPHICAL INFORMATION

Tuan Nguyen will earn his Honors Bachelor of Business in Administration (Economics concentration) and his Master of Arts in Economics from the University of Texas at Arlington in May 2010. He will continue studying economics at the doctoral level at the University of Texas at Austin beginning August 2010.