

Increases in Risk and the Demand for Insurance: Evidence from the Health and Retirement Study

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Abstract

Alarie, Dionne, and Eeckhoudt (1991) suggest that increases in risk lead to a higher demand for insurance. However, these increases may result in soaring premiums and coverage exclusions that hinder access to insurance in the individual market. To address this issue, this paper explores the effects on health insurance coverage when the near elderly experiences adverse medical conditions. The findings suggest that for people covered by individual plans, experiencing adverse medical conditions is associated with a 6.3 percentage point lower predicted probability of remaining covered by individual plans and a 4.9 percentage point higher predicted probability of becoming uninsured. Furthermore, larger negative effects on coverage continuation are found in states that do not take initiatives to restrict the range that premium rates can be varied due to health status.

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1. Introduction

The 55-to 64-year-old (near elderly) Americans are faced with various life changes that may affect their access to health insurance. First, the near elderly are the cohort in transition from the active workforce to retirement, and the percentage of employment-based insurance plan covering retirees declines steadily, from 78% in 1992 to 64% in 2000. This leads the near elderly to become the age group most likely to purchase health insurance through individual markets. Secondly, the near elderly begin to experience declining health as they are the age group most likely to develop major medical conditions; statistics indicate that 31% of the near elderly experiences any of the following four categories of adverse medical conditions: (1) diabetes; (2) cancer; (3) coronary heart disease; (4) stroke. These adverse medical conditions cause the near elderly to become medically uninsurable in the individual market. While studies have explored the issue of insurance coverage continuation of the near elderly (e.g., McClellan, 1998; General Accounting Office, 1998), few studies have quantified the effects of adverse medical conditions on coverage continuation of the near elderly specifically in the individual health insurance market (Pauly and Nichols, 2002).

To address this issue, the data from the Health and Retirement Study (HRS) are used to test several hypotheses. First, I examine whether experiencing any of the aforementioned four kinds of adverse medical conditions reduces the likelihood of remaining insured in the individual market. Secondly, since experiencing adverse medical conditions may lead the respondents eligible for government insurance plans including Medicare or Medicaid, I quantify the substitution effects of individual insurance plans for government insurance plans.

Thirdly, I analyze whether experiencing adverse medical conditions increases the likelihood of becoming uninsured.

Most individual health insurance policies provide short-term coverage either for six months or for a year. The absence of long-term contracts constitutes one of the major drawbacks of the individual health insurance market because policy renewal may lead the insureds who develop adverse medical conditions to face a substantial increase in their premium rates. While financial risks caused by developing adverse medical conditions are mitigated by the prohibition of experience rating at the individual level, some states take further initiatives to restrict the range that premium rates can be varied due to health status. These initiatives are similar to offering long-term contracts in the individual market because they provide insurance against “classification risk”, the risk of being discovered to be “high-risk”. The effects of these state initiatives on coverage continuation are also analyzed in this paper.

A linear probability model is employed to estimate the effects of adverse medical conditions on coverage continuation. The preliminary findings suggest that for people covered by individual plans, experiencing adverse medical conditions is associated with a 6.3 percentage point lower predicted probability of remaining covered by individual plans next period, a 4.6 percentage point higher predicted probability of switching to government insurance programs next period, and a 4.9 percentage point higher predicted probability of becoming uninsured next period.

The aforementioned state initiatives can be summarized into two categories: (1) premium rating restrictions in the individual market; (2) high-risk insurance pools. The preliminary findings suggest larger negative effects of adverse medical conditions on coverage continuation in states that do not implement these initiatives. For people covered by individual plans and living in states that do not implement these initiatives, experiencing adverse medical conditions is associated with a 14.2 percentage point lower predicted probability of remaining covered by individual plans next period and a 11.3 percentage point higher predicted probability of becoming uninsured next period. However, these two percentages are 3.8 and 2.8, respectively, for people covered by individual plans and living in states that implement these initiatives. The latter two percentages are statistically insignificant so one cannot reject the hypothesis that experiencing adverse medical conditions has no effect on coverage continuation in the individual market where state initiatives are implemented.

Five further issues will be addressed in this paper. First, since state initiatives are similar to offering long-term contracts, a theoretical model will be constructed to characterize the effects of state initiatives on coverage continuation. Secondly, since the insurance against “classification risk” is absent in states that do not take initiatives, risk premium will be used to quantify the welfare loss due to the absence of this kind of insurance. As mentioned in Chiappori (2003), the estimation of risk premium requires two key parameters. One is the form of utility function, and the other is the size of damage associated with experiencing adverse medical conditions. This paper will employ the constant relative risk aversion utility

function, and it is feasible to derive the coefficient of relative risk aversion because the HRS solicits information on categorical risk aversion (Barsky et al, 1997). The size of the damage will be measured by the ratio of annual, out-of-pocket medical expenditures to annual income.

Thirdly, this paper will analyze the effects of adverse medical conditions on premium payments in the individual market. Fourthly, by combining the analysis in coverage continuation and premium payments, this paper will examine the price elasticity of purchasing health insurance in the individual market. Finally, policy implications of the findings will be discussed.

The rest of the paper is structured as follows. Section 2 overviews the operation of individual health insurance market. Section 3 describes the data and summary statistics. Section 4 estimates the effects of adverse medical conditions on coverage continuation. Section 5 concludes.

2. Operation of Individual Health Insurance Markets

The term of health insurance may broadly encompass three types of policies: (1) medical expense insurance; (2) long-term care insurance; (3) disability income insurance; however, this paper employs its narrow definition which refers to medical expense insurance only. Furthermore, this paper focuses on primary medical expense insurance policies, not supplemental policies.

The operation of individual health insurance market differs from the operation of employment-based group health insurance market in several fundamental ways. Specifically,

if firms provide employment-based group health insurance, employees are entitled to coverage, regardless of health status. However, to secure individual health insurance, each applicant has to provide evidence of insurability by passing the process of medical underwriting. According to the Blue Cross Blue Shield Association, applicants are uninsurable when they have any of the following four categories of adverse medical conditions: (1) diabetes; (2) cancer; (3) coronary heart disease; (4) stroke.

General Accounting Office (1996) reports characteristics of the individual health insurance market. To facilitate further discussion, I highlight its key characteristics that include duration of contracts, renewability, experience rating, and state initiatives to improve access to coverage in the individual market. Most individual health insurance policies provide coverage either for six months or for a year at which time the premium rate is fixed. The insured has the right to renew policies up to a specified age, usually the age of 65, and policy renewal does not require evidence of insurability. Experience rating at the individual level is prohibited; when policies are renewed, companies are not allowed to revise premium rates based on any particular individual's claims experience. Alternatively, companies revise premium rates based on the experience of a class of policies.

To improve access to coverage in the individual market, states have implemented initiatives to restrict the range that premium rates can be varied due to health status. These initiatives can be summarized into two categories: (1) premium rating restrictions in the individual market; (2) high-risk insurance pools. The number of states implementing any of

these two initiatives increases from 36 in 1996 to 37 in 2000 (General Accounting Office, 1996; Communicating for Agriculture and the Self-Employed, 2003).

The aforementioned initiatives are briefly introduced below. First, premium rating restriction refers to the policy which limits the range that insurers can vary premium rates and the characteristics that can be used to vary premium rates. A few states require community rating that charges the same premium rate for all policyholders, but several states impose health status rate band that varies from +/-10 % to +/-25% of the base rate. Secondly, high-risk insurance pools offer health insurance policies to people who are medically uninsurable in the individual market. Premium rates of these policies are somewhat higher than the standard risk rates in the individual market. However, these policies are subsidized, and a cap is imposed on premium rates of high-risk pool policies. State variation leads the cap to range from 125% to 200% of the standard risk rate. At the end of 2002, 172,845 participants nationwide enrolled in high-risk insurance pools.

3. Data Description

The Health and Retirement Study offers a unique data set to investigate the effects of adverse medical conditions on insurance coverage continuation because it started to survey the nearly elderly aged 50-61 in 1992 and has followed up with them every two years to collect a wide range of longitudinal information on health status, health insurance, risk aversion, and demographic and economic variables. Due to the substantial revision of health insurance survey questions in 2002, this paper employs data collected during 1992 and 2000.

In addition, the data versions used in this paper are the Rand HRS Data file and Rand-enhanced flat files because these files facilitate data management¹.

Since Americans aged 65 and above have access to universal health insurance, my analysis is restricted to respondents aged between 50 and 64. In the individual health insurance market, applicants are uninsurable when they have any of the following four kinds of adverse medical conditions: (1) diabetes; (2) cancer; (3) heart diseases; (4) stroke. Thus this paper focuses on the effects of these four kinds of adverse medical conditions on coverage continuation. To facilitate further discussion, I define respondents who experience any of the aforementioned four kinds of adverse medical conditions as “sick” respondents. Analogously, I define respondents who do not experience any of the aforementioned four kinds of adverse medical conditions as “healthy” respondents. Statistics indicate that sick respondents account for 31% of the sample, and respondents covered by individual plans account for 6% of the sample. Table 1 shows respondents’ transitional matrix of insurance status. This matrix suggests that adverse medical conditions cause difficulties in continued coverage in the individual market; compared to their healthy counterparts, sick respondents covered by individual plans are less likely by 10% (48% versus 58%) to remain covered by individual plans next period, and are more likely by 4% (13% versus 9%) to become uninsured next period.

¹ For a detailed description of the HRS study, see Juster & Suzman (1995), Juster & Smith (1997), and HRS’s official website at <http://hrsonline.isr.umich.edu/>. For a comprehensive overview of the Rand HRS Data file and Rand-enhanced flat files, see <http://www.rand.org/labor/aging/dataproduct/#randhrs>.

After showing insurance status transition for respondents of all types of insurance status, this paper illustrates the effects of state initiatives on insurance status transition specifically for respondents covered by individual plans. These initiatives include the implementation of premium rating restrictions in the individual market and/or the establishment of high-risk insurance pools. The statistics displayed in Table 2 suggest larger negative effects of adverse medical conditions on coverage continuation in states that do not take these initiatives. Compared to their healthy counterparts, sick respondents living in states that do not take these initiatives are less likely by 20% (37% versus 57%) to remain covered by individual plans next period, and are more likely by 9% (20% versus 11%) to become uninsured next period. However, these two differences are 4% and 2%, respectively, in states that take these initiatives.

To simplify further discussion, I assume no policy switches if respondents remain in the same insurance status. This assumption is justified because the statistics displayed in Table 3 indicate that regardless of insurance status and health conditions, more than 90% of the respondents are covered by the same policies if they remain in the same insurance status in two consecutive periods.

4. Estimation of the Effects of Adverse Medical Conditions on Coverage Continuation

4.1 Stylized Model of Insurance Purchase Decisions

The seminal work of Ehrlich and Becker (1972) can be used to illustrate the purchase decision of health insurance policies, and their model is restated below for convenience.

Consider an economy inhabited by individuals who live for T periods. In each period, individuals face only two states of the world (0, 1) with probability p and $(1-p)$, respectively. Their endowed real income in each state is $(I-L)$ and I where L is the prospective loss if state 0 occurs. The insurance market is competitive in which only one-period contracts are provided. This kind of contracts enables the transfer of income in state 1 for income in state 0 at the market premium rate π , measured in terms of income in state 1.

$$(1) -\frac{dI_1}{dI_0} = \pi$$

Individuals are risk averse and have strictly concave utility functions over consumption.

Since the duration of contracts lasts for one period only, individuals' expected utility maximization problem can be reduced to a one-period maximization problem. That is, in the beginning of each period, individuals make the insurance purchase decision as follows:

$$(2) \text{Max}_{\{\alpha\}} \text{EU} = p U(I-L+\alpha) + (1-p) V(I-\pi \alpha)$$

where α is the amount of insurance purchased in state 0. The first-order optimality condition is

$$(3) \pi = \frac{pU'_0}{(1-p)V'_1}$$

where $\frac{pU'_0}{(1-p)V'_1}$ is the marginal rate of substitution between income in state 0 and income in state 1.

Equation (3) implies that insurance will be purchased if at the endowment point, the marginal rate of substitution exceeds the market premium rate:

$$(4) \pi < \frac{pU'(I-L)}{(1-p)V'(I)}$$

4.2. Identification Strategy

The stylized model suggests that insurance purchase decision depends on the difference between marginal rate of substitution and market premium rate. This difference is modeled as an unobserved variable y^* such that

$$(6) y^* = \beta_0 + \text{AMC} \beta_1 + \mathbf{X} \beta + \varepsilon, y = 1 [y^* \geq 0]$$

where AMC refers to a binary variable of adverse medical conditions. The variable y refers to a binary variable of individual insurance coverage equal to 1 if individual insurance plan is purchased. The response probability for y is estimated by the linear probability model below.

$$(5) y_{it} = \beta_0 + \beta_1 \text{AMC}_{it} + \beta_2 w_{it-1} + \beta_3 \text{AMC}_{it}^* w_{it-1} + \beta_4 v_{it-2} + \beta_5 X_{it} + \varepsilon_{it}$$

where the idiosyncratic error ε_{it} is structured to satisfy the assumption of contemporaneous exogeneity. That is,

$$(6) E[\varepsilon_{it} | \text{AMC}_{it}, X_{it}, w_{it-1}, v_{it-2}] = 0$$

where $w = [UD, OE, SE, GOV]$, a vector of binary variables of insurance status in which UD is an uninsured binary variable, OE is a binary variable indicating whether the respondent is covered by their own employment-based plan, SE is a binary variable indicating whether the respondent is covered by their spouse's employment-based plan, and GOV is a binary variable indicating whether the respondent is covered by government insurance programs including Medicare or Medicaid. The reference group of insurance status is respondents covered by plans purchased from the individual market.

Dor, Sudano, and Baker (2004) suggests that past insurance status affects current health status. To control for this potential bias, variables of two-period lagged insurance status are included in the regression. These variables are represented by $v = [UD, OE, SE, GOV, MISS]$, a vector of binary variables of insurance status. Vector v has the same binary variables as vector w except that vector v includes one more insurance status variable. This variable is *MISS*, a binary variable indicating whether insurance status is unknown².

An OLS approach is used to estimate the effect of adverse medical conditions on coverage continuation³. Since contemporaneous exogeneity is satisfied in the aforementioned econometric model, and weak dependence condition is assumed to be held, the OLS estimator produces consistent⁴ estimators of β . Additionally, while individual fixed effects are not explicitly controlled in the model, these effects are actually controlled because w and v , the variations of lagged dependent variable, are included as explanatory variables. Since fixed

² Respondents with unknown one-period lagged insurance status are excluded from the analysis. However, respondents with recognized one-period lagged insurance status, but unknown two-period lagged insurance status, are included in the analysis. The primary reason causing unknown insurance status in a particular wave is that respondents are not interviewed.

³ Alternatively, one might think of using a first-differenced equation to estimate the relationship between the onset of adverse medical conditions and the change in insurance coverage or use a five-state Markov model to estimate the effects of adverse medical conditions on coverage since insurance status includes five distinct states in every period. However, these two alternatives are not feasible. The first-differenced approach is not feasible because of limited within-individual variation in the key explanatory variable; only 5% of the HRS respondents developed adverse medical conditions during the survey period of 1996-2000. The five-state Markov model is not feasible because the number of observations in some states is too small.

⁴ The aforementioned model ensures that ε_{it} is uncorrelated with w_{it-1} and v_{it-2} , but ε_{it} can be correlated with three-period lagged insurance status. This suggests that the idiosyncratic error can be correlated within an individual. Wooldridge (2003) indicates that this correlation is not likely to cause inconsistency of the OLS estimator.

effects are time-invariant, they affect both current and past insurance status. Thus the inclusion of past insurance status provides an alternative way to control for fixed effects.

4.3 Preliminary Findings

The coefficient estimates presented in Table 4 suggest that for people covered by individual plans, experiencing adverse medical conditions reduces the likelihood of retaining their policies; Column (A-1) shows that when socio-economic variables are not controlled for, experiencing adverse medical conditions is associated with a 7.7 percentage point lower predicted probability of remaining covered by individual plans. This percentage amounts to 6.3% when socio-economic variables are controlled for in Column (A-2). Additionally, for uninsured people and people covered by other types of insurance plans, one cannot reject the hypothesis that experiencing adverse medical conditions has no effects on the likelihood of obtaining coverage in the individual market.

The findings of Column (B-1) and (B-2) suggest that regardless of insurance status, experiencing adverse medical conditions increases the likelihood of enrolling in government insurance programs. However, the findings in Column (C-1) and (C-2) suggest that the effects vary across insurance status when one investigates whether experiencing adverse medical conditions affects the likelihood of becoming uninsured. Column (C-2) suggests that for people covered by individual plans, experiencing adverse medical conditions is associated with a 4.9 percentage point higher predicted probability of becoming uninsured next period. On the contrary, for uninsured people and people covered by spouse's employment-based

plans or by government insurance plans, experiencing adverse medical conditions reduces the probability of becoming uninsured next period.

In Column (C-1) and (C-2), the dependent variables indicate whether respondents are uninsured when they are interviewed. Since respondents may be insured when they are interviewed, but are out of insurance between interviews, I employ two measures to investigate the effects of adverse medical conditions on uninsuredness when respondents are interviewed as well as between interviews. One of the measures indicates whether respondents are uninsured at their next interview or ever uninsured between interviews [Column (D-1) and (D-2)], and the other measure indicates whether respondents are uninsured at their next interview or ever uninsured between interviews causing \$100 or above out-of-pocket medical expenses [Column (E-1) and (E-2)]. The findings suggest that compared to their sick counterparts, healthy respondents covered by individual plans may have a slightly higher chance to become uninsured between interviews, but this uninsuredness does not seem to cause these healthy respondents financial consequences. The estimate of Column (D-2) suggests that for people covered by individual plans, experiencing adverse medical conditions is associated with a 4.2 percentage point higher predicted probability of becoming uninsured at their next interview or between interviews. This estimate is marginally significant, but has a smaller magnitude than the corresponding estimate in Column (C-2). On the contrary, the estimate of Column (E-2) suggests that for people covered by individual plans, experiencing adverse medical conditions is associated with a 5.6 percentage point

higher predicted probability of becoming uninsured at their next interview or ever uninsured between interviews causing \$100 or above expenses. This estimate is statistically significant and has a larger magnitude than the corresponding estimate in Column (C-2).

States have taken initiatives to restrict the range that premium rates can be varied due to health status. These initiatives include the implementation of premium rating restrictions in the individual market and/or the establishment of high-risk insurance pools. Table 5 reports the effects of state initiatives on coverage continuation specifically for respondents covered by individual plans, even though respondents of all types of insurance status are included in the regression. The findings displayed in Table 5 suggest larger negative effects of adverse medical conditions on coverage continuation in states that do not implement these initiatives. For people living in states that do not implement these initiatives, experiencing adverse medical conditions is associated with a 14.2 percentage point lower predicted probability of remaining covered by individual plans next period and a 11.3 percentage point higher predicted probability of becoming uninsured next period. However, these two percentages are 3.8 and 2.8, respectively, for people living in states that implement these initiatives. Furthermore, the latter two percentages are statistically insignificant so one cannot reject the hypothesis that experiencing adverse medical conditions has no effects on coverage continuation in the individual market in states that implement these initiatives.

5. Conclusion

This paper explores the effects on health insurance coverage when the near elderly

experiences adverse medical conditions. The findings suggest that for people covered by individual plans, experiencing adverse medical conditions is associated with a 6.3 percentage point lower predicted probability of remaining covered by individual plans and a 4.9 percentage point higher predicted probability of becoming uninsured. Furthermore, larger negative effects on coverage continuation are found in states that do not take initiatives to restrict the range that premium rates can be varied due to health status.

Five further issues will be addressed in this paper. First, since state initiatives are similar to offering long-term contracts, a theoretical model will be constructed to characterize the effects of state initiatives on coverage continuation. Secondly, since the insurance against “classification risk” is absent in states that do not take initiatives, risk premium will be used to quantify the welfare loss due to the absence of this kind of insurance. Thirdly, this paper will analyze the effects of adverse medical conditions on premium payments in the individual market. Fourthly, by combining the analysis in coverage continuation and premium payment, this paper will examine the price elasticity of purchasing health insurance in the individual market. Finally, policy implications of the findings will be discussed.

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Table 1: Transitional Matrix of Insurance Status

Insurance Status in Period (t-1)	Insurance Status in Period (t)						Overall Insured	Total
	Subgroup of the Insured, Covered by				Uninsured	Overall Insured		
	(1) Individu: Plan	(2) Gov't Program	(3) Own Emp Plan	(4) Spouse's Emp Plan				
1. Sick Respondents in Period (t)								
(1) Individual Plan	182 (0.48)	36 (0.10)	78 (0.21)	31 (0.08)	49 (0.13)	327 (0.87)	376 (1.00)	
(2) Gov't Program	12 (0.01)	1,214 (0.93)	27 (0.02)	13 (0.01)	41 (0.03)	1,266 (0.97)	1,307 (1.00)	
(3) Own Employment Plan	129 (0.04)	160 (0.05)	2,705 (0.81)	247 (0.07)	111 (0.03)	3,241 (0.97)	3,352 (1.00)	
(4) Spouse's Emp Plan	53 (0.04)	68 (0.06)	284 (0.24)	746 (0.63)	30 (0.03)	1,151 (0.97)	1,181 (1.00)	
Uninsured	51 (0.07)	170 (0.24)	84 (0.12)	29 (0.04)	380 (0.53)	334 (0.47)	714 (1.00)	
Overall Insured	376 (0.06)	1,478 (0.24)	3,094 (0.50)	1,037 (0.17)	231 (0.04)	5,985 (0.96)	6,216 (1.00)	
2. Healthy Respondents in Period (t)								
(1) Individual Plan	731 (0.58)	48 (0.04)	290 (0.23)	88 (0.07)	114 (0.09)	1,157 (0.91)	1,271 (1.00)	
(2) Gov't Program	25 (0.03)	804 (0.83)	52 (0.05)	25 (0.03)	65 (0.07)	906 (0.93)	971 (1.00)	
(3) Own Employment Plan	402 (0.05)	128 (0.01)	7,167 (0.83)	650 (0.08)	253 (0.03)	8,347 (0.97)	8,600 (1.00)	
(4) Spouse's Emp Plan	167 (0.05)	56 (0.02)	825 (0.27)	1,897 (0.62)	107 (0.04)	2,945 (0.96)	3,052 (1.00)	
Uninsured	151 (0.08)	160 (0.09)	262 (0.15)	92 (0.05)	1,125 (0.63)	665 (0.37)	1,790 (1.00)	
Overall Insured	1,325 (0.10)	1,036 (0.07)	8,334 (0.60)	2,660 (0.19)	539 (0.04)	13,355 (0.96)	13,894 (1.00)	

1. Period t refers to 1996, 1998, and 2000. These three years are chosen because the definition of uninsuredness remains exactly the same across these survey years.

2. Sick respondents refers to the respondents who are diagnosed with any of the following four kinds of adverse medical conditions: (1) diabetes; (2) cancer; (3) heart diseases; (4) stroke.

3. Number of observations is shown in each cell; numbers in parentheses are proportions.

Table 2: Effects of State Initiatives on Insurance Status Transition Given that Respondents are Covered by Individual Plans

Insurance Status in Period (t-1)	Insurance Status in Period (t)						Total
	Subgroup of the Insured, Covered by				Uninsured	Overall Insured	
	(1) Individual Plan	(2) Gov't Program	(3) Own Emp Plan	(4) Spouse's Emp Plan			
Panel A: Respondents Living in States that Implement Premium Restrictions							
A-1. Sick Respondents in Period (t)							
Individual Plan	143 (0.54)	25 (0.09)	51 (0.19)	19 (0.07)	27 (0.10)	238 (0.90)	265 (1.00)
A-2. Healthy Respondents in Period (t)							
Individual Plan	494 (0.58)	28 (0.03)	205 (0.24)	56 (0.07)	69 (0.08)	783 (0.92)	852 (1.00)
Panel B: Respondents Living in States that Do Not Implement Premium Restrictions							
B-1. Sick Respondents in Period (t)							
Individual Plan	39 (0.37)	10 (0.10)	24 (0.23)	11 (0.10)	21 (0.20)	84 (0.80)	105 (1.00)
B-2. Healthy Respondents in Period (t)							
Individual Plan	228 (0.57)	19 (0.05)	81 (0.20)	27 (0.07)	42 (0.11)	355 (0.89)	397 (1.00)

1. Period t refers to 1996, 1998, and 2000.

2. State initiatives include the implementation of premium rating restrictions in the individual market and/or the establishment of high-risk insurance pools.

3. Sick respondents refers to the respondents who are diagnosed with any of the following four kinds of adverse medical conditions: (1) diabetes; (2) cancer; (3) heart diseases; (4) stroke.

4. Number of observations is shown in each cell; numbers in parentheses are proportions.

Table 3: Policy Changes for Respondents who Have the Same Insurance Status in Two Consecutive Periods

Insurance Status in Period (t-1) and t, Covered by	Health Status			
	Sick		Healthy	
	Remain in the Same Policy	Switch to a Different Policy	Remain in the Same Policy	Switch to a Different Policy
(1) Individual Plan	169 (0.94)	10 (0.06)	675 (0.93)	49 (0.07)
(2) Gov't Program	1,176 (0.98)	28 (0.02)	778 (0.98)	12 (0.02)
(3) Own Employment Plan	2,454 (0.92)	226 (0.08)	6,459 (0.91)	656 (0.09)
(4) Spouse's Employment Plan	666 0.90	71 (0.10)	1,680 0.90	192 (0.10)

1. Period t refers to 1996, 1998, and 2000.

2. Sick respondents refers to the respondents who are diagnosed with any of the following four kinds of adverse medical conditions: (1) diabetes; (2) cancer; (3) heart diseases; (4) stroke.

3. Number of observations is shown in each cell; numbers in parentheses are proportions.

Table 4: Effects of Adverse Medical Conditions on Coverage

Independent Variables	Dependent Variables									
	(A) Individually Insured at Next Interview		(B) Insured by Gov't Plan at Next Interview (Inw)		(C) Uninsured at Next Interview		(D) Uninsured at Next Inw or Ever Uninsured b/w Inw		(E) Uninsured at Next Inw or Ever Uninsured b/w Inw Causing \$100+ Expenses	
	(A-1)	(A-2)	(B-1)	(B-2)	(C-1)	(C-2)	(D-1)	(D-2)	(E-1)	(E-2)
Individually Insured & Having Adverse Medical Conditions (AMC)	-0.077 (0.030)	-0.063 (0.031)	0.062 (0.017)	0.046 (0.017)	0.048 (0.020)	0.049 (0.020)	0.041 (0.023)	0.042 (0.024)	0.057 (0.022)	0.056 (0.022)
Uninsured & Having AMC	-0.009 (0.011)	-0.006 (0.012)	0.150 (0.018)	0.135 (0.018)	-0.109 (0.022)	-0.103 (0.023)	-0.060 (0.020)	-0.048 (0.021)	-0.049 (0.021)	-0.044 (0.022)
Insured by Own Employment Plan & Having AMC	-0.005 (0.004)	-0.001 (0.005)	0.031 (0.004)	0.018 (0.004)	0.002 (0.004)	-0.001 (0.004)	0.004 (0.005)	0.001 (0.005)	0.005 (0.004)	0.0003 (0.004)
Insured by Spouse's Employment Plan & Having AMC	-0.011 (0.008)	-0.009 (0.008)	0.040 (0.008)	0.021 (0.008)	-0.011 (0.006)	-0.018 (0.006)	-0.002 (0.008)	-0.012 (0.008)	-0.005 (0.007)	-0.017 (0.007)
Insured by Government Plan & Having AMC	-0.013 (0.006)	-0.008 (0.006)	0.086 (0.014)	0.070 (0.014)	-0.033 (0.010)	-0.031 (0.010)	-0.028 (0.012)	-0.030 (0.013)	-0.026 (0.011)	-0.027 (0.012)
Socio-Economic Covariates Included?	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
R-squared	0.279	0.284	0.623	0.629	0.396	0.405	0.432	0.439	0.422	0.431
Number of Observations	19,745	18,147	19,745	18,147	19,745	18,147	19,746	18,148	19,745	18,147

1. Dependent variables are binary variables indicating respondents' insurance status next period. Five kinds of status are used: (1) individually insured at next interview; (2) insured by government plan at next interview; (3) uninsured at next interview; (4) uninsured at next interview or ever uninsured between these two interviews; (5) uninsured at next interview or ever uninsured between these two interviews that incurred \$100 or above medical expenses. Estimation is done using a linear probability model.
2. The sample include respondents with any of the following five kinds of insurance status: uninsured, covered by individual plan, by own employment-based plan, by spouse's employment-based plan, or by government insurance program.
3. Column (A-1), (B-1), (C-1), (D-1), (E-1) include the following independent variables: adverse medical conditions (AMC), dummies of insurance status, interaction between AMC and dummies of insurance status, dummies of last period's insurance status, dummies of the availability of retiree health insurance plan, and year fixed effects. In addition to the aforementioned variables, Column (A-2), (B-2), (C-2), (D-2), (E-2) include socio-economic variables: degree of risk aversion, gender, marital status, age, household income, race, whether hispanic, education, smoking, and other medical conditions (high blood pressure, lung diseases, psychiatric problems, arthritis or rheumatism).
4. Numbers in parentheses are standard errors corrected for individual-level clustering.

Table 5: Effects of State Initiatives on Coverage Continuation in the Individual Market

Independent Variables	Dependent Variables				
	(A) Individually Insured at Next Interview	(B) Insured by Gov't Plan at Next Interview (Inw)	(C) Uninsured at Next Interview	(D) Uninsured at Next Inw or Ever Uninsured b/w Inw	(E) Uninsured at Next Inw or Ever Uninsured b/w Inw Causing \$100+ Expenses
Individually Insured, in States without Restrictions, & Having AMC	-0.142 (0.058)	0.037 (0.031)	0.113 (0.047)	0.108 (0.051)	0.130 (0.050)
Individually Insured, in States with Restrictions, & Having AMC	-0.038 (0.037)	0.051 (0.020)	0.028 (0.022)	0.019 (0.026)	0.030 (0.024)
R-squared	0.287	0.630	0.406	0.440	0.432
Number of Observations	18,031	18,031	18,031	18,032	18,031

1. State initiative is a binary variable equal to 1 if the state implements any of the following two programs or regulatory policies: (1) premium rating restrictions in the individual market; (2) high-risk insurance pools.
2. The definitions of dependent variables are the same as those in Table 4; the sample include the same kinds of respondents as those in Table 4.
3. All columns include the following independent variables: dummy of adverse medical conditions (AMC), dummies of insurance status, dummy of state initiatives, interaction between any two of the aforementioned three kinds of dummies, interaction among the aforementioned three kinds of dummies, dummies of last period's insurance status, dummies of the availability of retiree health insurance plan, year fixed effects, and socio-economic variables as defined in Table 4.
4. Numbers in parentheses are standard errors corrected for individual-level clustering.