



# Changes in the Incidence and Duration of Periods Without Insurance

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**Changes in the Prevalence and Duration of Spells Without Insurance,  
1983-86 vs. 2001-04**

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## ABSTRACT

**Background.** Policy-makers have recently proposed ways of covering more of the uninsured. However, little data indicate how the prevalence and duration of uninsured spells has changed over time.

**Methods.** Two Survey of Income and Program Participation (SIPP) datasets were used: one covering 1983-6 (N=25,946), the other 2001-4 (N=40,282). For each set of years, we estimated the probability of suffering an uninsured spell, along with a Cox competing risk model for obtaining private and public insurance. We calculated the implied probabilities that individuals in various demographic groups would be uninsured for different amounts of time.

**Results.** The share of the population with an uninsured spell rose from 33.9% in 1983-6 to 37.5 % in 2001-4 ( $p<.001$ ). The share with a spell increased markedly among the least educated, and decreased slightly among the most educated. The share of new spells ending within 24 months rose from 73.8% to 79.7% ( $p<.001$ ). Increases were experienced for all age and education groups. Transition from uninsured to private insurance fell from 65.2% to 59.2% ( $p<.001$ ). Transition to public insurance rose from 8.7% to 20.4% ( $p<.001$ ).

**Conclusions.** In 2001-4, more people had spells without insurance, but these spells were shorter than they were in 1983-6. An increase in transitions onto public coverage offset a

1 reduction in transitions onto private coverage. Our results portend difficulties if private  
2 coverage continues to decline and is not offset by further expansions of public insurance.

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1           The number of Americans without health insurance has increased markedly in  
2 recent years. The most widely cited statistic is the share of people reporting no insurance  
3 coverage over an entire calendar year. That number grew from 32 million (15% of the  
4 non-elderly population) in 1988 to 46 million (18% of the non-elderly population) in  
5 2005.<sup>1</sup> The status of the uninsured has become even more important as policy-makers  
6 mull new options to cover more of the uninsured.<sup>2</sup>

7           Lack of insurance for an entire year reflects only one dimension of insurance  
8 coverage, however. Data from the 1980s suggested that about twice as many people were  
9 uninsured at some point in a year as were uninsured throughout the year.<sup>3</sup> Studies  
10 showed that being without insurance, even temporarily, could be harmful for health.<sup>4,5</sup> At  
11 the same time, longer duration spells have a more immediate and larger adverse impact  
12 on health.<sup>6-8</sup> Longer spells may also be concentrated among a group that is less healthy  
13 to begin with.<sup>4</sup> The duration of uninsurance affects the consequences of being uninsured,  
14 the costs of addressing the problem, and the administrative ease in finding the uninsured.

15           Little is known about how uninsured spells have changed over time – both  
16 incidence and duration. Economic and social factors have pushed in both directions. As  
17 the prevalence of temporary and contingent work has increased,<sup>9</sup> private insurance  
18 coverage has become harder to obtain. In addition, increases in the share of premiums  
19 that employees pay may discourage some workers from taking up private coverage.<sup>10</sup>  
20 Each of these factors suggests there will be more long-term uninsured spells. On the  
21 other hand, eligibility for public insurance has expanded. In the early 1980s, Medicaid  
22 coverage for the non-elderly was limited to single women and children in low income  
23 families. Since then, Medicaid eligibility has been extended to dual parent families, and

1 families at higher income levels. The net change over time in the incidence and duration  
2 of time without insurance is thus uncertain.

3 We examined changes over time in the prevalence and duration of spells without  
4 insurance, using data from the 1983-86 and 2001-04 Surveys of Income and Program  
5 Participation (SIPP). The overall economy was better in 2001-4 than in 1983-6, but in  
6 each case it was in recovery from a recession. We controlled for employment changes to  
7 examine the impact of economic factors. We differentiated population groups by age and  
8 education and separately examined transitions to public and private insurance.

9

## 10 METHODS

### 11 Data

12 The data are from the Survey of Income and Program Participation (SIPP). The  
13 SIPP is a stratified random sample of families in the United States that longitudinally  
14 follows each family member for several years. The design and operation of the SIPP are  
15 described elsewhere.<sup>11</sup> The SIPP panel beginning in the fall of 1983 (the “1983-86  
16 SIPP”) follows individuals for 32 months, whereas the SIPP panel beginning in 2001 (the  
17 “2001-04 SIPP”) follows individuals for 36 months. We address this difference in panel  
18 lengths by estimating a hazard model for the duration of uninsured spells. In considering  
19 whether the person was uninsured at all, we consider only the first 32 months of the  
20 2001-4 SIPP.

21 Survey participants are asked about a number of socioeconomic variables,  
22 including age, race, sex, geographic location, education, income, wealth, labor supply,  
23 and participation in government programs. Every four months, respondents are asked to

1 report whether each member of the family had health insurance in each of the past four  
2 months, and if so, what type of health insurance.

3 We used the education level of the family's highest earner as the main  
4 socioeconomic variable of interest. We do not use income to sort families, since income  
5 could be endogenous to health insurance.<sup>12, 13</sup> Education is also a better proxy for long-  
6 run earning potential.

7 We sample people who were aged 61 or younger at the time of the first survey in  
8 the panel. The restriction to the population 61 and under ensures that no one will age into  
9 Medicare. Further excluding people who left the sample because the 1983-6 panel was  
10 made smaller due to budget cutbacks, and excluding people in the military or receiving  
11 veterans' payments and their relatives (who are usually covered by CHAMPUS or  
12 CHAMPVA), results in a final sample of 25,946 people in the 1983-86 panel and 40,206  
13 people in the 2001-04 panel. These samples represent 189 million individuals in 1983-6  
14 and 233 million individuals in 2001-4.

15 For the sample of people with an uninsured spell, we use the 8,706 people in the  
16 1983-86 panel and the 14,443 people in the 2001-04 panel who report spending some  
17 time uninsured (and who meet the other criteria above).

18

## 19 Analysis

20 We examined the fraction of different demographic groups with an uninsured  
21 spell in 1983-6 and 2001-4. For each of the people who become uninsured in the 1983-  
22 86 and 2001-04 SIPP surveys, we estimated a Cox competing risk model with  
23 proportional hazards. We use a non-parametric baseline hazard, effectively allowing the

1 baseline hazard to vary by month.<sup>14</sup> The dependent variable is one of three insurance  
2 groups: publicly insured; privately insured; and uninsured. We include dummy variables  
3 for two age groups (<18, 18-61), measured at the time of the first survey, four education  
4 groups (no high school diploma, exactly a high school diploma, some college, and  
5 college graduate +), three racial groups (black, white, other), and gender. Lunn and  
6 McNeil's Method B was employed,<sup>15</sup> so that the relationship between the baseline  
7 hazards for obtaining private and public health insurance was left unrestricted.

8         The regressions and summary statistics are weighted using population weights.  
9 Standard errors are adjusted for the complex survey design and are clustered by  
10 individual, using Stata 9.2.<sup>16</sup> To examine population-constant trends in insurance  
11 coverage, we weight the age- and income-specific probabilities, using as weights the  
12 average of the population distribution in the 1983-6 data and the population distribution  
13 in the 2001-4 data.

14

## 15 RESULTS

16         Characteristics of the study sample are shown in Table 1. The population has  
17 more adults and more minorities in 2001-04 than in 1983-86. Average education  
18 increased over time. The share of the population uninsured in any month is slightly  
19 higher in 2001-04 than in 1983-86, though not statistically significantly so (15.9% vs.  
20 15.8%, respectively,  $p = .075$ ). More individuals experienced an uninsured spell in the  
21 first 32 months of the 2001-4 panel than in 1983-6, 37.3% vs. 35.4% respectively ( $p <$   
22  $.001$ ).



1 Hazard model estimates for obtaining insurance among those who had an  
2 uninsured spell are reported for each survey in the appendix. The coefficient estimates  
3 were in the expected direction in all cases. Younger people are more likely to take up  
4 public coverage, and people with less education are less likely to join private coverage.  
5 Non-whites are more likely to become insured through public coverage.

6 The distribution of time spent uninsured is shown in Table 2. The percent without  
7 any uninsured spells is reported in the first column. The overall percentage continuously  
8 insured fell from 66.1% in 1983-6 to 62.5% in 2001-4 ( $p < .001$ ). The declines were  
9 largest among those without a high school diploma, falling from 51.9% in 1983-6 to  
10 36.5% in 2001-4 ( $p < .001$ ). It fell a bit for those with exactly a high school diploma and  
11 stayed constant for those with some college. Among college graduates, the percentage  
12 insured the whole time actually rose slightly from 80.2% to 82.0% ( $p = .048$ ). The  
13 percentage continuously insured fell slightly more for adults than for children.

14 Figure 1 shows the probability of becoming insured before a given month in  
15 1983-6 and 2001-4, for those experiencing an uninsured spell. Shorter uninsured spells  
16 were more common in 2001-4 than in 1983-6, in the sense that the probability of  
17 obtaining insurance is higher in 2001-4 starting in month 8 after an uninsured spell begins  
18 (though before month 8, the probability of obtaining insurance is lower in 2001-4 in some  
19 cases) The increases in probability associated with “seam bias”—excessively large  
20 changes in health insurance at each SIPP new survey every four months—are also  
21 apparent.

22 The remaining columns of Table 2 show the duration uninsured for people  
23 experiencing an uninsured spell in 1983-6 and 2001-4. The share of people obtaining

1 insurance coverage is higher in the 2001-4 panel at every time period shown in Table 2.  
2 In the 1983-86 panel, 59.2% of the uninsured gain insurance within a year, and 73.8% get  
3 insurance within two years. In the 2001-4 panel, the comparable figures are 61.7% by  
4 one year (p-value for difference from the 1983-86 panel  $<.001$ ) and 79.7% by two years  
5 ( $p<.001$ ).

6 The final column of Table 2 reports the median duration of an uninsured spell in  
7 1983-6 and 2001-4. The median length of a spell fell a bit, from 8 months 7 months ( $p =$   
8  $.014$ ). Changes in median spell length were substantial in some groups; for younger  
9 people, the median spell length fell from 7 to 4 months, and for those with less than a  
10 high school diploma, the median spell length fell from 10 to 7 months.

11 Figure 2 differentiates the coverage transitions into private and public coverage.  
12 On the basis of the hazard model, we calculated the probability of obtaining insurance of  
13 each type (public or private) by each month in each set of years. Figure 2 shows the  
14 increase or decrease in these probabilities from 1983-6 to 2001-4. The probability of  
15 obtaining private insurance within 24 months is 6.0 percentage points lower in the 2001-4  
16 panel than it was in the 1983-86 panel: 65.2% of people who experienced an uninsured  
17 spell in the 1983-6 panel will have transitioned onto private coverage, compared to  
18 59.2% in the 2001-4 panel ( $p<.001$ ). There was an increase in the probability of  
19 obtaining public coverage, but that more than offset the decline in private coverage. At  
20 24 months after the uninsured spell started, 8.7% of people will have transitioned onto  
21 public coverage in the 1983-6 panel, compared to 20.4% of people in the 2001-4 panel,  
22 an increase of 11.7 percentage points ( $p<.001$ ).

1           Table 3 shows transitions into public and private insurance by age and education  
2 group. The percentage obtaining private insurance within 24 months fell substantially  
3 among both children and adults (with a larger decrease for adults), while the percentage  
4 obtaining public insurance rose greatly among both children and adults. The percent of  
5 people obtaining private insurance within 24 months fell dramatically among households  
6 whose head had no high school diploma, by 12.0 percentage points. This decline was  
7 more than completely offset by greater public coverage: Public coverage rose by 20.6  
8 percentage points among those without a high school diploma. This parallels the large  
9 increase in the number with an uninsured spell in the group with less than a high school  
10 degree.

11

## 12 DISCUSSION

13           Spells without health insurance are more prevalent but shorter in 2001-04 than  
14 they were in 1983-86. 33.9% of people suffered an uninsured spell in 1983-6, compared  
15 to 37.5% in 2001-4. At the same time, the median duration of a spell without insurance  
16 fell from 8 to 7 months.

17           Increases in the percentage of individuals experiencing uninsured spells were  
18 largest among the least educated, and become progressively smaller at higher levels of  
19 education, with uninsured spells actually becoming less common among the most  
20 educated. This is coincident with a large reduction in the probability of transitioning onto  
21 private coverage, and an even larger increase in the probability of moving onto public  
22 coverage. The increased prevalence of uninsurance among the least educated, relative to  
23 the more educated, parallels the economy-wide expansion of inequality over this period.<sup>17</sup>

1           Several factors may explain the reduction in transitions into private coverage.  
2           First, employers have charged employees increasing amounts for health insurance, and  
3           the incidence of these higher prices has led some to decline insurance when offered.<sup>10</sup> In  
4           addition, there is more temporary and seasonal employment, each of which is associated  
5           with lower insurance coverage.<sup>9</sup>

6           Many individuals become uninsured because they lose their job. It is possible,  
7           therefore, that a change in the average length of unemployed spells could impact the  
8           average length of uninsured spells. However, when we estimate our hazard models  
9           controlling for whether the individual and other members of their family (spouse for  
10          adults, parents for children) are employed, we find a decrease from 1983-6 to 2001-4 in  
11          uninsured spell lengths that is similar to the decrease indicated by the model that does not  
12          condition on employment status (results not shown). Similarly, we find that conditional  
13          on employment status, the predicted probability of losing insurance increased by a similar  
14          amount from 1983-6 to 2001-4 as the unconditional increase.

15          The decrease in spell duration is not surprising given the enormous increase in  
16          Medicaid coverage over time. Enrollment rates in Medicaid among the non-elderly  
17          population rose 53 percent between 1983-86 and 2004.<sup>18</sup> Enrollment in Medicaid also  
18          increased most in precisely those groups—children and those without a high school  
19          diploma—for which we find the largest increases over time in spells ending in public  
20          coverage, which is consistent with the theory that the Medicaid increases were crucial in  
21          causing spell lengths to decrease. The large decrease in spell lengths and prevalence  
22          among these groups suggests that Medicaid expansions can be effective in shortening  
23          spell lengths. The increase in Medicaid coverage could also partly be responsible for the

1 relatively large decrease in private coverage in those groups, as public coverage crowded  
2 out private.<sup>19</sup>

3         The greater prevalence of uninsurance and shorter uninsured durations noted here  
4 could have significant impacts on health. For example, an individual’s probability of  
5 being in poor or fair health is 11% when insured all year; 14% when the individual has  
6 been uninsured for less than a year; and 20% when the individual has been uninsured for  
7 greater than one year.<sup>6</sup> Assuming that these figures represent causal effects of the length  
8 of an uninsured spell on health, , we find that the changes in uninsured prevalence and  
9 duration from 1983-6 to 2001-4 that we document should have caused an increase of  
10 1.1% in the probability that an individual is in poor or fair health.

11

## 12 LIMITATIONS

13         Our study has some limitations, which are important to note. As noted above, the  
14 SIPP suffers from “seam bias,” in which individuals are prone to report the same  
15 insurance status in blocks of four months. However, this would be the same in each  
16 survey. In addition, our results focus only on spells of uninsurance; they do not directly  
17 examine the health outcomes of the uninsured. Finally, we look at the uninsured without  
18 examining the underinsured—those with insurance coverage that is not generous enough  
19 to afford meaningful access to care.

20

## 21 CONCLUSION

22         Uninsured spells are now more prevalent, but shorter, than before. Spells have  
23 changed the most for the least educated: More of them are uninsured, but public

1 insurance has offset the lower rate of private coverage. These findings illustrate the  
2 importance of public insurance in stemming the tide of decreased private coverage, as  
3 expansions of public coverage appear to have substantially reduced spell lengths and  
4 prevalence in the groups most affected by these expansions. They also suggest the  
5 significant problems that could lie ahead if employer-based coverage continues to decline  
6 but public coverage is stable or retrenches.

7

Table 1. Characteristics of the Study Sample

Measure	1983-6	2001-4	p-value
	(N=25,946; wtd N = 189 million)	(N=40,282; wtd N = 233 million)	
Age (%)			
<18	32.0	28.7	<.001
18-61	68.0	71.3	
Female (%)	50.6	50.6	.17
Race (%)			
White	84.7	80.8	<.001
Black	12.1	13.4	
Other	3.1	5.8	
Education (%)			
<High School Diploma	24.8	13.1	<.001
High School Diploma	33.8	29.3	
Some College	20.0	30.7	
College Graduate +	21.4	26.9	
Uninsured in Month (%)	15.8	15.9	.07
Any Uninsured Spell (%)	35.4	37.3	<.001

Source: 1983-6 and 2001-4 SIPPs.

Table 2. Probability of Spending Different Amounts of Time Uninsured,  
1983-6 and 2001-4

Year	Group	Conditional Duration					Median Duration (Months)
		0 Months	1-4 Months	5-12 Months	13-24 Months	>24 Months	
1983-6	All	66.1	40.8	18.4	14.6	26.2	8
	<i>Age (%)</i>						
	<18	66.8	42.0	19.1	15.2	23.8	7
	18-61	65.9	40.3	18.1	14.3	27.2	8
	<i>Education (%)</i>						
	<High School Diploma	51.9	36.9	18.7	16.9	28.0	10
	High School Diploma	36.5	41.0	18.6	14.8	25.7	8
	Some College	67.2	43.1	18.4	14.0	24.6	7



		College Graduate +	80.2	41.2	18.0	13.8	27.0	8
2001-4	All		62.5*	42.0*	19.7	18.0*	20.3*	7*
		<i>Age (%)</i>						
		<18	64.5*	51.2*	20.6*	16.4	11.8*	4*
		18-61	61.5*	37.9*	19.3	18.7*	24.0*	9*
		<i>Education (%)</i>						
		<High School Diploma	36.5*	41.9*	20.1*	18.7*	19.4*	7*
		High School Diploma	34.2*	41.1	19.7*	18.3*	20.8*	7*
		Some College	67.2	41.9*	19.6*	17.8*	20.3*	7
		College Graduate +	82.0*	43.2*	19.5*	17.4*	20.0*	8

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Note: Estimates are obtained for each demographic group and weighted by the average population share of the demographic group over both time periods. “\*” indicates that the 2001-4 period is significantly different from the 1983-6 period at the 5% level.

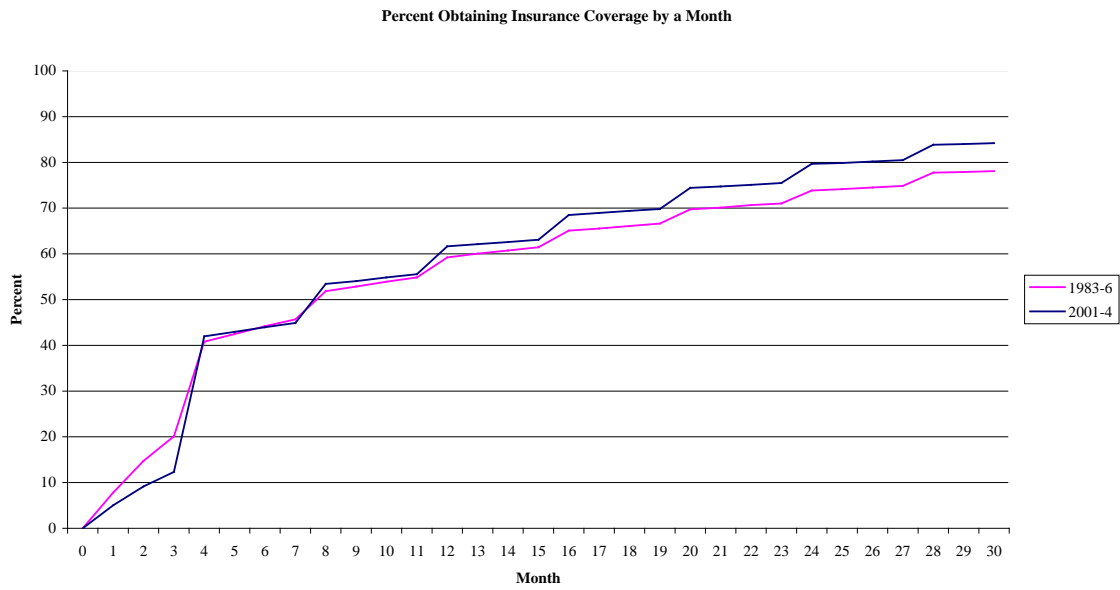
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Table 3: Predicted Probability of Insurance Coverage after 24 Months (%)

Demographic Group	Private Insurance			Public Insurance		
	1983-6	2001-4	P-value	1983-6	2001-4	P-value
<i>All</i>	65.2	59.2	<.001	8.7	20.4	<.001
<i>Children (Under 18)</i>	62.3	58.5	<.001	13.9	29.7	<.001
<i>Adults (18-61)</i>	66.4	59.6	<.001	6.4	16.4	<.001
<i>Education</i>						
<High School Diploma	53.2	41.2	<.001	18.8	39.4	<.001
High School Diploma	64.7	56.2	<.001	9.6	22.9	<.001
Some College	70.3	64.9	<.001	5.1	14.4	<.001
College Graduate +	69.8	71.4	.035	3.2	8.6	<.001

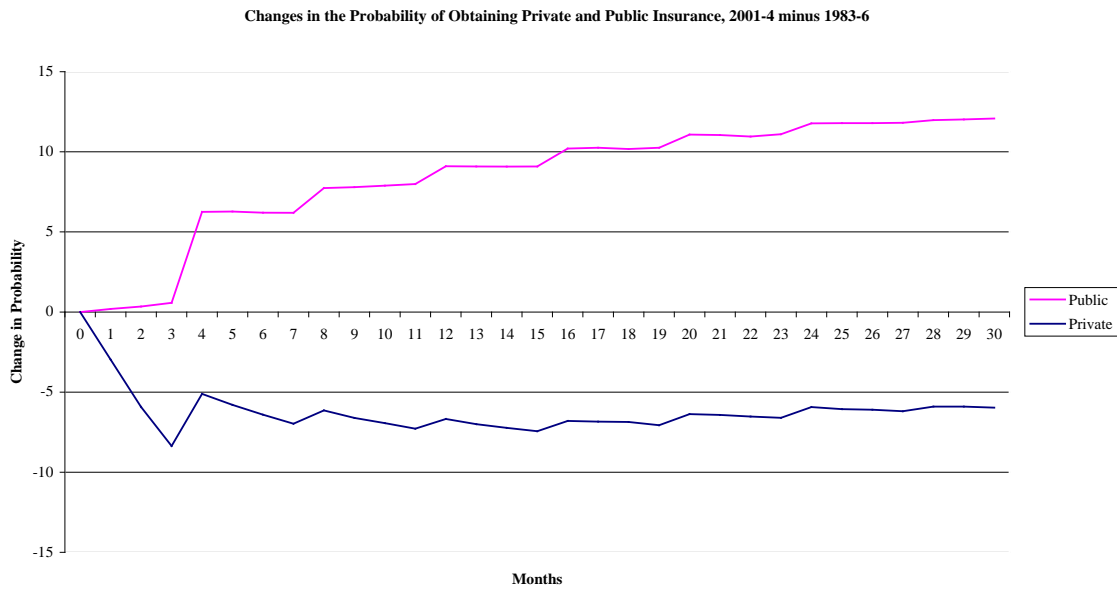
Note: Estimates are obtained for each demographic group and weighted by the average population share of the demographic group over both time periods.

**Figure 1.** Probability of Obtaining Insurance by Month, 1983-6 and 2001-4



Note: Estimates are obtained for each demographic group and weighted by the average population share of the demographic group over both time periods.

**Figure 2.** Changes in the Probability of Obtaining Private and Public Insurance, 2001-4 minus 1983-6



Note: Estimates are obtained for each demographic group and weighted by the average population share of the demographic group over both time periods.

## **Appendix**

This appendix displays estimated hazard ratios and standard errors for determinants of insurance status. The dependent variable (insurance status) takes on one of three values: uninsured, privately insured, or publicly insured. The independent variables are dummies representing several age, education, gender, and racial groups. Education is defined slightly differently in the 1983-86 and 2001-04 SIPP surveys. The 1983-86 SIPP asks for the highest grade the person attended, and whether the person completed that grade. The 2001-04 SIPP asks specifically about the highest grade completed or highest degree received. We code these to make them consistent across the surveys. The hazard ratios are obtained from a Cox competing hazard model with a non-parametric baseline hazard, using Lunn and McNeil's Method B.

Appendix Table 1: Hazard Ratios of Obtaining  
Private and Public Insurance, 1983-6 and 2001-4

Variable	1983-6		2001-4	
	Hazard	Standard	Hazard	Standard
	Ratio	Error	Ratio	Error
Hazard Ratio for Private Coverage				
<i>Age (relative to 18 ≤ Age ≤ 61)</i>				
Age < 18	.98	(.02)	1.20	(.02)
<i>Education (relative to No High School Diploma)</i>				
Exactly a High School Diploma	1.27	(.03)	1.36	(.04)
Some College	1.42	(.04)	1.59	(.04)
College Graduate	1.37	(.04)	1.77	(.05)
Women (relative to Men)	1.03	(.03)	.97	(.02)
<i>Race (relative to Whites)</i>				
Blacks	1.03	(.03)	1.02	(.02)
Other Races	.95	(.05)	.99	(.03)
Hazard Ratio for Public Coverage				
<i>Age (relative to 18 ≤ Age ≤ 61)</i>				
Age < 18	2.19	(.16)	2.25	(.08)
<i>Education (relative to No High School Diploma)</i>				

Exactly a High School Diploma	.58	(.05)	.59	(.03)
Some College	.32	(.04)	.38	(.02)
College Graduate	.20	(.04)	.23	(.02)
Women (relative to Men)	1.44	(.10)	1.51	(.05)
<i>Race (relative to White)</i>				
Black	1.65	(.14)	1.40	(.06)
Other Races	1.37	(.23)	1.38	(.09)
N	8,706		14,443	

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