Vice Quad:
Four Negative Health Behaviors and Their Relationship to Insurance

A Professional Paper

In Partial Fulfillment of the Master of Public Policy Degree Requirements
The Hubert H. Humphrey Institute of Public Affairs
The University of Minnesota

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December 14, 2009

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1. Introduction

The Center for Budget and Policy Priorities estimates that some 46.6 million Americans, or roughly 16 out of every 100 people, lack health insurance. Of those who have no health coverage, about one-quarter have an income of $25,000 or less,[1] which suggests that not only is the most costly medical care not being received, but neither is routine preventative care like physicals or checkups and follow-ups. Put in the simplest terms, doctors cost money and no dollars means no doctors, with the likely result over time of worsened health. When people are unwell, the cost gets passed on to the rest of society through lost productivity, a greater need for public services, longer wait times in emergency rooms, and, in the case of untreated mental health problems, compounded costs to public safety in the form of more police calls, court hearings, and incarcerations. Eventually, even burials can become a drain on public coffers.

The issue at the heart of achieving truly universal health care hinges on answering the unknowns: How much will it cost to cover the health needs of people who currently don't have insurance? How will these costs be covered? Who are the uninsured? How did they become that way? And what role can they themselves play in getting well? Information is the key to getting closer to achieving accessible health coverage for everyone, and reducing the burdens that weigh on individuals and society as a whole. It stands to reason that if we can learn more about the uninsured, we can better answer the questions standing in way of policy and action.

Four of the most common health risks for adults in the U.S. are smoking, drinking, obesity, and overweight. They are equally accessible risks regardless of a person's means. I hypothesize that a person's likelihood to smoke, drink, or have a high Body Mass Index is a proxy for health preference. I propose that any statistically significant differences between insured and uninsured is therefore a predictor in the rate of insurability.

[1] CBPP (2006). "The Number of Uninsured Americans is at an All-time High." http://www.cbpp.org/8-29-06health.htm. A accessed Feb. 4, 2008.

To conduct my study, I used demographic subgroups as my sample populations and the mechanism through which to measure the relationship between risky health behaviors and insurance status. I then used a regression approach to control for these factors, allowing me to see if there is a correlation between health behaviors and insurance status. In doing so, I am able to offer insight into the question of whether insurance has any relationship to good health, helping to answer whether expanding health coverage creates greater risk or greater benefit. By offering an additional comparison of the costs of health problems to society, I surmise that efforts to reduce these costs result in greater good.

My study requires several shared assumptions, as follows:

1) We don't know if the uninsured are more or less health than the insured. There is no conclusive method of knowing every person's health status in comparison to insurance status. We can only categorize people into one of four health/insurance groups as shown in Illustration 1. For example, some healthy people are able to work and therefore receive insurance benefits and remain healthy ("Healthy and Insured"), while some uninsured people may be young and healthy and therefore forego insurance ("Healthy and Uninsured"). Conversely, there are those who greatly value insurance and do what they have to afford it in order to treat ongoing health issues ("Unhealthy and Insured"). Conversely, some people might be unhealthy, unable to work, and therefore unable to access insurance benefits and unable to qualify for existing government programs ("Unhealthy and Uninsured").

Illustration 1. Two-by-Two Matrix of Insurance and Health Status

		Insurance Status
Health Status	Healthy and Insured	Healthy and Uninsured
	Unhealthy and Insured	Unhealthy and Uninsured

2) Insurance is more expensive to provide to the uninsured because it means an expansion of existing programs and the need for more resources. The cost is even greater if the uninsured are unhealthier than the insured. It further rises if the uninsured indeed value insurance less than the insured since additional money must be spent to convince them to get insurance, whether through advertising and outreach or tax incentives or attractive price breaks.
3) If preference for health is equitable to preference for insurance, which predicts future health costs, then health preference is also a predictor of current/future health costs (if A=B and B=C, then A=C).

Knowing both who is partaking in riskier behaviors and their tendency toward insurance – and thereby increasing the likelihood that they will be more costly to care for – could steer the policy design toward an optional system that has cost-effective methods to handle the risk-prone population. Massachusetts, for example, has included prevention and education programs as part of its mandated coverage law and the results have included reduced smoking rates statewide.[2]

2. Methodology

The best data set with which to conduct this analysis is the Integrated Health Interview Series (IHIS). The IHIS is a combined set of 1,000-plus variables mined from public data of the National Health Interview Survey (NHIS) from 1969-2006. It is the largest publicly available health data set in the U.S. on civilian, non-institutionalized persons. The cross-sectional data provide wide-ranging health and general population information, from income and education levels, to frequency of doctor visits and use of herbal supplements.

The survey is of households selected through a complex survey design of both clusters and stratification. U.S. Census workers conducting the in-person interviews are contracted with the Centers

[2] Wang, Shirley S. Wall Street Journal Health Blog (Aug. 21, 2009). "Does Expanding Health Insurance Coverage Improve Health?" http://blogs.wsj.com/health/2009/08/21/does-expanding-health-insurance-coverage-improve-health/. Accessed Nov. 28, 2009.

for the National Center for Health Statistics (NCHS), a division of the Centers for Disease Control and Prevention (CDC). Due to several adjusted sampling weights, the data are appropriate only for analysis at a level above state designation.

My interest for the purpose of this analysis is a subset of adults between 25 and 64 who have a verifiable insurance status and one or more of the three selected health behaviors. Data come from the 2006 study, which had a sample population of 29,204 U.S. households selected from stratified Census Bureau operating lists. The study sample is composed of 75,716 persons in 29,868 families (a family is considered any grouping of persons, related or not, who are living together in an occupied housing unit). The total household response rate was 87.3 percent with 8.4 percentage points due to respondent refusal or incomplete interviews and 4.3 percentage points resulting from failure to contact. All but one variable in my study (Body Mass Index, or BMI) come from variables at the person-level. Person-level data are developed from questions about individual family members, whether they are present for the interview or not (in which case a knowledgeable family member answers the questions). BMI data are taken from more detailed questioning from a sample adult in responding families, representing a calculated final response rate of 70.8 percent. Each file is weighted at least once for design and ratio, with person-level data further weighed to adjust for Census-derived sex, age, and race/ethnicity populations at the post-stratification level. When analyzing variables from both person and sample adult levels NHIS advises that the sample adult level trumps others. Therefore, the chosen weight for this study is sample adult level.

The IHIS provides indicators of frequency of alcohol consumption, smoking, and Body Mass Index ("BMI"). Among those respondents between the decision-making ages of 25 and 64, we can compare insurance status of persons exhibiting unhealthy (and, for the purposes of this paper, risky) levels of drinking, smoking, and/or weight. People with these behaviors are knowingly taking a risk with their long-term health. By studying the associated rate of being insured with these lifestyle factors, we can at least gain a sense of the long-term decisions made by some of those people most likely to need future health care, and among those possibly most costly to treat.

3. Key variables

A.

	Operationalized concept	Survey question	Universe
Age "age"	Years since last birthday.	"What is [your] age and date of birth? Please give month, day, and year for date of birth."	All respondents must provide this core information.

http://www.ihis.us/ihis-action/variableDescription.do?mnemonic=AGE

Intended recoding for analysis: The study sample is limited only to respondents ages 25-64 as this reflects the core group of those purchasing insurance. Adults ages 18-24 are statistically the highest uninsured and lowest income earners.[3] They have too many other variables at play to be able to study their risk tolerance and insurance decisions clearly. Likewise, after 65, adults are eligible for Medicare, and no longer have expense or risk as fair explanations for being uninsured.

B.

	Operationalized concept	Survey question	Universe
Insurance "uninsured"	Persons who reported not having health care coverage at the time of the interview (whether from employer, self-purchase, or publicly provided).	Data recoded by NCHS researchers doing extensive back editing.	All persons in study.

http://www.ihis.us/ihis-action/variableDescription.do?mnemonic=UNINSURED

Intended recoding for analysis: This is the basis of my study as it separates all respondents into three populations: Not covered, covered, and unknown.

[3] According to DeNavas Walt, Carmen; Proctor, Bernardette D.; and Smith, Jessica (August 2007). "Income, Poverty and Health Insurance Coverage in the United States: 2006." Current Population Reports: U.S. Census Bureau.

C.

	Operationalized concept	Survey question	Universe
Current alcohol consumption "alcstat2"	Current alcohol drinking status.	Data recoded by researchers.	Sample adults 18-plus.

http://www.ihis.us/ihis-action/variableDescription.do?mnemonic=ALCSTAT2

Intended recoding for analysis: This variable has already been coded into current status of drinking based on past drinking status. Those who are lifetime abstainers, former infrequent drinkers, current infrequent/light drinkers (more than 12 drinks in lifetime and 1 or more drinks in past year but three or fewer drinks per week on average) are combined for my purposes as "nondrinkers." Current moderate/regular drinkers (more than 12 drinks in lifetime and more than 3 drinks per week on average) are coded for my purpose as "drinkers," under the assumption that those with a greater frequency of imbibing are suggestive of having a drinking problem and greater likelihood of associated risks.

D.

	Operationalized concept	Survey question	Universe
Smoking "smokefreqnow"	Whether sample adult currently smokes.	"Do you smoke cigarettes every day, some days, or not at all?"	Sample adults over 18 who previously reported smoking approximately 5 packs/100 cigarettes during their lifetime.

http://www.ihis.us/ihis-action/variableDescription.do?mnemonic=SMOKFREQNOW

Intended recoding for analysis: A "health behavior" variable, it differs from alcohol consumption in that the quantity or frequency is not necessarily associated with health risk so much as the simple fact that one smokes. I recode it as "smoker," and divide it into those who smoke everyday or some days as 1, and don't smoke as 0. Additionally, I use the variable SMOKEV to account for sample adults who have never smoked.

E.

	Operationalized concept	Survey question	Universe
Body Mass Index ("bmi")	Measure of body fat based on height and weight. This is a general health variable.	"How tall are you without shoes?" and "How much do you weigh without shoes?" Data were then recalculated and recoded by researchers.	Sample adults 18-plus.

http://www.ihis.us/ihis-action/variableDescription.do?mnemonic=BMI

Intended recoding for analysis: For both men and women, underweight is a BMI less than 18.5; healthy weight is a BMI 18.5 to less than 25; overweight is a BMI greater than or equal to 25; obesity is a BMI greater than or equal to 30. A BMI rate over 30 is considered clinically "obese"[4] and is associated with diabetes, heart problems, high blood pressure, and other serious health conditions. For my purposes, BMI is recoded into variables "obese," "overweight," and "healthy."[5]

F.

	Operationalized concept	Survey question	Universe
Poverty ("poverty")	Ratio of family income to the 2006 Federal Poverty Measure.	"Can you tell me the total combined income for you/your family, including wages, salaries, Social Security, or retirement benefits before taxes?" Data were then recalculated and recoded by researchers.	Sample adults 18-plus.

http://www.ihis.us/ihis-action/codes.do?mnemonic=POVERTY

Intended recoding for analysis: I combined several groupings to form four categories for the purposes of simplifying the determination of the effects of health behaviors on certain income levels:

- Three groups (Under .50, .50 to .74, and .75 to .99) became "below poverty"
- Four groups (1.00 to 1.24, 1.25 to 1.49, 1.50 to 1.74, and 1.75 to 1.99) became "100-199%"
- Two groups (2.00 to 2.49 and 2.50 to 2.99) became "200-299%"

[4] Centers for Disease Control and Prevention. http://www.cdc.gov/healthyweight/assessing/bmi/adult_BMI/index.html. Accessed Aug. 9, 2009.

[5] "Underweight" was not included in this study because it can be indicative of several factors including drug addiction, serious illness, or eating disorder or other severe malnutrition due to abuse or poverty. Arguably, most of these conditions fall outside the parameters of choice, which was the focus of this study.

- Five groups (3.00 to 3.49, 3.50 to 3.99, 4.00 to 4.49, 4.5 to 4.99, 5.00 and over) became "300% and up."

Smaller combinations were unnecessary as the four groupings sufficiently illustrate the effect on various income levels in the U.S. For the purposes of this study, those persons closest to the poverty level (a single person earning below $9,800, two people earning $13,200, or a family of four earning $20,000[6]) are at an income level at which they conceivably qualify for state or federal health coverage.

4. Results

A. Age

Summary Table 1. Rate and percentage of insurance by age group and insurance status

	Uninsured	Insured	Total by age group
25-30	769 *28.9%*	1888 *71.1%*	***2,657*** *100%*
31-45	1542 *22.3%*	5384 *77.7%*	***6,926*** *100%*
46-60	1096 *15.0%*	6213 *85.0%*	***7,309*** *100%*
Total by coverage	**3,407**	**13,485**	**16,892**

Source: National Health Interview Survey (NHIS), 2006 person-level and sample adult files

Note: Standard errors calculated using Taylor series with Stata version 10.

As Summary Table 1 shows, there is a 4:1 ratio of insured to uninsured Americans in the data set. The majority within each age group is also insured; the percentage of insured within each age group increases as age increases. This likely can be attributed to a higher rate of stable employment in these

[6] U.S. Department of Health and Human Services. "The 2006 HHS Poverty Guidelines." http://aspe.hhs.gov/POVERTY/06poverty.shtml. Accessed Feb. 16, 2009.

groups, as well as the increased value of health insurance as people get older and either need medical care themselves or have dependents who need – or might need – medical treatment or would need it. In the latter case, it is possible that the psychological value of knowing insurance is there in an emergency – that is, a perceived utility under the expected utility theory – supersedes the actual utility of the coverage. A healthy individual or fortunate family could realistically go years without exceeding their premiums, but they would still perceptual benefit from the security blanket of having had insurance.

Summary Table 2. Odds of uninsured negative health behaviors by age range as compared to a baseline of 1 for insured Americans

	Smoking			Drinking			Obese			Overweight			Healthy		
	Odds ratio	**P-value**	**Rate**	**Odds ratio**	**P-value**	**Rate**	**Odds ratio**	**P-value**	**Rate**	**Odds ratio**	**P-value**	**Rate**	**Odds ratio**	**P-value**	**Rate**
Insured	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-
Uninsured:															
25-30	1.963	0.000*	35%	1.353	0.023*	23%	1	0.999	27%	0.952	0.661	30%	1.043	0.697	43%
31-45	1.876	0.000***	33%	1.032	0.72	22%	1.065	0.425	32%	1.086	0.26	37%	0.864	0.069*	31%
46-64	2.375	0.000***	36%	0.91	0.393	21%	0.955	0.586	34%	0.947	0.515	34	1.112	0.224	32%

Source: National Health Interview Survey (NHIS), 2006 person-level and sample adult files

Notes: Rate represents the percentage of uninsured within the stated subpopulation. Standard errors calculated using Taylor series with Stata version 10.

According to the results, shown in Summary Table 2, the uninsured between the ages of 25 and 30 are 1.96 times more likely to smoke than those with health insurance in the same age range, 1.87 times more likely to smoke if they are uninsured and between the ages of 31-45, and 2.4 times more likely to smoke if 46-60. Among the uninsured, there is statistical significance between heavy drinking and those ages 25-30 who show nearly 1.4 times greater likelihood than their insured counterparts. Finally, the uninsured between the ages of 31 and 45 show 0.87 times greater likelihood to have a healthy BMI than the insured.

B. Poverty Level

Summary Table 3. Rate and percentage within each poverty level by insurance status

	Uninsured	Insured	Total by poverty group
Below poverty	1046 *40.7%*	1525 *59.3%*	***2,571*** *100%*
100-199% above	1105 *36.2%*	1951 *63.8%*	***3,056*** *100%*
200-299% above	597 *22.2%*	2091 *77.8%*	***2,688*** *100%*
300%-plus above	628 *7.5%*	7726 *92.5%*	***8,354*** *100%*
Total by insurance status	**3,376**	**13,293**	**16,669**

Source: National Health Interview Survey (NHIS), 2006 person-level and sample adult files
Note: Standard errors calculated using Taylor series with Stata version 10.

In Summary Table 3, the number of uninsured again is lower than the insured. Likewise, the percentage of uninsured within each poverty income level drops. Of those who are uninsured, 31 percent are below poverty – a significant figure considering that most of them should have been able to access existing government health care programs.

Summary Table 4. Odds of uninsured negative health behaviors by poverty level as compared to a baseline of 1 for insured Americans

	Smoking			Drinking			Obese			Overweight			Healthy		
	Odds ratio	P-value	Rate	Odds ratio	P-value	Rate	Odds ratio	P-value	Rate	Odds ratio	P-value	Rate	Odds ratio	P-value	Rate
Insured	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-
Uninsured:															
Below pov.	1.389	0.001***	34%	1.199	0.14	18%	0.837	0.058*	31%	1.245	0.034*	34%	0.964	0.713	36%
100-199%	1.715	0.000***	31%	1.375	0.003**	20%	0.829	0.031*	29%	1.002	0.977	32%	1.187	0.032*	38%
200-299%	2.326	0.000***	36%	1.332	0.018*	22%	0.763	0.021*	27%	0.997	0.977	35%	1.281	0.024*	38%
300%	2.624	0.000***	33%	1.228	0.055*	29%	1.052	0.618	29%	0.869	0.165	32%	1.093	0.409	40%

Source: National Health Interview Survey (NHIS), 2006 person-level and sample adult files
Notes: Rate represents the percentage of uninsured within the stated subpopulation. Standard errors calculated using Taylor series with Stata version 10.

My model, shown in Summary Table 4, assumes base odds of 100 percent for the insured for all behavioral variables. Only smoking has a statistically significant ratio of uninsured in comparison: The uninsured are 2.08 times more likely to smoke than the insured in my sample population. This is consistent with conventional wisdom about the poor, who have greater smoking rates than the rest of the population. The remaining results, those of drinking status and separate BMI indications of obese, overweight, and healthy weights, are not statistically significant. Using a more sophisticated analysis and variables, such as those for different age groups and poverty income levels, could yield richer findings.

5. Regression Analysis

Having established a relationship between some of my variables and insurance status within chosen demographic subgroups, I have selected a regression approach to control for all of the factors together. This allows us to see the extent of the relationship of the variables on the base likelihood of being uninsured. I present eight models of uninsurance; four with one core variable each, one with all four variables, and three others with varying degrees of standard socioeconomic, race/ethnicity, and gender variables.

Summary Table 5. Estimates of coefficients in likelihood of being uninsured under eight regression models

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Smoker	**0.1180** (0.006)				**0.1235** (0.007)	**0.1189** (0.007)	**0.0999** (0.006)	**0.0929** (0.006)
Drinker		**0.0171** (0.007)			**-0.0058** (0.007)	**0.0037** (0.007)	**-0.001** (0.007)	**0.0035** (0.006)
Overweight			**-0.0004** (0.005)		**-0.0005** (0.006)	**-0.0002** (0.006)	**0.0023** (0.006)	**-0.0007** (0.006)
Obese				**-0.0128** (0.005)	**-0.0108** (0.006)	**-0.0133** (0.006)	**0.0005** (0.006)	**-0.0095** (0.006)
To 199% of Poverty Level						**0.1337** (0.007)	**0.1273** (0.006)	**0.1230** (0.006)
To 299% of Poverty Level						**0.0384** (0.007)	**0.0515** (0.007)	**0.0514** (0.007)
Age							**-0.0048** (0.000)	**-0.0051** (0.000)
Sex							**-0.0333** (0.005)	**-0.0347** (0.005)
Education							**-0.0024** (0.000)	**-0.0022** (0.000)
Citizen							**-0.1273** (0.006)	**-0.1261** (0.006)
Hispanic							**0.004** (0.000)	**0.0038** (0.000)
Race							**-0.0001** (0.000)	**-0.0001** (0.000)
Family Size								**0.00375** (0.002)
Health*								**0.0183** (0.002)
constant	*0.1543*	*0.1771*	*0.1827*	*0.1790*	*0.1606*	*0.1261*	*0.6369*	*0.6017*
r-squared	0.0151	0.003	0.0002	0.0000	0.0165	0.0357	0.1415	0.1441
n	23,871	21,829	23,766	21,434	21,434	21,143	21,143	21,143

Source: National Health Interview Survey (NHIS), 2006 person-level and sample adult files

Note: Standard errors calculated using Taylor series with Stata version 10.

* Health is self-reported general health based on a five-point scale from "excellent" to "poor"

UI = Probability of being uninsured
sm = Smoker (1=Yes, 0=No)
dr = Drinker (1=Yes, 0=No)
ov = Overweight
ob = Obese
povone = Household income up to 199% of Federal Poverty Level
povtwo = Household income up to 299% of Federal Poverty Level
age= Age
sex = Gender (1=Female, 0=Male)
educ = Highest grade level completed
cit = U.S. citizen (1=Yes, 0=No)
hisp = Hispanic/Spanish origin (1=Yes, 0=No)
race = Main racial background (3=Asian, 2=American Indian, 1=Black/African-American, 0=White)
fam = Family size
hlth = Health (1-4=Varying degrees of worsening health, 0=Excellent)

Model 1:
UI= 0.1543 + 0.1180sm
Analysis: Low p value and r-square; smoking increases probability of being uninsured.

Model 2:
UI= 0.1771 + 0.0171dr
Analysis: Low p value and r-square; drinking increase probability of being uninsured, but by less than smoking.

Model 3:
UI= 0.1827 – 0.0004ov
Analysis: Low p value and r-square; overweight decreases probability of being uninsured by trace amount.

Model 4:
UI= 0.1790 – 0.0128ob
Analysis: Low p value and r-square; obesity decreases probability of being uninsured but by more than overweight.

Model 5:
UI= 0.1606 + 0.1235sm – 0.0058dr – 0.0005ov – 0.0108ob
Analysis: Low p value and r-square; combination of four health behaviors leads to overall decrease in uninsured probability. Only smoking remains positive.

Model 6:
UI= 0.1261 + 0.1189sm + 0.0037dr – 0.0002ov – 0.0133ob + 0.1337povone + 0.0384povtwo
Analysis: Low p value and r-square; addition of poverty rates provides heavily weighted increase in uninsured probability, supporting notion that poorer people are less likely to have insurance. Drinking and smoking still positive.

Model 7:
UI= 0.6369 + 0.0999sm – 0.001dr + 0.0023ov + 0.0005ob + 0.1273povone + 0.0515povtwo – 0.0048age – 0.0333sex – 0.0024educ – 0.1273cit + 0.004hisp – 0.0001race
Analysis: Low p value and r-square; probability of being uninsured has increased two-fold from prior model. Smoking, high BMI, poverty, and Hispanic ethnicity all add to uninsured rate. Sex is negative.

Model 8:
UI= 0.6017 + 0.0929sm + 0.0035dr – 0.0007ov – 0.0095ob + 0.1230povone + 0.0514povtwo – 0.0051age - 0.0347sex – 0.0022educ – 0.1261cit + 0.0038hisp – 0.0001race + 0.00375fam + 0.0183hlth
Analysis: Low p value and r-square; probability of uninsured similar to prior model, smoking and drinking have positive correlation, as do poverty levels, Hispanic ethnicity, and family size. Sex still negative. Race has no impact in either of the last two models.

6. Conceptual Discussion

Is there a connection between negative health behaviors and insurance status? Based on my results, there appears to be a highly significant correlation between smoking and being uninsured, with increasing likelihood as this population gets older and has more money (up to 300% of the poverty level).

A. Discussion of age results

Clearly, smoking is the most notable result in the age category given its statistical significance across the three age categories of the uninsured. The high likelihood of the youngest uninsured to smoke can be explained by the concurrently high rate of smoking at that age – almost a quarter of all people in the US (23.5 percent) between 25 and 44 years are smokers, a rate only slightly lower than adults 18-24 (23.9 percent), according to the Centers for Disease Control and Prevention, which used answers from the 2006 NHIS as its source.[7] Smoking rates dropped to 21.8 percent for Americans 45-64, according to CDC figures. Combining the mortality and disease rate from smoking – still the No. 1 most preventable cause of disease and death in the U.S. – with the annual drop in the overall number of smokers, results in a smaller number of aging smokers for every year studied.[8] Incidentally, aging smokers are highly unlikely to be new smokers. About 1 million people start smoking each year; the average age of first reporting daily smoking is 19.2 years.[9] About 90 percent of smokers in a separate study were daily habitual smokers by age 21.[10]

In no other category do the uninsured in the oldest age range show any propensity toward any of this study's other selected health behaviors. Viewed in a different way, is there something about aging

[7] Centers for Disease Control and Prevention. Cigarette Smoking Among Adults—United States, 2006. Morbidity and Mortality Weekly Report. 2007;56(44):1157–1161. http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5644a2.htm. Accessed April 12, 2009.
[8] Ibid.
[9] Substance Abuse and Mental Health Services Administration (2008). Results from the 2007 National Survey on Drug Use and Health. Office of Applied Studies. NSDUH Series H-34, DHHS Publication No. SMA 08-4343). http://oas.samhsa.gov/nsduh/2k7nsduh/2k7Results.cfm#4.1. Accessed Aug. 10, 2009.
[10] Mowery PD, Brick PD, Farrelly MC. Legacy First Look Report 3. Pathways to Established Smoking: Results from the 1999 National Youth Tobacco Survey. Washington DC: American Legacy Foundation. October 2000. Courtesy of American Lung Association: http://www.lungusa.org/site/c.dvLUK9O0E/b.39871. Accessed Aug. 10, 2009.

smokers that makes them less likely to be insured? More specifically, do they have a more difficult time obtaining insurance and therefore the smallest incentive to enroll, or do they have the least access to cessation programs and products to help them quit smoking? Conversely, maybe they care the least about their health and, therefore, have little interest in getting insurance? This chicken-vs.-egg question highlights the issue of causality in my study. Since I do not have data explaining why the subpopulation is uninsured, I have no way of knowing whether the lack of insurance came before or after the negative health behavior.

Taking care not to make statements of causality, it has to be asked what is contributing to the lack of insurance at the same time that aging smokers are increasingly in need of health care for the side effects of their habit. First, there is the extra premium charged to smokers, which potentially makes it cost-prohibitive to keep being insured, especially as the likelihood of smoking-related diseases like emphysema, lung cancer, blood pressure problems, etc. Second, smokers pay cigarette taxes for each pack, a cost that aggregates for every year more that a person is a habitual smoker. After a certain age, income levels plateau and insurance and cigarette taxes (and the rising cost of cigarettes) eat up a greater proportion of a smoker's income. It is possible that the answer to the uninsured-vs.-smoking argument may be too difficult to tease apart. As for the middle age group of smokers, a plausible explanation for their slightly lower likelihood of smoking might be that the uninsured ones haven't begun to experience health problems and therefore are not seeking out insurance. Conversely, they are also just reaching an age and professional skill-set to acquire a job where health insurance is widely available to them and, if they are raising a family, increasingly important and no longer optional, so that a larger proportion of the age group has become insured.

The absence of any statistically significant difference between the insurance and uninsured when it comes to being obese or overweight (i.e. "unhealthy") and excessively drinking can be viewed broadly as the two groups having the same probability of exhibiting those behaviors. This is akin to a judge's

acquittal due to "lack of evidence," but not a declaration of innocence. Here, the results show there isn't enough evidence that the uninsured in these age ranges have worse lifestyle habits than the insured.

As for the significant t-scores for drinking and our youngest group of uninsured (1.353), it is entirely possible that the high correlation between age, lack of insurance, and high rate of alcohol consumption is exaggerating the t-score and potentially making this finding appear extra notable. The significance, regardless of how high, still stands. And it reflects an important finding – that younger people are behaving more recklessly and with a lower rate of insurance. As these young drinkers age, their overall rate drinking decreases as do the proportions of each age group participating in binge and heavy drinking.[11] We have already seen that their rates of insurance increase with age, too. Maybe this, too, is a sign of growth – that those who survive risky behavior self-correct their actions. If the economic concept of prospect theory holds – that is, when faced with a decision that involves risk, a person weighs gains and losses in their decision -- this would mean that a financial certainty has driven the outcome. Maybe the cost of car insurance for unsafe drivers has led to an overall decision to invest in all insurance. Or they have reached a level of experience in their career where binge drinking is no longer a sustainable activity when there are meetings first thing the next morning, and if they value their job and the benefits of health insurance, they adjust their behavior accordingly. Ehrlich and Becker (1972) term this loss-reduction measure "self protection."

While there are no studies directly associating an information gap to lack of insurance, an informed leap can be made from poverty level to education level and lack of insurance, with the safe assumption that the complexity of insurance makes it harder to access. If prospect theory holds, it would seem likely that a lack of education makes it more difficult for people to conduct a proper cost estimate for probabilities of need. This would especially hold true for medical issues; if you don't know what risks and health issues are out there, you aren't going to think you have any chance of becoming seriously ill or

[11] 2007 National Survey on Drug Use and Health. US Department of Health and Human Services, Substance Abuse and Mental Health Services Administration. http://oas.samhsa.gov/NSDUH/2k7NSDUH/2k7results.cfm#Fig3-1. Accessed Aug. 11, 2009.

injured. Under prospect theory, an uninformed, optimistic person is going to think that health insurance is pointless, a la "I don't plan to get sick, so why should I pay for health insurance?" While this is a strong argument for universal health care, it is outside the immediate focus of my study, which compares "like" groups of insured and uninsured. My analysis focuses on the remaining 69 percent of the uninsured, or the sum of the three "above poverty" categories, (2,330 persons, or 14% of our total sample).

B. Discussion of Role of Poverty on Health Behaviors

According to the Centers for Disease Control and Prevention, cigarette smoking is more common among adults who live below the poverty level (30.6%) than among those living at or above the poverty level (20.4%).[12] Furthermore, smoking is highest among adults with a General Education Development (GED) diploma (46.0%) or 9–11 years of education (35.4%), and lowest for adults with an undergraduate college degree (9.6%) or a graduate college degree (6.6%). Poor smokers are chronically poorer and less educated, a pattern not reflected by my data, which shows an increase in smoking as poverty decreases.

The situation also punches holes into the economic concept of moral hazard – essentially the idea that he who controls the information controls the outcome. For years, political pundits have used moral hazard to stymie health reform by suggesting that the information, in this case the utility of insurance, would be abused by the uninsured when they finally access full coverage. Were this the case, then those with the know-how on "abusing" insurance would be taking full advantage of it by purchasing as much as they could. That means the highest-income smokers would have the highest rates of insurance, which is not supported by my data. Furthermore, wouldn't these "rich" smokers be taking advantage of their resources and knowledge, as well as their fiscal sensibilities, and invest in whatever means necessary to quit smoking, in order to save money on the associated costs and consequences? Clearly they aren't and are still engaging in the behavior with the awareness of the costly and deadly outcome of being a lifelong

[12] Centers for Disease Control and Prevention.
http://www.cdc.gov/tobacco/data_statistics/fact_sheets/adult_data/cig_smoking/index.htm. Accessed Aug. 12, 2009.

smoker. So it begs the question of how the presumptive leap has been made that poorer smokers would take advantage of insurance and somehow shock the pool by overextending it with their health problems.

Drinking follows an opposite pattern – the likelihood of serious drinking is highest among the uninsured in the lower poverty income brackets (the exception are those below poverty, a result that is not statistically significant) and drops as respondents report higher incomes. It is notable that drinking appears in the range of 1.3-1.4 times greater for uninsured than insured. Drinking is widespread in its use, but appears in more serious levels in selected surveys among those who are unemployed[13] and men with family incomes below the poverty level vs. those in the highest income bracket[14], although its overall use increases as family income and education increase.[15]

Overweight is only statistically significant in the population below poverty – who are 1.25 times as likely as the insured to be overweight. One explanation might be that this weight/BMI level is fast becoming the category into which the majority of Americans fall.[16] So its significance overall might be decreasing as a result of the expanding category.

Unexpectedly, healthy and obese BMIs are the main source of optimism in this study. Obesity, the worst of the weight levels, has lower odds for the uninsured in the three lowest income brackets (0.8 to 0.7 odds compared to 1 for insured). Healthy BMI, for unclear reasons, only appears to have higher (and statistically significant) odds for the middle two income brackets. That these incomes have 1.2 to 1.4 times greater likelihood of being at a healthy weight compared to insured Americans is strangely encouraging and runs contrary to studies and conventional wisdom that those in poor income brackets

[13] Alcohol is used in heavy amounts by the unemployed(12%) vs. full-time employed (8.8%) in the 2007 National Survey on Drug Use and Health by the Substance Abuse and Mental Health Services Administration. http://oas.samhsa.gov/NSDUH/2k7NSDUH/2k7results.cfm#3.1. Accessed Aug. 16, 2009.
[14] Alcohol is used more heavily by men below the poverty level (8.4%) than in the highest income group (5.4%). Centers for Disease Control and Prevention, Vital and Health Statistics. "Health Behaviors of Adults: United States, 2002-04." Series 10, No. 230, September 2006. http://www.cdc.gov/nchs/data/series/sr_10/sr10_230.pdf. Accessed Aug. 16, 2009.
[15] Adults with family incomes below the poverty level had a current drinking prevalence of 46% compared to 75% of families with incomes four times the poverty level. Ibid.
[16] Six in 10 adults (58.7%) is categorized as overweight. Centers for Disease Control and Prevention. Ibid.

have a higher incidence of ailments like Type II diabetes.[17] Of course, it could be that the unhealthiest people in this range have been accepted into state health plans or sought to be insured so their existing weight complications and side effects can be treated. The remaining population (that is, *p*-1) indicates a sampling bias or self-selection bias in that only the "healthiest" BMIs/weights in these brackets can "afford" to be uninsured. At these weights, it is easier to maintain Ehrlich and Becker's (1972) self-protection or, failing that, at least reducing the potential loss via self-insurance. For instance, self-diagnosing an injury as a sprain and buying an arm sling from a medical supply store rather than paying out-of-pocket to visit an emergency room.

7. Cost Estimate

To gauge the extent of the effect of smoking, drinking, obesity, and overweight in American society, I have taken individual cost estimates of the associated health problems of the health behaviors and, using back-of-the-envelope estimates, multiplied them across the population engaging in that behavior.

Sturm (2002) used survey results and measures of health spending, health status, and quality of life to create cost estimates for the four behaviors. Mertens et al (2005) used information from health plan databases to create a cost estimate for hazardous drinking among patients in an HMO plan. Finkelstein (2003) uses a regression model and national data to create an estimate for aggregate overweight and obesity-related medical spending. And Chua et al (1998) used a literature review to create an average cost-of-illness average for smoking. I multiplied these estimates using my study's weighted estimates for the overall population.

[17] "Don't be fooled by the old idea that more money creates more problems. When it comes to health, the poor are much more likely to suffer physical and mental indignities--everything from asthma and accidents to chronic conditions like diabetes, high blood pressure, and heart disease. The lower your position in the economic hierarchy, the more susceptible you are to virtually every major disease affecting men." Undated "Fit Investor" column by Laurence Roy Stains: "Be As Healthy as the Wealthy." http://www.menshealth.com/fitinvestor/healthy_wealthy.html. Accessed Aug. 17, 2009.

Table 6. Cost estimates of an individual's average yearly medical expenses attributable to a specific health behavior by author

	Sturm (2002)	Mertens et al* (2005)	Finkelstein (2003)	Chua et al (1998)**
Smoking	$230			$3,500
Drinking	$150	$188		
Overweight	$125		$247	
Obesity	$395		$732	

* Heaviest drinkers as compared to control group
** Direct and indirect costs

Table 7. Cost estimates of Americans' yearly medical expenses attributable to a specific health behavior by author

	Sturm (2002)	Mertens et al* (2005)	Finkelstein (2003)	Chua et al (1998)**
Smoking	$8,029,901,680			$122,194,156,000
Drinking	$4,649,165,250	$5,826,953,780		
Overweight	$6,630,947,000		$13,102,751,272	
Obesity	$19,362,375,045		$35,881,667,172	

* Heaviest drinkers as compared to control group
** Direct and indirect costs

The results in Tables 6 and 7 show a wide range of estimates that, compounded, appear more significant. Taken another way, if Americans receive an average of $3,000 of care annually[18] then removing a smoker's care from the equation equals an 8 percent reduction in care using Sturm's conservative and dated estimate. The per-person cost of an anti-smoking program would pay for itself in lifetime savings, even if it took several years and several attempts.

8. Policy Implications

The jury is still out as to whether access to health care improves health. Intuitively this makes sense, of course, since health care includes preventative care, regular checkups, and experts monitoring small problems before they become serious illnesses. But keeping in mind that correlation is not causation, it is impossible to credit insurance with directly improving health. Too many other factors are

[18] Cover the Uninsured. http://covertheuninsured.org/content/national-spending-health-care. Accessed March 25, 2009.

at play, from genetics to environment to culture, a concept best shown in Illustration 2 with the spider web concept from the University of Michigan's Economic Research Initiative on the Uninsured (ERIU).

Illustration 2.

A Web of Factors Contributing to Health Status

Source: Economic Research Initiative on the Uninsured, University of Michigan. "Jumping to Conclusions: Will Expanding Health Care Insurance Improve the Health of the Uninsured?" Research Highlight: No. 3, March 2003. http://www.rwjf-eriu.org/pdf/research-highlight-mar.pdf. Accessed Nov. 30, 2009.

In spite of their best efforts, leadings health researchers with ERIU in 2003 tried find proof of a health impact from insurance and found no supporting evidence in existing literature. In 2006, Massachusetts became the first state in the U.S. to pass a health care reform requiring every resident to be insured. The state thus became a much-needed laboratory to be able to study the effects of insurance and get closer to an elusive answer.

Massachusetts now has enough information to begin to make some reasonable conclusions about the impact of insurance. Most notably, smoking rates decreased remarkably after an initial rush to get eligible residents covered under Medicaid. The program covers smoking cessation patches and counseling and an estimated 11 percent of smokers covered by Medicaid that year took advantage of the program. The following year, the smoking rate in Massachusetts dropped by 8 percent, the largest decrease in 10

years.[19] Here we see that access to health care, in a preventative sense, reduced smoking rates and, therefore, will more than likely lead to reduced smoking-related illnesses and the associated treatment costs. There is much to learn in coming years about more lasting impacts and longer-term results, however.

C. Discussion of health preference and risk tolerance

This study takes a hard line when it comes to defining negative health behaviors as well as how it views insurance. However addictive drinking, smoking, and overeating (the leading cause of obesity) might be, the argument can be made that they are still by and large the result of an adult's lifestyle choices, and can be stopped if a person weighs the consequences and so chooses to quit; obviously, I am assuming that there will be some people in the data set whose lifestyle choices or employment limitations are so severe, such as by chronic alcoholism or morbid obesity, that the statute of limitations has ended for having mind over matter). Likewise, insurance is a good or an investment. Although it is currently dependent largely on means or an employer's willingness to provide it, it is still offered by enough employers and insurance providers that if an uninsured person wanted to, and weighed the costs and benefits, he or she might choose to find a job with an employer who offered insurance.

The invisible variable consistent throughout my study is that of preference. Psychology might ask, "Do you prefer smoking to not smoking?" Economics might ask, "Do you value smoking, and the associated costs to do so, over not having that behavior and instead having that money in a lump sum?" Many health economists have further asserted that consumer preference for health insurance is a preference between certainty and uncertainty, especially in connection with the visible financial components of insurance, such as premiums, co-pays, deductibles, and the like. The conventional and

[19] Wang, Shirley S. Wall Street Journal Health Blog (Aug. 21, 2009). "Does Expanding Health Insurance Coverage Improve Health?" http://blogs.wsj.com/health/2009/08/21/does-expanding-health-insurance-coverage-improve-health/. Accessed Nov. 28, 2009.

reigning model in economics is expected utility theory, or the preference of certainty over uncertainty. However, Nyman (2003) uses empirical studies to show that consumers in actuality do not share this preference. Given the choice between certainty and uncertainty of an equal amount, they will choose not to purchase health insurance. Therefore, they do not use utility as the basis for their decision making in this context.

> "If the consumer has insurance, the uncertainty is whether the consumer will remain healthy and incur the loss of the premium, or become ill and receive an income transfer. If the consumer does not have insurance, the uncertainty is whether the consumer will remain healthy and consume other goods and services at the level of his endowment or become ill and consume at a level diminished by his medical care spending" (Nyman, p. 54)

Nyman says prospect theory (that risky financial decisions are made based on potential losses vs. potential gains) is a better explanation for the thought process used by consumers. Regardless of insurance, the uncertainty of illness and any attached financial loss always exists. What changes is the consumer's reference point. Viewed from a vantage point of a healthy consumer, insurance is purchased only if gain from being ill exceeds the cost of insurance for being healthy. Like all economic theory, this is a simplified macro version of an overall thought process and offers no room for the details and arguments of the "exception to the rule" sort. However, prospect theory offers an alternative to my suggestion that health and insurance are akin to gambling. This gives consumers, especially the uninsured, more credit than the mass media and conventional wisdom gives them. It also lends credence to my findings, which show that the uninsured are healthier and more "insurable" (that is, less risky for the insurance pool) than widely believed.

The results of the initial data analysis are limited by inferential factors ranging from design to the value of studying aggregated statistics for a topic that has endless explanations and differences on an individual level. In terms of design, insurance is a financial decision that is largely dependent on access to information, whereas smoking, drinking, and excess weight are lifestyle and health preferences. A person doesn't necessarily make a decision to smoke a cigarette in the same manner as they would agree to

exchange a large deductible for the right to be insured. While the health variables have a direct impact on long-term health, they are the result of much smaller daily and hourly decisions, sometimes made at the spur-of-the-moment, such as whether to take a smoke break, attend Happy Hour, or eat another potato chip. Signing up for health insurance requires a larger investment of time and concentration and a consideration of a much larger sum of money and of a matter of grave seriousness. Jobs often have probation periods before insurance is available to employees or open enrollment and information sessions only a few times a year. So even if a person is interested and able to become insured, he or she may have to wait far longer than it probably takes to become addicted to cigarettes or put on enough weight to go from healthy to overweight.

As for the role of decision-making, Americans are as individualistic as our system is bureaucratic. Whether it is delayed paperwork or changed employment status or simply a lack of time or foresight about health insurance, the individual and anecdotal explanations for not having it are endless. Similarly, the tendencies to smoke, drink, or be overweight are just as sundry, and may have no association with being uninsured, nor hint at future health problems. For example, a "frequent drinker" would describe a person who has a glass of wine every evening at dinner, a European custom that also has been shown to have health benefits.[20] Painter Pablo Picasso was a lifelong smoker and lived to age 92.[21] And professional athletes can have high BMIs as a result of muscle mass,[22] but only someone looking to lose a fight would call them "overweight."

9. Conclusion

When this topic was first conceived as a paper, a range of history-making candidates were still competing just to run as their party's presidential nominee. Health care was an issue, but war trumped

[20] Gordon, D. "Six Reasons Why a Little Glass of Wine Each Day May Do You Good." Health Magazinehttp://eating.health.com/2008/02/11/6-reasons-to-drink-wine/. Accessed April 5, 2009.
[21] Unconventional World Records. "The World's Most Famous Smokers." http://worldrec.info/2007/09/27/the-worlds-most-famous-smokers/. Accessed April 5, 2009.
[22] Wikipedia. "Body Mass Index." http://en.wikipedia.org/wiki/Body_mass_index. Accessed April 6, 2009.

every other issue. As this paper grew, a market crash and recession took hold and a historic presidency began. By the time the paper was reached its conclusion, an historic health care reform – effectively a mandate to make private health insurance more accessible to more Americans -- had been voted through Congress and was headed to President Obama's desk with an anticipated 2014 start date. After 40 years of attempts, expanded health care is a reality, even if a "public option," a universal care provision available regardless of income, was left out of the reform.

If Americans haven't faced a lack of health insurance personally, they would be hard-pressed to be immune from the plight of the uninsured – made all the more real by efforts like Michael Moore's record-breaking 2007 documentary as well as the widespread impact of the recession. Even if the compassion for the uninsured has been all but lost in the wake of angry outbursts at Congressional town hall meetings held around the country in August 2009 to discuss health reform, the public at least has some sense of understanding what it is like when a lifestyle is forcibly changed by circumstances outside one's control, whether it be as a result of bad health, natural disasters, or manmade economic disasters and the layoffs and plant closures that follow.

If my musings can be indulged, I have to wonder if there are lessons to be learned from our universal human roots as hunters who consumed only what could be gathered – in effect, at the whim of elements beyond our control. Only the strong survived which, in a sense, is an argument against national healthcare. Such a system effectively hands out help and asks nothing directly from individuals in return. Philosophically, this takes us further from the idealized, industrious America we aim to be – a country where the mythical Horatio Algers persevere, pulling themselves up by their boot-straps and prospering. As Americans, we should want to embody our inherited self-made (or self-invented) idealism.

Except that we are just as famously a country no longer divided but, as President Obama has famously orated, a *United* States. Just as our soldiers never leave behind a fallen comrade, it seems somehow un-American to leave our fellow men and women behind, especially when they are at their most vulnerable by virtue of illness, injury, or imminent death. By definition, to be a good and true

American is to support our fellow man. How much more noble and true to our cause can we be than to care for our tired, our poor, and ours who are yearning to breathe free? And what clearer message do we need than doing so with a system that directly cares for the most basic and innocent human needs?

Our most modern incarnation, however, is that of an America built on change and ingenuity. We are adept at adapting and inventing when inspired. We have played the middle-man and chief negotiator for much of the world, and we key in to compromise, even if we had done so clumsily and awkwardly as only a teenaged country can do.

That then would make a *true* American health care plan one that is inclusive but individualized, with expectation built in to it but also understanding of the "exceptions to the rule" that are illustrated by my findings from smoking, drinking, and BMI data. With breadth of coverage it could aim to be a "one size fits most" plan that allows for a "custom" version that grants more to those willing and able to invest more. For instance, a tiered system of coverage could provide a "basic cable" version with catastrophic care and preventative care, such as smoking cessation programs and alcohol and drug rehabilitation. The "premium cable" version could offer increasingly specialized benefits proportional to one's ability to pay for and desire for optional services like holistic medicine, chiropractic care, plastic surgery, and the other amenities that arguably do little to sustain life, but make a sustained life better. Of course, it is the former and not the latter that we need to do better.

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APPENDICES

Table 1. Selected health behaviors of uninsured and insured Americans ages 25 to 30 in the civilian, noninstitutionalized population, 2006 NHIS.

	Insurance status											
	Uninsured estimates				Insured estimates				Total Universe			
	Rate	SE	Obs	Count	Rate	SE	Obs	Count	Rate	SE	Obs	Count
Smoking status												
Nonsmoker	65.00%	2.15%	522	4,159,510	78.40%	1.22%	1,469	13,405,957	74.80%	1.07%	1,991	17,565,467
Smoker	35.00%	2.15%	235	2,244,241	21.60%	1.22%	402	3,684,483	25.20%	1.07%	637	5,928,724
Total	100.00%		757	6,403,751	100.00%		1,871	17,090,440	100.00%		2,628	23,494,191
Drinking status												
Nondrinker	77.30%	0.94%	186	4,303,392	78.40%	1.33%	518	12,690,512	76.90%	1.14%	704	16,993,904
Drinker	22.70%	0.94%	375	1,602,307	21.60%	1.33%	1,390	3,492,756	23.10%	1.14%	1,765	5,095,063
Total	100.00%		561	5,905,699	100.00%		1,908	16,183,268	100.00%		2,469	22,088,967
BMI												
Obese	27.10%	1.95%	195	1,722,483	27.10%	1.19%	495	4,583,324	27.10%	0.99%	690	6,305,807
Overweight	30.00%	1.87%	236	1,902,505	31.00%	1.40%	573	5,237,357	30.70%	1.13%	809	7,139,862
Healthy	42.90%	2.11%	326	2,724,597	41.90%	1.55%	776	7,075,837	42.20%	1.25%	1,102	9,800,434
Total	100.00%		757	6,349,585	100.00%		1,844	16,896,518	100.00%		2,601	23,246,103

Source: National Health Interview Survey (NHIS), 2006 person-level and sample adult files
Note: Standard errors calculated using Taylor series with Stata version 10.

Table 2. Odds of selected health behaviors of uninsured Americans ages 25 to 30 years old in the civilian, noninstitutionalized population, 2006 NHIS.

				95% Confidence level	
	Odds Ratio	SE	P-value	Lower	Upper
Smoking status					
(n=2628)					
Insured	1.000	-	-	-	-
Uninsured	1.963	0.242	0.000**	1.541	2.501
Drinking status					
(n=2469)					
Insured	1.000	-	-	-	-
Uninsured	1.353	0.179	0.023*	1.042	1.756
Obese					
(n=2601)					
Insured	1.000	-	-	-	-
Uninsured	1.000	0.119	0.999	0.792	1.263
Overweight					
(n=2601)					
Insured	1.000	-	-	-	-
Uninsured	0.952	0.106	0.661	0.765	1.185
Healthy					
(n=2601)					
Insured	1.000	-	-	-	-
Uninsured	1.043	0.113	0.697	0.843	1.292

Source: National Health Interview Survey (NHIS), 2006 person-level and sample adult files
** p<.001
Note: Standard errors calculated using Taylor series with Stata version 10.

Table 3. Selected health behaviors of uninsured and insured Americans ages 31 to 45 in the civilian, noninstitutionalized population, 2006 NHIS.

	Insurance status											
	Uninsured estimates				Insured estimates				Total Universe			
	Rate	SE	Obs	Count	Rate	SE	Obs	Count	Rate	SE	Obs	Count
Smoking status												
Nonsmoker	67.30%	1.53%	1,057	8,585,422	79.40%	0.69%	4,250	39,321,841	76.90%	0.65%	5,307	47,907,263
Smoker	32.70%	1.53%	470	4,176,480	20.60%	0.69%	1,068	10,194,207	23.10%	0.65%	1,538	14,370,687
Total	100.00%		1,527	12,761,902	100.00%		5,318	49,516,048	100.00%		6,845	62,277,950
Drinking status												
Nondrinker	78.30%	1.31%	1,105	9,040,290	78.90%	0.71%	4,026	36,546,194	78.70%	0.63%	5,131	45,586,484
Drinker	21.70%	1.31%	290	2,502,505	21.10%	0.71%	958	9,802,366	21.30%	0.63%	1,248	12,304,871
Total	100.00%		1,395	11,542,795	100.00%		4,984	46,348,560	100.00%		6,379	57,891,355
BMI												
Obese	31.70%	1.52%	485	4,059,873	30.40%	0.78%	1661	15,026,397	30.60%	0.70%	2,146	19,086,270
Overweight	36.90%	1.52%	567	4,728,018	35.00%	0.77%	1830	17,340,067	35.40%	0.69%	2,397	22,068,085
Healthy	31.40%	1.56%	481	4,018,110	34.60%	0.80%	1812	17,134,095	33.90%	0.72%	2,293	21,152,205
Total	100.00%		1,533	12,806,001	100.00%		5,303	49,500,559	100.00%		6,836	62,306,560

Source: National Health Interview Survey (NHIS), 2006 person-level and sample adult files
Note: Standard errors calculated using Taylor series with Stata version 10.

Table 4. Odds of selected health behaviors of uninsured Americans ages 31 to 45 in the civilian, noninstitutionalized population, 2006 NHIS.

				95% Confidence level	
	Odds Ratio	SE	P-value	Lower	Upper
Smoking status					
(n=6845)					
Insured	1.000	-	-	-	-
Uninsured	1.876	0.151	0.000***	1.602	2.198
Drinking status					
(n=6379)					
Insured	1.000	-	-	-	-
Uninsured	1.032	0.091	0.720	0.868	1.227
Obese					
(n=6836)					
Insured	1.000	-	-	-	-
Uninsured	1.065	0.084	0.425	0.912	1.244
Overweight					
(n=6836)					
Insured	1.000	-	-	-	-
Uninsured	1.086	0.079	0.260	0.941	1.252
Healthy					
(n=6836)					
Insured	1.000	-	-	-	-
Uninsured	0.864	0.069	0.069*	0.737	1.012

Source: National Health Interview Survey (NHIS), 2006 person-level and sample adult files
* p<.1 ** p<.01 *** p<.001

Table 5. Selected health behaviors of uninsured and insured Americans ages 46 to 64 in the civilian, noninstitutionalized population, 2006 NHIS.

	Insurance status											
	Uninsured estimates				Insured estimates				Total Universe			
	Rate	SE	Obs	Count	Rate	SE	Obs	Count	Rate	SE	Obs	Count
Smoking status												
Nonsmoker	63.90%	1.83%	702	5,788,204	80.80%	0.62%	5088	49,311,667	78.60%	0.58%	5,790	55,099,871
Smoker	36.10%	1.83%	385	3,265,386	19.20%	0.62%	1295	11,712,219	21.40%	0.58%	1,680	14,977,605
Total	100.00%		1,087	9,053,590	100.00%		6,383	61,023,886	100.00%		7,470	70,077,476
Drinking status												
Nondrinker	79.30%	1.76%	786	6,510,800	77.60%	0.70%	4536	42,799,658	77.90%	0.66%	5,322	49,310,458
Drinker	20.70%	1.76%	202	1,700,325	22.40%	0.70%	1209	12,319,356	22.10%	0.66%	1,411	14,019,681
Total	100.00%		988	8,211,125	100.00%		5,745	55,119,014	100.00%		6,733	63,330,139
BMI												
Obese	33.70%	1.72%	358	3,060,906	34.70%	0.76%	2275	21,201,631	34.60%	0.70%	2,633	24,262,537
Overweight	34.10%	1.80%	369	3,096,585	35.30%	0.72%	2240	21,562,993	35.10%	0.69%	2,609	24,659,578
Healthy	32.30%	1.77%	362	2,933,937	30.00%	0.70%	1893	18,329,479	30.30%	0.66%	2,255	21,263,416
Total	100.00%		1,089	9,091,428	100.00%		6,408	61,094,103	100.00%		7,497	70,185,531

Source: National Health Interview Survey (NHIS), 2006 person-level and sample adult files
Note: Standard errors calculated using Taylor series with Stata version 10.

Table 6. Odds of selected health behaviors of uninsured Americans ages 46 to 64 in the civilian, noninstitutionalized population, 2006 NHIS.

				95% Confidence level	
	Odds Ratio	SE	P-value	Lower	Upper
Smoking status					
(n=7470)					
Insured	1.000	-	-	-	-
Uninsured	2.375	0.216	0.000***	1.986	2.841
Drinking status					
(n=6733)					
Insured	1.000	-	-	-	-
Uninsured	0.907	0.103	0.393	0.725	1.135
Obese					
(n=7497)					
Insured	1.000	-	-	-	-
Uninsured	0.955	0.081	0.586	0.809	1.127
Overweight					
(n=7497)					
Insured	1.000	-	-	-	-
Uninsured	0.947	0.079	0.515	0.803	1.116
Healthy					
(n=7497)					
Insured	1.000	-	-	-	-
Uninsured	1.112	0.097	0.224	0.937	1.319

Source: National Health Interview Survey (NHIS), 2006 person-level and sample adult files
* p<.1 ** p<.01 *** p<.001

Table 7. Selected health behaviors by insurance status of Americans ages 25 to 64 and below the poverty level in the civilian, noninstitutionalized population, 2006 NHIS.

	Insurance status											
	Uninsured estimates				Insured estimates				Total Universe			
	Rate	SE	Obs	Count	Rate	SE	Obs	Count	Rate	SE	Obs	Count
Smoking status												
Nonsmoker	65.8%	1.84%	904	6,448,907	72.7%	1.28%	1,992	12,892,396	70.3%	1.10%	2,896	19,341,303
Smoker	34.2%	1.84%	423	3,357,259	27.3%	1.28%	673	4,830,761	29.7%	1.10%	1,096	8,188,020
Total	100.0%		1,327	9,806,166	100.0%		2,665	17,723,157	100.0%		3,992	27,529,323
Drinking status												
Nondrinker	82.5%	1.38%	1018	7,457,757	85.0%	1.00%	2063	13,486,614	84.1%	0.81%	3,081	20,944,371
Drinker	17.5%	1.38%	208	1,583,610	15.0%	1.00%	318	2,388,543	15.9%	0.81%	526	3,972,153
Total	100.0%		1,226	9,041,367	100.0%		2,381	15,875,157	100.0%		3,607	24,916,524
BMI												
Obese	30.5%	1.62%	398	2,976,455	34.4%	1.33%	961	6,046,977	33.0%	1.06%	1,359	9,023,432
Overweight	34.0%	1.71%	448	3,314,386	29.2%	1.27%	766	5,141,568	30.9%	0.97%	1,214	8,455,954
Healthy	35.5%	1.72%	473	3,469,470	36.4%	1.47%	917	6,398,492	36.1%	1.12%	1,390	9,867,962
Total	100.0%		1,319	9,760,311	100.0%		2,644	17,587,037	100.0%		3,963	27,347,348

Source: National Health Interview Survey (NHIS), 2006 person-level and sample adult files
Note: Standard errors calculated using Taylor series with Stata version 10.

Table 8. Odds of selected health behaviors by insurance status of Americans ages 46 to 64 and below the poverty level in the civilian, noninstitutionalized population, 2006 NHIS.

				95% Confidence level	
	Odds Ratio	SE	P-value	Lower	Upper
Smoking status					
(n=3992)					
Insured	1.000	-	-	-	-
Uninsured	1.389	0.138	0.001***	1.142	1.690
Drinking status					
(n=3607)					
Insured	1.000	-	-	-	-
Uninsured	1.199	0.147	0.140	0.942	1.527
Obese					
(n=3963)					
Insured	1.000	-	-	-	-
Uninsured	0.837	0.078	0.058*	0.697	1.006
Overweight					
(n=3963)					
Insured	1.000	-	-	-	-
Uninsured	1.245	0.128	0.034*	1.017	1.523
Healthy					
(n=3963)					
Insured	1.000	-	-	-	-
Uninsured	0.964	0.095	0.713	0.794	1.171

Source: National Health Interview Survey, 2006 person and sample adult files
* p<.1 ** p<.01 *** p< .001
Note: Strata omitted from Smoker, Obese, Overweight, and Health (4 each) and Drinker (6) because they contain no subpopulation.

Table 9. Selected health behaviors by insurance status of Americans ages 25 to 64 with reported earning levels of 100% to 199% of the federal poverty level in the civilian, noninstitutionalized population, 2006 NHIS.

	Insurance status											
	Uninsured estimates				Insured estimates				Total Universe			
	Rate	SE	Obs	Count	Rate	SE	Obs	Count	Rate	SE	Obs	Count
Smoking status												
Nonsmoker	68.80%	1.49%	985	6,448,907	79.10%	0.87%	2,976	12,892,396	76.10%	0.78%	3,961	19,341,303
Smoker	31.20%	1.49%	412	3,357,259	20.90%	0.87%	714	4,830,761	23.90%	0.78%	1,126	8,188,020
Total	100.00%		1,397	9,806,166	100.00%		3,690	17,723,157	100.00%		5,087	27,529,323
Drinking status												
Nondrinker	80.40%	1.38%	1019	7,457,757	84.90%	0.81%	2,855	13,486,614	83.60%	0.72%	3,874	20,944,371
Drinker	19.60%	1.38%	270	1,583,610	15.10%	0.81%	450	2,388,543	16.40%	0.72%	720	3,972,153
Total	100.00%		1,289	9,041,367	100.00%		3,305	15,875,157	100.00%		4,594	24,916,524
BMI												
Obese	29.20%	1.50%	393	2,976,455	33.20%	0.92%	1,207	6,046,977	32.00%	0.75%	1,600	9,023,432
Overweight	32.40%	1.39%	472	3,314,386	32.30%	0.94%	1,188	5,141,568	32.30%	0.77%	1,660	8,455,954
Healthy	38.40%	1.59%	530	3,469,470	34.50%	0.95%	1,264	6,398,492	35.60%	0.82%	1,794	9,867,962
Total	100.00%		1,395	9,760,311	100.00%		3,659	17,587,037	100.00%		5,054	27,347,348

Source: National Health Interview Survey (NHIS), 2006 person-level and sample adult files
Note: Standard errors calculated using Taylor series with Stata version 10.

Table 10. Odds of selected health behaviors by insurance status of Americans ages 25 to 64 with reported earning levels of 100% to 199% of the federal poverty level in the civilian, noninstitutionalized population, 2006 NHIS.

				95% Confidence level	
	Odds Ratio	SE	P-value	Lower	Upper
Smoking status					
(n=5087)					
Insured	1.000	-	-	-	-
Uninsured	1.715	0.144	0.000***	1.454	2.023
Drinking status					
(n=4594)					
Insured	1.000	-	-	-	-
Uninsured	1.375	0.146	0.003**	1.116	1.694
Obese					
(n=5054)					
Insured	1.000	-	-	-	-
Uninsured	0.829	0.072	0.031*	0.700	0.983
Overweight					
(n=5054)					
Insured	1.000	-	-	-	-
Uninsured	1.002	0.077	0.977	0.861	1.166
Healthy					
(n=5054)					
Insured	1.000	-	-	-	-
Uninsured	1.187	0.094	0.032*	1.015	1.388

Source: National Health Interview Survey, 2006 person and sample adult files
* p<.1 ** p<.01 *** p<.001

Table 11. Selected health behaviors by insurance status of Americans ages 25 to 64 with reported earning levels of 200% to 299% above the federal poverty level in the civilian, noninstitutionalized population, 2006 NHIS.

	Insurance status											
	Uninsured estimates				Insured estimates				Total Universe			
	Rate	SE	Obs	Count	Rate	SE	Obs	Count	Rate	SE	Obs	Count
Smoking status												
Nonsmoker	63.70%	1.90%	493	6,448,907	80.30%	0.90%	2,708	12,892,396	77.20%	0.83%	3,201	19,341,303
Smoker	36.30%	1.90%	253	3,357,259	19.70%	0.90%	634	4,830,761	22.80%	0.83%	887	8,188,020
Total	100.00%		746	9,806,166	100.00%		3,342	17,723,157	100.00%		4,088	27,529,323
Drinking status												
Nondrinker	78.20%	1.89%	540	7,457,757	82.70%	0.86%	2,515	13,486,614	81.80%	0.82%	3,055	20,944,371
Drinker	21.80%	1.89%	155	1,583,610	17.30%	0.86%	497	2,388,543	18.20%	0.82%	652	3,972,153
Total	100.00%		695	9,041,367	100.00%		3,012	15,875,157	100.00%		3,707	24,916,524
BMI												
Obese	26.50%	2.14%	201	2,976,455	32.00%	0.97%	1,049	6,046,977	31.00%	0.90%	1,250	9,023,432
Overweight	35.30%	2.38%	253	3,314,386	35.40%	1.05%	1,141	5,141,568	35.40%	0.96%	1,394	8,455,954
Healthy	38.20%	2.30%	283	3,469,470	32.50%	1.06%	1,138	6,398,492	33.60%	0.95%	1,421	9,867,962
Total	100.00%		737	9,760,311	100.00%		3,328	17,587,037	100.00%		4,065	27,347,348

Source: National Health Interview Survey (NHIS), 2006 person-level and sample adult files
Note: Standard errors calculated using Taylor series with Stata version 10.

Table 12. Odds of selected health behaviors of uninsured Americans ages 25 to 64 with reporting earning levels of 200% to 299% above the federal poverty level in the civilian, noninstitutionalized population, 2006 NHIS.

				95% Confidence level	
	Odds Ratio	SE	P-value	Lower	Upper
Smoking status					
(n=4088)					
Insured	1.000	-	-	-	-
Uninsured	2.326	0.235	0.000***	1.907	2.837
Drinking status					
(n=3707)					
Insured	1.000	-	-	-	-
Uninsured	1.332	0.161	.018*	1.051	1.689
Obese					
(n=4065)					
Insured	1.000	-	-	-	-
Uninsured	0.763	0.089	.021*	0.607	0.960
Overweight					
(n=4065)					
Insured	1.000	-	-	-	-
Uninsured	0.997	0.114	0.977	0.796	1.248
Healthy					
(n=4065)					
Insured	1.000	-	-	-	-
Uninsured	1.281	0.140	.024*	1.033	1.590

Source: National Health Interview Survey (NHIS), 2006 person-level and sample adult files
* p<.1 ** p<.01 *** p<.001

Table 13. Selected health behaviors of uninsured and insured Americans ages 25 to 64 with reported earning levels of 300% and above of the federal poverty level in the civilian, noninstitutionalized population, 2006 NHIS.

	Insurance status											
	Uninsured estimates				Insured estimates				Total Universe			
	Rate	SE	Obs	Count	Rate	SE	Obs	Count	Rate	SE	Obs	Count
Smoking status												
Nonsmoker	67.40%	2.16%	533	5,511,984	84.40%	0.46%	8,148	84,481,785	83.10%	0.47%	8,681	89,993,769
Smoker	32.60%	2.16%	226	2,668,077	15.60%	0.46%	1,465	15,583,845	16.90%	0.47%	1,691	18,251,922
Total	100.00%		759	8,180,061	100.00%		9,613	100,065,630	100.00%		10,372	108,245,691
Drinking status												
Nondrinker	71.40%	2.08%	499	5,290,354	75.40%	0.57%	6,760	70,180,786	75.10%	0.55%	7,259	75,471,140
Drinker	28.60%	2.08%	199	2,117,954	24.60%	0.57%	2,164	22,875,468	24.90%	0.55%	2,363	24,993,422
Total	100.00%		698	7,408,308	100.00%		8,924	93,056,254	100.00%		9,622	100,464,562
BMI												
Obese	28.50%	2.03%	213	2,356,008	27.50%	0.60%	2,651	27,437,046	27.60%	0.59%	2,864	29,793,054
Overweight	31.80%	2.08%	250	2,622,647	34.90%	0.54%	3,384	34,771,704	34.60%	0.51%	3,634	37,394,351
Healthy	39.70%	2.48%	299	3,276,672	37.60%	0.64%	3,552	37,474,497	37.80%	0.62%	3,851	40,751,169
Total	100.00%		762	8,255,327	100.00%		9,587	99,683,247	100.00%		10,349	107,938,574

Source: National Health Interview Survey (NHIS), 2006 person-level and sample adult files
Note: Standard errors calculated using Taylor series with Stata version 10.

Table 14. Odds of selected health behaviors of uninsured Americans ages 25 to 64 with reported income of 300% and above of the federal poverty level in the civilian, noninstitutionalized population, 2006 NHIS.

				95% Confidence level	
	Odds Ratio	SE	P-value	Lower	Upper
Smoking status					
(n=10372)					
Insured	1.000	-	-	-	-
Uninsured	2.624	0.271	0.000**	2.142	3.215
Drinking status					
(n=9622)					
Insured	1.000	-	-	-	-
Uninsured	1.228	0.131	.055*	0.996	1.151
Obese					
(n=10349)					
Insured	1.000	-	-	-	-
Uninsured	1.052	0.106	0.618	0.862	1.283
Overweight					
(n=10349)					
Insured	1.000	-	-	-	-
Uninsured	0.869	0.088	0.165	0.713	1.060
Healthy					
(n=10349)					
Insured	1.000	-	-	-	-
Uninsured	1.093	0.117	0.409	0.885	1.349

Source: National Health Interview Survey (NHIS), 2006 person-level and sample adult files
* p<.1 ** p<.01 *** p<.001

Table 15. Estimates of coefficients in likelihood of being uninsured/Regression model 1

					95% Conf. Int.	
	Coef.	SE	t	p>|t|	Low	High
Smoker	0.1235	0.0066	18.66	0.000***	0.1105	0.1365
Drinker	-0.0058	0.0067	-0.86	0.387	-0.0188	0.0073
Obese	-0.0108	0.0065	-1.66	0.096*	-0.0236	0.0019
Overweight	-0.0005	0.0062	-0.08	0.938	-0.0126	0.0116
constant	*0.1606*	*0.0047*	*34.37*	*0.000****	*0.1514*	*0.1697*
r-squared			0.0165			
n			21,434			

Source: National Health Interview Survey (NHIS), 2006 person-level and sample adult files
Note: Standard errors calculated using Taylor series with Stata version 10.
* Obese and Overweight are compared to likelihood of having Healthy BMI.
* p<.1 ** p<.01 *** p<.001

Table 16. Estimates of coefficients in likelihood of being uninsured/Regression model 2

					95% Conf. Int.	
	Coef.	SE	t	p>|t|	Low	High
Smoker	0.1189	0.0066	17.98	0.000***	0.1059	0.1314
Drinker	0.0036	0.0067	0.55	0.586	-0.0094	0.0167
Obese	-0.0133	0.0065	-2.04	0.041*	-0.0260	-0.0005
Overweight	-0.0002	0.0062	-0.03	0.977	-0.0123	0.0119
100-199% poverty	0.1337	0.0066	20.33	0.000***	0.1208	0.1465
200-299% poverty	0.0384	0.0071	5.41	0.000***	0.0245	0.0524
constant	*0.1261*	*0.0051*	*24.71*	0.000***	*0.1161*	*0.1361*
r-squared			0.0357			
n			21,143			

Source: National Health Interview Survey (NHIS), 2006 person-level and sample adult files
Note: Standard errors calculated using Taylor series with Stata version 10.
* Obese and Overweight are compared to likelihood of having Healthy BMI; Poverty Incomes are compared to
* p<.1 ** p<.01 *** p<.001

Table 17. Estimates of coefficients in likelihood of being uninsured/Regression model 3

					95% Conf. Int.	
	Coef.	SE	t	p>|t|	Low	High
Smoker	0.0999	0.0063	15.84	0.000***	0.0876	0.1123
Drinker	-0.0010	0.0065	-0.15	0.878	-0.0137	0.0117
Obese	0.0005	0.0062	0.08	0.935	-0.0137	0.0126
Overweight	0.0023	0.0059	0.38	0.703	-0.0093	0.0138
100-199% poverty	0.1273	0.0062	20.39	0.000***	0.1151	0.1395
200-299% poverty	0.0515	0.0067	7.66	0.000***	0.0383	0.0647
Age	-0.0048	0.0001	-33.88	0.000***	-0.0051	-0.0045
Female	-0.0333	0.0052	-6.44	0.000***	-0.0434	-0.0232
Education	-0.0024	0.0003	-8.06	0.000***	-0.0029	-0.0018
US Citizen	-0.1273	0.0064	-19.85	0.000***	-0.1399	-0.1147
Hispanic	0.0039	0.0002	16.75	0.000***	0.0035	0.0044
Race	-0.0001	0.0000	-2.77	0.006**	-0.0001	0.0000
constant	*0.6368*	*0.0186*	*34.29*	0.000***	*0.6004*	*0.6732*
r-squared			0.1410			
n			21,143			

Source: National Health Interview Survey (NHIS), 2006 person-level and sample adult files
Note: Standard errors calculated using Taylor series with Stata version 10.
* Obese and Overweight are compared to likelihood of having Healthy BMI; Poverty Incomes are compared to likelihood of being at 300%-plus above the Federal Poverty Level.
* p<.1 ** p<.01 *** p<.001

Table 18. Estimates of coefficients in likelihood of being uninsured/Regression model 4

					95% Conf. Int.	
	Coef.	SE	t	p>|t|	Low	High
	0.0929	0.0064	14.58	0.000***	0.0804	0.1054
Drinker	0.0035	0.0065	0.54	0.590	-0.0093	0.0163
Obese	-0.0095	0.0063	-1.51	0.132	-0.0218	0.0028
Overweight	-0.0007	0.0059	-0.12	0.908	-0.0123	0.0109
100-199% poverty	0.1230	0.0063	19.66	0.000***	0.1108	0.1353
200-299% poverty	0.0514	0.0067	7.65	0.000***	0.0382	0.0645
Age	-0.0051	0.0002	-32.75	0.000***	-0.0054	-0.0048
Female	-0.0347	0.0052	-6.7	0.000***	-0.0448	-0.0245
Education	-0.0022	0.0003	-7.55	0.000***	-0.0028	-0.0016
US Citizen	-0.1261	0.0064	-19.66	0.000***	-0.1387	-0.1135
Hispanic	0.0038	0.0002	16.27	0.000***	0.0034	0.0043
Race	-0.0001	0.0000	-3.10	0.002**	-0.0001	0.0000
Family Size	0.0038	0.0018	2.14	0.032**	0.0003	0.0072
Health	0.0188	0.0025	7.63	0.000***	0.0140	0.0237
constant	*0.6017*	*0.0199*	*30.29*	0.000***	*0.5627*	*0.6406*
r-squared			0.1441			
n			21,143			

Source: National Health Interview Survey (NHIS), 2006 person-level and sample adult files
Note: Standard errors calculated using Taylor series with Stata version 10.
likelihood of being at 300%-plus above the Federal Poverty Level; Health represents respondents self-reported health status.
* p<.1 ** p<.01 *** p<.001