

Americans' Cardiovascular Risk and Changes in Health Insurance Coverage: the Role of Recent Coverage Expansions

Leighton Ku, Erika Steinmetz, and Brian Bruen
George Washington University

December 2016

Abstract

About half (26) of U.S. states, largely in the South and Midwest, did not expand Medicaid insurance coverage at the beginning of 2014. This brief examines differences in cardiovascular (CVD) risk status (based on obesity, smoking, hypertension, high cholesterol or diabetes), history of acute CVD (stroke, heart attack or other heart disease) and insurance coverage among non-elderly adults living in states that expanded or failed to expand Medicaid, using 2013 and 2014 National Health Interview Survey data. At a national level, the number of adults with current CVD risk factors who were uninsured fell from 31 million in 2013 to 25 million in 2014. But residents of states that did not expand Medicaid were more likely to have a CVD risk factor and those at risk were more likely to be uninsured in both years. Thus, non-expanding states face double burdens of higher risk prevalence.

Introduction

Implementation of the Affordable Care Act (ACA) triggered major increases in Americans' health insurance coverage

and access to care.^{1 2} Many patients, including those at risk of cardiovascular disease (CVD) have problems obtaining appropriate care due to lack of insurance coverage. For example, one study found that one-fifth of hypertensive adults were uninsured and were unable to visit a doctor due to cost.³ A randomized trial in Oregon found that Medicaid expansions led to increases in access to preventive and acute care services.⁴ Early results from NHIS found that Medicaid expansions were associated with increased insurance coverage, improved access to primary care physician visits and greater identification of persons with high cholesterol and diabetes.⁵ Broader insurance coverage could improve access to care for individuals at risk of and living with CVD by enabling more people to obtain services, ranging from preventive screening to primary management of hypertension or coronary heart disease to more intensive care for severe conditions like myocardial infarction or stroke.

But CVD risks are not evenly distributed across the nation. The existence and persistence of geographic disparities in CVD risk, prevalence, and mortality across the U.S., such as the "Stroke Belt" in the South, demonstrates

that residents of some parts of the country are at higher risk than others.⁶ From a population health perspective, we might hope that services, such as health insurance or public health services, that could mitigate problems, are more available in areas where people have higher risks.

A factor that could widen interstate disparities is whether states expanded Medicaid eligibility or not. Most elements of the ACA, such as health insurance marketplaces, tax credits, and insurance mandates, apply in all states. However, a 2012 Supreme Court decision gave states the option to forego expansion of Medicaid eligibility to non-elderly adults with incomes below 138% of the poverty line (\$27,800 for a family of three in 2016). Nineteen states, including many southern and Great Plains states, are not expanding Medicaid as of mid-2016. The median Medicaid eligibility level for parents and caretaker adults in non-expansion states is 42% of poverty (\$8,500 for a family of three); childless adults without disabilities are ineligible in these states, no matter how poor.⁷ Analyses of the 2013 Behavioral Risk Factor Surveillance System found that key CVD risk factors such as obesity, hypertension, stroke, and diabetes were more prevalent in states that were not planning to expand Medicaid.⁸

To assess whether and to what extent Medicaid expansion may affect these geographic disparities, this analysis examines the relationships between CVD risk prevalence and changes in insurance coverage before and after the ACA expansions. As of late 2016, there is strong interest in repealing and replacing the ACA, but it is too early to know what

future policies will be or how those changes could affect access to care for people with cardiovascular risk or who have cardiovascular disease.

Methods

Our analyses are based on the 2013 and 2014 National Health Interview Survey (NHIS), nationally representative household surveys of the non-institutionalized population, conducted by the National Center for Health Statistics (NCHS). Response rates for adults were 81.7% in 2013 and 80.5% in 2014.⁹ Public use NHIS data do not include the state of residence for respondents, so we accessed restricted data through NCHS's Research Data Center to link respondents' state of residence to Medicaid expansion status. Under NCHS privacy rules, data about individual states cannot be reported, so we aggregated states into the 25 that had adopted a Medicaid expansion as of January 2014 (Arizona, Arkansas, California, Colorado, Connecticut, Delaware, District of Columbia, Hawaii, Illinois, Iowa, Kentucky, Maryland, Massachusetts, Minnesota, Nevada, New Jersey, New Mexico, New York, North Dakota, Ohio, Oregon, Rhode Island, Vermont, Washington and West Virginia) and the 26 that did not. Seven of the non-expanding states (Alaska, Indiana, Louisiana, Michigan, Montana, New Hampshire and Pennsylvania) subsequently expanded Medicaid, but those expansions were not in effect throughout 2014. In some cases, data are suppressed when the number of observations was too small (e.g., an unweighted sample size below 30 for any cell). Our analyses account for survey

weights and the clustered survey design of NHIS, using SAS version 9.2.

The analyses focus on adults 18 to 64, the key ages of ACA insurance expansions (sample size = 133,198). The primary outcome variable is whether the adult was insured or uninsured at the time of the survey. The relationship between income and insurance eligibility can be complicated. Those with incomes between 100% and 138% of poverty living in expansion states enroll in Medicaid, but those in non-expansion states may receive tax subsidies to enroll in health insurance marketplaces. But in non-expansion states, adults with incomes between the state Medicaid eligibility level and 100% of poverty are eligible for neither exchange subsidies nor Medicaid.

In this study, current CVD risk factors are measured based on whether a person (1) had *hypertension* in the last year; (2) had *high cholesterol* in the past year; (3) was currently being treated for *diabetes* (i.e., taking insulin or diabetes pills); (4) was *overweight or obese* (body mass index greater than 25 or 30, respectively), and/or (5) was a *current smoker*. We also examine data about respondents' history of acute CVD, including ever having a stroke, heart attack, angina, coronary heart disease or other heart disease, regardless of current risk factor status. Data are self-reported by respondents and not based on direct clinical measurements or records.

Access to the restricted NHIS data was approved by the National Center for Health Statistics. This research was exempt from human subjects review.

Results

Table 1 shows that about three-quarters of American adults had at least one of the five CVD risk factors in both 2013 and 2014. Prevalence rates were higher in non-expansion states in both years (see Figure 1). The overall risk of being uninsured among those with a CVD risk factor fell from 21.4% in 2013 to 17.0% in 2014 ($p < .05$). The number of uninsured adults with a CVD risk factor fell by 6.1 million, from 31.0 million to 24.8 million. The decline appeared to be slightly larger in expansion states (-5.1 percentage points) than non-expansion state (-3.8 percentage points), but the difference was not statistically significant (see Figure 2). Those who were Hispanic or had incomes below 200% of poverty were much more likely to be uninsured.

As seen in Table 2, the most common CVD risk factor was being overweight or obese (body mass index greater than 25%). Almost two-thirds of American adults (126 million) were overweight or obese in 2014 and one-sixth of them were uninsured (see Figure 3). Less than one-fifth of adults (36 million) were at risk due to smoking in 2014, but about one-quarter (25%) of smokers lacked health insurance (see Figure 4). The other three risk factors (hypertension, high cholesterol, and diabetes) were less prevalent and fewer people with these risk factors were uninsured. For most measures, the number and percentage of those at risk who were uninsured fell significantly between 2013 and 2014, and the number at risk and the share uninsured were generally higher in non-expansion states.

Table 1. Number and Percent of Adults 18-64 with Any Current Cardiovascular Risk Factor Who Are Uninsured, by Medicaid Expansion Status, 2013 and 2014

	Medicaid Expansion States		Non-Medicaid Expansion States		All States	
	2013	2014	2013	2014	2013	2014
Number of Adults	97.8 mil.	96.7 mil.	96.2 mil.	98.1 mil.	194.0 mil.	194.8 mil.
Number with Any Risk Factor	70.2 mil.	70.5 mil.	74.5 mil.	75.4 mil.	144.7 mil.	146.0 mil.
Percent with Any Risk Factor	71.8%	73.0%	77.5%	76.9%	74.6%	74.9%
Number with Any Risk Factor Who Are Uninsured	13.8 mil.	10.2 mil. *	17.3 mil.	14.6 mil. *	31.0 mil.	24.8 mil. *
Percent with Any Risk Factor Who Are Uninsured	19.6%	14.5% *	23.2%	19.4% *	21.4%	17.0% *
Subpopulations, Percent with Any Risk Factor Who Are Uninsured:						
Gender						
Male	20.7%	16.1% *	23.9%	20.1% *	22.3%	18.1% *
Female	18.4%	12.7% *	22.4%	18.7% *	20.5%	15.8% *
Race and Ethnicity						
Hispanic	38.0%	29.6% *	46.6%	40.4% *	41.4%	34.2% *
Non-Hispanic White	14.4%	9.9% *	16.9%	14.3% *	14.0%	10.8% *
Non-Hispanic Black	19.0%	12.4% *	27.8%	20.6% *	23.2%	16.5% *
Non-Hispanic Asian	13.6%	12.8%	20.1%	16.3%	13.9%	12.5%
Non-Hispanic Other Races	n/a	n/a	31.7%	32.9%	21.3%	27.3%
Income to Poverty Level						
Under 200% Federal Poverty Line	35.8%	25.6% *	43.4%	36.1% *	39.8%	31.2% *
200% or higher	11.5%	8.8%	12.3%	10.4% *	11.9%	9.6% *
Age						
18-24	28.2%	15.9% *	31.5%	23.7% *	28.9%	19.0% *
25-34	26.2%	21.2% *	29.0%	27.7%	26.5%	23.4% *
35-49	19.0%	15.7% *	23.9%	19.5% *	20.6%	17.0% *
50-64	13.8%	9.3% *	16.5%	13.2% *	14.3%	10.7% *

Source: National Health Interview Survey, as analyzed by George Washington Univ.

Notes:

* Comparisons between 2013 and 2014 are statistically significant at $p < .05$.

n/a Not Available. Data suppressed due to small sample size.

Table 2. Number and Percent of Adults with Current Cardiovascular Risk Factors by Medicaid Expansion Status, 2013 and 2014

Risk Factor	Medicaid Expansion States		Non-Medicaid Expansion States		All States	
	2013	2014	2013	2014	2013	2014
Number of Adults	97.8 mil.	96.7 mil.	96.2 mil.	98.1 mil.	194.0 mil.	194.8 mil.
<u>Currently Overweight or Obese</u>						
- Number with Risk Factor	60.6 mil.	60.7 mil.	63.2 mil.	64.7 mil.	123.8 mil.	125.5 mil.
- Percent with Risk Factor	62.0%	62.8%	65.7%	66.0%	63.8%	64.4%
- Number with Risk Factor Who are Uninsured	11.7 mil.	8.5 mil. *	14.1 mil.	12.1 mil. *	25.8 mil.	20.7 mil. *
- Percent with Risk Factor Who are Uninsured	19.3%	14.1% *	22.2%	18.8% *	20.8%	16.5% *
<u>Current Smoker</u>						
- Number with Risk Factor	17.0 mil.	16.4 mil.	21.1 mil.	19.5 mil.	38.1 mil.	35.9 mil.
- Percent with Risk Factor	17.4%	17.0%	21.9%	19.9%	19.6%	18.5%
- Number with Risk Factor Who are Uninsured	4.5 mil.	3.4 mil. *	7.0 mil.	5.4 mil. *	11.5 mil.	8.8 mil. *
- Percent with Risk Factor Who are Uninsured	26.4%	20.9% *	33.1%	27.6% *	30.1%	24.5% *
<u>Hypertension in Last 12 Months</u>						
- Number with Risk Factor	14.4 mil.	14.6 mil.	16.5 mil.	17.2 mil.	31.0 mil.	31.8 mil.
- Percent with Risk Factor	14.8%	15.1%	17.2%	17.5%	16.0%	16.3%
- Number with Risk Factor Who are Uninsured	1.8 mil.	1.4 mil.	2.8 mil.	2.3 mil. *	4.6 mil.	3.7 mil. *
- Percent with Risk Factor Who are Uninsured	12.2%	9.8%	17.3%	13.1% *	14.9%	11.6% *
<u>High Cholesterol in Last 12 Months</u>						
- Number with Risk Factor	15.3 mil.	14.4 mil.	16.7 mil.	15.0 mil.	32.0 mil.	29.4 mil.
- Percent with Risk Factor	15.6%	14.9%	17.4%	15.3%	16.5%	15.1%
- Number with Risk Factor Who are Uninsured	1.7 mil.	1.0 mil. *	2.3 mil.	1.4 mil. *	4.0 mil.	2.4 mil. *
- Percent with Risk Factor Who are Uninsured	11.2%	7.1% *	13.8%	9.2% *	12.5%	8.2% *
<u>Currently Treated for Diabetes</u>						
- Number with Risk Factor	5.3 mil.	5.3 mil.	6.5 mil.	6.1 mil.	11.8 mil.	11.4 mil.
- Percent with Risk Factor	5.4%	5.5%	6.7%	6.2%	6.1%	5.9%
- Number with Risk Factor Who are Uninsured	0.7 mil.	0.6 mil.	1.2 mil.	0.6 mil.	1.9 mil.	1.2 mil. *
- Percent with Risk Factor Who are Uninsured	12.7%	10.6%	18.4%	10.3%	15.8%	10.4% *

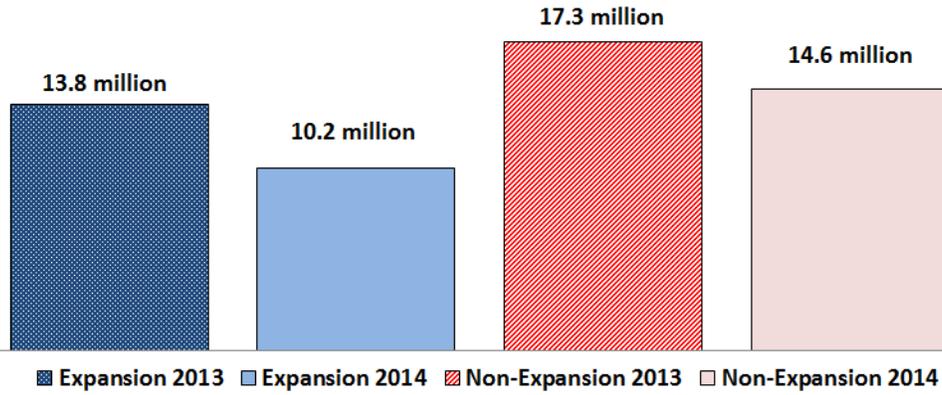
Source: National Health Interview Survey, as analyzed by George Washington Univ.

Notes:

* Comparisons between 2013 and 2014 are statistically significant at p< .05.

Figure 1. Millions of Adults with Any of Five Key Cardiovascular Risk Factors Who Are Uninsured, by Residence in Medicaid Expansion & Non-Expansion States, 2013 vs. 2014

[Risk factors include: Hypertension or high cholesterol in last year, currently treated for diabetes, currently obese or overweight or current smoker]

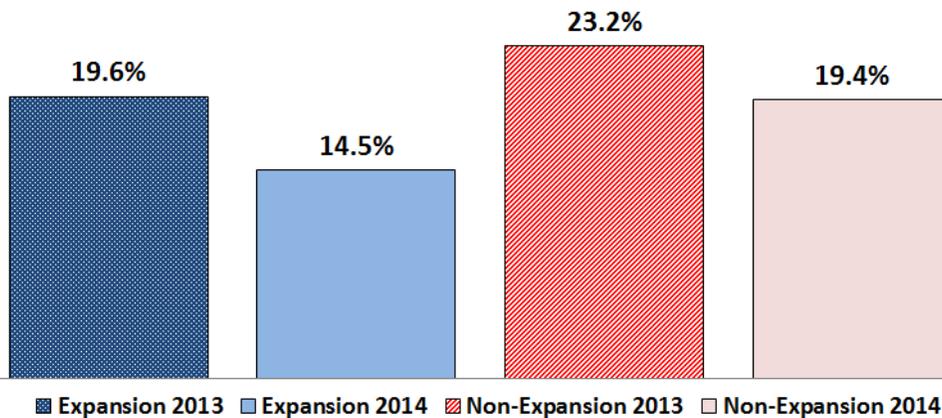


Medicaid Expansion Status & Year

Analyses of National Health Interview Survey data by George Washington University

Figure 2. Percent of Adults with Any of Five Key Cardiovascular Risk Factors Who Are Uninsured, by Residence in Medicaid Expansion & Non-Expansion States, 2013 vs. 2014

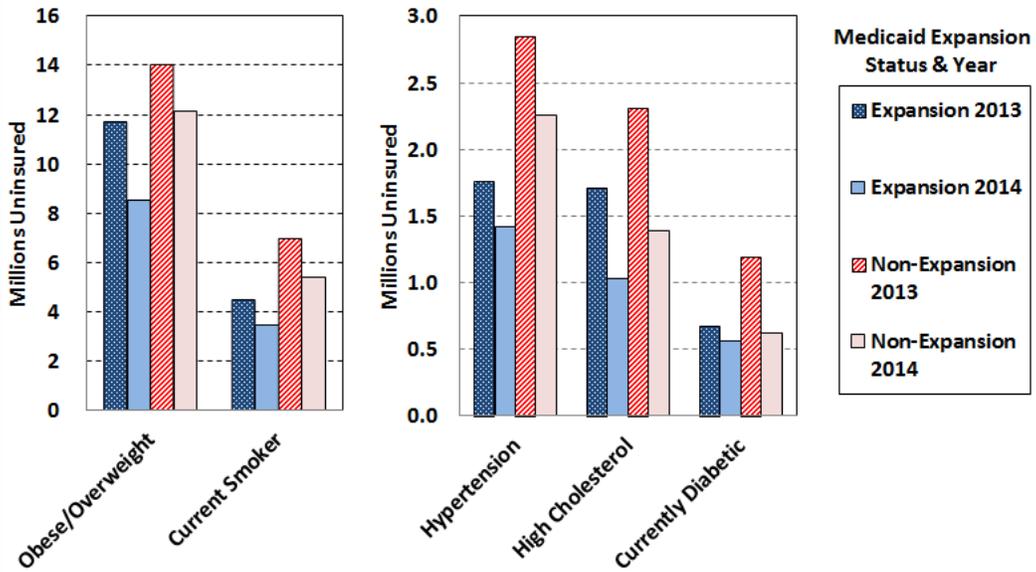
[Risk factors include: Hypertension or high cholesterol in last year, currently treated for diabetes, currently obese or overweight or current smoker]



Medicaid Expansion Status & Year

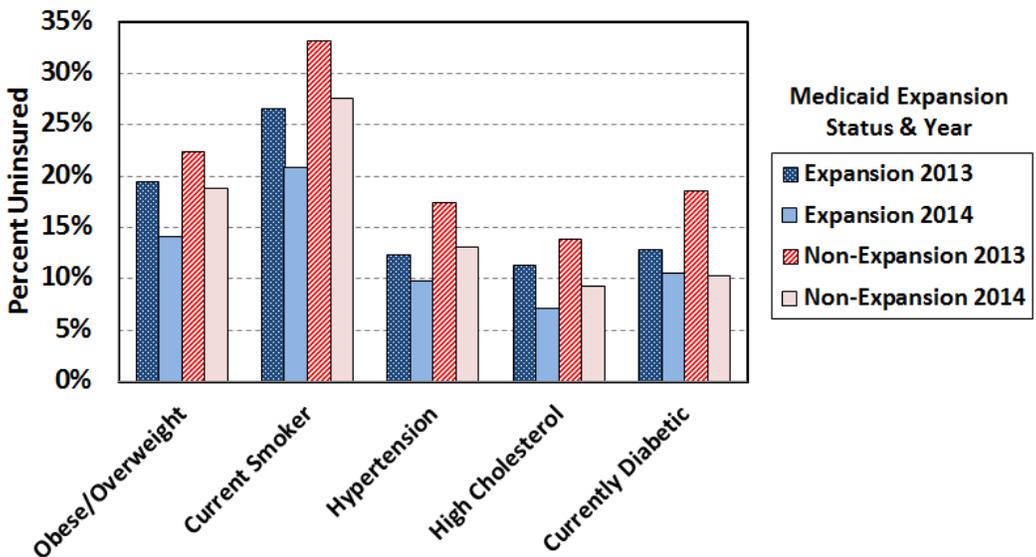
Analyses of National Health Interview Survey data by George Washington University

Figure 3. Millions of Adults with Key Cardiovascular Risk Factors Who Are Uninsured, by Residence in Medicaid Expansion & Non-Expansion States, 2013 vs. 2014



Analyses of National Health Interview Survey data by George Washington University.

Figure 4. Percent of Adults with Key Cardiovascular Risk Factors Who Are Uninsured, by Residence in Medicaid Expansion & Non-Expansion States, 2013 vs. 2014



Analyses of National Health Interview Survey data by George Washington University.

Table 3 examines insurance coverage of adults with a history of acute CVD, including those reporting ever having a stroke, myocardial infarction, angina, coronary heart disease, or other heart problem. In 2014, about one-eighth of non-elderly adults (16.5 million people) reported a history of acute CVD, of whom 2.1 million were uninsured (12.6%) (see Figure 5). The percent uninsured fell from 15.5% in the prior year. The 4.4% reduction in uninsurance in Medicaid expansion states was significant ($p < .05$), but the 1.7% reduction in non-expansion states was not.

Discussion

These analyses indicate that millions of American adults have a CVD risk factor or a history of acute CVD. The general prevalence of risk changed very little between 2013 and 2014, but the share of the adults who were uninsured declined, which could increase access and improve diagnosis and treatment rates over time. A recent analysis examined differences in insurance coverage, health care utilization and status for low-income patients in selected states that expanded Medicaid using regular Medicaid or waiver coverage in the health exchange and a state that did not expand Medicaid. It found expansions (whether using regular Medicaid or a subsidized waiver alternative) increased insurance coverage and use of primary or outpatient care, as well as higher rates of checkups, diabetes screening and glucose testing, compared to those in a state where eligibility was not expanded.¹⁰ The analysis examined changes through the end of 2015 and noted that further changes could occur with more time.

The gains are not even across the nation. Adults who live in states not expanding Medicaid are at higher risk of CVD or are more likely to have experienced acute CVD, and also have lower insurance coverage rates. Before the ACA expansions, 55% of all uninsured adults at risk of CVD lived in states that did not expand Medicaid. In 2014, this share grew to 59% living in non-expansion states. From a population health perspective, we might hope that states with higher burdens of risk were doing more to provide care for their residents, but these states are actually providing less coverage for low-income adults. Over time, this may mean that patients in those states have greater difficulties getting preventive, primary or acute care and harder for primary care and specialty physicians to collect insurance payments for their patients.

Other indicators suggest that states expanding Medicaid are doing more to protect the health of their residents in other ways. For example, average per capita state public health funding was twice as high in Medicaid expansion states (\$48 per capita) as in non-expansion states (\$25 per capita), based on analyses of state fiscal year 2014-15 data reported by the Trust for America's Health.¹¹

In 2014, 16.2% of all non-elderly adults were uninsured. This is close to the percentages of uninsured among those with any CVD risk factor (17.0%) and those who are overweight or obese (16.5%), which is not surprising since those two groups comprise the majority of U.S. adults. Uninsurance rates among those with high blood pressure, high cholesterol, diabetes, or a history of acute

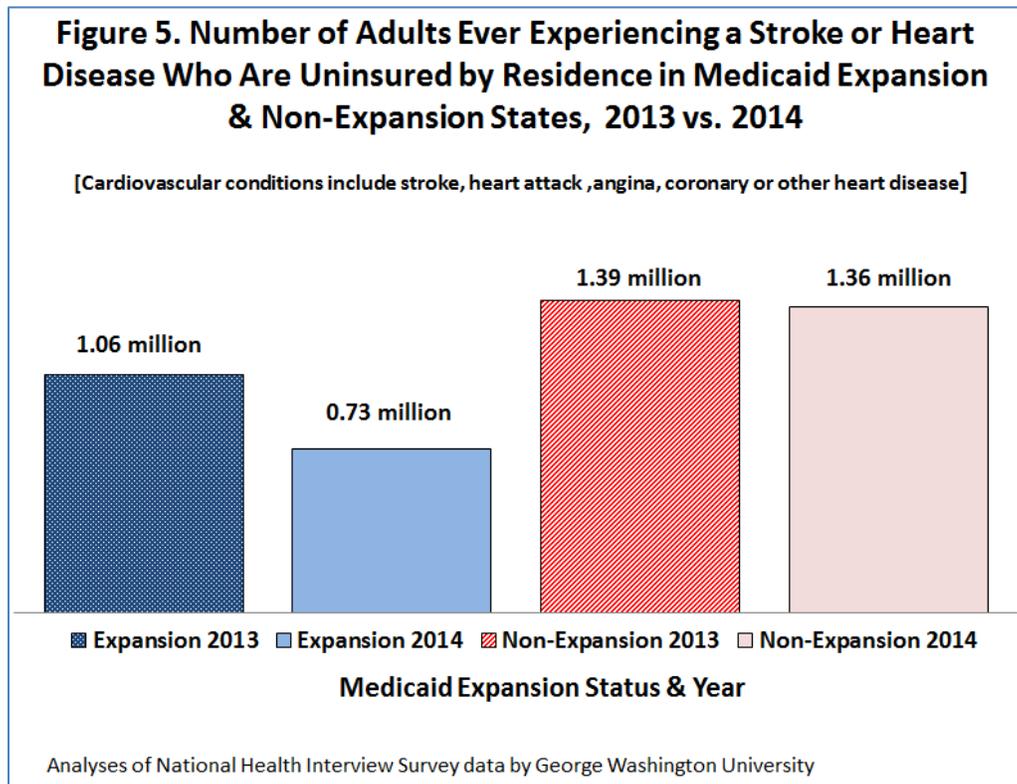
Table 3. Number and Percent of Adults with a History of Acute Cardiovascular Disease Who Are Uninsured by Medicaid Expansion Status, 2013 and 2014

	Medicaid Expansion States		Non-Medicaid Expansion States		All States	
	2013	2014	2013	2014	2013	2014
Number with History of Acute CVD	7.7 mil.	7.7 mil.	8.1 mil.	8.8 mil.	15.8 mil.	16.5 mil.
Percent with History of Acute CVD	7.9%	8.0%	8.4%	9.0%	8.1%	8.5%
Number with History Who Are Uninsured	1.1 mil.	0.7 mil. *	1.4 mil.	1.4 mil.	2.5 mil.	2.1 mil. *
Percent with History Who are Uninsured	13.8%	9.4% *	17.2%	15.4%	15.5%	12.6% *

Source: National Health Interview Survey, 2013-2014, as analyzed by George Washington Univ.

Notes:

* Comparisons between 2013 and 2014 are statistically significant at $p < .05$.



CVD are lower, ranging from 8.2% uninsured among those with high cholesterol to 12.6% for those with a CVD history. This is consistent with the concept of “moral hazard”: those with health risks are more likely to obtain insurance coverage to avert health or financial problems.¹²

The exception is smokers, whose risk of being uninsured (24.5%) is much higher than the norm. This is particularly regrettable since, under the ACA, almost all health insurance coverage includes the availability of tobacco cessation therapy without cost-sharing.¹³ One possible reason for the discrepancy may be that smokers tend to have lower-incomes, which also increases the risk of being uninsured. Another possible factor is that health insurance is less affordable for smokers. The ACA lets insurers impose surcharges as much as 50% higher to cover smokers than non-smokers, although states may prohibit or reduce the surcharges. A recent analysis found that tobacco surcharges are associated with lower insurance take-up and do not lead to greater tobacco cessation.¹⁴ Smokers are at higher risk of being both at risk of CVD and other diseases and of being uninsured; further efforts to provide insurance coverage and to help them quit smoking could help improve population health.

There are three key limitations to this analysis. First, the NHIS data, including both health risks and insurance coverage, are self-reported and may be subject to reporting error or bias. Clinical data of comparable breadth are not available. Second, this is a simple descriptive analysis about insurance coverage and health status in 2013 and

2014. It is observational in nature and we cannot ascribe causality, although most analysts agree that ACA insurance expansions have substantially increased the number of people insured and improved access. As a descriptive analysis, we are not seeking to analyze underlying reasons for differences in risk factors or insurance status across states or subpopulations and report basic trends over time. Finally, this is relatively early analysis, since insurance coverage has continued to grow.¹⁵ Seven more states have decided to expand Medicaid coverage since the start of 2014. Unfortunately, we lacked access to the restricted NHIS data for 2015, so were unable to analyze the more recent data.

Health insurance expansions under the ACA improved access to care and utilization of key primary care services, such as higher access to physician services and higher rates of diagnosis for diabetes or high cholesterol.^{6, 10} Adults who live in states that did not expand Medicaid face a double burden of higher CVD risk and lower insurance coverage. Further experience and research will be needed to know whether Medicaid and other insurance expansions ultimately lead to improved CVD outcomes or lower mortality or morbidity.

As of late 2016, the incoming Administration and Congress have expressed interest in repealing and replacing many elements of the law, making future policies uncertain. Future changes might undercut some of the insurance gains and increases in access to care that began in 2014. Hopefully, future policy changes will be able to retain the gains in access that already occurred and

continue to make progress in increasing access to services for patients at risk of cardiovascular disease.

This project was supported by the American Heart Association; we appreciate guidance and contributions by Laurie Whitsel and Madeleine Konig of the AHA. We also thank staff of the National Center for Health Service for help with access to restricted data. All conclusions are those of the authors and should not be viewed as positions of the American Heart Association or the George Washington University.

¹ Sommers B, Gunja M, Finegold K, Musco T. Changes in self-reported insurance coverage, access to care, and health under the Affordable Care Act. *JAMA* 2015; 314(4):366-74.

² Obama B. United States health care reform: Progress to date and next steps. *JAMA*. 2016; 316(5):525-532.

³ Fang J, Yan W, Ayala C, Loustalot F. Disparities in access to care among US adults with self-reported hypertension. *Am J Hypertension*. 2014; 27(11): 1377-86.

⁴ Finkelstein A, Taubman S, Wright B, et al. The Oregon Health Insurance Experiment: Evidence from the first year. *Quart J Economics* 2012; 127(2): 1057-1106.

⁵ Wherry L, Miller S. Early coverage, access, utilization, and health effects associated with the Affordable Care Act Medicaid expansions: A quasi-experimental study. *Ann Intern Med*. 2016; 164(12):795-803.

⁶ Gillum R, Mehari A, Curry B, Obisesan T. Racial and geographic variation in

coronary heart disease mortality trends. *BMC Public Health*. 2012, 12:410

⁷ Kaiser Commission on Medicaid and the Uninsured. Where Are States Today? Medicaid and CHIP Eligibility Levels for Adults, Children, and Pregnant Women. March 2016. Washington, DC: Author. Available at <http://files.kff.org/attachment/fact-sheet-where-are-states-today-medicaid-and-chip-eligibility-levels-for-adults-children-and-pregnant-women>

⁸ Akinyanju R, Jha M, Moore J, Pisu M. Disparities in the prevalence of comorbidities among US adults by state Medicaid expansion status. *Prev. Med*. 2016; 88: 196-202.

⁹ Division of Health Interview Statistics National Center for Health Statistics. 2013 National Health Interview Survey (NHIS): Survey Descriptions for 2013 and 2014. Available at <http://www.cdc.gov/nchs/nhis/data-questionnaires-documentation.htm>.

¹⁰ Sommers B, Blendon R, Orav J, Epstein A. Changes in utilization and health among low-income adults after Medicaid expansion or expanded private insurance. *JAMA Intern Med* Aug. 8, 2016. Doi: 10.1001/jamainternmed.2016-4419.

¹¹ Hamburg R, Segal L, Martin A. Investing in America's Health: A State-by-State Look at Public Health Funding and Key Facts. Washington, DC: Trust for America's Health. April 2016.

¹² Arrow K. Uncertainty and the welfare economics of medical care. *Amer Econ Rev*. 1963; 53(5): 941-73.

¹³ Ku L, Bruen B, Steinmetz E, Bysshe T. Medicaid tobacco cessation: big gaps remain in efforts to get smokers to quit," *Health Affairs*, 2016; 35:62-70.

¹⁴ Friedman A, Schpero W, Busch S. Evidence suggests that the ACA's tobacco surcharges reduced insurance take-up and did not increase smoking cessation. *Health Affairs* 2016; 35(7): 1176-83.

¹⁵ Ward B, Clarke T, Nugent C, Schiller J. Early Release of selected estimates based on data from the 2015 National Health Interview Survey. National Center for Health Statistics. May 2016.