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Lazarus Ude Eze, Student

Dr. Julia Costich, Committee Chair

Dr. William Pfeifle, Director of Graduate Studies

**THE EFFECT OF STATE EXPANSION OF MEDICAID ELIGIBILITY ON UNINSURANCE RATES AND
HEALTH OUTCOMES OF NONELDERLY ADULTS**

CAPSTONE PROJECT MANUSCRIPT

*A paper submitted in partial fulfillment of the requirements for the degree of Masters of Public
Health in the University of Kentucky College of Public Health*

By

Lazarus Ude Eze, MBBS

Health Services Management Concentration

April 15, 2013

Committee

Dr Julia Costich, Chair

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Dr Scott Hankins

Abstract

Background:

Arizona, New York, and Maine expanded Medicaid eligibility to include nonelderly non-disabled childless adults between 2001 and 2002. This study examines whether this policy affects the percentage of uninsured nonelderly adult population and years of potential life lost in the state.

Methods

I compared the three states with Medicaid expansion with three other states with similar demographic characteristics but without expansions. The study population consists of uninsured adults between ages of 19 and 64 years of income equals or below 138% federal poverty level. I carried out a paired-samples t-test on the data and also plotted a line graph showing the trends of the uninsurance rate and YPLL before and after the implementation of the policy.

Results

There was no statistically significant difference in the uninsurance rate 5 years before and after Medicaid expansion although it was on a downward trend after the expansion. The association between the expansion and increase in rate of Medicaid was statistically significant, $p < 0.01$. The trends of the YPLL across the states were not affected by the policy.

Conclusion

The study demonstrates an association between Medicaid expansion policy and downward trend in the percentage of the uninsured and increase in the proportion nonelderly adults on Medicaid.

Introduction

“Health insurance makes a difference in whether and when people get necessary medical care, where they get their care, and ultimately, how healthy they are.” - Kaiser Commission 2012.

According to the Urban Institute analysis of 2012 Annual Social and Economic (ASEC) Supplement to Current Population Survey (CPS), about 48 million nonelderly Americans did not have health insurance in 2011. Most of the uninsured people are low income earners and are in working families. Nonelderly adults make up a disproportionate share of the uninsured population because they are less likely than children to be eligible for Medicaid. They are also not covered by Medicare unless they qualify because of serious disability. More than 75% of the uninsured population live in working families— almost 40% of the uninsured are individuals and families who are poor (incomes less than the federal poverty level of \$23,021 for a family of four in 2011 (US Census Bureau,2011). The number of uninsured people has increased over the past decade and this is largely due to the struggling economy. Nonelderly adults are disproportionately affected by this increase. According to *The Uninsured: A primer* (a 2012 report by the Kaiser Commission), only 17.6% of the nonelderly population were covered by Medicaid and SCHIP. The four main categories of low-income individuals covered include: children, their parents, people living with disability and pregnant women (Kaiser Commission, 2012). The nonelderly nondisabled childless adults do not fall into any of the above categories and are generally ineligible for public health insurance coverage irrespective of their socioeconomic status (Kaiser Commission, 2012).

Starting in 2014, the Patient Protection & Affordable Care Act of 2010 will extend Medicaid eligibility to millions more Americans. By 2016, the Congressional Budget Office (CBO) estimates the law will expand coverage to 30 million people and may cut the uninsured rate by more than half (Kaiser Family Foundation analysis based on CBO, 2012). However, the June 2012 Supreme Court ruling in *NFIB v. Sebelius* allows states to choose whether to expand Medicaid under ACA or not. Thus some states may not expand their Medicaid programs under the ACA. If a state does not expand Medicaid, it will make people with incomes below 100% of poverty ineligible for subsidies to purchase coverage through the health insurance exchanges and will be left out of insurance coverage (Kaiser Commission, 2012). Consequently, Medicaid expansion under ACA will be most beneficial to the nonelderly non-disabled adults. Many previous studies have documented correlation between Medicaid expansion and improved health among children and pregnant women but not many have specifically looked into the impact on nonelderly adults.

Within the past couple of decades, some states have expanded Medicaid to cover nonelderly adults. In particular, Arizona, New York, and Maine implemented policies that expanded Medicaid. In 1999, New York enacted the State's Family Health Plus (FHP) expansion, which increased Medicaid's income limits to 100 percent of the federal poverty level (FPL) for childless adults and 150 percent of FPL for parents of children under 21 who live at home, making several hundred thousand adults newly eligible for public coverage. The implementation began in 2001 (Medicaid Institute, 2006). In addition, implementation of a June 2001 New York State Court of Appeals decision—*Aliessa v. Novello 3*—extended Medicaid eligibility to adult legal

immigrants otherwise eligible for the program. Consequently, Medicaid coverage among non-elderly, non-disabled adults in New York State nearly doubled between 2001 and 2003 (Medicaid Institute, 2006).

Maine and Arizona expanded Medicaid for nonelderly adults through the Health Insurance Flexibility and Accountability Waivers (HIFA). Health Insurance Flexibility and Accountability waivers are a variant of Medicaid 1115 waivers designed to encourage new state approaches to increase the number of people with health insurance through Medicaid, State Children's Health Insurance Program (SCHIP), as well as new public-private partnerships. They specifically targeted individuals with incomes below 200 percent of the federal poverty level (FPL) and allowed expansions in eligibility under existing public programs. The inclusion of childless adults in the HIFA program began on August 4, 2001. Did the expansion decrease the rate of uninsurance? Did it increase the utilization of care? Is there any evidence of improved health outcomes among this category of people and the entire population as a result of the policy?

A recent study, by Sommers, Baicker and Epstein (2012) found a reduction in adult mortality as a result of expansions in New York, Maine and Arizona. This study will look at the effect of the policy on the percentage of the uninsured nonelderly adults in these three states; all the expansions were for people with income below 100% FPL. The result may provide a lead for further studies in this population by the supporters or opponents of Medicaid expansions as proposed by the Affordable Care Act. Not many states have expanded Medicaid among non-elderly adults within the period under review. A limitation of this study will be that the

outcome may not be applicable for other states or generalizable for the entire United States. However, the study will help to provide more literature for the relative sparse evidence of the impacts of Medicaid expansion on nonelderly adults.

My hypothesis is that Medicaid expansion will reduce percentage of uninsured among the eligible nonelderly adults and will have no effect on the Years of Potential Lives Lost of the state population within the study period.

Literature Review

The following review of literature is a summary of research that sought to establish correlation between health insurance and health outcomes of different categories of beneficiaries. The peer reviewed articles were obtained through the University of Kentucky Library from the PubMed and Web of Science database. Key words were Medicaid expansion, Medicaid and health outcomes.

Hundreds of peer reviewed observational studies have examined the association between health insurance status and health status. Most of them documented the fact that uninsured people have worse health outcomes than the insured (Levy and Meltzer, 2001). A major weakness of this type of study is its inability to establish causation. This study seeks to observe the effect of a policy change in a selected population; in this case the association between the Medicaid expansion policy and the trends of the rate of uninsurance particularly among eligible nonelderly adults.

In 1982, California terminated Medi-Cal benefits for all 270,000 “medically indigent” (people with medical or economic need but not eligible for assistance from federal programs) beneficiaries. Lurie et al. (1986) examined changes in health outcomes for 186 patients at a Los Angeles clinic whose medical benefits were terminated and compared them with changes in outcomes for a comparison group of 109 patients at same clinic who were continuously covered by Medi-Cal. They found that those who lost benefits experienced a statistically significant increase in diastolic blood pressure by 9mmHg 6 months after the termination and 6mmHg 1 year after. There was no significant change in blood pressure among the comparison group within same period.

Three papers by Janet Currie and Jonathan Gruber estimate the effects of Medicaid eligibility expansions that occurred between 1979 and 1992 on the health outcomes of pregnant women, infants and children. Two of the papers (Currie and Gruber 1997, Currie and Gruber 1996b) focus on the effect of the expansion on pregnant women and infants; Currie and Gruber (1996b) estimate a 250% increase in eligibility among women aged 15-45 years old as well as an 8.5% decline in the infant mortality rate. Currie and Gruber (1997) focus on specific mechanisms through which the effect on infant mortality documented in the earlier work might operate. They found that the impact of expansion on infant mortality depended on the proximity of the infant mother’s residence to a “high-tech” hospital with a Neonatal Intensive Care Unit.

Holahan, et al. (2010) used the Medical Expenditure Panel Survey Household Component (MEPS-HC) to provide a detailed look at the demographic and health characteristics of the population who will be eligible to benefit from Medicaid expansion under the Affordable Care Act. They found that substantial increase in Medicaid enrollment will disproportionately favor childless adults. They also found strong evidence that new enrollees following Medicaid expansion will be healthier than nondisabled adults currently enrolled. Nevertheless, the analysis from MEPS is based on self-reported information on health status, presence of chronic health problems and substance abuse. Adults without health insurance are less likely to be aware that they have chronic health conditions. Respondents may also be reluctant to report substance abuse. These factors could introduce the problem of selection and/or reporting bias. But assuming the finding of the study is true; Medicaid expansion will be expected to be more cost effective as the cost of treating the new 'healthier' enrollees would be less.

Another study by the Kaiser Commission examined the experiences of expanding insurance coverage expansion for childless adults in a selected number of states and also drew on the perspectives of a number of national experts in eligibility and enrollment to help inform expansion efforts under the Affordable Care Act (Kaiser Commission, 2010). The states studied were Arizona, Indiana, New York, Wisconsin, Vermont, Washington, Pennsylvania and District of Columbia. Except New York and Arizona that expanded Medicaid for the nonelderly adults, the other states expanded the coverage through programs that vary from state to state based on structure, financing, benefits and cost sharing. Several of the studied programs for childless adults have slimmer benefit packages compared to Medicaid. The study identified lack of

awareness, as well as language and cultural barriers as key challenges to coverage of childless adults. It also suggested that initial costs of expanding coverage to childless adults could be higher than expected due to pent up demand for services and untreated chronic conditions given that the individuals may have been uninsured for long periods of time.

Atherly, Dowd, Coulam and Guy (2011) evaluated the impact of Medicaid expansion on the rate of insurance in 15 states including Arizona and Maine. They found that in states that fully implemented their HIFA waiver, HIFA increased the rate of insurance coverage by 6.4 percentage points on average in the targeted adult population.

Last, the preliminary finding of a continuing randomized controlled trial of an expansion of Medicaid in Oregon suggests significant improvement in access to health care and self-reported health status in the first year (Allen, Baicker, Frinkelstein, Traubman and Wright 2010). In 2008, Oregon had a reservation list (a waiting list) for enrollment in its previously closed program that expanded Medicaid coverage to low-income adults (Standard Plan). More than 85,000 people put their names on the list, but the state did not have adequate funding to cover them all. Between March and October 2008, 29,411 names were randomly drawn from the list, and those selected were permitted to apply for coverage; this is the study population. The control group is drawn from those who were not selected from the list using the same random selection procedure.

The Oregon Health Study, Atherly et al, and Sommers et al studied the same population that the present study is focusing on. However, Oregon is not included in my study population and has different demographic features. Because my data is inadequate to run regression analysis, this study will compare the differences in means of the data and also look at the trends on the uninsurance rate and Years of Potential Life Lost following the implementation of the Medicaid expansion policies in these states.

Methodology

The State of New York expanded its Medicaid eligibility in September 2001, Arizona in November 2001 and Maine in October 2002. The implementation commenced in Arizona and New York in 2001 and in Maine in 2002. The study population is nonelderly adults aged between 19 and 64 years and with annual income at or below 138% of federal poverty level in Arizona, New York and Maine. I used 138% FPL because the historical information for 100% FPL that benefitted from the expansions is not available.

Choice of Control States

The comparison states are those without Medicaid expansion within the study periods that largely share similar demographic features and development indices with the states in focus. They are Pennsylvania (for New York), Nevada (for Arizona) and Kentucky (for Maine). Like New York, Pennsylvania is densely populated, industrialized and shares an almost equal data on binge drinking, smoking, physical activity and other health-related social behaviors (American Health Rankings 2000).

Like Maine, Kentucky is largely rural and poverty rate by households is similar. Nevada shares a boundary with Arizona and has a similar Hispanic population composition. An important measure I considered in choosing control states was the Immunization coverage and prenatal care; because studies have shown that they influence the state of health in adult life. The table below shows the measures between the study and control states, the data was obtained from the records of American Health Rankings (2001) and US Census Bureau. For each measure in the American Health Rankings, the raw data as obtained from the stated sources were adjusted for age.

Table 1a - Comparing Study and Control States

Measure	Arizona	Nevada	New York	Pennsylvania	Maine	Kentucky
Health Status	14.8	15.8	16.3	14	13.2	21.7
Lack of Health Insurance	21.2	20.7	15.5	9.2	10.3	12.3
Support for Public Health care	1.47	1.36	2.37	2.07	1.55	1.2
Prenatal Care	67.9	67.7	70.08	73.88	82.77	80.24
Infant mortality	7.1	6.8	6.4	7.2	4.8	7.4
Total mortality	831.1	957	833.2	913.3	888	1003
Immunization Coverage	67.2	69.1	77.1	78.8	75.1	75.9
Income Disparity	0.443	0.406	0.491	0.451	0.434	0.452
Unemployment (August)	4.8	5.5	6.2	5.7	4.4	5.7
Motor vehicle deaths	2.2	1.9	1.1	1.5	1.3	1.8
High School Graduate Rate	60.2	70.7	59.2	74.9	76.6	65.8
*Population change (04/2000 - 07/2001)	3.4	5.4	0.2	0.05	0.9	0.6
*Proportion of whites (2011)	-	-	-	-	13.2	21.7
Poverty rate by household income (2009)	-	-	-	-	12.6	14.8

Table 1b: Definition of measures

Measure	Definition	Source
Health status	Percentage of adults who describe their general health as fair or poor.	CDC BRFSS
Lack of Health Insurance	Percentage of the population that does not have health insurance privately, through their employer or the government.	CPS, Census Bureau
Unemployment	Total unemployed as a percent of the civilian labor force (U-3 definition).	US BLS
Immunization coverage	The average percentage of children ages 19 to 35 months who have received these individual vaccinations: four or more doses of DTP, three or more doses of poliovirus vaccine, one or more doses of any measles-containing vaccine, and three or more doses of Hepatitis B vaccine	CDC NIP
High School Graduate Rate	Percentage of incoming ninth graders who graduate in four years from a high school with a regular degree.	NCES
Income Disparity (Gini Coefficient)	A common measure of income inequality, where 0 represents complete equality and 1 indicates complete inequality.	US Census

Study period

The study period for the trends of the percentage uninsured is 5 years before and 8 years after the implementation of the expansion policies in Arizona and New York (1996-2009); as well as 6 years before and 7 years after for Maine. This period was chosen because I assume five or more years of data from before the onset of the policy were adequate to show the trend of the percentage uninsured. If the expansion policy has any association with the rate of the

uninsured nonelderly population of income below 100% FPL, the effect would be noticeable within 6-7 years timeframe. Also, a related peer-reviewed article (Sommers et al 2012) used a study period of 5 years before and after the policy. The t-test statistical analysis was done 5 years before and after the implementation of the policy in all the states.

For the YPLL the period is between 1999 and 2010. I chose this period based on the available historical data. A study by Currie and Gruber (1996b) found that an increase in eligibility among women aged 15-45 years old led to a decline in the infant mortality rate. Assuming the Medicaid expansion has a similar effect (reduced mortality) on the nonelderly adults, the YPLL of the study states will reduce overtime. I chose YPLL as an outcome measure because it aggregates deaths from all causes by age 65.

Data:

I obtained the data of the uninsured nonelderly adult population and Medicaid rates from the Current Population Survey via the State Health Access Data Assistance Center website (www.shadac.org). The Medicaid rates include SCHIP. The Years of Potential Life Lost (YPLL) data were obtained from the National Center for Health Statistics (NCHS) Vital Statistics System. The data is the YPLL age-adjusted rate (2000) before age 65 between 1999 and 2010. YPLL is a very useful measure in prioritizing public health and health services management. This is because mortality in older age group is less amenable to health services or public health policy interventions than it would be among younger age groups. Prevention of mortality among younger persons is one of the major goals of public health. The age-adjusted YPLL rates take

the different age structures across the states into account and make it a better comparability measure. The data on the unemployment rate is from the Bureau of Labor Statistics.

I conducted paired t-test to measure the differences in the means of uninsured rate and percentage on Medicaid before and after the implementation of the expansion policy. The data available to me was insufficient to run a regression analysis. I also used the data to plot a line graph on Microsoft Excel for the study and control states to observe the trends of the percentage of uninsured nonelderly adults below 138% FPL, their Medicaid rates and the YPLL age-adjusted rates of the states.

Results

A paired-samples *t* test was calculated to compare the mean unisurance rate before Medicaid expansion to the mean after the expansion. The results are summarized in Table 2 below.

	Treatment pre-expansion	Treatment post-expansion	Control pre-expansion	Control post-expansion				
Mean	40.71	32.54	36.74	36.27				
Standard Error	2.24	2.40	2.13	2.22				
Paired Samples Test - Rate of Uninsured								
	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Before Medicaid expansion	3.97	7.78	2.01	-.34	8.28	1.974	14	.069
After Medicaid expansion	-3.73	7.17	1.85	-7.70	.24	-2.013	14	.064

As shown in Table 2 above, the mean uninsurance rate in the study states reduced by 8 points after the expansion. However, the t-test shows no significant difference in the mean uninsured rate in study states from the control states 5 years after the implementation of the Medicaid expansion policy ($t(14) = -2.013, p > .05$).

A similar test was performed to compare the difference between the mean percentage of people on Medicaid among the study and control states. The results are summarized in Table 3 below.

	Treatment pre-expansion	Treatment post-expansion	Control pre-expansion	Control post-expansion				
Mean	23	33	21	20				
Standard Error	1.84	2.15	2.41	1.73				
Paired Samples Test - Percentage on Medicaid								
	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Before Medicaid expansion	1.94	8.45	2.18	-2.74	6.62	.889	14	.389
After Medicaid Expansion	13.03	5.62	1.45	9.92	16.14	8.986	14	.000

Table 3

The t test shows a significant increase in the percentage of people on Medicaid five years after the implementation of Medicaid eligibility expansion in Arizona, Maine and New York ($t(14) = 8.99, p < 0.01$).

Trends in the percentage of the uninsured nonelderly adult population

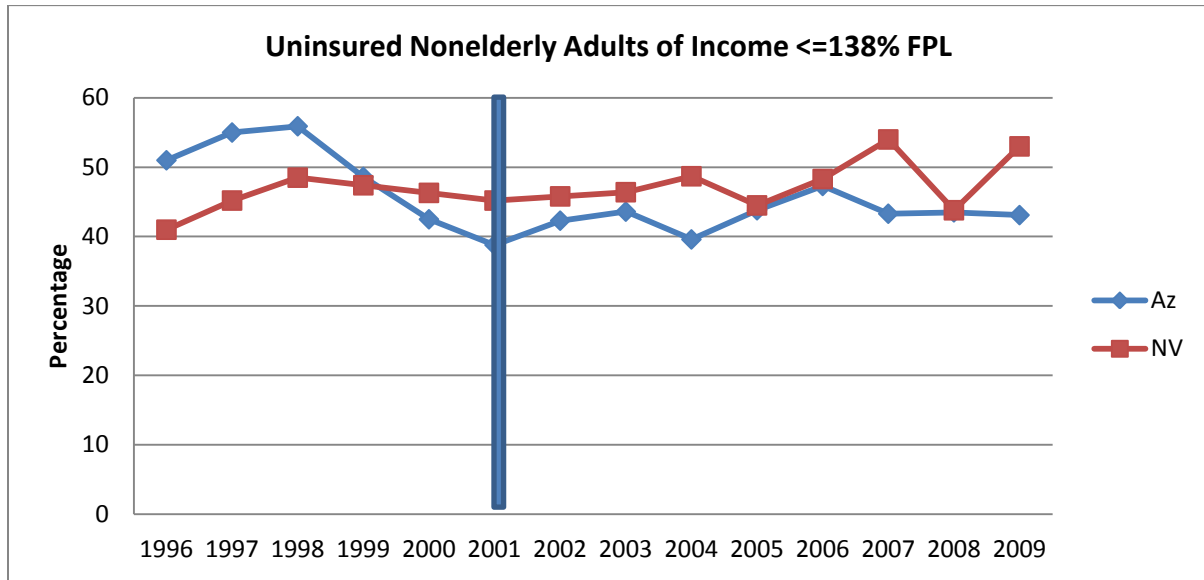


Figure 1

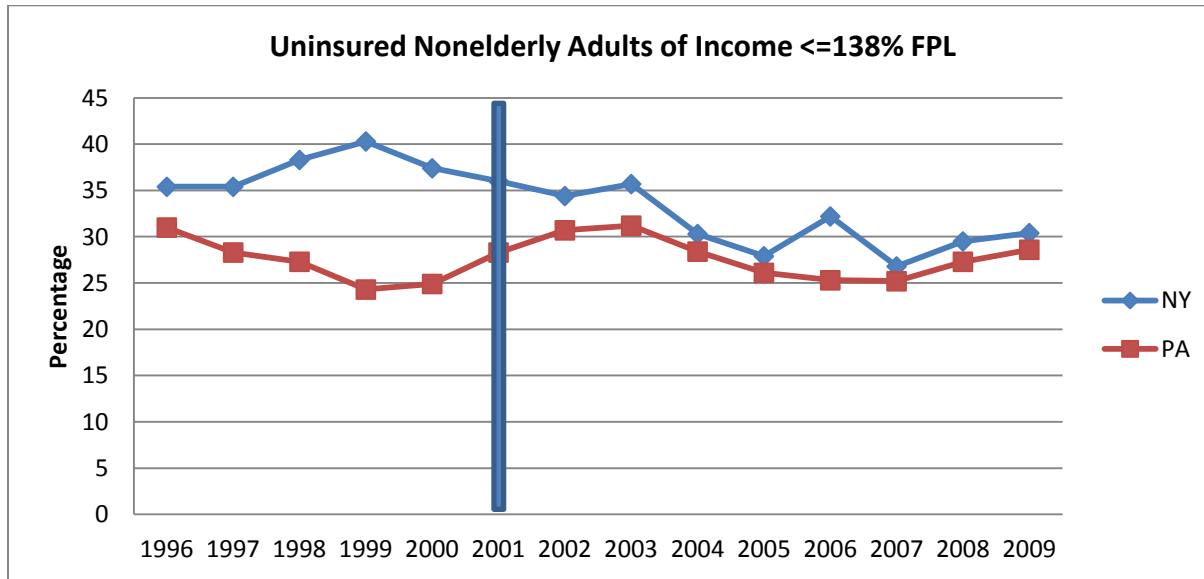


Figure 2

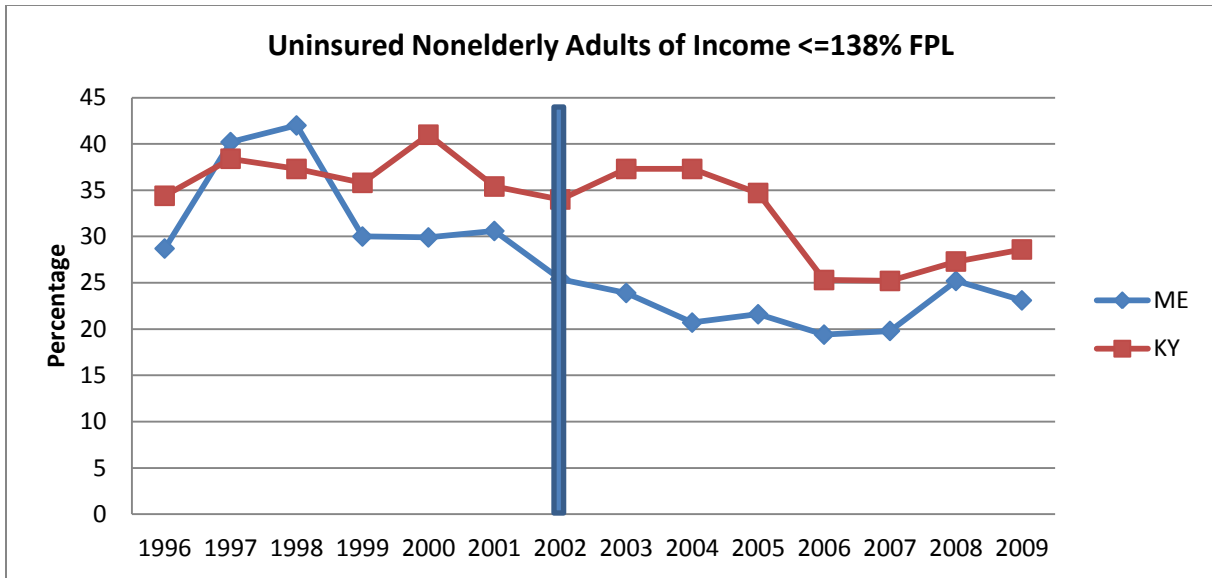


Figure 3

Figure 1-3: Percentage of Uninsured Population between the ages of 19 and 64 years of income equals or below 138% FPL. The vertical lines represents the year during which the Medicaid expansions were implemented (2001 for Arizona and New York and 2002 for Maine).

Data Source: Current Population Survey Annual Social and Economic Supplement (2010)

The graphs show interesting trends between the study and control states. The percentage of the uninsured nonelderly adults in Arizona fell below the one for Nevada in 1999. It remained lower after the implementation of the expansion. On the other hand, the expansion in Arizona was associated with a sustained increase in the proportion of nonelderly adults on Medicaid, which rose by 10 points between 2001 and 2007 and created a wider gap between Arizona and Nevada, which increased by only 3 percentage points within same period (see Figure 4 below).

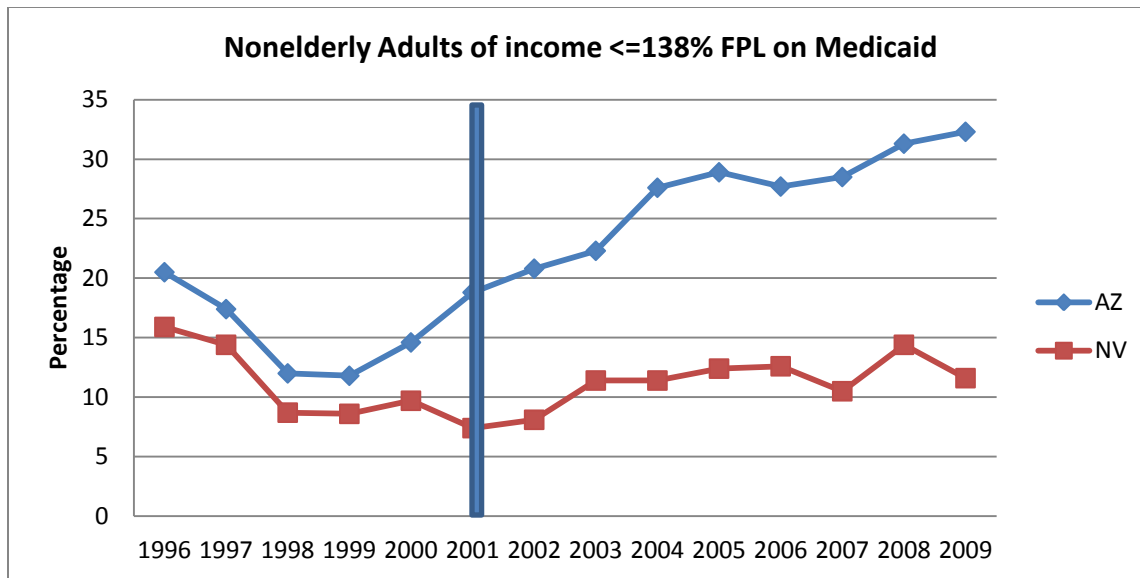


Figure 4

Figure 2 shows that the trend of the percentage uninsured nonelderly adults in New York appears similar to Pennsylvania. However, the percentage of the uninsured in New York reduced by 6 percentage points more than Pennsylvania between 2001 and 2006. Similarly, the trend doesn't also suggest an association between the policy and Medicaid rate when compared with Pennsylvania (see Figure 5 below).

Between 2002 and 2004, a rising trend in the rate of uninsured nonelderly adults of income below 138% FPL was observed in Kentucky and a downward trend in Maine. The gap between them increased from 10% in 2002 to 15% in 2004 and narrowed to 2% in 2008. The narrowing may largely be as a result of a sharp increase of the percentage of uninsured nonelderly adults in Maine from 19.8% in 2007 to 25.2% in 2008. There appears to be a strong association between the Medicaid expansion and Medicaid enrollment rate in Maine when compared to Kentucky (see Figure 6 below).

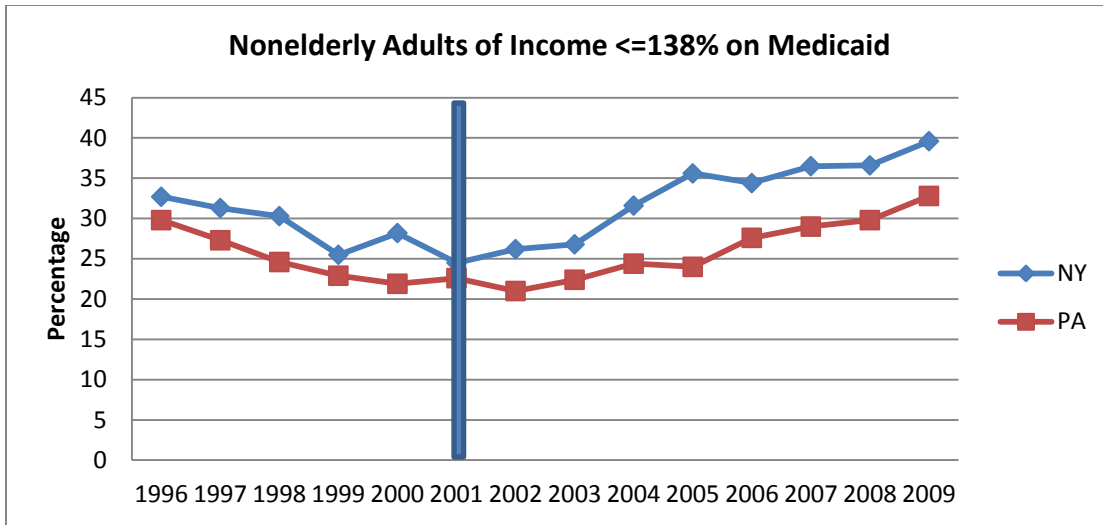


Figure 5

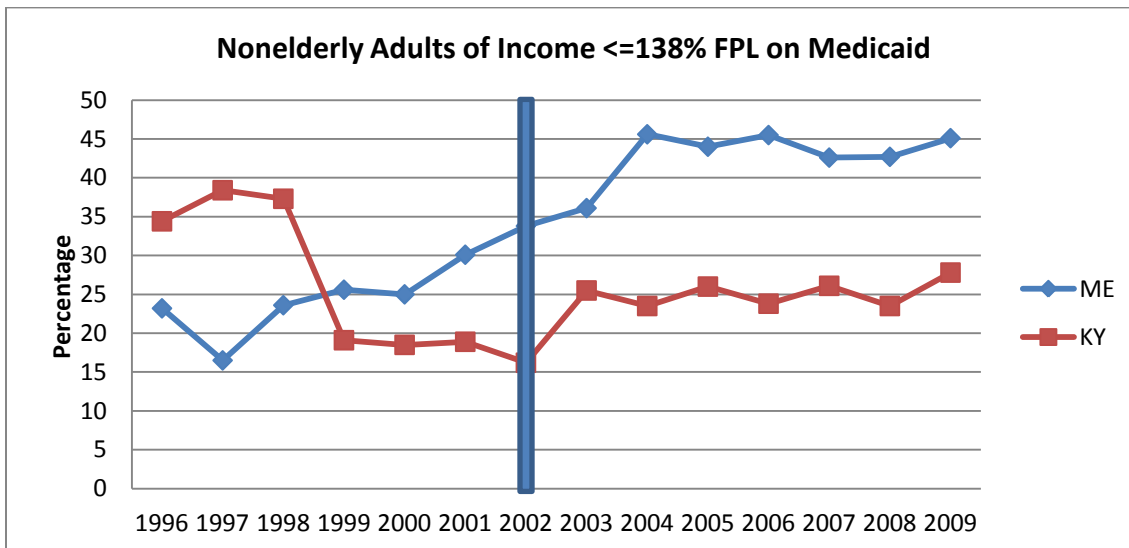


Figure 6

Figure 4-6: Medicaid enrollment rates among Adults 19-64yrs <=138% FPL
Data Source: Current Population Survey Annual Social and Economic Supplement (2010)

It can be observed that the trends shown in the graphs are consistent with the results of the paired-samples *t* test conducted.

Trends of Years of Potential Lives Lost

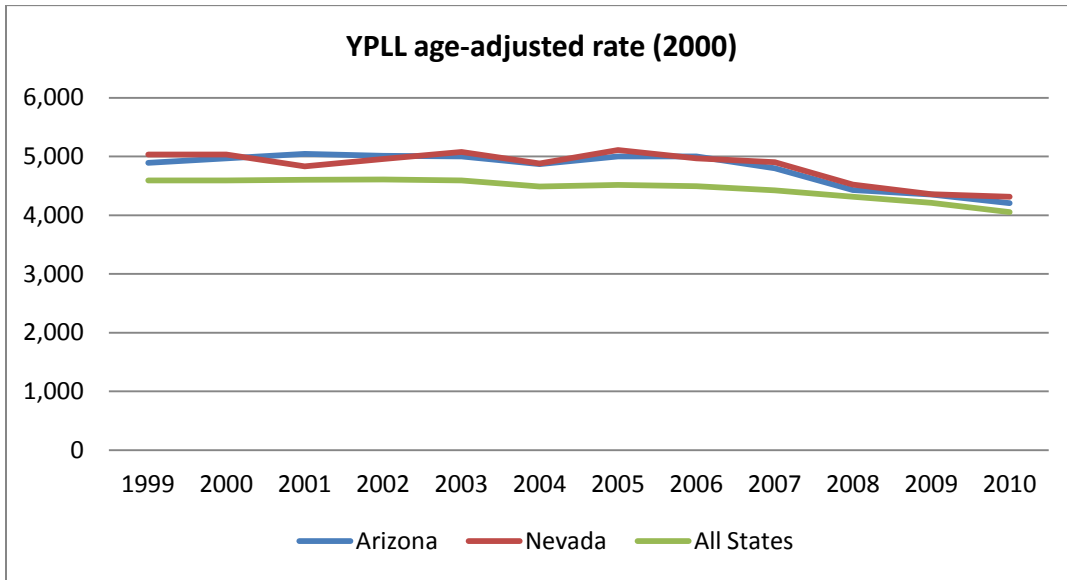


Figure 7

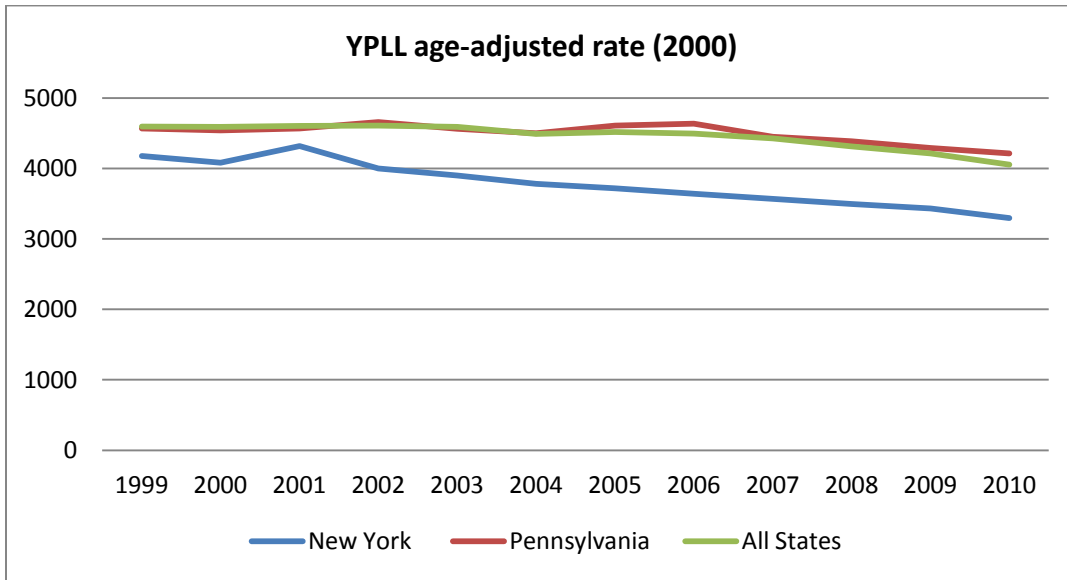


Figure 8

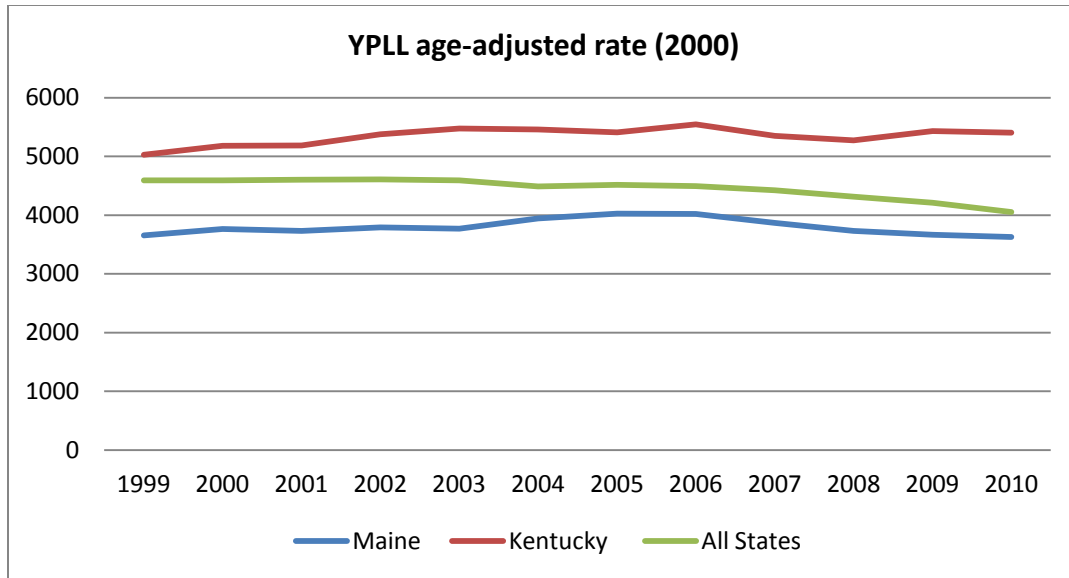


Figure 9

Figure 6-9: Years of Potential Lives Lost (YPLL) age-adjusted rates
 Data Source: National Center for Health Statistics (NCHS) Vital Statistics System

Figures 4-6 above show the trends of the Years of Potential Lives Lost of the study states compared with the control states and those of all 50 states combined. The trends were essentially following a similar pattern but New York has a steeper trend compared to Pennsylvania and all states beginning from 2001. This observation is not likely to be due to the Medicaid expansion because any improvement in health outcome will not have an immediate effect on the YPLL.

Discussion

The study found no significant reduction in the rate of uninsurance among nonelderly adults population in Arizona, New York and Maine after the first 5 years of implementing Medicaid eligibility expansion. This negates my hypothesis that the policy would lead to a significant reduction in the rate of uninsurance. A possible explanation for this finding may be the inclusion of persons with income between 101% and 138% FPL in the study population. They were not beneficiaries of the expansion policy and may have confounded the outcome. The rate of unemployment is another possible confounder. However, the unemployment trends in both the study and control states are essentially similar (see Fig. 10 below).

Five years preceding the expansion, New York recorded a 0.6% increase in uninsured rate and Pennsylvania decreased by 2%, but in the 5th year after the expansion, the decrease in New York was 6 percentage points more than Pennsylvania. This observation may be associated with the expansion policy in New York as both states didn't implement any other policy within this period to expand eligibility for the study population. An article on the trends and policy implications of the New York Medicaid expansion policy (Birnbaum, 2006) noted that the state experienced recession during the period of the expansion in 2001 (possibly related to the 9/11 terrorists attack). It is possible that the recession may have affected the trend in New York. Except in Arizona, the rate of uninsured increased in the states studied beginning in 2008; this might be due to the economic crisis that hit the United States that year.

Furthermore, the Medicaid eligibility expansion policy was associated with a statistically significant increase in the percentage of the study population on Medicaid. This is consistent with the HIFA Study by Atherly et al (2012) which documented increases in coverage rates in 15 states that expanded Medicaid under the HIFA waiver including Arizona and Maine.

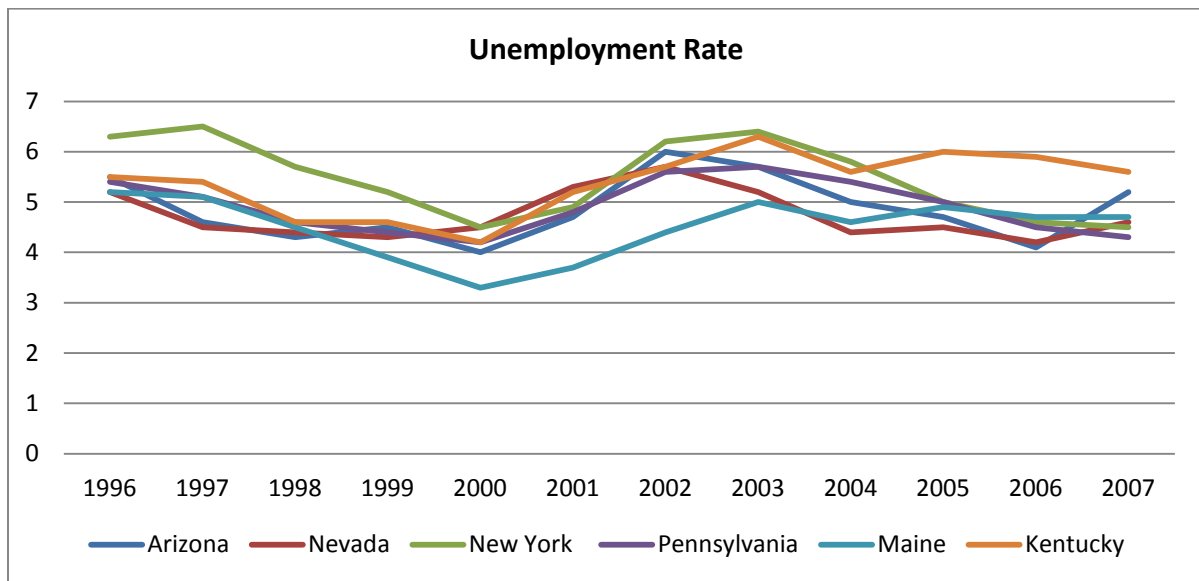


Figure 10

The finding of no apparent association between the Medicaid expansion policy and the years of potential life lost (YPLL) age-adjusted rate is expected. By definition, YPLL is the numerical difference between age 65 (or 75) and the age at death. It is an important measure of premature mortality. Many studies have documented positive correlation between insurance and health. However, causation is difficult to establish. The expansion policy in our study states must have improved access to medical care and possibly the quality of life of many nonelderly

adults. But it is unlikely that such improvement may affect the YPLL. This is because the study period is too short to observe any positive effect on the health outcome that may reduce YPLL.

More so, it is interesting to observe that the trend of rate of uninsured in Arizona, unlike that in Maine, was not significantly affected by the Medicaid expansion despite the fact that both implemented the HIFA waiver. What possible factors could be responsible for different take-up rates across states? An Issue Brief by Kaiser Commission (July 2010) titled *Expanding Medicaid to Low-Income Childless Adults under Health Reform: Key Lessons from State Experiences*, discussed multiple factors that affect take-up rates of health insurance in states where eligibility expansion have been implemented. They include:

- Lack of Awareness – Uninsured low income nonelderly adults may not be aware of the policy change. This was identified an initial setback in the implementation of the Family Health Plus in New York.
- Legal Residential Status - Arizona, unlike Maine has a large population of undocumented Hispanic immigrants who contribute to the uninsured data but are ineligible to benefit from the Medicaid expansion policy.
- Language Barriers – According to Kaiser Commission brief (2010), “Low-income childless adults may have limited English proficiency, lower education levels, and literacy issues that can make completing the enrollment process challenging”. Enrolment for the insurance benefits requires documentations which the less literate ones may find difficult to do. Among the 3 study states, Maine has the highest high school graduate rate (76.6) while New York has the least (59.2) in 2001 (see Tables 1 above).

- Bureaucratic Bottlenecks – Many studies have identified administrative bureaucracy as a barrier to health insurance take-up. The benefitting population is low income people whose nature of jobs may make it difficult for them to queue up for hours for enrolment.

Limitations

This study has several limitations. It mainly observed trends of variables and demonstrated associations but not based on a statistical test. Possible confounders like age, race, sex, education status and health behaviors of the residents were not controlled for. The analytical method cannot definitely show causation. As earlier discussed, the uninsured nonelderly adults of income between 101% and 138% FPL were part of the analysis but were not beneficiaries of the Medicaid expansion. The non-randomization of study population is also a limitation.

More so, YPLL as a measure of health outcome does not capture the possible changes in health-related quality of life. The common causes of death among people aged 19 to 35 years in the United States include road traffic accidents, suicide, poisonings and homicide (CDC official data 2010 via worldlifeexpectancy.com); it may be unlikely for Medicaid expansion to have a significant impact on mortality arising from any of them. This may be a limitation in using YPLL as an outcome measure. Levy and Meltzer (2001) argued that health is a multidimensional construct and that our ability to measure it is imperfect. I agree with this opinion; we may not be able to all possible changes in health that may occur as a result of health insurance policies.

Conclusion

Prior to the enactment of Affordable Care Act, most non-disabled childless nonelderly adults were not covered by any form of government insurance irrespective of income level. The Medicaid expansion policies implemented in New York, Arizona and Maine in 2001 and 2002 provided insurance for many people within this category. This study has been able to demonstrate association between this policy and a downward trend in the percentage of the uninsured and statistically significant increase in the Medicaid enrollment rate within the age group. The policy doesn't appear to have any association with the pattern of YPLL age-adjusted rates.

Further research could include a quasi-experimental study of the Medicaid expansion in New York, Maine and Arizona among nonelderly adults population using all other states without any expansion policy between 1996 and 2007 as control. The findings of such study may provide better insight on how the policy affects the rate of uninsured. I also recommend after the first 25 years of the implementation of Medicaid expansion under the Affordable Care Act, a study should be carried out to determine the effect of the policy on the YPLL of all states that implement it.

Appendix - Tables

Table 4

States	Percentage of the Uninsured Nonelderly Adults of Income <= 138% FPL (19-64yrs)													
	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Arizona	51	55	55.9	48.6	42.5	38.8	42.3	43.6	39.6	43.8	47.3	43.3	43.5	43.1
Nevada	41	45.2	48.5	47.4	46.3	45.2	45.8	46.4	48.7	44.5	48.3	54	43.8	53
New York	35.4	35.4	38.3	40.3	37.4	36	34.4	35.7	30.3	27.9	32.2	26.8	29.5	30.4
Pennsylvania	31	28.3	27.3	24.3	24.9	28.3	30.7	31.2	28.4	26.1	25.3	25.2	27.3	28.6
Maine	28.7	40.2	42	30	29.9	30.6	25.4	23.9	20.7	21.6	19.4	19.8	25.2	23.1
Kentucky	34.4	38.4	37.3	35.8	41	35.4	34	37.3	37.3	34.7	25.3	25.2	27.3	28.6

Source: Current Population Survey (CPS) Annual and Economic Supplement 2010

Table 5

States	Percentage of nonelderly adults of <=138% on Medicaid													
	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Arizona	20.5	17.4	12	11.8	14.6	18.8	20.8	22.3	27.6	28.9	27.7	28.5	31.3	32.3
Nevada	15.9	14.4	8.7	8.6	9.7	7.4	8.1	11.4	11.4	12.4	12.6	10.5	14.4	11.6
New York	32.7	31.3	30.3	25.5	28.2	24.5	26.2	26.8	31.6	35.6	34.4	36.5	36.6	39.6
Pennsylvania	29.8	27.3	24.6	22.9	21.9	22.6	21	22.4	24.4	24	27.6	29	29.8	32.8
Maine	23.2	16.5	23.6	25.6	25	30.1	33.8	36.1	45.6	44	45.5	42.6	42.7	45.1
Kentucky	34.4	38.4	37.3	19.1	18.5	18.9	16.2	25.5	23.5	26	23.8	26.1	23.5	27.8

Source: Current Population Survey (CPS) Annual and Economic Supplement 2010

Table 6

	YPLL age-adjusted rate (2000) before age 65											
	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
All States	4593.4	4591.3	4601	4606	4592	4490	4518	4492	4424	4312	4212	4055
Arizona	4,892	4,968	5,044	5,014	4,998	4,871	5001	5001	4,798	4,430	4,350	4,208
Nevada	5034.9	5033.7	4830	4956	5075	4880	5111	4968	4904	4523	4358	4316
New York	4177.6	4082.4	4317	3997	3900	3782	3716	3640	3569	3495	3429	3297
Pennsylvania	4566.6	4538.4	4568	4657	4563	4500	4606	4634	4448	4387	4290	4214
Maine	3655.9	3765.6	3732	3788	3769	3941	4024	4017	3868	3731	3666	3628
Kentucky	5025.4	5180.1	5186	5377	5475	5458	5408	5547	5348	5276	5431	5402

Data Source: National Center for Health Statistics Vital Statistics System

Table 7

States	Unemployment rate											
	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Arizona	5.5	4.6	4.3	4.5	4	4.7	6	5.7	5	4.7	4.1	5.2
Nevada	5.2	4.5	4.4	4.3	4.5	5.3	5.7	5.2	4.4	4.5	4.2	4.6
New York	6.3	6.5	5.7	5.2	4.5	4.9	6.2	6.4	5.8	5	4.6	4.5
Pennsylvania	5.4	5.1	4.6	4.4	4.2	4.8	5.6	5.7	5.4	5	4.5	4.3
Maine	5.2	5.1	4.5	3.9	3.3	3.7	4.4	5	4.6	4.9	4.7	4.7
Kentucky	5.5	5.4	4.6	4.6	4.2	5.2	5.7	6.3	5.6	6	5.9	5.6

Source: Bureau of Labor Statistics, Local Area Unemployment Statistics (LAUS) program.

Table 8 – Paired-Samples t-test analysis of Uninsurance rate

Tables 8a - Paired Samples Statistics

	Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Treatment_preHIFA	40.7067	15	8.69043
	Control_preHIFA	36.7400	15	8.23258
Pair 2	Treatment_postHIF	32.5400	15	9.29799
	Control_postHIFA	36.2667	15	8.58950

Table 8b - Paired Samples Correlations

	N	Correlation	Sig.
Pair 1	15	.578	.024
Pair 2	15	.681	.005

Table 8c

Paired Samples Test - Rate of Uninsured								
	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Treatment_preHIFA - Control_preHIFA	3.96667	7.78439	2.00992	-.34418	8.27752	1.974	14	.069
Treatment_postHIFA - Control_postHIFA	-3.72667	7.17122	1.85160	-7.69796	.24462	2.013	14	.064

Table 8 – Paired-Samples t-test analysis of percentage of nonelderly adults on Medicaid

Table 9a - Paired Samples Statistics

	Mean	N	Std. Deviation	Std. Error Mean
Pair 1 Treatment_Pre	23.0067	15	7.11110	1.83608
Control_pre	21.0667	15	9.33302	2.40978
Pair 2 Treatment_Post	33.0467	15	8.32594	2.14975
Control_post	20.0133	15	6.71925	1.73490

Table 9b - Paired Samples Correlations

	N	Correlation	Sig.
Pair 1 Treatment_Pre & Control_pre	15	.499	.058
Pair 2 Treatment_Post & Control_post	15	.741	.002

Table 9c - Paired Samples Test - Percentage on Medicaid								
	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Treatment_Pre- expansion - Control_pre	1.94000	8.44916	2.18156	- 2.73899	6.61899	.889	14	.389
Treatment_Post - Control_post	13.03333	5.61715	1.45034	9.92266	16.14401	8.986	14	.000

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Biographical Sketch

Lazarus Ude Eze was born in Okposi, Ebonyi State of Nigeria on April 20, 1982. He had his primary, secondary and undergraduate studies in Nigeria. He was the best graduating student in both his elementary and high school. He obtained a Bachelor in Medicine and Surgery degree in the University of Ibadan in August 2008 and won the Medical Students Prize. He then proceeded to work as a resident physician for 2 years. Subsequently, he was posted to do his national service at the federal capital where he worked with Family Health International (FHI360) on Global Fund and USAID-funded health projects. He proceeded to the University of Kentucky for graduate training in public health. He served as the President of the University of Kentucky Student Public Health Association (UKSPHA) in 2012. He is the founder of the Health Advocacy and Promotion Partnership by Youth, Nigeria (HAPPYNigeria) - a non-profit organization that inspires and mobilizes young people in Nigeria for community health projects.

Laz worked as a volunteer on multiple non-profit health initiatives and has been featured in the media both in Nigeria and United States in recognition of his global health activities. He's a regular blogger on health/developmental issues (www.donlaz.blogspot.com) and a columnist with an online news media – The Newsnest. After graduation, he hopes to build his professional career working on global health systems projects especially in developing countries.

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