Does Awareness of the Affordable Care Act Reduce Adverse Selection? A Study of the Long-term Uninsured in South Carolina

Lu Shi, PhD[1], Chaoling Feng, PhD[2*], Sarah Griffin, PhD[1],
Joel E. Williams, PhD[1], Lee A. Crandall, PhD[1], and Khoa Truong, PhD[1]

Abstract

Adverse selection predicts that individuals with lower health status would be more likely to sign up for health insurance. This hypothesis was tested among the long-term uninsured population in South Carolina (SC). This study used data from an in-person survey conducted from May 2014 to January 2015. Interviews were held with the long-term uninsured individuals at multiple sites throughout the state, using a multistage sampling method. SC residents aged 18 to 64 years who had had no health insurance for at least 24 consecutive months were eligible for the survey. The dependent variable is the participants' attempt to obtain insurance coverage. Key independent variables are self-reported health status, hospitalization in the past year, use of emergency department in the past year, and presence of serious long-standing health problems. The analysis is stratified by the awareness of the Affordable Care Act (ACA)'s individual mandate while controlling for age, gender, race/ethnicity, and household income. Participants' self-reported health status was not significantly associated with the attempt to sign up for health insurance in both groups (those aware and those unaware of the individual mandate). Being hospitalized in the previous year was significantly associated with their attempt to sign up for insurance in both groups. Participants with serious long-term health problems were more likely to have attempted to sign up for insurance among those who were not aware of the ACA. However, this association was statistically insignificant among those who had heard of ACA. Sicker people were more likely to attempt to sign up for insurance. However, being aware of the ACA's individual mandate seemed to play a role in reducing adverse selection.

Keywords

Affordable Care Act, adverse selection, health insurance, uninsured population, health status

Introduction

Adverse selection occurs in insurance marketplaces where information asymmetry between the buyer and the seller leads to suboptimal pricing, efficiency loss, and even market failure.[1,2] A health insurance seller typically knows less than individual buyers about their health status and subsequent health care expenditures: It is not surprising that adverse selection has been found in different types of individual health plans and even group health plans, affecting the stability of these plans.[3,4]

To overcome adverse selection among insurance subscribers, "individual mandate," the legal requirement that individuals purchase health insurance to avoid a penalty, was implemented in 2006 in Massachusetts[5] and in the 2010 Patient Protection and Affordable Care Act (ACA).[6,7] However, 5 years into the implementation of the ACA, millions of Americans remain uninsured[8] with barriers such as low health literacy and high insurance premiums. In states such as South Carolina (SC), where the state government chose not to participate in the Medicaid expansion program,[9] adverse selection could be particularly serious since a substantial pool of people with potentially high health care expenditures and low incomes are left to the federally facilitated marketplace to shop individual plans without a premium subsidy. Adverse selection indicates that the less healthy people could be more likely to sign up for a given premium listed in the marketplace, driving up the premium

[1]Clemson University, SC, USA
[2]Cornell University, Ithaca, NY, USA

*Chaoling Feng is currently working as a researcher with IBM Watson Health, Bethesda, MD, USA

Corresponding Author:
Chaoling Feng, IBM Watson Health, Bethesda, MD, 7700 Old Georgetown Rd, 6th floor, Bethesda, MD 20814, USA.
Email: chaoling.feng@ibm.com

in an upward spiral and pricing. As a result, more individual enrollees opt out of insurance plans.

In 2014, SC was ranked sixth in terms of percentage of the uninsured, with 18% of nonelderly adults (aged between 19 and 64 years) being uninsured.[10] Yet relatively little is known about the actual demand for insurance coverage among the uninsured, especially among the long-term uninsured.

This study examines whether adverse selection, as described above, is a driving factor for uninsured people's attempt to sign up for health insurance in SC. Answers to this question can provide a meaningful contribution to the quest to understand why many people in SC still remain uninsured after the implementation of the ACA.

Methods

Survey and Data

We conducted an in-person survey throughout SC from May 2014 to January 2015. Our sampling method first selected 10 Zip Code Tabulation Areas (ZCTAs) in 4 regions of SC (Upstate, Midland, Low-Country, and Pee Dee). The main difference between a zip code and a ZCTA is that the latter has a "regular" population attached to it while a zip code can be unique for an entity such as university, a military base, or a PO Box. Selection of the ZCTAs was determined in multiple steps. We used secondary data from the Census Bureau to extract the sociodemographic and economic information including percentage of the uninsured population at the ZCTA level. The extracted data were then used in a statistical model to predict the level of concentration of the long-term uninsured (LTU) in each ZCTA. Then we rank-ordered 424 SC ZCTAs by their predicted concentration of the LTU. Two or 3 ZCTAs with the highest predicted concentration of the LTU in each of the 4 regions of SC were selected. After having the ZCTAs selected, multiple interview sites were secured by working with local partners such as free health clinics, community centers, faith organizations, and food pantries, which were known for serving people in need to recruit potential survey participants. Flyers, words of mouth, and even local radio station were used to solicit interests in interview participation, with a financial incentive of $25 for eligible respondents who showed up and finished the interview. Zip codes of the respondents were obtained from the interviews. While the interview sites were located in 10 zip codes, final data contained individuals from 90 zip codes.

The survey was administered through face-to-face interviews targeted at people aged 18 to 64 years residing in SC who had been without health insurance for 24 months or longer at the time of the study. Interviewers were trained and monitored by the research project team members. All interviewers completed human subjects training. Prior to participation, subjects were administered an informed consent process approved by the institutional review board. A total of 954 people responded to our survey.

Inquiry about attempts to obtain insurance coverage was part of a series of questions that asked for reasons why the respondents remained uninsured. To assess their overall health status, we included standard questions on self-reported health status, and asked about past year's household health expenditures, hospitalization experience, emergency department visit(s), and existence of a serious long-standing health problem diagnosed by a health care professional. Using Likert-type items, we also measured the perceived community coverage rate and the perceived affordability of insurance premium. The interview also asked for the respondents' age, gender, race/ethnicity, and household income in the previous year.

Statistical Methods

We first described the demographic, socioeconomic, health status, and spending characteristics of the uninsured SC residents in our sample. Then we compared demographic, socioeconomic, and health status characteristics in our sample with that of the uninsured subsample of SC's 2015 Behavioral Risk Factor Surveillance System (BRFSS) data set. We also compared the health spending of our sample with that of the uninsured subsample of the nationally representative 2015 National Health Expenditure Accounts (NHEA)-Aligned Medical Expenditure Panel Study (MEPS) data set (Table 1).

Using multivariable logistic regression, the dependent variable is constructed as a binary variable: participants' attempts to obtain insurance coverage (yes or no). All key independent variables are dummy-coded including self-reported health status (excellent, fair, good, poor), hospitalization in the past year, use of emergency department in the past year, and presence of serious long-standing health problems. The analysis is stratified by the awareness of the ACA's individual mandate while controlling for age, gender, race/ethnicity (African American, Non-Latino white, Non-Latino other races, and Latino), household income last year (log transformed), and health expenditure last year (log transformed). We then rerun these logistic regressions by stratifying the sample by median income (above/below the median household income of $8520). Stata 11 (Stata Corp, College Station, Texas) was used to run the statistical analysis.

Results

Out of 954 respondents, 98 cases were excluded from our analysis due to missing values. The resulting sample of 856 cases has a mean age of 42.0 (SD = 12.7) and 58.1% of respondents are women. African Americans (71.1%), whites (17.4%), and Latinos (6.6%) are the 3 major racial groups in our sample.

Health Status

When asked to rate their own health status on a 5-point ordinal scale, 32.7% of the respondents reported "fair" and 9.5%

Table 1. Characteristics and Representativeness of Long-term Uninsured Residents of South Carolina.

Variables	Long-term uninsured sample (n = 856)	BRFSS uninsured sample (n = 1088)
Self-reported health status		
Excellent/very good (%)	27.00	38.14
Good (%)	30.77	36.40
Fair (%)	32.67	16.00
Poor (%)	9.48	9.19
Age (mean)	42.00	47.93
Gender (female) (%)	58.14	50.09
Race		
African American (%)	71.99	33.46
Non-Hispanic white (%)	17.42	52.67
Latino (%)	6.55	6.62
Other	4.96	7.25
Household income (mean)	$13 626	$39 830

Note. In the "BRFSS uninsured sample" column, all the characteristics of long-term uninsured residents in South Carolina are based on analysis of the 2015 BRFSS sample; age and household income are recalculated based on the income and age categories defined in the BRFSS data set. BRFSS = Behavioral Risk Factor Surveillance System.

reported "poor" (Table 1). When asked whether he or she had been told of a serious long-standing health problem, 44.7% of the respondents chose "yes." A total of 17.9% had been hospitalized within the past year, higher than the SC rate (11.6%) as reported by the South Carolina Revenue and Fiscal Affairs Health Statistics in 2013.[11]

Knowledge and Behavior Regarding Health Insurance

A total of 44.0% of those surveyed had attempted to sign up for insurance. When asked whether they had heard of the ACA, the law which required that everyone have health insurance, 15.9% responded no.

Comparison With BRFSS and MEPS Uninsured Subsamples

Table 1 compares our sample characteristics with that estimated from the uninsured subsample in SC BRFSS and MEPS. The household health care (out-of-pocket) spending is based on analysis of 14 521 uninsured households in 2015 MEPS Household Component's national sample. All the other characteristics of uninsured residents in SC were based on analysis of the uninsured resident sample from 2015 BRFSS. The characteristics of our sample were not distinctively different from the BRFSS uninsured subsample in terms of health status, age, and gender. Our convenience sample of the LTU was different from the uninsured subset of SC population in terms of racial mix and household income. Specifically, African Americans and the low-income residents were of higher proportion in our LTU sample as compared with the uninsured subset in BRFSS and MEPS. The self-reported health care expenditure among

our respondents was higher than that in the uninsured subsample of MEPS.

Results From Logistic Regressions by Awareness of ACA

The respondent's self-reported health status was not significantly associated with the attempt to sign up for health insurance, regardless of the respondents' awareness of the ACA or the household income (Table 2). By contrast, hospitalization experience in the previous year was significantly associated with the attempt to sign up for insurance with odds ratio (OR) of 1.656 (95% confidence interval [CI]: 1.053-2.604) among those who had heard of the ACA and OR of 3.368 (95% CI: 1.006-11.28) among those who had not heard of the ACA, a pattern that held when we stratified by household income and when we ran the analysis on the full sample. Having a prior emergency department visit, however, is not associated with the attempt to sign up for health insurance among either group: OR is 0.957 (95% CI: 0.683-1.342) among those who had heard of the ACA and 0.970 (95% CI: 0.404-2.331) among those who had not heard of the ACA.

Having a serious long-term health problem was significantly associated with an attempt to sign up for insurance among those who had not heard of the ACA (OR = 2.865, 95% CI: 1.160-7.074), yet this association was insignificant among those who had heard of the ACA (OR = 1.267, 95% CI: 0.891-1.801). This association was also significant among the subsample with household income below $8520 (OR = 1.617, 95% CI: 1.009-2.590) and among the full sample (OR = 1.388, 95% CI: 1.007-1.914), although with a smaller absolute value of the OR than the one estimated among the subsample who had heard of the ACA.

Table 2. Logistic Regressions of Attempts to Sign Up for Insurance.

	Among those aware of ACA's mandate (n = 717)	Among those unaware of ACA's mandate (n = 136)	Among those with household income < $8520 (n = 427)	Among those with household income > $8520 (n = 429)	Among the full sample (n = 856)
Long-term health problem	1.267	2.865*	1.617*	1.133	1.388*
	(0.891-1.801)	(1.160-7.074)	(1.009-2.590)	(0.716-1.794)	(1.007-1.914)
Self-rated health (reference: excellent)					
Very good	1.373	2.013	2.236	1.003	1.399
	(0.761-2.477)	(0.415-9.766)	(0.976-5.124)	(0.472-2.131)	(0.807-2.425)
Good	1.293	1.175	1.499	1.071	1.249
	(0.742-2.254)	(0.296-4.673)	(0.701-3.203)	(0.526-2.181)	(0.749-2.083)
Fair	1.709	0.638	1.528	1.572	1.490
	(0.962-3.036)	(0.152-2.683)	(0.718-3.251)	(0.731-3.378)	(0.879-2.526)
Bad	1.751	1.149	2.105	1.159	1.688
	(0.816-3.757)	(0.181-7.314)	(0.827-5.355)	(0.379-3.538)	(0.840-3.391)
Age	0.996	1.023	0.993	1.009	1.000
	(0.983-1.010)	(0.991-1.055)	(0.976-1.010)	(0.991-1.027)	(0.988-1.012)
Female	1.713***	1.465	1.467	1.982**	1.679***
	(1.245-2.356)	(0.663-3.240)	(0.957-2.249)	(1.307-3.007)	(1.255-2.246)
Race/ethnicity (Reference: African American)					
Non-Latino white	0.624*	0.313	0.610	0.513*	0.584**
	(0.416-0.937)	(0.0747-1.309)	(0.339-1.096)	(0.299-0.879)	(0.397-0.859)
Non-Latino other races	0.735	0.998	0.977	0.420	0.765
	(0.363-1.488)	(0.170-5.855)	(0.418-2.286)	(0.139-1.265)	(0.397-1.474)
Latino	0.781	0.207	0.272	0.826	0.661
	(0.400-1.524)	(0.0360-1.193)	(0.0670-1.104)	(0.402-1.695)	(0.361-1.210)
Household income last year (logged)	1.057*	1.118	1.090**	1.005	1.069**
	(1.003-1.113)	(0.983-1.271)	(1.027-1.156)	(0.706-1.431)	(1.019-1.121)
Health expenditure last year (logged)	1.033	1.064	1.017	1.066	1.037
	(0.970-1.101)	(0.896-1.264)	(0.943-1.097)	(0.969-1.174)	(0.978-1.099)
Hospitalized last year	1.656*	3.368*	1.623	1.993*	1.790**
	(1.053-2.604)	(1.006-11.28)	(0.897-2.936)	(1.086-3.660)	(1.176-2.725)
Use emergency department last year	0.957	0.970	1.195	0.820	0.995
	(0.683-1.342)	(0.404-2.331)	(0.767-1.863)	(0.524-1.285)	(0.728-1.358)
Aware of ACA's mandate			1.542	1.522	1.530*
			(0.915-2.599)	(0.826-2.804)	(1.036-2.257)
Pseudo R^2	.0439	.1475	.0734	.0564	.0543

Note. 95% confidence intervals in parentheses. ACA = Affordable Care Act.
*$P < .05$. **$P < .01$. ***$P < .001$.

Age was not associated with the attempt to sign up for insurance among either of the 2 subsamples.

Discussion

There have been concerns that key ACA elements such as guaranteed issue and community rating might contribute to the issue of adverse selection when people sign up for insurance plans in the federally facilitated marketplace,[12] which makes it important for us to conduct this empirical study of adverse selection. Descriptive statistics from our study showed there were many unmet medical needs among these LTU individuals in SC and that they were not "young invincibles"[13] who simply did not perceive the need for health coverage. In fact, chronic conditions and prior hospitalizations were common among study participants. Moreover, 44.7% of the sample reported having been diagnosed as having at least 1 serious long-term health problem.

Although age and self-rated health status have been proven to predict health care expenditures[14,15] and thus could in turn influence one's insurance enrollment decision, our analysis suggests that they did not predict the attempt to sign up for health insurance among these LTU people. Nor was the household's prior health care expenditure a significant predictor of the enrollment decisions in either of the 2 subsamples, contrary to what the "adverse selection" hypothesis would suggest.

There is a possible explanation for the positive relationship between previous hospitalization and attempts to sign up for insurance. Those who went through hospitalization could have received more outreach efforts from service agencies, and therefore they could be more aware of the available insurance options and/or better prepared to navigate through complicated processes to get insurance coverage. As for the variable of having long-term health problems, the contrast between those who had heard of the ACA and those who had not suggests a possible effect of the individual mandate: It might have reduced the impact of the adverse selection mechanism from the otherwise significant association between diagnosed health problems and an attempt to sign up for health insurance.

Although there has been considerable discussion regarding the impact of adverse selection in the implementation of the ACA[16] and a few simulation studies of ACA's risk mitigation policies have shown the promise of risk corridor and reinsurance[17,18] as well as the challenges facing risk adjustment,[19] our study is among the first attempts to empirically assess the presence of adverse selection. It is important to note that the awareness of the ACA does seem to have a role in at least partially mitigating adverse selection among these LTU. Meanwhile, the fact that people with recent hospitalization experience are more likely to attempt to sign up for insurance in both subsamples suggests that the adverse selection might be better explained by the individuals' recent inpatient experience rather than self-reported health status and long-term illness.

As our descriptive analysis shows, only 0.74% of respondents would rather pay penalties rather than enrolling in ACA. This might indicate that the very existence of penalties, rather than the penalty amount, could be the driving factor for overcoming adverse selection, since the penalty amount in 2014 was of a very low amount.[20] It is more likely that the knowledge about the individual mandate has potential influence on attempt on enrollment. It remains uncertain whether alternatives to the penalty design (eg, everyone with insurance gets a tax credit, aka replacing the penalty design with an absence of tax credit) could overcome adverse selection.

More studies are needed to explore what other approaches, in addition to disseminating the message about the individual mandate in ACA and planned increases in tax penalties for remaining uninsured, might work to enroll these LTU people. Specifically, it will be interesting to know whether it is the awareness of financial risk from the recent hospitalization or the awareness of health risk from the recent hospitalization that drives an LTU person to sign up for insurance. If it is the heightened awareness of financial risk from the recent hospitalization that motivates one to enroll in health plans, policy and outreach programs should also present the odds and economic toll of hospitalization without health insurance, in order to encourage the uninsured to sign up for insurance. The recent announcements of pull-out of ACA health insurance market by major insurers such as United Health Care[21] pose more important questions related to adverse selection and its potential impact on health care market for the uninsured population.

It should be noted that our study has several limitations and the results should be interpreted with caution. From a theoretical perspective, adverse selection predicts that individuals with lower health status are more likely to sign up for health insurance. But a null finding when testing this adverse selection hypothesis can also come from the fact that the cost of health insurance is prohibitively expensive for most of them, making it look like there is no difference in the attempts to sign up for insurance across individuals with different health status. These people need to balance between costs and benefits including the penalties for not having insurance. Our survey happened to capture the time when the monetary amount of penalties is very insignificant, and the patterns we found among these people could very well change in future as the regulatory context continue to evolve.

Moreover, the survey participants were recruited using a convenience sampling within each region's "hotspots," based on referrals of charity care providers and respondents. This reduces the generalizability of our analytical results. Second, there have not been a great number of empirical studies to assess the effectiveness of ACA implementation, which means that we have not identified widely used measures of individual participants' knowledge of the ACA. The measure used in this survey is based on 1 questionnaire item, and could be confounded by factors such as the respondents' self-perceived knowledge instead of detailed knowledge about the ACA individual mandates and its specific rules such as penalty amount.

Moreover, we should note that our findings are based on the LTU and thus cannot be easily generalized to other uninsured. The LTU is a subset of the uninsured. From the literature, we have found a number of distinctive characteristics of the LTU. They often work part-time and might be referred to as the "working poor class" with an income below the median but not among the poorest in the nation.[22] There are nearly 20% of the LTU families with an annual income above $50 000, while 70% are in families where the family head is a full-time, full-year worker, but is either not offered health insurance or does not take it up to cover the family members.[23] Social and economic factors such as the increase in temporary and contingent work along with increased cost sharing for insurance may lead to LTU status.[24] In addition to income, the extent of being LTU varies across age and ethnicity groups: for instance, Latinos were more likely to be LTU compared to other ethnic groups.[25] We look forward to future data collections aiming to specific subgroups of LTU such as the Latino LTU.

Finally, it is important to recognize the LTU individuals can be divided into subgroups. Our study focused on the LTU who still remained uninsured at the time of our survey. One specific merit to focus on this subgroup is to

understand why these individuals remained uninsured months after the individual mandate of the ACA became effective. There were also LTU who got insurance coverage through the market exchange (and thus not eligible for our survey). If considering all LTU individuals as only 1 group, then our sample would be subject to some potential bias, which can be qualitatively judged. For instance, we found a positive relationship between previous hospitalization and attempts to sign up for insurance. It can be argued that the estimated coefficient for previous hospitalization could have a downward bias since the "high-risk type" had already signed up for health insurance. Those remained uninsured were the "low-risk type" and less inclined to get health insurance. Such estimated effect would be larger if the sample would have included the high-risk type. In addition, a study[26] on Medicare Advantage insurance enrollment shows that subpopulations with different education, income, and longevity expectation also predict differences in motivation to enroll health insurance. To the best of our knowledge, there is no other evaluation study on LTU in SC, which examines all the major social economic aspects of pre-ACA and post-ACA LTU population. We therefore cannot estimate the magnitude of such potential bias.

We look forward to future studies where a representative sample of LTU people in the state can be collected, and analyses based on that sample can then be helpful in predicting insurance enrollment behavior as decision makers at different levels of government continue to modify or improve the current health insurance system.

Authors' Note

Dr Lu Shi is the principal investigator of this research study. Dr Chaoling Feng is currently working as a researcher with IBM Watson Health, Bethesda.

References

1. Akerlof GA. The market for "lemons": quality uncertainty and the market mechanism. *Q J Econ*. 1970;84(3):488-500. doi:10.2307/1879431.

2. Cutler DM, Zeckhauser RJ. Adverse selection in health insurance. *Forum Health Econ Pol*. 1998;1(1). doi:10.2202/1558-9544.1056.

3. Browne MJ. Evidence of adverse selection in the individual health insurance market. *J Risk Insur*. 1992;59(1):13-33. doi:10.2307/253214.

4. Ettner SL. Adverse selection and the purchase of Medigap insurance by the elderly. *J Health Econ*. 1997;16(5):543-562. doi:10.1016/s0167-6296(97)00011-8.

5. Chandra A, Gruber J, Mcknight R. The importance of the individual mandate—evidence from Massachusetts. *N Engl J Med*. 2011;364(4):293-295. doi:10.1056/nejmp1013067.

6. Patient Protection and Affordable Care Act of 2010. HR3590, 111th Cong. 2010, 148 (111): 1001-10909.

7. Rosenbaum S. The Patient Protection and Affordable Care Act: implications for public health policy and practice. *Public Health Rep*. 2011;126(1):130-135.

8. Shaw FE, Asomugha CN, Conway PH, Rein AS. The Patient Protection and Affordable Care Act: opportunities for prevention and public health. *Lancet*. 2014;384(9937):75-82. doi:10.1016/s0140-6736(14)60259-2.

9. Price CC, Eibner C. For states that opt out of Medicaid expansion: 3.6 million fewer insured and $8.4 billion less in federal payments. *Health Aff*. 2013;32(6):1030-1036. doi:10.1377/hlthaff.2012.1019.

10. Health insurance coverage of adults 19-64. http://kff.org/other/state-indicator/adults-19-64/. Published 2014. Accessed August 8, 2017.

11. South Carolina Health Statistics Health Utilization. *Online Query System: Emergency Department Reports*. Date unknown. http://rfa.sc.gov/healthcare/utilization. Accessed October 3, 2015.

12. Mulvany C. Insurance market reform: the grand experiment: insurance market reforms and revenue provisions of the Affordable Care Act intended to support expansion of healthcare coverage to the uninsured could have unintended consequences. *Healthc Financ Manag*. 2013;67(4):82-88.

13. Cappellanti S. Premium Increases for "young invincibles" under the ACA and the impending premium spiral. *Foro de Acción Americana*. 2013(2). http://www.americanactionforum.org/wp-content/uploads/files/research/Premium_Increases_for_Young_Invincibles.pdf. Accessed August 26, 2017.

14. Wee CC, Phillips RS, Legedza AT, et al. Health care expenditures associated with overweight and obesity among US adults: importance of age and race. *Am J Public Health*. 2005;95(1):159-165. doi:10.2105/ajph.2003.027946.

15. Desalvo KB, Jones TM, Peabody J, et al. Health care expenditure prediction with a single item, self-rated health measure. *Med Care*. 2009;47(4):440-447. doi:10.1097/mlr.0b013e318190b716.

16. Blumberg L, Corlette S, Dash S, Rifkin S. *Stabilizing Premiums Under the Affordable Care Act: State Efforts to Reduce Adverse Selection*. Urban Institute and Georgetown University Center on Health Insurance Reforms; 2013.Washington DC.

17. Layton TJ, McGuire TG, Sinaiko AD. Risk corridors and reinsurance in health insurance marketplaces: insurance for insurers. *Am J Health Econ*. 2016;2(1):66-95. doi:10.1162/AJHE_a_00034.

18. Zhu JM, Layton T, Sinaiko AD, McGuire TG. The power of reinsurance in health insurance exchanges to improve the fit of the payment system and reduce incentives for adverse selection. *Inquiry*. 2013;50(4):255-274. doi:10.1177/0046958014538913.

19. Montz E, Layton T, Busch AB, Ellis RP, Rose S, Mcguire TG. Risk-adjustment simulation: plans may have incentives to distort mental health and substance use coverage. *Health Aff*. 2016;35(6):1022-1028. doi:10.1377/hlthaff.2015.1668.

20. Collins SR, Nicholson JL. Realizing health reform's potential: young adults and the Affordable Care Act of 2010. *Commonwealth Fund Pub*. 2010;101(1446). http://www.commonwealthfund.org/~/media/files/publications/issue-brief/2010/oct/1446_collins_young_adults_and_aca_ib.pdf. Accessed August 26, 2017.

21. Koller CF. United's withdrawal from exchanges—much ado about the wrong things? *N Engl J Med*. 2016;375(4):303-305. doi:10.1056/nejmp1605841.

22. Gruber J. Covering the uninsured in the United States. *J Econ Lit*. 2008;46(3):571-606. doi:10.1257/jel.46.3.571.

23. Sommers BD, Gunja MZ, Finegold K, Musco T. Changes in self-reported insurance coverage, access to care, and health under the Affordable Care Act. *JAMA*. 2015;314(4):366-374. doi:10.1001/jama.2015.8421.

24. Cutler DM, Gelber AM. Changes in the incidence and duration of periods without insurance. *N Engl J Med*. 2009;360(17):1740-1748. doi:10.1056/nejmsa0804668.

25. Levy J. In U.S., uninsured rate dips to 11.9% in first quarter. *Gallup*. April 13, 2015. http://www.gallup.com/poll/182348/uninsured-rate-dips-first-quarter.aspx. Accessed April 20, 2017.

26. Fang H, Keane MP, Silverman D. Sources of advantageous selection: evidence from the Medigap insurance market. *J Polit Econ*. 2008;116(2):303-350. doi:10.1086/587623.