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# The Affordable Care Act Reduces Emergency Department Use By Young Adults: Evidence From Three States

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**ABSTRACT** The Affordable Care Act (ACA) extended eligibility for health insurance for young adults ages 19–25. This extension may have affected how young adults use emergency department (ED) care and other health services. To test the impact of the ACA on how young adults used ED services, we used 2009–11 state administrative records from California, Florida, and New York to compare changes in ED use in young adults ages 19–25 before and after the ACA provision was implemented with changes in the same period for people ages 26–31 (the control group). Following implementation of the ACA provision, the younger group had a decrease of 5.9 ED visits per 1,000 people compared to the older group—a relative change of –1.5 percent. The largest relative decreases were found in women (–2.3 percent) and blacks (–3.5 percent). This relative decrease in ED use implies a total reduction of more than 38,000 visits from young adults ages 19–25 across the three states in 2011. When we compared the probability of ever using the ED before and after implementation of the ACA provision, we found a minimal decrease (–0.2 percent) among the younger group compared to the older group. This suggests that the change in the number of visits was driven by fewer visits among ED users, not by changes in the number of people who ever visited the ED.

In the United States, emergency department (ED) visit rates have steadily increased for more than a decade,<sup>1–3</sup> with an estimated 131 million ED visits in 2011.<sup>4</sup> The ED visit rate increase is double what would be expected from US population growth alone.<sup>1</sup>

Studies suggest that increasing rates are primarily the result of an increase in illness-related diagnoses and not of additional trauma-related injuries.<sup>5,6</sup> Lack of private health insurance is also associated with elevated rates of ED use.<sup>7–11</sup> In particular, uninsured people and Medicaid patients demonstrate the greatest increase in rates of ED use, compared to patients with pri-

ivate insurance.<sup>3</sup> Recent studies suggest that Medicaid patients have experienced decreasing access to primary care,<sup>12</sup> which may prompt them to use the ED as a main source of health care.<sup>13–16</sup>

Young adults, in particular, often lack health insurance: One-quarter of people ages 18–34 were uninsured in 2009.<sup>17</sup> In many cases, young adults do not have easy access to health insurance because they are unemployed, working at low-paying entry-level jobs, or enrolled in educational programs at institutions that do not provide coverage.<sup>18,19</sup> They may also frequently forgo opportunities to obtain insurance, particularly when doing so would be time-consuming or costly relative to the perceived low health risks

faced by a young and generally healthy population.<sup>19</sup> When uninsured young adults are in need of health care, they frequently turn to EDs as their main and sometimes only source of care.<sup>20,21</sup>

The 2010 Affordable Care Act (ACA) was designed to improve health care for all Americans through expanded coverage, increased accountability, lower costs, and improved quality, but it included a special provision for young adults.<sup>22</sup> As of September 23, 2010, a provision of the ACA allowed people ages 19–25 to retain coverage under their parents' employer-sponsored or individually purchased health insurance plans. This appears to have led to significant increases in private insurance coverage in the affected population.<sup>17,23–26</sup> In turn, these increases may influence health care use.<sup>27</sup> Of particular interest is how the ACA will affect ED use—an important component of health care use in the population of interest.

Several studies have looked at changes in insurance coverage for ED visits before and after the implementation of the ACA provision. However, the effect of the provision on ED use has yet to be explored. We compared the differences in ED use among young adults ages 19–25 before and after the ACA provision was implemented to differences in ED use among people ages 26–31, who were unaffected by the provision (the control group). Our study provides new information about the relationship between the ACA provision and ED use.

## Study Data And Methods

**DATA** We obtained data from the California, Florida, and New York State Inpatient Databases (SIDs)<sup>28</sup> and State Emergency Department Databases (SEDDs)<sup>29</sup> through the Healthcare Cost and Utilization Project of the Agency for Healthcare Research and Quality. (These three states were selected for analysis because of data availability, state population, and state diversity.) SIDs are a set of longitudinal state-specific databases of inpatient discharges that capture ED visits resulting in hospital admission. SEDDs are corresponding data sets that capture ED visits by patients who are discharged from the ED without being admitted. Together, these databases capture discharge information on all ED visits and include the following data for each visit: the patient's demographic characteristics, diagnosis and procedure information, discharge disposition, admission source, expected primary payer, and a linkage variable to track the patient's health care use across encounters.

For our analysis, we extracted data on all ED visits made by people ages 19–31 from January 1, 2009, to December 31, 2011, in the three states.

About 2.5 percent of visits had missing data on the patient's race or ethnicity. We retained these visits in the analysis. We excluded a small number of records that were missing other patient or visit information.

**ANALYSIS** We compared measures of ED use among young adults ages 19–25 before and after the ACA provision was implemented, relative to changes in use among people ages 26–31. The provision extended insurance access to the younger group, but not to the older group.

The *pre-ACA period* was defined as September 1, 2009, through August 31, 2010, the year preceding the implementation of the ACA provision. The *post-ACA period* was defined as January 1 through December 31, 2011. Under the ACA, the expansion of insurance for young adults ages 19–25 took effect on September 23, 2010. However, many plans are renewed only at the beginning of the calendar year. Therefore, as other studies have done,<sup>25</sup> we excluded the period from September 1 through December 31, 2010, from our analyses to allow for uncertainties in the timing of the insurance expansion.

In our main analysis, we studied population-level rates of ED visits. Using Census Bureau population data for 2010 and 2011 as denominators, we computed the total number of ED visits per thousand people in the pre and post periods according to the patient's age, sex, and race or ethnicity. This resulted in 104 rates per state, per period: rates for each year of age, 19–31; two sexes; and four racial or ethnic groups (white, black, Hispanic, and other or missing). Using these data, we observed overall ED visit rates in the population of young adults ages 19–25 in the pre and post periods, and we compared them to rates for people ages 26–31.

Our goal was to assess changes in ED visit rates among young adults after the implementation of the ACA. To do so, we used a difference-in-differences analysis. This allowed us to perform a natural experiment to assess the change in ED visits among young adults ages 19–25 compared to the change in visits among people ages 26–31 and to derive an estimate of the impact of the ACA.

In a second analysis, we assumed that time trends—that is, any secular population-level changes—among the younger group were the same as those among the older group. Thus, the difference-in-differences estimate of the effect of the ACA provision is the difference between the changes for the two groups.

Since there might have been secular changes in demographic characteristics, we used a regression model to compute adjusted rates of ED use per population, controlling for patients' sex, race or ethnicity, age by year, and state of

residence. Within each time period we calculated the number of visits per person, using the population data to determine the number of people with no visits. We regressed these counts onto indicators for the age group and time period. The models also controlled for patients' race or ethnicity, sex, age by year, and state of residence. The interaction between the age group and the time period represents the difference-in-differences estimate.

The model most typically used to analyze count data—the Poisson model—assumes that the mean number of visits equals the variance of the number of visits. However, since many people had no ED visits, we used a negative-binomial distribution to account for such overdispersion. We used the results to derive our estimates of the percentage changes in the number of ED visits.

In a third analysis, we counted the number of people in each age-sex-race or ethnicity group in each state who had any ED visit and combined this with the population denominators. To estimate percentage change, we used relative-risk regression. This model is analogous to the more typical logistic model, but it estimates a change in rate instead of a change in odds.<sup>30</sup> Here, too, we controlled for patients' sex, race or ethnicity, age by year, and state of residence. For each person, we regressed whether he or she had any visit onto indicators for the age group and time period, as well as the additional covariates in the difference-in-differences models as above. We present changes in the probability of having any visit before and after the ACA provision was implemented.

To explore subgroup effects, we repeated the analyses, stratifying ED use by state, sex, and race or ethnicity. In a series of sensitivity analyses—including the use of a regular Poisson model and zero-inflated models, and restricting the analysis to include only patients age twenty-four or twenty-six—we found that our results were robust.

Analyses were performed using R software, version 3.0.2. The Stanford Institutional Review Board (IRB) determined that this study was exempt from IRB approval.

**LIMITATIONS** This study had several limitations. It used a nonrandomized design and thus could not prove that the ACA provision caused any of the changes in ED use that we observed. However, studying changes over time in the same areas and controlling for patient demographic characteristics should reduce the chance that the results were confounded by variations in unobserved patient characteristics. In addition, comparing changes for young adults ages 19–25 to those for people ages 26–31 should help ac-

count for generalized changes in ED use.

Our difference-in-differences analysis assumed that care use patterns by people ages 26–31 provide information about what would have happened to care for young adults ages 19–25 had the ACA provision not been implemented. If this was not an accurate assumption, the results of our analysis would be biased.

We used administrative databases from three states, and our results might not be generalizable to other states. We were also unable to account for patient mobility. Therefore, it is possible that we underreported ED visits if patients either sought ED care outside their state of residence or moved out of state during the study period, which can be an important factor in this college-level age group. The fact that sensitivity analysis using only people age twenty-four or twenty-six produced similar results increases our confidence that the results were not strongly associated with mobility over time.

Extended insurance coverage for young adults under the ACA took effect on September 23, 2010. However, the date that the provision actually affected coverage depended on the dates on which insurance contracts were renewed. In many cases, this would have been between September 23, 2010, and January 1, 2011. In some cases, it might have been as late as September 22, 2011. This might have led to measurement error, which could have affected our results. We excluded September 1–December 31, 2010, from the analysis to reduce the effects of measurement error.

## Study Results

**ED VISITS AND PATIENTS** There were 11,442,331 ED visits available for analysis during the study period. After we removed visits without identifying information for the patient and those from a patient who was not a resident of the state of visit, we were left with 10,158,254 (89 percent) ED visits by 4,734,409 patients.

In our study sample, visits by young adults ages 19–25 accounted for 56.0 percent of the total ED visits, 56.1 percent in the pre period and 55.8 percent in the post period (Exhibit 1). People in this age group accounted for 56.6 percent of the patients in the pre period and 56.4 percent of the patients in the post period.

Of the ED visits, 91.9 percent were treat-and-release visits; 8.1 percent led to the patient's being admitted to an acute care hospital. Although statistically significant, there was little meaningful variation in patients' characteristics between the pre and post periods or between the two age groups in terms of sex, race or ethnicity, and state of residence (Exhibit 2).

**RELATIVE CHANGE IN ED USE** Among young adults ages 19–25, the number of ED visits per thousand people increased by 7.3 visits between the pre and post periods. (Exhibit 3). At the same time, ED visits for people ages 26–31 increased by 13.3 per thousand people. The difference-in-differences analysis estimated an absolute difference of –5.9 per thousand people among the younger group compared to the older group.

After regression adjustment, we found a relative increase of 2.1 percent in ED visits by the younger group and a 3.7 percent increase for the older group (Exhibit 3). Because the former had a smaller increase compared to the latter, the difference-in-differences analysis estimated a reduction of 1.5 percent in young adults ages 19–25, compared to people ages 26–31.

Among people ages 26–31, the probability of an ED visit increased between the pre and post periods by 1.7 percent (Exhibit 3). In comparison, young adults ages 19–25 had a smaller increase, of 1.5 percent. The small difference between the two groups was not significant.

**CHANGE IN EXPECTED PRIMARY PAYER** We determined the share of visits in which the expected primary payer was a public or private insurance plan and the share of visits in which the expected primary payer was “self-pay,” which we took to be an indication that the patient was not insured. In the pre-ACA period 29.8 percent of visits by young adults ages 19–25 were self-pay. This decreased to 26.9 percent (95% confidence interval: 26.8, 27.0), a 2.9-percentage-point (95% CI: 2.8, 3.1) reduction, after the ACA. In contrast, people ages 26–31 had a decrease of only 0.6 percentage points in self-pay visits.

Similarly, from the pre to the post period the younger group had a 3.1-percentage-point (95% CI: 3.0, 3.2) increase in ED visits covered by health insurance. The older group had a 0.3-percentage-point (95% CI: 0.2, 0.4) increase.

**VARIABLE EFFECTS ON ED VISITS** Exhibit 4 shows the heterogeneity of the effect of the ACA provision on ED use, stratified by state of residence and patients’ demographic characteristics. The provision was associated with larger changes in ED use in Florida and smaller changes in New York. The largest associated changes in ED use were observed for female and black patients. The smallest association between the provision and ED use was among Hispanic patients.

When we extrapolated the state-specific net differences in ED use, we found that the ACA provision appeared to be associated with a reduction in 2011 of 38,500 ED visits among young adults ages 19–25: 12,945 visits in California, 19,030 in Florida, and 6,525 in New York.

## EXHIBIT 1

### Emergency Department (ED) Visits And Patients, By Age Group, 2009–11

Age group (years)	ED visits		ED patients	
	Number	Percent	Number	Percent
<b>PRE-ACA</b>				
19–25	2,788,217	56.1	1,588,637	56.6
26–31	2,178,582	43.9	1,217,340	43.4
19–31	4,966,799	100.0	2,805,977	100.0
<b>POST-ACA</b>				
19–25	2,896,497	55.8	1,633,402	56.4
26–31	2,294,958	44.2	1,263,395	43.6
19–31	5,191,455	100.0	3,026,698	100.0

**SOURCE** Authors’ analysis of data from the 2009–11 State Inpatient Databases (see Note 28 in text) and State Emergency Department Databases (see Note 29 in text) from California, Florida, and New York. **NOTES** The pre-ACA (Affordable Care Act) period is September 1, 2009–August 31, 2010. The post-ACA period is January 1–December 31, 2011.

## Discussion

In this study of ED visits in three large and diverse US states, we found that ED use by young adults ages 19–25 expanded by a modest amount after the implementation of the ACA insurance expansion but that ED use by people ages 26–31, who were not included in the ACA expansion, grew faster. Relatively slower growth in use by

## EXHIBIT 2

### Characteristics Of Patients Using The Emergency Department, By Age Group And Time Period, 2009–11

Characteristic	Age group (years)			
	19–25		26–31	
	Pre-ACA (n=1,588,637)	Post-ACA (n=1,633,402)	Pre-ACA (n=1,271,340)	Post-ACA (n=1,263,395)
<b>SEX</b>				
Female	58.7	58.7	57.3	57.6
Male	41.2	41.2	41.8	41.6
<b>RACE OR ETHNICITY</b>				
White	44.8	43.8	44.9	44.5
Black	21.5	21.7	19.7	20.1
Hispanic	23.6	24.3	22.9	23.1
Other	8.0	8.3	9.3	9.4
Missing	2.1	1.9	3.3	2.9
<b>STATE OF RESIDENCE</b>				
California	37.0	37.0	38.2	37.8
Florida	29.0	29.0	28.4	28.7
New York	34.0	34.1	33.4	33.5
<b>HOSPITAL ADMISSION</b>				
Yes	7.4	7.1	9.3	8.9
No	92.6	92.9	90.7	91.1

**SOURCE** Authors’ analysis of data from the 2009–11 State Inpatient Databases (see Note 28 in text) and State Emergency Department Databases (see Note 29 in text) from California, Florida, and New York. **NOTE** All comparisons between the pre-ACA (Affordable Care Act) and post-ACA periods (September 1, 2009–August 31, 2010, and January 1–December 31, 2011, respectively) within and between age groups were significant ( $p < 0.0001$ ).



## EXHIBIT 3

## Changes In Emergency Department (ED) Use, By Age Group, 2009–11

Age group	ED visits per 1,000 population			Model estimates			
				Change in number of ED visits <sup>a</sup>		Change in probability of having at least one ED visit <sup>b</sup>	
	Pre-ACA	Post-ACA	Change	Percent	95% CI	Percent	95% CI
Ages 19–25	370.3	377.6	7.3	2.1	(1.8, 2.3)	1.5	(1.3, 1.8)
Ages 26–31	336.4	349.7	13.3	3.7	(3.4, 3.9)	1.7	(1.5, 2.0)
Difference	33.9	28.0	–5.9	–1.5*	(–1.9, –1.2)	–0.2**	(–0.5, 0.2)

**SOURCE** Authors' analysis of data from the 2009–11 State Inpatient Databases (see Note 28 in text) and State Emergency Department Databases (see Note 29 in text) from California, Florida, and New York. **NOTES** The model adjusted for sex, race or ethnicity, age, and state of residence. The pre-ACA (Affordable Care Act) period is September 1, 2009–August 31, 2010. The post-ACA period is January 1–December 31, 2011. CI is confidence interval. <sup>a</sup>The modeled relative change in the number of ED visits per patient was estimated using a negative binomial model, with change after the implementation of the ACA provision measured by the interaction of the post-ACA time period and the younger age group. <sup>b</sup>The modeled change in the probability of young adults ever using the ED pre-ACA versus post-ACA was estimated using logistic relative-risk regression analysis, with change after the implementation of the ACA provision measured by the interaction of the post-ACA time period and the younger age group. \*Chi-square *p* value < 0.001. \*\*Chi-square *p* value = 0.292.

the younger group is consistent with the view that the ACA decreased ED use in this age group.

Furthermore, we found a minimal relative decrease in the rate at which the younger group ever used the ED, compared to the rate for the older group. When we controlled for patients' demographic characteristics and compared changes in the two groups between the pre and post periods—that is, before and after the ACA provision was implemented—we estimated relative decreases of 1.5 percent in the number of ED visits and 0.2 percent in the probability of ever using the ED for young adults ages 19–25.

Our results do not provide evidence about the mechanism that generated the observed

changes. However, it is plausible that the ACA played a causal role. Both our results and other reports suggest that the ACA provision was associated with higher rates of insurance coverage among young adults ages 19–25.<sup>17,25</sup>

Better coverage could have facilitated better access to health care in non-ED settings such as doctors' offices, which could have reduced the use of ED care by young adults ages 19–25. It is plausible that such an effect was stronger among people with chronic conditions, who might formerly have used the ED more regularly as a source of care,<sup>20,31</sup> and weaker among those who might have used the ED less frequently—for example, for injuries or other acute events. If

## EXHIBIT 4

## Relative Change In Number Of Emergency Department (ED) Visits Per Patient, By Patients' Sex, Race Or Ethnicity, And State Of Residence, 2009–11

	Difference-in-differences estimate							
	All three states		California		New York		Florida	
	Percent	95% CI	Percent	95% CI	Percent	95% CI	Percent	95% CI
All patients	–1.5	(–1.9, –1.2)	–1.3	(–1.9, –0.6)	–1.0	(–1.6, –0.4)	–2.7	(–3.4, –2.0)
Sex								
Male	0.6	(–1.2, 0.0)	0.0	(–1.0, 0.9)	–0.2	(–1.1, 0.8)	–2.2	(–3.3, –1.1)
Female	–2.3	(–2.8, –1.8)	–2.3	(–3.1, –1.5)	–1.6	(–2.4, –0.8)	–3.3	(–4.2, –2.4)
Race or ethnicity								
White	–2.0	(–2.6, –1.5)	–1.7	(–2.6, –0.7)	–0.5	(–1.5, 0.5)	–4.1	(–5.1, –3.2)
Black	–3.5	(–4.2, –2.7)	–4.1	(–5.8, –2.3)	–4.2	(–5.3, –3.0)	–2.4	(–3.7, –1.2)
Hispanic	–0.9	(–1.6, –0.1)	–0.7	(–1.8, 0.4)	–2.4	(–3.8, –0.9)	0.2	(–1.6, 2.0)

**SOURCE** Authors' analysis of data from the 2009–11 State Inpatient Databases (see Note 28 in text) and State Emergency Department Databases (see Note 29 in text) from California, Florida, and New York. **NOTES** The exhibit shows the modeled estimated relative changes in the number of ED visits per patient using a negative binomial model after the implementation of the ACA provision, measured by the interaction of post-ACA time period and the younger age group. CI is confidence interval.

# In some populations, the net effect of further coverage expansions could be a reduction in ED use.

that were the case, better coverage could have had a greater effect on the number of ED visits than on the probability of having any ED visit.

Additionally, our findings indicate that the ACA had a minimal impact on the difference between the younger and older groups in terms of the probability of using the ED at least once a year. This may be understood in the context of past health care behavior by young adults. Many young adults might not seek coverage under the ACA provision. In fact, other studies have shown that young adults often opt out of coverage because they are generally in good health.<sup>18,20,32</sup> These adults might still see the ED as the simplest and most accessible form of health care. In addition, young adults who gained coverage would likely have lower costs for ED care, which could result in increased ED use. The minimal effects of the ACA provision that we observed on ED use in young adults could reflect the offsetting impacts of both mechanisms.

We observed variations in the association between the ACA provision and ED use in different subpopulations. First, our results indicate that the ACA had a stronger association with ED use among women than among men. This may be of interest given a recent finding of Benjamin Sommers and colleagues: Men had a larger estimated increase in insurance coverage as a result of the ACA provision than women had.<sup>17</sup> Young women in particular are in need of regular preventive care for reproductive and general health issues, including human papillomavirus—which

affects approximately half of women ages 20–24.<sup>18</sup>

Furthermore, we found variation in the association of the ACA provision and ED use across racial and ethnic categories. Blacks and whites had similar relative decreases in ED use. However, Hispanics had smaller decreases overall and in individual states. In particular, our data indicate that the ACA was not associated with the number of ED visits per patient for Hispanics in California and Florida. This is particularly troubling given the large numbers of Hispanics in these states.

The ACA provision is dependent on parents' insurance coverage. Thus, this result could be explained in part by the differences in adult insurance coverage in these states, since Hispanics are the group with the highest percentage of people who lack health insurance.<sup>33</sup> Further studies are needed to understand the heterogeneity of the ACA's effects across patient demographic characteristics.

## Conclusion

Our results suggest that the ACA's dependent coverage provision is associated with a relative decrease in the number of ED visits for young adults but a minimal relative decrease in the rate at which they ever used the ED. Further expansions of coverage under the ACA could facilitate expanded ED use by reducing economic barriers to using the ED among newly insured populations. Such expansions could also facilitate these populations' use of better non-ED care, which would tend to reduce the demand for ED care. These results hold out the possibility that in some populations, the net effect of further coverage expansions could be a reduction in ED use.

As EDs face capacity challenges, it is important to consider how to meet the broader underlying needs of young adults through other channels and ensure the needed availability of these alternative health services. With the coverage expansion under health care reform, changes in health care use may be expected. ■

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## NOTES

- 1 Tang N, Stein J, Hsia RY, Maselli JH, Gonzales R. Trends and characteristics of US emergency department visits, 1997–2007. *JAMA*. 2010; 304(6):664–70.
- 2 Hines A, Frazee T, Stocks C. Emergency department visits in rural and non-rural community hospitals, 2008 [Internet]. Rockville (MD): Agency for Healthcare Research and Quality; 2011 Jun [cited 2014 Jul 8]. (H-CUP Statistical Brief No. 116). Available from: <http://www.hcup-us.ahrq.gov/reports/statbriefs/sb116.pdf>
- 3 Hsia RY, Brownell J, Wilson S, Gordon N, Baker LC. Trends in adult emergency department visits in California by insurance status, 2005–2010. *JAMA*. 2013;310(11):1181–3.
- 4 Agency for Healthcare Research and Quality. Welcome to H-CUPnet [home page on the Internet]. Rockville (MD): AHRQ; [cited 2014 Jul 8]. Available from: <http://hcupnet.ahrq.gov/>
- 5 Burt CW, McCaig LF. Trends in hospital emergency department utilization: United States, 1992–99. *Vital Health Stat* 13. 2001;(150): 1–34.
- 6 McCaig LF, Nawar EW. National Hospital Ambulatory Medical Care Survey: 2004 emergency department summary. *Adv Data*. 2006;(372): 1–29.
- 7 Backus LI, Bindman AB. Low-income Californians' experiences with health insurance and managed care. *J Health Care Poor Underserved*. 2001;12(4):446–60.
- 8 Zuckerman S, Shen YC. Characteristics of occasional and frequent emergency department users: do insurance coverage and access to care matter? *Med Care*. 2004;42(2): 176–82.
- 9 LaCalle E, Rabin E. Frequent users of emergency departments: the myths, the data, and the policy implications. *Ann Emerg Med*. 2010;56(1):42–8.
- 10 Fuda KK, Immekus R. Frequent users of Massachusetts emergency departments: a statewide analysis. *Ann Emerg Med*. 2006;48(1):9–16.
- 11 Taubman SL, Allen HL, Wright BJ, Baicker K, Finkelstein AN. Medicaid increases emergency-department use: evidence from Oregon's Health Insurance Experiment. *Science*. 2014;343(6168):263–8.
- 12 Decker SL. In 2011 nearly one-third of physicians said they would not accept new Medicaid patients, but rising fees may help. *Health Aff* (Millwood). 2012;31(8):1673–9.
- 13 Newton MF, Keirns CC, Cunningham R, Hayward RA, Stanley R. Uninsured adults presenting to US emergency departments: assumptions vs data. *JAMA*. 2008;300(16):1914–24.
- 14 Grumbach K, Keane D, Bindman A. Primary care and public emergency department overcrowding. *Am J Public Health*. 1993;83(3):372–8.
- 15 Clancy CM, Eisenberg JM. Emergency medicine in population-based systems of care. *Ann Emerg Med*. 1997;30(6):800–3.
- 16 Walls CA, Rhodes KV, Kennedy JJ. The emergency department as usual source of medical care: estimates from the 1998 National Health Interview Survey. *Acad Emerg Med*. 2002;9(11):1140–5.
- 17 Sommers BD, Buchmueller T, Decker SL, Carey C, Kronick R. The Affordable Care Act has led to significant gains in health insurance and access to care for young adults. *Health Aff* (Millwood). 2013;32(1): 165–74.
- 18 Nicholson JL, Collins SR, Mahato B, Gould E, Schoen C, Rustgi SD. Rite of passage? Why young adults become uninsured and how new policies can help, 2009 update [Internet]. New York (NY): Commonwealth Fund; 2009 Aug [cited 2014 Jul 8]. (Issue Brief). Available from: [http://www.commonwealthfund.org/~media/files/publications/issue-brief/2009/aug/1310\\_nicholson\\_rite\\_of\\_passage\\_2009.pdf](http://www.commonwealthfund.org/~media/files/publications/issue-brief/2009/aug/1310_nicholson_rite_of_passage_2009.pdf)
- 19 Kellermann AL. Coverage matters: insurance and health care. *Ann Emerg Med*. 2002;40(6):644–7.
- 20 Newacheck PW, Stoddard JJ, Hughes DC, Pearl M. Health insurance and access to primary care for children. *N Engl J Med*. 1998;338(8):513–9.
- 21 Callahan ST, Cooper WO. Access to health care for young adults with disabling chronic conditions. *Arch Pediatr Adolesc Med*. 2006;160(2): 178–82.
- 22 Congressional Budget Office. Letter to the Hon. Nancy Pelosi [Internet]. Washington (DC): CBO; 2010 Mar 18 [cited 2014 Jul 8]. Available from: [http://www.cbo.gov/sites/default/files/cbofiles/attachments/hr4872\\_0.pdf](http://www.cbo.gov/sites/default/files/cbofiles/attachments/hr4872_0.pdf)
- 23 Cantor JC, Monheit AC, DeLia D, Lloyd K. Early impact of the Affordable Care Act on health insurance coverage of young adults. *Health Serv Res*. 2012;47(5):1773–90.
- 24 O'Hara B, Brault MW. The disparate impact of the ACA-dependent expansion across population subgroups. *Health Serv Res*. 2013; 48(5):1581–92.
- 25 Mulcahy A, Harris K, Finegold K, Kellermann A, Edelman L, Sommers BD. Insurance coverage of emergency care for young adults under health reform. *N Engl J Med*. 2013;368(22):2105–12.
- 26 Sommers BD, Kronick R. The Affordable Care Act and insurance coverage for young adults. *JAMA*. 2012;307(9):913–4.
- 27 Ginde AA, Lowe RA, Wiler JL. Health insurance status change and emergency department use among US adults. *Arch Intern Med*. 2012; 172(8):642–7.
- 28 Agency for Healthcare Research and Quality. Healthcare Cost and Utilization Project. Overview of the State Inpatient Databases (SID) [Internet]. Rockville (MD): AHRQ; [last modified 2014 Jun 27; cited 2014 Jul 8]. Available from: <http://www.hcup-us.ahrq.gov/sidoverview.jsp>
- 29 Agency for Healthcare Research and Quality. Healthcare Cost and Utilization Project. Overview of the State Emergency Department Databases (SEDD) [Internet]. Rockville (MD): AHRQ; [last modified 2014 Jun 27; cited 2014 Jul 8]. Available from: <http://www.hcup-us.ahrq.gov/seddoverview.jsp>
- 30 Skov T, Deddens J, Petersen MR, Endahl L. Prevalence proportion ratios: estimation and hypothesis testing. *Int J Epidemiol*. 1998;27(1): 91–5.
- 31 Finkelstein A, Taubman S, Wright B, Bernstein M, Gruber J, Newhouse JP, et al. The Oregon Health Insurance Experiment: evidence from the first year. *Q J Econ*. 2012;127(3): 1057–106.
- 32 Reid GJ, Irvine MJ, McCrindle BW, Sananes R, Ritvo PG, Siu SC, et al. Prevalence and correlates of successful transfer from pediatric to adult health care among a cohort of young adults with complex congenital heart defects. *Pediatrics*. 2004;113(3 Pt 1):e197–205.
- 33 Centers for Disease Control and Prevention. People without health insurance coverage, by race and ethnicity [Internet]. Atlanta (GA): CDC; [page last updated 2008 Dec 3; cited 2014 Jul 8]. Available from: <http://www.cdc.gov/Features/dsHealthInsurance/>