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## REVIEW ARTICLE

# How Have ACA Insurance Expansions Affected Health Outcomes? Findings From The Literature

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**ABSTRACT** A growing body of literature examining the effects of the Affordable Care Act (ACA) on nonelderly adults provides promising evidence of improvements in health outcomes through insurance expansions. Our review of forty-three studies that employed a quasi-experimental research design found encouraging evidence of improvements in health status, chronic disease, maternal and neonatal health, and mortality, with some findings corroborated by multiple studies. Some studies further suggested that the beneficial effects have grown over time and thus may continue to grow if the ACA insurance expansions remain in force. However, not all studies reported a significant positive relationship between ACA provisions that expanded insurance coverage and health status. We highlight the challenges facing researchers, including the importance of nonmedical factors in determining individual health and the use of outcome data predominantly drawn from self-reports. In closing, we identify opportunities to enhance researchers' understanding of the relationship between the ACA insurance expansions and health outcomes using new data sources, including electronic health records.

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One of the key goals of the Affordable Care Act (ACA) was to improve health outcomes by expanding insurance coverage to millions of Americans. There is tremendous interest in understanding the effects of the ACA on the nation's health, given the US's poor performance on many health measures relative to other developed nations, its high medical spending, and its substantial racial/ethnic disparities in health outcomes.<sup>1-3</sup>

A growing body of literature is using quasi-experimental research—which uses a comparison group and regression analysis to control for multiple variables—to examine the effects of insurance expansions on health. We summa-

rize findings from this particularly rigorous body of literature, presenting results for four categories of health outcomes among nonelderly adults: self-reported physical and mental health, chronic disease, maternal and neonatal health, and mortality. We highlight results for the overall nonelderly adult population, as well as for different demographic subpopulations of interest—including racial/ethnic minority groups. We pay special attention to studies that allowed us to trace changes in the ACA's health effects over time. We conclude by highlighting limitations of the existing research and identifying promising areas for future research.

This article is informative for ongoing policy debates about health care reform and potential

changes to the ACA. It complements other reviews that discuss the ACA's impacts on health outcomes<sup>4-7</sup> and the relationship between insurance coverage and health more generally.<sup>8</sup> It updates these prior reviews with analyses of more recent articles, including some that used stronger data sources and stronger study methods and used objectively assessed health measures. In addition, this article takes a deeper dive into the health impacts of the ACA by summarizing new evidence on the effects of the coverage expansions on health over time.

### Background On Coverage Expansions

One of the first insurance expansions of the ACA was the dependent coverage provision, which allows young adults to be included on their parents' insurance plans until age twenty-six. The provision was implemented in September 2010, and an estimated 5.5 million young adults took advantage of this form of coverage at some point within the first five years.<sup>9</sup>

A second component aimed to expand Medicaid coverage to all nonelderly adults with incomes below 138 percent of the federal poverty level, regardless of parental or disability status. A 2012 Supreme Court ruling made expansion optional for states, and only thirty-six states and the District of Columbia adopted the expansion in the period 2014–19. About twelve million adults gained Medicaid coverage under the ACA.<sup>10</sup>

The third insurance expansion component of the ACA was the creation of health insurance exchanges (known as Marketplaces). For people who lacked employer-sponsored or public coverage before the ACA, nongroup policies could be prohibitively expensive or restrictive. In 2014 the ACA established online Marketplaces where people can purchase regulated nongroup insurance policies, with government subsidies for those with incomes below 400 percent of poverty. In 2018 over ten million people enrolled in Marketplace plans.<sup>10</sup>

Other insurance-related provisions of the ACA included an individual mandate that required almost all individuals to have insurance or be subject to a tax penalty (the penalty for noncompliance has since been repealed), an employer mandate that required large employers to provide health insurance to full-time employees, and rules that prevented insurers from denying coverage or charging higher premiums to people with preexisting conditions.

### Selection Of Relevant Articles

We identified studies for potential inclusion in our review by conducting a Google Scholar

search for those released in the period January 2011–January 2020 with keywords related to the ACA and health (online appendix exhibit A presents the exact search phrases).<sup>11</sup> We included publicly available working papers in our search. This search yielded 222 nonunique results. We first deleted duplicate studies, those that had not examined health outcomes, and those that had studied populations other than nonelderly adults, which left us with 57 studies.

We then selected those that employed quasi-experimental research methods. To meet this definition, we required that studies include a reasonable comparison group and use regressions to control for differences in outcomes over time or across groups that were not directly affected by the policy being studied. Most of the studies tested or commented on whether the key assumptions required to interpret the results as causal estimates were met. For example, studies using difference-in-differences designs tested the assumption of parallel prepolicy trends in outcomes in treatment and comparison groups. While studies that employ quasi-experimental research approaches do not provide definitive evidence of causality, using regression to control for other potential factors increases the likelihood that observed associations flow from causal relationships. We did not consider the magnitude or statistical significance of effect sizes when deciding which studies to include. These selection criteria resulted in a final sample of 43 studies. Appendix exhibit B presents a detailed summary of these studies.<sup>11</sup>

We then grouped the studies into four categories, based on health outcomes: self-reported physical and mental health, chronic disease, maternal and neonatal health, and mortality. Some studies contributed evidence to multiple categories. We flagged studies that presented analyses by racial/ethnic groups to examine the potential impacts of the ACA on disparities. We also identified studies that calculated separate estimates by year of policy implementation, to contribute to our discussion of changes in health effects over time.

Of the forty-three studies included in our review, thirty-nine focused on the health effects of either the dependent coverage provision of 2010 or the state Medicaid expansions of 2014. These policies affected only clearly defined groups (adults younger than age twenty-six and low-income adults in Medicaid expansion states, respectively) and, compared to other policies, are easier to evaluate using quasi-experimental analyses. While other ACA provisions such as the individual mandate and insurance exchanges have likely affected health, they have been less studied because they were implemented nation-

wide at the same time—which makes it difficult to disentangle the impacts of specific policy changes. In this article we focus on the evidence related to the dependent coverage provision and Medicaid expansions. We then briefly summarize the smaller literature on the health outcomes of other coverage provisions.

## Effects On Health Outcomes

This section summarizes studies that examined the health effects of the coverage expansions.

**SELF-REPORTED PHYSICAL AND MENTAL HEALTH** We first examined nineteen studies of self-reported health (exhibit 1), as this outcome was most often included in survey data and provides a strong summary measure of respondents' overall health. Though self-assessed health may seem subjective, a large literature has shown that it is highly correlated with objective measures of health, such as mortality.<sup>12,13</sup> Multiple studies reported that the dependent coverage provision substantially improved young adults' perceptions of their overall, physical, and mental health.<sup>14–16</sup> The estimates from these studies, when combined with the change in insurance status for young adults under the provision, suggest improvements in self-reported health of 12–86 percent among newly insured people (appendix exhibit G).<sup>11</sup>

Findings from the Medicaid expansions were more varied. Many studies found improvements in self-reported health.<sup>17–24</sup> There were also reductions in the probabilities of experiencing depression and psychological distress and in the numbers of days spent in poor mental health.<sup>17,20–22,25</sup> However, other studies did not detect significant impacts of the Medicaid expansions on self-reported health (exhibit 1).<sup>25–32</sup> Estimates in the studies that did find evidence of better self-reported health suggested improvements of 21–27 percent among the newly insured (appendix exhibit G).<sup>11</sup> Results were sensitive to the study sample used, with greater evidence of health improvements among childless adults and those with chronic health conditions—who face particularly high medical needs and expenses in the absence of insurance.<sup>17,21</sup>

**CHRONIC DISEASE** Next we examined fifteen studies of the ACA's impact on the diagnosis and management of chronic diseases such as diabetes, heart disease, cancer, and obesity (exhibit 2). Few studies examined changes in these outcomes under the dependent coverage provision, but there was evidence that the provision reduced body mass index for young adults<sup>14</sup> and increased early-stage cancer diagnosis.<sup>33</sup>

Several studies examined the effects of the Medicaid expansion on chronic disease. Three

of these studies documented increases in early-stage cancer diagnosis, which is associated with improved patient outcomes.<sup>34–36</sup> Other studies reported improved cardiovascular health, including better blood pressure control among patients in community health centers, increased probability of early uncomplicated disease presentation among hospitalized patients, and increased diagnosis rates of diabetes and high cholesterol.<sup>27,28,37–40</sup> There was no evidence that the Medicaid expansions affected body mass index or rates of obesity.<sup>20,21,24,31</sup>

**MATERNAL AND NEONATAL HEALTH** Our third group included three studies that focused on maternal and neonatal health, which is reflective of mothers' health and health care (exhibit 3). The dependent coverage provision increased insurance coverage for reproductive-age women, which was linked in this literature to the reduced probability of preterm birth but not to changes in the likelihood of cesarean delivery, low birthweight, or admission to the neonatal intensive care unit.<sup>41</sup> Most states' Medicaid programs covered pregnant women generously even before the ACA. However, there are potential avenues to improved outcomes through better preconception health, improved contraception access, early prenatal care initiation, and increased access to care between pregnancies. The research to date found no detectable effects of the expansions on neonatal health.<sup>42,43</sup>

**MORTALITY** Finally, we analyzed eleven studies that examined mortality (exhibit 4). Measuring mortality effects is challenging because death is

### EXHIBIT 1

Findings from 19 studies on the Affordable Care Act's coverage expansions and their effects on nonelderly adults' self-reported physical and mental health

Effects	Number of studies
<b>DEPENDENT COVERAGE PROVISION</b>	
Increased reports of excellent health or decreased reports of fair or poor health	2
Increased reports of both excellent physical and mental health	1
No impact on number of days per month of poor mental or physical health	1
<b>EXPANSION OF ELIGIBILITY FOR MEDICAID</b>	
Improved self-reported health	8
No impact on self-reported health	8
Fewer days per month of poor physical health	1
No impact on the number of days per month of poor physical health	5
Decreased probability of depression or psychological distress	2
Fewer days per month of poor mental health	1
No impact on number of days per month of poor mental health	5

**SOURCE** Authors' summary of findings from nineteen relevant studies in the final review sample published between January 2011 and January 2020. **NOTE** Appendix exhibit C provides full sources for the studies (see note 11 in text).

EXHIBIT 2

Findings from 15 studies on the Affordable Care Act’s coverage expansions and their effects on chronic disease among nonelderly adults

Effects	Number of studies
<b>DEPENDENT COVERAGE PROVISION</b>	
Reduced body mass index and rates of obesity	1
Increased early-stage cancer diagnosis	1
<b>EXPANSION OF ELIGIBILITY FOR MEDICAID</b>	
Increased rates of early-stage cancer diagnosis	3
Increased rates of diabetes diagnosis	4
Increased rates of high cholesterol diagnosis	2
Increased probability of hypertension and cholesterol control	2
Increased probability of early uncomplicated disease presentation among patients admitted to hospitals for surgical conditions	1
No impact on diabetes control	3
No impact on body mass index or rates of obesity	4

**SOURCE** Authors’ summary of findings from fifteen relevant studies in the final review sample published between January 2011 and January 2020. **NOTE** Appendix exhibit D provides full sources for the studies (see note 11 in text).

a rare event for nonelderly people, and most standard mortality data sets lack the statistical power needed to detect plausible effects for the general population.<sup>44</sup> Some studies aimed to study targeted populations that gained coverage. Notably, Sarah Miller and coauthors linked federal survey and administrative death data sets to identify a sample of near-elderly adults who were most likely to benefit from Medicaid expansion, based on income and citizenship status. The authors found that the Medicaid expansion reduced mortality by 9.4 percent for near-elderly adults, which was equivalent to a reduction of 39–64 percent for the new Medicaid enrollees.<sup>45</sup> Others found decreases in cardiovascular mortality among middle-aged adults<sup>46</sup> and mortality reductions for patients with end-stage renal disease,<sup>47</sup> but no effect on in-hospital mortality for

EXHIBIT 3

Findings from 3 studies on the Affordable Care Act’s coverage expansions and their effects on maternal and neonatal health

Effects	Number of studies
<b>DEPENDENT COVERAGE PROVISION</b>	
Reduced probability of preterm birth, especially for unmarried women	1
No impact on likelihood of cesarean delivery, low birthweight, or NICU admission	1
<b>EXPANSION OF ELIGIBILITY FOR MEDICAID</b>	
No impact on low birthweight, preterm birth, or small size for gestational age	2

**SOURCE** Authors’ summary of findings from three relevant studies in the final review sample published between January 2011 and January 2020. **NOTES** Appendix exhibit E provides full sources for the studies (see note 11 in text). NICU is neonatal intensive care unit.

acute myocardial infarction patients.<sup>48</sup>

The dependent coverage provision was estimated to have reduced disease-related mortality by 6.1 percent among young adults<sup>49</sup>—an effect whose magnitude was similar to that of the coverage change for this group. One study found large reductions in opioid mortality for young adults,<sup>50</sup> while others found no significant impact on opioid mortality<sup>51</sup> or in-hospital mortality for young adult trauma patients.<sup>52</sup>

**OTHER COVERAGE PROVISIONS** Four studies examined the health effects of other ACA provisions enacted in 2014. Anna Goldman and coauthors used longitudinal survey data to compare previously uninsured adults whose incomes made them eligible for Marketplace subsidies to those with similar incomes who had employer coverage before the ACA. This study found that Marketplace coverage increased rates of diagnosis of high cholesterol and hypertension for low-income adults but had no detectable effect on diabetes diagnosis rates.<sup>53</sup> Two other studies used triple-differences models that exploited pre-2014 differences in county-level uninsurance rates to estimate the effects of the individual mandate and Marketplaces after the second and third years of ACA implementation.<sup>31,32</sup> The authors found improvements in self-reported health in the third year.<sup>32</sup>

Of particular note was a randomized pilot study in which the Internal Revenue Service sent letters to some but not all individuals who were subject to the individual mandate penalty. Researchers found that new coverage resulting from the letters was associated with a 12 percent decline in mortality among people ages 45–64.<sup>54</sup>

**IMPROVEMENTS IN RACIAL/ETHNIC HEALTH DISPARITIES** Few studies have examined whether improved coverage under the ACA for historically disadvantaged populations translated to better health status.

One of the three studies that estimated separate effects by race/ethnicity found that, compared to non-Hispanic whites, non-Hispanic blacks experienced a greater reduction in poor mental health days or health-related activity limitations, and Hispanics had a larger reduction in the probability of fair or poor health status.<sup>22</sup> Another study found larger increases in hypertension control among Hispanics.<sup>37</sup> Finally, one study estimated a narrowing of disparities in neonatal health outcomes between non-Hispanic whites and non-Hispanic blacks after Medicaid expansion.<sup>42</sup>

Overall, the small literature on this topic suggested that racial/ethnic health disparities improved for hypertension, certain self-assessed health outcomes, and neonatal health outcomes. However, there is little evidence related to other

outcomes, such as chronic disease. Moreover, disparities are still high in the post-ACA era.<sup>55</sup>

### Changes In Health Effects Over Time

Next, we traced changes in the ACA's health effects over time. While coverage rates increased almost immediately after implementation of the ACA coverage expansions in 2014, they continued to grow substantially over the following two years.<sup>56</sup> Therefore, early evaluations did not capture the full reach of the coverage changes. There are also reasons to expect lags in downstream impacts of insurance coverage on health outcomes because of delays in finding providers, using health care, and modifying health behaviors. Furthermore, some types of medical care, such as preventive care and chronic disease management, may take longer to improve health.

We compared findings from three studies that examined the ACA's effects on nonelderly adults' self-reported health over time (exhibit 5). These studies estimated the change in each year post-ACA, relative to a pre-ACA baseline. We classified them by the policy change studied: Medicaid expansions or non-Medicaid ACA components that were implemented in 2014. Not all studies found evidence of improvements in self-reported health. However, those that did often found that the ACA's effects on health were growing over time. We observed this pattern across two separate sets of studies, despite differences in the policies examined and measures of health used.

#### EXHIBIT 4

#### Findings from 11 studies on the Affordable Care Act's coverage expansions and their effects on mortality among nonelderly adults

Effects	Number of studies
<b>DEPENDENT COVERAGE PROVISION</b>	
Reduced disease-related mortality rates	1
Reduced opioid mortality rates	1
No impact on opioid mortality rates	1
No impact on in-hospital mortality rates for young adult trauma patients	1
<b>EXPANSION OF ELIGIBILITY FOR MEDICAID</b>	
Typical mortality data lack statistical power to detect effects	1
Reduced mortality rates for all nonelderly adults	1
Reduced mortality rates for disadvantaged near-elderly adults	1
Reduced mortality rates for patients with end-stage renal disease	1
Reduced cardiovascular mortality rates	1
No impact on in-hospital mortality rates for acute myocardial infarction patients	1
No impact on opioid mortality rates	1

**SOURCE** Authors' summary of findings from eleven relevant studies in the final review sample published between January 2011 and January 2020. **NOTE** Appendix exhibit F provides full sources for the studies (see note 11 in text).

### Discussion

The burgeoning body of research on the health effects of the ACA suggest promising improvements among nonelderly adults for certain health outcomes and some reductions in racial/ethnic disparities. Studies reported that the dependent coverage provision improved self-

#### EXHIBIT 5

#### Findings from 3 studies on the coverage expansions of the Affordable Care Act (ACA) and their effects on nonelderly adults' self-reported health over time, by study population

Outcomes	Pre-ACA baseline (mean % of population)	Estimated change from baseline by post-ACA year <sup>a</sup> (percentage points)			
		Year 1	Year 2	Year 3	Year 4
<b>MEDICAID EXPANSION<sup>b</sup></b>					
All Medicaid expansion states <sup>c</sup>					
Very good or excellent health	46.2	-2.5	-2.9	-1.4	-2.1
Arkansas and Kentucky <sup>d</sup>					
Excellent health	12.2	2.4	5.0**	5.1*	— <sup>e</sup>
Fair or poor health	39.6	0.6	-3.7	-6.0*	— <sup>e</sup>
<b>NON-MEDICAID ACA COMPONENTS<sup>f,g</sup></b>					
Good or better health	84.0	-0.4	0.1	1.5***	— <sup>e</sup>
Very good or excellent health	53.6	2.0***	2.0	4.3***	— <sup>e</sup>
Excellent health	20.4	1.4	0.9	3.5***	— <sup>e</sup>

**SOURCE** Authors' summary of findings from three relevant studies in the final review sample published between January 2011 and January 2020. <sup>a</sup>Non-Medicaid expansion population estimates are implied effects of the ACA at the mean pretreatment uninsurance rate and are from Courtemanche C, et al. Effects of the Affordable Care Act on health care access and self-assessed health after 3 years (see note 32 in text). <sup>b</sup>Among people ages 19–64 with incomes of 138 percent of the federal poverty level or less. <sup>c</sup>Miller S, Wherry LR. Four years later (see note 29 in text). <sup>d</sup>Sommers BD, et al. Three-year impacts of the Affordable Care Act (see note 19 in text). <sup>e</sup>Estimates not available for these years. <sup>f</sup>Courtemanche C, et al. (see note 32 in text). <sup>g</sup>Among people ages 19–64. \* $p < 0.10$  \*\* $p < 0.05$  \*\*\* $p < 0.01$

reported health, increased early-stage cancer diagnosis, reduced poor birth outcomes, and decreased opioid mortality for young adults. Findings for the Medicaid expansion were more varied. Results for self-reported physical and mental health were mixed, though the expansion increased early-stage cancer diagnosis, improved cardiovascular health, and reduced mortality for certain groups of nonelderly adults. In addition, there was some evidence that the health effects of the ACA grew over time, based on self-reported health measures.

**CHALLENGES FACED IN THE LITERATURE** While increased insurance coverage under the ACA is clearly detectable in any standard study design, examining how this coverage increase translates to improved health outcomes is more challenging. Increased use of medical care might not immediately result in measurable improvements in health, which is a composite outcome of many social, environmental, genetic, economic, and medical factors. There have been documented increases in the use of preventive care and prescription drugs for chronic disease management under the ACA.<sup>20,57</sup> However, US policy had already expanded coverage to some of the most vulnerable populations (low-income mothers, infants, people with disabilities, and elderly people) before the ACA, and many uninsured people had already received subsidized emergency and hospital care as a result of the Emergency Medical Treatment and Active Labor Act of 1986.

In addition, few studies used objectively measured health data to measure the impact of the ACA. Most of the research to date has relied on self-reported health information in national surveys with larger samples. Surveys that contain clinical health information often have smaller sample sizes, which may make it difficult to detect morbidity effects. While self-reported evidence is strongly suggestive, it is difficult to know how changes in self-reported health map to changes in actual health. Increased insurance coverage may positively or negatively affect self-perceptions of health, as people increase their interactions with the health care system and receive new information about their health—including diagnoses of chronic disease. In addition, improved financial status and protection against the high costs of health care may affect people's overall sense of well-being, which could influence their reported health status.<sup>58</sup>

The recent literature also points to statistical challenges in detecting health effects related to changes in insurance coverage.<sup>44</sup> Data sets with objective health information, such as mortality rates or clinical measures, often do not contain information on individual characteristics such as income that can be used to identify targeted

recipients of insurance expansions. Analyses of these data require that any health effects be detectable at the population level, but many people did not gain coverage under the ACA.

**KEY AREAS FOR FUTURE WORK** Many gaps in the literature remain. There has been little work on mental health conditions beyond self-assessed mental health. This is a particularly important outcome to study, given elevated rates of “deaths of despair” from suicide and drug overdoses.<sup>59</sup> Researchers also know little about health impacts for populations that previously faced high barriers in obtaining care, including racial/ethnic minority groups, rural populations, and self-employed people. In addition, there is a need to study other ACA provisions by finding ways to identify causal effects of the Marketplaces and the individual and employer mandates. Finally, there is a dearth of evidence on the health impacts of the portions of the ACA that change the nature of insurance—such as coverage of ten essential benefits.

As additional years of data become available, it will be important to explore longer-term health impacts. At the same time, it will be necessary to address an additional challenge: measurement error caused by individual changes in eligibility for the ACA programs over time—for example, resulting from moves between states and fluctuations in income.

There is also a critical need to use clinical, rather than self-reported, health measures, such as those available through insurance claims, physical examinations, and laboratory test data. Efforts under way to use electronic health records (EHRs) to track patient health may deepen researchers' understanding of the health impacts of the ACA's insurance expansions. For instance, researchers are beginning to assemble high-quality data sets on patients' morbidity outcomes over time through longitudinally linked EHRs; others are linking insurance data to administrative health care and mortality records for full populations of states.<sup>60</sup>

## Conclusion

Improving outcomes in population health and reducing disparities were and remain key goals of the ACA. A growing literature suggests that there have been promising improvements for certain health outcomes, including early-stage cancer diagnosis and cardiovascular health. However, data are generally lacking on clinical measures of health, and results for self-reported physical and mental health are mixed. Recent research points to clear mortality improvements from insurance expansions and provides evidence of growing health effects of the ACA over

time. But while these results are encouraging and suggest that the ACA's health benefits will continue to accrue in coming years, the future of the ACA and the direction of national health

care reform remain uncertain. The future health impacts of the ACA will largely be determined by policy decisions made or deferred moving forward. ■

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