PPIC PUBLIC POLICY INSTITUTE OF CALIFORNIA

25 YEARS

FEBRUARY 2019

Shannon McConville,
Caroline Danielson,
Renee Hsia

Emergency Department Use in California

Demographics, Trends, and the Impact of the ACA

SUMMARY

CONTENTS

Technical appendices to this report are available on the PPIC website.

Hospital emergency departments (EDs) have a vital role in our health care system. As the only guaranteed access point to medical care for all Californians, they are often characterized as the safety net of the safety net. But they are also a relatively expensive setting to provide health services. A substantial uptick in ED use over the past several years has raised questions about the impact of the Affordable Care Act (ACA). In particular, the large expansion of the Medi-Cal program under the ACA has raised concerns that the dramatic declines in uninsured residents in such a short timeframe may be spurring increases in ED use.

In this report, we look at trends in ED use from 2005 to 2016, with a particular focus on rates of ED use since ACA insurance expansions were fully implemented in 2014. We find no evidence that the ACA was responsible for increased ED use—indeed, our analysis suggests that ED visit rates for non-elderly adults would have been higher in the absence of the coverage expansions.

Our key findings include:

- **Large reductions in the number of uninsured Californians** as a result of the 2014 ACA expansion of major insurance coverage options did not increase ED use among adults under age 65, and may in fact have reduced ED use among middle-age adults ages 35–54.
- **Among non-elderly adults, women age 19–34 have the highest rates of ED use** (42 visits per 100 population in 2016), at least partly due to pregnancy-related visits.
- **The vast majority (about 90%) of all ED visits made by adults under age 65 are outpatient visits**—patients are treated and released the same day. Only about 10 percent of ED visits result in admission to the hospital.
- **ED outpatient use has increased substantially across all demographic groups and for all reasons.** Non-elderly adults experienced the largest uptick, increasing by 38 percent between 2005 and 2016.

While our findings on the impact of the ACA are encouraging, the growing use of EDs for complex needs requires closer consideration of how EDs fit into our evolving health care system. Medi-Cal has a key role to play in monitoring and managing ED use. This is both because one in three Californians has health insurance through the Medi-Cal program and because Medi-Cal enrollees have higher visit rates compared to those with private coverage and the uninsured.

More broadly, as state policymakers contemplate further insurance expansions with an eye toward universal coverage, it will be essential to continue monitoring patterns of health care use and to carefully evaluate efforts aimed at curbing ED use.

Introduction

Hospital emergency departments (EDs) are a critical component of our health care system, offering the only guaranteed source of health care available 24 hours a day, 365 days a year. They are required by federal law to treat all people in need of medical care regardless of whether they have insurance coverage or are able to pay for that care.[1] But emergency departments are also relatively expensive health care providers, particularly for conditions that could be treated in other outpatient settings such as doctor offices or urgent care clinics. The high cost, coupled with the fact that ED use for certain conditions is considered an indicator of poor access to outpatient care, have long made EDs a focus for policymakers and practitioners alike (Sommers & Simon 2017a).

The Affordable Care Act (ACA)—the largest health care reform in more than 50 years—has brought renewed attention to ED use. With the ACA, state and federal policymakers aimed to both improve access to health coverage and care, with an eye toward managing health care costs. In theory, insurance coverage can support both aims, but only if cost-effective care is coordinated and health care resources are allocated to maximize value. Given the sizable amount of public funds that go toward health care expenditures, it is crucial that health care dollars be deployed in the most efficient way possible. ED use can serve as a bellwether for these goals—and a comprehensive examination of patterns of ED use offers an important assessment of the success of ACA reforms.

There is no doubt that ACA coverage expansion in California succeeded in substantially increasing access to insurance coverage. Since 2014—when major coverage expansions went into effect—California's uninsured rate has declined more than 10 percentage points, which translates into 4 million fewer uninsured Californians. Much of the coverage gain has been driven by expanded eligibility and enrollment in Medi-Cal, the state's Medicaid program; Medi-Cal enrollment has grown by more than 50 percent and the program now provides health insurance coverage to about one-third of the state's population. While the coverage expansion is clearly a success, the large growth in such a short time span raises concerns about the ability of the health care system to meet the needs of newly insured patients.

As we move into the fifth year of ACA implementation, rigorous examination of the effects of coverage expansions becomes vitally important. We start by looking at trends in ED use from 2005 through 2016 across various subgroups. We then offer a detailed analysis of the effect the ACA coverage expansions may have had on ED use over the past few years.

[1] The Emergency Medical Treatment and Active Labor Act (EMTALA), a federal law passed in 1986, requires hospitals that participate in the Medicare program—essentially all hospitals—to provide screening, stabilization, and all necessary medical care regardless of insurance coverage or the ability to pay. Although there is debate about what EMTALA requires and it has been subject to clarifying legislation, it is considered a fundamental component of the US health care system that promises access to emergency medical care (Rosenbaum 2013).

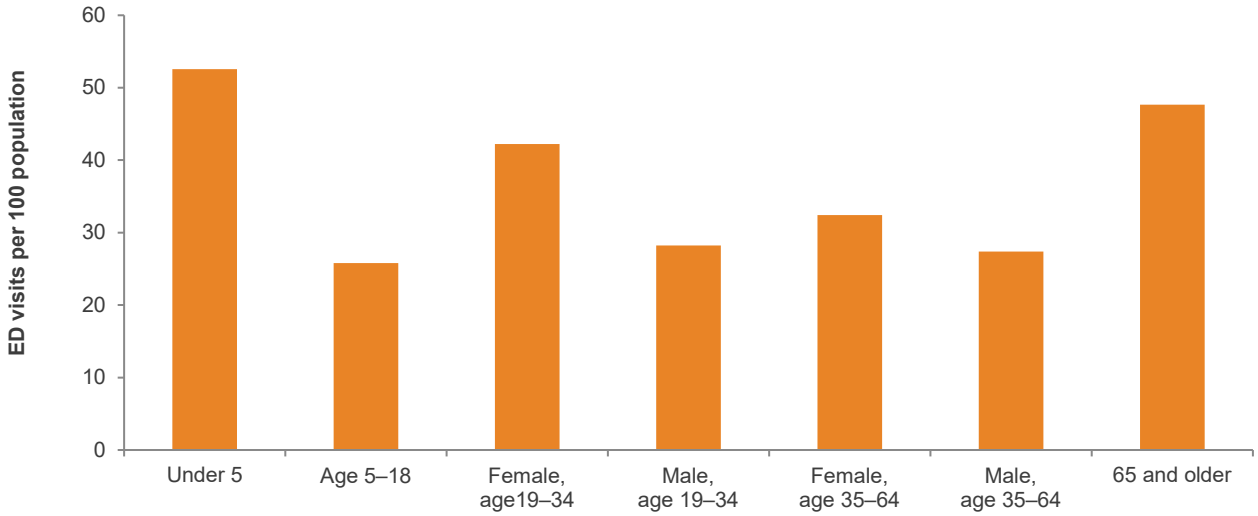
ED Use Has Been Increasing

People visit the ED for everything from serious injuries or heart attacks requiring immediate, lifesaving care to relatively minor conditions that could be handled in other outpatient settings such as a doctor's office or clinic. Figure 1 shows that very young and older Californians have higher rates of ED use than the ages in between. High visit rates for young children are driven largely by infants and toddlers and reflect parental concern for very young children. Higher visit rates among adults over age 65 are also to be expected: as people age, their health deteriorates.

Young women (age 19–34) have the highest per capita visit rate among non-elderly adults (about 42 visits per 100). Pregnancy is a major reason for this: about one in seven ED outpatient visits by women age 19–34 are related to pregnancy complications. Older women (age 35–64) have a considerably lower ED visit rate—about 32 per 100—but this is higher than the rates for non-elderly adult men; all male adult age groups have visit rates of about 28 per 100 population.

FIGURE 1

Young children, seniors, and women age 19–34 have the highest ED visit rates



SOURCE: Author calculations from emergency department and inpatient discharge records from the California Office of Statewide Health Planning and Development (OSHPD) department. National Institute of Health, SEER population estimates.

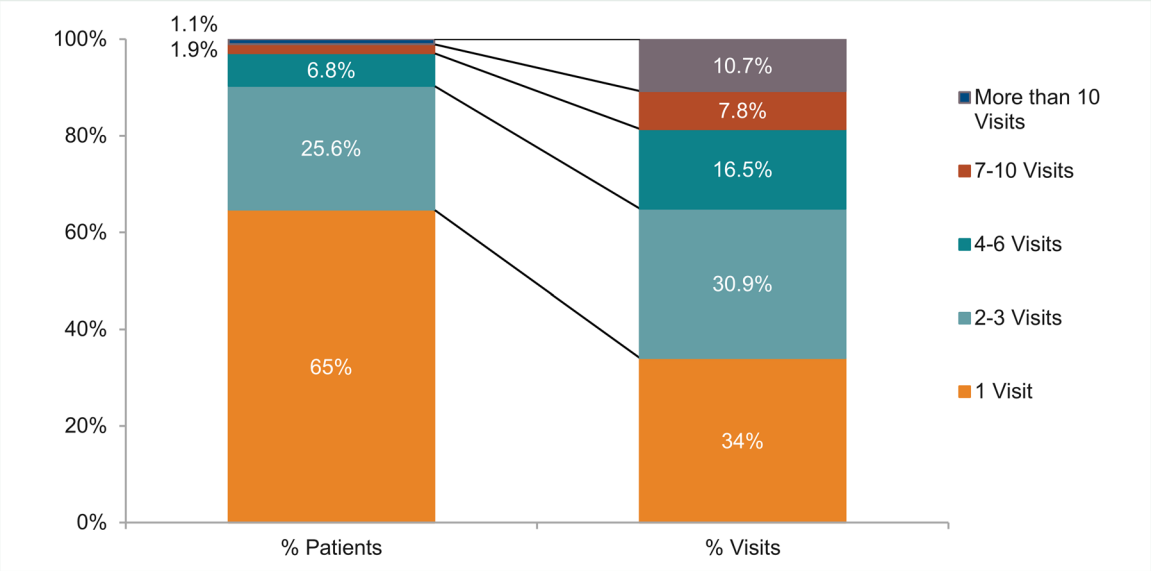
NOTE: Includes all ED visits made in calendar year 2016. Population denominators are from SEER.

It is important to note that ED visit rates do not account for people who make multiple visits in any given time period (see text box). So these rates should not be taken to mean that one in every three adult males visited the ED in 2016.

Frequent ED users account for a disproportionate share of ED visits

Our examination of ED visits does not take into account that some people visit the ED more than once in any given time period—possibly many times—while others never do. Frequent ED users—referred to as "frequent flyers"—are often the focus of provider and policy interventions designed to better manage health care utilization and resources.

In California, nearly two-thirds of ED patients in 2016 made only one ED visit and accounted for about one-third of total ED visits. One in ten patients made four or more visits and were responsible for about one-third of all ED visits. Heavy ED users—those who make more than 10 visits in a year—made up only 1 percent of ED patients but accounted for nearly 11 percent of all ED visits.



SOURCE: Author calculations of OSHPD discharge data for 2016.

NOTES: Patient-level counts are based on linking ED visits across patients using a unique record linkage number (RLN). About 10 percent of all ED visits for adults over age 18 do not have an RLN and are excluded.

Interventions designed to reduce frequent ED use have yielded mixed results, suggesting that there is not a one-size-fits-all strategy that can address this issue. Most frequent ED users are insured (and those covered by public insurance such as Medicaid and Medicare are overrepresented). Frequent flyers are also heavy users of other sources of health care, including outpatient, primary care, and other ambulatory encounters (Billings and Raven 2013). This group also has a high prevalence of chronic illnesses and high rates of hospital admission, which suggests poor health status (McConville et al. 2018; Zuckerman and Shen 2004). Mental health conditions, in particular, are much more prevalent among frequent ED users and mental health severity is associated with increased ED visits (Niedzwiecki et al. 2018).

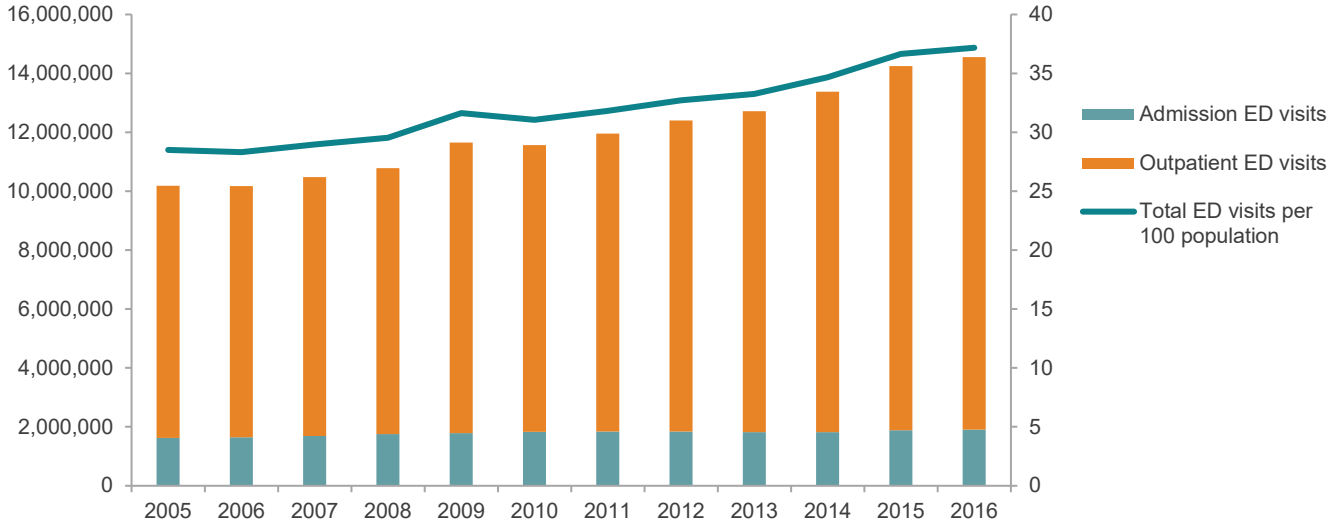
The role of hospital EDs has evolved considerably over the past half century—their ability to provide lifesaving medical care and diagnose complex conditions has expanded dramatically. This increased capacity contributed to the growth in demand, as did changes in clinical practices that led to primary care physicians serving greater numbers of patients and focusing on preventive care and managing chronic conditions (Kellermann et al. 2013). Office-based physicians increasingly rely on EDs to evaluate complex patients with potentially serious problems,

rather than managing these patients themselves (Morganti et al. 2013). A recent study found that one-quarter of all ED visits nationwide were referrals by an outpatient provider (Raven and Steiner 2018).[2]

In California, ED use has increased considerably, both in terms of the total number of ED visits and on a per capita basis (Figure 2). In 2005, California EDs recorded just over 10 million visits. Just 10 years later, the number of ED visits had grown to more than 14.5 million—an increase of more than 40 percent. When we adjust for population growth over this time period, we still observe a sizable increase from about 28 ED visits per 100 population in 2005 to more than 37 ED visits per 100 people in 2016—a 31 percent increase. Looking just at the first two years after the major health insurance expansions took effect, we see a 7 percent increase (from nearly 35 visits per 100 in 2014 to a little over 37 visits per 100 in 2016).

FIGURE 2

Total ED visits and per capita ED visits have been growing over the past decade



SOURCE: Author calculations from OSHPD hospital discharge data.

NOTE: Denominators for the per-capita measures are from SEER population data.

These upward trends are not unique to California. Across the country, ED use has been increasing since at least the 1990s, with the largest uptick in use leading up to the passage of the ACA recorded among adults ages 19 to 64 (Burt and McCaig 2001; Tang et al. 2010). In 2015, national estimates of per capita ED use reached an all-time high of about 46 visits per 100 population (Sun et al. 2018). And while California's per capita usage is lower than the national rate, the recent statewide increase seems to be outpacing the national trend.

Outpatient ED Visits Account for Most of the Increase

The vast majority (89%) of ED visits result in patients being treated and released the same day (referred to as outpatient ED visits in this report). Figure 3 breaks down ED visits made by male and female patients age 19–64, showing the shares of visits that resulted in a hospital admission—and for those discharged directly from the ED, the primary diagnoses for the visit. Men have higher shares of inpatient admissions than women (13.3% vs. 9.7%). Men also have higher shares of visits for injuries (20.2% vs. 13.8%) and chronic conditions (12.4% vs. 10.3%),

[2] This study was not able to distinguish between referrals made by primary care physicians during office visits or clinic visits versus recommendations from other sources such as nurse advice lines.

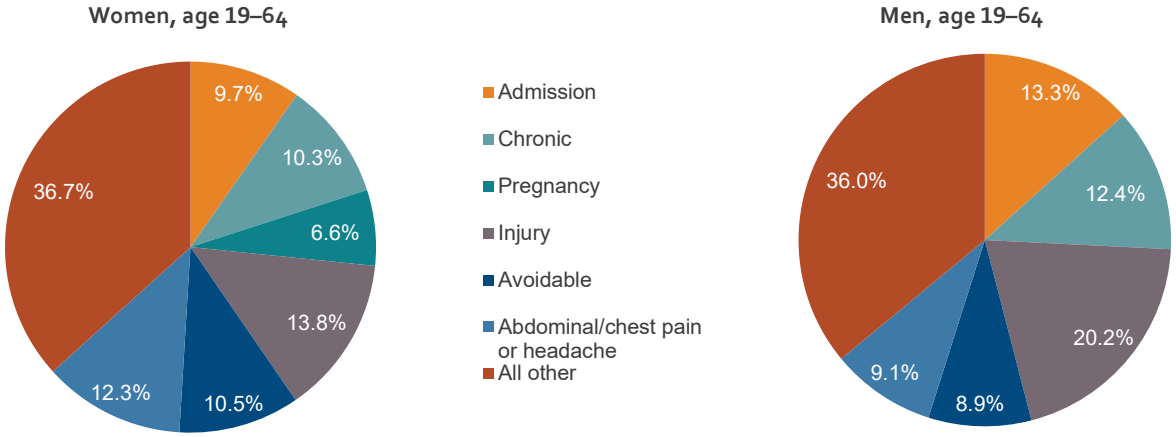
which include treatment for diseases such as cancer and diabetes.[3] Nearly 40 percent of ED visits for chronic conditions involve behavioral health issues, including mental illness, substance use, and alcohol-related problems. Women make higher shares of ED visits for abdominal pain, chest pain, or headaches (12.3% vs. 9.1%) and nearly 7 percent of ED visits made by women are for pregnancy-related conditions.

Avoidable ED visits are a focus of policymakers and practitioners looking for ways to control costs and manage hospital resources. In the late 2000s, for example, initiatives to address avoidable ED visits among Medi-Cal beneficiaries were a focus of quality improvements implemented by the Department of Health Care Services in partnership with Medi-Cal managed care plans (California Department of Health Care Services 2012). To identify avoidable visits, we use new emergency department prevention quality indicators (PQIs) developed and validated by the Agency for Healthcare Research and Quality (Davies et al. 2017).[4]

Overall, we find that only one in ten ED visits among adults were potentially preventable—meaning that they could have been avoided with access to high-quality community-based care. Women have a slightly higher share of avoidable visits (10.5%) than men (8.9%). Among visits classified as avoidable, nearly 30 percent were for treatment of upper respiratory infections, followed by cellulitis (18%), back pain (13%), and dental issues (11%).

FIGURE 3

Avoidable visits make up a relatively small share of ED visits made by non-elderly men and women



SOURCE: Author calculations from OSHPD emergency department and inpatient discharge records.

NOTES: Figure includes all ED visits made by adults age 19–64 between January 2014 and September 2015. Diagnostic categories for outpatient ED visits are based on the primary diagnosis. We restrict our analysis of diagnoses to this time period because of the change from ICD-9 to ICD-10 codes and the sources we use to categorize ED visits into broader categories rely on and/or have only be validated using ICD-9 codes. Avoidable visits are classified according to new AHRQ ED prevention quality indicators (Davies et al. 2017). Pain-related conditions include abdominal pain, chest pain, or headaches (not classified as chronic), pregnancy-related conditions, and injury-related visits are based on ICD-9 codes matched to Clinical Classifications Software (CCS) and chronic conditions are based on the Chronic Condition Indicator (CCI) developed and maintained by the Healthcare Cost and Utilization Project (HCUP) sponsored by AHRQ.

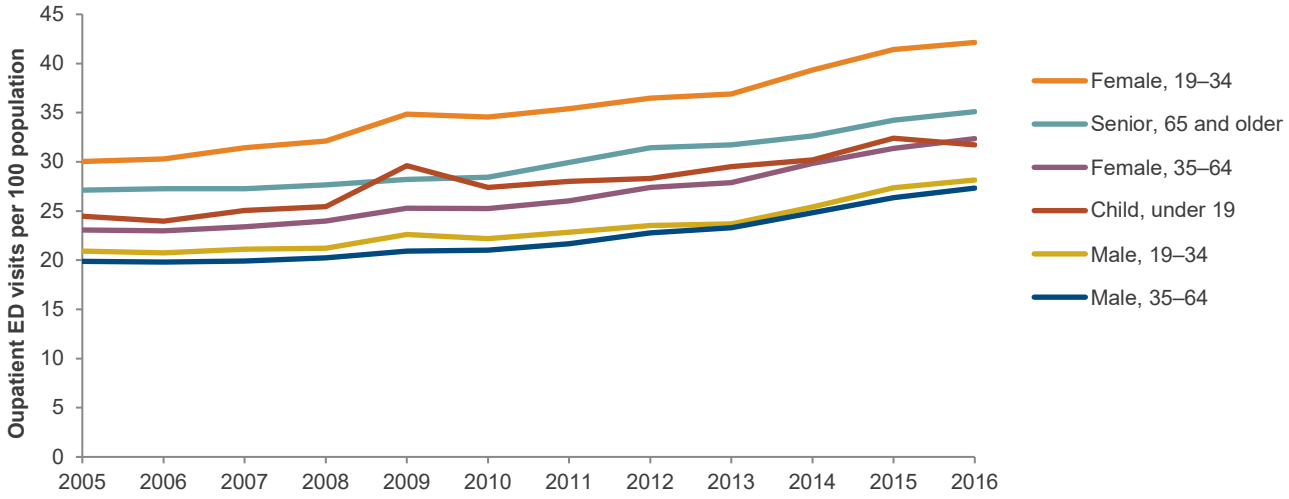
[3] There is a slight overlap between diagnosis codes used for avoidable visits and chronic conditions. In addition, some visits for headaches, including migraine and cluster headaches, are in the chronic conditions category. We create mutually exclusive categories to classify conditions using the following hierarchy – first we classify avoidable visits, then chronic conditions not considered avoidable, then pain-related conditions not considered avoidable or chronic.

[4] Much of the current research on avoidable visits either relies on an algorithm developed more than 20 years ago or focuses on avoidable hospitalizations in an inpatient setting rather than avoidable visits in an ED setting (Davies et. al. 2017; Durand et. al. 2011). An algorithm developed by physicians and researchers at NYU assigns probabilities that an ED visit falls into one of four severity categories based on ICD-9 diagnostic codes (Billings et al., 2000). The ambulatory care sensitive conditions (ACSC) classification system identifies hospitalizations that could have been avoided with access to community-based health care. ACSC rates are used to assess differences in health care resources across communities and intended to inform policies to improve health care access.

Most of the recent increase in overall ED use has been driven by outpatient ED visits. Controlling for population growth, overall per capita outpatient ED visits grew nearly 35 percent over this time period, compared to a 7 percent increase in per capita ED visits that resulted in a hospital admission. In 2016, non-elderly adults made about 32 outpatient ED visits per 100 people, up from 23 visits in 2005—an increase of 38 percent (Figure 4). Young women (age 19–34), a group with an already high use rate, had the largest increase (40%). However, there were also large increases among non-elderly men (35%), while rates among seniors and children increased 29 percent.

FIGURE 4

Outpatient ED visits rates have increased across all age groups



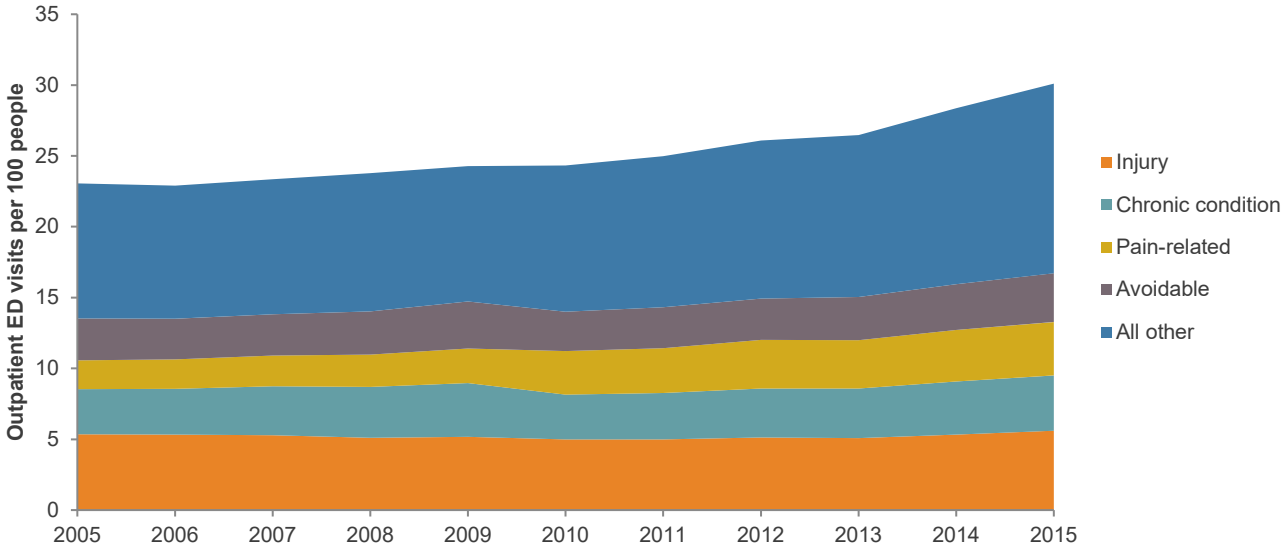
SOURCE: Author calculations from OSHPD discharge data and SEER population estimates.

NOTE: Figure includes only outpatient ED visits in the numerator and uses the appropriate population denominator for the age/sex group. See Technical Appendix B for more details.

When we break down outpatient ED visits by primary diagnosis, we find increases across all types (Figure 5). The smallest increase was for rates of injury-related ED visits: this type of visit—which accounted for the largest share of categorized outpatient ED use—increased by about 7 percent between 2005 and 2015. ED visit rates for chronic conditions grew more—by 22 percent—from about 3.2 visits per 100 population in 2005 to 3.9 in 2015. There was a slightly smaller uptick in avoidable visits, which increased about 18 percent. The largest increase—more than 80 percent—was in visits for which the primary diagnosis was related to abdominal pain, chest pain, or headaches.

FIGURE 5

Trends in ED visits for particular conditions vary over time



SOURCE: Author calculations from OSHPD discharge data.

NOTES: Figure includes all outpatient ED visits made by adults age 19–64. Diagnoses are based on the ICD-9 codes recorded as the primary diagnosis for the ED visit. These codes are categorized into more meaningful categories using the Clinical Classification Software algorithm from AHRQ. Injury and pain-related health conditions rely on CCS categories; those in the pain-related category include abdominal pain, chest pain, and headaches. Back pain is also a common primary diagnosis, but most ED outpatient visits for back pain are included in the avoidable category. ED visits categorized as avoidable are based on the ED PQI diagnoses. Due to the change from ICD-9 codes to ICD-10 codes in October 2015, we only include through quarter 3 of 2015 in all analyses of diagnoses or types of ED visits.

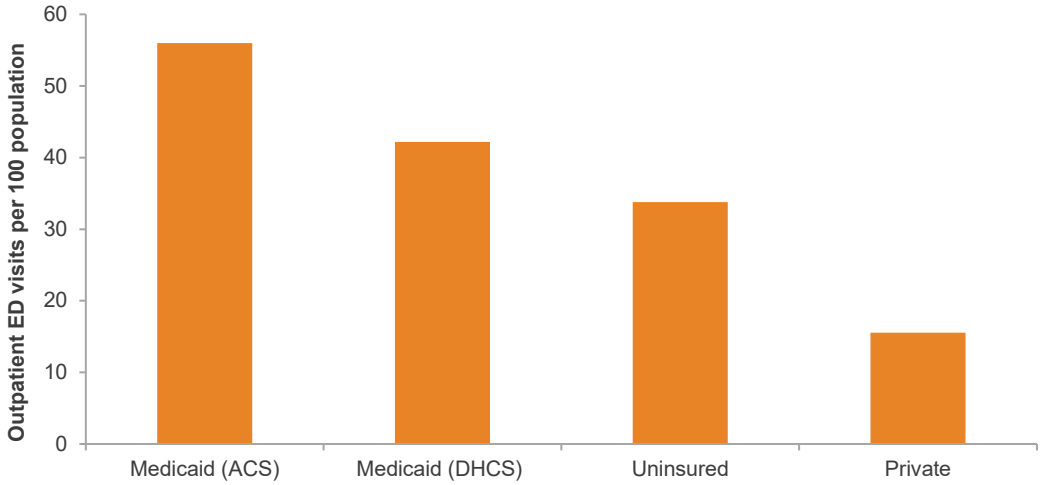
ED Use Varies across Sources of Insurance Coverage

Next, we look at the relationship between health insurance coverage and ED use. There are well-documented differences in ED usage patterns across insurance coverage groups. Historically, Medicare and Medicaid beneficiaries have had the highest ED visit rates in both California and the nation; ED rates are lower among the uninsured and lowest among the privately insured (Hsia 2018; Sun et al. 2018).

Figure 6 shows per capita outpatient ED visit rates for California adults in 2016. Because survey data tend to underestimate those with public coverage, we used two measures for the Medi-Cal visit rate, each with a different population denominator (Boudreaux 2015). According to both measures, non-elderly adult Medi-Cal beneficiaries have much higher per capita ED rates (55 or 42 visits per 100) than either the privately insured (16 visits per 100) or the uninsured (34 visits per 100). This is consistent with previous state and national measures.

FIGURE 6

Per capita ED use among adults age 19–64 is highest among those covered by Medi-Cal



SOURCE: Author calculations from OSHPD discharge data, 2016 American Community Survey, and DHCS Medi-Cal Certified Eligibles – Recent Trends.

NOTES: The population denominators for the Medicaid (ACS), uninsured, and private visit rates are estimates for the 19-to-64-year-old population from the ACS. The population denominator used for the Medicaid (DHCS) visit rate is based on counts of Medi-Cal certified eligibles from the California Department of Health Care Services for July 2016.

There are several reasons for observed differences in ED use across coverage groups. The most obvious is related to differences in the out-of-pocket costs for an ED visit. Generally, Medicaid beneficiaries do not have any out-of-pocket costs for ED use.[5] This is quite different than most private insurance, which often requires fairly sizable patient co-pays to discourage ED use in favor of other outpatient settings. And while the uninsured may not be able to pay, the fact that they are often billed for the care they receive creates barriers.

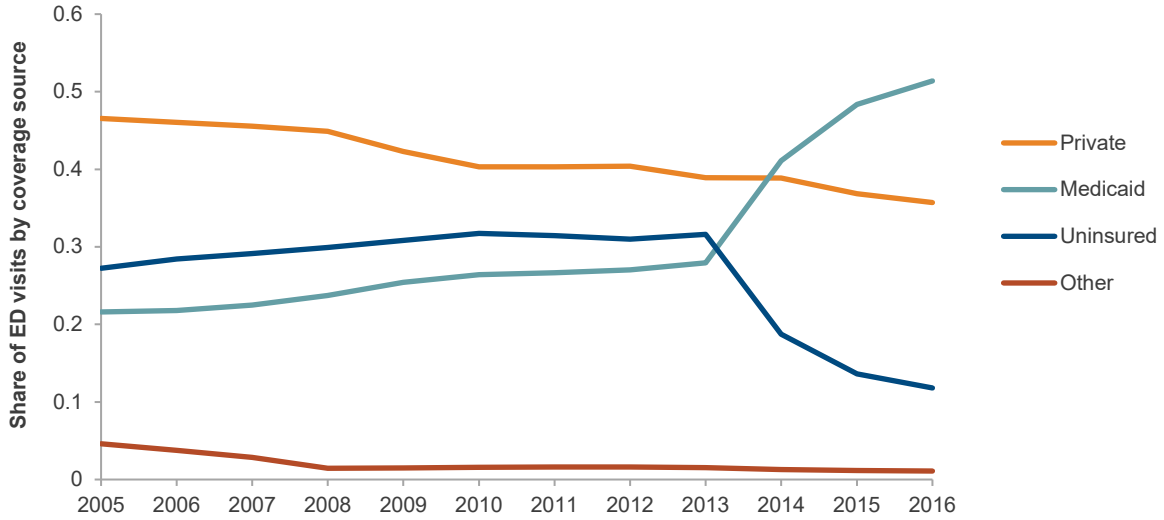
Other research exploring ED use among Medicaid beneficiaries finds that patients who use the ED more have higher physical health burdens and use more outpatient care as well (Billings and Raven 2013). Qualitative work suggests that Medicaid beneficiaries access the ED rather than outpatient care because they lack transportation, have limited access to urgent appointments with a primary care provider, and because it is more convenient. (Capp et al. 2016; Cheung et al. 2012).

As we might expect, the composition of ED visits by coverage source shifted after 2013, when many low-income adults gained access to Medi-Cal (Figure 7). The share of outpatient ED visits among adults 19 to 64 who are covered by Medi-Cal increased from 26 percent in 2013 to 47 percent by 2016. There were commensurate declines in the share of uninsured ED visits—from 29 percent in 2013 to 11 percent in 2016. The proportion of visits covered by private insurance also declined by about 3 percent between 2013 and 2016. It is not clear why we observe the small decline in ED use among the privately insured, but it is important to note that we do not have information on the type of private coverage, and patients' out-of-pocket costs for ED care vary considerably across private insurance carriers.

[5] In recent years, more states have established co-payments for ED visits by Medicaid enrollees; these co-pays are quite low—typically in the $5 range. Evidence is mixed on whether co-pays have any impact on ED usage among Medicaid recipients (Sabik and Gandhi 2016; Mortensen 2010).

FIGURE 7

After the ACA coverage expansion, outpatient ED visits with Medi-Cal increased while uninsured visits declined



SOURCE: Author calculations of OSHPD discharge data.

NOTES: Figure includes outpatient ED visits for adults age 19–64. "Other coverage" includes Medicare visits, which for the non-elderly population is a proxy for disability. Coverage is based on expected payer source recorded on the discharge abstract.

Clearly, the ACA changed the payer mix for outpatient ED visits; the share covered by Medi-Cal increased about 20 percentage points, while the share for uninsured visits declined by 18 percentage points. While we do not have information on how many ED patients may have enrolled as a result of an ED visit, we do know that Medi-Cal now pays for almost half of all ED visits among non-elderly adults. Beyond the shifts in coverage sources for ED visits, it is also important to investigate whether the ACA caused changes in trends in ED use.

Presumptive eligibility for Medi-Cal

Presumptive eligibility (PE) allows certain health care providers to give temporary Medicaid coverage to individuals likely to qualify for the program based on their income and household size. The ACA expanded the scope of presumptive eligibility from children and pregnant women to all individuals who are income-eligible for Medicaid. It also made hospital presumptive eligibility a requirement (previously, it was a state option).

California implemented the Hospital Presumptive Eligibility (HPE) program on January 1, 2014, providing immediate access to temporary Medi-Cal coverage for uninsured patients who visit the ED and meet eligibility criteria. A hospital employee can determine that an uninsured patient is eligible for Medi-Cal. Nearly all hospitals in the state are qualified HPE providers.

Moreover, Medicaid coverage is retroactive, meaning that the Medi-Cal program will pay for health care services provided up to three months *before* enrollment of any individual who would have been eligible during that period. Presumptive eligibility and retroactive Medicaid coverage are intended as safeguards to low-income, vulnerable populations and the health care providers that serve them (Musumeci and Rudowitz 2017).

How Did ACA Coverage Expansions Affect ED Use?

In this final section, we investigate how the Affordable Care Act—the largest expansion in insurance coverage in the last 50 years—affected ED use in California. As we have seen, the relationship between health insurance coverage and emergency department use is complex and multifaceted. On the one hand, insurance coverage typically reduces the out-of-pocket costs of patients seeking care at the ED, which could lead to an increase in ED visits. On the other hand, insurance coverage should expand access to other outpatient health services and could reduce ED use, especially if those gaining coverage are being connected to a primary care provider through managed care plans—and most Medi-Cal patients are in managed care plans (Sommers et al. 2017).

As a result, it is not immediately clear how the ACA coverage expansions might be affecting ED visits, particularly in the relatively short time since the ACA was implemented. Existing research provides mixed evidence. Studies that examine state-based coverage expansions that pre-date the ACA have come to different conclusions. The Oregon Health Insurance Experiment—a randomized, controlled study of Medicaid expansion—found that ED visits increased significantly among individuals who gained Medicaid coverage compared to a control group made up of people who remained uninsured after signing up for a lottery to receive Medicaid (Taubman 2016; Finkelstein 2017). However, other studies that used quasi-experimental research designs have found significant declines in ED visits attributable to increased coverage. A study of ED use in Massachusetts found strong evidence that outpatient ED visits significantly declined as the result of major state-level reforms (Miller 2012).

The few studies that focus on how the ACA Medicaid expansion in 2014 impacted ED use nationally have also generated conflicting results. Pines et al. (2016) find no significant change in ED use across hospitals in states that expanded Medicaid compared to those that did not, while Sommers et al. (2017b) report significant reductions in ED use among patients who gained ACA coverage in select states. In contrast, Nikpay et al. (2017) find significantly higher per capita ED rates comparing Medicaid expansion states to states that chose not to expand their Medicaid programs.

These differences suggest that the effect of coverage expansions on ED use is determined by many factors, including the population groups most affected by the expansion, the types of coverage and health plans in which people enroll, and the health care resources available across geographic areas (Sommers and Simon 2017a). Thus, a thorough analysis of what has happened across California in the post-ACA environment is needed to help policymakers and practitioners understand the impact of coverage expansion.[6]

[6] A recent study provides a detailed examination of the impacts of the ACA for California including an analysis of ED use (Duggan et al. 2019). This study uses similar data to ours, but employs different methods and finds ED use increased as a result of the ACA. Specifically, the study employs a regression discontinuity research design focused on adults aged (64/65) for its main analysis of the effects of the ACA. For more discussion of how their analysis relates to ours, see Technical Appendix E.

Data and methods

Our analysis relies on hospital discharge records submitted to the California Office of Health Planning and Development. Licensed hospitals in the state are required to submit information on all hospital encounters, including ED visits. We combine this information with population counts from the National Institutes of Health SEER program to develop our per capita ED visit rates. We rely on Census Bureau data for county-level uninsured rates and household income estimates and Bureau of Labor Statistics data for employment levels (see Technical Appendix B).

To estimate the effect of the ACA coverage expansion on ED use, we apply an analytic method that uses the variation across county uninsured rates to isolate the effect of insurance coverage on ED use. While the ACA coverage expansion went into effect at the same time across the state, counties with high uninsured rates in the years prior to the coverage expansion had the potential to experience larger changes in coverage. We identify counties with higher-than-average (75th percentile) uninsured rates in the pre-ACA period and those with relatively low pre-ACA uninsured rates (25th percentile). We use a difference-in-differences approach to compare the post-reform changes in per capita ED visit rates across these two county groups. For more information, refer to Technical Appendix C.

Isolating the Impact of the ACA on ED Use

As we have seen, ED use had been increasing well before the ACA. To disentangle the role that the ACA coverage expansions may have played from longstanding trends in ED use, we focus on a comparative county analysis, using a strategy developed by Miller (2012) in her examination of coverage expansions in Massachusetts.[7]

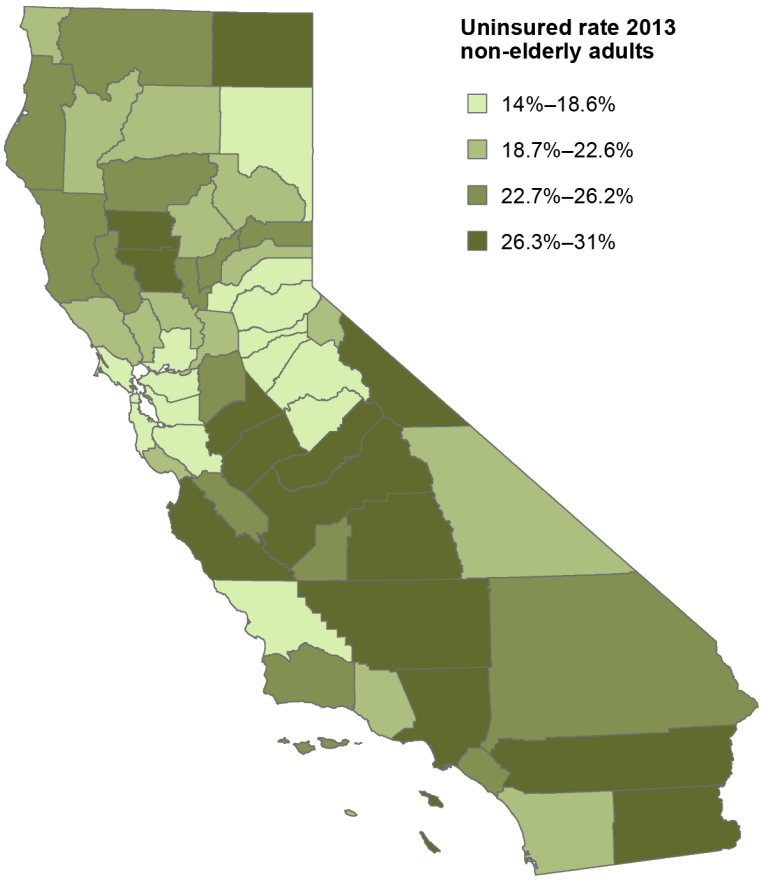
In the years leading up to ACA implementation, there were large differences in uninsured rates across California's counties. In 2013, the year before major ACA coverage expansions, more than 25 percent of adults age 18 to 64 lacked health insurance coverage in some counties—mainly in the central and southern parts of the state. In other counties, fewer than 15 percent of adults were uninsured (Figure 8).[8]

[7] While we use the analytic approach developed by Miller (2012) for the main results presented in this report, we also considered an alternative analytic strategy to examine how the ACA affected ED use. In Technical Appendix E, we consider whether the elderly could be a reasonable pre-ACA control group in place of counties with low uninsured rates.

[8] We use the pre-ACA uninsured rate rather than the actual observed drop in the uninsured rate that resulted from the coverage expansion. This minimizes the possible effect of counties with larger observed declines in their uninsured rate taking different actions to increase coverage and those efforts could be related to changes in ED use. However, counties with higher uninsured rates did in fact experience larger declines compared to counties that had lower pre-ACA rates.

FIGURE 8

Pre-ACA uninsured rates varied considerably across California counties



SOURCE: US Census Bureau, Small Area Health Insurance Estimates.

NOTES: Uninsured rates are for adults age 18–64. Rate categories are based on quartiles. Counties with the darkest shading had uninsured rates for adults age 19–64 in the top quartile—75th percentile or above. They are: Colusa, Fresno, Glenn, Imperial, Kern, Los Angeles, Madera, Merced, Modoc, Mono, Monterey, Riverside, Stanislaus, and Tulare.

We leverage these large differences in pre-ACA uninsured rates to estimate the relationship between changes in per capita ED use and increased insurance coverage that resulted from the ACA. We do so by comparing the trends in ED use in the group of 15 counties with the highest pre-ACA uninsured rates (75th percentile and higher) to a similar number of counties that had much lower uninsured rates (25th percentile and below) before the ACA expansion. (We also identified counties in the middle of the uninsured distribution—between the 25th and 75th percentile.) This allows us to separate out the effects of the dramatic increase in insurance coverage from the pre-existing growth in ED visit rates.

The statewide drop in the uninsured rate among non-elderly adults between 2013 and 2016 was about 13.5 percentage points. Looking at our two groups of counties, we observe a much larger decline (16.1 percentage points) in uninsured rates for the first group (counties with the highest pre-ACA uninsured rates) than for the second group (counties with lowest pre-ACA uninsured rates), which saw a 9.9 percentage point reduction in their uninsured rate.[9]

[9] Differences in uninsured rates across counties—in both the pre- and post-ACA periods—may be related to the distribution of undocumented immigrants across the state. Undocumented immigrants were largely excluded from the ACA coverage expansions and are not eligible for comprehensive Medi-Cal coverage except in limited cases. While California expanded full Medi-Cal coverage to undocumented immigrant children in 2016, undocumented adults can only receive emergency services, also referred to as "limited scope" Medi-Cal, if they meet other eligibility requirements. We do not explicitly adjust for undocumented immigrants in our

In our analysis, we take a number of steps to further ensure that we are isolating the effect of the ACA coverage expansions from other pre-existing and trending factors. First, we include county indicators to account for underlying differences across counties that do not vary over time. Second, we include annual measures of county-level demographics, economic conditions, and health care resources—such as per capita counts of ED beds, community clinic providers, and clinic visits—that may have changed within counties over our study period and could be contributing to the trends we see in ED use. Third, we restrict our analytic time period to 2011 (three years before ACA coverage expansions) through 2016 (three years after) because there were differential ED-use trends across counties during the Great Recession (see Technical Appendix C for more details). Finally, we control for county implementation of Low-Income Health Programs (LIHPs) during our pre-ACA period. LIHPs acted as a "pre-expansion" of Medi-Cal to low-income uninsured adults in preparation for the full expansion that began in January 2014. All but five California counties implemented LIHPs.

ACA Coverage Expansion Reduced Outpatient ED Use among Middle-aged Adults

Our statewide analysis of all 58 counties provides evidence of significant reductions in outpatient ED visits among adults age 19–64 attributable to the ACA coverage expansion that started in 2014. In other words, the increase in ED visit rates that we observe would have been even larger in the absence of the ACA. Statewide, ED use increased, on average, by about 4 visits per 100 people from 2011–13 to 2014–16. However, it would have increased significantly more (by nearly 3 additional visits) in counties with the highest pre-ACA uninsured rate if there had not been a large increase in coverage. Narrowing our analysis to the 35 largest counties in the state—those with at least 100,000 residents—we find no significant effect of increased insurance coverage on ED use. Thus, we conclude that the ACA coverage expansions were not responsible for the growth in ED use observed since 2014.

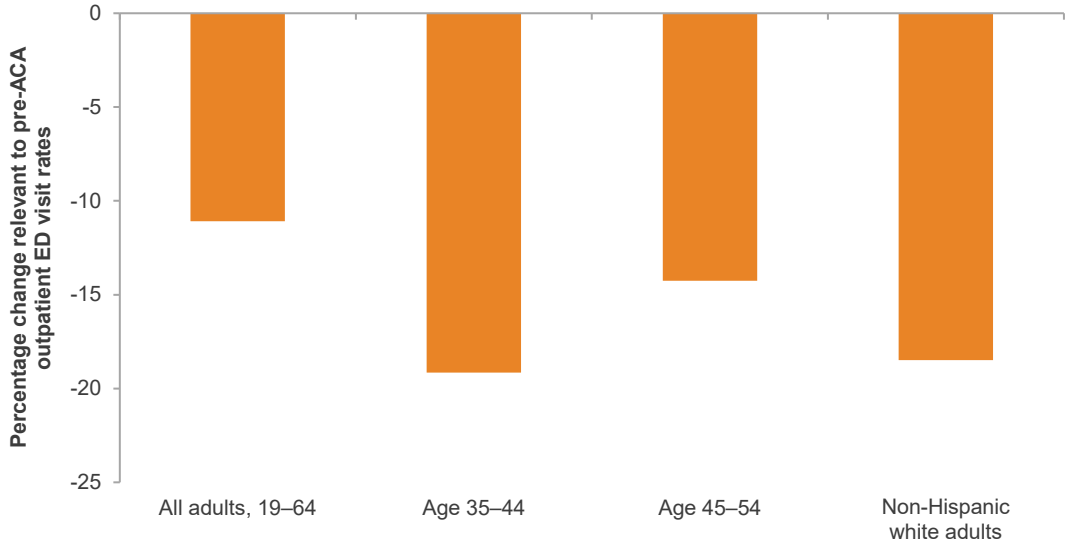
To further probe how the ACA impacted ED visit rates, we examined changes in per capita ED use across a number of patient subgroups—age, sex, and race/ethnicity—across all 58 counties. We find evidence that declines in per capita ED use attributable to the ACA were concentrated among middle-aged adults—more specifically, those age 35–54. Men and women in this age range saw similar declines, but we see evidence that non-Hispanic whites saw declines while other racial/ethnic groups did not.

Figure 9 shows the estimated percent change in per capita ED use caused by ACA coverage expansions for all adults as well as for subgroups with statistically significant reductions in ED visits. These reductions range from an 11 percent decline in per capita ED use among all non-elderly adults to a nearly 20 percent decline for adults age 35–44 and non-Hispanic white adults.

models, but the inclusion of county fixed effects account for baseline differences across counties in undocumented residents and we do not have reason to believe that the distribution of undocumented immigrants across the state changed during our analytic time period.

FIGURE 9

The ACA brought about declines in outpatient ED visits for some adult groups



SOURCE: Author calculations from data described in Technical Appendix B and "top quartile" model coefficients shown in technical appendix Tables D2–D5.

NOTE: Model coefficients shown are all significant at the 0.05 level or better; to obtain the percentages shown in the figure, coefficients are divided by the 2011–13 average per capita ED visits in each subgroup. See Technical Appendix C for details.

Looking at primary diagnoses, we do not see a change in ED visits due to the ACA for chronic conditions or visits classified as avoidable. We do find a small decline in injury-related visits—this is somewhat puzzling given the expectation that chronic or avoidable visits that could be treated in other outpatient settings would be more impacted by coverage expansions.

Finally, we conducted analyses using only the largest 35 counties (100,000 people or more) in the state rather than all 58 counties. Nearly two in five of California's counties (23 of 58) have very small populations—these 23 counties are home to only about 1.5 million (about 4%) of the state population—and this poses challenges for accurately estimating our key variable of interest, pre-ACA uninsured rates. For this reason, and because statewide outcomes are driven by what happens in the larger counties, we ran all of our models on the subset of large counties. In these results, we find no statistically significant effects from 2014 through 2016 (see technical appendix Table E1). In other words, the ACA coverage expansions had no detectable effect on ED use in larger counties.[10]

In sum, our analyses imply that the ACA coverage expansions did not increase ED use in California; indeed, they may have reduced it.

[10] We also ran models that included only the 16 largest counties—those with half a million people or more. We discuss this analysis in the technical appendices but do not include it in the main results presented in the report because the 16-county analysis becomes a regional comparison between Bay Area counties—which had flat trends in ED use compared to the state as a whole—and large counties in the southern and central regions of the state. These results probably reflect specific regional differences rather than the broader effects of the ACA on ED use throughout the state. That said, our findings of reductions in ED use are different when we narrow the analysis to a small number of counties.

Conclusion

The ACA's expansion of health insurance to millions of Californians raised reasonable concerns about increased coverage—in particular, the dramatic growth in Medi-Cal enrollment—driving increases in ED use. We find no evidence that this is the case. In fact, in our analysis of all 58 counties, our results suggest that, without the large reductions in uninsured rates in the wake of the ACA, ED visit rates would have been even higher, particularly for adults age 35–54.

Nonetheless, the growing reliance on emergency departments for complex needs is cause for concern, given the large share of ED visits that are publicly funded through Medi-Cal. Efforts to curtail ED use often focus on increasing the cost of accessing ED care to discourage avoidable ED visits. However, the existing, limited evidence on how effective copays are in reducing ED use among Medicaid beneficiaries does not offer clear policy prescriptions.

Medi-Cal managed care plans will need to play a key role in stemming the upward trend in ED visits. More than 85 percent of Medi-Cal participants are enrolled in managed care. Medi-Cal initiatives including Whole Person Care pilots and health homes that focus on case management and integration of physical and behavioral health are designed to lower ED use by frequent users. Rigorous evaluations of these pilot programs will be important in helping tailor policies aimed at curbing ED use.

One important note of caution: reductions in ED visit rates should not be interpreted as being linearly associated with cost reductions. The actual costs of providing health care are complex—and the increasing reliance on managed care, risk-sharing arrangements, and delegation have further complicated our ability to understand—let alone control—costs. That said, ensuring the most efficient and effective allocation of health care spending and resources will be important to finding sustainable solutions to growing health care costs.

Moving forward, it will be crucial to monitor the evolving patterns of health care use as Californians who gained coverage become incorporated into the health care delivery system. Recent steps toward developing an all-payer claims database could go a long way in helping policymakers, providers, and the public alike better understand and improve our health care system. As state policymakers focus on further expansions of health insurance in an effort to reach universal coverage, reliable information on coverage, costs and health care use become even more essential.

REFERENCES

Billings J., M. Raven. 2013. "Dispelling an Urban Legend: Frequent Emergency Department Users Have Substantial Burden of Disease." *Health Affairs* 32 (12): 2099–2108.

Billings J., N. Parikh, T. Mijanovich. 2000. "Emergency Department use: New York City." Issue Brief. New York, NY: Commonwealth Fund.

Boudreaux M. H., K. T. Call, J. Turner, B. Fried, B. O'Hara. 2015. "Measurement Error in Public Health Insurance Reporting in the American Community Survey: Evidence from Record Linkage." *Health Services Research* 50 (6): 1973–95.

Burt C. W., L. F. McCaig. 2001. "Trends in Hospital Emergency Department Utilization: United States, 1992-99." *Vital and Health Statistics* 13, 150: 1–34.

California Department of Health Care Services, Medi-Cal Managed Care Division. 2012. "Reducing Avoidable Emergency Room Visits: Final Remeasurement Report: January 1, 2010–December 31, 2010."

Capp R., L. Kelley, P Ellis, J. Carmona, A. Lofton, D. Cobbs-Lomax, G. D'Onofrio. 2016. "Reasons for Frequent Emergency Department Use by Medicaid Enrollees: A Qualitative Study." *Academic Emergency Medicine* 23 (4): 476–81.

Cheung P. T., J. L. Willer, R. A. Lowe, A. A. Ginde. 2012. "National Study of Barriers to Timely Primary Care and Emergency Department Utilization among Medicaid Beneficiaries." *Annals of Emergency Medicine* 60 (1): 4–10.

Davies, S., E. Schultz, M. Raven, et al. 2017. Development and Validation of the Agency for Healthcare Research and Quality Measures of Potentially Preventable Emergency Department (ED) Visits: The ED Prevention Quality Indicators for General Health Conditions. *Health Services Research* 2017; doi:10.1111/1475-6773.12687.

Durand, A. C., S. Gentile, B. Devictor, et al. 2011. "ED Patients: How Nonurgent Are They? Systematic Review of the Emergency Medicine Literature." *American Journal of Emergency Medicine* 29 (3): 333–45.

Finkelstein, A. N., S. L. Taubman, H. L. Allen, B. J. Wright, K. Baicker. 2016. "Effect of Medicaid Coverage on ED Use: Further Evidence from Oregon's Experiment." *New England Journal of Medicine* 375: 1505–07.

Finkelstein, A., S. Taubman, B. Wright, et al. 2012. "The Oregon Health Insurance Experiment: Evidence from the First Year." *Quarterly Journal of Economics* 2 (127): 1057–1106.

Hernandez-Broussard, T., D. Morrison, B. A. Goldstein, R. Y. Hsia. 2016. "Relationship of Affordable Care Act Implementation and Emergency Department Utilization among Young Adults." *Annals of Emergency Medicine* 67 (6): 714–20.

Hsia, R. Y., S. H. Sabbagh, J. Guo, T. J. Nuckton, M. J. Niedzwiecki. 2018. "Trends in the Utilization of Emergency Departments in California 2005–2015: A Retrospective Analysis." *BMJ Open* 8 (7): e021392.

Kellermann A. L., R. Y. Hsia, C. Yeh, K. G. Morganti. 2013. "Emergency Care: Then, Now, and Next." *Health Affairs* 32 (12): 2069–74.

Klerman. J. A., C. Danielson. 2016. "Can the Economy Explain the Explosion in the Supplemental Nutrition Assistance Program Caseload? An Assessment of the Local-Level Approach." *American Journal of Agricultural Economics* 98 (1): 92–112.

Mazurenko, Olena, C. P. Balio, R. Agarwal, A. E. Carrol, N. Menachemi. 2018. "The Effects of Medicaid Expansion under the ACA: A Systematic Review." *Health Affairs* 37 (6).

McConville, S., M. C. Raven, S. H. Sabbagh, R. Y. Hsia. 2018. "Frequent Emergency Department Users: A Statewide Comparison Before and After Affordable Care Act Implementation." *Health Affairs* 37 (6): 881–89.

Miller, S. 2012. "The Effect of Insurance on Emergency Room Visits: An Analysis of the 2006 Massachusetts Health Reform." *Journal of Public Economics* 96 (11-12): 893–908.

Miller, S., L. Wherry. 2017. "Health and Access to Care during the First Two Years of the ACA Medicaid Expansion." *New England Journal of Medicine* 376: 947–56.

Morganti, K. G., S. Bauhoff, J. C. Blanchard, M. Abir et al. 2013. "The Evolving Role of Emergency Departments in the United States." Santa Monica, CA: RAND Corporation.

Mortensen K. 2010. "Copayments Did Not Reduce Medicaid Enrollees' Nonemergency Use of Emergency Departments." *Health Affairs*. 29 (9): 1643–50.

Musumeci M., R. Rudowitz. 2017. "Medicaid Retroactive Coverage Waivers: Implications for Beneficiaries, Providers, and States." Issue Brief. Kaiser Family Foundation.

Niedzwiecki, M. J., P. Sharma, H. Kanzaria, S. McConville, R. Y. Hsia. 2018. "Factors Associated with Emergency Department Use by Patients with and without Mental Health Diagnoses." *JAMA Network Open* 1 (6): e183528.

Nikpay S., S. Freedman, H. Levy, T. Buchmueller. 2017. "Effect of the Affordable Care Act Medicaid Expansion on Emergency Department Visits: Evidence from State-level Emergency Department Databases." *Annals of Emergency Medicine*70 (2): 215–25.

Pines, J. M., M. Zocchi, A. Moghtaderi, et al. 2016. "Medicaid Expansion in 2014 Did Not Increase Emergency Department Use But Did Change Insurance Payer Mix." *Health Affairs* 35:1480–86.

Raven, M. and F. Steiner. 2018. "A National Study of Outpatient Health Care Providers' Effect on Emergency Department Visit Acuity and Likelihood of Hospitalization." *Annals of Emergency Medicine* 71 (6): 728–36.

Rosenbaum, S. 2013. "The Enduring Role of the Emergency Medical Treatment and Active Labor Act." *Health Affairs* 32 (12): 2075–81.

Sabik L. M., S. O. Gandhi. 2016. "Copayments and Emergency Department Use Among Adult Medicaid Enrollees." *Health Economics* 25 (5): 529–42.

Simon, K., A. Soni, J. Cawley. 2017. "The Impact of Health Insurance on Preventive Care and Health Behaviors: Evidence from the First Two Years of the ACA Medicaid Expansions." *Journal of Policy Analysis and Management* 36 (2): 390–417.

Sommers, B. D., R. Blendon, J. Orav, A. Epstein. 2015. "Changes in Utilization and Health among Low-Income Adults after Medicaid Expansion or Expanded Private Insurance." *JAMA* 176 (10): 1501–09.

Sommers, B. D., K. Simon. 2017a. "Health Insurance and Emergency Department Use—A Complex Relationship." *New England Journal of Medicine* 376: 1708–11.

Sommers, B. D., B. Maylone, R. .J. Blendon, J. Orav, A. M. Epstein. 2017b. "Three-Year Impacts of the Affordable Care Act: Improved Medical Care and Health among Low-Income Adults. *Health Affairs* 36 (6): 1119–28.

Sun, R., Z. Karaca, H. Wong. 2018. "Trends in Hospital Emergency Department Visits by Age and Payer, 2006–2015." HCUP Statistical Brief 238. Rockville, MD: Agency for Healthcare Research and Quality.

Tang, N., J. Stein, R. Hsia, J. Maselli, R. Gonzales. 2010. "Trends and Characteristics of US Emergency Department Visits, 1997–2007." *JAMA* 304 (6): 664–70.

Taubman, S. L., H. L. Allen, B. J. Wright, K. Baicker, A. N. Finkelstein. 2014. "Medicaid Increases Emergency Department Use: Evidence from Oregon's Health Insurance Experiment." *Science* 343 (6168): 263–68.

Wherry, L. R., S. Miller. 2016. "Early Coverage, Access, Utilization, and Health Effects Associated with the Affordable Care Act Medicaid Expansions: A Quasi-experimental Study." *Annals of Internal Medicine* 164: 795–803.

Zuckerman S., Y. C. Shen. 2004. "Characteristics of Occasional and Frequent Emergency Department Users: Do Insurance Coverage and Access to Care Matter?" *Medical Care* 42 (2): 176–82.

ABOUT THE AUTHORS

Shannon McConville is a senior research associate at the Public Policy Institute of California. Her research interests include health care access, utilization, and outcomes among vulnerable populations and the impact of vocational training programs on economic mobility. Her current work focuses on examining safety net programs, assessing the effects of Medicaid coverage expansions on individuals involved with the criminal justice system, and analyzing the employment outcomes and economic returns of career technical education. Before joining PPIC, she was a research training fellow in the Health Services and Policy Analysis doctoral program at the University of California, Berkeley; a senior research associate at the Department of Health Research and Policy at Stanford University; and a project manager at the Lewis Center for Regional Policy Studies at the University of California, Los Angeles. She holds a master's in public policy from the University of California, Los Angeles.

Caroline Danielson is a policy director and senior fellow at the Public Policy Institute of California. Her research focuses on multiple dimensions of the social safety net, including its role in mitigating poverty, program access and enrollment, and the integration and governance of programs. Her work has been published in numerous academic journals, including the *Journal of Policy Analysis* and the *Social Service Review*. Before coming to PPIC, she was a principal analyst at the University of California's Welfare Policy Research Project and a faculty member in the Department of Politics at the State University of New York, Potsdam. She holds a PhD in political science from the University of Michigan and a master's degree in policy analysis from the Pardee RAND graduate school.

Renee Hsia is a professor and director of Health Policy Studies in the Department of Emergency Medicine at University of California, San Francisco, associate chair of Health Services Research in the Department of Emergency Medicine, and director of The PLACE (The Policy Lab for Acute Care and Emergencies). She is also a core faculty member of the UCSF Philip R. Lee Institute for Health Policy Studies (IHPS), as well as a member of the UCSF Center for Healthcare Value and the UCSF Global Health Economics Consortium. She is certified by the American Board of Emergency Medicine and provides emergency care to patients with a variety of backgrounds as an attending physician in the emergency department at the Zuckerberg San Francisco General Hospital & Trauma Center. She holds an MD from Harvard Medical School and a master's in health policy, planning, and financing from the London School of Economics.

ACKNOWLEDGMENTS

The authors would like to thank several people who assisted us with this research. Jackie Bender, Mia Bird, Sarah Miller, Paulette Cha, Lynette Ubois and Mary Severance provided thoughtful reviews and suggestions that improved our analysis and presentation of the findings. We would also like to thank the Office of Statewide Health Planning and Development for providing access to the data used in this study. Any errors are the authors' own.

PPIC

PUBLIC POLICY
INSTITUTE OF CALIFORNIA

The Public Policy Institute of California is dedicated to informing and improving public policy in California through independent, objective, nonpartisan research.

Public Policy Institute of California
500 Washington Street, Suite 600
San Francisco, CA 94111
T: 415.291.4400
F: 415.291.4401
PPIC.ORG

PPIC Sacramento Center
Senator Office Building
1121 L Street, Suite 801
Sacramento, CA 95814
T: 916.440.1120
F: 916.440.1121