# Beyond Health Insurance: Remaining Disparities in U.S. Health Care in the Post-ACA Era

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**Beyond Health Insurance:**
**Remaining Disparities in U.S. Health Care in the Post-ACA Era**

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**Date:** December 12, 2016

**ABSTRACT**

**Context:** The Affordable Care Act (ACA) has reduced the U.S.'s uninsured rate to an historic low. But coverage is only one of many factors contributing to racial and income-based disparities in health care access, affordability, and quality.

**Methods:** Using a novel 2015 national survey of over 8,000 Americans, we examined disparities between low-income and high-income adults, and between racial/ethnic minorities and whites. We conducted a series of regression analyses, starting with models that only took into account income or race, and then sequentially adjusted for health insurance, state of residence, demographics, and health status. We examined self-reported quality of care, cost-related delays in care, and emergency department (ED) use due to lack of available appointments. Then we used multivariate regression to assess respondents' views of whether quality and affordability had improved over the past two years and whether the ACA was helping them.

**Findings:** Quality of care ratings were significantly worse among lower-income adults than higher-income adults. Only 10-25% of this gap was explained by health insurance coverage. Cost-related delays in care and ED use due to lack of available appointments were nearly twice as common in the lowest-income group, and less than 40% of these disparities was explained by insurance. There were significant racial/ethnic gaps: reported quality of care was worse among blacks and Latinos than whites, with 16-70% explained by insurance. In contrast to these disparities, lower-income and minority groups were generally *more* likely than whites or higher-income adults to say that the ACA was helping them and that the quality and/or affordability of care had improved in recent years.

**Conclusions:** Our post-health reform survey shows ongoing stark income and racial disparities in the health care experiences of Americans. While the ACA has narrowed these gaps, insurance expansion alone will not be enough to achieve health care equity.

**Key Words:** Disparities, Health Care Access, Health Insurance, Health Reform

**POLICY POINTS:**

- In a national survey of approximately 8000 adults in 2015, we found large income and race-based disparities in perceived health care quality, affordability, and use of the Emergency Department.
- Lack of health insurance is one factor that contributes to worse health care experiences among lower-income Americans and racial/ethnic minorities, but it only explains a small to moderate portion of these disparities.
- While the Affordable Care Act has led to significant improvements in health care access and affordability, large gaps remain. Repeal of the law would undo much of this progress, but even if the law remains in effect, policymakers need to address other social determinants that contribute to ongoing income and race-based disparities in health care.

**INTRODUCTION**

Disparities in U.S health care are a source of considerable public health and policy concern, with substantial evidence that minorities and low-income Americans experience greater barriers to care and worse health outcomes across numerous measures.[1,2] At the same time, the U.S. is currently in the midst of the largest overhaul of the health care system in more than 50 years, with the passage and implementation of the Affordable Care Act (ACA). Evidence shows that the ACA has expanded health insurance to nearly 20 million individuals and has brought the uninsured rate to an all-time low.[3] Whether – and how much – this expansion of coverage has narrowed disparities in health care is unclear.

Cross-sectional studies from before the ACA demonstrate that coverage is just one aspect of disparities in health care experienced by racial/ethnic minorities and those with low incomes. Even among those without insurance, access to a regular source of care and health care utilization rates differ significantly among racial and ethnic groups,[4,5] with studies suggesting contributions from factors such as educational attainment, language barriers, citizenship, and neighborhood effects.[6,7]

Previous health insurance expansions have a mixed record in terms of improving equity. Often called the model for the ACA, Massachusetts' 2006 health reform led to improved access to outpatient care for vulnerable populations in the state, including non-elderly adults living in low- and middle income areas, elderly adults, and non-elderly Hispanic adults.[8] Some studies have found that the state's policy reduced disparities. For instance, the state's reform was associated with a significant decrease in mortality and a narrowing of disparities, with mortality improvements largest among non-whites and those living in poorer counties.[9] Another survey-based study found that improvements in self-reported health after Massachusetts health reform

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were largest for lower-income adults and minorities.[10]  However, not all research has found a reduction in disparities after the state's reform.  In these studies, even though vulnerable populations in Massachusetts experienced improvements in cost-related barriers and coverage, similar or larger gains were observed among white and non-poor groups, resulting in no significant progress toward the elimination of racial disparities for many outcomes.[11,12]

State-level Medicaid expansions preceding the ACA have, by definition, disproportionately benefited lower-income individuals, since they are the ones eligible for the program.  Evidence of Medicaid's impact on racial disparities, however, is less clear.  Large Medicaid expansions in the early 2000s in New York, Maine and Arizona were associated with significant reductions in all-cause mortality, as compared to demographically similar neighboring states that did not expand Medicaid.  These gains were greatest among racial and ethnic minorities and residents of poorer counties, suggesting that state Medicaid expansions may reduce mortality disparities among vulnerable groups.[13]  Other studies of Medicaid expansions have found improvements in access to care and self-reported health, but have not provided information on how these effects varied by race or socioeconomic status.[14,15]

Researchers have also examined the impact of the ACA's 2010 dependent coverage provision (which allowed adults to remain on their parents' plans through age 25) on disparities among young adults.  Studies indicate significant gains in insurance coverage and reduced out-of-pocket spending, but mixed progress when it comes to narrowing disparities. Among young adults ages 19-25, the dependent coverage provision increased private coverage for men and women, for most racial and ethnic minorities, for those with limited English proficiency, and for those with and without citizenship.[16]  However, net gains were greater for whites than for other

racial or ethnic minorities,[17] and one study found evidence that the policy primarily benefited higher-income families.[18]

While much of the research on disparities has focused on race and ethnicity, gaps in health care coverage and access related to income are also of significant concern. Moreover, widening income inequality[19] – combined with the steady rise of health care costs over the past several decades[20] – poses particular challenges for health care access, which the ACA in part was designed to mitigate.[21]

Since the beginning of the ACA's major insurance expansions in 2014, several studies have demonstrated larger coverage gains among lower-income groups and minorities, with some concurrent improvements in access to primary care and affordability of care.[22-26] For instance, one study found that reductions in the uninsured rate among blacks and Latinos were nearly twice as large as those among whites.[23] Meanwhile, the uninsured rate for those living below the poverty level fell from 33% in 2013 to 25% by 2016, compared to a much smaller drop from 12% to 8% among those with incomes from 250-400% of the poverty level.[26]

While many of these prior studies have used pre-post comparisons or quasi-experimental study designs to evaluate the effect of coverage expansions on disparities, as noted earlier, other studies have used multivariate cross-sectional approaches to evaluate the extent to which baseline income and racial disparities in access to care and health care quality can be attributed to insurance differences across groups. These comparisons indicate that coverage plays a significant role in these gaps, but is not the only factor at play.[6] However, to our knowledge, there has been little post-ACA analysis of the remaining disparities in health care – particularly in terms of perceived health care quality – and how much of a role health insurance coverage still plays in these gaps.

Our study objectives were: 1) to examine disparities based on race/ethnicity and income in perceived health care quality, access to care, and affordability of care, using a post-ACA sample of adults; 2) to estimate what proportion of these disparities could be attributed to differences in health insurance coverage across groups; and 3) to compare perceptions across groups of how the ACA and recent trends have affected these outcomes.

## METHODS

### Survey Data

Our study data are from the "Patients' Perspectives on Health Care in the United States" Survey, a project conducted by the Harvard T.H. Chan School of Public Health, the Robert Wood Johnson Foundation, and National Public Radio.[27] The survey was a random-digit dialing telephone survey (of both cellphones and landlines), fielded by the research firm SSRS. Interviews were available in English and Spanish, and calls were completed between September 8 and November 9, 2015, among adults ages 18 or older. In each contacted household, one eligible respondent was selected at random to participate in the survey. The study contained eight different subsamples, each with roughly 1000 respondents. The first group was a nationally-representative sample in all 50 states and the District of Columbia. The other samples were from seven states – Florida, Kansas, New Jersey, Ohio, Oregon, Texas, and Wisconsin. These states were selected to represent a geographically and demographically diverse group of states that have not been studied extensively by other polls and represent a range of policy environments related to the Affordable Care Act.

The final sample contained 1002 adults in the national sample and 7036 adults total in the seven states. The study oversampled African-American/blacks, Latinos, and adults with annual

household incomes of less than $25,000. The overall response rate was 15%, calculated according to the American Association for Public Opinion Research's RR3 definition.[28] Data from each of the eight subsamples were weighted by cell phone/landline use and demographics (sex, age, race/ethnicity, education, and household income) to reflect the appropriate population, based on data from the U.S. Census Bureau and National Health Interview Survey. Further details about the survey design are available in the Appendix.

The survey collected data on demographic information, personal health care experiences, perceptions of health care in their respective states, and changes in these measures over the past year. The survey's chief advantages for our research purposes were its timeliness, enabling analysis of outcomes nearly two years in the implementation of the ACA, and the use of several health-care related domains that are not typically covered by federal surveys.

**Study Outcomes**

We assessed several outcomes related to perceived quality and affordability of care, use of the Emergency Department due to lack of available appointments (as a measure of health care access), and perceptions of the ACA.

For quality, we asked respondents, "Overall, how would you rate the health care you receive?" on a four-point scale (Excellent, Good, Fair, or Poor). We then asked whether the quality of care had gotten better, worse, or stayed the same over the past two years.

For affordability, we asked respondents whether they had ever needed health care in the past two years, but did not get it because they could not afford that care. We also asked whether their care had become more affordable, less affordable, or stayed the same over the past two years.

For Emergency Department (ED) use, we asked whether they had used the ED in the past two years, and then among those with an ED visit, whether the primary reason was that "Other facilities were not open or you could not get an appointment." We focus on this particular outcome rather than any ED use since numerous factors influence ED use that are not likely to be related to health insurance (such as transportation issues, availability of paid sick leave, and geographic proximity); we focus on appointment availability as a meaningful assessment of access to outpatient care.

Finally, we asked each respondent, "Would you say the Affordable Care Act, also called Obamacare, has directly helped you, directly hurt you, or has it not had a direct impact?"

## Covariates

Several of our models included covariates as described below. Covariates were selected based on Andersen's revised behavioral model for access to health care.[29] Those factors which increase one's likelihood of using medical care, which Andersen terms "predisposing characteristics," included sex, age, education, and race and ethnicity. We used insurance information, income, and state of residence as our main indicators of enabling resources – that is, those factors that affect one's ability to obtain health care services. Finally, we added self-reported health status (on a five-point scale) as a proxy measure of one's need for medical care.

## Statistical Analysis

We analyzed our data in several steps. First, we assessed for the presence of disparities in our study outcomes in unadjusted models by race/ethnicity and separately by income. Race/ethnicity was categorized into white non-Latino, black non-Latino, Latino, and

other/missing.  Household income was categorized as less than $25,000 per year, $25,001-$50,000, $50,001-$100,000, greater than $100,000, and income not reported.  These models were simple linear probability models, with whites as the omitted reference group for race/ethnicity, and the highest income group omitted for income.  Thus, the coefficients for each group identify the disparity relative to whites or those earning more than $100,000, respectively, without adjustment for any other demographic or health related differences.  This baseline unadjusted measure of disparity is consistent with the Institute of Medicine's recommendations and with prior research.[1,30]

Next, we added health insurance information as a covariate to our regression models, in the following categories: Medicaid, employer-sponsored insurance (ESI), Medicare, Marketplace coverage, other coverage, and uninsured.  This model produces coefficients that indicate the disparities that remain based on income or race/ethnicity, after adjustment for differences in health insurance coverage across groups.  We then present a fully-adjusted model that includes the following complete list of covariates: age, sex, education, income, race/ethnicity, self-reported health status, state of residence, and health insurance.  By comparing the coefficients across these models, we are able to assess the contribution of health insurance differences to disparities for each of our study outcomes.

Then, using the outcomes related to changes over time, we used our multivariate linear model to assess what factors were associated with improved quality and affordability in the last two years, and with a perception that the ACA had directly helped the respondent.   These outcomes were each coded on a three-point scale from negative to positive (e.g. quality of care has gotten worse, stayed the same, or improved).

For all analyses, we separately analyzed the nationally-representative sample (n=1002) and the seven-state sample (n=7036). Both analyses used survey weights to approximate the target population in each sample; the seven states were weighted based on the population size in each state according to 2014 Census American Factfinder. Thus, for each outcome and model, we produced a national estimate and an aggregated seven-state estimate. All regressions used a linear model to provide straightforward estimates of the magnitude of change for each outcome across subgroups; for assessments of disparities, odds ratios or other non-linear estimates are more difficult to interpret. However, we tested the robustness of our results to those obtained using predicted probabilities from a logistic model and the results were quite similar. We also compared the results when splitting our seven-state sample into Medicaid expansion and non-expansion states.

The study investigators had access only to deidentified survey data, and the protocol was exempted from review by the Harvard Institutional Review Board. Analyses used Stata 14.0.

## RESULTS

### Perceived Quality of Care

Tables 1 and 2 present disparities by income and race/ethnicity, respectively, for the proportion of adults reporting that the quality of their overall health care was "fair" or "poor."

In Table 1, the unadjusted data (Model 1) demonstrates significantly worse care at lower incomes for each step along the income distribution. At the extremes, those in the lowest income group reported receiving fair or poor care at a rate 29.1 percentage-points higher than those in the highest income group for the national sample, and 17.1 percentage points in the 7-state sample (both p<0.01). For comparison, in the highest income group, only 6.5% of the national

sample and 11.0% of the 7-state sample reported fair or poor quality of care. Adjustment for health insurance status (Model 2) only reduced these disparities slightly, to 26.0 and 13.2 percentage points respectively. This implies that health insurance explained just 11% to 23% of the disparity for the lowest-income group compared to the highest group. Meanwhile, full multivariate adjustment (Model 3) still left large residual disparities for lower-income adults in both the national and 7-state sample.

In Table 2, we see significant disparities in receipt of fair or poor care based on race/ethnicity, though smaller than the disparities based on income. Blacks reported rates of fair/poor care 11.1 percentage points ($p<0.05$) and 4.9 percentage points ($p<0.10$) higher than whites in the national and the 7-state samples, respectively, while Latinos experienced disparities for this measure of 11.9 ($p<0.05$) and 7.4 percentage points ($p<0.01$), compared to whites. Again, adjustment for health insurance (Model 2) narrowed these gaps somewhat, but only by 16% for blacks and 30% for Latinos in our national sample. In the 7-state model, however, insurance played a larger role, eliminating 43% of the black-white disparity and 70% of the white-Latino disparity. After full multivariate adjustment (Model 3), no statistically significant disparities remained for blacks and Latinos.

**Problems Affording Needed Care**

Tables 3 and 4 present disparities by income and race/ethnicity, respectively, for the proportion of adults reporting that they had not obtained needed medical care due to cost in the previous two years.

In Table 3, we see large income-based disparities. The lowest income group reported rates 10.4 percentage-points greater of skipping needed care due to cost in the national sample

and 10.8 percentage-points in the 7-state sample, compared to the highest income group.  Those between $25,000-$50,000 experienced similarly large disparities.  Adjusting for health insurance shrank these gaps somewhat, reducing the disparities between the highest and lowest income groups by 38% in the national sample and 29% in the 7-state sample.  In contrast to these results, Table 4 does not indicate any significant racial/ethnic disparities in skipping needed care due to cost in the unadjusted models.  In fact, in the fully adjusted model, rates of skipping needed care were actually lower among Latinos than whites (-9.3 percentage points, p<0.01) in the 7-state sample, though there are no significant differences in the national sample.  In part this may relate to the much smaller sample size for the national analysis compared to the state analysis.

Appendix Table 1 presents coefficients for the other covariates in the full model.  These results indicate that quality of care and ability to afford care were generally better among those with Medicaid, Medicare, or employer-sponsored insurance than the uninsured.  Non-elderly adults were more likely to report fair/poor quality care or affordability problems than were adults over age 65.  Adults in fair/poor health were much more likely to report poor quality of care and cost-related delays in care, compared to adults in excellent health.  Educational status and gender were inconsistent predictors of these outcomes.


**ED Use Due to Lack of Available Appointments**

Appendix Tables 2 and 3 present disparities by income and race/ethnicity for the proportion of adults reporting they had visited the Emergency Department in the past two years because they could not obtain an outpatient appointment in time.  Rates were 5.7 (national sample) and 3.1 percentage points (7-state sample) higher for the lowest-income group than the highest income group, though only the latter was statistically significant.   These estimates

dropped by 22-26% after adjustment for insurance type. Meanwhile disparities for this measure
were larger for blacks versus whites, with a gap of 10 percentage points (p<0.10) in the national
sample and 4.5 percentage points (p<0.05) in the 7-state sample. Roughly 10% of these
disparities were explained by health insurance type. In contrast to blacks, Latinos had similar or
even lower rates of ED visits due to lack of appointments than did whites.

**Perceived Changes in Health Care Over Time**

Table 5 presents results from multivariate regressions assessing respondents' perceptions
of how their health care has changed over the prior two years. Each coefficient shows the
changes on a three-point scale (where -1 is getting worse, 0 is unchanged, and +1 is improving),
compared to the reference group in each category. In both the national and 7-state samples, we
find consistent evidence that blacks and Latinos were far more likely than whites to report that
the ACA had personally helped them (p<0.01); on average, whites felt the law had hurt them,
while non-whites reported that it had helped them. Those with Medicaid were also much more
likely to report that the ACA had helped them, as were those with Marketplace coverage in the 7-
state sample; meanwhile, those without health insurance felt the law had hurt them on average.
The lowest-income group also reported more favorable views towards the ACA in the 7-state
sample, even after adjustment for health insurance and race/ethnicity.

Blacks and Latinos were significantly more likely than whites to say that the quality of
their health care had gotten better over the past two years. On average, whites reported little to
no change in quality, in contrast to the significant improvements reported by minorities.
Medicaid beneficiaries also reported improving quality of care in the 7-state sample.
Meanwhile, overall affordability declined for all racial groups, but less so for blacks and Latinos

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than for whites.  Those with Medicaid coverage were more likely to say that their health care had

become more affordable than did those without insurance or those with employer-based

coverage.  Lower-income respondents were more likely than their higher-income peers to report

that their care had become more affordable in the past two years ($p<0.05$), though they did not

report any significant changes in quality of care.


**Medicaid Expansion vs. Non-Expansion**

We repeated our main analyses using the 7-state sample stratified into expansion vs. non-

expansion; the national sample was not large enough to support this analysis.  Appendix Tables

4-8 report these results.  Rates of fair/poor care were higher in non-expansion states than

expansion states (12.6% vs 8.0% for the highest-income group, and 18.5% vs. 16.0% for whites).

The pattern of disparities between income groups and between whites versus blacks were similar

in the two groups of states, though white-Latino disparities were smaller in non-expansion states.

Patterns of income and racial disparities in cost-related delays in care were similar across

expansion and non-expansion states.

However, larger differences were evident for changes in these outcomes over time, based

on expansion status (Appendix Table 8).  Lower-income adults in expansion states were much

more likely to report that the ACA had directly helped them, compared to lower-income adults in

non-expansion states.  Medicaid recipients in expansion states were much more likely to report

that the ACA had helped them – by three times as much – compared to those in non-expansion

states; meanwhile, Marketplace recipients rated the ACA more highly in non-expansion states

(where a higher share of low-income adults are eligible for Marketplace subsidies in lieu of

Medicaid).  Medicaid beneficiaries in expansion states were also much more likely to report

improving affordability of care than were their counterparts in non-expansion states.  Patterns by race/ethnicity did not differ dramatically across expansion versus non-expansion states – in both groups of states, blacks and Latinos were more likely than whites to say that their care was improving and becoming more affordable.

**DISCUSSION**

In our 2015 survey of nearly 8000 Americans, we find large racial and economic disparities in affordability of medical care, perceived quality of care, and access to timely outpatient care.  Thus, even two years into the largest expansion of health insurance in 50 years, inequality remains a fundamental attribute of American health care.  We find evidence that health insurance coverage can help narrow some of these gaps, and minorities and adults with lower incomes tend to feel most positively about the ACA and recent changes in their own health care.  Moreover, Medicaid expansion was generally associated with larger changes in favor of lower-income and minority groups.  But even so, health insurance coverage only explains a small-to-moderate portion of the ongoing disparities in affordability, quality, and access.

Most of the disparities we document here are evident in both the national sample and in the seven-state sample, and exist for both comparisons of white versus non-whites and higher-income versus lower-income adults.  However, for most outcomes the differences were larger across income-groups than racial/ethnic groups.  For instance, the lowest-income group reported receiving fair or poor quality of care at a rate nearly 30 percentage points greater than the top income group (representing a nearly five-fold increase), while blacks and Latinos reported receiving fair or poor care at rates 11-12 percentage points higher than whites.  Moreover, the income-based disparities persisted to a greater extent after multivariate adjustment than did

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racial/ethnic disparities.  In this context, the ACA's income-based approach to coverage expansion is likely to improve equity, which is consistent with other evidence on the law to date.[22,24,26]

Previous research has documented the major gains in coverage under the ACA, with larger gains for minorities and low-income adults.[23-25]  Our findings add to our understanding of these issues through the use of a novel survey, which included consumer-rated health care quality and reasons for ER use, which have not been characterized in prior ACA-related research, as well as our comparison of both a nationally-representative sample and a more in-depth examination of seven diverse states.

The largest gaps we observed were for perceived quality of health care.   How might poverty and race affect quality, even after controlling for health insurance coverage?  Among those with insurance, cost-sharing requirements have increased consistently over recent years leading to a problem of "underinsurance"[31] that likely places disproportionate burdens on lower-income groups.  These financial barriers – which are evident in our data as well – may interfere with their ability to get the care they desire and see the providers they consider to be of high quality.  For racial/ethnic minorities, lack of cultural competence, language barriers, and mistrust of health care institutions due to historic abuses may all contribute to worsened perceptions of health care quality.[32,33]

We find less pronounced but still significant disparities in reliance on the Emergency Department due to a lack of available appointments for blacks and lower-income adults.  Some of this is mediated by insurance coverage – not only whether one is uninsured but by the type of insurance, consistent with previous work showing lower provider participation rates in Medicaid than private insurance[34] and with some studies showing higher ED use associated with Medicaid

coverage.[35]  Interesting, we did not find elevated rates of ED usage due to lack of appointments among Latinos, compared to whites, which is consistent with previous research showing lower overall utilization rates including in the ED among both native born and non-citizen Latinos.[7,36]

Our analysis of attitudes towards the ACA and perceived changes in health care over time provide a silver lining in these large disparities.  Lower-income adults and racial/ethnic minorities were much more likely than other groups to report that their care has become more affordable in the past two years, and similar progress is evident for blacks and Latinos regarding quality of care and whether they felt the ACA had directly helped them.  In multivariate models, health insurance itself was also a strong predictor of attitudes towards the ACA, with those who have Medicaid or Marketplace coverage the most likely to report that the law had helped them.  These general patterns are consistent with other polling data on the health reform law.[37,38]

**Limitations**

Our study relies on self-reported measures of quality, affordability, and access.  These may be influenced by a variety of cultural and economic factors, and perceptions of these factors may themselves be subject to disparate interpretations across the lines of race/ethnicity and income.  All of our outcomes are also subject to potential recall bias or social desirability bias.  However, the general patterns we detect here are consistent with a large body of evidence that points to existence of fundamental inequities in health care,[1] suggesting these are not just subjectively perceived differences or measurement error.

Our approach of adding health insurance status to an unadjusted model as the first set of covariates means that these variables may capture both direct effects of insurance as well as some confounding factors tightly associated with insurance (such as state of residence,

citizenship, or age).  Thus, if anything, the difference between Models 1 & 2 in our findings may *overstate* the actual contribution of health insurance to the disparities we find in our data.  Our results can therefore be seen as the upper bound of how much insurance expansion might close these gaps in quality, affordability, and access.

Our survey is also subject to potential sources of non-sampling error, including non-response bias, question wording, and ordering effects.  Non-response in random-digit dialing telephone surveys produces some known biases in survey-derived estimates because participation tends to vary for different subgroups of the population. To compensate for these known biases and for variations in probability of selection within and across households, as well as the relatively low response rate, we weighted to population benchmarks using federal survey data, which has been shown to mitigate the potential for non-response bias and produce estimates that closely resemble results from government in-person surveys. [39-41 39-41 39-41 38-40 37-39 37-3937-39]

Finally, while our analysis includes outcomes explicitly related to the ACA, we are not conducting a quasi-experimental evaluation of the health reform law comparable to many of the studies discussed in the introduction.  Rather, we are attempting to decompose health care disparities into underlying contributing factors, with health insurance coverage as the key variable of interest.  On a related note, our questions often ask about health care experiences over the prior two years; given our survey's timing in the fall of 2015, this spans both pre- and post-ACA periods.  For questions about overall experiences over the prior two years, this is a mixture of pre- and post-ACA experiences.  For questions about changes in health care experiences over the past two years, this time frame is relatively consistent with evaluating changes concurrent with the ACA's implementation.

**Policy Implications & Conclusions**

Long-standing disparities in health care access, quality, and affordability continue in the post-ACA period, with lower-income families and racial/ethnic minorities generally experiencing more cost-related barriers to care, worse perceived health care quality, and more difficulty obtaining needed appointments. While lower-income and minority respondents were generally more supportive of the ACA and reported improving trends in these outcomes relative to higher-income and white adults, our analysis suggests that health insurance only explains a small to moderate portion of the baseline disparities.

The reasons for these remaining gaps in care are not completely clear and are beyond the scope of our data to directly assess. However, others have suggested two broad explanations: (1) structural, and (2) social determinants. The first category suggests that there are not enough accessible and high-quality health-related resources in many low-income and minority communities.[42,43] Factors relevant to this argument include provider shortages and limited facilities for advanced diagnostic testing or treatment. Increased coverage only mitigates a share of these shortfalls. Potential policy solutions to these challenges include expanding not only coverage but also financial support for safety net providers, such as federally-qualified health centers and safety net hospitals. While the ACA did temporarily increase federal grants to health centers, more sustained and predictable long-term funding streams could be even more helpful to a permanent expansion of health care capacity in disadvantaged urban neighborhoods and rural areas.[44] As for hospitals, the ACA's planned cuts to Medicaid Disproportionate Share Hospital (DSH) payments may hamper efforts to close some of these disparities in quality and access.[45] Another area of policy that is a necessary complement to coverage expansion is the health care workforce. Increasing financial incentives and programs to practice in underserved settings,

such as the National Health Service Corps,[46] and making concerted efforts to train a racially- and ethnically-diverse provider workforce[47] are could potentially improve the availability and quality of care for vulnerable populations.  Whether these approaches would be successful in narrowing disparities is unclear and worthy of future study.  However, given the results of the 2016 election, it is unlikely that expansions in these programs is in the offing, and rather, the main policy debate of the coming year is likely to be whether to maintain the ACA's coverage gains at all.

The other broad explanation for persistent disparities relates to the broader circumstances that lower-income and minority individuals are more likely to face, with challenges such as inadequate public transportation, substandard housing, decreased availability of healthy food and safe exercise opportunities, and physical environments less conducive to good health.[48,49]  A growing body of research – both domestically and internationally – suggests that more public spending on social services can yield a higher return for health outcomes than solely focusing on health care.[50,51]  A recent effort by Medicaid officials – the new Accountable Health Communities grant program – to explore interventions geared at social factors influencing health is a critical next step in this approach.[52] Whether the new administration will continue this program is unclear for now.

In reality, both explanations probably contribute significantly to these remaining non-insurance mediated disparities.  Our results point to continuing gaps and the need for a policy and research agenda that extends beyond simply the expansion of insurance coverage. Coverage expansion may help narrow these gaps somewhat, which means that a potential repeal of the ACA poses significant risk particularly to low-income groups and racial/ethnic minorities.  But even if the new administration and its Republican allies in Congress ultimately maintain the

ACA in some form, the law's coverage expansion should not be considered the primary solution

to racial and socioeconomic disparities in health care.  Additional policy attention will be needed

to address these serious problems in the post-ACA era.

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# Table 1: Disparities in Receipt of Fair or Poor Care by Income

| Income Group (Annual) | Sample Size (N) | MODEL 1: Unadjusted Difference | | MODEL 2: Adjusting for Health Insurance | | MODEL 3: Adjusted for Health Insurance, Race, State, Health Status, and Demographics (age, sex, education) | |
|---|---|---|---|---|---|---|---|
| | | U.S. (n=975) | 7 States (n=6883) | U.S. (n=975) | 7 States (n=6883) | U.S. (n=975) | 7 States (n=6883) |
| Less than $25,000 | 2490 | 29.1%*** | +17.1%*** | 26.0%*** | +13.2%*** | 20.1%*** | +6.6** |
| $25,001-$50,000 | 1651 | 10.4%*** | +11.3%*** | 9.2%** | +8.6%*** | 7.8%* | +5.0%** |
| $50,001-$100,000 | 1669 | 6.9%* | +3.6%* | 7.1%* | +2.8% | 9.1%** | +2.3% |
| Greater than $100,000 | 1150 | *Reference* | *Reference* | *Reference* | *Reference* | *Reference* | *Reference* |
| Income Not Reported | 898 | 11.7%** | +6.2%*** | 10.4%** | +4.4%* | 9.2%* | +0.7% |

**Notes:** All results report percentage-point differences relative to the highest income group (Greater than $100,000 per year). Outcome mean for highest income group was 6.5% for the national sample and 11.0% for 7-state sample. Sample excludes those with missing data for the outcome variable.
* p<0.10, **p<0.05, ***p<0.01

**Table 2: Disparities in Receipt of Fair or Poor Care by Race/Ethnicity**

| Income Group (Annual) | Sample Size (N) | MODEL 1: Unadjusted Difference | | MODEL 2: Adjusting for Health Insurance | | MODEL 3: Adjusted for Health Insurance, Race, State, Health Status, and Demographics (age, sex, education) | |
|---|---|---|---|---|---|---|---|
| | | U.S. (n=975) | 7 States (n=6883) | U.S. (n=975) | 7 States (n=6883) | U.S. (n=975) | 7 States (n=6883) |
| White Non-Latino | 5196 | *Reference* | *Reference* | *Reference* | *Reference* | *Reference* | *Reference* |
| Black Non-Latino | 845 | 11.1%** | 4.9%* | 9.3%* | 2.8% | 7.2% | -0.6% |
| Latino | 1136 | 11.9%** | 7.4%*** | 8.3% | 2.2% | 1.5% | -3.3% |
| Other/Missing | 681 | 12.9%** | 6.3%** | 13.4%** | 4.7%* | 10.9%** | -3.0% |

**Notes:** All results report percentage-point differences relative to whites. Outcome mean for whites was 14.7% for the national sample and 17.8% for 7-state sample. Sample excludes those with missing data for the outcome variable.
* p<0.10, **p<0.05, ***p<0.01

**Table 3: Disparities in Health Care Not Obtained Due to Costs, by Income**

| Income Group (Annual) | Sample Size (N) | MODEL 1: Unadjusted Difference | | MODEL 2: Adjusting for Health Insurance | | MODEL 3: Adjusted for Health Insurance, Race, State, Health Status, and Demographics (age, sex, education) | |
|---|---|---|---|---|---|---|---|
| | | U.S. (n=962) | 7 States (n=6804) | U.S. (n=962) | 7 States (n=6804) | U.S. (n=962) | 7 States (n=6804) |
| <$25,000 | 2312 | 10.4%*** | 10.8%*** | 6.5%** | 7.7%*** | 6.3%* | 8.0%*** |
| $25,001-$50,000 | 1593 | 9.2%** | 11.5%*** | 7.5%** | 8.9%*** | 7.8%** | 10.2%*** |
| $50,001-$100,000 | 1637 | 1.9% | 7.5%*** | 2.0% | 6.9%*** | 2.0% | 7.7%*** |
| Greater than $100,000 | 1136 | Reference | Reference | Reference | Reference | Reference | Reference |
| Income Not Reported | 818 | 0.8% | 5.8%*** | -0.9% | 4.7%** | 1.1% | 6.6%*** |

**Notes:** All results report percentage-point differences relative to the highest income group (Greater than $100,000 per year). Outcome mean for highest income group was 3.9% for the national sample and 3.4% for 7-state sample. Sample excludes those with missing data for the outcome variable.
* p<0.10, **p<0.05, ***p<0.01

**Table 4: Disparities in Health Care Not Obtained Due to Costs, by Race/Ethnicity**

| Income Group (Annual) | Sample Size (N) | MODEL 1: Unadjusted Difference | | MODEL 2: Adjusting for Health Insurance | | MODEL 3: Adjusted for Health Insurance, Race, State, Health Status, and Demographics (age, sex, education) | |
|---|---|---|---|---|---|---|---|
| | | U.S. (n=962) | 7 States (n=6804) | U.S. (n=962) | 7 States (n=6804) | U.S. (n=962) | 7 States (n=6804) |
| White Non-Latino | 5146 | Reference | Reference | Reference | Reference | Reference | Reference |
| Black Non-Latino | 835 | 1.8% | 0.7% | 0.1% | -0.7% | -0.3% | -3.0% |
| Latino | 1118 | 1.4% | -1.0% | -1.1% | -6.6%*** | -3.6% | -9.3%*** |
| Other/Missing | 667 | -0.7% | 2.5% | -0.2% | 1.0% | -4.0% | 0.3% |

**Notes:** All results report percentage-point differences relative to whites. Outcome mean for whites was 8.7% for the national sample and 11.3% for 7-state sample. Sample excludes those with missing data for the outcome variable.
* p<0.10, **p<0.05, ***p<0.01

## Table 5: Impact of Income, Race, and Health Insurance on Perceived Changes in Health Care

| Variable | ACA Has Directly Helped vs. Hurt You† | | Change in Quality of Care Over Past Two Years | | Costs of Health Care Have Become More Affordable Over Past Two Years | |
|---|---|---|---|---|---|---|
| | U.S. (n=466) | 7 States (n=3383) | U.S. (n=974) | 7 States (n=6861) | U.S. (n=961) | 7 States (n=6821) |
| INCOME | | | | | | |
| <$25,000 | .069 | .173*** | .037 | .008 | .190** | .157*** |
| $25,001-$50,000 | .082 | .054 | .036 | -.009 | -.018 | .096*** |
| $50,001-$100,000 | -.113 | -.004 | -.031 | -.036 | -.017 | .019 |
| > $100,000 | Reference (-.049) | Reference (-.176) | Reference (.069) | Reference (.054) | Reference (-.264) | Reference (-.339) |
| Not Reported | -.350*** | .114* | -.100 | .036 | -.012 | .115** |
| RACE | | | | | | |
| White Non-Latino | Reference (-.225) | Reference (-.191) | Reference (.013) | Reference (-.020) | Reference (-.307) | Reference (-.343) |
| Black Non-Latino | .482*** | .427*** | .236*** | .267*** | .165** | .319*** |
| Latino | .323*** | .142*** | .168*** | .146*** | .100 | .209*** |
| Other | .183* | .143** | -.044 | -.032 | -.018 | .068 |
| INSURANCE | | | | | | |
| Medicaid | .467*** | .326*** | .095 | .126** | .284*** | .246*** |
| Employer-Based | .026 | -.010 | -.014 | .071* | -.030 | .029 |
| Medicare | .016 | .153** | -.109 | .111** | .037 | .196*** |
| Marketplace | .215 | .599*** | .001 | .120 | .163 | .197* |
| Other Coverage | .164 | .113 | -.037 | .042 | .094 | .164*** |
| Uninsured | Reference (-.179) | Reference (-.198) | Reference (.090) | Reference (-.040) | Reference (-.312) | Reference (-.363) |

**Notes:**
* p<0.10, **p<0.05, ***p<0.01
† Question only asked of half the survey sample.
Regressions adjust for income, race, insurance, education, age, sex, health status, and state of residence.
All questions are on a three-point scale (Yes/Better, No Effect/No Change, or No/Worse), with positive numbers indicating better outcomes. Adjusted mean for each reference group listed in parentheses, using the Stata "margins" command.

## Appendix Table 1: Full Multivariate Model (Model 3) for Study Outcomes

| Variable | Receipt of Fair or Poor Care | | Health Care Not Obtained Due to Costs | | ED Visits Due to Lack of Available Appointments | |
|---|---|---|---|---|---|---|
| | U.S. (n=975) | 7 States (n=6883) | U.S. (n=962) | 7 States (n=6804) | U.S. (n=990) | 7 States (n=6957) |
| Medicaid | -7.1% | -13.8%*** | -3.9% | -15.5%*** | 12.5%** | 3.1% |
| Employer-Based Insurance | -9.8% | -15.2%*** | -14.6%*** | -19.1%*** | 3.2% | -0.1% |
| Medicare | -12.6%* | -18.6%*** | -14.6%** | -20.2%*** | 9.7%** | 3.5% |
| Marketplace Coverage | -2.3% | -2.4% | 0.6% | -7.1% | 6.8% | -0.9% |
| Other Health Insurance | -11.2%* | -11.2%*** | -13.1%*** | -18.4%*** | 14.0%*** | 1.5% |
| Uninsured | *Reference* | *Reference* | *Reference* | *Reference* | *Reference* | *Reference* |
| Male | 4.8%* | 0.2% | -4.9%** | -2.5%** | -7.0%*** | -2.9%*** |
| Female | *Reference* | *Reference* | *Reference* | *Reference* | *Reference* | *Reference* |
| Age 18-29 | 7.4% | 9.7%*** | 3.7% | 11.0%*** | 13.6%*** | 6.3%*** |
| Age 30-49 | 10.0%** | 7.0%*** | 8.2%** | 9.3%*** | 13.8%*** | 5.1%*** |
| Age 50-64 | 8.6%** | 4.8%** | 4.2% | 7.1%*** | 6.2%** | 1.9% |
| Age ≥ 65 | *Reference* | *Reference* | *Reference* | *Reference* | *Reference* | *Reference* |
| Age Missing | 19.1% | 44.6%*** | 6.6% | -0.5% | 28.6% | 20.4% |
| Less than High School Education | 0.3% | 1.1% | -9.1%** | -5.2%* | 6.6% | -1.1% |
| High School Graduate | -1.1% | 0.5% | -2.1% | -4.0%** | 2.0% | 1.2% |
| Some College | 5.6% | 1.4% | 2.2% | -1.4% | -2.0% | 0.9% |
| College Graduate | *Reference* | *Reference* | *Reference* | *Reference* | *Reference* | *Reference* |
| Education Not Reported | 2.0% | -2.4% | -23.3%*** | -8.0%** | 0.9% | -5.0% |
| Excellent Health | *Reference* | *Reference* | *Reference* | *Reference* | *Reference* | *Reference* |
| Very Good Health | -7.3%** | 0.7% | 5.0%* | 1.9% | -4.6% | 3.3%*** |
| Good Health | 1.5% | 7.9%*** | 4.6%* | 5.2%*** | -1.0% | 5.0%*** |
| Fair/Poor Health | 23.5%*** | 27.4%*** | 12.8%*** | 10.5%*** | 3.0% | 3.5%*** |
| Health Not Reported | 18.9% | 12.0% | -11.8% | 2.7% | -11.4% | 17.4%* |

**Notes:** All results report percentage-point differences relative to reference group. Samples exclude those with missing data for the outcome variable. Models also include state fixed effects, race/ethnicity, and income. See Model 3 results in Tables 1-4 and Appendix Tables 2-3 for the coefficients on race/ethnicity and income.
* p<0.10, **p<0.05, ***p<0.01

**Appendix Table 2: Disparities in ED Visits Due to Lack of Available Appointments, by Income**

| Income Group (Annual) | Sample Size (N) | MODEL 1: Unadjusted Difference | | MODEL 2: Adjusting for Health Insurance | | MODEL 3: Adjusted for Health Insurance, Race, State, Health Status, and Demographics (age, sex, education) | |
|---|---|---|---|---|---|---|---|
| | | U.S. (n=990) | 7 States (n=6957) | U.S. (n=990) | 7 States (n=6957) | U.S. (n=990) | 7 States (n=6957) |
| <$25,000 | 2517 | 5.7% | 3.1%*** | 4.2% | 2.4%* | 1.2% | 0.4% |
| $25,001-$50,000 | 1670 | 3.9% | 3.6%*** | 3.8% | 3.4%** | 3.4% | 1.8% |
| $50,001-$100,000 | 1686 | 1.1% | 1.9% | 1.3% | 1.9% | 3.9% | 0.7% |
| Greater than $100,000 | 1163 | Reference | Reference | Reference | Reference | Reference | Reference |
| Income Not Reported | 911 | 1.6% | -0.8% | 0.8% | -1.1% | -1.4% | -2.6%* |

**Notes:** All results report percentage-point differences relative to the highest income group (Greater than $100,000 per year). Outcome mean for highest income group was 6.7% for the national sample and 4.5% for 7-state sample. Sample excludes those with missing data for the outcome variable.
* $p<0.10$, ** $p<0.05$, *** $p<0.01$

**Appendix Table 3: Disparities in ED Visits Due to Lack of Available Appointments, by Race/Ethnicity**

| Income Group (Annual) | Sample Size (N) | MODEL 1: Unadjusted Difference | | MODEL 2: Adjusting for Health Insurance | | MODEL 3: Adjusted for Health Insurance, Race, State, Health Status, and Demographics (age, sex, education) | |
|---|---|---|---|---|---|---|---|
| | | U.S. (n=990) | 7 States (n=6957) | U.S. (n=990)) | 7 States (n=6957) | U.S. (n=990) | 7 States (n=6957) |
| White Non-Latino | 5251 | Reference | Reference | Reference | Reference | Reference | Reference |
| Black Non-Latino | 837 | 10.0%* | 4.5%** | 9.1%* | 4.1%* | 8.5%* | 4.4%** |
| Latino | 1174 | 1.4% | -2.2%** | 0.7% | -2.3%* | -3.3% | -1.8% |
| Other/Missing | 685 | 0.2% | -1.4% | 0.3% | -1.4% | -0.6% | -1.0% |

**Notes:** All results report percentage-point differences relative to whites. Outcome mean for whites was 8.1% for the national sample and 6.6% for 7-state sample. Sample excludes those with missing data for the outcome variable.
* p<0.10, **p<0.05, ***p<0.01

**Appendix Table 4: Disparities in Receipt of Fair or Poor Care by Income in 7-State Sample, Medicaid Expansion vs. Non-Expansion**

| Income Group (Annual) | Sample Size (N) | MODEL 1: Unadjusted Difference | | MODEL 2: Adjusting for Health Insurance | | MODEL 3: Adjusted for Health Insurance, Race, State, Health Status, and Demographics (age, sex, education) | |
|---|---|---|---|---|---|---|---|
| | | Expansion States (n=2951) | Non-Expansion States (n=3932) | Expansion States (n=2951) | Non-Expansion States (n=3932) | Expansion States (n=2951) | Non-Expansion States (n=3932) |
| Less than $25,000 | 2490 | 18.6%*** | 16.1%*** | 17.4%*** | 11.2%*** | 12.0%*** | 3.9% |
| $25,001-$50,000 | 1651 | 12.7%*** | 10.4%*** | 11.6%*** | 7.2** | 8.5%*** | 3.3%** |
| $50,001-$100,000 | 1669 | 5.4%** | 2.6% | 5.2%** | 1.5% | 5.0%** | 0.8% |
| Greater than $100,000 | 1150 | *Reference* | *Reference* | *Reference* | *Reference* | *Reference* | *Reference* |
| Income Not Reported | 898 | 12.6%*** | 3.0% | 12.6%*** | 0.4% | 9.1%*** | -3.3% |

**Notes:** All results report percentage-point differences relative to the highest income group (Greater than $100,000 per year). Outcome mean for highest income group was 8.0% for the expansion states and 12.6% for the non-expansion states. Sample excludes those with missing data for the outcome variable.
* $p<0.10$, ** $p<0.05$, *** $p<0.01$

**Appendix Table 5: Disparities in Receipt of Fair or Poor Care by Race/Ethnicity in 7-State Sample, Medicaid Expansion vs. Non-Expansion**

| Income Group (Annual) | Sample Size (N) | MODEL 1: Unadjusted Difference | | MODEL 2: Adjusting for Health Insurance | | MODEL 3: Adjusted for Health Insurance, Race, State, Health Status, and Demographics (age, sex, education) | |
|---|---|---|---|---|---|---|---|
| | | Expansion States (n=2951) | Non-Expansion States (n=3932) | Expansion States (n=2951) | Non-Expansion States (n=3932) | Expansion States (n=2951) | Non-Expansion States (n=3932) |
| White Non-Latino | 5196 | *Reference* | *Reference* | *Reference* | *Reference* | *Reference* | *Reference* |
| Black Non-Latino | 845 | 6.0%* | 4.3% | 4.0% | 2.2% | -0.8% | -0.4% |
| Latino | 1136 | 12.5%*** | 5.9%** | 9.0%** | 0.6% | 0.4% | -3.9% |
| Other/Missing | 681 | 9.4%*** | 4.3% | 8.4%** | 2.5% | 5.7% | 1.5% |

**Notes:** All results report percentage-point differences relative to whites. Outcome mean for whites was 16.0% for the expansion states and 18.5% for the non-expansion states. Sample excludes those with missing data for the outcome variable.
* p<0.10, **p<0.05, ***p<0.01

**Appendix Table 6: Disparities in Health Care Not Obtained Due to Costs by Income in 7-State Sample, Medicaid Expansion vs. Non-Expansion**

| Income Group (Annual) | Sample Size (N) | MODEL 1: Unadjusted Difference | | MODEL 2: Adjusting for Health Insurance | | MODEL 3: Adjusted for Health Insurance, Race, State, Health Status, and Demographics (age, sex, education) | |
|---|---|---|---|---|---|---|---|
| | | Expansion States (n=2921) | Non-Expansion States (n=3883) | Expansion States (n=2921) | Non-Expansion States (n=3883) | Expansion States (n=2921) | Non-Expansion States (n=3883) |
| <$25,000 | 2455 | 8.6%*** | 11.8%*** | 7.0%*** | 8.0%*** | 7.7%*** | 8.1%*** |
| $25,001-$50,000 | 1644 | 10.5%*** | 11.9%*** | 9.1%*** | 8.9%*** | 9.9%*** | 10.2%*** |
| $50,001-$100,000 | 1658 | 5.7%*** | 8.3%*** | 5.2%*** | 7.7%*** | 5.9%*** | 8.6%*** |
| Greater than $100,000 | 1132 | *Reference* | *Reference* | *Reference* | *Reference* | *Reference* | *Reference* |
| Income Not Reported | 877 | 6.6%** | 5.5%** | 7.2%*** | 3.7% | 9.8%*** | 4.9%* |

**Notes:** All results report percentage-point differences relative to the highest income group (Greater than $100,000 per year). Outcome mean for highest income group was 3.6% for the expansion states and 3.3% for the non-expansion states. Sample excludes those with missing data for the outcome variable.
* $p<0.10$, ** $p<0.05$, *** $p<0.01$

**Appendix Table 7: Disparities in Health Care Not Obtained Due to Costs by Race/Ethnicity in 7-State Sample, Medicaid Expansion vs. Non-Expansion**

| Income Group (Annual) | Sample Size (N) | MODEL 1: Unadjusted Difference | | MODEL 2: Adjusting for Health Insurance | | MODEL 3: Adjusted for Health Insurance, Race, State, Health Status, and Demographics (age, sex, education) | |
|---|---|---|---|---|---|---|---|
| | | Expansion States (n=2921) | Non-Expansion States (n=3883) | Expansion States (n=2921) | Non-Expansion States (n=3883) | Expansion States (n=2921) | Non-Expansion States (n=3883) |
| White Non-Latino | 5146 | *Reference* | *Reference* | *Reference* | *Reference* | *Reference* | *Reference* |
| Black Non-Latino | 835 | 0.3% | 0.6% | -1.4% | -0.6% | -3.0% | -3.0% |
| Latino | 1118 | 1.8% | -1.9% | -2.6% | -7.4%*** | -4.6% | -10.2%*** |
| Other/Missing | 667 | -2.5% | 5.5% | -3.5%* | 3.8% | -4.1%* | 2.9% |

**Notes:** All results report percentage-point differences relative to whites. Outcome mean for whites was 10.3% for the expansion states and 12.0% for the non-expansion states. Sample excludes those with missing data for the outcome variable.
* p<0.10, **p<0.05, ***p<0.01

**Appendix Table 8: Impact of Income, Race, and Health Insurance on
Perceived Changes in Health Care in 7-State Sample,
Medicaid Expansion vs. Non-Expansion**

| Variable | ACA Has Directly Helped You† | | Quality of Care Has Improved Over Past Two Years | | Costs of Health Care Have Become More Affordable Over Past Two Years | |
|---|---|---|---|---|---|---|
| | Expansion States (n=1430) | Non-Expansion States (n=1953) | Expansion States (n=2937) | Non-Expansion States (n=3924) | Expansion States (n=2920) | Non-Expansion States (n=3901) |
| INCOME | | | | | | |
| <$25,000 | 0.261*** | 0.135* | -0.028 | 0.018 | 0.100* | 0.185*** |
| $25,001-$50,000 | 0.080 | 0.035 | -0.007 | -0.010 | 0.069 | 0.114** |
| $50,001-$100,000 | -0.028 | -0.002 | 0.013 | -0.061* | 0.032 | 0.011 |
| > $100,000 | *Reference* | *Reference* | *Reference* | *Reference* | *Reference* | *Reference* |
| Not Reported | 0.034 | 0.150* | -0.010 | 0.056 | 0.033 | 0.157** |
| RACE | | | | | | |
| White Non-Latino | *Reference* | *Reference* | *Reference* | *Reference* | *Reference* | *Reference* |
| Black Non-Latino | 0.405*** | 0.435*** | 0.258*** | 0.272*** | 0.309*** | 0.335*** |
| Latino | 0.102 | 0.179*** | 0.200*** | 0.138*** | 0.192*** | 0.219*** |
| Other | 0.012 | 0.202** | 0.008 | -0.056 | 0.072 | 0.069 |
| INSURANCE | | | | | | |
| Medicaid | 0.526*** | 0.164** | 0.217*** | 0.077 | 0.488*** | 0.120* |
| Employer-based | 0.091 | -0.030 | 0.071 | 0.075 | 0.122** | 0.015 |
| Medicare | 0.271** | 0.104 | 0.165** | 0.089 | 0.335*** | 0.162** |
| Marketplace | 0.245 | 0.683*** | 0.174 | 0.112 | -0.005 | 0.244* |
| Other Coverage | 0.161 | 0.104 | 0.080 | 0.031 | 0.248*** | 0.146** |
| Uninsured | *Reference* | *Reference* | *Reference* | *Reference* | *Reference* | *Reference* |

**Notes:**
* p<0.10, **p<0.05, ***p<0.01
† Question only asked of half the survey sample.
Regressions adjust for income, race, insurance, education, age, sex, and state of residence.
All questions are on a three-point scale (Yes/Better, No Effect/No Change, or No/Worse), with positive numbers indicating better outcomes.

**Appendix: Survey Methodology**

SSRS conducted the 2015 Seven-State Patient Experience Poll on behalf of Harvard T.H. Chan School of Public Health (HSPH), NPR and The Robert Wood Johnson Foundation (RWJF) from September 8 through November 9, 2015. The goal of this study was to collect data on the attitudes and healthcare experiences of adults in Florida, Kansas, New Jersey, Ohio, Oregon, Texas and Wisconsin, with focus on subpopulations in these states defined by ethnicity, income-level and recent health insurance status. A parallel national poll was conducted via SSRS Omnibus – where 1,002 adults across the U.S. were asked the same questions as those in the seven target states.

<div align="center"><strong>Seven-State Poll Methods</strong></div>

For the Patient Experience Poll*,* SSRS interviewed a representative sample of 7,036 respondents, across the seven states, oversampling Blacks and Hispanics in some states and respondents with annual household incomes lower than $25,000 in all seven states. Respondents were reached via landline and cellular telephones and could choose to be interviewed in English or in Spanish.

**Sample Design**

Phone numbers used for this study were randomly generated from landline and cellular phone sampling frames in each of the seven states, with an overlapping frame design. To oversample Blacks, Hispanics, and respondents with lower income, the sample plan consisted of two components: (1) general adult population respondents reached by random digit dialing (RDD) landline or cell phone; (2) respondents reached by RDD landline or cell phone, and interviewed only if they were Black or Hispanic, or had a household income less than $25,000.

The RDD sample was stratified to efficiently reach the targeted sub-populations. To do so, the landline sample was divided into two components: (1) Phone number exchanges (defined by the first six digits of the number) associated with Census block groups with a high incidence of blacks or Hispanics (meaning, at least 40% of the population in the block group were Black/Hispanic); (2). Phone number exchanges associated with Census block groups with a high incidence of households with an annual income less than $25,000 (meaning, at least 33% of the population in the block group had a household income less than $25,000). In total, this produced six sampling strata: 3 ethnicity substrata (high Black, Hi Hispanic, Else) by 2 income strata (low income; high income).

Similarly, the cell phone sampling frame was divided into: (1) Cell phone rate centers associated with counties with a high incidence of blacks or Hispanics (meaning, at least 40% of the population

in the county were Black/Hispanic); (2). Cell phone rate centers associated with counties with a high incidence of households with an annual income less than $25,000 (meaning, at least 33% of the population in the block group had a household income less than $25,000).

*Other Sample Supplements*
In order to reach some of the population targets, other sample types were used to augment samples:
- Hispanic surname sample: Landline sample records identified in directory listings where the phone number was tied to at least one person with a distinctive Hispanic surname
- Targeted Black or Hispanic cell phone sample: Cell phone numbers for which consumer-listing information indicates the respondent is Black/Hispanic.

The RDD landline sample was generated through Marketing Systems Group's (MSG) GENESYS sampling system. MSG is one of the survey research industry's largest statistical sampling companies, and a supplier to social science researchers and governmental organizations such as the US Census Bureau and Centers for Disease Control. The standard GENESYS RDD methodology produces a strict single stage, Equal Probability Selection Method (epsem) sample of residential telephone numbers. In other words, a GENESYS RDD sample ensures an equal and known probability of selection for every residential telephone number in the sample frame. The sample was generated shortly before the beginning of data collection to provide the most up-to-date sample possible, maximizing the number of valid telephone extensions. Following generation, the RDD sample was prepared using MSG's proprietary GENESYS IDplus procedure, which identifies and eliminates a large percentage of all non-working and business numbers.

Using a procedure similar to that used for the landline sample, MSG generated a list of cell phone telephone numbers in a random fashion. Inactive numbers were flagged and removed utilizing MSG's CellWins procedure.

**Survey Administration**
The field period for this study was September 8 through November 9, 2015. All interviews were completed through the CATI system. The CATI system ensured that questions followed logical skip patterns and that complete dispositions of all call attempts were recorded.

Interviewers received written materials about the survey instrument and formal training for this particular project. The written materials were provided prior to the beginning of the field period and included an annotated questionnaire that contained information about the goals of the study, as well as detailed explanations as to why questions were being asked, the meaning and pronunciation of key terms, potential obstacles to be overcome in getting good answers to

questions, respondent problems that could be anticipated ahead of time, as well as strategies for addressing the potential problems.

Interviewer training was conducted both prior to the study pretest and immediately before the survey was launched. Call center supervisors and interviewers were walked through each question from the questionnaire. Interviewers were given instructions to help them maximize response rates and ensure accurate data collection.

In order to maximize survey response, SSRS enacted the following procedures during the field period:

- Up to 7 follow-up attempts were made to contact non-responsive numbers (e.g. no answer, busy, answering machine)
- Each non-responsive number was contacted multiple times, varying the times of day, and the days of the week that call-backs were placed using a programmed differential call rule
- Interviewers explained the purpose of the study and, when asked, stated as accurately as possible the expected length of the interview (~20 minutes)
- Respondents were offered the option of scheduling a call-back at their convenience
- Specially trained interviewers contacted households where the initial call resulted in a refusal in an attempt to convert refusals to completed interviews
- Respondents concerned with the cost of their cell phone minutes, and soft refusals were offered $10 incentive.

**Weighting Procedures**

The survey data were weighted, separately for each state, in order to: (1) adjust for the fact that not all survey respondents were selected with the same probability; and (2) account for systematic nonresponse along known population parameters. Weighting involved several stages, each conducted state-by-state:

**Base-Weight**

1. Adjustment for sample design among low income-respondents ($LI_{adj}$): In order to correct for oversampling of telephone exchanges and rate centers known to have higher incidences of low income households (specifically in the oversamples), the sample of completed interviews with respondents reporting annual family incomes less than $25,000, was assigned weights calculated as

$$LI_{adj}=LI_{pop}/LIs_{amp}$$

where $LI_{pop}$ is the estimated share of the low income population in this stratum share of the low income population in the sampling stratum and $LIs_{amp}$ is its share among the sample of completed interviews.

2. Adjustment for oversample sample design ($D_{adj}$). With $LI_{adj}$ applied the entire state sample was weighted so that oversampling of low income and high-density Black or Hispanic areas be corrected. This weight was calculated as:

$$D_{adj}= LI_{adj}*D_{pop}/D_{samp}$$

Where $D_{pop}$ is the estimated share of the adult population among the various sampling strata and $D_{samp}$ is the share among the sample of completed interviews.

3. Probability of the respondent being reached within the sample frame

The sample-weight for this stage was calculated based on:

   1. A phone number's probability of being included in the landline or cell phone sampling frame
   2. The likelihood that a respondent will be selected if their household's landline phone was reached.

A respondent's probability of being reached by cell phone (CellProb) was calculated as the ratio between the number of cell phones sampled and the available number of cell phones. If the respondent did not answer any cell phones, their probability of being reached by cell phone was 0.

A respondent's probability of being reached by landline (LLProb) was calculated as the ratio between the number of cell phones sampled and the available number of cell phones, divided by the number of adults in the respondent's household. If the respondent did not answer any landlines, their probability of being reached by landline was 0.

The total weighting adjustment for the RDD sample was calculated as:
Baseweight=([$D_{adj}$]/(LLProb+CellProb-LLProb*CellProb)).


**Post-Stratification Weighting (Raking)**
Post-Stratification was conducted separately, in two stages, for each state. Population parameters, or benchmarks, were based on the US Census Bureau's 2013 American Community Survey (ACS). In addition, the distribution of phone use (cell phone only; landline user) was estimated based on the CDC's modeled estimates based on the 2013 National Health Interview Survey (NHIS), with projected increases in the share of cell phone only (CPO) among adults. The weighting parameters used were:
   (1) Age-group crossed with gender: the age-groups used were: 18-29; 30-49; 50-64; 65 or more.
   (2) Race/Ethnicity:

- In all states: Hispanic, White non-Hispanic, Black non-Hispanic, Other non-Hispanic
- In Florida, New Jersey and Texas: Hispanics were also weighted to accurately represent the distribution of Hispanics born the United States and those born outside of the U.S. (or in Puerto Rico).

(3) Educational attainment: Less than high school; high school graduate; some college education (including associate's degree), and bachelor's degree or higher.

(4) Marital status: Married or unmarried.

(5) Population density of the respondent's county.[1]

(6) Phone use: Cell phone only, has landline in the household.

*Accounting for Oversampling Of Low Income Respondents*

Since the method by which the Census Bureau calculates family income differs meaningfully from the method in this study[2], Census estimates cannot reliably be used as benchmarks to correct for the oversampling in lower income households. To address this, the raking was conducted in two stages in each state. First respondents reached as part of the income oversample were excluded from the raking process. With the weight applied, the percentage of adults with family incomes under $25,000 was estimated. This percentage was then included as a weighting parameter when the full sample was raked (including all the aforementioned weighting parameters as well).

**Adjustment to Control Variance Among Weights ('Trimming')**

To reduce the possibility that single cases would affect the data too much, and to keep variance relatively low, the weights were truncated to a range at the top and bottom 2.5 percent of their distribution.

**National Study Methods**

The national survey was conducted using the SSRS Omnibus, a national, weekly, dual-frame bilingual telephone survey. Each weekly wave of the SSRS Omnibus consists of 1,000+ interviews, of which 500 are obtained with respondents on their cell phones, and approximately 35 interviews completed in Spanish. All SSRS Omnibus data are weighted to represent the target population.

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[1] Density is defined on the national level by dividing all counties in the U.S. into five equivalently-sized ranked classes defined by the counties adult population divided by the county's land-mass area. Thus, each county in the U.S. is assigned to one of the density quintiles, with the value '1' representing the least dense counties, and '5' representing the densest. Within each state counties could fall into any of the five categories. States with a relatively-low share of urban counties have no residents in the 5 category of population density.

[2] The Census estimates family income by asking a series of questions about possible sources of income for each family member in the respondent's household. This would be overly time-consuming for this telephone survey. Therefore, as is typically the case, family income was asked in a single-item question. See: https://usa.ipums.org/usa-action/variables/FTOTINC#questionnaire_text_section.

**Sample Design**

The SSRS Omnibus sample is designed to represent the adult U.S. population. SSRS Omnibus uses a fully-replicated, stratified, single-stage, random-digit-dialing (RDD) sample of landline telephone households, and randomly generated cell phone numbers. Sample telephone numbers are computer generated and loaded into on-line sample files accessed directly by the computer-assisted telephone interviewing (CATI) system.

*Respondent Selection*

Within each landline household, a single respondent is selected through the following selection process: First, interviewers ask to speak with the youngest adult male/female at home. The term "male" appears first for a random half of the cases and "female" for the other randomly selected half. If there are no men/women at home during that time, interviewers ask to speak with the youngest female/male at home.

Cell phones are treated as individual devices and the interview may take place outside the respondent's home; therefore, cell phone interviews are conducted with the person answering the phone.

*Field Procedures*

Interviewing for each SSRS Omnibus survey is conducted over a five-day period.
Each wave of SSRS Omnibus is composed of two distinct parts. The first is a series of inserts contracted for by various clients; these inserts may range from a single, closed-ended, question to a twenty-minute battery of open and closed-ended questions. The second part of the SSRS Omnibus questionnaire includes standard demographic/ classification questions

The CATI system allows for computer control of questionnaire administration, automatic handling of skip pattern response editing, and range checks. Closed-ended responses are ready for tabulation following completion of the last interview. Each unit in the sample receives as many calls as necessary in order to survey qualified respondents and to fulfill the required number of interviews within each sub-strata of the samples. Additional callback attempts follow a differential callback schedule (AM/PM, alternate days, weekdays-weekends) to ensure the highest completion rate possible.

*Weighting*

Each SSRS Omnibus wave is weighted to provide nationally representative and projectable estimates of the adult population 18 years of age and older. The weighting process takes into account the disproportionate probabilities of household and respondent selection due to the number of separate telephone landlines and cellphones answered by respondents and their households, as well as the probability associated with the random selection of an individual

household member.  Following application of the above weights, the sample is post-stratified and balanced by key demographics such as age, race, sex, region, and education. The sample is also weighted to reflect the distribution of phone usage in the general population, meaning the proportion of those who are cell phone only, landline only, and mixed users.

*Procedure for the Patient Experience Study*
For the Patient Experience study, respondents were selected so that a minimum of 300 would have family income less than $25,000. The weighting process followed the same procedure as the state polls, in that first the portion of the sample completed without screening for income was weighted to represent the U.S. adult population. Based on this sample, the estimated share of respondents who would report family incomes of less than $25,000 was estimated, and the full sample was raked keeping this percentage at the same level.