Offsetting Policy Feedback Effects: Evidence from the Affordable Care Act [*]

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Abstract

The U.S. welfare state provides key benefits indirectly. The Affordable Care Act (ACA), for example, uses a package including exchanges, subsidies, and penalties to increase health insurance enrollment. Prior research indicates that indirect policies do not produce feedback effects on public opinion, but the ACA was unusually salient and complex. Can such indirect policies produce feedback effects, and are any such effects heterogeneous? Here, we use several data sets and inferential strategies to show that groups especially affected by the exchanges and the associated insurance mandate did shift their ACA attitudes, albeit in opposing directions and with more limited effects than descriptive analyses suggest. Among our findings, those who experienced rising local prices became more opposed to the ACA while those most likely to benefit from the individual markets' price caps became more favorable. Overall, positive changes in attitudes were offset by demographically concentrated, negative shifts among the uninsured.

Political scientists have long documented the varied ways public policies can reconfigure the political landscape at the elite and mass levels (Patashnik, 2008; Campbell, 2012). While policies that are directly implemented by governments commonly generate feedback effects on public opinion (Soss, 1999; Campbell, 2003; Mettler, 2005; Lerman and Weaver, 2014; Nall, 2018), policies that rely on indirect mechanisms such as private markets, regulations, or the tax code often do not (Mettler, 2011; Morgan and Campbell, 2011; Galvin and Thurston, 2017; Mettler, 2018). In part, that is because policies provided indirectly are often lower in visibility and less easily politicized (Howard, 1999; Mettler, 2011). These claims are bolstered by a separate body of research concluding that self-interest typically has limited effects on public opinion (Citrin and Green, 1990).

The ACA is similar to other indirect policies in that it relies on incremental and individually low-salience measures (Patashnik and Oberlander, 2018). The ACA is also unusually complex, as it includes a wide array of different policy levers targeting insurers, employers, and citizens. Still, it had profound impacts on many Americans that were unlikely to go unnoticed: comprehensive health insurance is a substantial benefit that significantly improves recipients' financial security, health care access, and mental health (Finkelstein et al., 2012). And unlike other policies provided to a substantial extent through private actors or the tax code, the ACA as a package has been an extraordinarily salient and politicized initiative subject to extensive, competitive elite framing (Jacobs and Weaver 2015; Hopkins 2018; Béland, Rocco and Waddan 2019).

This combination of political visibility and real-world impact may make the ACA's exchanges more likely to influence public opinion than other complex or indirect policies, whether positively or negatively. Yet there are also reasons to hypothesize that the exchanges and associated policies produced different effects on different groups of people, a heterogeneity which may be masked by estimating their overall impacts. The package of policies supporting the exchanges and individual markets—including the mandate and subsidies—may have produced offsetting feedback effects. Those feedback effects may be better characterized by heterogeneity than invisibility.

Heterogeneity is particularly important to consider for the ACA because health care costs at a given point in time are highly concentrated on a small number of people with significant health issues (Sawyer and Claxton, 2019). At the same time, shifts in the system's costs are not necessarily so diffuse as to go unnoticed. As a consequence, any government policy which influences health

insurance markets is likely to have heterogeneous effects on different individuals, and specific elements of the ACA's design may amplify this heterogeneity. In particular, the law employed sticks as well as carrots, as it entailed substantial new taxes and regulation (Jacobs and Mettler, 2018) that might be viewed favorably or unfavorably depending on personal circumstances. It thus has the potential to generate *negative* policy feedbacks as well, especially if offerings on the exchanges were unsatisfactory or disappointing.

Despite the importance of heterogeneity for understanding the varied public opinion impacts of health care reform, research on the ACA's impacts has focused primarily on its Medicaid expansion (Clinton and Sances, 2017; Haselswerdt, 2017; Hopkins and Parish, 2019) or its overall impacts (McCabe, 2015; Jacobs and Mettler, 2016, 2018). Research examining the impacts of the exchanges or associated policies has been quite limited (but see Hosek, 2019).[1] Yet studying the exchanges promises to shed light on critical theoretical questions: can a salient but complex policy which relies heavily on indirect provision generate policy feedbacks on public opinion? And if so, are those feedback effects heterogeneous?

The inattention to the exchanges is surprising substantively as well as theoretically. The ACA's primary goal was to expand access to health insurance, as nearly 50 million people lacked insurance upon enactment (Kaiser Health News, 2012). Its centerpiece was the creation of exchanges on which Americans could purchase private health insurance. Initially, 75% of the total gains in health insurance enrollment were expected to come from the exchanges (Congressional Budget Office, 2010). The exchanges were potentially pivotal not only in expanding access to insurance but also in broadening the ACA's political support. The exchanges were designed to serve a large and middle-class constituency, which when combined with the Medicaid expansion offered the possibility of fostering a cross-class coalition in support of the law.

The paper's next two sections develop the hypothesis of heterogeneous effects, first briefly sketching how the exchanges operate and then using prior research to develop theoretical expectations. It subsequently turns to three sections which evaluate its predictions empirically. Our empirical tests exploit various population-based data sets to estimate the impact of the exchanges'

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[1]Existing research has also considered exchange enrollment as a *dependent* variable, demonstrating that Republicans are less likely to use the exchanges (Lerman, Sadin and Trachtman, 2017; Sances and Clinton, 2019).

implementation on the ACA attitudes of those most likely to use or be affected by the package of policies structuring the individual markets. Specifically, we focus on those who purchase their own insurance (whether via the exchanges or not) or who lack insurance. The individual mandate was enacted to prevent adverse selection on the exchanges and so its political impacts merit examination alongside those of the exchanges.

Since we are testing for the possibly heterogeneous effects of a complex policy package, our research design is necessarily somewhat complex as well. Rather than relying on a single, decisive test, we conduct a variety of statistical tests on different samples employing different research designs to test different aspects of the exchanges and supporting policies. In doing so, our goal is to provide an overall assessment of the exchanges' causal impacts. Presenting the results of an array of tests also strengthens our core conclusions, as the various studies have differing strengths, limitations, and potential biases.

The initial empirical results are descriptive and set the stage for subsequent causal inferences. The section with descriptive results turns first to data from the Kaiser Family Foundation's (KFF) rolling cross-sectional telephone survey of approximately 117,000 respondents over 8 years. Those who purchased their own insurance became more favorable at precisely the moment when the exchanges opened. At approximately the same time, those without insurance became less favorable toward the ACA. Analyses of separate questions from the KFF surveys also demonstrate that after the exchanges' 2014 opening, those who purchased their own insurance were more likely to say that they benefited from the law while the uninsured were more likely to report being harmed. Separate KFF surveys of the non-group insured and Kentucky residents[2], presented in the SI, show that among exchange users, those who received subsidies felt more positively toward the law as well. Results from a population-based panel survey reinforce these claims by showing that those who lost insurance between 2016 and 2018 became more negative toward the ACA, which is consistent with the earlier, similar findings of Jacobs and Mettler (2016). While not dispositive, these descriptive results are consistent with heterogeneous feedback effects.

Do the cross-sectional differences reflect causal effects, or are they instead the products of selection into different types of insurance? Building on the call in Campbell (2012) to conduct more

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[2]Kentucky saw the largest initial gains in insurance post-ACA (Hopkins and Parish, 2019), making it a valuable state to analyze.

policy feedbacks research focusing on causal inference, one central contribution of this manuscript is to provide estimates of the exchanges that are credibly causal effects and not subject to alternative explanations based on selection bias. Given prior research emphasizing the low visibility of indirectly provided benefits, we begin by analyzing two special cases in which policy feedback effects were especially likely.

In the first test, we link administrative data on exchange pricing to geo-coded respondents. It shows that respondents who used the exchanges and whose local exchanges experienced price shocks became more negative toward the ACA as a consequence. This implies that those using the exchanges were able to politicize their experiences, and that they downgraded their attitudes toward the ACA after negative experiences.

The second test, by contrast, focuses on a group that was especially likely to *benefit* from the ACA's individual markets. Among the regulations for the individual markets, the ACA limited the premiums that insurers could charge older customers relative to younger customers, making those in their early 60s a most-likely case for positive feedback effects. The Medical Expenditure Panel Survey suggests that many older adults considered the offerings on the exchanges, as it illustrates that adults ages 50 to 63 were disproportionately likely to switch from employer-based or COBRA plans to the individual market after the ACA's implementation (Glied and Jackson, 2018). Supporting this hypothesis, our regression discontinuity analysis demonstrates positive changes in attitudes among those in their early 60s after the newly capped premiums. Specifically, the ACA's 2014 implementation helped close the previously observed (2012) gap between 64-year-olds (who typically rely on private insurance) and 65-year-olds (who often use Medicare) (Lerman and McCabe, 2017).[3] In these two most-likely cases for policy feedbacks, indirect policies do produce feedback effects, albeit heterogeneous ones.

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[3]In the Lerman and McCabe (2017) argument, respondents over 65 felt more positively toward the ACA in 2012 because of their personal experiences with Medicare. Here, we are studying the post-2014 period, during which those *under* 65 were likely to have experienced changes due to ACA-related provisions such as the cap on premiums while those 65 and older had more consistent experiences. To the extent that the price caps and other ACA-related policies shaped experiences, we expect the previously observed differences at age 65 to shrink.

Next, to account for selection into purchasing on the exchanges, we return to the KFF data to consider whether those whose demographics make them most likely to use the individual markets became more favorable toward the ACA after implementation. They did not. And again, we find that those most likely to be uninsured were significantly *less* favorable toward the ACA—and even less likely to identify as Democrats, as we show in the SI—after its implementation.

Overall, these results suggest that Americans shifted their attitudes in response to perceived benefits or costs from the ACA, implying that they did attribute personal and local experiences with health insurance to the ACA. The feedback effects, however, largely cancelled out in aggregate, due to concentrated perceived costs and backlash among those likely to be uninsured. In other words, the ACA's complexity did not preclude policy feedback effects. Effects were instead complex and heterogeneous, varying across places, people, and specific policy levers. In the conclusion, we draw out the implications of these findings, using them to shed light on various paradoxical elements of the ACA's politics.

Background on the ACA's Exchanges

Some social policies can be summarized succinctly, but the ACA cannot. It is thus valuable to briefly provide background on the ACA's design and goals. Doing so enables us to develop targeted hypotheses about its potentially heterogeneous feedback effects; justify our decision to examine the exchanges alongside the individual mandate and subsidies; contextualize and justify potential estimation strategies; and underscore the law's complexity.

The pre-ACA health insurance system was already a patchwork of public and private insurance, with private insurance typically tax-subsidized and provided primarily through employers (Hacker, 2002). While there was a separate insurance market for individuals, insurers could reject applicants with pre-existing conditions, and the individual market was at once small and highly variable in the products available (Jones, 2017). On the public side, Medicare was a federal program that insured a majority of those over 64, while Medicaid was a means-tested federal-state partnership targeting households with children and varying markedly across states (Michener, 2018).

Rather than develop or expand a single program, the ACA sought to fill in gaps in the existing system. The law's centerpiece was arguably the establishment of exchanges on which individuals could purchase private insurance. Insurers were only allowed to charge older customers three times

as much as younger customers, and they could no longer deny coverage due to health histories. Initial projections indicated that by 2019, 24 million Americans would be insured through the exchanges and 16 million through the Medicaid expansion (Congressional Budget Office, 2010).[4]

The exchanges themselves were comprised of various policy levers. As enacted, the exchanges were bolstered by a new tax penalty or "individual mandate" for Americans who didn't have qualifying health insurance. This mandate was intended to limit adverse selection. In 2016, 5 million tax returns made such payments, with a mean payment of $727 (Internal Revenue Service, 2019). The federal exchanges also had a notoriously rocky roll-out. The healthcare.gov website was plagued by long waiting times and other technical difficulties during its fall 2013 opening.

By contrast, for Americans making below 400% of the poverty line, the federal government provided subsidies in the form of the Advanced Premium Tax Credit (APTC). In 2016, 6.1 million American households received this credit, with a mean subsidy of approximately $4,000 (Internal Revenue Service, 2019).[5] Working in tandem, the exchanges, the individual mandate, and the subsidies were designed to create a robust marketplace for affordable health insurance.

Prior Research and Hypotheses

Given the description of the ACA above, its exchanges—bolstered by the individual mandate as well as premium subsidies—are a clear example of an indirectly provided public benefit. Rather than provide health insurance directly, as does Medicare, the ACA's exchanges and associated policies sought to increase the uptake of health insurance through private actors. Prior research indicates that such indirect policies do not generally produce policy feedback effects, especially on public opinion. Here, we hypothesize that if they are sufficiently salient, policies which are indirect and complex can nevertheless shape public opinion, albeit in cross-cutting ways. Complex policies

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[4]As enacted, the law also expanded Medicaid to 138% of the federal poverty line and allowed adults to participate irrespective of family status. Separate elements ended lifetime caps on insurance company payments, defined essential health benefits plans must include, and enabled children to remain on their parents' insurance until 26.

[5]Notably, those with access to qualifying health insurance through employers were ineligible for subsidies on the exchanges. Separately, people whose incomes prove higher than expected are required to repay the excess subsidy.

can give rise to complex patterns of feedback.

Indirect Policies and Feedback Effects

One study which considers whether indirect policy levers can produce feedback effects on public opinion is Morgan and Campbell's 2011 analysis of the 2003 Medicare Modernization Act (MMA). Like the ACA, the MMA was a health policy reform that relied substantially on indirect mechanisms to reduce prescription drug costs. The MMA's impacts on public opinion were limited: its implementation did not lead beneficiaries to support more market-based policies generally, nor did it improve perceptions of Republicans' handling of health policy. Extensive research on other policies reinforces the claim that indirect policies are unlikely to have notable feedback effects on public opinion, as such policies are difficult to trace back to government actions (Mettler, 2011; Morgan and Campbell, 2011; Campbell, 2012; Galvin and Thurston, 2017; Mettler, 2018).

Certainly, there are reasons to think that the ACA's exchanges might follow this pattern. The government's role in facilitating the provision of insurance is not a salient feature of the exchanges' design,[6] perhaps reducing citizens' capacity to trace elements of their insurance back to government action at all (see also Kogan and Wood 2018), or else to link the exchanges' various benefits (and costs) to the same policy package. Indeed, KFF surveys showing wide discrepancies in the favorability of different ACA provisions suggest as much (Kirzinger, Munana and Brodie, 2019). Citizens may not be aware of the connections between different elements of the ACA, such as the way that the individual mandate limits adverse selection and so helps limit premiums.

Prior research also concludes that feedback effects are more readily detected on political participation than on public opinion (Baicker and Finkelstein, 2019; Larsen, 2019). That further dampens any expectation that the exchanges had feedback effects on public opinion.

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[6]The exchanges are simply a marketplace: once customers are enrolled, their primary interactions are not with government but a private insurer. After the exchanges' opening year, customers had the opportunity to automatically re-enroll, meaning that for many, the government's role in facilitating the exchanges might have become an increasingly distant memory. In 2017, nearly 4 million customers automatically re-enrolled with the same insurer (CMS, 2017).

Salience, Heterogeneity, and Complexity

Still, the ACA diverges from other indirect policies in key respects. The law overall was the subject of sustained, highly salient political battles that lasted for years after implementation, a fact which heightened its salience (see also Gollust et al., 2014; Fowler et al., 2017; Hopkins, 2018) and may have triggered loss-averse responses among citizens (Jacobs and Weaver, 2015). This high and sustained level of media coverage may help overcome the barriers that often prevent citizens from connecting their experiences with indirect government policies to their evaluations of those policies. There is evidence that the exchanges were unusually politicized: Republicans proved less likely to enroll via the exchanges than were Democrats or independents (Lerman, Sadin and Trachtman, 2017; Sances and Clinton, 2019).

The exchanges and associated policies also stand out for the extent to which they are likely to generate *heterogeneous responses*. Receiving health insurance can have sizable impacts on people's lives; it can reduce debt and even improve mental health (Finkelstein et al., 2012). For those receiving the APTC in particular, the financial subsidies for purchasing insurance can be large—and generous benefits are one likely source of policy feedbacks (Campbell, 2012).

However, the experiences of those who use the exchanges are likely to differ dramatically depending on their health care utilization, their eligibility for subsidies, the quality of their state's exchange, the options available in their market, and other factors (Chattopadhyay, 2018). A person forced to buy comprehensive coverage she doesn't need or, conversely, who pays a lot for insurance that leaves her exposed to significant costs may sour on the ACA. But someone with a serious pre-existing condition who can get heavily subsidized insurance may feel quite differently. As we detail below, prices on the exchanges also vary dramatically across the country, meaning that similar people can pay very different premiums depending on where they live.

Such heterogeneous impacts may be exacerbated by the ACA's complexity. Campbell (2003), Soss and Schram (2007), and Campbell (2012) note that policy feedbacks are more likely when the policy's beneficiaries are concentrated in ways which encourage them to identify as a coherent group and act on their shared interests. But the ACA's complex, multi-faceted design means that key beneficiaries have a stake only in specific, often disparate provisions (see also Chattopadhyay, 2018; Béland, Rocco and Waddan, 2019). This complexity may fragment the beneficiary population, reducing its capacity to generate a cohesive identity.

The ACA's design might also have inadvertently heightened the salience and traceability of one of the law's least popular elements, its individual mandate (see also Jacobs and Mettler, 2018). In general, people are prone to negativity biases, meaning that they are disproportionately influenced by negative information and events (Arceneaux, 2012), a mechanism which has been observed specifically in health care politics (Eckles and Schaffner, 2010). The tangible and immediate costs associated with the individual mandate might well outweigh any inchoate sense that the exchanges' other features produce benefits for others.

These points jointly suggest that experiences with and responses to the ACA are likely to be *particularistic* and *heterogeneous*. Only small sub-populations of Americans are unambiguously affected by the exchanges and associated policies, whether for good or ill. As a consequence, it would be surprising if the ACA's exchanges had consistently positive feedback effects. But for the most affected subpopulations, we hypothesize that the salience of the ACA's exchanges will enable them to trace their experiences back to the law. Even an indirectly provided public good can generate policy feedback effects on public opinion under certain conditions.

Research Design and Data Sets

Our core hypothesis holds that the ACA exchanges' salience and complexity were likely to have generated different political responses from different groups of people. This hypothesis shapes our research design in key ways. For one thing, it is critical that we consider the full package of policies designed to make the exchanges functional. This package includes not only the exchanges themselves but the individual mandate and the various subsidies, direct or otherwise, to individuals for purchasing insurance via the exchanges. It is also important that we identify tests which distinguish the causal impact of the ACA's exchanges from the factors that lead some people to use the exchanges or to go uninsured. Both considerations make it critical that we conduct multiple empirical tests with different samples, estimands, and outcomes. Our tests of the impacts of this complex law are themselves complex, so this section provides a broad overview of our research designs and data sources. The various empirical analyses employed to test our hypotheses are summarized in Table 1.

Descriptive analyses serve as a useful starting point, since we should expect causal effects to generate associations at a minimum. They help illustrate that beneficiaries from the ACA are few

in number and demographically diffuse, two factors which can jointly make benefits more remote for those paying even small costs. Descriptive analyses can also help identify sub-populations who were especially affected by the exchanges and the mandate, and so help motivate subsequent causal analyses.

We can also use panel data to evaluate the exchanges' impacts on individual-level attitude change to some extent. For example, our panel analyses demonstrate that those who lost insurance became more negative toward the ACA between 2016 and 2018. Given that the individual mandate's repeal took effect only in 2019, that finding suggests that the negative effects of the ACA could be driven by backlash against the penalty for not carrying insurance *or* from dissatisfaction from losing insurance.

Prior research leads us to expect substantial selection bias, as those who anticipate higher health care bills or are not Republicans are more likely to enroll via the exchanges (Lerman, Sadin and Trachtman, 2017). As a result, any straightforward comparison of people who did or did not use the exchanges is almost certainly biased. Accordingly, we then proceed to estimates that are credibly causally identified. The first are theoretically informative special cases as well as cases in which we have particular empirical leverage. For instance, in one such test, we examine whether exogenous price spikes influence exchange users' ACA attitudes. A second analysis uses regression discontinuity designs to examine whether the gap in ACA attitudes between those just under or over 65 years of age closes after the ACA's 2014 implementation. These most-likely cases for negative or positive influence provide initial tests of the pre-existing hypothesis that citizens cannot attribute indirect policies to government action as well as our hypothesis stressing heterogeneous responses.

Our final empirical analyses endeavor to provide causal inferences about the effects of purchasing one's own insurance or being uninsured beyond these special cases. Because the exchanges opened nationwide in late 2013 for insurance purchases in 2014, we cannot employ the same geographic difference-in-difference design which generated estimates of the Medicaid expansion's effects (Clinton and Sances, 2017; Hopkins and Parish, 2019). And our data do not include sufficient covariates or respondents to use a regression discontinuity design to compare those who were just eligible or ineligible for federal subsidies. Finally, most of the available data provides one-time, cross-sectional snapshots, making it difficult to know who in the pre-2014 period would

later use the exchanges. Given these limitations, we use a method similar to that employed in Karmakar et al. (2018). Specifically, we model likely self-purchasers or uninsured respondents using demographic characteristics, and then analyze changes in the relationship between these predicted scores and ACA attitudes. These tests consider both intended impacts of ACA benefits as well as negative outcomes that coincide with its implementation.

Research Question	Data	In SI?
Descriptive Tests		
1a., 1b., Self-purchasers more pos. to ACA post-2014?	HTS, Panel,	Main
1c., 1d.	NG, KY	SI
2a. 2b., Uninsured more neg. to ACA post-2014?	HTS, Panel,	Main
2c., 2d.	NG, KY	SI
3. More self-reported benefit/harm from ACA post-2014?	HTS	Main
4., 5. Self-insured (uninsured) report more benefit (harm) from ACA post-2014?	HTS	SI
6. Subsidy recipients more pos. to ACA than others?	NG	SI
Causal Tests		
4. Most likely: Local price shocks $\rightarrow$ exchange users more neg.?	HTS	Main
5. Most likely: Early 60s more pos. to ACA post-2014?	HTS	Main
6. Likely exchange users more pos. post-2014?	HTS	Main
7. Likely uninsured users more neg. post-2014?	HTS	Main

HTS: KFF Health Tracking Survey; NG: KFF Non-Group Survey;
KY: KFF Kentucky Survey; Panel: [Redacted] Panel

Table 1: *Research questions, anticipated directions of effects, data sources, and location of results.*

Data Sources

We use a range of available data for our tests of heterogeneous effects. One primary source is the KFF's Health Tracking Survey (HTS), a rolling cross-sectional telephone survey of adults' attitudes about the ACA and health policy. This survey has been conducted in most months between 2009 and the present; here, we report results for 117,234 respondents surveyed between February 2009 and September 2017. On account of its extraordinary sample size, these surveys

provide a unique opportunity to observe the evolution of Americans' ACA attitudes as well as the possibly differing trajectories of key sub-groups.

Our descriptive analyses supplement the HTS with separate KFF surveys of the non-group insured in 2014, 2015, and 2016 as well as a 2015 survey of Kentucky residents, all of which are presented in the Supplemental Information (SI). For our causal estimates, we return to the HTS when employing a regression discontinuity design for those just below age 65 as well as using the difference-in-difference estimation strategy based on predicted insurance source scores. We also merge a geo-coded version of the HTS with administrative data on exchange pricing to estimate the effects of local price changes on ACA favorability.[7]

Last, we draw on the [name redacted] panel survey administered via Knowledge Networks/GfK. This panel is unique, as it tracks a nationally representative, probability-based sample which was recruited through address-based sampling and random-digit dialing over ten years. Specifically, the panel has 13 separate waves: 5 waves in 2007-2008, 2 waves in 2012 (which included the first questions about the ACA specifically), 2 waves in 2014, 3 waves in 2016, and 1 wave in 2018. Insurance status was only asked in 2016 and 2018. Table 1 summarizes the data sets employed for each test. See the SI for details.

Descriptive Statistics on ACA Exchanges & Attitudes

In this section, we present the results of descriptive analyses whose goals are to identify who is especially likely to use the exchanges and then to detail the associations between different insurance sources and ACA attitudes. This section lays the groundwork for subsequent causal analyses.

Demographic Differences by Insurance Type

To understand the exchanges' impacts on public opinion, we first need to identify who actually uses them. SI Figure A1 uses the HTS to illustrate the distribution of types of health insurance before and after the ACA's primary provisions came into effect. It shows the decline in the uninsured rate from 14.4% before January 2014 to 9.7% after. It also shows the uptick in Medicaid receipt that followed the expansion of Medicaid in some states, from 3.7% to 6.6%.

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[7]Specifically, we obtained the administrative data on plan pricing and offerings by geography for 2014-2017 via the Robert Wood Johnson Foundation's National Narrow Network Project.

But overall, these changes are marginal: the basic contours of health care provision in the U.S. remain much as they were before the ACA. What's more, the share of U.S. adults who reported using the exchanges is on average only 2% of the surveyed population after their creation. Categories of insurance that were less overtly affected by the ACA—employer-provided insurance and Medicare—remain far and away the largest sources of insurance. These patterns alone place important limits on the ACA's direct policy feedback effects: people in the parts of the insurance market most influenced by the ACA represent a small minority of citizens.

How does the small share of Americans who purchase insurance via the exchanges compare to other groups? SI Table A1 summarizes the means of several key variables by source of insurance for post-January 2014 respondents. Consistent with Lerman, Sadin and Trachtman (2017) and Sances and Clinton (2019), those who bought insurance through the exchanges were more Democratic than the population overall. Medicaid recipients and those who used the exchanges had similar partisanship, even though those using the exchanges had higher incomes and were more likely to be White. This indicates that any causal analyses will have to be wary about selection biases, especially given the general stability of partisan identification. Jointly, the table and figure also show that exchange enrollees had lower incomes and were younger than the population overall, but were older than the uninsured.

Trends in ACA Attitudes by Insurance Type

We now turn to our primary independent and dependent variables. Descriptively, is there evidence that ACA favorability differs depending on Americans' sources of health insurance?

Figure 1 summarizes the trends in a dichotomized measure of ACA favorability by insurance type. The left side illustrates that respondents insured through Medicaid are always more favorable toward the ACA than those insured through Medicare or employers, with 61% of Medicaid recipients reporting favorable attitudes versus 47% for those with employer-provided insurance and 45% for those on Medicare. The over-time patterns for these groups are roughly similar, with growing favorability between 2016 and 2018, although the smallest group (Medicaid recipients) is understandably more variable.

On the right, we see the trends for the insurance categories for whom the ACA's exchanges and mandate are especially impactful: those who lack insurance, buy insurance themselves, and
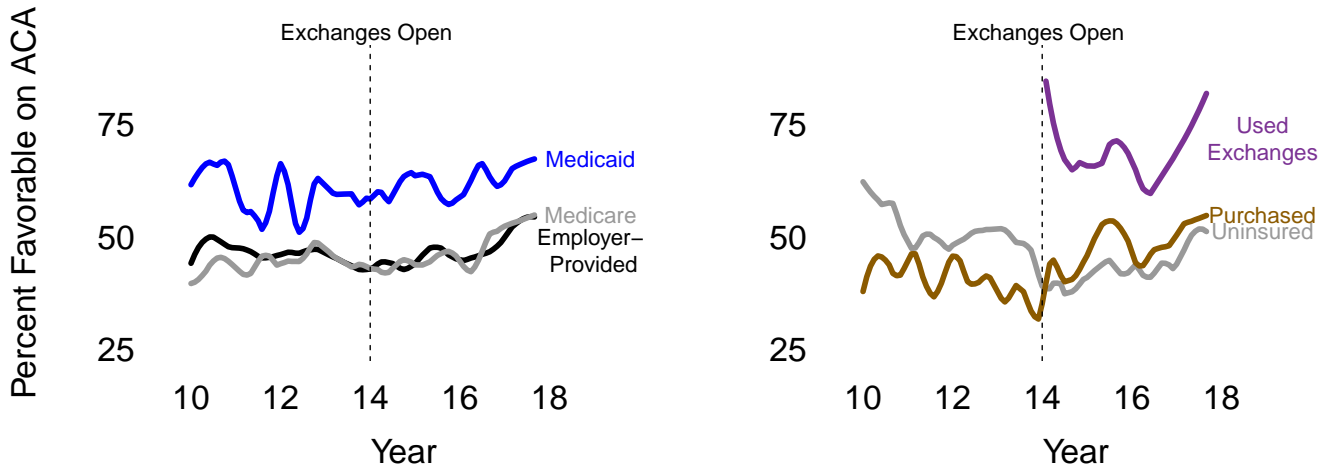
Figure 1: *Dichotomized ACA favorability by health insurance status and source over time.* The survey question for "used exchanges" was introduced in 2014, and it is a subset of "self-purchased". It measures whether an individual *purchased* insurance through the exchanges.

buy insurance via the exchanges. In the period before ACA implementation, those without insurance are consistently more favorable toward the ACA than those purchasing insurance on the individual market. The average ACA favorability for those without insurance is 52% in the pre-implementation period, as compared to 41% who are self-insured.

But the groups switch places almost immediately after implementation. Favorability among the uninsured drops sharply in the run-up to implementation and averages just 42% in post-implementation surveys. By contrast, favorability among those on the individual market rises, and averages 47% after implementation (see also McCabe, 2015). Such changes could reflect people's experiences, as those without insurance faced a newly implemented tax penalty while those needing to self-insure instead enjoyed a range of new options and protections, alongside subsidies in some cases. These sudden attitudinal changes thus provide a valuable motivation for subsequent analyses. However, such changes might also reflect selection effects.

Finally, the right panel shows that those who purchased on the exchanges felt particularly favorably toward the ACA. Like Medicaid recipients, this group is small and so favorability over time is noisy. In SI Figure A2, we fit a regression model to respondents' attitudes pre-implementation to show that exchange users are markedly more favorable—and the uninsured markedly less favorable—than we would expect based on demographics alone. It is possible, though by no means proven, that experiences with the exchanges may have influenced Americans' attitudes.

Trends in Self-Reported Benefit or Harm from ACA

In addition to questions about ACA favorability and insurance status, the KFF HTS also asked respondents whether they believed they had personally benefited from or been negatively affected by the ACA. Specifically, it asked "So far, would you say you and your family have (personally benefited from / been negatively affected by) the health reform law, or not?"[8] While such self-reported perceptions of impacts are prone to obvious perceptual biases from partisanship and other factors, the over-time trends can nonetheless be instructive. For example, Figure 2 illustrates that the share of people reporting either being helped or harmed by the ACA did increase markedly right as the exchanges were opening in late 2013 and early 2014.[9] Such results are certainly consistent with the claim that the exchanges' roll-out had heterogeneous effects. Figure A4 in the SI displays these patterns by insurance status, showing increases in self-reported harm for the uninsured and benefit for those self-purchasing. We also observe a spike in exchange users reporting personal harm in the second half of 2014. SI Tables A3 and A4 help give meaning to these results by showing the words that uninsured or self-purchasing respondents used most commonly in post-2014 open-ended responses to a follow-up question about how the ACA helped or hurt them. Uninsured respondents used words like "forced" and "penalized" while those who were self-insured used terms like "didn't," "affordable," and "insurance," which suggest that these groups' attitudes are based to some extent on personal experiences.

Attitudes among the Non-Group Insured

Even within the broad categories of insurance status identified above, there are sure to be substantial variations in people's experiences. After all, enrollees' experiences with government-funded

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[8]These questions were asked in 14 surveys from the end of 2010 through early 2014, and just over 18,000 respondents answered them.

[9]In SI Figure A4, we disaggregate these findings by insurance source. Doing so, we observe that respondents claimed that they had already benefited from or been harmed by the ACA well before its primary provisions were implemented. At the same time, those who purchased their own insurance increasingly stated post-2014 that they benefited from the ACA while those without insurance increasingly reported that they were harmed.
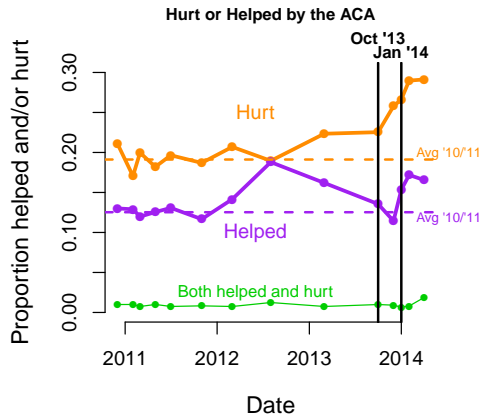
Figure 2: *Personal benefit or harm attributed to the ACA, 2010 through 2014.* This figure shows responses to questions in the KFF HTS asking "So far, would you say you and your family have (personally benefited from/been negatively affected by) the health reform law, or not?" The y-axis is the proportion reporting "personally benefited from" or "negatively affected by ACA" by month.

programs like Medicaid can vary substantially (Michener, 2018), and the variation in experiences with private insurance is potentially wider still. As a next step, in SI section A.4.1 and in SI Table A6, we consider the predictors of ACA support among those who were insured through the non-group insurance market post-implementation. The core descriptive result is that while exchange users generally are no more favorable toward the ACA than others without group-based insurance like Medicare or employer-provided insurance, those who received subsidies are a bit more favorable toward the ACA, especially in its first year of full implementation.

Panel-Based Estimates of Trends in ACA Attitudes by Insurance

Figure 1 shows that around the time of the ACA's implementation, the relationship between people's insurance status and their ACA attitudes shifted: people who purchased their own insurance became more favorable while the uninsured became less so. But it is quite possible that individuals who already felt favorably toward the ACA shifted from one insurance source to another.

Panel data provides one way to avoid this challenge, as the same individuals report their attitudes in multiple waves conducted over time. Here, we draw on the 2012-2018 [name redacted] panel to evaluate Americans' attitudes toward the ACA over time.

To be sure, there simply aren't many respondents who fall into the self-purchased or uninsured

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categories. Of the 589 panelists who completed both the November/December 2016 wave and the October 2018 wave, 38—or 6%—reported in January 2016 that they purchased their insurance themselves, and not all used the exchanges. Another 35 panelists—also 6%—reported being uninsured at that time, an estimate that is lower than the 2016 national benchmark of 11% (Witters, 2019). But the panel nonetheless provides a critical advantage, as it allows us to observe how those respondents' attitudes shifted relative to the population overall. We also get increased statistical precision from making comparisons within individuals. In these analyses, our outcome comes from a question the panel has asked since 2012: "Some people think the health care reform law should be kept as it is. Others want to repeal the entire health care law. Still others are somewhere in between." Respondents could reply on a 1-7 scale, with 1 indicating the "health care reform law should be kept as it is" and 7 indicating that "entire health care law should be repealed."

As Figure 3 illustrates, the groups defined by insurance status in 2016 differ at baseline but largely move in parallel. In particular, there is no evidence that those who purchased insurance themselves differ markedly in the trajectory of their ACA attitudes compared to other insured groups, though there is a significant uptick in support for repealing the ACA just after the 2012 election among those without insurance in 2016. Overall, there is little evidence that respondents who purchased their own insurance in 2016 had a distinctive trajectory. Note, however, that for those without insurance, there is somewhat less evidence of an improvement in ACA attitudes between 2016 and 2018.[10]

We next estimate OLS models which more fully leverage the panel data set by analyzing shifts in insurance status as a predictor of shifts in ACA attitudes. This approach tests whether changes in insurance status are associated with changes in ACA attitudes generally in the post-implementation era, rather than focusing on changes immediately after implementation.

Specifically, we model 2018 respondents' views of the ACA as a function of their fall 2018 insurance status, their January 2016 insurance status, attitudes toward the ACA in 2012 and 2016, 2012 partisan identification, and a series of basic demographics such as gender, education and income. Such models are well suited to isolate the extent to which *changes* in insurance

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[10]Specifically, those without insurance in January 2016 shifted toward the ACA by 0.30 while for those with insurance the pro-ACA shift was 0.53.
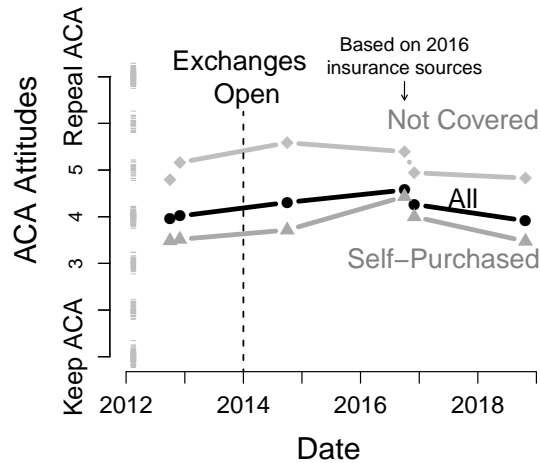
Figure 3: This figure reports ACA attitudes for respondents to the 2012-2018 [name redacted] panel who completed the November/December 2016 and October 2018 waves conducted through GfK's Knowledge Panel. N=589. Insurance status is as of January 2016, the first wave in which it was measured. The gray horizontal lines at left report the distribution of the outcome variable for the October 2012 survey. We consider changes in insurance status between 2016 and 2018 in Figure 4

status predict subsequent shifts in ACA attitudes, although their leverage comes from the 40 respondents whose status as uninsured changed between 2016 and 2018.[11] However, they are perhaps a conservative test, as we are isolating people who became uninsured only after 2016, nearly three years after the ACA's implementation. As a result, those who were uninsured in the first few years after the ACA's 2014 implementation will not influence our estimate.

The core results are presented graphically in Figure 4, while SI Table A11 provides the full, fitted model. Most of the indicators of different insurance statuses are not predictive of 2018 ACA attitudes. Importantly, those who purchased insurance plans themselves in 2018 are not much more or less supportive of the ACA. However, respondents who were uninsured in 2018 are dramatically less supportive of the ACA, even accounting for 2016 insurance status. The coefficient is 1.23 (SE=0.43), meaning that those who became uninsured between 2016 and 2018 also downgraded their opinion of the ACA by a pronounced 1.23 on a 1-7 scale. That effect is 61%

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[11]W have 29 respondents who were uninsured in both waves, 23 uninsured only in 2016 and 17 uninsured only in 2018. When predicting changes in insurance status, we do find that Republicans were marginally less likely to become uninsured in this period.

of a standard deviation.[12] The evidence of that the ACA had negative effects on at least some Americans is certainly reinforced by such over-time changes.
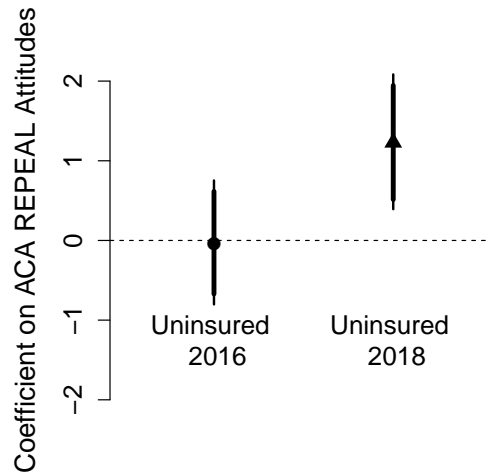
Figure 4: This figure reports coefficients for being uninsured in 2016 and 2018 (included in the same model) when predicting 2018 support for ACA *repeal* using the [name redacted] panel. The thick lines indicate 90% confidence intervals while the thin lines indicate 95% confidence intervals.

Most-Likely Cases for Policy Feedbacks

Geographic Variability in Exchange-based Insurance Prices

Prior research on indirect policies suggests that they are unlikely to shape attitudes, as citizens are unlikely to attribute related experiences to government action. However, the descriptive evidence above suggests that the effects of the exchanges and associated policies may instead have been heterogeneous. Given that, it's valuable to begin our causal tests of the heterogeneity hypothesis with a most-likely case: price shocks on the ACA's exchanges. In light of negativity biases and the sizable price increases on some exchanges, we examine whether people who purchase insurance on the exchanges become more negative toward the ACA if local prices spike.

Specifically, we use geographic variation in exchange pricing as leverage to estimate the attitudinal effects of price changes on local markets. Exchange customers are divided into geographic

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[12]As Table A12 illustrates, we reach very similar conclusions with an alternative model specification that examines the change in attitudes among those uninsured in January 2016, indicating that this result is robust to alternative specifications.

rating areas; in 2017, there were 504 such rating areas across the country. We acquired data on the insurance options and their prices for rating area and year between 2014 and 2017. We then developed a crosswalk which enables us to match KFF HTS respondents based on their ZIP codes and/or counties of residence to their rating area and the corresponding options and prices available to them.[13] In addition, we also used respondents' ZIP codes or county of residence to merge in basic county-level Census demographic information.

Given how few people in the survey use the exchanges—the sample sizes by year for exchange users are 157, 134, and 151—we fit a multi-level model to borrow strength across the three years and estimate the effects of price shocks jointly. This multilevel model conditions on the total number of plans available on each market as well as the mean premium for that year and the mean change in premiums from the prior year.[14] It also includes random effects for each of the three years as well as various individual- and county-level covariates. Shown in Table 2, and in full in the SI, the model suggests that *rising average premiums on the ACA exchanges are associated with sizable declines in ACA favorability for respondents who actually use the exchanges.*

The estimated coefficient is -0.19 (SE=0.07), meaning that an increase of one standard deviation in the mean monthly premium change (\$33) is associated with a -0.19 drop on the ACA favorability scale. That shift is substantively meaningful, as it is a change of -7.6 percentage points in the dichotomized ACA favorability scale. However, this relationship does not hold for other respondents or for the uninsured, as the other columns of Table 2 demonstrate. These findings indicate that we are detecting the effects of experience with the markets, and not simply spurious county-level associations.[15] Under certain circumstances, indirect policies can generate *negative* attitudinal feedbacks.

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[13]Data are missing for 2014 in some rating areas, but overall, we are able to identify the 2014 market conditions for 64% of respondents, 2015 conditions for 91% of respondents, and 2016 and 2017 conditions for 96% of respondents.

[14]Note that our interest in the change in premiums from the prior year requires us to exclude 2014.

[15]Our respondents are distributed across many counties—in 2015, for example, the 359 respondents using the markets were in 208 counties. As a consequence, we cannot employ county fixed effects.

| | ACA favorability | | |
	Non-Market	Market	Uninsured
Number of plans	0.00	−0.07	−0.00
(logged, in sd's)	(0.01)	(0.06)	(0.03)
Mean Premium	0.00	0.04	0.05
(in sd's)	(0.01)	(0.07)	(0.03)
Mean Change in	0.00	**−0.19****	−0.02
Premium (in sd's)	(0.01)	**(0.07)**	(0.04)
Observations	15,987	442	1,772
Month FEs	Y	Y	Y
County-Level Demographics	Y	Y	Y
Clusters (Year)	3	3	3
	*p<0.05; **p<0.01; ***p<0.001		

Table 2: This table presents the results of multi-level models fit to KFF respondents from 2015, 2016, and 2017 in which certain insurance market conditions (and various other independent variables) predict ACA favorability, measured on a 1 to 4 scale.

Premium Caps and the Discontinuity at 65

The ACA used various policy levers to bolster the exchanges and increase the availability of health insurance, so we continue assessing its causal impacts by examining another most-likely case: its overall impact on Americans in their early 60s. Whereas those exchange users who saw price spikes became more negative toward the ACA, Americans in their early 60s were more likely to become more positive after its implementation. That's because the ACA provided valuable new opportunities and protections for those in their early 60s. It created exchanges on which non-elderly adults could purchase insurance—sometimes with subsidies—while also mandating that insurers not discriminate on the basis of pre-existing conditions. It also limited premiums for older customers to no more than 3 times those of younger customers, creating an effective subsidy if healthcare costs for older customers exceeded that ratio. At the same time, the ACA did not entail substantial consumer-facing changes to Medicare in 2014, the program which insures 68% of adults 65 and older according to the HTS. To the extent that the ACA affected Americans

directly, it was substantially more likely to affect those just under 65.[16]

We thus assess the ACA's impacts on those in their early 60s relative to those 65 or slightly older. There is a precedent for this research design. Studying the period before the ACA's full implementation, Lerman and McCabe (2017) sought to understand whether Americans' experiences with publicly provided insurance through Medicare changed their health policy attitudes. But whereas Lerman and McCabe (2017) were interested in the effects of becoming Medicare-eligible at a single point in time, we use those who are 65 or older as a benchmark to understand the changing attitudes of those in their early 60s in response to the ACA.

Our goal is to use regression discontinuity designs to estimate the difference in ACA attitudes associated with Medicare eligibility both before and after the ACA's full implementation and then to compare those estimates. To do so, we turn back to the HTS. We first calculate the Imbens-Kalyanaraman optimal bandwidth to be 2.42 (Imbens and Kalyanaraman, 2012), so our initial analyses include respondents ages 62-68. After confirming that key variables do not differ across the discontinuity[17] we then estimate reduced-form equations in which we regress the four-category measure of ACA favorability on several variables, including measures picking up time trends as well as respondents' age in years; Medicare eligibility via age; levels of education; self-identification as male, Black, Hispanic, or Asian American; income; and a five-category measure of partisan identification. In the pre-implementation surveys, we find that being under 65 and not yet eligible for Medicare produces a coefficient of -0.12 (SE=0.06),[18] meaning that Medicare eligibility has a nearly significant positive effective on ACA attitudes that averages 10% of the dependent variable's standard deviation, consistent with Lerman and McCabe (2017).

A majority of Americans shift their insurance status at 65 with Medicare eligibility, so the key estimate is not the change at 65 but the extent to which the ACA's implementation reduced any differences in attitudes at age 65. Did the pro-ACA attitudinal bump at age 65 persist, or did the ACA's implementation close the gap? We thus estimate a parallel OLS model for respondents

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[16]Policies targeting those 65 and older included free preventative care (for certain services), and the gradual, partial closing of the "donut hole" in prescription drug coverage between 2010 and 2020.

[17]See SI Figure A15.

[18]See SI Table A14 for the full fitted model.

**Under 65 favorability
compared to 65 or over**
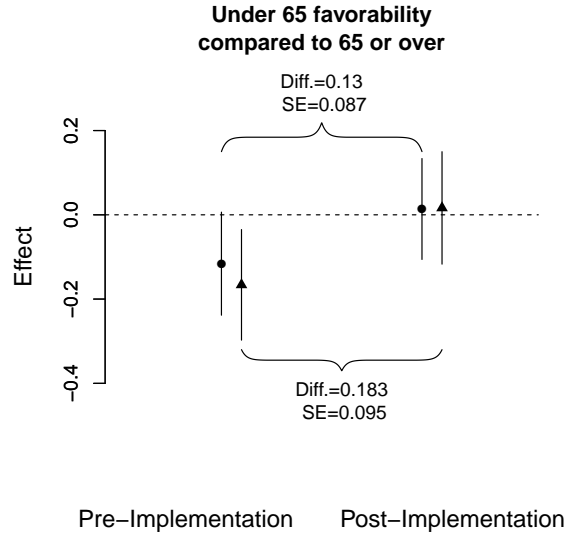
Figure 5: This figure illustrates the change in ACA attitudes associated with turning 65 for HTS respondents before and after the ACA was implemented. Those just under 65 were especially likely to benefit from the exchanges' price caps after their 2014 implementation. Estimates from models conditioning on various potential confounders are shown using dots; estimates from models without such controls are depicted using triangles.

after the ACA's January 1 2014 implementation, finding that the reduced-form impact of being under 65 became 0.01 (SE=0.06). Post-implementation, those who are under 65 and so more directly affected by the ACA are no less supportive than people just slightly older.

For our purposes, the key question is the extent to which the effect *declined* after the ACA was implemented, and Figure 5 presents that differenced estimate using dots. Using triangles, Figure 5 shows the comparable estimates via an estimator that does not condition on any variables other than age. In both cases, the estimated difference is positive, as it varies between 0.13 (SE=0.087) with controls to 0.183 (SE=0.095) without. Given the four-category dependent variable, *the ACA's implementation had a detectable but substantively small overall impact closing the attitudinal gap between those who were and were not Medicare eligible.*[19] Given the ACA's regulations about age and insurance pricing, this group is likely to have been more positively affected by the exchanges than others. So the exchanges and associated policies can have positive as well as negative effects for specific sub-groups.

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[19]This result is of course compatible with a larger effect on the small number of people most directly affected.

Over-time Changes by Predicted Insurance Source

The two causal tests above use specific populations to evaluate most-likely cases for policy feedbacks, whether they are exchange users in markets with rising prices or those in their early 60s. But it is also valuable to test the heterogeneity hypothesis among broader populations likely to have been affected by the exchanges and the mandate, including those who purchased their own insurance and those who went without insurance. In this section, we detail and then implement our research design for doing so.

One common research design for assessing a policy introduced at a specific moment in time is difference-in-difference estimation. Such estimators isolate whether there were disproportionate changes in a treated group after the treatment's administration. Yet when analyzing the HTS, which was administered as a rolling cross section, we are barred from employing classical difference-in-difference estimation because there is no fixed control group. There were no federal exchanges or people using them prior to the ACA's implementation. What's more, the exchanges are likely to have had system-wide effects, as they may have influenced the insurance status and experiences of people who were previously uninsured as well as those who previously purchased insurance for themselves and others. Most importantly, we should avoid using actual insurance status (as we did in Figure 1) because the people who chose to purchase their own insurance may have already felt favorably toward the law.

We attempt to overcome selection concerns by using predicted insurance source scores coupled with temporal variation to estimate the causal impact of self-purchasing insurance and then being uninsured. In essence, we model who in the data set is more or less likely to self-purchase insurance, construct synthetic cohorts of likely self-purchasers, and then evaluate whether over-time shifts in ACA attitudes were more pronounced among those whom the model flags as especially likely to be self-purchasers. In doing so, we are guided by prior work on causal inference including Athey and Imbens (2006) and Frangakis and Rubin (2002). The method we adopt is similar to that employed by Karmakar et al. (2018), and could be described as difference-in-difference estimation with an imputed, continuous measure of treatment group membership probability.

Note that this analysis relies on the timing of implementation, and mimics a difference-in-difference design—one in which we consider changes in attitudes among those with demographics

similar to those with given insurance sources. In the language of an encouragement design, we assign intention-to-treat status for all individuals in time periods after 2013 and estimate a probability of complying—taking up the treatment—based on their demographics, whether or not they actually use a given insurance source. As in difference-in-difference analyses, we then look for parallel trends (or, more precisely, parallel slopes for those more or less likely to purchase their own insurance) before the implementation and examine relative changes in attitudes after implementation. We expect those with predicted self-insured scores close to zero to rarely purchase their own insurance and those with higher scores to be more likely to do so.

As an initial step, we isolate respondents who were at all likely to use the exchanges, purchase their own insurance generally, or be affected by the individual mandate. In practice, this means excluding respondents over 64 (who are likely on Medicare) or with incomes under $40,000 per year (who are more likely to be on Medicaid, for which there is a competing effect).[20][21]

Next, we estimate three separate insurance source scores to identify the types of respondents who are especially likely to 1) purchase their own insurance (including via the exchanges), 2) use the exchanges, or 3) be uninsured in the post-2014 period. Estimating the probability of self-purchasing allows us to consider the effects of changing conditions among self-purchasers on ACA attitudes without requiring that survey respondents link their insurance to government-operated markets. The uninsured score analysis is important because it considers the possibility of negative feedback effects from the individual mandate or other sources.[22] These insurance source scores provide one-number summaries of respondents' probabilities of falling into specific ACA-related categories given their demographic characteristics.

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[20]The minimum income cutoff to remove likely Medicaid recipients varies by state. For simplicity, we set this cutoff at the Medicaid expansion level for all states. Reducing this cutoff to include lower-income people in non-expansion states does not meaningfully alter our results.

[21]Very few people who previously received Medicare or Medicaid transferred into the individual market post-ACA. 53% of all respondents who used the exchanges in 2014 had previously lacked health insurance, and another 19% had previously purchased a plan themselves. See SI Table A5, which reports the shares of people with non-group insurance by their previous insurance status.

[22]Those with higher uninsured scores might also be those who are especially vulnerable to the erosion of insurance offerings through their employers.

Health insurance was not available via the exchanges until January 2014, so we use a linear probability model to model the predictors of falling into a particular insurance source category for 2014 and later. Americans' experiences with the exchanges varied substantially, so the insurance source score model includes five polynomials of respondents' age in years, indicators for years of educational attainment, and identification as Asian American, Black, Hispanic, female, or retired. Subsidies and exchange usage are closely connected to respondents' incomes, so the insurance source score model also includes measures of respondents' income, income squared, and income cubed. From this model, we can then estimate any respondent's probability of using the exchanges based on her background characteristics, regardless of whether the exchanges were actually operating when she was surveyed.[23]

SI Table A18 shows the correlations for the two insurance source scores as well as for a third score for purchasing on the exchanges. As expected, given that those using the exchanges are a subset of those purchasing their own insurance, the scores for self-purchasing and using the exchanges are correlated at 0.6. The correlation between using the exchanges and being uninsured is also high (0.3), however, while self-purchasing and being uninsured are instead negatively correlated (-0.2). These correlations suggest that we might not be able to distinguish the effect of using the exchanges from being uninsured, but that estimates from the overall analysis of individual markets are not subject to the same concern. SI Figure A20 shows a simplified version of our predicted insurance source model, illustrating that lower incomes are similarly associated with using the exchanges or being uninsured. However, the uninsured are less educated and younger, as well as more likely to be black or Hispanic.

Critically, our second-stage estimates depend on the precision of the first-stage predictions—the better we predict in the first stage, the more effectively we isolate those likely to be uninsured or purchase their own insurance. The similarity between our approach and intention-to-treat analyses leads us to employ conventional tests for evaluating how well we predict insurance status as well as methods for incorporating the additional uncertainty from a multi-stage estimate. SI

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[23]Because partisan identification is potentially endogenous, and it is strongly associated with health care attitudes (Kriner and Reeves, 2014), we repeat these analyses with partisanship as the dependent variable in the SI and we do not include partisanship in our insurance score models. Including an endogenous variable in the insurance score analyses would bias our estimates.

Table A16 shows the first stage of each modeled insurance source. The uninsured scores ($F \approx$ 70) and the self-purchasing scores ($F \approx 15$) exceed the standard rule of thumb of $F > 10$ for a two-stage least squares model in analyzing encouragement designs (i.e. instrumental variables) (Stock, Wright and Yogo, 2002) while the exchange scores have a more borderline F-statistic just below 10.[24] Due to concerns about both the strength of the first-stage *and*, more fundamentally, the reasonably high correlation between the exchange scores and the uninsured scores, we do not discuss the score for predicted exchange use in the main text.

Results from Predicted Insurance Score Analyses

To distinguish ACA experiences from long-term shifts, we examine over-time associations between likely insurance use and ACA favorability. Effects driven by the ACA should be apparent discontinuously in late 2013 (when the exchanges first opened) and 2014. Specifically, we include the insurance source scores as independent variables in OLS models predicting dichotomized ACA favorability in each of the six-month increments between early 2010 (when the ACA was passed) and late 2017. Accordingly, the left panel of Figure 6 shows 16 separate correlations between ACA favorability and respondents' estimated probability of self-purchasing insurance.[25] If the experience of self-purchasing insurance shifted ACA attitudes, the insurance source scores should become stronger predictors of ACA support after the exchanges opened.

Figure 6 illustrates the correlations for a 10 percentage-point change in the probability of self-purchasing or going without insurance for each six-month window of time.[26] On the figures' right

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[24]High F-statistics reduce estimation concerns in two-stage least squares models used in instrumental variable analysis (Stock, Wright and Yogo, 2002), but, as in encouragement designs, the estimates here only provide information on those affected by the treatment. Those affected by the treatment means people whose demographics (e.g. low education, relatively low income) affect their decision to purchase on the exchanges or go without insurance. The estimates do not tell us about the views of people who purchased on the exchanges because of their health care needs unless those needs are reflected in the demographic predictors, for example through increasing healthcare needs with age.

[25]The minimum sample size for these six-month periods is 1,739 while the maximum is 6,227.

[26]One empirical challenge is that even among those under 65, most people making more than

sides, we report the mean change in the effect for estimates after January 2014. The self-purchasing score is not associated with meaningful changes in ACA favorability after implementation. On balance, people more likely to self-insure don't show different over-time trends.

However, the scores for being uninsured are associated with markedly more *negative* ACA attitudes after implementation. Specifically, those with a higher probability of being uninsured are 5.0 (SE: 0.09) percentage points less likely to be favorable toward the ACA after its 2014 implementation, a substantively large effect.[27] This uninsured score is a catch-all. It identifies both respondents who actually chose to forego insurance and demographically similar respondents who *would have* foregone purchasing on the individual markets had they not had some other source of insurance. Regardless of the specific mechanisms at work, these results reinforce the claim that the ACA induced negative experiences for at least some Americans.
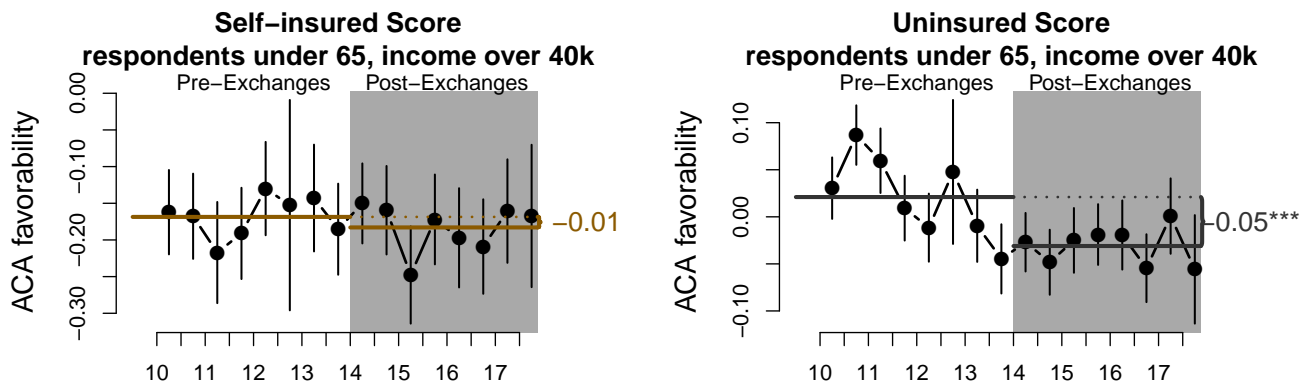
Figure 6: *Over-time associations between insurance source scores, ACA attitudes.* These figures show the effect of increasing the average insurance source score by 10 percentage points.

$40,000 per year have access to employer-provided insurance, so the variation in the estimated insurance source scores is relatively small, as illustrated in SI Table A17. Accordingly, we generate multiple estimates from the second stage over-time models. In some cases, we show the effect of a 10 percentage point increase in the likelihood of self-purchasing or going uninsured; in others, we report the effect of a full change from 0 to 1 in the insurance source score (the typical interpretation of the coefficients), even though this is an extrapolation outside the range of the observed scores.

[27]SI A5 demonstrates that the same holds for the exchange scores as well, but the high correlation with the uninsured scores (and informal analyses controlling for the uninsured scores) suggest that this drop is better interpreted as an effect of being uninsured.

To formally test the impact of the exchanges' introduction, we estimate a multi-level model predicting ACA favorability using the same insurance source scores and timeframe shown in Figure 6, with random effects for the six-month period of the response. We also include an interaction between the insurance source score and whether the response comes after January 1st, 2014, which measures any change in the mapping between the probability of self-purchasing and ACA favorability. In this test, we use the typical scaling for such models in which the estimated probability shifts from 0 to 1. The estimates in SI Table A19 otherwise mirror those presented graphically in Figure 6. In separate models shown in the SI, we use bootstrapping to incorporate uncertainty in both model stages, finding that this only modestly increases confidence intervals.

Beyond reporting the same results as in Figure 6, Table A19 provides an additional, if more peripheral, take-away: the attitudes among those purchasing on the exchanges appeared to be extremely positive before the ACA's implementation. This indicates possible ceiling effects that limit the potential for further increases in favorability. The overall results from this analysis indicate that the ACA's exchanges and associated policies generated negative reactions not just among those experiencing price increases on the exchanges but also among the uninsured.

Conclusion

Which features of policy designs make feedback effects on public opinion more or less likely? Prior research on policies administered through complex, back-door mechanisms including private markets indicates that these policies do not typically produce strong imprints on public opinion (Howard, 1999; Morgan and Campbell, 2011; Mettler, 2011, 2018). To most citizens, such policies are low-visibility, making them difficult to trace back to government action.

At the time of its enactment, the ACA was expected to increase health insurance enrollment principally through its new exchanges. The exchanges and the associated individual mandate embodied an indirect approach to public benefit provision. As a consequence, it was plausible that the exchanges and the mandate might leave a similarly faint imprint on public opinion. Yet the ACA was also highly salient and contentious, so much so that citizens' partisan predispositions shaped their willingness to enroll via the exchanges. Could an indirect but salient policy generate feedbacks? In this paper, we employed a wide range of data sets and analyses to test the exchanges' competing influences on public opinion toward the ACA.

Descriptive statistics provide consistent evidence of different attitudes among those differentially affected by the ACA, but are such differences causal? Overall, we find that while the net effect of the ACA's core, indirect features was muted, the ACA's exchanges and its individual mandate did appear to influence the opinions of those most likely to be affected. In one most-likely case for negative policy feedbacks, we found that local price spikes on the ACA exchanges reduced support for the law, a strong indication that Americans were able to link their experiences with their ACA attitudes. In another analysis of a most-likely case, differenced regression discontinuity estimates indicate that the ACA's implementation reduced the gap in ACA favorability between those who are 64 and 65. Those in their early 60s were among those most likely to benefit from the ACA's exchanges and its price caps, and the ACA's implementation had a positive effect on their ACA attitudes.

But showing that the ACA had discernible impacts among highly affected populations still leaves open questions about its capacity to generate policy feedback effects in general. We next assessed the impacts of the core, indirect provisions of the ACA by analyzing changes in patterns using respondents' expected insurance sources. These analyses indicate that the types of people most likely to be uninsured became *less* favorable toward the ACA around the time of its introduction. They thus corroborate a separate test using panel data which demonstrates that those who became uninsured between 2016 and 2018 also became substantially less favorable toward the ACA. In other words, different groups in different places had quite different experiences with the ACA's exchanges and its mandate. One key factor limiting the ACA's mass-level policy feedbacks was heterogeneity, not invisibility. Given the variety of results presented in this paper, we can be confident that these conclusions are not dependent on any one data set or research design.

To be sure, various factors shaped how the ACA was designed, implemented, and challenged (Hertel-Fernandez, Skocpol and Lynch, 2016; Jones, 2017; Hacker and Pierson, 2018; Patashnik and Oberlander, 2018), and public opinion was only one of them. Still, by showing that indirect policies can produce complex and self-cancelling feedback effects, this paper may contribute to explaining why the ACA's exchanges and its mandate were politically vulnerable even after the law was enacted and implemented.

Moreover, these results are relevant well beyond health policy alone. The U.S. relies on indirect policy mechanisms to pursue its social and economic policy goals to an unusual extent (Howard,

1999; Mettler, 2018). In fact, some of the key proposals to address climate change have relied on a complex mixture of direct and indirect government provision that resemble the ACA's (Stokes, 2020). Here, we have shown that indirect policies can be visible to citizens if they produce tangible effects on people's personal lives. At the same time, indirect policies can generate patterns of feedback *across individuals* that can be offsetting, in part because negative experiences can powerfully influence attitudes. Put simply, complex, indirect policies can produce feedback effects that are themselves complex.

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Supplemental Information for "Offsetting Policy Feedback Effects: Evidence from the Affordable Care Act"

Table of Contents

A   Supplemental Information

A.1   Health Insurance Sources
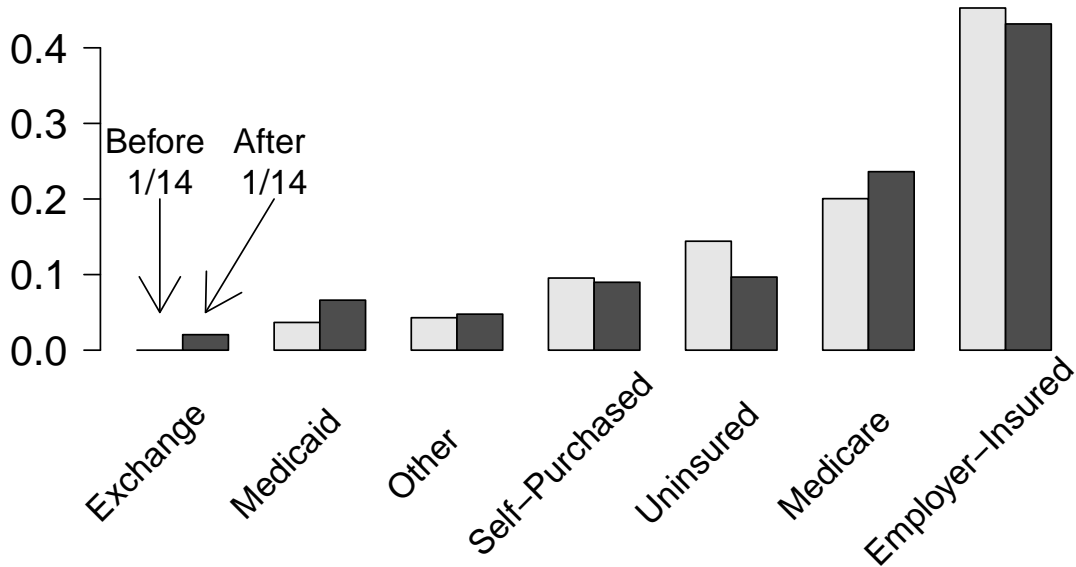
Figure A1: *Distribution of HTS respondents by health insurance source before and after the ACA's January 2014 implementation.*

	Income	*Education*	*Age*	*Male*	*Black*	*Hispanic*	*Party ID*	*N*
Used Exchanges	**59.8**	**14.7**	**47**	**0.50**	**0.12**	**0.13**	**2.5**	**1,074**
Medicaid	26.8	12.7	46	0.42	0.23	0.21	2.5	3,469
Self-Purchased	**76.6**	**14.6**	**53**	**0.51**	**0.09**	**0.09**	**3.0**	**4,708**
Uninsured	**37.1**	**12.5**	**41**	**0.58**	**0.17**	**0.33**	**2.8**	**5,069**
Employer-Insured	106.6	15.3	48	0.53	0.10	0.09	2.9	22,624
Medicare	58.5	14.3	70	0.44	0.09	0.05	2.9	12,379
Other	57.5	13.4	44	0.54	0.00	0.45	2.6	2,499
All	77.9	14.4	52	0.51	0.11	0.12	2.9	52,424

Table A1: *Key covariates and their associations with insurance sources, respondents to surveys after December 2013.* "Used exchanges" is a subset of "self-purchased." Party ID is a 5-point scale. All summary values are means.

A.2 Benchmarking with a Pre-Implementation Model

To contextualize the results in the main manuscript on favorability by insurance source, we here consider *expected* ACA favorability by insurance source. Using the same basic demographic variables as in the insurance source score analysis in the main manuscript, we predict favorability toward the ACA in the pre-implementation period. We then calculate the difference between actual ACA favorability and predicted favorability for all insurance types. Figure A2 shows these differences, with exchange users significantly more favorable toward the ACA than their demographics would suggest while those without insurance were significantly more negative.[28] SI Table A8 shows the model predicting favorability by demographics from which expected favorability is estimated.
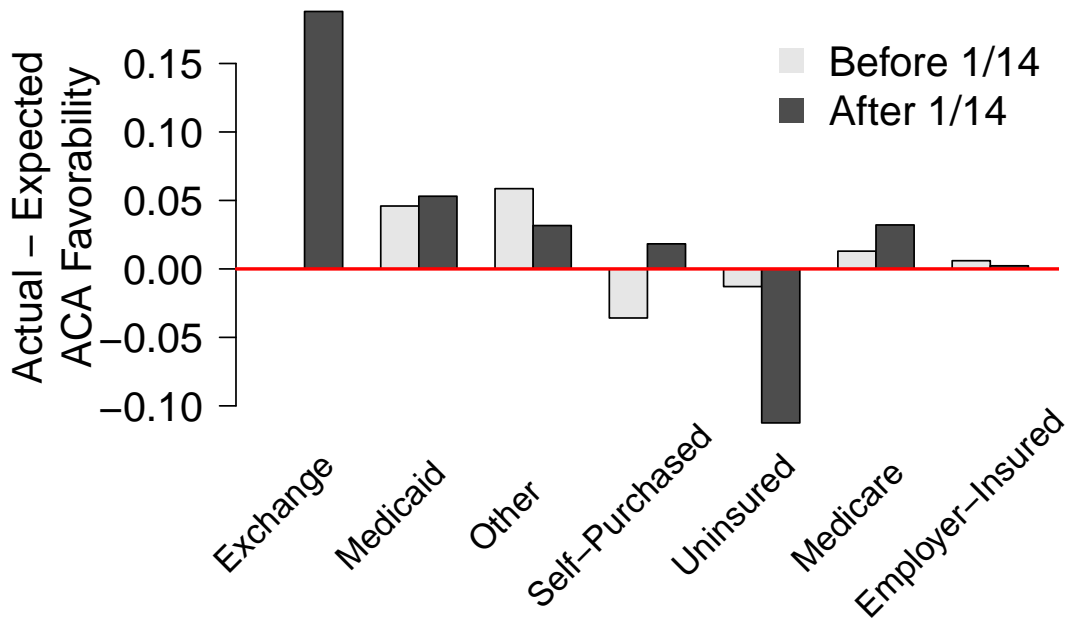
Figure A2: *Actual versus expected favorability by insurance source.* Expected favorability is estimated using a linear regression on all respondents in the pre-2014 period. The actual versus expected estimates are the observed ACA attitudes minus the predicted ACA attitudes.

Like the earlier results, this analysis is subject to selection concerns. Even so, it provides a

[28]Note that the pre-implementation differences are model residuals—the key point here is the difference pre- and post-implementation.

sense of the magnitude of the potential selection effect. Also, SI Figure A3 shows these same effects multiplied by the population size within each insurance category. Even subtle changes in attitudes among those with employer-provided insurance or Medicare—much larger groups than exchange users—can have an aggregate impact on ACA attitudes equal to that generated by much more dramatic shifts among exchange users themselves.
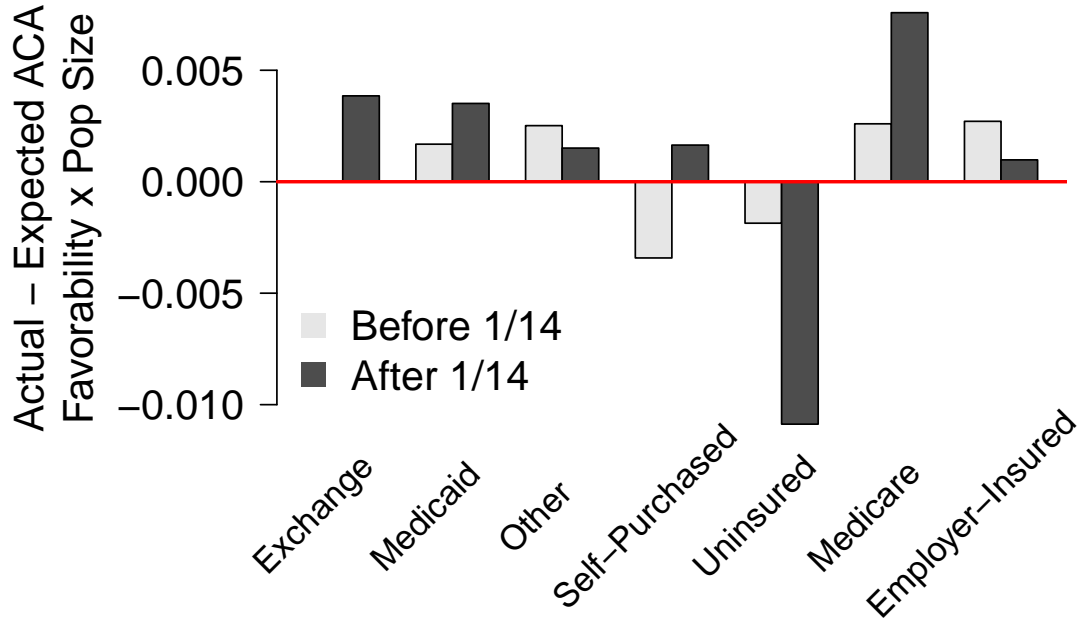
Figure A3: This figure presents the difference between each group's actual ACA favorability and its expected ACA favorability given its demographics multiplied by its overall population size. When summed, very small declines in attitudes among those with employer-provided insurance are similar in size to the total increase in ACA favorability among Medicaid recipients.

A.3 Self-Reported Help and Harm by Insurance Source

Figure A4 shows the percentages of KFF Health Tracking Survey respondents who said that they personally benefited from or were negatively affected by the ACA. Even before the ACA's implementation, many respondents claimed to have benefited or been harmed. The survey question reads as follows: "So far, would you say you and your family have (personally benefited from / been negatively affected by) the health reform law, or not?" In the Figure, those who purchased their own insurance (top right, orange) increasingly said that they benefited after 2014, while those who were uninsured (bottom right, gray) said that they were negatively affected.
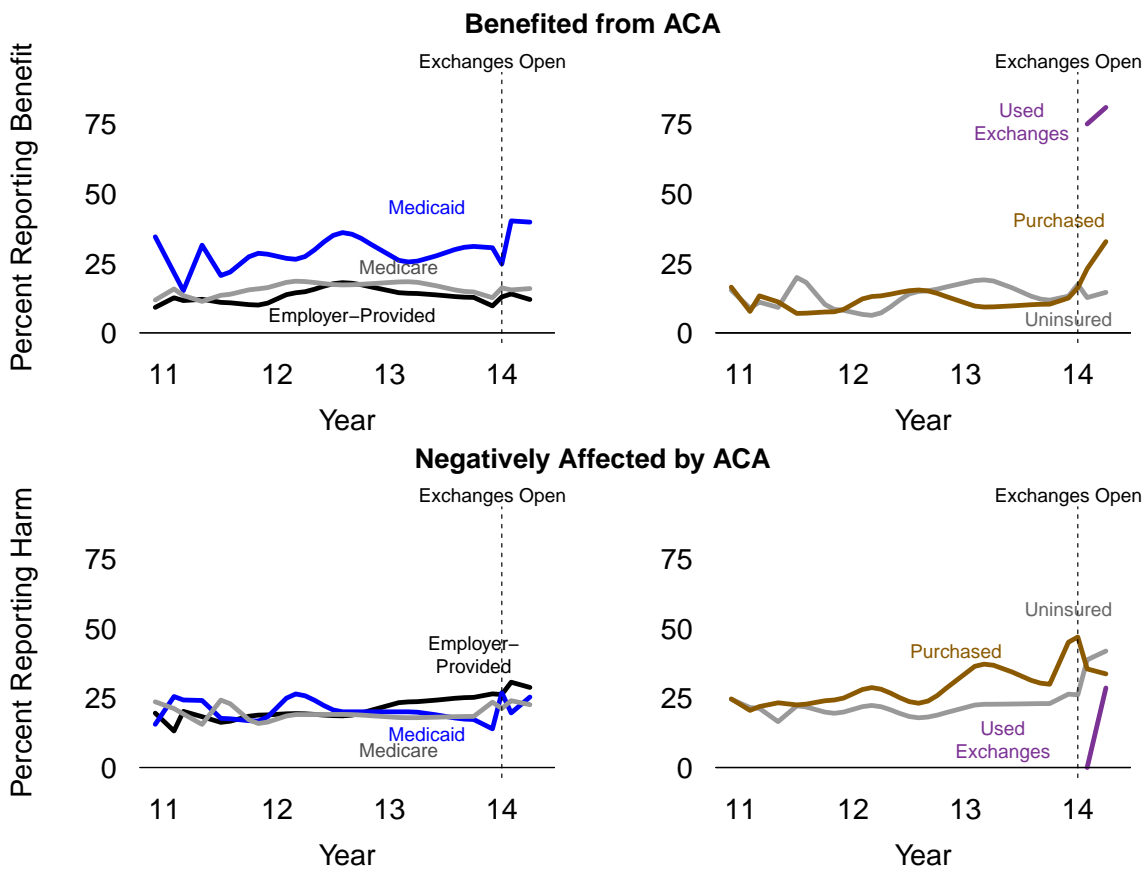
Figure A4: *Helped or Hurt by the ACA, by Insurance Source.* This figure shows that several insurance source categories, especially those with self-purchased insurance or the uninsured, reported greater help and/or harm after the ACA's 2014 implementation.

Table A2 displays the number of respondents by insurance source on or after January 2014, which is displayed via the vertical line in Figure A4.

	Employer	Exchanges	Medicaid	Medicare	None	Other	Purchased
2003		41	278	1056	499	335	340

Table A2: *Numbers of post-2014 respondents by insurance source: personally benefited from or negatively affected by ACA survey question.*

A.3.1 Text Analysis of Uninsured Reporting Harm, Self-Purchased Reporting Benefit

In the section on self-reported help and harm, we analyzed yes/no responses to the question "So far, would you say you and your family have (personally benefited from / been negatively affected by) the health reform law, or not?" If a respondent answered "yes," the question was followed by an open-ended question: "[i]n what ways would you say you have (benefited from / been negatively affected by) the health reform law?" and the interviewer recorded the verbatim response.

As a descriptive analysis to better understand the experiences of the uninsured and those self-purchasing insurance after January 2014, we also identify keywords that can distinguish whether an open-ended response was written before or after the ACA's implementation. To do this, we use mutual information to identify words with the most information for classifying a document—in this case an open-ended response—into a class (Manning, Raghavan and Schütze, 2008), which is an indicator of being pre- or post-implementation. In this set-up, we are using the pre-implementation responses as controls, since these were more likely to be misattributions of benefit or harm than the post-implementation responses. Note that this analysis is subject to the same selection concerns as other descriptive analyses, and the specific words used might be driven by changes in rhetoric (see also Hopkins, 2018).

In Table A3, the keywords identified in the uninsured sample suggest that the individual mandate was common in the post-implementation complaints by uninsured respondents, in addition to responses mentioning "price," "choice," and "cancelled"/"dropped" (insurance). In the self-purchased sample shown in Table A4, we see mentions of both lower cost ("lower", "affordable") and words suggesting increased access ("coverage"), but some of this shift might be due to changes in tense.

Uninsured **Harmed before January 2014**	Uninsured **Harmed in or after January 2014**
financially	**forced**
care	**penalized**
medicaid	**lost**
going	**hospital**
doctors	**insurance**
family	**get**
law	**couldnt**
bill	**price**
company	**able**
gone	**like**
harder	**enough**
increase	**cost**
affected	**fine**
doctor	**one**
right	**take**
getting	**choice**
husband	**good**
know	**information**
health	**longer**
amount	**back**
anything	**canceled**
got	**dropped**
need	**medication**
needs	**said**
costs	**covered**
N = 346	N = 171

Table A3: *Open-ended keywords, ACA harm – uninsured.* This table shows keywords that distinguish post-implementation open-ended responses about harm from the ACA from pre-implementation responses based on mutual information. The analysis uses the KFF health tracking survey 2010 through 2014 subset to uninsured respondents.

Self-purchased **Helped before January 2014**	Self-purchased **Helped in or after January 2014**
condition	**now**
dont	**didnt**
existing	**insurance**
lot	**affordable**
people	**time**
pre	**got**
will	**month**
cant	**preexisting**
costs	**lower**
help	**cost**
helps	**good**
keep	**money**
received	**companies**
without	**insured**
get	**premium**
law	**really**
pay	**spend**
can	**afford**
benefits	**plan**
well	**coverage**
doctor	**less**
kids	**policy**
plans	**cover**
prescriptions	**free**
able	**better**
N = 119	N = 79

Table A4: *Open-ended keywords, ACA benefit – self-purchased insurance.* This table shows keywords that distinguish post-implementation open-ended responses about benefits from the ACA from pre-implementation responses based on mutual information. The analysis uses the KFF health tracking survey 2010 through 2014 subset to self-insured respondents.

A.4 KFF Non-Group Surveys

Prior Coverage	Non-group, All	Non-group, Exchange only
Covered by a different plan you purchased yourself	0.24	0.19
Covered by an employer	0.21	0.14
Covered by COBRA	0.05	0.04
Had Medicaid or other public coverage	0.06	0.06
Was uninsured	0.38	0.53
Covered by parents	0.01	0.01
Covered by family member (non-specific)	0.00	0.00
Military/VA	0.00	0.00
Same coverage/no change (non-specific)	0.01	0.00
Had coverage from some other source	0.01	0.01
Don't know	0.01	0.01
Refused	0.01	0.01

Table A5: This table shows the prior insurance sources for respondents in the KFF 2014 non-group survey.

A.4.1 Attitudes among the Non-Group Insured

Those with non-group insurance include people who purchase insurance on the exchanges or otherwise purchase their insurance directly, but exclude those insured through Medicare, Medicaid, or an employer as well as the uninsured. This group's members were among those most directly affected by the ACA. Below, we present similar estimates for another group that saw disproportionate impacts from the ACA: Kentucky residents, whose state saw the most dramatic decline in its post-ACA uninsured rate.

To be sure, the non-group insured is a select population, as its members differ from those with other sources of insurance in terms of their age, income, employment, and various other factors. It is also a moving target. But such an examination can nonetheless identify variation in ACA attitudes that might plausibly be connected to variation in Americans' experiences with the exchanges.[29]

---

[29]Among those who have non-group insurance, there are a few key distinctions that may appear in respondents' ACA attitudes. For one, while many of these respondents purchased health insurance through the exchanges, others used a broker or purchased a policy directly from an

In the years immediately following the ACA's implementation, KFF surveyed Americans who got their insurance on the non-group market, whether using the exchanges or not.[30] The non-group data includes several variables of interest: whether respondents purchased insurance through the exchanges, whether their plan qualifies for sale on the exchanges, and whether they received a subsidy to pay for the plan.

Using the four-category measure of ACA favorability as our outcome, we estimate linear models which predict ACA attitudes as a function of basic demographics including age, education, five-category partisan identification, and identification as male, Asian American, Black, and Hispanic/Latinx. The models also include indicator variables for being surveyed on a landline as well as the respondent's stratum if surveyed in 2014.[31] Additionally, the models include a five-category measure of respondents' income as a percentage of the Federal Poverty Line. Determinations about enrollees' eligibility for subsidies as well as their size are made based on this coarse measure.

SI Table A6 uses OLS models fit separately for each year to examine the correlates of four-category ACA favorability when looking at those on the non-group insurance market. Simply buying insurance that meets the regulations for exchange-traded plans has no strong association on its own, as none of the corresponding coefficients even reach the size of their standard errors. The coefficient for people who themselves bought insurance on the exchanges is consistently positive and in the range of 0.16 to 0.21; the precision-weighted average is 0.18. While the signal isn't overwhelming, this result is consistent with the claim that exchange users were somewhat more supportive of the ACA.

One of the ACA's key policy levers was to subsidize lower-income Americans using the exchanges.[32] Receiving a subsidy is associated with more favorable ACA attitudes in all three surveys, with coefficients of 0.49 (SE=0.11), 0.14 (SE=0.11), and 0.09 (SE=0.11). In 2014, people

insurance company. Some of these respondents have plans which meet the requirements for sale on the exchanges, while others do not.

[30]The 2014, 2015, and 2016 surveys of individuals on the non-group market included 742, 804, and 786 respondents between ages 18 and 64, respectively.

[31]The 2014 survey included over-samples of those who are "very high poverty" and "high poverty"; our models include indicator variables for being in these strata.

[32]To validate the self-reported measure of subsidy receipt, we confirmed that subsidy receipt is concentrated among lower-income respondents. While just 7% of 2014 non-group respondents

who reported receiving subsidies were markedly more favorable toward the ACA, a relationship that has attenuated since. Substantively, the association between receiving a subsidy and evaluating the ACA favorably declined markedly between 2014 and 2016 (p=0.01, two-sided). It's possible that the people opting into the ACA markets have changed over time, and that explains the declining relationship. But it's also possible that initial impact of the subsidies waned as their recipients adjusted to them or as conditions in the marketplaces changed.

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with incomes over 400% of FPL report receiving subsidies, 59% of those with lower incomes do.

	ACA favorability		
	2014	2015	2016
Age	−0.01	−0.001	−0.004
	(0.003)	(0.003)	(0.003)
Education - 12 years	−0.12	−0.25	0.08
	(0.17)	(0.17)	(0.23)
Education - 13	−0.02	−0.14	−0.60
	(0.28)	(0.29)	(0.49)
Education - 14	0.10	−0.38*	0.29
	(0.17)	(0.17)	(0.24)
Education - 16	0.24	−0.34	0.17
	(0.18)	(0.18)	(0.24)
Education - 19	0.45*	−0.10	0.37
	(0.20)	(0.20)	(0.26)
Income (percentage of	0.01	−0.02	−0.04
Federal Poverty Line)	(0.03)	(0.02)	(0.03)
Male	−0.09	0.04	0.02
	(0.09)	(0.08)	(0.09)
Hispanic	0.55***	−0.004	−0.48
	(0.14)	(0.13)	(0.27)
Black	0.47***	0.08	0.55***
	(0.14)	(0.13)	(0.16)
Asian	0.66**	0.13	−0.29
	(0.25)	(0.22)	(0.24)
Weak Democrat	−0.28*	0.07	−0.36**
	(0.13)	(0.12)	(0.13)
Independent	−0.63***	−0.83***	−0.63***
	(0.12)	(0.12)	(0.13)
Weak Republican	−0.98***	−1.13***	−1.16***
	(0.15)	(0.14)	(0.16)
Strong Republican	−1.27***	−1.18***	−1.23***
	(0.13)	(0.11)	(0.13)
Health Plan Meets	0.06	−0.05	0.16
Exchange Regulations	(0.19)	(0.14)	(0.14)
Used exchange	0.21	0.19	0.16
	(0.19)	(0.13)	(0.13)
Insurance subsidized	0.49***	0.14	0.09
	(0.11)	(0.11)	(0.11)
Intercept	2.69***	3.42***	2.89***
	(0.28)	(0.26)	(0.30)
Observations	577	687	538

*p<0.05; **p<0.01; ***p<0.001

Table A6: *Models of ACA favorability among the non-group insured, surveyed by KFF in 2014-2016 (full models).* Note that measures of the respondents' strata for the 2014 survey and use of a cell phone and family size for all three surveys were also included.

A.4.2 Attitudes in Kentucky, 2015

American adults who don't have group-based insurance are one especially instructive group; the attitudes of residents of specific states with unique post-ACA trajectories are another. Kentucky was one of the few Republican-leaning states to create its own health insurance exchange, known as "Kynect," as well as expand its Medicaid program (Hertel-Fernandez, Skocpol and Lynch, 2016). It saw among the largest increases in its percentage of insured residents—and in late 2015, its voters elected Republican Matt Bevin Governor after he had promised to shut down Kynect.

At the time of Bevin's election, the Kaiser Family Foundation conducted a poll of Kentucky residents (which included 692 respondents under 65) and asked various questions about respondents' attitudes toward the ACA and health insurance. Here, we estimate models similar to those just above in which we regress the four-category measure of ACA favorability on a variety of standard demographic questions as well as respondents' sources of insurance (if any). Even in Kentucky, the survey data indicate that only 10% of adults under 65 had insurance they purchased themselves, and just 21% of those respondents reported having gotten their insurance through Kynect. What's more, only 13% of adults who purchased their own insurance—and just 2% of adults under 65 overall—report receiving a subsidy to help with their insurance premiums.[33] As with some other analyses, the coefficients are not meant to provide causal estimates, but they do provide conditional correlations which will guide other inquiries.

Table A7 presents the fitted models. In some, we include a measure for whether the respondent used Kynect while in the others we do not. People who purchase their own insurance are not noticeably different from other Kentucky respondents, with coefficients that are substantively small and inconsistent in their signs. Nor is there evidence that people who use the "Kynect" exchange were more favorable—there, the coefficients are: -0.20 (SE=0.15) or -0.24 (SE=0.15). But conditional on income, partisanship, and other background characteristics, respondents who receive Medicaid are somewhat more favorable toward the ACA than others, with coefficients varying from 0.21 (SE=0.15) to 0.35 (SE=0.15) depending on the specification.

We observe too few people receiving a subsidy to estimate its correlation with any precision,

---

[33]Again, we restrict our analyses to those under 65 given that the exchanges target that population.

but it is noteworthy that the coefficient corresponding to receiving a subsidy is substantively very large, at 0.32-0.46. Still, this estimate for Kentucky residents with subsidies matches the estimate from the analyses of all adults with non-group insurance in 2014 nationwide closely. As best we can tell, receiving a subsidy is associated with a substantial boost in ACA favorability, even conditional on income, education, and indicators for respondents' racial/ethnic backgrounds.

	ACA favorability			
---	Model 1	Model 2	Model 3	Model 4
Received Medicaid	0.30*	0.21	0.35*	0.27
	(0.14)	(0.15)	(0.15)	(0.15)
Purchased Own Insurance	0.11	−0.06	0.12	−0.07
	(0.18)	(0.20)	(0.18)	(0.20)
Employer-Provided Insurance	0.03	−0.09	0.005	−0.12
	(0.13)	(0.15)	(0.14)	(0.15)
Received Subsidy		0.32		0.46
		(0.40)		(0.41)
Insured		0.41*		0.41*
		(0.20)		(0.20)
Used Kynect			−0.20	−0.24
			(0.15)	(0.15)
Employed	−0.17	−0.14	−0.15	−0.12
	(0.11)	(0.11)	(0.11)	(0.11)
Male	−0.10	−0.07	−0.10	−0.08
	(0.10)	(0.10)	(0.10)	(0.10)
Income - 25	−0.42**	−0.38*	−0.44**	−0.40*
	(0.16)	(0.16)	(0.16)	(0.16)
Income - 35	−0.24	−0.23	−0.26	−0.25
	(0.18)	(0.18)	(0.18)	(0.18)
Income - 45	−0.53**	−0.49**	−0.53**	−0.50**
	(0.18)	(0.18)	(0.18)	(0.18)
Income - 62.5	−0.50**	−0.46*	−0.53**	−0.48**
	(0.18)	(0.18)	(0.18)	(0.18)
Income - 82.5	−0.39	−0.35	−0.40	−0.36
	(0.23)	(0.23)	(0.23)	(0.23)
Income - 95	−0.46	−0.40	−0.47	−0.41
	(0.29)	(0.29)	(0.29)	(0.29)
Income - 200	−0.64**	−0.60**	−0.65**	−0.62**
	(0.20)	(0.20)	(0.20)	(0.20)
Age	−0.01	−0.01	−0.01	−0.01
	(0.004)	(0.004)	(0.004)	(0.004)
Black	0.45*	0.46*	0.45*	0.45*
	(0.19)	(0.19)	(0.19)	(0.19)
Hispanic	−0.18	−0.08	−0.19	−0.08
	(0.27)	(0.27)	(0.27)	(0.27)
Weak Democrat	−0.18	−0.20	−0.18	−0.19
	(0.16)	(0.16)	(0.16)	(0.16)
Independent	−0.85***	−0.85***	−0.84***	−0.84***
	(0.15)	(0.15)	(0.15)	(0.15)
Weak Republican	−0.78***	−0.78***	−0.78***	−0.79***
	(0.16)	(0.16)	(0.16)	(0.16)
Strong Republican	−1.06***	−1.06***	−1.07***	−1.07***
	(0.12)	(0.12)	(0.12)	(0.12)
Education - 10	−0.04	−0.14	0.01	−0.09
	(0.30)	(0.30)	(0.30)	(0.30)
Education - 12	−0.12	−0.18	−0.09	−0.14
	(0.27)	(0.27)	(0.28)	(0.28)
Education - 13	−0.20	−0.26	−0.15	−0.21
	(0.28)	(0.29)	(0.29)	(0.29)
Education - 14	0.09	0.02	0.13	0.06
	(0.29)	(0.29)	(0.29)	(0.29)
Education - 16	0.06	−0.01	0.10	0.03
	(0.30)	(0.30)	(0.30)	(0.30)
Education - 17	−0.08	−0.15	−0.05	−0.12
	(0.58)	(0.58)	(0.58)	(0.58)
Education - 19	0.17	0.12	0.21	0.16
	(0.31)	(0.31)	(0.31)	(0.31)
Intercept	3.60***	3.32***	3.58***	3.31***
	(0.33)	(0.36)	(0.33)	(0.36)
Observations	567	567	567	567

*p<0.05; **p<0.01; ***p<0.001

Table A7: OLS models of respondents to the 2015 Kentucky KFF survey (full model).

	ACA Favorability
Education - 10	-0.02
	(0.02)
Education - 12	-0.07^{***}
	(0.02)
Education - 13	-0.05^{**}
	(0.02)
Education - 14	-0.04^{*}
	(0.02)
Education - 16	0.004
	(0.02)
Education - 17	0.06^{**}
	(0.02)
Education - 19	0.11^{***}
	(0.02)
Income	-0.06^{***}
	(0.01)
Income^2	-0.01
	(0.01)
Income^3	0.02^{**}
	(0.01)
Age	0.003
	(0.01)
Age^2	0.02^{*}
	(0.01)
Age^3	-0.04^{***}
	(0.01)
Age^4	-0.003
	(0.002)
Age^5	0.01^{***}
	(0.002)
Black	0.37^{***}
	(0.01)
Hispanic	0.22^{***}
	(0.01)
Asian	0.20^{***}
	(0.02)
Male	-0.05^{***}
	(0.01)
Retired	0.03^{***}
	(0.01)
Constant	0.32^{***}
	(0.03)
Observations	34,169
F Statistic	62.42

Table A8: *ACA favorability model using demographics only, HTS data pre-implementation.* State fixed effects not shown.

A.5 Panel Details

Wave	Start Date	End Date	N
Wave 1	October 2nd, 2007	December 31st, 2007	19,190
Wave 2	January 1st, 2008	March 31st, 2008	17,747
Wave 3	April 2nd, 2008	August 28th, 2008	20,052
Wave 4	August 29th, 2008	November 4th, 2008	19,241
Wave 5	November 5th, 2008	January 20th, 2009	19,234
Wave 6	October 19th, 2012	October 29th, 2012	2,606
Wave 7	November 14th, 2012	January 29th, 2013	2,471
Wave 8	October 17th, 2014	October 31st, 2014	1,693
Wave 9	November 19th, 2014	January 14th, 2015	1,493
Wave 10	January 22nd, 2016	February 8th, 2016	1,562
Wave 11	October 14th, 2016	October 24th, 2016	1,227
Wave 12	November 28th, 2016	December 7th, 2016	1,075
Wave 13	October 23rd, 2018	November 5th, 2018	1,024

Table A9: This table summarizes the panel waves and sample sizes.

Here, we detail the demographics of our GfK-based panel. Our respondents are older than the U.S. population, but that is to be expected: they had to be 18 in late 2007 to participate. On a variety of other metrics, even the sample which participated in the final waves are a reasonable approximation of the target population of U.S. adults over 25 (see Appendix Table A10). For example, our sample's mean income in 2016 was $58.4K, which is not far from the 2015 U.S. median household income of $54.9K. Of particular importance is the fact that there is no evidence of heightened attrition rates among those who are less politically engaged. We merged our data with validated vote histories provided by the data vendor Catalist and found that voter turnout was essentially indistinguishable among those who did and did not remain in the panel between 2012 and 2016. Specifically, 2008 turnout was 69.4% among the 2,471 respondents to the post-election 2012 wave and 69.0% among the 1,075 respondents who participated in post-election 2016 wave.

	Min 2008	Max 2008	Mean 2008	Miss. 2008	Mean 2012	Miss. 2012	Mean 2016	Miss. 2016	ACS 2015
Income '08*	2.50	250.00	61.38	0.31	57.72	0.07	58.40	0.00	54.89
Years of Ed. '08	4.00	19.00	14.33	0.00	13.76	0.00	13.68	0.00	
HS Degree '08	0.00	1.00	0.96	0.00	0.94	0.00	0.94	0.00	0.87
Has BA '08	0.00	1.00	0.40	0.00	0.31	0.00	0.30	0.00	0.30
Party ID '08	1.00	7.00	3.87	0.15	3.82	0.17	3.87	0.14	
Union Hsh. '08	0.00	1.00	0.09	0.00	0.12	0.00	0.13	0.00	
Catholic '08	0.00	1.00	0.16	0.00	0.21	0.00	0.20	0.00	
Protestant '08	0.00	1.00	0.27	0.00	0.31	0.00	0.33	0.00	
Female '08	0.00	1.00	0.56	0.00	0.53	0.00	0.50	0.00	0.51
Age '08	18.00	110.00	50.13	0.00	47.12	0.00	48.84	0.00	
Over 65 '08	0.00	1.00	0.17	0.00	0.14	0.00	0.15	0.00	0.15
Black '08	0.00	1.00	0.09	0.00	0.13	0.00	0.12	0.00	0.13
Hispanic '08	0.00	1.00	0.06	0.00	0.10	0.00	0.10	0.00	0.17
White '08	0.00	1.00	0.80	0.00	0.71	0.00	0.71	0.00	0.77
Voted '12					0.69	.21	0.69	0.21	

Table A10: Demographics for the (1) 19,241 respondents to panel wave 4 in 2008; (2) 2,471 respondents to panel wave 7 in 2012; (3) 1,075 respondents to panel wave 16 in November-December 2016. "Miss." refers to the share of that variable which is missing for respondents to the designated panel wave. The American Community Survey benchmarks come from July 1, 2015 estimates for the full U.S. population. The asterisk (*) denotes that the U.S. Census reports median household income, not mean income.

	Repeal ACA (1-7)
Intercept	3.56*
	(0.35)
Uninsured, Fall '18	1.23*
	(0.43)
Uninsured, Jan. '16	−0.03
	(0.40)
Jan. '16: Medicare	−0.13
	(0.33)
Jan. '16: Plan through parent	−0.91
	(1.10)
Jan. '16: Plan through employer	−0.15
	(0.34)
Jan. '16: Self-purchased plan	−0.62
	(0.40)
Jan. '16 Insurance: Refused	−1.04
	(0.99)
Jan. '16: Other government insurance	−0.30
	(0.47)
Jan. '16: Somewhere else	0.38
	(0.45)
Jan. '18: Medicare	0.07
	(0.37)
Jan. '18: Plan through parent	2.80
	(1.66)
Jan. '18: Plan through employer	0.45
	(0.39)
Jan. '18: Self-purchased plan	0.56
	(0.46)
Jan. '18 Insurance: Refused	1.03
	(1.76)
Jan. '18: Other government insurance	0.75
	(0.53)
Jan. '18: Somewhere else	−0.68
	(0.51)
Oct. '12: Repeal ACA	0.60*
	(0.11)
Nov. '12-Jan. '13: Repeal ACA	−0.02
	(0.10)
Oct. '16: Repeal ACA	0.76*
	(0.08)
Oct. '12: GOP Partisan ID	0.34*
	(0.07)
Oct. '12: Years of Education	0.10
	(0.06)
Oct. '12: White	0.19
	(0.14)
Oct. '12: Black	−0.27
	(0.22)
Fall '07: Income	0.01
	(0.05)
Oct. '12: Female	0.02
	(0.11)
Oct. '12: Age	0.24*
	(0.08)
Fall '07: Union household	0.13
	(0.17)
Fall '07: Catholic	−0.05
	(0.15)
Fall '07: Protestant	0.21
	(0.13)
R^2	0.65
Num. obs.	567

$^*p < 0.05$

Table A11: This table presents an OLS model of fall 2018 anti-ACA attitudes, measured on a 1-7 scale, as a function of various variables.

	Repeal ACA '18 Model 1	Repeal ACA '18 Model 2
(Intercept)	3.83*	3.78*
	(0.26)	(0.29)
Jan. '16: Medicare	0.04	−0.14
	(0.28)	(0.29)
Jan. '16: Plan through parent	−0.78	−0.73
	(1.09)	(1.10)
Jan. '16: Plan through employer	0.08	0.04
	(0.27)	(0.27)
Jan. '16: Self-purchased plan	−0.31	−0.33
	(0.33)	(0.33)
Jan. '16 Insurance: Refused	−0.98	−1.02
	(0.99)	(0.99)
Jan. '16: Other government program	0.19	0.10
	(0.41)	(0.41)
Jan. '16: Other insurance	0.34	0.19
	(0.42)	(0.43)
Jan. '16: Uninsured	0.53	0.54
	(0.35)	(0.35)
Oct. '12: ACA attitudes	0.61*	0.59*
	(0.10)	(0.11)
Nov. '12-Jan. '13: ACA attitudes	0.03	0.03
	(0.10)	(0.10)
Oct. '16: ACA attitudes	0.75*	0.76*
	(0.08)	(0.08)
Oct. '12: GOP partisan ID	0.35*	0.32*
	(0.07)	(0.07)
Oct. '12: Years of Ed.		0.09
		(0.06)
Oct. '12: White		0.17
		(0.14)
Oct. '12: Black		−0.20
		(0.22)
Fall '07: Income		0.00
		(0.05)
Oct. '12: Female		0.04
		(0.11)
Oct. '12: Age		0.18*
		(0.08)
Fall '07: Union Household		0.12
		(0.17)
Fall '07: Catholic		−0.09
		(0.15)
Fall '07: Protestant		0.19
		(0.13)
R^2	0.62	0.63
Num. obs.	573	573

*$p < 0.05$

Table A12: This table presents an OLS model of fall 2018 anti-ACA attitudes, measured on a 1-7 scale, as a function of various variables.

A.6 Most Likely Case 1: Geographic Variability in Exchange-based Insurance Prices

	ACA favorability		
	Non-Market	**Market**	Uninsured
Weak Democrat	−0.63***	−0.19	−0.42***
	(0.02)	(0.15)	(0.07)
Independent	−0.87***	−0.60***	−0.63***
	(0.03)	(0.16)	(0.07)
Weak Republican	−1.01***	−0.94***	−0.50***
	(0.03)	(0.15)	(0.07)
Strong Republican	−1.51***	−1.27***	−0.91***
	(0.02)	(0.14)	(0.08)
Education	0.03***	−0.01	−0.03**
	(0.003)	(0.02)	(0.01)
Income	−0.0003*	−0.001	−0.002**
	(0.0001)	(0.001)	(0.001)
Black	0.37***	0.40*	0.36***
	(0.03)	(0.16)	(0.07)
Hispanic	0.28***	0.01	0.46***
	(0.03)	(0.16)	(0.07)
Asian	0.20***	0.74*	0.19
	(0.05)	(0.35)	(0.19)
Age	−0.001	0.001	−0.01***
	(0.0005)	(0.004)	(0.002)
County % Black 2010	−0.20*	0.54	0.38
	(0.08)	(0.53)	(0.23)
County % Hispanic 2010	0.03	0.23	0.38*
	(0.06)	(0.36)	(0.17)
County Med. Hsh. Inc. 2010	−0.0000	0.0000	−0.0000
	(0.0000)	(0.0000)	(0.0000)
County % Poor 2010	0.003	1.01	−0.16
	(0.30)	(1.81)	(0.92)
County % Unemployed 2010	5.15***	−6.40	2.24
	(0.90)	(6.14)	(2.62)
County Δ % Unemployed 2010-16	3.56**	−2.43	4.30
	(1.15)	(7.88)	(3.51)
County % with BA 2010	0.97***	1.24	0.48
	(0.13)	(0.79)	(0.40)
Number of plans (logged, in sd's)	0.001	−0.07	−0.004
	(0.01)	(0.06)	(0.03)
Mean Premium (in sd's)	0.004	0.04	0.05
	(0.01)	(0.07)	(0.03)
Mean Change in Premium (in sd's)	0.001	−0.19**	−0.02
	(0.01)	(0.07)	(0.04)
Constant	2.17***	2.87***	2.65***
	(0.14)	(0.70)	(0.34)
Month FEs	Y	Y	Y
County-Level Demographics	Y	Y	Y
Clusters (Year)	3	3	3
Note:		*p<0.05; **p<0.01; ***p<0.001	

Table A13: This table presents the results of the full multi-level models fit to KFF respondents from 2015, 2016, and 2017 in which certain insurance market conditions (and various other independent variables) predict ACA favorability, measured on a 1 to 4 scale.

A.7 Most Likely Case 2: Those in their Early 60s

	Pre-ACA	Post-ACA
Intercept	3.57*	1.91
	(1.24)	(1.37)
Age > 64	−0.12	0.01
	(0.06)	(0.06)
Age	−0.02	−0.00
	(0.02)	(0.02)
Survey Month	1.92*	1.43
	(0.92)	(1.65)
Survey Month Sq.	−2.18	−0.60
	(1.14)	(1.00)
Education	0.05*	0.03*
	(0.01)	(0.01)
Black	0.49*	0.44*
	(0.06)	(0.05)
Hispanic	0.37*	0.40*
	(0.07)	(0.06)
Asian Am.	0.29*	0.28*
	(0.13)	(0.13)
Male	−0.04	−0.01
	(0.03)	(0.03)
Income	0.20	0.09
	(0.29)	(0.26)
Weak Dem	−0.24*	−0.85*
	(0.05)	(0.05)
Pure Independent	−0.96*	−0.82*
	(0.06)	(0.05)
Weak GOP	−1.60*	−0.94*
	(0.05)	(0.05)
Strong GOP	−1.60*	−1.56*
	(0.04)	(0.04)
R^2	0.42	0.32
N	3843	4791

$^*p < 0.05$

Table A14: These tables present the RDD models fit to respondents between 62 and 68 before (left) and after (right) the ACA's implementation. Although we do not control for partisanship in other causal models to avoid post-treatment bias, we include it here to match the model specification in Lerman and McCabe (2017). Removing partisanship from these models does not meaningfully change the RDD coefficient.

	Beta	SE	t-value
Education	-0.108	0.133	-0.813
Black	0.015	0.013	1.158
Hispanic	0.008	0.011	0.698
Asian American	0.012	0.005	2.285
Male	-0.000	0.022	-0.020
Republican	-0.024	0.080	-0.296
Income	-1.250	2.912	-0.429

Table A15: This table presents checks of the key assumption underpinning the RDD analyses, which is that potentially confounding variables are distributed smoothly at the point of the discontinuity. Using the same specification as in the RDD models in Table A14, it presents the coefficient, standard error, and t-value from models in which the listed variable is the dependent variable predicted by being 65 or older. As the table makes clear, none of these variables are significantly different for those just over 65 years old save for being Asian American, which is slightly more common just over 65.

A.8 Insurance Source Score Analyses

	Exchanges	**Uninsured**	**Self-Purchased**
Education[1]	0.66***	−4.05***	0.90***
	(0.18)	(0.28)	(0.32)
Education[2]	−0.06	2.54***	0.06
	(0.16)	(0.24)	(0.27)
Income[1]	−1.36***	−2.94***	−0.83***
	(0.18)	(0.27)	(0.31)
Income[2]	0.97***	2.00***	1.47***
	(0.16)	(0.24)	(0.28)
Income[3]	−0.07	−0.32	−0.15
	(0.16)	(0.24)	(0.28)
Age[1]	0.72***	−2.06***	2.55***
	(0.18)	(0.27)	(0.31)
Age[2]	0.04	−1.09***	0.43
	(0.18)	(0.27)	(0.30)
Age[3]	0.33*	1.61***	0.70**
	(0.17)	(0.26)	(0.30)
Age[4]	−0.03	0.04	0.21
	(0.17)	(0.26)	(0.29)
Age[5]	0.22	0.37	0.56**
	(0.16)	(0.25)	(0.28)
Black	−0.003	0.01**	−0.03***
	(0.004)	(0.01)	(0.01)
Hispanic	0.004	0.04***	−0.004
	(0.004)	(0.01)	(0.01)
Asian	−0.01**	−0.02**	−0.01
	(0.01)	(0.01)	(0.01)
Male	0.002	0.002	0.02***
	(0.002)	(0.004)	(0.004)
Retired	−0.0003	−0.02**	0.05***
	(0.01)	(0.01)	(0.01)
Constant	0.03***	0.05***	0.09***
	(0.002)	(0.003)	(0.003)
Observations	17,018	19,688	19,688
F Statistic	**9.46**	**69.91**	**15.81**

Table A16: *Insurance source score models.*

25

	Market score	Uninsured score	Self-purchased score
Mean	0.03	0.06	0.10
SD	0.01	0.06	0.03
Min	-0.04	-0.05	-0.02
Max	0.08	0.47	0.25

Table A17: *Summary statistics for insurance source scores.* Given that we observe a relatively small amount of variability in these scores, we limit our interpretation of coefficient sizes in several analyses to a change of 0.1 in the scores. Although the models themselves are no different depending on this scaling, this limited interpretation is consistent with the amount of variation in the data we have available. Some scores are negative because we use a linear first-stage model. In our analysis here, however, a logistic first stage does not alter the second-stage estimates.

| | Predicted Insurance Source | | |
	Exchanges	Uninsured	Self-purchased
Exchanges	1.00	**0.29**	**0.62**
Uninsured	**0.29**	1.00	**-0.20**
Self-purchased	**0.62**	**-0.20**	1.00

Table A18: The exchange scores are highly correlated with the self-purchased scores because exchanges are a subset of the self-purchased in the data. The demographics of exchange users resemble the demographics of the uninsured.
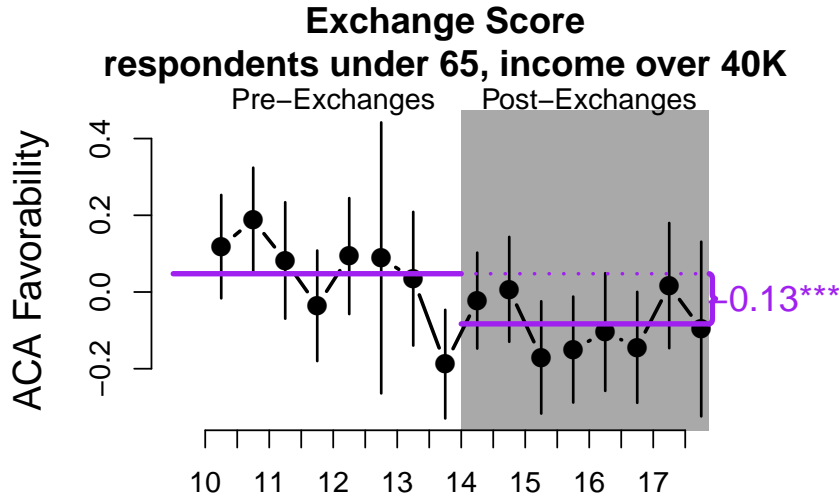

Figure A5: *Over-time associations between insurance source scores, ACA attitudes.* This figure shows the effect of increasing the average insurance source score by 10 percentage points for the exchange user scores. The exchange user scores are correlated with the uninsured score estimates, explaining our emphasis on other results.

	ACA favorability		
	Purchased on Exchanges	Uninsured	Self-Insured
Intercept	0.46***	0.45***	0.63***
	(0.01)	(0.01)	(0.02)
Insurance Source Score	0.44	0.22***	−1.70***∘
	(0.28)	(0.07)	(0.12)
Post-Implementation	0.03	0.03*	−0.0003
	(0.02)	(0.02)	(0.02)
Post-Implementation × Insurance Source Score	−1.24***∘	−0.51***	−0.11∘
	(0.39)	(0.09)	(0.17)
Observations	35,474	35,474	35,474
Number of period random-effects	10	10	10
Post-Implementation × Insurance Source Score (no REs, bootstrapped CIs)	**−1.34** [-2.30, -0.20]	**−0.52** [-0.75, -0.29]	**−0.14** [-0.53, 0.29]

*p<0.05; **p<0.01; ***p<0.001;　∘ leads to prediction outside 0-1

Table A19: This table presents the results of a multi-level model predicting four-category ACA favorability. Unlike the figures elsewhere, these scores estimate moving from 0 to 1 on the probability scale. This extrapolates from the observed data, since the demographic variables do not strongly predict purchasing on the exchanges and being uninsured. The insurance source score result for purchasing on the exchanges suggests that these groups were already extremely favorable toward the law, and perhaps could only maintain that high opinion or lower it. Bootstrapped 95% confidence intervals using the percentile method from 10,000 replications are shown in brackets at the bottom. This bootstrapping incorporates uncertainty from both stages of this model. The effect estimates are re-listed here because in these models did not include random effects, which had little to no effect on the original confidence intervals but complicated the bootstrapping procedure.

A.9 Poisson Models of Insurance Source Scores

Table A20 below presents a version of our predicted insurance source models from Table A16 with a few modifications which make interpretation more straightforward and direct—and thus facilitate readers' understanding of the predictive relationships. Specifically, these models differ from those employed in the insurance score analyses in that they omit polynomials and use Poisson regression to estimate relative risk. With the risk ratios, coefficients can be interpreted as indicating how many times more likely someone is to use the exchanges/be uninsured/self-purchase insurance given a one-unit change in the relevant variable. To make the coefficients more interpretable, we also detail the coding for education and income.[34] One of the main take-aways from this table is that income is similarly associated with using the exchanges and being uninsured, but the uninsured are younger and less educated, as well as more likely to be black or Hispanic.

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[34]Education levels to numeric conversion:

6 = "Less than high school (Grades 1-8 or no formal schooling)"
10 = "High school incomplete (Grades 9-11 or Grade 12 with no diploma)"
12 = "High school graduate (Grade 12 with diploma or GED certificate)"
13 = "Some college, no degree (includes some community college)"
14 = "Two year associate degree from a college or university"
16 = "Four year college or university degree/Bachelor's degree (e.g., BS, BA, AB)"
17 = "Some postgraduate or professional school, no postgraduate degree"
19 = "Post-graduate or professional degree, including master's, doctorate, medical, or law degree (e.g., MA, MS, PhD, MD, JD)"

Income levels to numeric conversion:
10 = "Less than $20,000",
25 = "$20,000 to $30,000",
35 = "$30,000 to $40,000",
45 = "$40,000 to $50,000",
62.5 = "$50,000 to $75,000",
82.5 = "$75,000 to $90,000",
95 = "$90,000 to $100,000",
200 = "$100,000 or more"

	Exchanges	Uninsured	Self-Purchased
Education	1.25	0.64	1.08
in sd's	(1.20, 1.30)	(0.61, 0.67)	(1.05, 1.10)
Income	0.61	0.65	0.92
in sd's	(0.54, 0.67)	(0.61, 0.69)	(0.90, 0.95)
Age	1.24	0.84	1.22
in sd's	(1.19, 1.30)	(0.81, 0.87)	(1.20, 1.25)
Black	0.93	1.19	0.65
	(0.77, 1.10)	(1.11, 1.28)	(0.55, 0.75)
Hispanic	1.22	1.49	0.97
	(1.06, 1.38)	(1.41, 1.56)	(0.89, 1.06)
Asian	0.41	0.68	0.92
	(0.05, 0.77)	(0.52, 0.84)	(0.80, 1.03)
Male	1.10	1.03	1.22
	(1.00, 1.20)	(0.97, 1.09)	(1.17, 1.27)
Retired	0.99	0.62	1.52
	(0.78, 1.21)	(0.43, 0.80)	(1.42, 1.61)
Constant	0.02	0.04	0.08
	(-0.06, 0.11)	(-0.01, 0.10)	(0.04, 0.12)
Observations	17,018	19,688	19,688

Table A20: *Insurance source score models for interpretation (Poisson GLM, coefficients as risk ratios, no polynomials).* 95% confidence intervals are shown in parentheses. These models are not used in any other analyses – we rely on the polynomial, linear regression, instead.

A.10 Expected Insurance Source & Partisanship

In this section, we replicate the insurance source score tests from the main manuscript using partisan identification as the outcome. ACA attitudes are strongly associated with partisan identification (e.g. Kriner and Reeves, 2014), and since partisan identification is strongly resistant to change (Green, Palmquist and Schickler, 2002), partisanship could limit the extent to which improvements in personal circumstances can increase favorability toward a politicized policy (Jacobs and Mettler, 2018). At the same time, any changes in partisan identification induced by the ACA might have far-reaching effects, since partisan identification can influence a range of political opinions and behaviors (Achen and Bartels, 2016). More importantly for our main analyses, the fact that we have detected changes in partisanship bolsters the case for excluding partisanship from the calculation of our insurance source scores, as partisanship might be affected by personal experience with the ACA.

In this analysis, we follow extensive research by considering partisan identification to be causally prior to ACA attitudes (Green, Palmquist and Schickler, 2002). Democrats are more likely to favor the ACA and Republicans the reverse. Here, we consider whether *changes* in exposure to the ACA and the resulting changes in ACA attitudes correspond with *changes* in partisanship.

To ease comparisons with the dichotomous ACA favorability analyses, the dependent variable for partisanship is coded 1 for Democrats, 0.5 for Independent, and 0 for Republican, and the dependent variable for Independent is coded 1 for Independent and 0 otherwise. As in tests in the main manuscript, we use a linear probability model with an indicator for Democratic identification as the outcome when analyzing the insurance source scores. In select models, we also show the effect of controlling for ACA favorability on any associations between insurance source and partisanship. This is an informal mediation analysis. If the standard assumptions hold[35], the decrease in the size of the partisan identification coefficient after controlling for ACA

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[35]The assumptions underpinning causal mediation analysis are similar to those underpinning linear regressions, but there are additional assumptions about lack of unmeasured confounding (or, at minimum, "deconfounding") along the expanded causal pathway. In our analysis, for example, a joint effect on ACA favorability and partisanship in the year or so after the 2012 election that

favorability roughly corresponds to the size of the mediated effect.[36]

In Figure A6, we show that respondents who are more likely to use the exchanges or purchase insurance do not differ disproportionately in their partisanship after January 2014. However, those who were more likely to be uninsured shifted disproportionately away from the Democrats and toward identification as Independents. A 10 percentage-point increase in the likelihood of going without insurance was associated with 2.5 percentage point decrease (SE=0.7 percentage points) in the probability of being a Democrat after 2014 compared to before 2014.[37]

Not identifying with either major party was also positively associated with the uninsured scores. Put differently, people whose demographics made them more likely to be uninsured were also more likely to identify as independents after 2014. At the same time, those predicted to purchase their own insurance were more likely to identify with a party.

Overall, these results mirror the ACA attitude findings. We find that the people who were relatively likely to go without insurance shifted away from the Democrats, and those likely to purchase their own insurance were *polarized* rather than shifting uniformly toward either party. In other words, the ACA's implementation resulted in both positive and negative policy feedback effects, and these heterogeneous experiences partly cancelled out.

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is not due to the ACA would be such a confounder, and would be especially concerning if it were concentrated among individuals with high likelihoods of having the insurance sources considered here. Such a confounder would prove problematic not only for our analyses but for much of the extant research on the effects of the ACA on political attitudes.

[36]If the ACA's rollout did change partisan identification with the Republicans or Democrats, the *absence* of mediation would perhaps be more surprising than the presence of mediation. After all, such a finding would imply that the ACA had shifted partisanship without influencing attitudes toward the ACA itself.

[37]Note that for the estimates in Figure A6, we are using the full 0 to 1 probability scale as our independent variable. Dividing the y-axis by 10 keeps the estimates closer to the observed variability in our data.
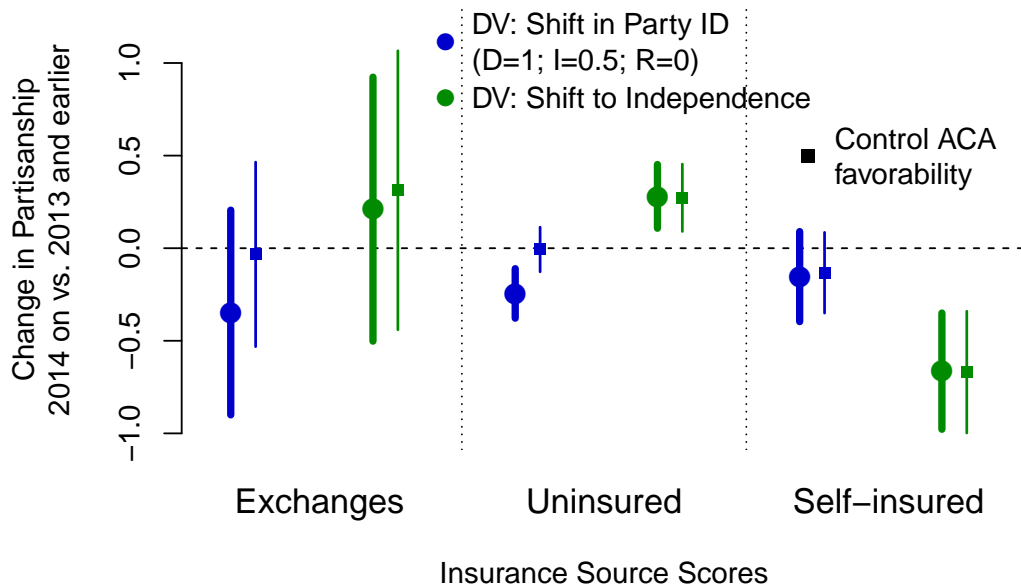
Figure A6: *Partisanship & Insurance Status Scores.* This figure shows estimates for pre- vs. post-implementation associations between partisanship and the insurance status scores. In each case, the first estimate is the change in the partisanship-insurance source score association after implementation while the second reports the same association conditioning on ACA attitudes. Over-time estimates are shown in the supporting information.
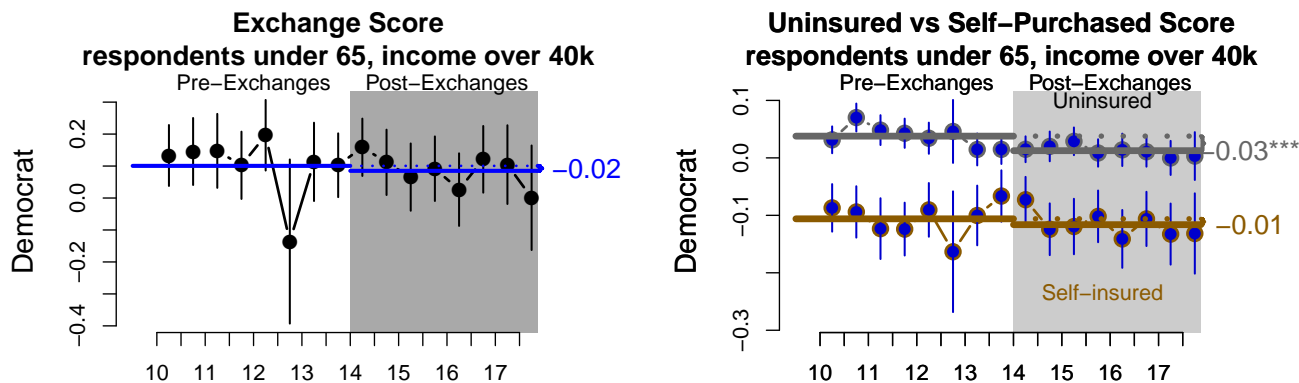

Figure A7: *Over-time associations between insurance source scores, partisan identification.* This figure shows the effect of a 10-percentage-point increase over the mean score. The uninsured score is meant to capture the effect of the individual mandate on ACA attitudes. However, the uninsured score is a catch-all score—it identifies both those groups who chose to forego insurance rather than purchase insurance on the individual market and those groups who *would have* foregone purchasing on the individual markets had they not had some other source of insurance, such as an employer-based health plan. Partisanship here is measured via 1=Democrat, 0.5=Independent, and 0=Republican.
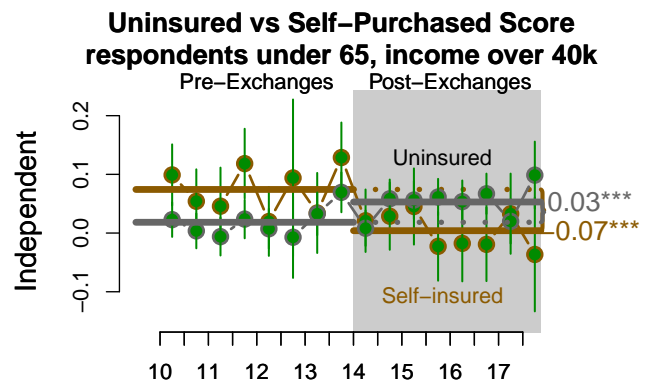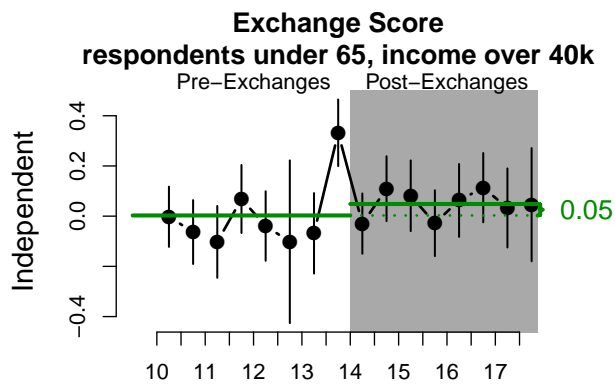
Figure A8: *Over-time associations between insurance source scores, identification as independent.* This figure shows the effect of a 10-percentage-point increase over the mean score.

	Party ID (Identify as Democrat)		Identify as Independent	
		(control ACA)		(control ACA)
Under 65	−0.02	−0.01	−0.01	−0.04*
	(0.02)	(0.02)	(0.02)	(0.02)
Post-Implementation	−0.05***	−0.04***	−0.02	−0.05**
	(0.02)	(0.01)	(0.02)	(0.02)
Post-Implementation x Under 65	**0.02***	**0.01**	**0.01**	**0.04****
	(0.01)	**(0.01)**	**(0.02)**	**(0.02)**
ACA favorability		0.16***		−0.04***
		(0.003)		(0.004)
Observations	11,276	9,499	11,276	9,499
			*p<0.05; **p<0.01; ***p<0.001	

Table A21: "Democrat" is measured via 3-category partisan identification, with Democrat coded 1, Republican coded 0, and Independent coded 0.5.