Navigating Medicaid:
Experimental Evidence on Administrative Burden and Coverage Loss

Rebecca Myerson, University of Wisconsin-Madison

Allison Espeseth, Covering Wisconsin

Laura Dague, Texas A&M University & NBER

Abstract:

Millions of people lose access to safety-net programs each year because they do not complete required administrative processes. In a field experiment, we tested whether outreach providing help with renewal processes increased retention of Medicaid coverage. Analysis of experimental data matched to administrative sources showed that pre-recorded calls offering free, one-on-one assistance from health insurance navigators increased successful Medicaid renewal by 1 percentage point, including effects for tribal members, children, and people with above-median medical expenses. These findings provide the first evidence from a randomized trial that administrative ordeals cause eligible people, including those needing care, to lose their coverage.

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Introduction

Means-tested programs can provide an important safety net for low-income Americans, but many people who are eligible for these programs do not receive them (Currie 2006). Gaps in program receipt occur when eligible people do not enroll (incomplete take-up) or do not renew their benefits (incomplete retention). Potential reasons for incomplete take-up and retention include lack of information about program benefits and the application process, the length or complexity of enrollment processes, and errors in calculating eligibility; the impact of these factors on take-up and retention is largely unknown and likely varies by context (Ko and Moffitt 2022). The hassles inherent in the application or renewal process—sometimes termed ordeals, administrative burdens, or compliance costs—may be inadvertent or may be used intentionally in an effort to target the program to people who are eligible and value the benefits (Herd and Moynihan 2018; Kleven and Kopczuk 2011; Nichols and Zeckhauser 1982). Beneficiaries who face additional barriers such as low literacy or numeracy, unstable housing, or lack of internet access may find it more difficult to overcome these hassles (Homonoff and Somerville 2021; Aizer 2003; Hoerl et al. 2017; Bertrand, Luttmer, and Mullainathan 2000). Accordingly, policymakers have raised concerns about whether current enrollment and renewal processes for safety-net programs provide fair and equitable access for all eligible individuals (Biden 2021; Office for Management and Budget 2022).

Medicaid, which provides free or very low-cost health insurance coverage for certain low-income Americans, has lower take-up and retention rates than might be expected considering the value of the benefit (Baicker, Congdon, and Mullainathan 2012; Buchmueller, Ham, and Shore-Sheppard 2015; Currie and Gruber 1996; Miller, Johnson, and Wherry 2021; Sommers 2007). One in five Medicaid beneficiaries lose coverage during the renewal process, during which they must submit evidence of eligibility that meets their state's requirements and respond to clarification requests by a given deadline (Dague and Myerson 2024). Half of those who lose coverage are uninsured 6 months later, despite likely eligibility for free or heavily subsidized coverage through Medicaid or the health insurance marketplace (Einav and Finkelstein 2023; Ndumele et al. 2022). A 2020 federal policy temporarily implementing continuous Medicaid coverage resulted in a 40% increase in enrollment nationwide due to increased retention, and the 2023–2024 return-to-usual processes, called "the unwinding," prompted widespread concerns about mass uninsurance (Dague and Ukert 2024). In 2023 alone, more than 9 million U.S. residents lost Medicaid coverage for procedural reasons (i.e., because they did not complete the required renewal processes) (KFF 2023). However, because the eligibility of individuals who do not complete their renewal paperwork is unobserved, the impact of renewal processes on access to Medicaid – for those who are truly eligible – remains unclear.

Designing a well-targeted renewal process requires understanding whether Medicaid eligible people lose coverage at their renewal deadline and, if so, what mechanisms drive it. While outreach messages with reminders or relevant information might encourage people to renew their benefits, evidence suggests such interventions may disproportionately benefit relatively

advantaged (healthier or higher income) enrollees (Ericson et al. 2017; Howell et al. 2017; Lopoo, Heflin, and Boskovski 2020; Domurat, Menashe, and Yin 2021). In contrast, step-by-step assistance with the enrollment process—such as help delivered by live telephone-based outreach—increases enrollment among groups that have low rates of enrollment without intervention, including people with lower incomes and those who prefer a language other than English (Aizer 2003; 2007; Myerson et al. 2022). However, live outreach is labor intensive. Scalable methods are needed because the number of people who must renew Medicaid regularly is very large: even after the unwinding, more than 70 million beneficiaries will experience the Medicaid renewal process at least annually (KFF 2019; Medicaid and CHIP Payment and Access Commission 2017).

The Affordable Care Act (ACA) Navigator program could be a key source of assistance for beneficiaries who need help renewing their Medicaid coverage. Funded by the federal government since 2013, navigators offer free one-on-one help with health insurance (in person, by phone, or via online calls), including Medicaid. The navigator program is active in more than 30 states, including 6 of the 10 states with the highest levels of procedural denials during the Medicaid renewal process (KFF 2023). The program increases health insurance coverage among underserved groups including low-income adults and people who prefer a language other than English (Myerson and Li 2022). However, navigators can only obtain contact information of beneficiaries whose Medicaid renewals are coming due, and outreach them, by partnering with state agencies.

In partnership with the Wisconsin Department of Health Services and Covering Wisconsin (Wisconsin's Navigator program), we ran a 12-month large-scale field experiment to test the impact of reducing administrative hassles using outreach that provided information and assistance (e.g., a hotline number to call for live help). Across different experimental arms, outreach was conducted using different types of technology-enabled methods (text message, postcard, or pre-recorded outbound call), varying the content and frequency of messages. Because these outreach interventions helped beneficiaries navigate the renewal process without changing their true Medicaid eligibility, any impact of the intervention on renewal rates would suggest that eligible people lose benefits because of challenges with the renewal processes. More precisely, the experimental intervention does not affect underlying eligibility, anticipated benefits, stigma, or program operator error rates. However, the intervention could affect participation by providing information (a reminder of the deadline) and assistance with renewal processes (advice on how to correctly complete the required forms and gather the required evidence).

We randomized outreach among 79,580 English- or Spanish-speaking households enrolled with fee-for-service Medicaid coverage who had to take action to renew their coverage between June 2023 and June 2024, during the unwinding of continuous Medicaid coverage in Wisconsin. Using linked administrative data, we assessed whether the 92,474 enrollees in these households lost their Medicaid coverage after the renewal deadline. Being randomized to the pre-recorded

outbound call arm increased Medicaid renewal by 1.0 percentage points (a 1.4% increase compared to those who received only a postcard and no outbound call). Sending text messages was less costly than postcards but yielded similar coverage outcomes. Sending pre-recorded calls cost $15 per additional beneficiary who kept their Medicaid coverage, substantially less than recent estimates of the benefit's value to recipients and health care providers (Finkelstein, Hendren, and Luttmer 2019).

An important dimension of the effectiveness of different contact methods is the likelihood that the message reached the target. Secondary analyses showed that contact information was frequently out of date—at least 1 in 5 addresses and phone numbers were likely incorrect. A treatment on the treated analysis found that receiving an outbound call (i.e., a call was sent and there was no evidence of a bounced call or inaccurate contact information) increased Medicaid renewal by 1.5 percentage points or 2.2%. Process-related measures (e.g., analysis of inbound calls to the hotline) suggested that assistance was a meaningful contributor to the intervention's effect, above and beyond the effect of simply reminding people they need to renew their Medicaid.

The typical rationale for purposeful administrative burden or ordeal mechanisms in applications for public benefits is that such costs efficiently discourage participation by those with low need (Zeckhauser 2021). Yet, this argument is undermined if only relatively advantaged people are able to overcome the hassles, suggesting the targeting property is ex ante unclear (Deshpande and Li 2019; Finkelstein and Notowidigdo 2019). To identify the population for whom assistance was impactful, we examined the effect of outreach by language preference, beneficiary demographics, tribal membership, and history of successful prior Medicaid renewal. We also examined effects for beneficiaries whose past Medicaid claims indicated they had chronic conditions or had used more costly care. Receiving an outbound call increased Medicaid renewal among tribal members (by 7.0 percentage points or 12.1%), children (by 2.9 percentage points or 3.4%), people who had not recently completed a successful Medicaid renewal (by 2.0 percentage points or 3.1%), and people with above-median health care costs (by 1.7 percentage points or 2.3%) suggesting that ordeals can disadvantage some people who need and use their Medicaid but have less experience with the renewal process.

These findings provide the first evidence from a randomized trial that administrative burdens in the Medicaid renewal process cause eligible people to lose Medicaid coverage. Prior studies have measured changes in Medicaid or Children's Health Insurance Program enrollment when administrative requirements (eligibility rules and screening processes) become more or less complex (Arbogast, Chorniy, and Currie 2024; Bansak and Raphael 2007; Blavin, Kenney, and Huntress 2014; Schmidt, Shore-Sheppard, and Watson 2024; Sommers 2010; Wolfe and Scrivner 2005). However, these studies reflect the dual challenges that administrative requirements are broadly correlated with the generosity of eligibility policy and that states tend to simultaneously change processes and de facto eligibility (Fox et al. 2020; Kronebusch and Elbel 2004). In other words, changes to the screening process not only affect the marginal

applicant willing to go through the process but also change who would be deemed eligible if everyone were screened. Because the state's screening processes and the Medicaid-eligible population are held fixed in our experiment, our findings have clear normative implications for the targeting properties of avoidable hassles in the renewal processes.

Our estimates contribute to the literature on take-up and retention in the social safety net (Alsan and Yang 2022; Bertrand, Luttmer, and Mullainathan 2000; Bhargava and Manoli 2015; Deshpande and Li 2019; Ko and Moffitt 2022 provide a recent review). Our focus on retention among Medicaid enrollees is novel and is the first randomized trial of the impact of information and assistance on Medicaid retention. Closely related experiments estimated the impacts of outreach in SNAP at initial enrollment (Daponte, Sanders, and Taylor 1999; Finkelstein and Notowidigdo 2019; Giannella et al. 2024; Schanzenbach 2009). SNAP differs from Medicaid on several important dimensions, most notably that the value of Medicaid benefits vary much more by individual and coverage can sometimes be viewed as implicit due to retroactive enrollment. Retention is studied much less than take-up—with existing studies of retention focused on SNAP, rather than Medicaid—but represents an important opportunity to keep eligible people engaged (Lopoo, Heflin, and Boskovski 2020; Homonoff and Somerville 2021).

Our findings also offer practical insights for policymakers, insurers, and navigator organizations, who consistently need to contact Medicaid members. Pre-recorded outbound calls reduced loss of coverage during the renewal process; estimates indicate that supplementing postal mail outreach with outbound calls for all Medicaid beneficiaries nationwide would prompt 700,000 additional people to renew their Medicaid. Other low-cost, easy to scale methods (text messages, including messages linked to a chatbot) were no more or less effective than postcard mail-based outreach. Furthermore, using a text message that asks recipients to reply via text (triggering a chatbot that can link to the hotline if needed) rather than directly call the hotline resulted in similar coverage outcomes while reducing calls to the hotline, suggesting these text messages were the most cost-effective outreach option tested. Given the large existing navigator program, which received nearly $100 million in federal funding each of the last three years, our tested approach offers a scalable method to reduce ordeals in the Medicaid renewal process.

Background and Descriptive Evidence

In an optimal system, screening mechanisms would ensure that eligible people are enrolled and renewed in safety-net programs and ineligible people are not. In practice, however, administrative burden, ordeals, and red tape sometimes prevent eligible people from receiving benefits (Finkelstein and Notowidigdo 2019; Homonoff and Somerville 2021; Wright et al. 2017). Potential Medicaid participants may be subject to a unique set of ordeals because unlike most safety-net programs, Medicaid is financed jointly by federal and state governments and is administered by states, which control almost every aspect of application, eligibility

determination, and renewal, subject to minimum federal standards.[1] How a state implements its eligibility policies often depends on Medicaid agency structure, available information technology systems, and staffing level. For example, although states can use existing data to renew beneficiaries' coverage automatically in a process called ex parte renewal (DeLeire et al. 2012; Rennane et al. 2024; MACPAC 2023), many states do not implement this process for logistical, political, or financial reasons. In general, ongoing eligibility is not guaranteed between initial application and renewal—changes in income and other circumstances may change a member's eligibility status. Renewals are understudied, and we lack descriptive evidence on the overall success rates of renewals as well as the relative proportions of failures due to eligibility issues versus other obstacles, and how these proportions might vary with the frequency of redeterminations. Evidence from simulations suggests that Medicaid requires renewal too frequently (Pei 2017). Many Medicaid beneficiaries who lose coverage at renewal re-enroll within a few months, a phenomenon sometimes called churning (ASPE 2021). This suggests that some coverage losses are not due to lack of eligibility, although because true eligibility is unobserved for people who do not complete renewal paperwork, there is no definitive proof.

Our study population included enrollees in Wisconsin Medicaid whose coverage was not renewed ex parte and whose coverage was administered on a fee-for-service basis (i.e., not through a managed care organization). Fee-for-service enrollees represent about one third of Medicaid beneficiaries nationally and 19% of beneficiaries in Wisconsin; all other enrollees receive care through managed care organizations (Buchmueller, Ham, and Shore-Sheppard 2015). Although managed care organizations are not typically allowed to assist with enrollment processes due to their financial interest in maintaining enrollment, the federal government relaxed certain conditions during the COVID-19 pandemic (CMS 2024). In Wisconsin, Covering Wisconsin (Wisconsin's Navigator program) was responsible for outreach to all fee-for-service enrollees while MCOs were responsible for outreach to their members above and beyond standard contacts from the state. Wisconsin allows tribal members and those who reside in a service area in which there is only one MCO available to opt-in to fee-for-service coverage, and requires dually enrolled, home and community-based program enrollees, and those living in nursing homes at application to enroll in fee-for-service coverage; other members are generally required to enroll in managed care with limited exceptions (WI DHS 2024).

Barriers to Medicaid renewal could impact groups unevenly, underscoring concerns about optimal targeting and equitable access. In an analysis of pre-pandemic Wisconsin data, higher and lower income people renewed Medicaid at similar rates, suggesting some loss of coverage due to logistical challenges rather than genuine ineligibility, and Hispanic enrollees and American Indian or Alaskan Native enrollees were disproportionately likely to lose Medicaid at

[1] Minimum federal standards include the use of a single application for all Medicaid-funded programs; acceptance of applications by phone, mail, online, and in person; applications being processed within 45 days; redeterminations occurring every 12 months for income-eligible members and at least every 12 months for other members; and states making an attempt to renew coverage automatically if they have sufficient information and sending a renewal form to the member if not.

the renewal deadline even after adjustment for baseline household income, enrollment group, and past usage of Medicaid services (Dague and Myerson 2024). Patient surveys and qualitative work suggests that those with greater health-related challenges were less likely to be aware of Medicaid program rules (Heinrich et al. 2022; Stuber and Bradley 2005). Finally, prior work concerning SNAP suggested that those disenrolled due to administrative hassle costs were similar in need to the average enrollee (Homonoff and Somerville 2021).

Matching this literature, there was a large risk of Medicaid coverage loss during the renewal process in our study sample and the risk of coverage loss was associated with both demographic characteristics and health care use. Nearly one-third (32%) of the sample members who received only a postcard, the closest approximation in our data to a status quo/control group, lost their Medicaid coverage at their renewal deadline (see Figure 1). When examining the data by age, rates of successful coverage renewal were highest among children (84%) and near-elderly adults aged 50-64 (71%), and lowest among young adults (51% of people aged 18-25, and 59% of people aged 26-49, successfully renewed). Renewal rates were low among people who preferred Spanish (50%), tribal members (58%), and people with Black race (66%) or Hispanic ethnicity (61%). Use of health care during the continuous coverage period (i.e., a baseline period when everyone in the sample had Medicaid) also predicted coverage renewal. 63% of people who had a chronic condition, based on their recent Medicaid claims, successfully renewed their coverage. Past success with the renewal process was also predictive of a successful renewal. People who had renewed their Medicaid in the year prior to the continuous coverage period had renewal rates 14 percentage points higher than people without a recent renewal (77% and 64%, respectively).

Frequent changes in address may also impact whether people receive important renewal information from the state. For example, among SNAP program beneficiaries who only received program notifications by mail, moving to a new zip code was associated with a five-fold increase in the odds of losing benefits during the recertification process (Mills et al. 2014). Mail outreach is typically for state agencies to contact Medicaid beneficiaries, although some innovations (including texting, for the first time) were allowed and used during unwinding. We are not aware of prior empirical data related to whether contacting Medicaid beneficiaries by phone rather than, or in addition to, by postal mail would improve rates of coverage renewal. In our study, we used a contact information search service to collect new data on the accuracy of contact information used by the state to contact beneficiaries.

Methods

We conducted a field experiment in Wisconsin to test scalable outreach methods for reducing Medicaid coverage loss during the renewal process. Specifically, we contacted Medicaid recipients whose coverage was up for renewal to offer information about how to receive free assistance with the renewal process. In this type of information-provision field experiment, participants face real stakes and are not aware of the experiment, enhancing the generalizability

of findings (Haaland, Roth, and Wohlfart 2023). On average, participants in the experiment received outreach 28 days before their renewal deadline.

IRB approval was obtained from the University of Wisconsin and Texas A&M University, and the study protocol was pre-registered on the AEA RCT registry (https://www.socialscienceregistry.org/trials/9772).

a. Experimental Population

The experimental population included households in Wisconsin enrolled in fee-for-service Medicaid who faced a deadline to take action to renew during the unwinding of continuous coverage, between June 2023 and June 2024. The state Department of Health Services assigned each enrollee a deadline by which they should renew and shared this information with Covering Wisconsin. Households were excluded from the experiment if they lacked a valid phone number or if their preferred language was neither English nor Spanish, the two languages in which navigator assistance was most readily available. (Fee-for-service Medicaid enrollees excluded from the experiment still received outreach from Covering Wisconsin in the form of a postcard in their preferred language.) The final analytic sample included 79,580 households or 92,474 individuals.

b. Experimental Arms

We tested outreach methods designed to reduce administrative frictions in the renewal process in two ways: 1) by reminding the recipient about their personal Medicaid renewal deadline, and 2) by explaining how to obtain assistance with the renewal process – by calling the Covering Wisconsin hotline directly or, in some cases, first interacting with a chatbot. To test the relative impact of specific outreach methods, the experimental arms varied the modality of outreach (pre-recorded call, text message, or postcard) as well as the number and content of messages. Outreach was conducted in the recipient's preferred language and was sent to the primary person listed in each Medicaid enrollment case record.

For ethical reasons, everyone in the study sample received outreach. The primary method of outreach was split between postcard (40%) and text message (60%); a randomly assigned 50% of enrollees in each of these groups were also sent a pre-recorded outbound call. This pre-recorded call intervention was selected because it resembled a live outbound call offering one-on-one assistance that previously increased marketplace enrollment (Myerson et al. 2022), but was scalable for a larger population. Within the text message group, experimental arms randomly varied the call to action (connecting with a chatbot vs. calling a hotline) and the number of messages (1 vs. 2). The chatbot, which consumers could interact with online or via text message, provided interactive information about Medicaid eligibility based on household size and income and facilitated access to live help if requested. Appendix Exhibit A1 provides a visual schematic of the experimental arms.

Although all participants received outreach, the pre-recorded outbound call and text message provided more specific and personalized information than the postcard. Given Wisconsin confidentiality rules, the postcard could not reference Medicaid or the recipient's renewal date and instead provided general information about how navigators could help with health insurance (see Exhibit A2 in Appendix). In contrast, text messages and outbound calls specified that the recipient must renew their BadgerCare (the Wisconsin-specific name of the Medicaid program) or Medicaid by a specific deadline to avoid losing coverage (see Exhibits A3 and A4 in the Appendix).

Each month, the timing of the first text messages and outbound calls for members with an upcoming renewal deadline was randomized across days over a period of one week. These messages and calls were randomly assigned to arrive in the afternoon (1:00 pm) or evening (7:00 pm); all messages sent on a Friday or Saturday were sent in the afternoon. For individuals randomized into the group receiving two text messages, the second (reminder) message was sent two weeks after the first.

After an interim analysis in December 2023 found that the pre-recorded outbound call was effective to increase Medicaid renewal, such calls were delivered to all enrollees, starting with February 2024 renewal deadlines. As noted below, our regression specification isolates the effect of being randomized to receive outbound call, using variation from people for whom the outbound call was randomized (i.e., people with deadlines prior to February 2024). Thus, the outbound call was only randomized for 62,220 people in 55,036 households, whereas the other treatment arms were randomized for the full study sample.

c. Randomization Process

To ensure that each beneficiary received outreach at the beginning of their two-month state-assigned renewal window, assignment to treatment arms occurred monthly based on updated lists from DHS of enrollees with upcoming renewal deadlines. Randomization was clustered at the case level to address intra-household spillovers. To ensure balance on key characteristics, randomization was stratified by beneficiary characteristics measured at baseline including Spanish language preference, Medicaid eligibility category for the case at baseline, and demographics (any children or adults over 50 in the household, rural/urban residence, and race and tribal membership of the primary person on the case). Exhibit A5 includes additional details on treatment assignment.

d. Data and Measures

Data from the field experiment were merged with Wisconsin administrative records housed at the University of Wisconsin Institute for Research on Poverty using Medicaid identification numbers. The merged data set captures historical and current Medicaid enrollment and eligibility fields, as well as past health care use paid for by Medicaid during the continuous coverage period (measured in Medicaid claims).

Renewal of Medicaid Coverage. The primary outcome was Medicaid renewal, defined as ongoing enrollment in any full-benefit Medicaid eligibility category in the month after the renewal deadline. Wisconsin allows late renewals for up to 90 days if the beneficiary was continuously eligible, and provides back-dated continuous coverage in such cases; these cases are marked as successful renewals in our data.

Receipt of Outreach. Secondary outcomes measured whether the outreach was received, a key determinant of whether outreach is successful and an input to our treatment on the treated (TOT) analyses. First, we measured whether the correct person likely received their outreach messages using data on returned mail and bounced texts as well as data from a contact information search vendor (LexisNexis) indicating whether the person was likely reachable at the listed phone number or address. (Although data on contact information accuracy were available in real time, legal concerns prevented the use of information from LexisNexis to update the contact information from DHS.) Participants were considered not to have received the message if call vendor or USPS feedback data indicated that the message was undeliverable (text message bounced, pre-recorded call could not be placed, or the recipient moved and did not leave a valid forwarding address) or the contact information search service suggested that the phone number or address was no longer associated with the person of interest.

Engagement with the Intervention. Secondary outcomes measured how members of the study population engaged with the intervention. First, we assessed engagement with the Covering Wisconsin hotline, namely, inbound calls during the 40 days before the renewal deadline using inbound phone numbers to identify study participants. Second, we measured engagement with the text message intervention, specifically, whether people replied to the text message with "COVER" to trigger the chatbot. Finally, as a measure of annoyance costs, we measured whether members of the study population opted out from receiving further texts.

Past Use of Medicaid-Covered Health Care. A screening mechanism for social safety net programs induces more welfare loss, all else equal, if it excludes people who would have greatly benefited from the program. Accordingly, we used heterogeneity analyses to test whether administrative frictions in the renewal process excluded people who likely would have used their Medicaid coverage in the future based on the closest available proxy, their recent claims. Due to the continuous coverage policy related to the COVID-19 pandemic, every member of the study population had continuous Medicaid coverage from April 2020 to April 2023. We used information from this continuous coverage period to classify members of the study sample into groups for heterogeneity analyses.

First, we measured whether each person used their Medicaid coverage to obtain care for special, ongoing health care needs. Specifically, we applied the Chronic Conditions Warehouse algorithm to each person's claims from the continuous coverage period to measure whether each enrollee had any chronic conditions; we also measured whether the enrollee had any chronic conditions

related to mental health, and/or diagnoses related to substance use. (The algorithm's recommended lookback period varies by condition; for each condition, we defined the lookback period using the most recent relevant claims from the continuous coverage period.) Second, because financial protection is an important benefit of the Medicaid program, we measured total health care expenditures covered by Medicaid. We calculated each enrollee's annual Medicaid-covered health care costs during the continuous coverage period and assessed whether their health care costs were above or below the sample median.

Past Success in Navigating Medicaid Renewals. The complexity of the Medicaid renewal process can present a significant learning curve for those who have not completed the process recently. In a pre-specified analysis, we tested the effects of the interventions specifically for people who had not successfully renewed their Medicaid coverage in recent years. This group comprised people who had less than 13 months of continuous Medicaid coverage in March 2020, i.e., had not successfully renewed their coverage in the year prior to the continuous coverage provision.

Other Personal Characteristics. Policymakers have emphasized the importance of equitable access to government safety net programs among historically marginalized or underserved populations such as tribal members, people with Black race or Hispanic ethnicity, people who prefer a language other than English, and people living in rural areas, as well as vulnerable populations such as children. In additional pre-specified heterogeneity analyses, we examined effects separately for each of these groups. People were defined as living in a rural are if their case was administered in a county with a rating of 8 or 9 in the U.S. Department of Agriculture 2013 Rural-Urban Continuum Codes.

Results

a. Study Population and Balance Across Study Arms

Table 1 describes the characteristics of the study population and provides tests for balance of observable characteristics by study arm. Half of the study sample was female (52%). The average age at the time of their renewal deadline was 43 years; 22% were aged 18 or younger and 27% were aged 65 or older. Ten percent identified as Black, 8% identified as Hispanic, and 13% indicated tribal membership. Few enrollees preferred Spanish-language contact (4%) and only 7% lived in rural counties. Only 27% of the sample had successfully renewed their Medicaid coverage in the recent past and 50% had originally qualified for Medicaid because they were aged, blind, or disabled. Claims data found that 18% had a diagnosed chronic condition (e.g., diabetes, chronic kidney disease, COPD, Alzheimer's and related dementias). Compared to the average Medicaid enrollee, the study population was older and more often disabled, reflecting the population that receives fee-for-service Medicaid.

Observable characteristics were balanced across study arms, suggesting that randomization was successfully implemented. There was a statistically significant difference between the postcard

and text message arm in history of recent Medicaid renewal, but this difference was substantively small (27.7 percent had a recent successful Medicaid renewal in the postcard group vs 27.0 percent in the text message group).

b. Contact Information Accuracy

While our study population only included people with a complete address and phone number, many people may not have received their outreach because the contact information was no longer accurate (i.e., no longer belongs to the correct person). Matched data from a contact information search vendor indicated that among all members of the study population (regardless of randomized study arm), 48% had a correct address, 6% had a minor error in their address that might not impede delivery (such as a missing apartment number), and 20% had a major error in their address; the vendor was unable to assess address accuracy for 27% of people in the study population. Likewise, only 50% of phone numbers were judged to be correct, 23% were judged to be incorrect, and 27% had uncertain accuracy. See Figure 2.

c. Intent to Treat Analysis

We conducted an intent-to-treat examination of the effects of assignment to each intervention arm conducted via linear regressions using the following estimating equation:

$$Y_i = \beta_0 + \beta_1(Randomized\ To\ Text)_i + \beta_2(Randomized\ To\ Text\ with\ Chatbot)_i + \beta_3(Randomized\ to\ Reminder\ Text)_i + \beta_4(Randomized\ to\ Outbound\ Call)_i + \mu_t + \boldsymbol{X}_i\delta + \varepsilon_i$$

In the equation, Y_i denotes an outcome of interest (e.g., Medicaid coverage renewal), μ_t denotes renewal deadline fixed effects, and *i* denotes individual. Coefficients β_1- β_4 capturing the respective impacts of randomization to receive the text message rather than postcard as their main outreach; randomization to receive a reminder and/or chatbot call to action if in the text message group; and randomization to receive an outbound call as secondary outreach. Importantly, the variable capturing randomization to an outbound call was set to 0 for people with renewal deadlines of February 2024 or later. (As noted above, all sample members received an outbound call for ethical reasons after interim analyses found that the calls increased Medicaid renewal rates.) The inclusion of renewal deadline fixed effects in the model allows us to identify the effect of randomization to the outbound call only for the people for whom it was randomized.[2] In secondary analyses we added interaction terms to test for differential effects of being sent a message on a weekday versus weekend and in the afternoon versus evening. Standard errors were clustered by case, which was the level of randomization.

To increase statistical power, we adjusted for pre-specified covariates $\boldsymbol{X}$ measured prior to outreach, including fixed effects by county of residence, household income at the start of the

[2] As expected, the β_4 coefficient capturing the effect of randomization to an outbound call was identical when we estimated the model only including data from the people for whom receipt of an outbound call was randomized (i.e., the 62,200 people in 55,036 households with a renewal deadline before February 2024).

current enrollment spell (under 50% FPL, 50-100% FPL, 100-200% FPL, over 200% FPL, missing), whether or not the case had been enrolled in Medicaid for at least 13 months in March 2020 (i.e., had recently successfully completed a redetermination before the continuous coverage provision), eligibility categories for the case at the start of the current enrollment spell (e.g., childless adult, pregnancy), whether or not there were any children or any adults age 50 or older in the case, and characteristics of the primary person on the case including preferred language, gender, tribal membership, and age (<18, 18-25, 26-49, 50-64, 65+, missing). We used two-tailed tests with *p*-values under 0.05 to denote statistically significant effects.

Table 2 presents the impact of randomized outreach arm on Medicaid coverage one month after the renewal date. Randomization to the outbound call arm increased Medicaid coverage by 1 percentage point, which represents a 1.5% increase in coverage among those randomized to receive an outbound call relative to the 68.4% coverage rate in the group sent a postcard but no outbound call (hereafter, baseline group).

Other outreach variations had no impact on Medicaid renewal. Specifically, text messages did not have a different level of effectiveness than postcards, nor was the chatbot text any more or less effective than a regular text, and there was no detectable impact of sending a reminder text. There was also no significant difference in the impact of calls or texts that were sent in the afternoon versus the evening, or on a weekend versus a weekday.

d. Mechanisms

The offer of assistance likely contributed to the intervention's effect, above and beyond the effect of simply reminding people they need to renew their Medicaid, based on data on behavioral responses to the intervention. For example, outreach increased the likelihood that participants called the Covering Wisconsin hotline to make an appointment for one-on-one help. In the baseline group, whose members received a postcard with a less specific call to action (*"For more information: [hotline number]"*), only 0.2% of people called the Covering Wisconsin hotline during the 40 days before their deadline, according to available data on inbound calls.[3] Sending a text message encouraging a call ("*To get free help near you, call [hotline number]*") increased the proportion of people who called Covering Wisconsin before their deadline by 2.5 percentage points (95% CI 2.2 to 2.8). Sending a reminder via text message further increased the proportion of callers by 1.4 percentage points (95% CI 1.1 to 1.7).

Likewise, sending an outbound call encouraging the recipient to call Covering Wisconsin ("*We can help you renew, find financial help, or solve billing and coverage questions. To learn more, call us at [hotline number]*") increased the proportion of people who called the hotline by 1.2 percentage points (95% CI 1.0 to 1.4). Figure 3 demonstrates this outcome in more detail by showing the impact of being randomly sent an outbound call on inbound calls to the hotline, day

[3] Inbound call and text analyses were not pre-specified because we were not aware the data would be available. The data source did not capture calls when users were placed on hold; while this means calls are under-reported, we do not expect patterns of under-reporting to differ across groups.

by day. The figure reflects the results of an event-study regression of calls to the hotline from sample members on days relative to outbound call interacted with the treatment variables, showing the coefficients on days since or until outreach along with 95% confidence intervals. Those who received an outbound call were significantly more likely to call Covering Wisconsin each day for the next two weeks, with the largest increase occurring on the day of the outbound call.

Inbound call and text data also suggest there was engagement with the chatbot. Sending a text message linked to a chatbot ("*To get free help near you, reply COVER*") reduced the proportion of people who called the hotline (by 3.0 percentage points, 95% CI -3.3 to -2.7). Among those who received this version of the text, 1.3% replied "COVER" as instructed, which triggered help via the chatbot and if needed, set up an appointment with a navigator; others may have visited the website, which was also mentioned in the text.

Despite these positive results, the data are also consistent with an "annoyance cost" of the text messages, including the chatbot text. Overall, 3.1% of people receiving one text message encouraging a hotline call opted out of receiving further messages. Sending a message encouraging engagement with a chatbot rather than hotline increased opt-outs (by 0.4 percentage points, 95% CI 0.1 to 0.7 percentage points), and sending a reminder further increased opt-outs (by 0.8 percentage points, 95% CI, 0.4 to 1.1 percentage points).

e. Treatment on the Treated Analysis

To assess the potential effect of receiving an outbound call, we conducted a treatment on the treated analysis using an instrumental variables model. In this model, randomization to the outbound call group was used to instrument for receipt of the outbound call. We coded the outbound calls as received unless the call could not be placed (e.g., the call did not connect, or was not picked up and the number did not accept voicemails), or the contact information search service found that the phone number was no longer associated with the person of interest. Taken together, these data suggest that 61% of people who were randomized to the outbound call group received it. This model included the same covariates included in the intent to treat model; as in the intent to treat model, standard errors were clustered by household.

Our estimated treatment effects would be biased downward if more phone numbers were incorrect than we were able to detect (i.e., because the contact information search vendor's findings were inconclusive in one quarter of cases) or if some people did not see the voicemail because it was marked as spam. Although we took steps to avoid texts being marked as spam by carriers, the spam rules carriers use are ambiguous and variable, and our outreach phone number could be added to a spam list if messages were frequently marked as spam by those who received them.

Table 3 shows the findings from the instrumental variable analysis. Randomization to the outbound call was a strong instrument for receipt of the outbound call; the first stage F statistic

was 36,961 for the full sample and at least 1,700 for all subgroups of interest. Across the full study sample, receiving an outbound call increased Medicaid renewal rates by 1.5 percentage points, a 2.2% increase. The latter rows of Table 3 show the effects of receiving an outbound call for pre-specified subgroups of interest. The effects of the outbound call were largest both absolutely and proportionally among tribal members, at 7.0 percentage points (a 12.1% increase). When stratifying the sample by age, the outbound call significantly increased renewal rates among children (by 2.9 percentage points or 3.4%) and people aged 50-64 (by 2.5 percentage points or 3.5%).

When stratifying the sample by prior Medicaid renewal and recent health care use, the outbound call increased Medicaid renewal only for people who had not recently renewed their Medicaid (by 2.0 percentage points or 3.1%) and people with above median medical expenses (1.7 percentage points or 2.3%). We did not detect statistically significant effects of outreach for rural residents, people preferring Spanish, people who were Black or Hispanic, or people with chronic conditions, although the effect of an outbound call neared statistical significance for rural residents (an increase of 3.1 percentage points or 4.6%, p=0.06) and people with chronic conditions (an increase of 2.2 percentage points or 2.9%, p=0.05). Sign and significance of the findings were similar for the subgroups of interest, although magnitude was smaller, in an intent to treat analysis; see Appendix A6.

f. Cost-effectiveness

Postcards were the most expensive form of outreach considering both printing and mailing costs, at 38 cents per card. Texts cost approximately 9 cents per message. Concerns about the disadvantages of texting among this older and more disabled group did not materialize. Because postcards and texts had similar impacts on coverage, but texts were cheaper to send, texts may be cost-effective relative to postcards in terms of direct outreach costs. (A full cost-effectiveness analysis would require data on the time navigators spent assisting these consumers, including appointments made via the chatbot or during calls to the hotline.)

The cost of sending a pre-recorded outbound call was 15 cents, which translates into a cost of $15 to successfully renew an enrollee via an outbound call. Scaled by the 70 million Medicaid clients in the United States who must renew coverage annually, on average, 700,000 more eligible people could retain coverage using pre-recorded outbound calls at a cost of $10.5 million. The value of this additional enrollment to beneficiaries, using values from Finkelstein and Hendren (2019), is at least $60 per month (excluding value to external parties such as providers), indicating that such an intervention is likely cost-effective.[4]

Conclusion

[4] The basis for the monthly value calculation is ($1450*.5 /12). Note that outbound calls were so effective that navigators had to alter the times these calls were sent to avoid being overwhelmed by inbound calls. Cost-benefit calculations do not consider the time costs of navigators, additional hiring that may need to occur at scale, or the annoyance costs to recipients.

Our data demonstrate, for the first time in a randomized controlled trial, that eligible Medicaid beneficiaries lose coverage due to avoidable frictions in the renewal process. Outreach and assistance increased renewals among tribal members, children, and the near-elderly, raising questions about whether existing administrative frictions reduce equity in Medicaid access. Outreach also increased renewals among people with above-median health care use, which challenges the legitimacy of the typical rationale for allowing barriers or costs to enrollment—namely, that they may efficiently discourage participation by those with low need—and instead suggests that reducing frictions may improve welfare.

The 1 percentage point increase in coverage we find attributable to the intervention is relatively large considering the proportion of people who were potentially eligible for Medicaid. A national survey of people who lost Medicaid coverage in 2023, during our study period, suggest that 17.4% thought they lost Medicaid due to an inability to complete the renewal process, rather than dropping the coverage voluntarily or due to (perceived or real) ineligibility (Rumalla et al. 2024).[5] Applied to our sample, this would imply that 18% of potentially eligible people kept their coverage due to being sent our phone call outreach.

Outreach connected beneficiaries with navigators, an existing source of personalized assistance. Given the presence of similar programs nationwide, other states could adopt this approach to reduce the risk of unnecessary Medicaid coverage loss at renewal. However, many beneficiaries did not receive the messages because of out-of-date contact information; further, even among individuals who received the full intervention, nearly one-third lost Medicaid coverage. Taken together, these findings have important implications for the millions of people who must renew their Medicaid coverage annually. In addition, the results underscore the importance of structural changes for reducing administrative ordeals in the Medicaid renewal process and ensuring equitable access to coverage.

[5] This estimate is based on the October 2023 Census Household Pulse Survey and represents the fraction of those who lost Medicaid since January 2022 who reported they lost coverage due to an inability to complete the process rather than voluntarily or due to ineligibility (Rumalla et al. 2024). Given that 31.6% of our sample lost Medicaid at the deadline, this proportion would imply 0.174*31.6=5.6% of our sample population believed themselves to be potentially eligible but lost coverage due to an inability to complete the renewal process.

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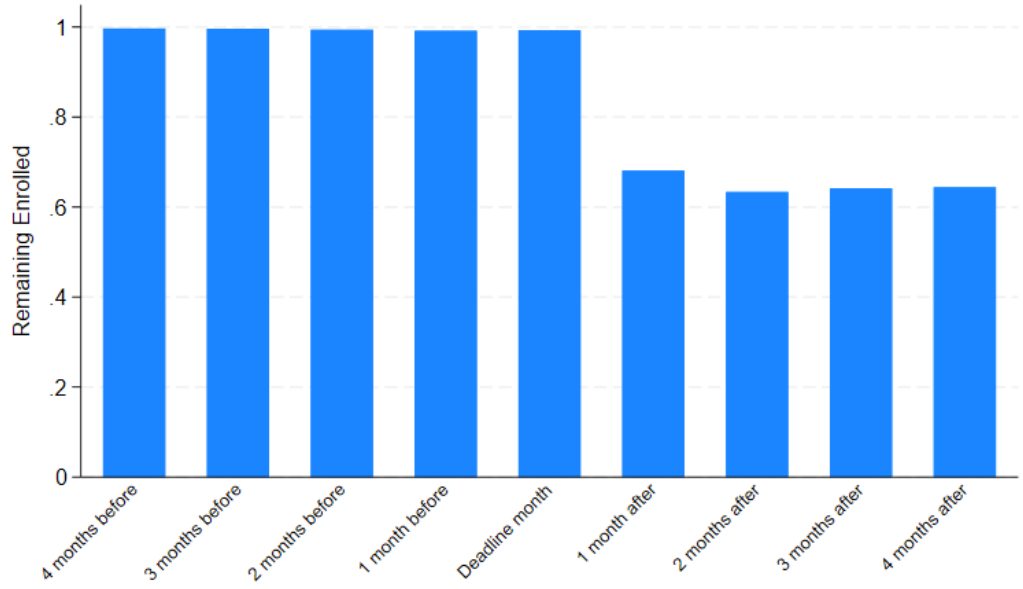
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Figure 1. Medicaid Enrollment in the Study Sample, Before and After the Medicaid Renewal Deadline



Source: Administrative data from Wisconsin.

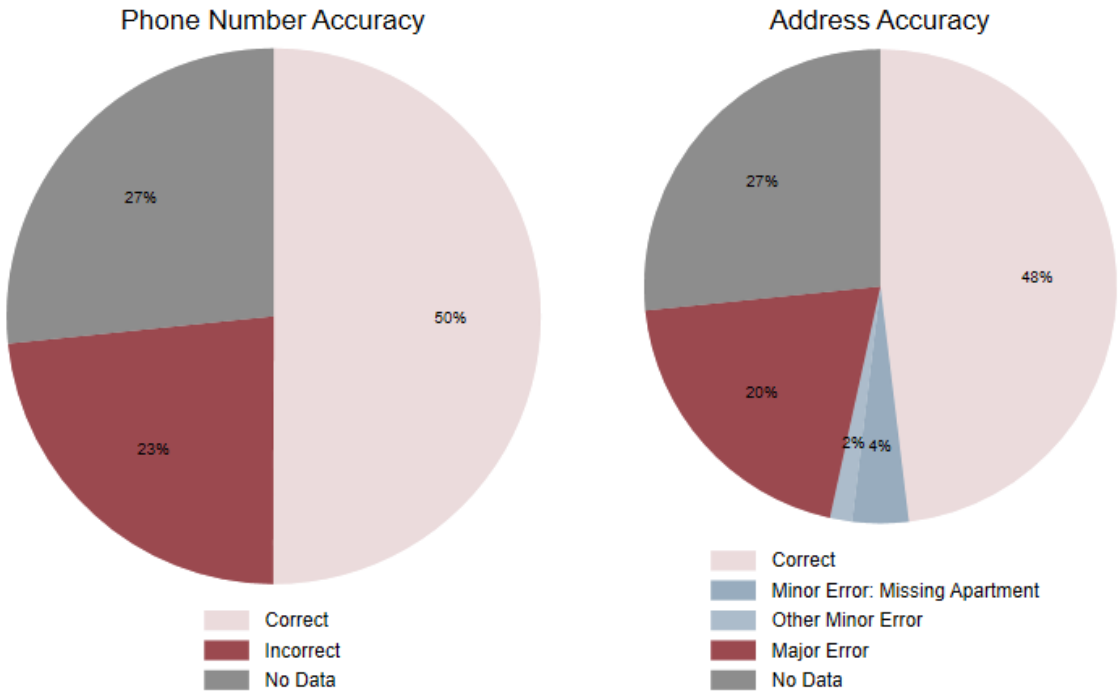
Note: Data are from the group sent a postcard only (no outbound call). For the purposes of this graph, the data are restricted to survey waves with 4 months of follow-up data on enrollment.

Table 1. Description of the Study Population

	% of the Study Population	*p*-value of Hypothesis Test Assessing Whether Characteristics Differ by Randomized Study Arm			
		Text vs. Postcard	Chatbot Text vs. Hotline Text	Reminder vs. No Reminder	Outbound Call vs. No Outbound Call
Personal characteristics					
Female	52	0.67	0.86	0.58	0.68
Tribal member	13	0.73	0.89	0.26	0.12
Black	10	0.92	0.52	0.98	0.81
Hispanic	8	0.35	0.43	0.77	0.53
Prefer Spanish	4	0.24	>0.99	0.91	0.65
Rural resident	7	0.47	0.88	0.84	0.57
Age category					
Less than 18 years	22	0.45	0.76	0.58	0.81
18-25 years	7				
26-49 years	21				
50-64 years	23				
65+ years	27				
Medicaid eligibility category at start of coverage					
Aged, blind, or disabled	50	0.80	0.87	0.69	0.45
Parent	7				
Childless adult	18				
Pregnant	3				
Child	16				
Extensions	5				
History of Medicaid renewal					
Recent successful Medicaid renewal	27	0.05	0.95	0.81	0.93
Recent health care use					
Mean annual Medicaid costs	$4,222	0.86	0.50	0.17	0.16
Any chronic conditions	18	0.47	0.20	0.86	0.90

Source: Administrative data from Wisconsin. Note: Recent health care use is measured during a period when all members of the study sample had continuous Medicaid coverage. F-tests were used to check for significant differences in age category or Medicaid eligibility category by study arm; other comparisons used T-tests.

Figure 2. Accuracy of Contact Information



Source: Contact information search vendor feedback.

Note: This graph includes everyone in the study population, regardless of randomly assigned study arm.

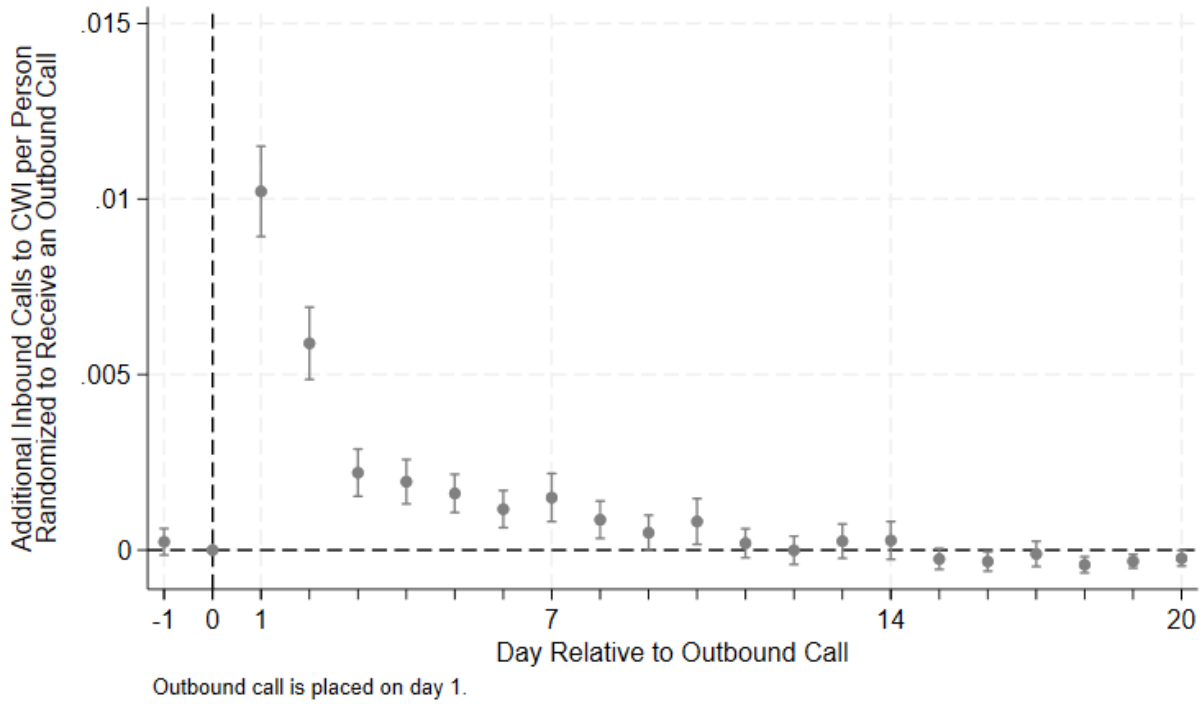
Table 2. Impact of Random Assignment to Outreach on Successful Medicaid Renewal

		Impact on Renewal (pp)			
N	**Baseline Renewal Rate (%)**	Randomized to Text Message	Randomized to Chatbot Rather than Hotline Text	Randomized to Additional Reminder	Randomized to Outbound Call
92,474	68.4	0.2 (-0.7 to 1.0) [0.71]	-0.3 (-1.1 to 0.5) [0.44]	0.4 (-0.4 to 1.2) [0.28]	1.0*** (0.2 to 1.7) [0.01]

Source: Administrative data from Wisconsin. pp=Percentage points.

*Note: * p<0.1, ** p<0.05, ***p<0.01. Medicaid renewal is a variable that takes the value 1 for people who still had Medicaid coverage the month after their renewal deadline, and 0 otherwise. "Baseline" refers to the group that received only a postcard. P-values are in brackets.*

Figure 3. Calls to Hotline by Days Since Receipt of Outbound Call



Source: DoIT data on inbound calls to Covering Wisconsin's hotline. We identified inbound calls from people in the study population based on the phone number listed.

Table 3. Impact of Receiving a Pre-Recorded Call on Successful Medicaid Renewal

Subgroup	Baseline Renewal Rate (%)	First stage *F* statistic	Impact of Receiving a Call on Renewal (pp)
Full Sample	68.4	36,961	1.5**
N=62200			(0.3 to 2.8)
			[0.01]
By Personal Characteristics			
Tribal member	57.6	1,739	7.0**
N=7400			(1.4 to 12.6)
			[0.01]
Black	65.8	3,934	-0.8
N=6106			(-4.7 to 3.1)
			[0.68]
Hispanic	61.3	3,066	3.2
N=4689			(-1.0 to 7.4)
			[0.14]
Prefer Spanish	50.1	1,701	0.2
N=2321			(-5.7 to 6.1)
			[0.95]
Rural resident	68	1,333	5.5*
N=4377			(-0.5 to 11.5)
			[0.07]
Age category			
Less than 18 years	84.1	7,721	2.9**
N=10898			(0.6 to 5.3)
			[0.02]
18-25 years	51	2,929	-0.1
N=3891			(-4.9 to 4.8)
			[0.98]
26-49 years	58.9	8,028	2.4*
N=12861			(-0.4 to 5.2)
			[0.09]
50-64 years	71.2	12,112	2.5**
N=15898			(0.3 to 4.7)
			[0.02]
65+ years	67.3	12,121	-0.6
N=18652			(-2.8 to 1.7)
			[0.62]
By History of Medicaid Renewal			
Successful recent renewal	77.7	12,454	0.5
N=19090			(-1.4 to 2.4)
			[0.59]
No successful recent renewal	63.9	25,909	2.0***

N=43110			(0.5 to 3.5) [0.01]
By Recent Health Care Use			
Chronic conditions N=18769	77.8	16,020	1.5* (-0.3 to 3.3) [0.09]
Above median medical expenditures N=33127	73.3	23,063	1.7** (0.3 to 3.2) [0.02]
Below median medical expenditures N=29066	62.9	17,922	1.2 (-0.6 to 3.1) [0.20]

Source: Administrative data from Wisconsin. pp=Percentage points.

*Note: * p<0.1, ** p<0.05, ***p<0.01. Medicaid renewal is a variable that takes the value 1 for people who still had Medicaid coverage the month after their renewal deadline, and 0 otherwise. "Baseline" refers to the group that received only a postcard. P-values are in brackets.*

Appendix

A1. Randomization scheme

<table>
<tr><td>Postcard (40%)</td><td colspan="3"><table><tr><td>No outbound call (20%)</td><td>Outbound call (20%)</td></tr></table></td></tr>
<tr><td>Text (60%)</td><td><table><tr><td>Chatbot (30%)</td></tr><tr><td>Hotline (30%)</td></tr></table></td><td><table><tr><td>Reminder text (30%)</td></tr><tr><td>No reminder text (30%)</td></tr></table></td><td><table><tr><td>Outbound call (30%)</td></tr><tr><td>No outbound call (30%)</td></tr></table></td></tr>
</table>

A2. Image of Postcard



Covering Wisconsin is a nonprofit program of UW Extension that helps people in Wisconsin find and use health insurance.

Our federal and state-licensed Health Insurance Navigators provide free help to:

- Help you apply or renew
- Know your plan options
- Solve billing or coverage questions
- Find financial help available to you

To learn more:

(877) 942-6837

www.coveringwi.org/gethelp

Scan with your phone camera

www.coveringwi.org/gethelp

University of Wisconsin
Covering Wisconsin
432 N. Lake St.
Madison, WI 53706

Nonprofit
Organization
U.S. Postage
PAID
UMS

A3. Content of text messages

	Hotline Group	Chatbot Group
Initial Text	Hi, this is Covering WI for the WI Dept of Health Services. Time to renew your BadgerCare or Medicaid! If you haven't already, renew by [date] to avoid a gap in coverage. To get free help near you, call 877-942-6837 or visit coveringwi.org/gethelp. Text DONE if you already renewed. ABOUT to learn about us. STOP to end. Msg & Data Rates May Apply.	Hi, this is Covering WI for the WI Dept of Health Services. Time to renew your BadgerCare or Medicaid! If you haven't already, renew by [date] to avoid a gap in coverage. To get free help near you, reply COVER or visit coveringwi.org/gethelp. Text DONE if you already renewed. ABOUT to learn about us. STOP to end. Msg & Data Rates May Apply.
Reminder Text	Don't forget it's time to renew your BadgerCare or Medicaid! If you haven't already, renew by [date] to avoid a gap in coverage. Call 877-942-6837 or visit coveringwi.org/gethelp to get free local help. Text DONE if you already renewed. ABOUT to learn about us. STOP to end.	Don't forget it's time to renew your BadgerCare or Medicaid! If you haven't already, renew by [date] to avoid a gap in coverage. Reply COVER or visit coveringwi.org/gethelp to get free local help. Text DONE if you already renewed. ABOUT to learn about us. STOP to end.

A4. Content of auto-dialed outbound call

Hi, this is Covering Wisconsin for the Wisconsin Department of Health Services calling to remind you it's time to renew your BadgerCare or Medicaid. If you already renewed, great! If you didn't, be sure to renew by the 15th *[16th/17th/18th]* to avoid a gap in coverage.

Our state-licensed health insurance navigators provide free help with health insurance. We can help you renew, find financial help, or solve billing and coverage questions.

To learn more, call us at 877-942-6837, or visit coveringwi.org/gethelp.

To opt out, press 1. To hear more about Covering Wisconsin, press 2. To repeat this message, press 3.

A5. Further details about the experiment and data

Although institutionalized individuals (such as those in nursing homes) were included in the experimental population in initial rounds, in later rounds we re-assigned them to the postcard condition and removed them from the experiment. The rationale for this change was that an outbound call might reach the institution rather than the individual. This change was not pre-specified.

Outreach was sent to the primary person in the Medicaid household as identified by the Medicaid agency in the data shared with Covering Wisconsin. In rare cases where no primary individual was noted on the record, we selected the oldest individual between the ages of 18 and 75; if there were multiple people of the same age who were the oldest in the household, we selected the person with more complete contact information. We randomly broke any remaining ties.

For ethical reasons, we checked the viability of phone numbers using vendor data and reassigned someone to the postcard condition if a phone number was not viable. Any enrollees with ex-post reassignments of this type were still analyzed under their original assignment. This process was not pre-specified.

Finally, once we had evidence showing that the outbound call effectively increased Medicaid coverage, we discontinued this treatment arm and provided an outbound call to everyone, although we continued to randomize the timing of the call. This change affected individuals with renewal dates of February 2024 or later; these individuals are not included in any analyses in the current draft of this study.

A6. Impact of random assignment to outreach on successful Medicaid renewal, overall and by subgroups of interest

Subgroup	Baseline Renewal Rate (%)	Impact on Renewal (pp)			
		Randomized to Text Message	Randomized to Chatbot Rather than Hotline Text	Randomized to Additional Reminder	Randomized to Outbound Call
Full Sample	68.4	0.2	-0.3	0.4	1.0***
N=92,474		(-0.7 to 1.0)	(-1.1 to 0.5)	(-0.4 to 1.2)	(0.2 to 1.7)
		[0.71]	[0.44]	[0.28]	[0.01]
By Personal Characteristics					
Tribal member	57.6	-0.6	-0.9	1.1	3.7***
N=11,756		(-3.6 to 2.5)	(-3.8 to 1.9)	(-1.7 to 4.0)	(0.8 to 6.5)
		[0.72]	[0.53]	[0.43]	[0.01]
Black	65.8	0.4	0.5	-0.1	-0.5
N=9,380		(-2.1 to 3.0)	(-1.9 to 2.9)	(-2.5 to 2.3)	(-2.8 to 1.8)
		[0.75]	[0.68]	[0.92]	[0.68]
Hispanic	61.3	1.8	-2.4*	0.5	1.8
N=7,642		(-1.0 to 4.6)	(-5.1 to 0.4)	(-2.2 to 3.3)	(-0.8 to 4.5)
		[0.21]	[0.09]	[0.71]	[0.18]
Prefer Spanish	50.1	-0.1	1.9	0.9	-0.3
N=3,707		(-4.1 to 3.9)	(-1.9 to 5.7)	(-2.9 to 4.7)	(-4.1 to 3.4)
		[0.96]	[0.32]	[0.65]	[0.87]
Rural resident	68	-2.3	2.4	2.3	3.1*
N=6,621		(-5.9 to 1.3)	(-1.0 to 5.7)	(-1.0 to 5.7)	(-0.1 to 6.3)
		[0.21]	[0.16]	[0.17]	[0.06]
Age category					
Less than 18 years	84.1	0.2	-0.8	-0.4	2.1**
N=20,369		(-1.4 to 1.9)	(-2.4 to 0.7)	(-2.0 to 1.1)	(0.4 to 3.8)
		[0.79]	[0.29]	[0.57]	[0.02]
18-25 years	51	-2.6	0.8	3.0*	0
N=6,302		(-5.9 to 0.7)	(-2.3 to 3.9)	(-0.1 to 6.1)	(-3.1 to 3.0)
		[0.12]	[0.62]	[0.06]	[0.98]
26-49 years	58.9	-0.7	0.7	1.3	1.3
N=19,698		(-2.5 to 1.1)	(-1.0 to 2.4)	(-0.4 to 3.0)	(-0.2 to 2.9)
		[0.46]	[0.42]	[0.13]	[0.10]
50-64 years	71.2	1.4*	-1.4*	-0.4	1.5**
N=21,451		(-0.2 to 3.0)	(-2.9 to 0.1)	(-1.9 to 1.1)	(0.2 to 2.8)
		[0.08]	[0.07]	[0.62]	[0.03]
65+ years	67.3	0.5	0	0.5	-0.3
N=24,654		(-1.0 to 2.1)	(-1.5 to 1.4)	(-1.0 to 1.9)	(-1.6 to 1.0)
		[0.51]	[0.97]	[0.52]	[0.63]

Subgroup	Baseline retention (%)	Impact on Renewal (pp)			
		Randomized to Text Message	Randomized to Chatbot Rather than Hotline Text	Randomized to Additional Reminder	Randomized to Outbound Call
By History of Medicaid Renewal					
Successful recent renewal N=25,238	77.7	0.9 (-0.5 to 2.3) [0.22]	-0.1 (-1.5 to 1.2) [0.83]	-0.5 (-1.9 to 0.8) [0.44]	0.4 (-0.8 to 1.5) [0.55]
No successful recent renewal N=67,236	63.9	-0.1 (-1.1 to 0.9) [0.89]	-0.4 (-1.3 to 0.6) [0.45]	0.8 (-0.2 to 1.7) [0.11]	1.2*** (0.3 to 2.2) [0.01]
By Recent Health Care Use					
Has chronic conditions N=25,271	77.8	1.1 (-0.3 to 2.4) [0.12]	-0.2 (-1.4 to 1.1) [0.81]	-0.1 (-1.4 to 1.1) [0.87]	0.9 (-0.2 to 2.1) [0.10]
Above median medical expenditures N=46,223	73.3	0.2 (-0.9 to 1.3) [0.70]	-0.3 (-1.3 to 0.7) [0.51]	0 (-1.0 to 1.0) [0.98]	1.1** (0.2 to 2.0) [0.02]
Below median medical expenditures N=46,224	62.9	0.1 (-1.2 to 1.3) [0.93]	-0.3 (-1.4 to 0.9) [0.66]	0.9 (-0.2 to 2.1) [0.11]	0.8 (-0.3 to 1.9) [0.17]

Source: Administrative data from Wisconsin. pp=Percentage points.

*Note: * p<0.1, ** p<0.05, ***p<0.01. "Baseline" refers to the group that received only a postcard. P-values are in brackets.*