Official Title of the Study: Examining the Effect of Informational Emails on Cost-Sharing Reduction (CSR) Silver 94 Enrollment and Utilization Among Unemployment Insurance Recipients

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# Design Document and Analysis Plan

Project Name: Examining the Effect of Informational Emails on Cost-Sharing Reduction (CSR) Silver 94 Enrollment and Utilization Among Unemployment Insurance Recipients
Date of creation: October 18, 2022

## *Project Objective*

Using informational emails to increase CSR Silver enrollment among unemployment recipients

## *Evaluation Design*

**Test Arms / Treatment Conditions:**

This is a randomized intervention where households who reported receiving unemployment insurance (UI) in 2021, had an email address and were enrolled in non-silver tier plans as of June 2021 were assigned to one of two arms: (1) a control group or (2) an informational email treatment group. Households in the treatment arm were assigned to receive two emails in June and July 2021 that encourage switching metal tiers (from Catastrophic, Bronze, Gold or Platinum to CSR Silver).

**Total Number of Observations:**

N = 42,470 households eligible for Cost-Sharing Reduction (CSR) Silver 94 plans but enrolled in non-silver tier plans in late-June 2021.

**Randomization / Assignment:**

Randomization was done at the household level. 75% of households were randomly assigned to two informational emails in late June and mid-July, respectively, and the remaining 25% were randomly assigned to no outreach during the intervention period beyond an eligibility redetermination notice.

**Power:**

To arrive at an estimate for the minimum detectable effect (MDE) for our primary outcome, we assume a baseline metal tier switch rate of 10 percent. The intervention was powered at the 80% level to detect a 1 percentage point increase in the CSR Silver enrollment rate.

**Meaningful Effect Size:**

In previous RCTs designed to induce plan switching, we have observed intent-to-treat (ITT) effects between 0.7 to 3.9 percentage points. Given the low-cost nature of this nudge (i.e. approximately $0.02 per household), even a 1 percentage point increase in CSR Silver take-up would be meaningful.

**Likely Effect Size:**

Based on prior choice error nudges carried out by Covered California, we would expect to observe an ITT effect between 1-4 percentage points.

## *Data and Data Structure*

**Outcomes:**

The primary outcome of interest will be an indicator for whether a consumer is enrolled in a CSR Silver plan by the end of July 2021. Our secondary outcomes will include (1) an indicator for whether someone had an office visit between July 2021 and December 2021 (2) an indicator for whether someone had an prescription drug fill between July 2021 and December 2021, (3) an indicator for whether someone had

an emergency room visit between July 2021 and December 2021, (4) an indicator for whether someone had a hospital admission between July 2021 and December 2021.

### Data:
We will use Covered California administrative data to obtain enrollment outcomes and baseline demographics for our sample and Healthcare Evidence Initiative data to obtain utilization outcomes.

### Quality Control Checks:
After carrying out the randomization, we checked for balance across several observable covariates (e.g. language spoken, self-reported race and ethnicity, baseline metal tier and income as a percent of the federal poverty level), which indicated there were no significant dissimilarities across treatment arms.

## *Statistical Models & Hypothesis Tests*
This section describes the statistical models and hypothesis tests that will make up the analysis —including any follow-ups on effects in the main statistical model and any exploratory analyses that can be anticipated prior to analysis.

### Statistical Models:
Intent-to-treat: to estimate treatment effects, our primary analysis will be an intent-to-treat (ITT) specification, examining the effect of treatment assignment. We will estimate the effect of the treatment using ordinary least squares (OLS) regression. That is, we will regress the outcome of interest (e.g. Silver enrollment) for household *i* on the treatment indicator:

$$outcome_i = \propto + \beta_1 Emails_i + \varepsilon_i$$

The coefficient $\beta_1$ will be the estimate of the causal effect of the intent to treat of informational emails.

Complier average causal effect: we expect some noncompliance among those households assigned to receive emails as they may have opted out of email communications from Covered California or provided an invalid email address. Thus, to augment our ITT analysis, we will also estimate treatment effects based on treatment receipt, using two-stage least squares regression (2SLS).

### Follow-Up Analyses
We will examine treatment heterogeneity by self-reported race and ethnicity, baseline metal tier, age bracket and income bracket. In addition, as part of our complier average causal effect analysis, we will examine the effects of CSR Silver enrollment (among households induced to enroll in a CSR Silver plan as a result of random assignment) on our four utilization outcomes.

### Inference Criteria, Including Any Adjustments for Multiple Comparisons:
We will not perform any corrections for multiple hypothesis testing, and we will use two-tailed tests with p-values <= 0.05 to denote statistically significant effects.