

Kaiser Family Foundation ACA Eligibility Analysis, Technical Appendix C: Imputation of Offer of Employer-Sponsored Insurance

An integral part of determining ACA eligibility is assessing whether workers without employer-sponsored insurance (ESI) hold an offer through their workplace that they decline to take up. In most cases, an affordable offer of employer-sponsored insurance (ESI) disqualifies members of the tax filing unit of the worker from receiving subsidized coverage on the ACA Health Insurance Marketplace. In the past, we were unable to directly measure ESI offer rates from the CPS-ASEC. Instead, we used the SIPP Wave Six Topical Module as the source for imputing whether a worker had an offer of ESI.¹ Starting with March 2014 interviews, the re-designed Current Population Survey Annual Social and Economic Supplement (CPS-ASEC) included questions about whether each worker received an offer of ESI from his or her employer at the time of interview; these data files became available on a limited basis as of June 2016.^{2, 3} We compared the offer rates produced by SIPP 2010 to those produced by the newly-released CPS-ASEC variables for early 2014, 2015, and 2016 and found only trivial differences among workers, both overall and by poverty. Therefore, for current analyses, we use the CPS-ASEC offer of ESI variable to directly measure whether a worker had an offer at work at the time of the survey interview (February, March, or April). For the analysis underlying *Estimates of Eligibility for ACA Coverage among the Uninsured in 2016*, we used the newly-released 2016 point-in-time worker offer variable in the CPS-ASEC 2016.⁴

Since the health insurance coverage variables available in the CPS-ASEC 2016 capture sources of coverage during calendar year 2015 (versus at the time of survey, as with the offer rate variable), a subset of sampled individuals had a change in their employer-based coverage status across the two distinct time periods.⁵ Therefore, among workers who potentially experienced a shift in offer status across the two time periods, we recoded or imputed offer rates in 2015 using the offer status in 2016 into calendar year 2015. Below we describe these recodes and imputation. The programming code, written using the statistical computing package R v.3.3.1, is available upon request for people interested in replicating this approach for their own analysis.

Populations Included in Recoding and Imputing Offer Rates

As a first step in our analysis, we divided CPS-ASEC survey respondents into five distinct groups:

- (1) All individuals who did not work during 2015 and also did not hold an offer of ESI in 2016 were assumed not to have an offer in 2015.
- (2) All individuals who reported being an ESI policyholder (that is, anyone reporting having taken-up their offer of ESI) during 2015 and also reported holding an offer of ESI during early 2016 were assumed to have an offer in 2015.
- (3) All workers in 2015 who held their own ESI policies during 2015 but then reported not holding an offer during 2016 were re-coded as holding an offer of ESI in 2015.
- (4) All non-workers during 2015 who reported holding an offer during 2016 were re-coded as not holding an offer of ESI in 2015.
- (5) Some workers during 2015 who did not report being ESI policyholders but did report holding an offer of ESI during early 2016 were imputed to not have an offer of ESI during 2015.

For many groups, including those in groups (1) and (2) listed above, the offer status did not change across the two time periods. In contrast, we recoded offer status for people in groups (3) and (4): every non-offered worker in group (3), which includes people who held ESI policies in their own name in 2015, gained an offer of ESI in 2015, and offered workers in group (4), which includes people who did not work themselves in 2015, lost their offer of ESI in 2015. Last, we implemented a probability-based random sample imputation of offers of ESI for people in group (5). Only a subset of the group was re-coded from holding an offer in 2016 to not holding an offer in 2015. The number of workers selected from this population was equal to the population size of (3) subtracted by the population size of (4), thereby assuming an unchanging offer rate for the total worker population across the period.

Construction and Application of Regression Model

The regression model was designed to be applied to a single dataset where ESI offer status is known at one point in time but not another. The code mentioned above includes programming to apply the model to the Current Population Survey (CPS-ASEC) (for years 2014 on). For the analysis underlying *Estimates of Eligibility for ACA Coverage among the Uninsured in 2016*, we apply the regression model to the 2016 CPS-ASEC.

We use the 2016 point-in-time worker offer variable matching the US Census Bureau to create a binomial, dependent variable that identifies a respondent as a recipient of an offer of employer-sponsored

insurance at his or her workplace. The dependent variable was constructed at the worker-level based on the factors below:

- Worker was not covered by his or her own employer-sponsored insurance at time of interview,
- Worker indicated holding an ESI offer or eligibility to be covered that was then voluntarily declined.⁶

We use the following independent variables to predict offer status among workers not covered by their own ESI during early 2016 but potentially holding an offer of ESI:

- Any public coverage,
- Any nongroup coverage,
- Worker earnings among all jobs,
- Full-time versus part-time status,
- Age of worker,
- Work within the construction industry.

The regression model was sub-populated to remove respondents already covered by their own ESI and also to remove non-workers. This imputation does not account for the affordability of the offer or whether it meets the minimum value test.⁷

As mentioned above, we assume an unchanging offer rate for the total worker population across the two time periods. We determined the needed size of the population to impute by subtracting the population of (4) from the population of (3) to ensure an equivalent number of offers were gained and lost. This left only workers who reported holding an offer of ESI during early 2016, since (3) represented a larger count of workers than (4). We then calculated the probability that each worker in the dataset was offered ESI during calendar year 2015 based on our 2016 CPS-ASEC regression model. Next, we selected workers within the potential population (5) using the sampling probabilities resultant from our model. Since the imputation of documentation status (discussed in Technical Appendix B) required a multiply-imputed approach, this secondary imputation and subsequent worker sampling was only conducted once per implicate, keeping the number of implicates to ten.

Endnotes

¹ Survey of Income and Program Participation. 2008 Panel Topical Module List. Available at: <http://www.census.gov/programs-surveys/sipp/tech-documentation/topical-modules/topical-modules-2008.html>

² Abramowitz J., O'Hara B. 2016 "New Estimates of Offer and Take-Up of Employer-Sponsored Insurance" Med Care Res Rev. pii: 1077558716654630.

³ CPS ASEC Research Files. Offer and Take-up of Employer Sponsored Insurance. Available at: <http://www.census.gov/data/datasets/time-series/demo/health-insurance/cps-asec-research-files.html>

⁴ Following the advice of researchers at the US Census Bureau, we re-coded the offer status of certain workers. Workers who reported not holding an offer of ESI and also reported the reason for not being offered as "plan too expensive" were re-coded to be workers holding an offer of ESI. Workers who reported holding an offer of ESI who also reported that they did not take-up that offer because they had either not worked at the employer long enough to be covered or were not allowed in the plan due to contract or temporary work were re-coded to be workers not holding an offer of ESI. We confirmed that our calculations precisely matched CPS-ASEC 2015 statistics published by researchers at the US Census Bureau. See Majority of Workers Take Health Insurance Offered by Their Employers. US Census Bureau. Available at: <http://blogs.census.gov/2016/06/16/majority-of-workers-take-health-insurance-offered-by-their-employers/>

⁵ For example, anyone who did not work during 2015 who then held an offer of ESI in early 2016 would appear incongruous in our eligibility model. In the other direction, workers covered by health insurance through their own employer in 2015 who lost their offer of ESI during the early months of 2016 (perhaps due to a job change) would also appear incongruous due to the discrepancy across the two time periods.

⁶ As described in note 4, we re-coded the offer status of certain workers.

⁷ For an explanation of affordability, see: Kaiser Family Foundation. *Employer Responsibility Under the Affordable Care Act*. October 2015. Available at: <http://kff.org/infographic/employer-responsibility-under-the-affordable-care-act/>