Money Talks: The Effect of Monetary Incentives on Earnings Non-Response in SIPP

AAPOR 77th Annual Meeting, Chicago, IL

Shalise S. Ayromloo and Kelly R. Wilkin
U.S. Census Bureau

May 11, 2022

This presentation is approved for disclosure under CBDRB-FY21-POP001-0223 & CBDRB-FY22-POP001-0046.

Disclaimer

These slides are released to inform interested parties of ongoing research and to encourage discussion of work in progress. The views expressed here are those of the authors and are not necessarily the U.S. Census Bureau's. Any errors are solely those of the authors.

The Census Bureau's Disclosure Review Board and Disclosure Avoidance Officers have reviewed this product for unauthorized disclosure of confidential information and have approved the disclosure avoidance practices applied to this release. CBDRB-FY21-POP001-0223 and CBDRB-FY22-POP001-0046.

United States® Census Bureau

SIPP Has Used Monetary Incentives Since 1996 (Westra, Sunduchki, and Mattingly 2015)

- 1996
  - $10 and $20 incentives paid at door in advance in Wave 1
- 2001
  - $40 conditional discretionary incentive in Waves 1–9
  - $40 unconditional incentives mailed to prior-wave non-respondents in Waves 4–9
- 2004
  - Non-experimental $40 discretionary incentives in production (covered about 20 percent of a FR's workload)
  - Tried experimental conditional incentive in Wave 6 to improve conversion rates
- 2008
  - $20 unconditional incentive with advance letter in Wave 1
  - $40 discretionary incentive in each wave of panel

United States® Census Bureau

SIPP 2014 Multi-Wave Monetary Incentive Experiment

Group	Wave 1	Wave 2	Obs.	Pct.
1	$0	$0	14,000	24.1
2	$0	$40	14,500	25.0
3	$20	$0	14,500	25.0
4a	$40	$40	12,000	20.7
4b	$40	$0	3,100	5.3

Source: Authors' calculations from the Survey of Income and Program Participation 2014, Waves 1 and 2. Observations refer to unique persons for a given wave and incentive group.

United States® Census Bureau

Research Questions

- *Do monetary incentives affect earnings non-response?*
  - Earnings non-response rate is 1.3 points lower on average for the incentive group
  - Robust to estimation model, job types, age restrictions, and controlling for unobserved heterogeneity
- *If so, does the amount of incentive matter?*
  - Yes; the $40 incentive is associated with 1.4 points lower earnings non-response compared to the non-incentive group
  - The $20 is not
- *Are there any direct and indirect effects on attrition?*
  - Yes; the probability of attrition is higher for earnings non-respondents than respondents
  - The $40 incentive lowers the attrition rate by 5.0 percentage points more than the $20 group and 2.7 percentage points more than the control group

United States® Census Bureau

Data

- SIPP 2014 Waves 1 and 2
  - 2013 and 2014 reference years, respectively
  - Incentive experiment random (Wave 3 targeted based on propensity)
    - $20 or $40 (debit card mailed after *completed* interview)
    - Varies across individuals and time
- Any respondent with a *reported* job in the reference period
  - Drop Type-Z persons and all imputed jobs (EJB*n*_JOBID > 0)
  - Primary sample is jobs for employers: *JBORSE* = [1, 3]
- Outcome: Earnings non-response indicator r_{it}
- Treatment: Incentive receipt indicator I_{it}

United States® Census Bureau

Data: Earnings Non-Response r_{it}

- SIPP 2014 collects information for a possible 8 jobs and 2 distinct spells per job
- Earnings:
  - Wage and salary (e.g., hourly, weekly, monthly, annual)
  - Extra earnings (bonuses, tips, commissions, overtime)
- Aggregate to the *person*-wave level ($i = 1, \ldots, N; t = 1, 2$)

Up to two changes in the spell

$$r_{it} = \begin{cases} 1 \text{ if any earnings component imputed for } i \text{ in } t, \\ 0 \text{ otherwise} \end{cases}$$

United States® Census Bureau

Data: Incentive indicator I_{it}

- Incentives offered at the *household* level
  - Households split into four incentive groups
  - Amounts of either $20 and $40 (we generally treat these as the same)
- Multi-wave
  - Time variation in incentive assignment across groups and amount
  - One control group that never received an incentive (i.e., $0)

$$I_{it} = \begin{cases} 1 \text{ if respondent } i \text{ in household received a monetary incentive in } t, \\ 0 \text{ otherwise} \end{cases}$$

United States® Census Bureau

Correlated Random Effects Model

- Assume individual-specific unobserved heterogeneity in earnings non-response:

  (1) $$r_{it} = \alpha_i + \beta I_{it} + X'_{it}\gamma + u_{it},$$

  α_i is individual fixed effects

  X_{it} is a vector of observable individual characteristics

  Estimation requires eliminating α_i

- Following Mundlak (1978), let $\alpha_i = \psi + \bar{Z}'_i\zeta + \eta_i$:

  ψ is a time-invariant component common to all individuals

  $\bar{Z}'_i$ is a vector of time average of time-varying covariates (e.g., I_{it}, X_{it}, and wave dummies)

  (2) $$r_{it} = \psi + \bar{Z}_i\zeta + \beta I_{it} + X'_{it}\gamma + e_{it}$$

United States® Census Bureau

Summary Statistics by Incentive Receipt (Employer Sample)

Variable	Incentive	Non-Incentive	Difference
Earnings non-response	0.190	0.205	–0.014***
Incentive amount $USD	34.4	–	34.4***
Proxy response	0.312	0.311	0.001
Household size	3.0	3.0	0.005
In-person interview	0.707	0.684	0.024***
Telephone interview	0.291	0.314	–0.023***
Total job spells in wave	1.2	1.2	0.001
Total jobs in wave	1.2	1.2	0.004
Paid by the hour	0.408	0.409	–0.002
Received extra earnings	0.148	0.142	0.006
Wage and salary earner	0.977	0.978	–0.001
Observations	24,000	28,000	52,000

Source: Authors' calculations from SIPP 2014, Waves 1 and 2. Estimates weighted by annual person weights. Values in relative frequencies unless otherwise noted.

United States® Census Bureau

Incentive and Non-Incentive Samples Balanced by Demographics, Education, and Marital Status

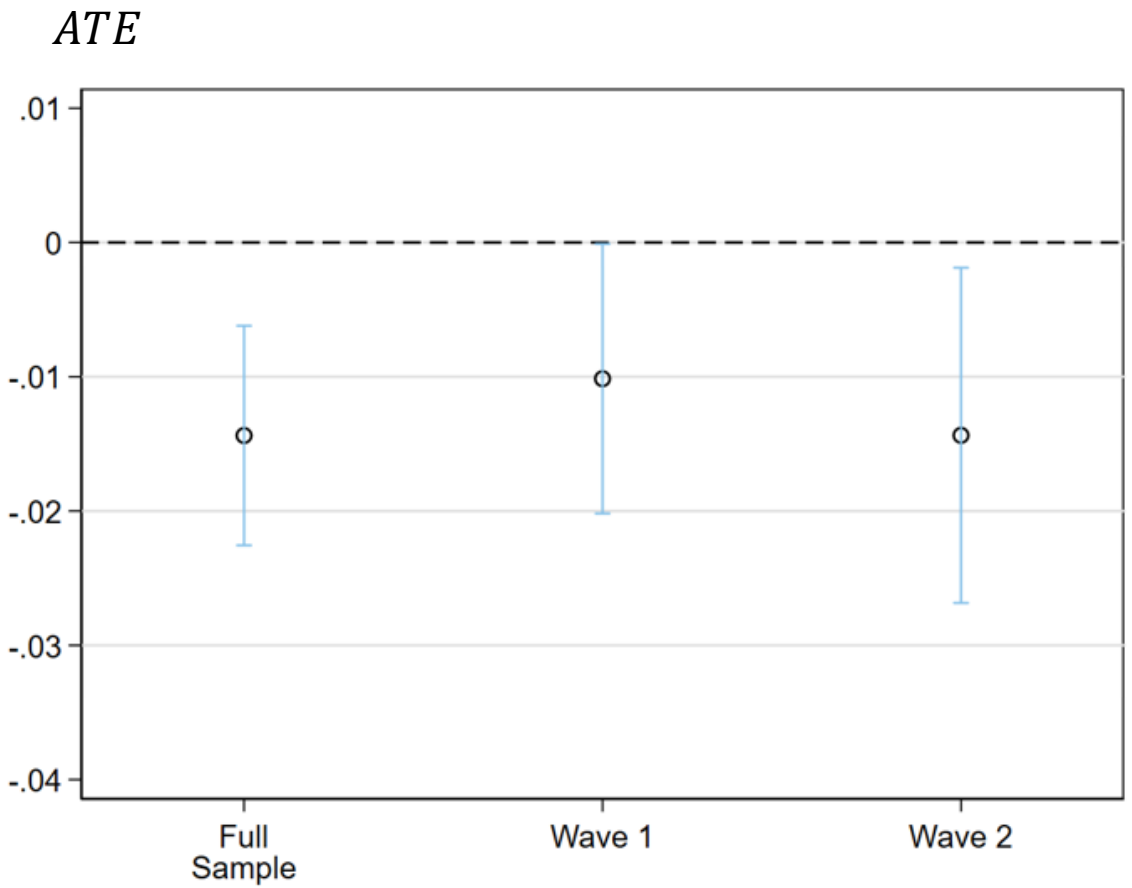
Variable	Incentive	Non-Incentive	Difference
Age (in years)	41.5	41.7	–0.176
Men	0.509	0.511	–0.002
White alone	0.796	0.791	0.005
Black alone	0.122	0.122	–0.000
Asian alone	0.052	0.056	–0.004
Other race alone	0.030	0.031	–0.001
Hispanic	0.157	0.158	–0.001
Foreign born	0.173	0.174	–0.001
High school degree	0.260	0.254	0.006
Some college	0.212	0.207	0.005
2-year college degree	0.098	0.100	–0.002
4-year college degree	0.218	0.216	0.002
Advanced degree	0.120	0.132	–0.013***
Married	0.530	0.535	–0.005
Divorced or separated	0.137	0.134	0.003
Widowed	0.019	0.019	–0.001
Observations	24,000	28,000	52,000

United States® Census Bureau

Source: Authors' calculations from SIPP 2014, Waves 1 and 2. Estimates weighted by annual person weights. Values in relative frequencies unless otherwise noted.

Average Treatment Effect of Any Incentive Receipt

- Overall, earnings non-response rate is 1.4 points lower for incentive recipients than the non-incentive group
- Treatment effect is slightly greater in Wave 2 than Wave 1

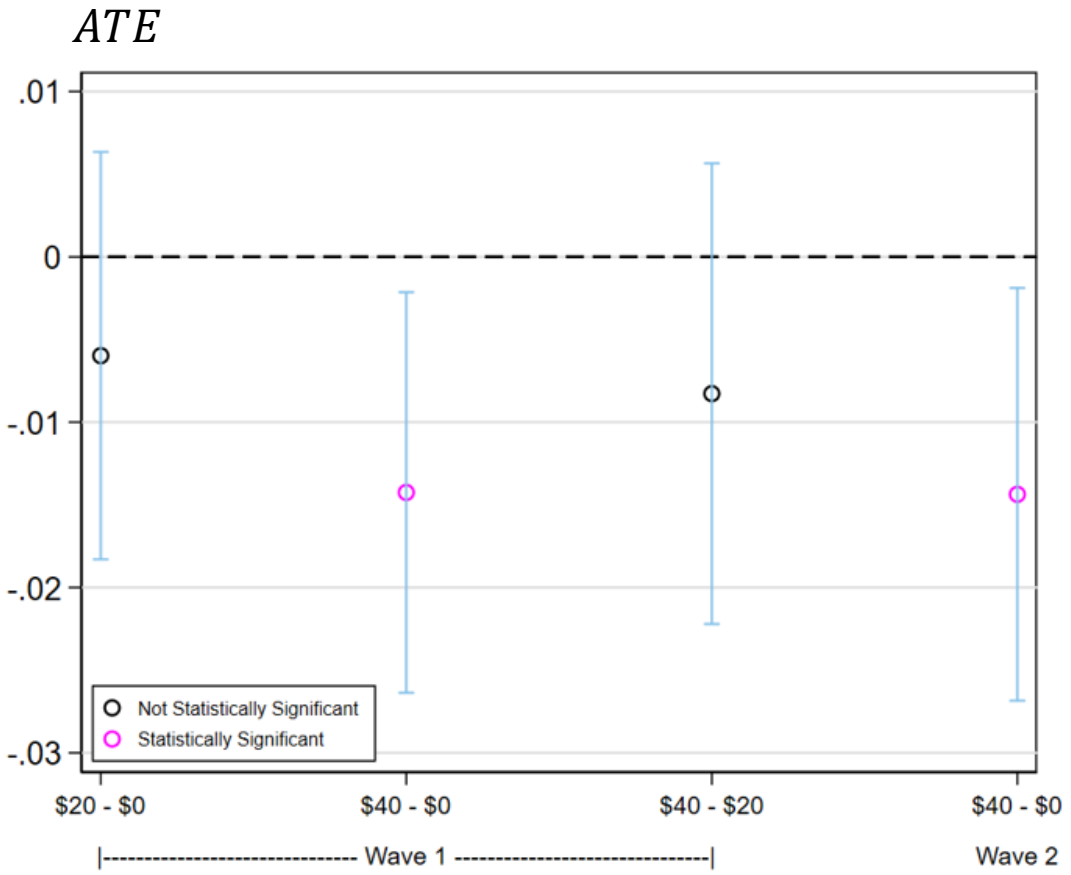


Source: Authors' calculations from SIPP 2014, Waves 1 and 2. Weighted by annual weights.

United States® Census Bureau

Average Treatment Effect of Incentive Amounts

- Respondents in all incentive households have lower earnings non-response rates than the non-incentive group
- Only the $40 incentive relative to the $0 control is statistically significant ($p < 0.05$)



Source: Authors' calculations from the Survey of Income and Program Participation 2014, Waves 1 and 2.

United States® Census Bureau

Linear Probability Model Estimates of the ATE

- Incentive lowers earnings non-response by 1.3 points
- Robust to estimation model and inclusion of explanatory variables
- Wald tests reject the hypothesis that unobserved heterogeneity is equal to zero
- Unchanged estimated ATE from (2) to (3) and (4) to (5) indicates that unobserved heterogeneity is uncorrelated with the incentive effect on earnings non-response.

	OLS			Logit	
Variable	(1)	(2)	(3)	(4)	(5)
Incentive eligible	–0.010**	–0.013***	–0.013***	–0.013***	–0.013***
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Wave 2	0.032***	0.016***	0.016***	0.019***	0.019***
	(0.004)	(0.004)	(0.004)	(0.007)	(0.007)
Proxy response		0.153***	0.140***	0.144***	0.134***
		(0.005)	(0.005)	(0.010)	(0.009)
Telephone interview		0.054***	0.051***	0.040***	0.038***
		(0.006)	(0.005)	(0.008)	(0.008)
Log household size (age ≥ 15)		0.018***	0.018***	–0.049***	–0.051***
		(0.006)	(0.006)	(0.016)	(0.017)
Log total reported jobs		0.026***	0.026***	0.039***	0.041***
		(0.008)	(0.008)	(0.013)	(0.014)
Paid by the hour		–0.031***	–0.032***	–0.006	–0.007
		(0.005)	(0.005)	(0.008)	(0.008)
Received extra earnings		0.120***	0.107***	0.132***	0.117***
		(0.007)	(0.006)	(0.012)	(0.010)
Include (X_{it}, Z_i)	No	Yes	Yes	Yes	Yes
Observations	43,000	43,000	43,000	43,000	43,000
Clusters	15,500	15,500	15,500	15,500	15,500
R^2	0.002	0.055	0.057	0.056	0.058
Wald H_0: $\zeta = 0$			3.3***		55.7***

X_{it} includes demographics, education, marital status and Z_i includes time average of time-varying covariates

Source: Authors' calculations from the Survey of Income and Program Participation 2014, Waves 1 and 2.

United States® Census Bureau

Linear Probability Model Estimates of the ATE: Robustness Checks

- Incentive effect robust to age restrictions on the employer sample (**Panel B**)
- Incentive effects robust to job type (**Panel C**)
  - Adds *profits* and *business income* (OINCAMT)
  - Non-response rates relatively higher when include self-employed

	OLS	Logit
	(1)	(2)
Panel A. Employer-only		
Incentive eligible	–0.013***	–0.013***
	(0.005)	(0.005)
Observations	43,000	43,000
Clusters	15,500	15,500
R^2	0.057	0.058
Wald H_0: $\zeta = 0$	3.3***	55.7***
Panel B. Employer-only, Age 18–65		
Incentive eligible	–0.013***	–0.012***
	(0.005)	(0.005)
Observations	40,000	40,000
Clusters	14,500	14,500
R^2	0.057	0.058
Wald H_0: $\zeta = 0$	3.2***	56.5***
Panel C. All Jobs		
Incentive eligible	–0.015***	–0.015***
	(0.005)	(0.005)
Observations	47,500	47,500
Clusters	16,500	16,500
R^2	0.056	0.054
Wald H_0: $\zeta = 0$	4.8***	82.1***
Include (X_{it}, Z_i)	Yes	Yes

Source: Authors' calculations from the Survey of Income and Program Participation 2014, Waves 1 and 2.

United States® Census Bureau

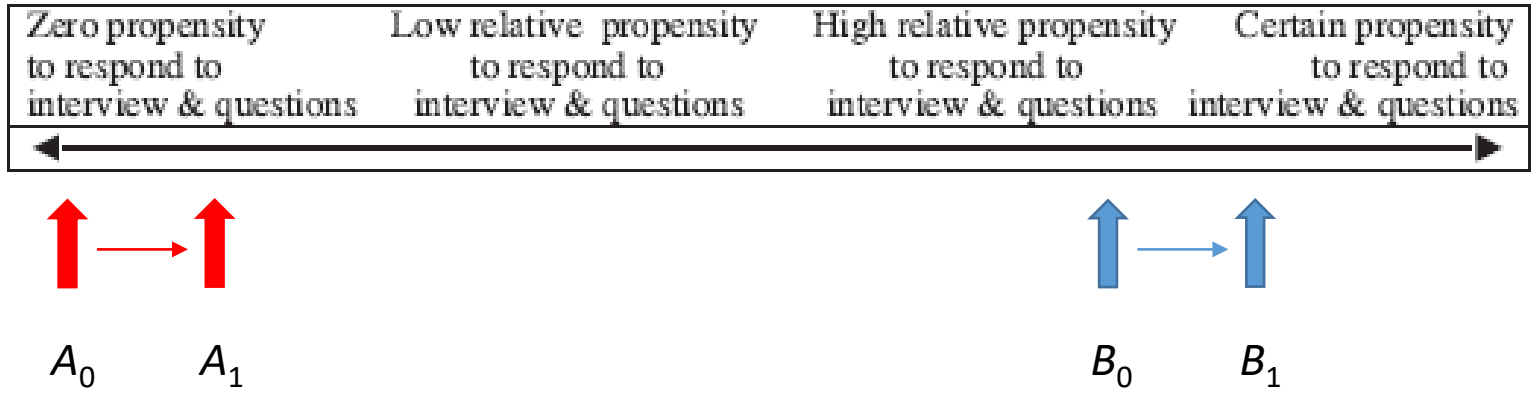
Discussion

- Incentives lower average earnings non-response rate by 1.3 points
- Although there is evidence of unobserved individual heterogeneity, it is uncorrelated with the effect of incentives on earnings non-response
- Understand results in context of the *response continuum model*
  - Individuals vary in time-constant idiosyncratic ways (e.g., propensity to respond)
  - Places them on the response continuum, but that location is unobserved
  - Net effect of incentive depends on counterfactual location on the continuum and average idiosyncratic response to incentive

United States® Census Bureau

Response Continuum Model (Yan and Curtin 2010)

The response continuum model



- *Assumption*: incentives lead (on average) to rightward shift along continuum (i.e., increased response propensity)
- Treatment effect on earnings non-response depends on individual-specific counterfactual location on the continuum and Δ_i:
  - *A* induced to unit response, but initial reluctance manifests as earnings non-response
  - *B* induced to earnings response (was already unit responder)

United States® Census Bureau

Incentives May Lower Attrition Directly and Indirectly

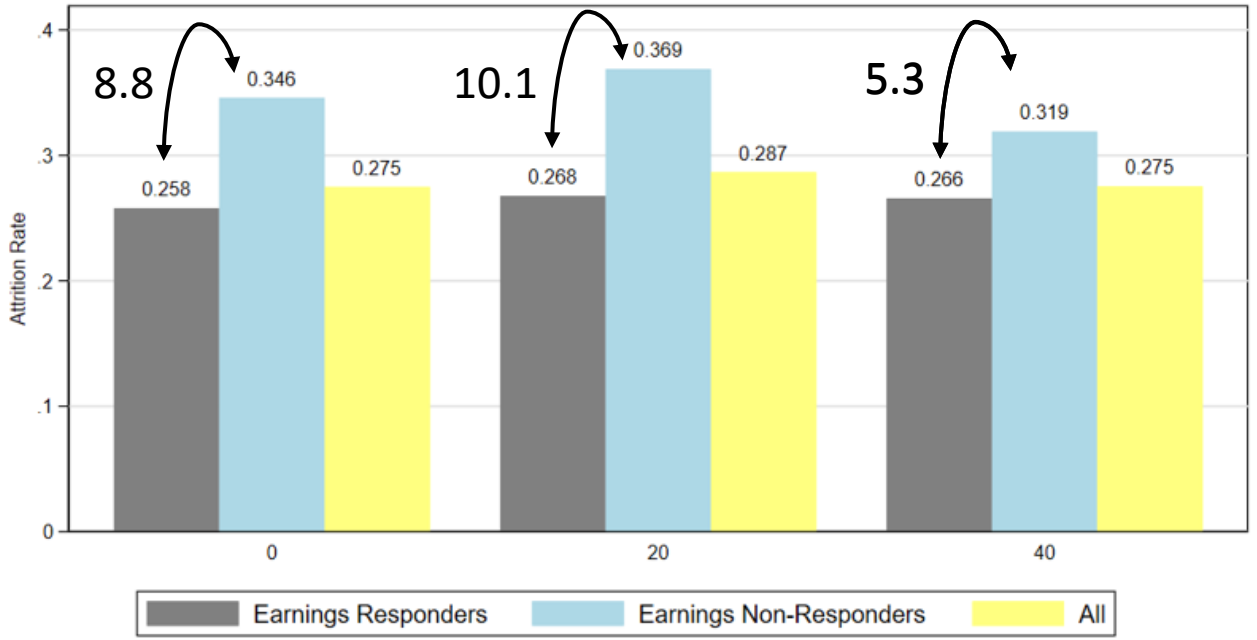
- Response continuum model:

$$H_0: \frac{d}{dr_{it}} \Pr(A_{i,t+1}) > 0,$$

where $A_{i,t+1}$ = attritor

- Regardless of incentive amounts, the probability of attrition is higher for earnings non-respondents than respondents
- Among non-respondents, the **$40** incentive **lowers** attrition rate by **5 percentage points** more than the **$20** group and 2.7 points more than the control group (the latter is not significant at the 10-percent level)

Probability of attrition in Wave 2 by earnings response and incentive amount in Wave 1



Source: Authors' calculations from the Survey of Income and Program Participation 2014, Wave 1.

Thank you!

Please direct all questions and comments to:

Shalise S. Ayromloo
Social, Economic, and Housing Statistics Division
U.S. Census Bureau
shalise.ayromloo@census.gov

Kelly R. Wilkin
Center for Genomic Medicine
Desert Research Institute
Kelly.wilkin@dri.edu

United States® Census Bureau