Online Appendix for "Tax Filing and Take-Up: Experimental Evidence on Tax Preparation Outreach and Benefit Claiming"

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October 2021

A Online Appendix

Figure A.1: Sample Treatment Letter (VITA + Free File Wizard)

Department of the Treasury
Internal Revenue Service
c/o Westat
1600 Research Blvd. RW2634
Rockville, MD 20850-3129
RETURN SERVICE REQUESTED

Letter: 6169
Date: [DATE]

[BARCODE] [RECID] [NDC CODE]
[TAXPAYER NAME]
[ADDRESS LINE 1] [ADDRESS LINE 2]
[CITY], [STATE] [ZIP]

According to our records, you may qualify for free tax preparation

What you need to know

Two out of three taxpayers qualify for free in-person or online tax preparation through an IRS-sponsored program.

Benefits you may receive from assisted tax preparation:

- Getting your refund in as few as three business days.
- Access to free commercial software for federal and state returns.
- Less change of making a mistake on your tax return or missing a tax benefit.

Read below for information about these free IRS-sponsored programs.

VITA/ TCE programs

- The Volunteer Income Tax Assistance (VITA) and Tax Counseling for the Elderly (TCE) programs provide free in-person tax preparation assistance by IRS-certified volunteers, regardless of a taxpayer's age.
- Most taxpayers qualify if they earned $55,000 or less in 2018.
- Help is available near you. Call for hours of operation:

[VITE SITE NAME #1]	**[VITE SITE NAME #2]**
[Address line #1]	[Address line #2]
[City, State Zip #1]	[City, State Zip #2]
[Phone #1]	[Phone #2]

- Be sure to bring photo identification, a copy of your last year's return, Social Security cards, and your tax documents (e.g., Forms W-2 and 1099-MISC).
- **For more information, visit www.irs.gov/VITA or call 800-906-9887.**

Free File program

- Free File provides free commercial software to help prepare your return online.
- Most taxpayers qualify if they earned $66,000 or less in 2018.
- You will need your 2017 tax return, 2018 tax documents, and a valid email address to begin.
- **For more information, visit www.irs.gov/WizardFreeFile.**

Frequently asked questions

- If you have questions about this letter, you can call 855-421-8641 (toll-free).
- You don't need to respond to this letter.

Letter 6169 (02-2019)
Catalog Number 72136V

Notes: Sample treatment letter (Treatment 2) including information on VITA and Free File with a link to the Free File wizard website.

Figure A.2: Sample Treatment Letter (VITA Only)



Department of the Treasury
Internal Revenue Service
c/o Westat
1600 Research Blvd. RW2634
Rockville, MD 20850-3129
RETURN SERVICE REQUESTED

Letter: 6170
Date: [DATE]

[BARCODE] [RECID] [NDC CODE]
[TAXPAYER NAME]
[ADDRESS LINE 1] [ADDRESS LINE 2]
[CITY], [STATE] [ZIP]

According to our records, you may qualify for free tax preparation

What you need to know

Two out of three taxpayers qualify for free in-person tax preparation through an IRS-sponsored program.

Benefits you may receive from assisted tax preparation:

- Getting your refund in as few as three business days.
- Access to free commercial software for federal and state returns.
- Less chance of making a mistake on your tax return or missing a tax benefit.

Read below for information about these free IRS-sponsored programs.

VITA/ TCE programs

- The Volunteer Income Tax Assistance (VITA) and Tax Counseling for the Elderly (TCE) programs provide free in-person tax preparation assistance by IRS-certified volunteers, regardless of a taxpayer's age.
- Most taxpayers qualify if they earned $55,000 or less in 2018.
- Help is available near you. Call for hours of operation:

[VITA SITE NAME #1]	**[VITA SITE NAME #2]**
[Address line #1]	[Address line #2]
[City, State Zip #1]	[City, State Zip #2]
[Telephone #1]	[Telephone #2]

- Be sure to bring photo identification, a copy of your last year's return, Social Security cards, and your tax documents (e.g., Forms W-2 and 1099-MISC).
- **For more information, visit www.irs.gov/VITA or call 800-906-9887.**

Frequently asked questions

- If you have questions about this letter, you can call 855-421-8641 (toll-free).
- You don't need to respond to this letter.

Letter 6170 (02-2019)
Catalog Number 72137G

Notes: Sample treatment letter (Treatment 3) including information on VITA only.

Figure A.3: Sample Treatment Letter (Free File Only)



Department of the Treasury
Internal Revenue Service
c/o Westat
1600 Research Blvd. RW2634
Rockville, MD 20850-3129
RETURN SERVICE REQUESTED

Letter: 6171
Date: [DATE]

[BARCODE] [RECID] [NDC CODE]
[TAXPAYER NAME]
[ADDRESS LINE 1] [ADDRESS LINE 2]
[CITY], [STATE] [ZIP]

According to our records, you may qualify for free tax preparation

What you need to know	**Two out of three taxpayers may qualify for free online tax preparation through an IRS-sponsored program.** Benefits you may receive from assisted tax preparation: • Getting your refund in as few as three business days. • Access to free commercial software for federal and state returns. • Less chance of making a mistake on your tax return or missing a tax benefit. Read below for information about this free IRS-sponsored program.
Free File program	• Free File provides free commercial software to help prepare your return online. • Most taxpayers qualify if they earned $66,000 or less in 2018. • You will need your 2017 tax return, 2018 tax documents, and a valid email address to begin. • **For more information, visit www.irs.gov/FreeFile.**
Frequently asked questions	• If you have questions about this letter, you can call 855-421-8641 (toll-free). • You don't need to respond to this letter.

Letter 6171 (02-2019)
Catalog Number 72138R

Notes: Sample treatment letter (Treatment 4) including information on Free File only with a link to the general IRS landing website.

Figure A.4: Sample Treatment Letter (Free File Wizard Only)



Department of the Treasury
Internal Revenue Service
c/o Westat
1600 Research Blvd. RW2634
Rockville, MD 20850-3129
RETURN SERVICE REQUESTED

Letter: 6172
Date: [DATE]

[BARCODE] [RECID] [NDC CODE]
[TAXPAYER NAME]
[ADDRESS LINE 1] [ADDRESS LINE 2]
[CITY], [STATE] [ZIP]

According to our records, you may qualify for free tax preparation

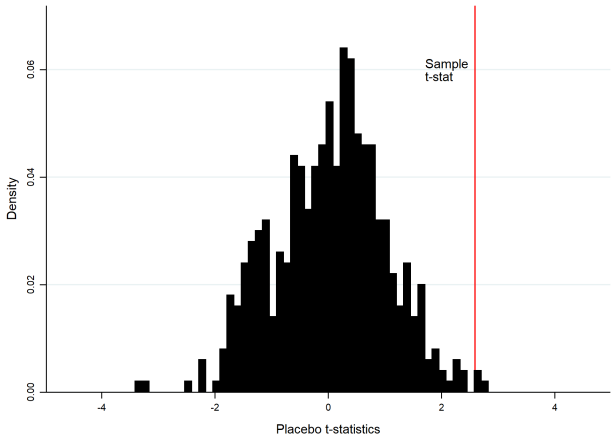
What you need to know	**Two out of three taxpayers qualify for free online tax preparation through an IRS-sponsored program.** Benefits you may receive from assisted tax preparation: • Getting your refund in as few as three business days. • Access to free commercial software for federal and state returns. • Less change of making a mistake on your tax return or missing a tax benefit. Read below for information about this free IRS-sponsored program.
Free File program	• Free File provides free commercial software to help prepare your return online. • Most taxpayers qualify if they earned $66,000 or less in 2018. • You will need your 2017 tax return, 2018 tax documents, and a valid email address to begin. • **For more information, visit www.irs.gov/WizardFreeFile.**
Frequently asked questions	• If you have questions about this letter, you can call 855-421-8641 (toll-free). • You don't need to respond to this letter.

Letter 6172 (02-2019)
Catalog Number 72139C

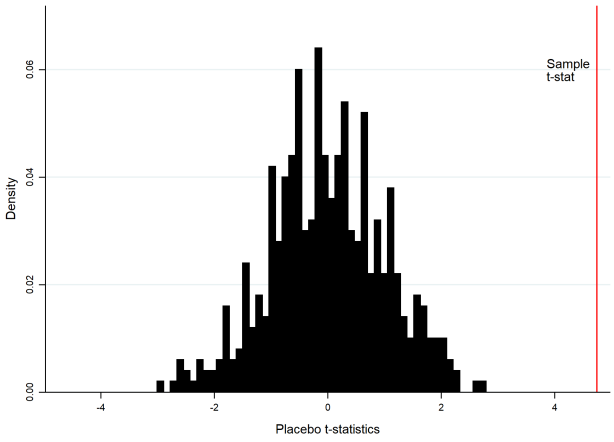
Notes: Sample treatment letter (Treatment 5) including information on Free File only with a link to the Free File wizard website.

Figure A.5: Randomization Inference

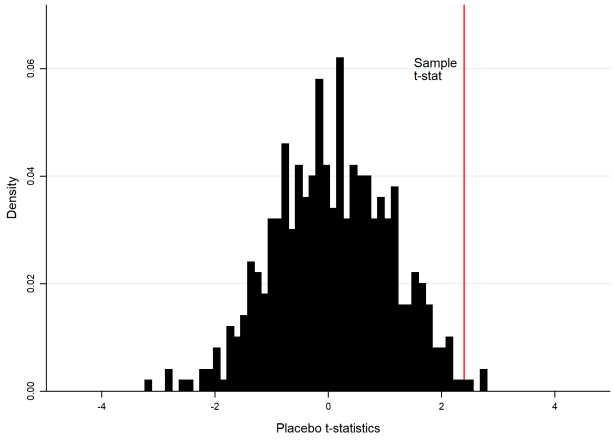
(a) Tax Return Filing



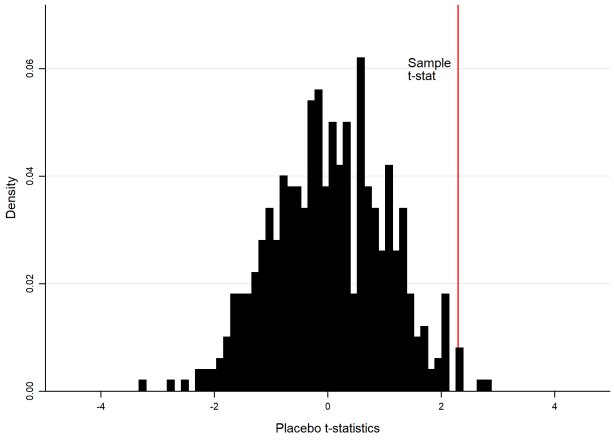
(b) Free Tax Preparation Method



(c) EITC/CTC Claiming



(d) Refund Claiming



Each panel of the figure plots the distribution of t-statistics corresponding to the estimated reduced form effect of the intervention on the specified outcome variable, generated from 500 random reassignments of the treatment indicator variable across individuals in the experimental sample. The reassignments were conducted with the "ritest" Stata command (**?**). The vertical line denotes the t-statistic estimated using the actual treatment assignment. The outcomes specified in panels (a)-(d) correspond to the outcomes evaluated in panels (a)-(d) of Figure **??**. The p-values implied by the analyses depicted in panels (a) through (d) are, respectively: 0.008, <0.001, 0.018, and 0.014.

Table A.1: Treatment Variant Description

	(1)	(2)	(3)	(4)	(5)
	VITA	FreeFile	FreeFile General Website	FreeFile "Wizard" Website	Observations
Treatment					56,015
1	X	X	X		11,182
2	X	X		X	11,179
3	X				11,217
4		X	X		11,242
5		X		X	11,195
Control					1,748,405

Notes: The table summarizes the components of each treatment letter variant as well as the number of individuals in the experimental sample that were randomly assigned to receive it. Treatments 1-3 contain information about VITA. Treatments 1, 2, 4, and 5 contain information about Free File. Treatments 1 and 3 provide a link to the general IRS Free File landing website whereas Treatments 2 and 4 provide a link to the IRS Free File "eligibility wizard" website.

Table A.2: Summary Statistics and Balance Checks by Treatment Variant

	(1)	(2)	(3)	(4)	(5)	(6)
	T1	T2	T3	T4	T5	Difference p-value
Age	36.3	36.5	36.2	36.3	36.2	0.656
Female	0.413	0.418	0.407	0.413	0.409	0.586
Income	13,835	13,851	13,837	13,800	13,894	0.998
Any Wages	0.899	0.898	0.898	0.898	0.897	0.976
Any Withholding	0.730	0.731	0.731	0.731	0.731	1.000
Closest VITA Site (Miles)	3.66	3.58	3.57	3.62	3.64	0.853
Observations	11,182	11,179	11,217	11,242	11,195	

Notes: The table contains summary statistics and balance checks relating to the assignment of individuals across treatment variants. Each individual included in the table was assigned to receive one of the treatment variants. Columns (1)-(5) provide summary statistics for individuals assigned to Treatments (1)-(5), respectively. Column 6 presents the p-value for a test of equality across the treatment group means. All characteristics are based on data for tax year 2017 (the pre-intervention year). Age and sex are derived from Social Security Administration records housed by the IRS. Income is derived from information returns such as Form W-2 and 1099-Misc. "Any Wages" indicates the presence of income reported on Form W-2. "Any Withholding" indicates the presence of withheld income on one or more of the individual's information returns.

Table A.3: Effect of Treatment Assignment on Successful Letter Delivery (First Stage)

	(1)
	Any Postcard
Treated	62.067***
	(0.205)
Observations	1,804,420

The table reports the estimated first stage effect of assignment to a treatment group on receipt of a letter. An individual is treated as receiving a letter if (1) the individual is assigned to one of the experimental treatment groups and (2) the letter that is sent to that individual is not returned to the IRS as undeliverable. Parentheses contain heteroskedasticity robust standard errors. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.4: Effect of Intervention on Tax Filing Outcomes (Reduced Form)

	(1)	(2)	(3)	(4)	(5)
	Filed	Free Method	Claimed EITC	Claimed CTC	Claimed Refund
Treated	0.461***	0.239***	0.200**	0.133*	0.369**
	(0.178)	(0.050)	(0.092)	(0.073)	(0.161)
Control Mean	21.489	1.164	4.611	2.882	16.562
Observations	1,804,420	1,804,420	1,804,420	1,804,420	1,804,420

The table reports the estimated reduced form effect of treatment group assignment on tax filing outcomes for tax year 2018. Units are percentage points (0-100). Each column reports the difference in means for the (pooled) treatment groups versus the control group. The outcome variables are as follows: whether the individual filed a tax return (Column 1); whether the individual filed a tax return through the VITA or Free File program (Column 2); whether the individual claimed the EITC (Column 3); whether the individual claimed the CTC (Column 4); whether the individual filed a return claiming a refund (Column 5). Parentheses contain heteroskedasticity robust standard errors. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.5: Effect of Intervention on Tax Filing Outcomes Controlling for Randomization Strata Indicators

	(1)	(2)	(3)	(4)	(5)
	Filed	Free Method	Claimed EITC	Claimed CTC	Claimed Refund
Received Letter	0.739***	0.385***	0.321**	0.215*	0.589**
	(0.283)	(0.081)	(0.147)	(0.118)	(0.255)
Control Mean	21.489	1.164	4.611	2.882	16.562
Observations	1,804,420	1,804,420	1,804,420	1,804,420	1,804,420

The table reports the estimated effect of receiving one of the experimental letters on tax filing outcomes for tax year 2018 from specifications that control for randomization strata fixed effects. Units are percentage points (0-100). Each column is derived from a two-stage least-squares specification in which an indicator for successful letter delivery is instrumented for by an indicator for treatment status. The outcome variables are as follows: whether the individual filed a tax return (Column 1); whether the individual filed a tax return through the VITA or Free File program (Column 2); whether the individual claimed the EITC (Column 3); whether the individual claimed the CTC (Column 4); whether the individual filed a return claiming a refund (Column 5). Parentheses contain heteroskedasticity robust standard errors. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.6: Effect of Intervention on Tax Filing Method

	(1)	(2)	(3)	(4)	(5)
	Free-File	VITA	Commercial Software	Professional Tax Preparer	Unassisted Preparation
Received Letter	0.167***	0.218***	0.107	0.174	0.076
	(0.058)	(0.057)	(0.195)	(0.212)	(0.080)
Control Mean	0.603	0.561	8.653	10.364	1.308
Observations	1,804,420	1,804,420	1,804,420	1,804,420	1,804,420

The table reports the estimated effect of receiving one of the experimental letters on the use of various tax filing methods for tax year 2018. Units are percentage points (0-100). Each column is derived from a two-stage least-squares specification in which an indicator for successful letter delivery is instrumented for by an indicator for treatment status. The outcome variables are as follows: whether the individual filed a tax return using Free File (Column 1); VITA (Column 2); commercial software (Column 3); professional tax preparer (Column 4); no professional assistance or commercial software (Column 5). Parentheses contain heteroskedasticity robust standard errors. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.7: Effect of Intervention on Tax Filing Method by Letter Variant

	(1)	(2)	(3)	(4)	(5)
	Free-File	VITA	Commercial Software	Paid In-Person	Unassisted Preparation
Letter 1	0.167	0.307**	-0.311	-0.129	0.156
	(0.128)	(0.132)	(0.426)	(0.465)	(0.180)
Letter 2	0.080	0.019	-0.380	0.468	0.070
	(0.123)	(0.116)	(0.426)	(0.473)	(0.177)
Letter 3	0.033	0.575***	0.308	-0.037	-0.010
	(0.120)	(0.145)	(0.433)	(0.464)	(0.173)
Letter 4	0.274**	0.285**	0.775*	0.098	0.171
	(0.133)	(0.130)	(0.438)	(0.464)	(0.179)
Letter 5	0.280**	-0.098	0.134	0.470	-0.006
	(0.134)	(0.108)	(0.431)	(0.471)	(0.173)
Control mean	0.603	0.561	8.653	10.364	1.308
Observations	1,804,420	1,804,420	1,804,420	1,804,420	1,804,420

The table reports the estimated effect of receiving the various experimental letters on the use of various tax filing methods for tax year 2018. Units are percentage points (0-100). Each column is derived from a two-stage least-squares specification in which indicators for successful delivery of each letter type is instrumented for by indicators for treatment assignment to receive each letter variant. The outcome variables are as follows: whether the individual filed a tax return using Free File (Column 1); VITA (Column 2); commercial software (Column 3); professional tax preparer (Column 4); no professional assistance or commercial software (Column 5). Letter 1 and 2 include information on both Free File and VITA, Letter 3 includes information on VITA only, and Letters 4 and 5 include information on Free File only. Letters 1 and 4 include a link to the general Free File landing page, while Letters 2 and 5 include a link to the Free File wizard. Parentheses contain heteroskedasticity robust standard errors. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.8: Effect of Intervention on Tax Filing Method by Letter Variant (Combined by Highlighted Method)

	(1)	(2)	(3)	(4)	(5)
	Free-File	VITA	Commercial Software	Paid In-Person	Unassisted Preparation
Free-File Only	0.277***	0.094	0.456	0.284	0.083
	(0.095)	(0.085)	(0.308)	(0.332)	(0.125)
VITA Only	0.033	0.575***	0.308	-0.037	-0.010
	(0.120)	(0.145)	(0.433)	(0.464)	(0.173)
Free-File + VITA	0.123	0.163*	-0.345	0.169	0.113
	(0.089)	(0.088)	(0.302)	(0.333)	(0.127)
Control mean	0.603	0.561	8.653	10.364	1.308
Observations	1,804,420	1,804,420	1,804,420	1,804,420	1,804,420

The table reports the estimated effect of receiving the various experimental letters on the use of various tax filing methods for tax year 2018. Units are percentage points (0-100). Each column is derived from a two-stage least-squares specification in which indicators for successful delivery of each letter type is instrumented for by indicators for treatment assignment to receive each letter type. The outcome variables are as follows: whether the individual filed a tax return using Free File (Column 1); VITA (Column 2); commercial software (Column 3); professional tax preparer (Column 4); no professional assistance or commercial software (Column 5). "Free File + VITA" includes treatments 1 and 2; "VITA Only" refers to treatment 3; "Free File Only" includes treatments 4 and 5. Parentheses contain heteroskedasticity robust standard errors. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.9: Effect of Intervention on EITC Claims with and without Qualifying Children

	(1)	(2)
	Claimed EITC with QC	Claimed Childless EITC
Received Letter	0.178*	0.144
	(0.100)	(0.111)
Control Mean	2.035	2.576
Observations	1,804,420	1,804,420

The table reports the estimated effect of receiving one of the experimental letters on EITC claiming in tax year 2018. Units are percentage points (0-100). Each column is derived from a two-stage least-squares specification in which an indicator for successful letter delivery is instrumented for by an indicator for treatment status. The outcome variables are as follows: whether the individual claimed the EITC with qualifying children (Column 1); whether the individual claimed the childless EITC (Column 2). Parentheses contain heteroskedasticity robust standard errors. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.10: Effect of Intervention on Benefit and Refund Amounts Claimed (Reduced Form)

	(1)	(2)	(3)	(4)
	EITC Amount ($)	CTC Amount ($)	EITC/CTC Amount ($)	Refund Amount ($)
Treated	3.968*	4.497**	8.465**	9.728
	(2.115)	(1.779)	(3.394)	(6.348)
Control Mean	68.403	53.926	122.329	124.433
Observations	1,804,420	1,804,420	1,804,420	1,804,420

The table reports the estimated reduced form effect of treatment group assignment on benefit and refund claim amounts in dollars for tax year 2018. Each column reports the difference in means for the (pooled) treatment groups versus the control group. The outcome variables are as follows: EITC claim amount (Column 1); CTC claim amount (Column 2); EITC and CTC claim amount combined (Column 3); refund amount (Column 4). Parentheses contain heteroskedasticity robust standard errors. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.11: Effect of Intervention on Subsequent Year Tax Filing Outcomes

	(1)	(2)	(3)	(4)	(5)
	Filed	Free Method	Claimed EITC	Claimed CTC	Claimed Refund
Received Letter	0.128	0.165	0.068	0.132	0.171
	(0.340)	(0.109)	(0.181)	(0.119)	(0.304)
Control Mean	40.501	2.474	7.398	2.974	26.003
Observations	1,804,420	1,804,420	1,804,420	1,804,420	1,804,420

The table reports the estimated effect of receiving one of the experimental letters on tax filing outcomes for tax year 2019 (the second tax year following the intervention). Units are percentage points (0-100). Each column is derived from a two-stage least-squares specification in which an indicator for successful letter delivery is instrumented for by an indicator for treatment status. The outcome variables are as follows: whether the individual filed a tax return (Column 1); whether the individual filed a tax return through the VITA or Free File program (Column 2); whether the individual claimed the EITC (Column 3); whether the individual claimed the CTC (Column 4); whether the individual filed a return claiming a refund (Column 5). Parentheses contain heteroskedasticity robust standard errors. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.12: Effect of Intervention by Subgroup

	(1)	(2)
	Free Method	Filed
	Panel A: Age	
Received Letter	0.463***	0.865**
	(0.122)	(0.423)
Received * Age over 30	-0.151	-0.225
	(0.163)	(0.571)
	Panel B: Income	
Received Letter	0.452***	0.852***
	(0.097)	(0.324)
Received * Income over 25k	-0.273	-0.447
	(0.173)	(0.682)
	Panel C: Any Withholding	
Received Letter	0.618***	0.274
	(0.191)	(0.657)
Received * Any Withholding	-0.293	0.581
	(0.211)	(0.729)
	Panel D: Distance to a VITA Site	
Received Letter	0.450***	0.966***
	(0.093)	(0.320)
Received * VITA over 5 miles	-0.363**	-1.242*
	(0.176)	(0.707)
Control Mean	1.164	21.489
Observations	1,804,420	1,804,420

The table reports the estimated effect of receiving one of the experimental letters on tax filing outcomes for tax year 2018 by subgroup. Units are percentage points (0-100). Each column is derived from a two-stage least-squares specification in which an indicator for successful letter delivery is instrumented for by an indicator for treatment status. The outcome variables are as follows: whether the individual filed a tax return through the VITA or Free File program (Column 1); whether the individual filed a tax return (Column 2). The subgroups considered are the four characteristics on which treatment status was stratified: whether the individual was over 30 years old (Panel A); had apparent income of at least $25,000 in 2017 based on third party information reports (Panel B); had withheld income in 2017 (Panel C); and did not live within 5 miles of a VITA site (Panel D). Parentheses contain heteroskedasticity robust standard errors. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.13: Effect of Intervention on Tax Filing Outcomes Using Multiple Instruments

	(1)	(2)	(3)	(4)	(5)
	Filed	Free Method	Claimed EITC	Claimed CTC	Claimed Refund
Received Letter	0.743***	0.385***	0.322**	0.215*	0.596**
	(0.286)	(0.081)	(0.148)	(0.118)	(0.259)
Control Mean	21.489	1.164	4.611	2.882	16.562
Observations	1,804,420	1,804,420	1,804,420	1,804,420	1,804,420

The table reports the estimated effect of receiving one of the experimental letters on tax filing outcomes for tax year 2018. Units are percentage points (0-100). Each column is derived from a two-stage least-squares specification in which an indicator for successful letter delivery is instrumented for by a set of five indicators, each indicating (respectively) whether the individual was assigned to a particular letter variant. The outcome variables are as follows: whether the individual filed a tax return (Column 1); whether the individual filed a tax return through the VITA or Free File program (Column 2); whether the individual claimed the EITC (Column 3); whether the individual claimed the CTC (Column 4); whether the individual filed a return claiming a refund (Column 5). Parentheses contain heteroskedasticity robust standard errors. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.14: Effect of Intervention on Early-Filed Tax Returns (Placebo)

	(1)	(2)	(3)	(4)
	Free Method	Claimed EITC	Claimed CTC	Claimed Refund
Received Letter	-0.447	-1.236	-0.611	-0.047
	(0.377)	(0.841)	(0.729)	(0.404)
Control Mean	4.749	31.561	20.363	94.854
Observations	229,521	229,521	229,521	229,521

The table reports the estimated effect of receiving one of the experimental letters on tax filing outcomes for tax year 2018 among the subset of the sample that filed a 2018 return during the first 12 weeks of 2019 (i.e., before the IRS letters were mailed). Filing date for a return is proxied by the date that the return is posted to the IRS database. Units are percentage points (0-100). Each column is derived from a two-stage least-squares specification in which an indicator for successful letter delivery is instrumented for by an indicator for treatment status. The outcome variables are as follows: whether the individual filed a tax return through the VITA or Free File program (Column 1); whether the individual claimed the EITC (Column 2); whether the individual claimed the CTC (Column 3); whether the individual filed a return claiming a refund (Column 4). Parentheses contain heteroskedasticity robust standard errors. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.