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Boosting Take-Up of the Expanded Child Tax Credit Through School-Based Outreach

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Abstract

The expanded Child Tax Credit provided taxpayers up to $3,600 per child for tax year 2021, but take-up was incomplete. We experimentally test whether information frictions and costs of filing taxes explain non-take-up. We designed an information and counseling intervention contacting parents through school districts, coupled with assistance from local VITA (Volunteer Income Tax Assistance) programs. According to tax records, treatment increased tax filing by 2 percentage points, increased CTC claims by (a statistically insignificant) 1.9 percentage points, and tripled filing through VITA. Effects were concentrated among previous non-filers and Spanish speakers, demonstrating the value of targeted outreach.

Keywords: Child Tax Credit, Outreach, Program Participation, Children

JEL Codes: H24, H31, I38

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I. INTRODUCTION

Non-take-up of social assistance programs is a well-documented phenomenon that can deprive the neediest of families and individuals from receiving benefits intended for them. Prior literature has identified information frictions, monetary costs, time costs, and hassle costs as reasons for not taking up social assistance programs (Currie 2004; Bertrand, Mullainathan, and Shafir 2004; Chetty, Friedman, and Saez 2013; Bhargava and Manoli 2015; Guyton et al. 2017). Non-take-up of child benefit programs in particular has been widely documented and recognized as a first-order issue for economists and policymakers around the world (Eurofound 2015; Goldin 2018; ODI/UNICEF 2020).

In 2021, the Child Tax Credit (CTC) was expanded by the American Rescue Plan Act, providing monthly payments and historically high levels of child poverty alleviation (Parolin et al. 2021). This policy change had a substantial risk of low take-up among the most needy of intended recipients, due to the twin barriers of lack of information and time or hassle costs. The program began in mid 2021 with little advance notice. Monthly payments, a new feature of the program, began in the last six months of 2021; to claim the second half of the credit, families needed to file an income tax return in early 2022. Parents may have been unaware or simply inattentive to information about the expanded CTC. In new programs, information frictions are especially likely to contribute to non-take-up (Humphries, Neilson, and Ulyssea 2020). According to a poll conducted in February 2022, only 58 percent of respondents with income under $50,000 were aware of the option to claim the CTC when filing taxes, and just 36 percent were aware that missed monthly payments could be claimed by filing a tax return (Morning Consult 2022).

Additionally, administering a benefit program through the tax system that can be collected even by very low-income families or those who do not work is challenging. Families in the U.S. with income below the standard deduction ($12,550 for single and $25,100 for married taxpayers in 2021) are generally not required to file an income tax return; this means families had to incur time and monetary costs to file taxes and claim the full benefit of the CTC. Although most children in the United States were eligible, families that had not filed a recent tax return did not automatically

start receiving the monthly payments, because the statute instructed the Internal Revenue Service (IRS) to use information from tax returns filed for the prior two tax years. Estimates from the Office of Tax Analysis (OTA) at the U.S. Treasury suggested 5-10 percent of children could miss out on advance payments because they had not been claimed on a recent tax return (Office of Tax Analysis 2021).

In response to non-take-up of tax credits for low-income families, such as the Earned Income Tax Credit (EITC), researchers have developed interventions to reach those who have not claimed benefits. Evidence on the success of information-only interventions to increase collection of tax credits is mixed. Cranor, Goldin, and Kotb (2019) found that reducing information frictions by mandating employee notification laws did not increase take-up of the EITC, and Linos et al. (2022) found no effect of numerous experiments conducting outreach to non-filers via mail. However, mailings that increased awareness (Guyton et al. 2017) simplified eligibility criteria (Bhargava and Manoli 2015), and provided information about locations of free tax preparation sites (Goldin et al. 2022) did increase take-up in other studies, though by relatively small magnitudes. Qualitatively, non-filers reported in interviews that information was not the primary barrier to take-up of the pandemic Economic Impact Payments (Zucker and Wagner 2021).

A clear possibility is that on its own, information is necessary but not sufficient to increase take-up of social benefits among the most needy. Rather, interventions may need to combine informational outreach (to overcome information deficits) with assistance in applying for benefits (to overcome time or hassle costs). Indeed, Finkelstein and Notowidigdo (2019) tripled take-up rates of the Supplemental Nutrition Assistance Program (SNAP) among seniors on Medicaid by providing both information *and* personalized assistance with enrollment. They find that the information and assistance intervention was more effective than information alone.

Our paper develops and implements an intervention that provides both information and application assistance to boost take-up of the expanded CTC. The intervention coupled outreach through public schools in San Diego County and assistance from local VITA (Volunteer Income Tax As-

sistance) programs to increase take-up of the CTC.[1] San Diego schools were our partners for this study due to pre-existing research relationships, which allowed the intervention to be quickly implemented in time for the 2022 tax season (less than a year after the enactment of the expanded CTC). We conducted outreach to families using the school district's direct messaging systems, and enrolled parents who indicated that they were eligible for VITA and were interested in our assistance.[2] Half of enrolled respondents were randomly assigned to treatment. We texted treated parents short messages with information about the CTC and how to claim it, and encouraged them to collect the CTC by filing a 2021 income tax return using VITA assistance. We facilitated participation by setting up appointments for treated families to meet with a VITA specialist, contacting them by phone and email. Tax specialists answered questions about complex tax situations and addressed any hesitancy or unique barriers.

A key innovation is to use school districts as a trusted intermediary to spread word about the intervention. The theory behind this was that families are more likely to pay attention to outreach that comes through a trusted partner (such as the school district that educates their children) than outreach conducted through an unknown social service organization or the IRS.

Crucially, we obtained consent from a large fraction of sample members to link their data with federal tax records, which allows us to obtain highly accurate measures of program participation through observation of whether families filed tax returns. We matched 96 percent of experimental sample members who consented to the match to tax data, and find that our intervention increased rates of filing taxes in 2021 by 2 percentage points (versus a control mean of 91 percent). The effect on filing was larger among previous non-filers and Spanish speakers, though we were not powered to detect a statistically significant result within these groups. The tax data also show that the treatment group was vastly more likely to file through VITA relative to the control group, an increase of 5 percentage points on a base of 3 percent, which allowed them to access expanded CTC benefits at a lower monetary cost.

1. Details on VITA are available at https://www.irs.gov/individuals/free-tax-return-preparation-for-qualifying-taxpayers.

2. To be eligible for VITA services, households must have income less than $57,000 in 2021.

Effects on claiming of the CTC on 2021 tax returns were in line with the effects on filing – a 1.9 percentage point increase (although not statistically significant) versus a control mean of 83 percent. Our results do not directly inform us about national take-up of the expanded CTC, because our experimental participants are not a random sample; they were a subgroup of parents of school-aged children who specifically expressed interest in learning more about claiming the credit. However, within our sample, experimentally induced tax refunds were seven times larger than the associated outreach costs. This implies that our method of high-cost, high-touch outreach has substantial benefits to taxpayers in an environment when large refundable credits are available.

II. BACKGROUND

A. Expanded Child Tax Credit

The expansion to the CTC for Tax Year (TY) 2021 nearly doubled the existing credit from a maximum benefit amount of $2,000 per child to $3,600 for children younger than six years old and $3,000 for children younger than 18. Single parents earning less than $112,000 (and married parents earning less than $150,000) could collect the full benefit. In fact, nearly all children lived in families that were income-eligible for the CTC since it had a high income limit. Benefits phased out completely by $240,000 of income for single parents ($440,000 for married).

The 2021 CTC was fully refundable, i.e. available to families with no income. Previously, one-third of families who claimed the credit were excluded from the full credit because they earned too little (Collyer, Harris, and Wimer 2019). In 2020, a household with an earned income of $12,000 would only have been eligible to claim $1,400 per child; in 2021, the family could receive up to $3,600 per child, depending on the child's age. Similarly, before 2021 a household that received only Social Security or disability benefits and earned no income from work would typically not be eligible for the CTC; with the expansion, the family could claim the full amount.

To claim the CTC, the child must have a Social Security Number (SSN) that is valid for employment; this includes U.S. citizens, permanent residents, and some other immigrants. However, the parent claiming the credit for the child does not need to have an SSN. This means that immi-

grant parents with no SSN but an Individual Taxpayer Identification Number (ITIN) are eligible to claim the credit for a child who has an SSN. Some policymakers have proposed restricting access to the CTC to parents with an SSN (Crandall-Hollick and Lunder 2016), and other tax credits like the EITC require an SSN for parents, so there is potential for taxpayers with ITINs to be uncertain about their eligibility.

Other CTC eligibility criteria are standard for tax credits, such as that the child must live with the taxpayer who is claiming them for at least half of the year, and the child may not provide more than half of their own financial support. Taxpayers who are not the parents of the child may still collect the CTC if the child they care for is their sibling, step-sibling, grandchild, niece, nephew, or other eligible relative, as long as no one else is collecting the CTC on that child's behalf, and they meet other eligibility criteria. Ambiguity about tax filing units is another source of confusion for taxpayers; over 60 percent of low-income families live in households with non-traditional family structures (Michelmore and Pilkauskas 2022).

The temporarily expanded CTC was partially available through advanced monthly payments, a novelty for a tax credit in the United States. For families who filed a tax return for 2019 or 2020 or who used the IRS non-filer portal to claim a pandemic stimulus payment, receiving CTC monthly checks was generally simple: the IRS would automatically issue either a check or direct deposit to a bank account.[3] Those payments arrived from July 2021 until December 2021. For each child, families received monthly checks worth $250 (or $300 if the child was younger than six years old). Families who received all six monthly checks would have received $1,500 per child ($1,800 for young children), or half of the total credit.

To claim the second half of the expanded CTC, families had to file a tax return for TY 2021 (starting in January 2022). If families did not receive monthly payments, the entire credit could be claimed by filing a tax return for TY 2021. For that reason, our intervention focused on increasing take-up by increasing tax filing. Additionally, by filing a tax return, families became eligible for a number of additional tax credits, including unclaimed tax credits from prior years and pan-

3. Alternatively, if families did not automatically begin receiving the monthly checks, they could sign up by using the non-filer portal located on the IRS website or by filing a late tax return for 2020.

demic assistance programs.[4] These other credits increased the benefits of filing taxes beyond the $3,000/$3,600 per child from the expanded CTC.

B. Non-take-up in San Diego County

Non-take-up of the expanded CTC was predicted to be an issue. Low-income people who live in families that are disconnected from the labor force and children who live in immigrant families may be especially likely to not take-up (Cox et al. 2021). The EITC, the largest tax program for low-income households, suffers from incomplete take-up despite the fact that it has existed for decades: only 78 percent of eligible families participate overall, and 82 to 86 percent of families with children.[5] A novel program such as the expanded CTC, which serves a similar population, is especially likely to suffer from incomplete take-up. Because our school district partners were located in San Diego County, we were especially concerned with the possibility of non-take-up in this geographic region.

It is difficult to precisely quantify the non-take-up rate of the expanded Child Tax Credit. First, a roster of eligible children does not exist in any one data source. The Social Security Administration has records on the universe of children with SSNs, but does not track their geographic location; the IRS has location information for children who are claimed as dependents on tax returns or covered by health insurance, but does not have information about eligible children who have no interaction with the tax system; and school records include most children, but do not identify which children are eligible for the CTC. Second, the expanded Child Tax Credit and monthly payments received significant attention from the media and community organizations, so take-up rates were increasing between July 2021 (when the monthly payments began) and tax filing season in early 2022 (when we began our intervention) (Curran 2021).

OTA estimated in June 2021 that approximately 2.3 million children nationwide, and nearly

4. These additional tax credits include the Recovery Rebate Credit (for missed Economic Impact Payments issued during the COVID-19 pandemic), the federal EITC, and two state credits: the CalEITC, and the Young Child Tax Credit.

5. For overall take-up rates, see https://www.eitc.irs.gov/eitc-central/participation-rate-by-state/eitc-participation-rate-by-states and reports from the National Taxpayer Advocate (2020, Figure A-7). The IRS does not produce similar figures for take-up of the CTC, before or after the 2021 expansion. However, Greenstein (2022) estimates the expanded CTC had an overall take-up rate of 90 percent.

25,000 in San Diego County, were likely eligible but not automatically collecting advance monthly payments of the CTC (Office of Tax Analysis 2021). OTA's count included any children who were covered by a health insurance policy as reported to the IRS on Form 1095 in 2019, but were not claimed as a dependent on a tax return in 2019 or 2020. This number is a lower bound on the true number of children not receiving monthly payments because the figure excludes uninsured children in households that do not file a tax return. This omission is not trivial — in 2020, 5.6 percent of all children, and 9.3 percent of children in low-income households, were uninsured (Keisler-Starkey and Bunch 2021). Additionally, children whose parents are undocumented are more likely to be excluded from these counts because their parents are less likely to file taxes, participate in the formal labor market or have health insurance (although their citizen children are generally eligible for Medicaid). The Migration Policy Institute estimates that 169,000 undocumented immigrants lived in San Diego County in 2019; 55,000 of them lived with their U.S. citizen children, meaning they could be eligible for the CTC.[6] Thus, we anticipated there would be considerable non-take-up in San Diego, which provided an opportunity for our intervention to connect families to the CTC.

III. SAMPLE RECRUITMENT AND EXPERIMENTAL DESIGN

Given the estimate that approximately 25,000 children in San Diego County were not automatically receiving monthly payments of the CTC, ZIP codes with large shares of children missing out were attractive targets for outreach. **Figure A1** in **Online Appendix A** shows the geographic locations in San Diego County with high concentrations of children not claimed on tax returns. Partnering with school districts had the benefit of engaging with parents through a community partner they trusted and regularly interacted with. Even families that are completely disengaged from other public support systems most likely send their children to school.[7]

We formed partnerships with three school districts in San Diego County: San Diego Unified, Sweetwater High School, and Vista Unified. These schools were selected due to pre-existing

6. Unauthorized Immigrant Population Profiles, https://www.migrationpolicy.org/data/unauthorized-immigrant-population/county/6073.

7. For example, according to the 2018 American Community Survey, 98.5 percent of children in San Diego between age 6-18 (the compulsory schooling age) were enrolled in school.

relationships with the research team, which enabled quick development of the project in time for the first tax season after the expanded CTC was enacted, and their locations in areas with many children not claimed on tax returns in OTA's estimates. **Table 1** summarizes enrollment data and estimates of non-take-up in the areas served by partner school districts. Combined, our partner districts enroll over 170,000 students, and serve 39 San Diego ZIP codes where over 12,500 children who were likely missing out on the CTC payments reside. The ratio of children unclaimed to school enrollment, a rough measure of non-take-up, is 7.2 percent.[8] This is a higher share of unclaimed children than in San Diego County overall (5.2 percent), California (6.2 percent), or nationally (4.6 percent).

The final columns of **Table 1** show two demographic characteristics of our three-district sample, relative to the county, state, and nation. The sample resembles California as a whole in terms of the percentage of students who are low-income (eligible for meal assistance) and English learners. The sample is very close to the national average for the percentage eligible for meal assistance, but the English learner percentage is about twice the national average.

We designed a baseline recruitment survey in collaboration with our school district partners. The goal was to identify families that needed help filing taxes and collecting the CTC. This survey informed parents and caretakers about the new, expanded CTC, and invited them to sign up for an opportunity to receive free help understanding eligibility rules and scheduling appointments for tax preparation. Families interested in this assistance that consented to the research study were included in the research sample. The full text of the baseline recruitment survey is in **Online Appendix B**.

Our district partners used their existing dissemination provider and parent communication platform to invite parents and guardians (for simplicity, "parents" in this paper) to participate in the short online baseline recruitment survey. Each school district sent out an invitation to the survey at

8. The estimated number of unclaimed children is calculated by summing the number of children who are missing out on the CTC in ZIP codes where each district has a school. This method of aggregation may understate the figure if the district serves ZIP codes that do not have a school in them, or overstate if a district does not serve an entire ZIP code. It will also overstate the share of children who are unclaimed since non-school aged children and children in private school are included in the OTA counts, but they would not be attending district schools.

least once. The first district sent its communication on January 24th, 2021. By April 8th, the last day the survey was open, the number of survey responses totaled 15,878.[9]

The baseline recruitment survey was designed to encourage participation. Survey responses were anonymous until the respondent shared their name and contact information upon enrollment in the research study. The survey was offered in four languages: English, Spanish, Arabic, and Vietnamese. The majority of respondents completed the survey on their phones. Given how easy it is to get interrupted when completing an online survey on a handheld device, the survey was designed to be short. The survey was especially short for parents who were not interested in our tax assistance or who did not want to be part of the research study. 84 percent of respondents who completed the survey but did not meet the inclusion criteria for the research sample finished the survey within 5 minutes; for those in the experimental sample, only 26 percent finished this quickly.

We measured receipt of monthly CTC payments in the baseline recruitment survey. In **Table 2**, we show that 23 percent of survey respondents self-reported that they did not receive any monthly CTC payments, increasing to 38 percent of the experimental sample. After matching the experimental sample to tax data (as described in Section 5), we confirm that 23 percent of these parents truly did not receive advance payments.[10] This is a significantly larger non-participation rate than was originally estimated in San Diego County by OTA (2021), and larger than what we would expect to find in these school districts (see **Table 1**). Our result is similar to the non-participation rate of the October advanced payment measured by Michelmore and Pilkauskas (2023), who surveyed low-income SNAP recipients.

Despite the low participation rates measured at baseline, our recruitment survey did not inquire about the reason for nonpayment, and thus may not directly translate to low take-up rates. In Michelmore and Pilkauskas (2023), a quarter of the families who reported not receiving monthly

9. We do not count responses where the recipient clicked the link to open the survey, and consented to take the recruitment survey, but answered no questions.

10. Overall, 67 percent of respondents had actual receipt matching their survey response; 17 percent received advance payments but reported that they did not, and 2 percent did not receive payments but reported that they had done so. 14 percent said they were not sure about their receipt.

payments had a valid reason for it, such as ineligibility for the CTC. In a national poll conducted by Morning Consult (2022), half of respondents who reported not receiving any monthly payments voluntarily opted out of them.[11] We do not know whether the baseline recruitment survey respondents did not receive monthly payments because they were not eligible, chose not to receive them, or simply were not aware of them. It is possible that respondents lacked knowledge about the monthly payments; 13 percent of survey respondents said that they were not sure whether they had received payments, and 37 percent of those who actually received the advance CTC in tax records said they had not received any or were unsure.[12] Thus, respondents who reported not receiving payments are likely a combination of our target population (those who are truly not taking-up) and parents who were not collecting monthly payments because their children were not eligible for the CTC.

Table 3 shows characteristics of survey respondents in column 2.[13] We compare respondent demographics to characteristics of San Diego residents who have at least one child living in their household, as shown in Column 1. Survey respondents skewed heavily female, likely due to our recruitment method which used school communication platforms. Survey respondents were more likely to identify as Hispanic. Our survey respondents were slightly less likely to have a high school diploma or less, and more likely to have at least a bachelor's degree, relative to the average San Diego resident with children.

Online Appendix Table A3 summarizes the challenges of distributing an online survey. De-

11. Taxpayers could opt out for any reason. For instance, a tax payer may elect to opt out of monthly payments if they anticipate having a tax liability on their annual tax return and prefer for the credit to cover that tax liability.

12. One contributing factor is that advance payments were made to the primary filer on 2020 tax returns, but the survey question asked if the *respondent* had received monthly payments. If the respondent was a secondary filer on a joint return, they could have been unsure how to answer the question if payments were received by their *spouse*. Overall, 37 percent of advance CTC recipients in the tax data did not report receipt in the survey; this share was 45 percent for respondents who were a secondary filer on a joint tax return in 2021, versus 35 percent of other respondents. Thus, secondary filer status had an impact on misreporting.

13. About half of survey respondents, and over 95 percent of the experimental sample, responded to the demographic questions. Missing values are excluded when computing means in **Table 3**. **Online Appendix Table A1** includes a category for no response when computing means of demographic characteristics. In **Online Appendix Table A2**, we show demographic survey characteristics by self-reported receipt of monthly payments (the first question in the survey). There is some evidence that survey attrition was not random – parents who reported not receiving any monthly payments and who were not sure whether they received payments were less likely to complete the survey and respond to demographic questions (the last set of questions).

spite our best efforts to design a short survey, each question of the survey had large attrition, as commonly seen in online surveys (Stantcheva 2022). Respondents skimmed the questions, suggesting that they did not read carefully and may have not been aware that they were signing up to receive assistance filing their taxes.[14]

Because not all survey respondents were eligible or interested in our assistance, out of the 15,878 survey respondents, 2,200 enrolled in the research study. Eligibility criteria for inclusion in the experimental sample include (1) indicating interest in tax preparation assistance and self-reported VITA eligibility, (2) consenting to participating in the research study, and (3) sharing contact information. VITA-eligible families were most likely to be missing out on the CTC since they are low to middle income, and thus less likely to file taxes than higher income families.

A subset of the experimental sample consented to a match with tax data, our main source of study outcomes. This is because a secondary consent process in the baseline recruitment survey sought permission to share respondents' identifying information and participation status with the U.S. Treasury (see Section 5, and match details in **Online Appendix C**).[15] Out of the 2,200 parents who enrolled in the experimental sample, 1,650 consented to the match with tax data.

Column 3 of **Table 3** presents demographic characteristics of families in the experimental sample, and Column 4 presents characteristics of families who consented to the match with tax records.[16] Families in the experimental sample are more likely to be Hispanic and speak Spanish at home. They are nearly two times more likely to have a high school diploma or less, and less likely to have a college degree. Families who consented to the match with tax data are very similar to the experimental sample on all demographic characteristics, indicating that parents consenting to the match are not a highly selected group (beyond the initial selection based on interest in

14. We can get a sense of whether respondents were skimming by calculating the "reading speed": dividing the number of words in the text of each question by the amount of time that respondents spent on each page. For example, 35 percent of the experimental group read the question about interest in VITA assistance very quickly, over 600 words per minute.

15. We separated consent for a data match from the main consent to participate in the study in order to include families interested in receiving help who may have been put off by the idea of sharing data with the Treasury for the purposes of research.

16. **Online Appendix Table A4** conducts formal t-tests of differences between experimental sample members and survey respondents.

assistance).

The 2,200 families in the experimental sample were randomized into treatment and control groups in six sequential lotteries. We conducted multiple lotteries to minimize delay between families asking for tax preparation help and the research team reaching out. The families were randomized into a treatment group that would be offered the intervention (described below) and a control group with equal probability.[17]

Balance tests confirm that the treatment and control groups are comparable across key demographic characteristics in the subsample consenting to the match with tax data (see **Table 4**). A test of joint significance on all characteristics cannot reject the null hypothesis that the treatment and control groups are similar. Looking in the overall experimental sample, we continue to have balance on a joint significance test (see **Online Appendix Table A6**), although families in the treatment group were less likely to have a college education (significant at the 10% level) and had fewer children (significant at the 5% level) than families in the control group. Families that consented to the match with tax data were more likely to be in the control group than in the treatment group (77.6 percent of the control group consented to the match versus 72.4 percent of the treatment group, statistically significant at the 1 percent level). However, conditional on consent to the match, the treatment and control groups are comparable.

IV. INTERVENTION

The intervention was designed to provide information about the CTC and eligibility requirements, and significantly lower the cost (or perceived cost) of filing a tax return. The intervention consisted of three phases: (1) informational text messages, (2) scheduling appointments for tax preparation, and (3) appointments with local VITA providers.

17. The characteristics of sample members randomized in the six lotteries can be found in **Online Appendix Table A5**. Characteristics are relatively similar across all lotteries, with differences likely driven by the composition of school districts.

A. Phase I: Text message intervention

The main goal of Phase I efforts was to inform families about the CTC and other benefits of filing taxes. Using the contact information obtained in the recruitment survey, our team of research assistants texted participants in the treatment group three short, standardized messages. The messages aimed to be friendly and invited the family into a conversation, though families rarely replied. Text messages were sent in English and Spanish (participants specified their preferred language in the baseline recruitment survey).[18] The messages addressed information barriers that may have been particularly significant to San Diego families. One message reminded parents that the Child Tax Credit is not exclusively for parents; taxpayers could qualify for the CTC if they cared for grandchildren or certain other relatives.[19] This information may have been especially important for low-income families, who disproportionately live in non-traditional family structures (Noguchi 2016). Another message aimed to dispel myths prevalent in communities of undocumented immigrants (Haley et al. 2021). In this message, we explained that parents could claim the CTC even if they did not have a valid SSN. The exact text of the messages appear in **Online Appendix D**.

B. Phase II: Scheduling appointments

The goal of this phase of the intervention was to schedule appointments for the treatment group at local VITA sites. We called parents using the phone number they provided on the recruitment survey. On the call, we scheduled tax preparation appointments at a time that was convenient for them and confirmed that they had the necessary documents for a successful appointment. Calls were conducted in both English and Spanish, depending on the preference indicated on the recruitment survey.

True to the design of a high-touch, high-cost intervention, calling parents and scheduling appointments was an extremely time intensive task. Research assistants were hired to assist. We exchanged over 6,500 text messages and placed over 2,000 calls. In total, the team spent nearly

18. Contact with parents who responded in Arabic and Vietnamese in the survey was conducted in English, since they were very small in number.

19. IRS guidance for these families was provided at https://www.irs.gov/newsroom/non-traditional-families-may-qualify-for-advance-child-tax-credit-payments.

400 hours on this phase of the intervention; equivalent to hiring a full time employee for 10 weeks. The team completed an average of 2.57 cases per hour.[20]

Despite the text messages in the first phase of the intervention and advance notice letting parents know to expect a call from us, it was difficult reaching people on the phone. 36 percent of the treatment group never responded to any contact attempt. The difficulty reaching parents was surprising, but perhaps informative about the population we were trying to engage and the obstacles they faced in collecting the credit. Some were families who do not usually file taxes, due to low incomes or associated costs. They may have worked long hours, had atypical schedules, been single parents, struggled with childcare, had health concerns or disabilities, or may have experienced other stressors (divorce, custody battles, legal issues) that made it difficult for them to engage with outside help collecting the CTC.

Once we did get a parent on the phone, the team experienced challenges scheduling appointments. 46 percent of the treatment group indicated they were not interested in tax preparation help or told us that they already filed taxes. The high frequency of this occurrence was surprising, because the parents filled out the recruitment survey, which explicitly asked about whether they were interested in free tax preparation, just a few days before. Given the online format of the survey, some parents may have not read the survey attentively, and were unaware what they were signing up for (as discussed above). Anecdotally, about 5 percent of parents who picked up the phone told us that they had no recollection of filling out the survey. We also learned that some parents were not eligible for VITA, either because their households made more than $57,000 last year or had some other complicated tax situation that was out-of-scope for the VITA tax preparers.[21] In the end, 12 percent of parents in the treatment group scheduled appointments with local VITA providers.

In conversation, we found a level of distrust about the intervention among parents we spoke with, despite our attempts to conduct outreach in collaboration with a trusted school district partner,

20. Outreach to a participant was "complete" when 1) an appointment was scheduled, 2) the participant let us know that they were not interested in tax help anymore or that they had already filed, or 3) we had attempted contact three times with no response.

21. See page 5 of the VITA/TCE Volunteer Resource Guide for more details about tax situations that fall out of VITA's scope of service: https://www.irs.gov/pub/irs-pdf/p4012.pdf.

and offer of services through local nonprofits with excellent reputations. A few parents did not believe that tax preparation services were offered for free (our communications, which included phrases like "free benefit" and "free cash" may have exacerbated this effect). Others were not comfortable having their taxes filled out by a volunteer, fearing that it would compromise the quality of the return.[22]

C. Phase III: Tax appointments

We partnered with a number of San Diego community organizations to offer VITA services. Our main partner was the local branch of the International Rescue Committee (IRC). Due to the coronavirus pandemic and the omicron variant peak in January 2022, the IRC only offered tax services online. Parents who preferred in person appointments were referred to Dreams for Change (D4C), and parents who needed ITIN assistance were referred to a specialist at MAAC (Metropolitan Area Advisory Committee on Anti-Poverty).

We designed an intervention survey that was administered by the tax preparation volunteer at the VITA center to each treatment family that availed of their services (and consented to the survey). The purpose of the survey was to track families during this part of the intervention because the research team did not observe the VITA appointment directly. **Online Appendix Table A7** summarizes the results of this survey. We received 49 responses, indicating that approximately this number of families attended their appointment. Our partners were careful to complete the survey each time they worked with a family that was enrolled in the research study. However, because the nonprofits were not working exclusively with the families in our sample, it is possible that some families did attend their appointment but we have no record of it (or families attended the appointment and did not consent to the survey). Thus, the intervention survey is likely a lower bound estimate of the proportion of the treatment group that took up services.[23] The average refund

22. In fact, the opposite is true: VITA sites are specifically trained in preparing accurate returns for low- and middle-income taxpayers, which can result in a bigger refund and more accurate return than with paid tax preparers. VITA's accuracy rate is over 90 percent (https://www.irs.gov/pub/irs-utl/qss-review-results.pdf).

23. Later, we will match sample members who consented to the match with IRS tax records. Even though the administrative tax records provide a better measure of take-up rates, and allow us to compare the treatment group to the control group, the results of the intervention survey are interesting because 1) they echo the results from the tax records very well, and 2) they are available for all parents who filed through the intervention, and not only those who

as reported in the intervention survey was $5,900, with $4,100 coming from the CTC. 28 percent of families also benefited from filing taxes for prior years, further increasing their refund.[24] Given the COVID-19 pandemic, 92 percent of the meetings were conducted online via Zoom.

Although we scheduled appointments for 12 percent of the treatment group (129 out of 1,102), only 47 reported filing a federal tax return in the intervention survey. This implies that approximately 4.3 percent of the treatment group (47 out of 1,102) took up the intervention. For the sample consenting to the match with tax records, this was 4.1 percent (33 out of 798). **Online Appendix Table A8** shows how the characteristics of those who filed through the intervention compare to others in the treatment group. Those who took up the intervention and filed a tax return were more likely to be Hispanic and more likely to speak Spanish at home, suggesting that the intervention was successful at reducing language barriers.

The no-show rate for appointments we scheduled for members of our treatment group was 62 percent. Our partners, who were experienced in working with low- and middle-income tax filers at VITA sites, agreed that the rate was very high and unexpected. However, the no-show rate may be characteristic of the population we sought to engage with high barriers to filing. It was impossible to remove all costs associated with filing taxes. For example, the high documentation burden of VITA services may have been a barrier for this population. In order to have a tax return prepared by a VITA tax preparer, parents needed to show their physical Social Security card (or corresponding ITIN document) for themselves, any spouse, and all of their children. Another reason for the high no-show rate may have been the online appointments. Our partners reported that treated families struggled with technology. Taking pictures of tax documents and uploading them to an online folder sometimes took over an hour. Families persevered, but many would have benefited from an in-person appointment. It is thus possible that uptake could have been higher in a non-pandemic year with more tax preparation meetings taking place in-person.

consented to the match with tax data.

24. Families could claim tax credits such as the EITC for the past three years, if they had not already filed for prior years. https://www.irs.gov/credits-deductions/individuals/earned-income-tax-credit/how-to-claim-the-earned-income-tax-credit-eitc.

V. ANALYSIS OF OUTCOMES IN TAX RECORDS

A. Tax data

For individuals who consented to the match with tax data, we used administrative tax records stored at the IRS which include data on income, household composition, and most importantly, tax filing and receipt of the CTC. To minimize participant privacy concerns, we did not collect SSNs or ITINs in the survey; instead, we matched individuals to tax records using reported name, date of birth, and contact information as described in **Online Appendix C**. To summarize, we started with exact matches on name and date of birth, expanded to fuzzier matches for participants missed by the exact matches, and made use of relationships between parents and children (such as identifying parents based on which taxpayers claimed a child as a dependent). The records used to match included tax returns, information returns, and records of identifiers (birth records, SSN changes, and ITINs), allowing us to identify individuals who did not file taxes. Ultimately, 96 percent of the parents that consented to the use of their tax data were matched.

Individuals who consented to the match with tax data are a selected sample, but have characteristics very similar to individuals who chose not to consent to that match (see **Table 3**). Also, there is no reason to think that selection differs systematically between the treatment and control group, especially because when answering that question, respondents did not know which group they would be randomly assigned. **Table 4** confirms that we have balance across all covariates between treatment and control. Therefore, we can draw causal inference about the effect of the intervention on tax outcomes within the group that consented.

B. Estimating equation

Main Specification. We estimate the impact of our intervention using the following equation on the sample of parents that were matched to the tax data:

$$Y_i = \beta T_i + \mathbf{W_i}\gamma + \varepsilon_i$$

where Y_i is a tax outcome such as filing status in 2021 for parent i, T_i is an indicator for whether parent i was in the treatment group, and $\mathbf{W_i}$ are controls, including lottery fixed effects, gender, age, race, ethnicity, educational attainment, language spoken at home, number of children as reported on the baseline recruitment survey and variables from the tax data (prior year filing, filing a joint married return, income, VITA eligibility, and having an ITIN). ε_i is the error term. We report robust standard errors (White 1980), and do not cluster because the level of randomization (parents) is the same as the level of treatment. Since treatment is randomly assigned, β represents the causal effect of the information and counseling intervention on filing and other tax outcomes.

Heterogeneity. We are interested in whether the intervention had differential effects for some subgroups. Specifically, we hypothesize that the intervention was particularly effective for parents who did not file in 2020, who spoke Spanish at home, and who filed with an ITIN. We estimate heterogeneous treatment effects using this equation:

$$Y_i = \delta T_i + \lambda X_i + \phi X_i T_i + \mathbf{W_i}\Gamma + \varepsilon_i$$

where Y_i, T_i, and $\mathbf{W_i}$ are defined as in the main specification, and X_i is a binary variable that defines the subgroup (for instance, X_i=1 if parent i filed using an ITIN). Since treatment is randomly assigned, ϕ is the differential effect of the intervention on parents with characteristic X_i.

C. Tax data results

Table 5 shows the effect of the intervention on our two primary outcomes of interest: whether participants filed a tax return for 2021 (allowing them to claim the second half of the expanded CTC), and whether they filed a return at a VITA site (as identified via the preparer identifier in tax data). The effect of treatment on filing in our preferred specification is 2.0 percentage points (column 4, significant at the 10 percent level). This represents a small percentage increase in filing on a base of 90.9 percent filing in the control group. However, the increase in filing at a VITA site is much larger, 5.2 percent on a base of 2.7 percent (a 193 percent increase). This implies that roughly half of compliers would not have filed absent the intervention; the other half would have

filed, but were induced to use a VITA site instead of a different tax preparer, potentially saving the cost of tax preparation fees.

Examining heterogeneity in results, **Table 6** shows that the point estimates for filing and VITA usage are larger for 1) those who did not file taxes in 2020, 2) parents speaking Spanish at home, and 3) parents who had ITINs instead of SSNs. We do not have enough precision to separate effects for overall tax filing, but all of these groups have substantially larger increases in VITA filing (19.5, 7.3, and 21.9 percentage points larger, respectively). This implies that the intervention was successful in guiding groups with more barriers to tax filing (less recent filing, language barriers, or complex immigration statuses) to take advantage of free tax preparation.

Table 7 shows other outcomes from the tax data, although none have significant treatment effects. The point estimate for the increase in claiming CTC at filing (1.9 percent) is in line with the overall increase in filing. We do not find evidence of persistence in the treatment effect; members of the treatment group were no more likely to file taxes for tax year 2022, and had a 1 percent increase in future use of VITA sites (not significant).[25]

The average refund for treatment group members was $547 higher (on a base of $2,831), including $120 more in refundable credits (on a base of $4,220). While this difference is not statistically significant, it implies that the treatment group received comparable refunds to the control group. This can be used to roughly estimate the cost-effectiveness of the intervention; with about 400 hours of staff time to contact respondents, valued at the San Diego minimum wage ($15.00/hour in 2022), and assuming the VITA sites were not operating at full capacity (so the sample members did not require additional VITA resources on the margin), the total variable cost of the intervention was approximately $6,000. With 767 matched members of the treatment group, an experimentally induced 2.0 percent increase in filing, and $2,830 in refunds claimed on average, the implied total benefit to participants was over $43,000. Thus, there was a roughly 7:1 ratio of tax refunds to outreach costs for this high-touch intervention. Cash transfers to families with children

25. This contrasts with Ramnath and Tong (2017), who find persistent increases in the probability of filing after stimulus payments induced new tax filing in 2007; however, their sample was exclusively non-filers in the prior two years, unlike our sample's 90 percent rate of filing in 2019 and 2020.

have also been shown to have positive effects on numerous child outcomes (National Academies of Sciences, Engineering, and Medicine 2019), so our comparison of only monetary values likely understates the total benefits of our outreach.

VI. CONCLUSION

The COVID-era expansion of the Child Tax Credit provided both economic stimulus and redistribution to low-income families with children. For practical reasons, payments of the credit were implemented by the IRS, which could quickly locate most eligible families and disburse payments through established tax refund channels. Yet, the IRS faced major challenges in implementation: it was tasked with transferring money to newly eligible families, many of which had not previously filed taxes (and may find the tax system complex and onerous), or may have been reluctant to interact with a federal agency due to concerns about previous tax liabilities or immigration status. We designed and experimentally tested an intervention which attempted to overcome those challenges: outreach through local schools which informed families of eligibility and referred them to free VITA tax filing assistance.

A large proportion of control families (91 percent) filed taxes, which made it difficult for our intervention to precisely target the intended recipients on the margin of filing. The filing rate in our study might have been slightly inflated because of the informational content of our initial outreach (before randomization into treatment)—but Gee et al. (2022) find that 93-95 percent of children in the U.S. were claimed on tax returns in the 2017-2019 period, implying high filing rates for parents with children overall. Given this context, our approach would likely have been more efficient if we had explicitly asked survey respondents if they had filed taxes in the prior year, and prioritized previous non-filers in our outreach efforts. We were also constrained by the rapid roll-out of the policy (with roughly 11 months between the expanded CTC's enactment and the start of the tax year 2021 filing season) combined with the need to coordinate with numerous staff in our partner districts. This meant our surveys were predominately sent in March 2022, when many families we contacted stated they had already filed. Starting the experiment earlier in the tax season would have allowed our intervention to reach more families before they filed through other channels.

Despite these limitations, our treatment increased the filing rate from 91 to 93 percent, and tripled filing through VITA. Our data also suggest that the intervention increased the claiming of the expanded CTC by 1.9 percentage points (reducing non-participation by $1.9 \div 17$, or 11 percent). The effects were particularly large for previous non-filers and Spanish speaking households—as we suspected they might be, though those effects are not statistically significant. The pandemic likely reduced the potential impact of such an intervention, as it forced VITA to be mostly online, making it less attractive than usual for clients.

We have two major conclusions. First, our results demonstrate a promising path to increase filing rates and take-up of refundable tax credits. Outreach based on mailings has had difficulty increasing engagement with the tax system for non-filers (Linos et al. 2022). Our intervention was substantially more time-intensive and costly than a mailing, but still had a large ratio of benefits to costs. Second, a central hypothesis of our work was that families view school districts as trusted partners, and that reaching out to families via their children's school district would engender trust in our outreach. Our impacts on filing suggests that this outreach strategy has potential for future efforts to connect non-filers, immigrants, and other hesitant taxpayers to tax credits.

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DISCLOSURES

The authors have no financial arrangements that might give rise to conflicts of interest with respect to the research reported in this paper.

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VII. TABLES AND FIGURES

Table 1: Characteristics of participating districts and comparison areas in 2021-2022 school year

Area	Number of Schools	Total Enrolled	Children Unclaimed for CTC (OTA est.)		% of Students Who Are...	
			Total in Area	% of Enrolled	Low Income	English Learners
Participating Districts						
San Diego Unified	207	114,467	7,221	6.3	55.9	19.6
Sweetwater Union High	25	38,026	3,475	9.1	50.6	22.9
Vista Unified	27	22,092	1,901	8.6	64.2	17.3
Three District Sample	259	174,585	12,597	7.2	55.8	20.0
Comparison Areas						
San Diego County	689	481,102	24,975	5.2	48.7	18.8
California	10,325	5,959,858	371,877	6.2	48.6	19.1
United States	99,239	49,433,092	2,267,562	4.6	57.8	10.6

Sources: California Department of Education (https://www.cde.ca.gov/ds/ad/downloadabledata.asp and https://dq.cde.ca.gov/dataquest/), National Center for Education Statistics (https://nces.ed.gov/programs/digest/, Tables 204.20, 203.40, 204.06 and 204.1), and Office of Tax Analysis 2021. Notes: The estimated number of unclaimed children in a district is calculated by summing the number of children who are missing out on the CTC in ZIP codes where each district has a school. Low income students are defined as those eligible for free and reduced-price lunch.

Table 2: Receipt of monthly payments among various subsamples

	Survey Respondents	Experimental Sample	Consented to Match	Matched to Tax Data	Actually Received Advance CTC?	
Self-reported receipt of advance monthly CTC					Yes	No
Any payment	0.63	0.48	0.48	0.50	0.62	0.07
Full	0.47	0.32	0.33	*d*	*d*	*d*
Partial	0.16	0.16	0.16	*d*	*d*	*d*
No payment	0.23	0.38	0.38	0.36	0.21	0.86
Not sure	0.13	0.15	0.14	0.14	0.16	0.07
Observations	15,878	2,200	1,650	1,592	1,230	362
Share retained		0.14	0.75	0.96	0.77	

Source: Baseline recruitment survey and administrative tax data. Notes: Taxpayers are counted as actually receiving the advance CTC if 1) a payment was made to their TIN, or 2) a payment was made to the TIN of their spouse from their 2020 tax unit. [d] Value suppressed to avoid disclosure of small cells.

Table 3: Characteristics of baseline recruitment survey respondents

	San Diego Residents with Children (ACS)	Survey Respondents	Experimental Sample	Consented to Match
Female	0.56	0.78	0.78	0.78
Race/ethnicity				
Hispanic	0.38	0.50	0.61	0.61
White, non-Hispanic	0.40	0.24	0.16	0.17
Asian, non-Hispanic	0.15	0.16	0.14	0.13
Other, non-Hispanic	0.07	0.09	0.08	0.09
Educational attainment				
High school or less	0.37	0.26	0.38	0.37
At least Bachelor's	0.34	0.40	0.28	0.28
Languages spoken at home				
Spanish	0.32	0.34	0.44	0.44
Other non-English	0.17	0.12	0.14	0.13
School district				
San Diego Unified	.	0.61	0.62	0.63
Sweetwater	.	0.29	0.28	0.28
Vista	.	0.09	0.10	0.09
Observations	194,135	15,878	2,200	1,650

Source: Column 1 from the U.S. Census Bureau's 2014-2018 American Community Survey (ACS), accessed using Ruggles et al. (2024); columns 2-4 from the baseline recruitment survey.

Notes: All measures are self-reported, and missing values are excluded when computing means (8,266 survey respondents reported at least one demographic variable). The sample that consented to the match with tax data (column 4) is a subset of the experimental sample (column 3), which is a subset of the survey respondents (column 2). In columns 2-4, sex and race/ethnicity are reported for the responding parent, educational attainment is reported for both the responding parent and their parter, if any, and school district of respondent is imputed based on the date of the survey and the date that the survey was sent out to each district. Observations from the ACS are person-weighted average yearly counts.

Table 4: Balance table of means for sample consenting to match with tax data

	Treatment	Control	Difference	p-value
Panel A: Baseline survey				
Female	0.788	0.780	0.008	0.705
Race/ethnicity				
Hispanic	0.622	0.603	0.019	0.426
White, non-Hispanic	0.161	0.173	-0.012	0.520
Asian, non-Hispanic	0.130	0.139	-0.009	0.597
Other, non-Hispanic	0.087	0.085	0.002	0.908
Educational attainment				
High school or less	0.394	0.355	0.039	0.106
At least Bachelor's	0.262	0.294	-0.032	0.153
Languages spoken at home				
Spanish	0.431	0.439	-0.008	0.747
Other non-English	0.128	0.130	-0.002	0.882
School district				
San Diego Unified	0.634	0.619	0.016	0.515
Sweetwater	0.284	0.279	0.005	0.817
Vista	0.081	0.102	-0.021	0.147
Age	40.574	40.929	-0.355	0.390
Number of children	1.832	1.898	-0.066	0.151
Matched to tax data	0.961	0.968	-0.007	0.430
Observations	798	852		
p-value from F-test of joint significance	0.670			
Panel B: Tax Data (among matched sample)				
Filed in...				
2018	0.83	0.82	0.01	0.52
2019	0.90	0.90	0.00	1.00
2020	0.90	0.91	-0.01	0.47
Joint filer in...				
2018	0.40	0.40	-0.01	0.77
2019	0.41	0.41	0.00	0.97
2020	0.39	0.41	-0.02	0.31
Income in 2020 ($1000s)	57.44	57.41	0.03	0.99
Income $< \$57,000$ (VITA-eligible)	0.65	0.67	-0.03	0.23
ITIN for parent	0.06	0.06	0.00	0.71
Observations	767	825		
p-value from F-test of joint significance	0.385			

Source: Baseline recruitment survey. Notes: See notes to Table 3 about the baseline recruitment survey. Income from tax data is Adjusted Gross Income from the tax return or sum of income from information returns for non-filers. p-values from t-tests: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 5: Filing outcomes from tax data

	(1)	(2)	(3)	(4)
Outcome: Filed 2021 tax return				
Treatment	0.017	0.021*	0.019	0.020*
	(0.014)	(0.012)	(0.012)	(0.012)
Filed in 2020		0.463***	0.404***	0.403***
		(0.042)	(0.049)	(0.048)
Constant	0.909***	0.486***	0.477***	0.616***
	(0.010)	(0.042)	(0.050)	(0.068)
Tax Controls	No	No	Yes	Yes
Survey Controls	No	No	No	Yes
Observations	1,592	1,592	1,592	1,592
Outcome: Filed through VITA in 2021				
Treatment	0.052***	0.051***	0.051***	0.052***
	(0.011)	(0.011)	(0.011)	(0.011)
Filed in 2020		-0.086***	-0.012	-0.012
		(0.028)	(0.032)	(0.032)
Constant	0.027***	0.105***	0.108***	0.009
	(0.006)	(0.026)	(0.034)	(0.057)
Tax Controls	No	No	Yes	Yes
Survey Controls	No	No	No	Yes
Observations	1,592	1,592	1,592	1,592

Source: Baseline recruitment survey and administrative tax data. Notes: Controls are as listed in Table 4, with tax controls from panel B, and survey controls from panel A, plus missing survey variables added as separate categories and lottery fixed effects. Robust standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 6: Heterogeneity in filing outcomes from tax data

	Filed 2021 Tax Return			Filed through VITA in 2021		
	(1)	(2)	(3)	(4)	(5)	(6)
Treatment	0.010	0.017	0.016	0.034***	0.021	0.039***
	(0.010)	(0.016)	(0.012)	(0.011)	(0.013)	(0.011)
Treatment × Non-Filer in 2020	0.108			0.195***		
	(0.083)			(0.051)		
Treatment × Spanish		0.008			0.073***	
		(0.025)			(0.023)	
Treatment × ITIN			0.070			0.219***
			(0.069)			(0.068)
Tax Controls	Yes	Yes	Yes	Yes	Yes	Yes
Survey Controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,592	1,592	1,592	1,592	1,592	1,592
Control mean (baseline)	0.95	0.92	0.92	0.03	0.03	0.03
Control mean (subgroup)	0.44	0.89	0.80	[d]	0.02	[d]

Source: Baseline recruitment survey and administrative tax data. Notes: Controls are as listed in Table 4, with tax controls from panel B, and survey controls from panel A, plus missing survey variables added as separate categories and lottery fixed effects. Robust standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. [d] Value suppressed to avoid disclosure of small cells.

Table 7: Other outcomes from tax data

	(1) Claimed CTC	(2) Refund Amount ($)	(3) Refundable Credits ($)	(4) Filed in 2022	(5) VITA in 2022
Treatment	0.019	547.0	120.4	0.000	0.010
	(0.016)	(539.1)	(154.7)	(0.017)	(0.009)
Tax Controls	Yes	Yes	Yes	Yes	Yes
Survey Controls	Yes	Yes	Yes	Yes	Yes
Observations	1,592	1,592	1,592	1,592	1,592
Control mean	0.83	2830.6	4219.8	0.85	0.025

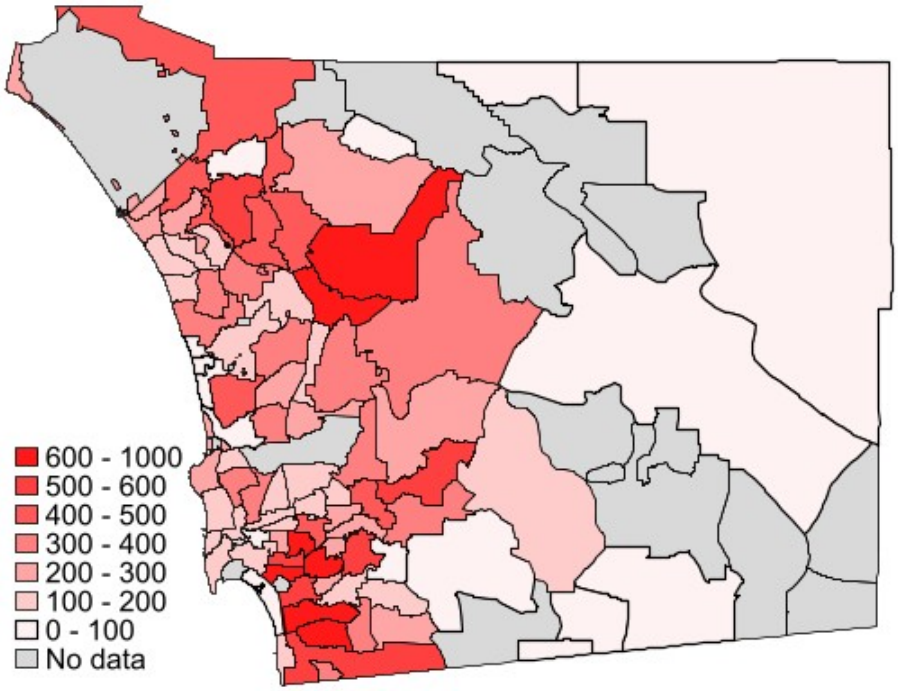
Source: Baseline recruitment survey and administrative tax data. Notes: Controls are as listed in Table 4, with tax controls from panel B, and survey controls from panel A, plus missing survey variables added as separate categories and lottery fixed effects. Robust standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

ONLINE APPENDIX for "Boosting Take-Up of the Expanded Child Tax Credit Through School-Based Outreach"

by Beata Łuczywek, Kye Lippold, Julian Betts, and Eli Berman

A. ONLINE APPENDIX: TABLES AND FIGURES

Figure A1: Number of children unclaimed for the CTC by ZIP code in San Diego county



Source: Office of Tax Analysis 2021 and SANDAG GIS zip code shapefile (https://sdgis-sandag.opendata.arcgis.com/datasets/zip-code/about).

Table A1: Characteristics of baseline recruitment survey respondents, with missing values

	Survey Respondents	Experimental Sample	Consented to Match
Sex			
Female	0.41	0.77	0.78
Missing or no response	0.49	0.01	0.00
Race/ethnicity			
Hispanic	0.25	0.59	0.60
White, non-Hispanic	0.12	0.15	0.16
Asian, non-Hispanic	0.08	0.14	0.13
Other, non-Hispanic	0.05	0.08	0.08
Missing or no response	0.51	0.04	0.02
Educational attainment			
High school or less	0.13	0.37	0.37
At least Bachelor's	0.20	0.26	0.27
Missing or no response	0.50	0.04	0.02
Languages spoken at home			
Spanish	0.18	0.44	0.44
Other	0.06	0.13	0.13
Missing or no response	0.48	0.01	0.00
School district			
San Diego Unified	0.61	0.62	0.63
Sweetwater	0.29	0.28	0.28
Vista	0.09	0.10	0.09
Observations	15,878	2,200	1,650

Source: Baseline recruitment survey. Notes: See notes to Table 3.

Table A2: Characteristics of survey respondents by self-reported receipt of monthly payments

	Full	Partial	None	Not sure
Female	0.80	0.78	0.74	0.79
Race/ethnicity				
Hispanic	0.27	0.25	0.23	0.20
White, non-Hispanic	0.11	0.16	0.12	0.10
Asian, non-Hispanic	0.08	0.08	0.08	0.06
Other, non-Hispanic	0.05	0.05	0.04	0.04
Missing or no response	0.49	0.45	0.53	0.61
Educational attainment				
High school or less	0.14	0.10	0.14	0.12
At least Bachelor's	0.18	0.27	0.22	0.16
Missing or no response	0.48	0.44	0.52	0.59
Languages spoken at home				
Spanish	0.19	0.18	0.17	0.14
Other	0.06	0.06	0.08	0.05
Missing or no response	0.46	0.42	0.50	0.57
Age	39.36	40.50	41.13	42.43
Number of children	1.93	1.85	1.82	1.96
Observations	7469	2593	3688	2128

Source: Baseline recruitment survey. Notes: See notes to Table 3.

Table A3: Baseline recruitment survey attrition by question

	Survey Respondents		Experimental Sample	
	Count	Share	Count	Share
Answered monthly payments question	15,878	1.00	2,200	1.00
Interested in VITA assistance	7,370	0.46	2,200	1.00
Consented to research study	3,716	0.23	2,200	1.00
Filled in parent information	2,466	0.16	2,200	1.00
Filled in child information	2,379	0.15	2,190	1.00
Filled in demographics	2,352	0.15	2,174	0.99
Consented to match with tax data	1,786	0.11	1,650	0.75

Source: Baseline recruitment survey. Notes: VITA = Volunteer Income Tax Assistance.

Table A4: Difference between experimental sample and survey respondents

	Sample	Not in Sample	Difference	p-value
Female	0.783	0.784	-0.002	0.863
Advance CTC receipt				
Full	0.322	0.494	-0.172***	0.000
Partial	0.155	0.165	-0.009	0.283
None	0.376	0.209	0.167***	0.000
Not sure	0.146	0.132	0.014*	0.067
Race/ethnicity				
Hispanic	0.615	0.460	0.154***	0.000
White, non-Hispanic	0.158	0.275	-0.117***	0.000
Asian, non-Hispanic	0.143	0.167	-0.024***	0.010
Other, non-Hispanic	0.084	0.097	-0.013*	0.073
Educational attainment				
High school or less	0.383	0.218	0.165***	0.000
At least Bachelor's	0.276	0.443	-0.168***	0.000
Languages spoken at home				
Spanish	0.442	0.301	0.141***	0.000
Other non-English	0.136	0.117	0.019**	0.023
School district				
San Diego Unified	0.617	0.611	0.007	0.552
Sweetwater	0.283	0.297	-0.014	0.174
Vista	0.100	0.092	0.008	0.256
Observations	2,200	13,678		

Source: Baseline recruitment survey. Notes: See notes to Table 3. p-values from t-tests: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A5: Characteristics of experimental sample by lottery

	Feb-08	Feb-23	Mar-11	Mar-28	Apr-08	Apr-21
Consented to match with tax data	0.72	0.77	0.77	0.74	0.65	0.57
Self-reported receipts of advance monthly CTC						
Full	0.41	0.37	0.33	0.27	0.20	0.07
Partial	0.14	0.13	0.15	0.18	0.15	0.36
None	0.34	0.36	0.37	0.40	0.40	0.36
Not sure	0.11	0.14	0.15	0.14	0.25	0.21
Female	0.82	0.77	0.78	0.78	0.75	0.75
Race/ethnicity						
Hispanic	0.74	0.83	0.56	0.50	0.53	0.50
White, non-Hispanic	0.18	0.04	0.18	0.21	0.15	0.38
Asian, non-Hispanic	0.04	0.09	0.18	0.17	0.15	0.00
Other, non-Hispanic	0.04	0.04	0.08	0.12	0.18	0.12
High school or less	0.56	0.43	0.34	0.35	0.27	0.25
At least Bachelor's	0.18	0.20	0.32	0.30	0.35	0.38
Languages spoken at home						
Spanish	0.58	0.59	0.41	0.33	0.44	0.38
Other non-English	0.04	0.08	0.17	0.16	0.18	0.00
School district						
San Diego Unified	0.00	0.00	0.80	0.99	0.98	1.00
Sweetwater	0.00	0.96	0.19	0.01	0.02	0.00
Vista	1.00	0.04	0.01	0.00	0.00	0.00
Age	38.30	42.27	41.35	39.53	42.21	40.88
Number of children	1.78	1.92	1.88	1.83	1.83	2.43
Observations	192	489	760	680	65	14

Source: Baseline recruitment survey. Notes: Each column represents a lottery (identified by date of the lottery in 2022). See notes to Table 3.

Table A6: Balance table - experimental sample

	Treatment	Control	Difference	p-value
Consented to match with tax data	0.724	0.776	-0.052***	0.005
Female	0.787	0.778	0.009	0.616
Race/ethnicity				
Hispanic	0.618	0.611	0.008	0.717
White, non-Hispanic	0.157	0.159	-0.002	0.892
Asian, non-Hispanic	0.140	0.146	-0.006	0.702
Other, non-Hispanic	0.084	0.084	0.000	0.980
Educational attainment				
High school or less	0.397	0.369	0.029	0.177
At least Bachelor's	0.258	0.293	-0.035*	0.073
Languages spoken at home				
Spanish	0.438	0.446	-0.009	0.688
Other non-English	0.136	0.135	0.001	0.970
School district				
San Diego Unified	0.615	0.619	-0.004	0.845
Sweetwater	0.291	0.274	0.017	0.372
Vista	0.093	0.107	-0.013	0.306
Age	40.574	40.929	-0.355	0.390
Number of children	1.827	1.907	-0.081**	0.044
Observations	1,102	1,098		
p-value from F-test of joint significance	0.621			

Source: Baseline recruitment survey. Notes: See notes to Table 3. p-values from t-tests: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A7: Results from intervention survey

	Mean
Filing status	
Filed federal return TY 2021	0.96
Filed California return TY 2021	0.86
Net refund for TY 2021, federal and state ($)	5,893
Federal return	
Owed a refund TY 2021	0.88
Refund, if owed ($)	6,416
Had liability to IRS TY 2021	0.08
Liability, if had ($)	1,303
California return	
Owed a refund TY 2021	0.59
Refund, if owed ($)	624
Had liability to FTB TY 2021	0.00
Child Tax Credit (CTC)	
Children claimed for the CTC	1.77
Total claimed ($)	5,074
Total claimed through advance payments ($)	929
Total claimed through filing ($)	4,105
Other credits claimed (TY 2021)	
Recovery Rebate Credit	0.41
Federal EITC	0.33
Other dependent credit	0.04
Young Child Tax Credit	0.06
California EITC	0.12
Tax preparation appointment	
In-person	0.08
Online	0.92
Meeting length	
$<$ 1 hour	0.30
1-2 hours	0.26
2+ hours	0.44
Language(s) used in meeting	
English	0.71
Spanish	0.35
Claiming the CTC was... 1 (very difficult)-5(very easy)	4.11
Observations	49

Source: Intervention survey. Notes: TY = Tax Year. FTB = Franchise Tax Board. EITC = Earned Inocme Tax Credit. ITIN = Individual Tax Identification Number. All measures are self-reported with assistance from the VITA (Volunteer Income Tax Assistant) preparer at community partners.

Table A8: Difference between treatment group and those who filed through the intervention

	Treatment, Filed Through Intervention	Treatment, Did Not File Through Intervention	Difference	p-value
Consented to match with tax data	0.702	0.725	-0.023	0.730
Female	0.872	0.783	0.089	0.144
Race/ethnicity				
Hispanic	0.778	0.611	0.167**	0.024
White, non-Hispanic	0.067	0.161	-0.095*	0.088
Asian, non-Hispanic	0.067	0.143	-0.077	0.147
Other, non-Hispanic	0.089	0.084	0.005	0.910
Educational attainment				
High school or less	0.489	0.393	0.096	0.187
At least Bachelor's	0.170	0.263	-0.092	0.158
Languages spoken at home				
Spanish	0.638	0.429	0.210***	0.005
Other non-English	0.043	0.140	-0.097*	0.057
School district				
San Diego Unified	0.574	0.617	-0.043	0.557
Sweetwater	0.191	0.296	-0.104	0.124
Vista	0.234	0.087	0.147***	0.001
Age	41.788	40.521	1.267	0.386
Number of children	1.702	1.832	-0.130	0.340
Observations	47	1,055		

Source: Baseline recruitment survey. Notes: See notes to Table 3. p-values from t-tests: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

B. ONLINE APPENDIX: BASELINE RECRUITMENT SURVEY

Survey logic is italicized.

Survey consent

The US government now provides up to $3,600 per child to parents and caretakers, yet many families in San Diego are not collecting their payments. We are researchers at UC San Diego working with schools to help families get their payment. We are surveying all families in your school district.

The main benefits from participating in this survey are: you may learn that you are eligible for this child payment, and you may receive free assistance signing up for this payment. The main risk to participating is a loss of confidentiality, but this risk is very small. The research team will follow the strictest protocols to protect your privacy, storing any information that may identify you on encrypted, password-protected computers. We will not share your answers with your school, the district, or with anyone else outside our research team. There is also a risk of boredom or fatigue as you take the survey, but the risk is very small since the survey is short. It should take you no more than 5-10 minutes to complete. There will be no direct cost to you, or compensation, for participating in this survey.

Your participation is voluntary. You may refuse to participate in this survey for any reason. The alternative to participating in this survey is not participating. You may exit this survey at any time.

Please click "agree" if you are at least 18 years old and wish to participate in this survey.

(1) Agree

Question 1

A new federal program gives families up to $3,600 for each child under 6 years old and up to $3,000 for children aged 6 to 17. Half of this child credit has been available through monthly payments of up to $300 per child aged 0-5 (or up to $250 per child aged 6-17), which began in

July.

Have you been receiving these monthly payments?

(1) Yes, I have received payments of the correct amount every month since July.

(2) Yes, partially (I received only some of the payments and/or payments of an incorrect amount).

(3) No, I have not received any monthly payments.

(4) I am not sure.

Question 2

If Q1 = 1. Yes.

Did you know that half of the credit, or up to $1,800 for children aged 0-5 and up to $1,500 for children aged 6-17, is available to you only if you file a tax return for 2021? The second half of the credit will not be given out through monthly payments.

We are offering free tax preparation services to families who earned less than $57,000, have limited English ability, or have a member with a disability. The tax preparation expert can confidentially answer any questions you may have that are specific to your situation. The tax preparation service is offered by IRS-certified tax preparation experts and are among the most reliable in the industry. If you receive a child payment by filing a tax return, you will not have to pay it back.

Would you like help determining your eligibility for the child credit or help filing an income tax return to claim the credit?

(1) Yes

(2) No

If Q1 = 2. Yes, partially.

Did you know that even if you did not receive all of the monthly payments, or you received the wrong amount, filing a tax return will fix this mistake? You can claim the correct credit amount that you are owed when you file a tax return for 2021.

We are offering free tax preparation services to families who earned less than $57,000, have limited English ability, or have a member with a disability. The tax preparation expert can confidentially answer any questions you may have that are specific to your situation. The tax preparation service is offered by IRS-certified tax preparation experts and are among the most reliable in the industry. If you receive a child payment by filing a tax return, you will not have to pay it back.

Would you like help determining your eligibility for the child credit or help filing an income tax return to claim the credit?

(1) Yes

(2) No

If Q1 = 3. No, or 4. Not sure.

Nearly all children living in the US are eligible for this child benefit, including children of parents who do not work or are self-employed, and children of parents who are undocumented.

You can claim the payment for your child if he/she:

- has a valid SSN (social security number),
- was 17 years old or younger on December 31, 2021,
- lived in a household with family income below $240,000 if not married (below $440,000 if married),
- and lived in your household for more than half the year.

A primary caregiver is eligible to claim the child payment even if they are not the parent.

We are offering free tax preparation services to families who earned less than $57,000, have limited English ability, or have a member with a disability. The tax preparation expert can confidentially answer any questions you may have that are specific to your situation. The tax preparation

service is offered by IRS-certified tax preparation experts and are among the most reliable in the industry. If you receive a child payment by filing a tax return, you will not have to pay it back.

Would you like help determining your eligibility for the child credit or help filing an income tax return to claim the credit?

(1) Yes

(2) No

If Q2=2 [skip Q4-Q6]

Thank you. We would still like to collect some survey data from you for statistical purposes, even if you do not wish to participate in our research study. Your answers are voluntary and will not be shared with anyone outside our research team. This is the final section of the survey.

Continue to BASIC DEMOGRAPHICS.

Question 3

Before we contact you to help, we must make sure that you understand a few things. Please read them before agreeing to receive help:

A. This help is available as a part of an independent research project conducted by Dr. Eli Berman, Dr. Julian Betts, and Beata Luczywek from the University of California, San Diego. We, the researchers, would like to learn how the cash benefit affects families with children.

B. Due to staff limitations, we cannot help everyone. If you choose to participate, you will be assigned by chance to either receive help now, or to receive it at a later date. Neither you nor the researchers can choose the group to which you are assigned. If more families are interested in this assistance than we can provide for, we will prioritize families who have not received monthly payments.

C. We would like your permission to ask the tax preparation expert if you used their services, and in addition, we would like your permission to study your child(ren)'s test scores,

grades, attendance record, and physical fitness test results. To protect privacy, this information will be kept confidential and will not be shared with anyone outside of the research team. Once the study concludes, we will destroy information identifying you and/or your child(ren).

D. There are no risks to participating in the study beyond risks that you may encounter in your daily life. The biggest risk is a loss of confidentiality, but this risk is very small. The research team will follow the strictest protocols to protect your privacy. Any information that may identify you is stored on encrypted, password-protected computers only accessible to the research team. Research findings will be presented in ways that make it impossible to identify individuals. In addition, filing taxes with a tax expert's assistance may reveal a tax liability, which could be distressing, but would be encountered in daily life. Eligible families are much more likely to collect a credit than to owe net taxes.

E. Participation in this research study is entirely voluntary. Declining to participate does not affect your eligibility for any public benefit. If you participate, you are not restricted from applying for any benefit on your own. The alternative to participating in this study is not participating.

F. There will be no direct cost to you, or compensation, from participating in the study.

G. By agreeing to participate, you indicate that you are at least 18 years old, and that you consent to have the date that you receive help (now, or later) be selected at random. You also consent to give the research team access to information about you and your child(ren), as described above.

Do you agree to participate in this research study?

(1) Yes, I agree to participate in this research study.

(2) No, I do not agree to participate.

If Q3=2 [skip Q4-Q6]

Thank you. We would still like to collect some survey data from you for statistical purposes, even if you do not wish to participate in our research study. Your answers are voluntary and will not be shared with anyone outside our research team. This is the final section of the survey.

Continue to BASIC DEMOGRAPHICS.

If Q3=1, continue to following questions

Question 4

Thank you for agreeing to participate in our research study. If you have any questions or wish to withdraw your consent to participate, contact us by email: CTCstudy@mail.ucsd.edu or by phone (call or text): (858) 621-3939. If you have any questions about your rights as a research subject, please contact the UCSD Human Research Protections Program Office at (858) 246-HRPP (858-246-4777).

Please share your name, phone number, and email address where you can be reached by the research team and by a certified tax preparation expert.

Your name: (Enter full name)

Your cell phone number: (Enter phone number)

Your email address: (Enter email address)

Question 5

Which language do you prefer to be contacted in? (please select one)

(1) English

(2) Spanish

(3) Filipino/Tagalog

(4) Chinese, Mandarin

(5) Chinese, Cantonese

(6) Vietnamese

(7) Japanese

(8) Arabic

(9) Somali

(10) Russian

(11) Other [please specify by writing the name of the language in the box]

Question 6

This assistance is only available to parents and caretakers with at least one child registered in the school district. Please provide the full name(s) of your child(ren):

Full name of Child 1: (Enter child's full name)

Full name of Child 2: (Enter child's full name)

...

Full name of Child 8: (Enter child's full name)

What is [insert name of Child 1]'s date of birth?

(Enter date of birth)

Which grade is [insert name of Child 1] in?

(1) Preschool

(2) Kindergarten

(3) Grade 1

(4) Grade 2

(5) Grade 3

(6) Grade 4

(7) Grade 5

(8) Grade 6

(9) Grade 7

(10) Grade 8

(11) Grade 9

(12) Grade 10

(13) Grade 11

(14) Grade 12

(15) Other

(16) Not enrolled in school

Which school does [insert name of Child 1] attend?

District: (Enter name of district currently attending)

School: (Enter name of school currently attending)

Repeat question about date of birth, grade, district, and school for each child.

After Q4-Q6, display:

Please answer a few more questions, to help us understand how to help families receive the cash benefits. Your answers are voluntary and will not be shared with anyone outside our research team. Declining to answer will not affect your access to help receiving benefits, which you signed up for earlier. Continue to BASIC DEMOGRAPHICS.

BASIC DEMOGRAPHICS

1. What is the highest level of education you, or your spouse/partner (if any), have attained?

    (1) Less than high school

    (2) High school diploma

    (3) General Education Diploma (GED) or alternative high school equivalency

    (4) Some college or vocational training, but no degree or certificate

    (5) Technical or vocational certificate

    (6) Associate degree

    (7) Bachelor's degree

    (8) Master's degree

    (9) Professional degree (M.D., J.D., Psy.D, Pharm.D., etc)

    (10) Doctorate degree (Ph.D., Ed.D., etc)

    (11) Prefer not to say

2. What is your sex?

    (1) Male

    (2) Female

    (3) Nonbinary

    (4) Prefer not to say

3. What is your race? (check all that apply)

    (1) White

(2) Black or African American

(3) American Indian or Alaskan Native

(4) Chinese

(5) Vietnamese

(6) Filipino

(7) Asian, other

(8) Other race [enter race]

(9) Prefer not to say

4. Are you of Hispanic, Latino, or Spanish origin?

(1) Yes, Hispanic, Latino, or Spanish origin

(2) No, not of Hispanic, Latino, or Spanish origin

(3) Prefer not to say.

5. What language(s) do you speak at home with your child(ren)? (check all that apply)

(1) English

(2) Spanish

(3) Filipino/Tagalog

(4) Chinese, Mandarin

(5) Chinese, Cantonese

(6) Vietnamese

(7) Japanese

(8) Arabic

(9) Somali

(10) Russian

(11) Other [enter language]

(12) Prefer not to say

If Q2=2 or Q3=2, end survey.

If Q3=1, continue to ADDITIONAL CONSENT

ADDITIONAL CONSENT for match with tax records

We (the researchers), would also like to learn how the child credit affects earnings and other outcomes for families like yours. This is an important policy question for which we lack good evidence. To study it well, we would like to use reports from the U.S. Treasury to compare the average outcomes of families who receive help now (through this experiment) with the average outcomes of families who receive help later. For this purpose, may we share information that identifies you as a participant in this research study with the U.S. Treasury?

Your answer to this question will NOT affect your eligibility to receive assistance accessing the child payment, which you signed up for earlier.

Please be assured that the privacy of your tax records is strongly protected by US law. Researchers and schools will never see your individual tax information. Once the study concludes, the Treasury will destroy all information identifying you as participants in this research study.

Declining to share this information with the U.S. Treasury will not affect your eligibility to receive help.

Do you agree to share the information described above with the U.S. Treasury?

(1) Yes, I agree to share this information with the U.S. Treasury.

(2) No, I do not agree to share this information with the U.S. Treasury.

Thank you for helping us learn more about how the child credit helps families with children. Please enter your full legal name, date of birth, and zip code to share with the Treasury:

Enter your full legal name: (Enter your full legal name)

Enter your date of birth (mm/dd/yyyy): (Enter your date of birth)

Enter the zip code of your primary residence: (Enter the zip code of your primary residence)

Thank you for participating in this survey.

Your response has been recorded.

C. ONLINE APPENDIX: MATCHING PROCEDURE FOR TAX RECORDS

To minimize respondent concerns about confidentiality, we did not collect Taxpayer Identification Numbers (TINs) from the experimental sample. Instead, we collected the following information from people who consented to the match with tax records:

- Name and date of birth of parent answering survey
- Name and date of birth of all children in the household
- ZIP code of parent residence
- Email address and phone number of the parent

An important limitation is that the administrative databases available to this project did not have name information for the universe of people with SSNs; thus, several separate databases were queried sequentially to find matches in a hierarchical manner, as follows:

A. Matching for Parents

1. Exact matching on parent first and last name and date of birth to the following data sources:
   (a) Information returns submitted to the IRS for 2016-2021 (such as Forms W-2, 1099-INT, SSA-1099, etc.).
   (b) Tax returns (Form 1040) from 2016-2020.
   (c) Health insurance information returns (Form 1095-A/B/C) from 2016-2021.

   In the case of duplicate matches, we prioritized records that had the following characteristics over those that did not:
   - Matching middle initial.
   - ZIP code on the administrative data source matching the parent ZIP code from the survey.

- State location in California on the administrative data source.
- Records with an inconsistent middle initial and an address outside California were dropped.[1] Thus, records outside California were only used if they had a matching middle initial (using non-California records at all allowed for matching individuals who moved into California in 2021).
- Most recent tax year.
- Any remaining duplicates were not treated as matches.

2. Exact match on parent email address or phone number to tax returns from 2016-2020.
   - To validate, we only included matches where the date of birth or first name of the parent matched the tax return, allowing fuzzy matches for date of birth.[2]
3. Exact match on first name and date of birth, and expanded match on last name (using either of the last two words in the name, removing suffixes, and/or removing hyphens), to the following sources:
   (a) Information returns from 2016 to 2021.
   (b) Birth records of requests for SSNs from 1983 to 2021.
   (c) Records of SSN changes from 2015 to 2021.
   (d) ITIN applications before 2022.
4. Exact match on first name and date of birth, and fuzzy match on last name, with information returns, Forms 1095, and ITIN applications from 2016 to 2021.
   - First, counted a record as a match if the survey last name matched any word in the administrative data last name.
   - Second, if the similarity score of a bigram-based string comparison of the survey

1. This was not done for all records because multi-word last names could appear to be middle names, which would eliminate some true matches; however, location outside of California was viewed as suggestive that the record was not a true match.

2. The fuzzy matches on date of birth counted matches if any two of the month, day, and year fields matched, or the month and day fields were transposed, so long as the year was within 3 years of the survey-reported year (or the year of birth was 2010 or greater, implying a typo in the year).

and administrative data last names was above a threshold, the record was counted as a match.

B. Matching for Children

1. Exact match on child first name, last name, and date of birth to birth records of requests for SSNs from 1983 to 2021.
   - In the case of duplicates, those with the same middle name were preferred, then those with a matching parent date of birth or last name; remaining duplicates and records with mismatches on middles names were dropped.
2. Exact match on child first name, last name, and date of birth to health insurance information returns (Form 1095-A/B/C) from 2016-2021.
   - In the case of duplicates, prioritize them with the characteristics used for Forms 1095 for parents. Also prefer observations where the payee on the form had the same date of birth, first name, or last name as the parent.
3. Exact match on child first name and date of birth, and expanded match on last name (using either of the last two words in the name, removing suffixes, and/or removing hyphens), to the following sources:
   - Birth records of requests for SSNs from 1983 to 2021.
   - Records of SSN changes from 2015 to 2021.
   - ITIN applications before 2022.
4. Exact match on child first name and date of birth, and fuzzy match on last name, with birth records, Forms 1095, and ITIN applications.
   - First, counted a record as a match if the survey last name matched any word in the administrative data last name.
   - Second, if the similarity score of a bigram-based string comparison of the survey and administrative data last names was above a threshold, the record was counted

as a match.

C. Combining Parent and Child matches

1. If the first name or date of birth of the survey parent matched that of a parent reported on a child's birth record, or a policyholder reported on Form 1095, we assigned that parent's TIN to the survey parent. Fuzzy birth date matches were allowed.

2. For all children where a TIN was previously identified, we searched tax records from 2016 to 2020 for parents who claimed that child as a dependent. If the survey parent first name or (fuzzy) date of birth matched the primary or secondary taxpayer claiming the child, or an exact match of date of birth of a follow dependent on the return (capturing multi-generational households), we assigned that TIN as the parent TIN.

3. For all parents with a TIN, we found dependents they claimed on tax returns from 2016 to 2020. If the date of birth was a (fuzzy) match to the survey child, we assigned that dependent's TIN to the child.

D. For records that remained unmatched, we repeated the steps above but allowed the use of information from calendar year 2022, specifically tax returns, birth records, and ITIN applications filed in 2022.

   - Using this information has a tradeoff; these returns are potentially an outcome of the intervention, so many not be exogenous, but we also want to capture parents who never filed prior to the intervention. Results are robust to excluding the small number of parents identified using 2022 information.

After this matching, the distribution of matches by source for parents is shown in **Table C1**. 96 percent of the sample was matched, with 85 percent captured by an exact name and date of birth match to tax or information returns, and the remaining 11 percent matched with contact information, fuzzy matches, or child information.

Table C1: Matching methods used for sample that consented to match with tax records

	Percent
No Match	4
A1. Parent Name/DOB exact match	
(a) Information Return	79
(b) Tax return	3
(c) Health Insurance (Form 1095)	3
A2. Tax return email/phone match	3
A3. SSN/ITIN expanded last name match	2
A4. Info return fuzzy last name match	[d]
C. Tax return found via child	4
D. Match to 2022 information only	[d]
Observations	1650

Source: Administrative tax data matched to sample from baseline recruitment survey that consented to match with tax records. [d] Value suppressed to avoid disclosure of small cells.

D. ONLINE APPENDIX: INTERVENTION TEXT MESSAGES

"Hi, [parent name]. This is Beata from the research team at UCSD. We are studying how to help taxpayers claim the Child Tax Credit when filing taxes. You agreed to participate in our project when completing our online survey. Thank you for joining our study. We have great news! We have selected you to receive free assistance signing up for the Child Tax Credit. To claim this free benefit, you need to file taxes. In the next few days, we will text you some tips to make tax filing faster and easier. We will also reach out to schedule your meeting with one of our tax experts within the next week. Do you have any questions about the Child Tax Credit?"

(excerpt from Message 1)

*"You can claim the money for your child, even if you or another member of your household is undocumented. To receive the free cash benefit, *your child* must have a valid SSN (Social Security Number). You can collect the benefit even if you as *the parent or guardian* do not have a valid SSN by filing using an ITIN (Individual Tax Identification Number). If you do not have an ITIN, our tax experts can help you apply for one."*

(excerpt from Message 2)

"You may qualify for the Child Tax Credit if you care for a child who is your grandchild, younger sibling, step-sibling, half-sibling, or even a niece or nephew. To be eligible, the child must live with you for more than half of the year 2021 and you must provide most of that child's financial support. Claim the credit by filing taxes!"

(excerpt from Message 3)

"Thank you again for joining our study. I will call you soon (sometime later today) to schedule your tax appointment. Please, respond "OK" to this message, or if you would like me to call you on a different day, respond to this message with your preferred time

or day”.

(excerpt from Message 3)