

Measuring Take-up of the California EITC with State Administrative Data

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Abstract

The Earned Income Tax Credit (EITC) is the largest cash-based means-tested transfer program in the United States. In 2021, 31 million households received \$64 billion from the federal EITC. Twenty-eight states also offer eligible taxpayers a supplement to the federal program. An estimated one-fifth of eligible households fail to claim the federal credit, but little is known about take-up of these state programs. We use administrative data from California on the population of Supplemental Nutrition Assistance Program (SNAP) recipients linked to state tax records to estimate the number of households who are eligible for California's supplement to the federal EITC (CalEITC) but do not claim it. We find that over 400,000 households who received SNAP benefits and who were eligible for the state EITC in 2017 did not receive the credit. This includes approximately 40,000 eligible households who claimed the federal EITC but not the state credit; nearly 98,000 eligible households who filed a state tax return but did not claim the state or federal credit; and roughly 270,000 eligible households who did not file a state tax return. The corresponding take-up rate for the CalEITC among eligible SNAP-enrolled households was 54%. Altogether, these households left a total of \$71 million in state EITC funds on the table. If received, these credits would have increased incomes among these households by 2.7% and increased total state EITC outlays by 20%.

Keywords: Administrative Data, California Earned Income Tax Credit, Social Safety Net, Take-up.

JEL Classification: H240, H710, I380

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1 Introduction

The Earned Income Tax Credit (EITC) is the largest means-tested cash transfer program in the United States. In 2021, 31 million households – one-fifth of all tax units and nearly one-half of tax units with children – received over \$64 billion in total and approximately \$2,000 on average from the program (IRS, n.d.b). California introduced its own EITC in 2015, joining 27 other states and the District of Columbia that supplemented the federal EITC at that time. In tax year 2020, approximately 4.25 million tax units claimed this state supplement, known as the CalEITC, receiving a total of \$1.25 billion (FTB, 2022).

Despite the EITC’s well-documented beneficial effects on work, income, and poverty, children’s educational achievement and attainment, and adult and infant health (see reviews in Nichols and Rothstein, 2016; Hoynes and Rothstein, 2017), an estimated one in five households who are eligible for the EITC do not receive it (IRS, n.d.a). While the EITC’s take-up rate exceeds that of many other means-tested programs, this level of non-participation means millions of households fail to receive critical financial assistance that is available to them.

To estimate EITC participation, researchers at the Census Bureau and the Internal Revenue Service (IRS) match respondents to the Current Population Survey’s Annual Social and Economic Supplement (CPS ASEC) and the American Community Survey (ACS) to their federal tax information (Plueger, 2009; Jones, 2014). While a significant improvement over past approaches, this method relies upon imputations of EITC eligibility from survey data that are prone to error (Meyer et al., 2020; Jones and Ziliak, 2022).² Moreover, this approach cannot be used to assess take-up of state-level EITCs, since the IRS only shares copies of federal returns with the Census Bureau, and these federal returns do not include indicators for claiming of state tax credits. As such, there exists no estimate of take-up of the California EITC or any other state supplement.

We propose a method to measure eligibility for and take-up of a state credit that relies solely on state administrative data. We use enrollment records for the CalFresh program (the state’s instantiation of the Supplemental Nutrition Assistance Program [SNAP], or food stamp program) linked at the individual-level to administrative earnings records and California state income tax returns in 2017. These SNAP records contain detailed demographic and family composition information. For both filers and non-filers, we use this information, along with the linked state tax forms, to measure three components of eligibility (filing status, earned income, and number of qualifying children). We then identify which of the seemingly eligible tax units actually claimed the state credit.

The SNAP data contain two pieces of information critical to measuring EITC eligibility that are not always available in tax records or household surveys. First, we observe the date of birth for each SNAP recipient, which allows us to identify the ages of dependents on tax returns and likely child dependents among non-filers. Second, SNAP enrollment records provide monthly snapshots of household composition, which enable us to group non-filing adults and children into likely tax units and observe whether adults reside with children for a certain number of months in the tax year – an important component of eligibility

²Prior to this match, researchers generally relied on survey data alone, meaning they could not verify receipt (Scholz, 1994; White, 2001; Blumenthal, Erard and Ho, 2005).

for the EITC. The novelty of this information and our data match enable us to make important progress on measuring eligibility among filing non-claimants and the larger population of non-filers.

We find that more than 400,000 California households who received SNAP benefits and who appeared eligible for the state EITC did not receive the credit in 2017.³ This includes over 40,000 who claimed the federal EITC but not the state credit; nearly 100,000 who filed a state tax return but did not claim either the federal or state credit; and roughly 270,000 who did not file a state tax return. The corresponding take-up rate for these households was 54%. Altogether, these households left on the table a total of over \$71 million in state EITC funds. If received, these credits would have increased incomes among these households by 2.7% and increased state EITC outlays by 20%.⁴

We also investigate patterns in and sources of non-participation. First, we find that two-thirds of non-claiming is attributable to eligible households not filing a state return. Second, among filers and non-filers, the majority of non-claimants are single individuals without dependents; these non-claimants appeared eligible for about \$85 on average. At the same time, we show that tens of thousands of tax units with dependents and non-filing households with children failed to claim the CalEITC, and unclaimed amounts for these households were much higher – an average of \$251 for filers and \$596 for non-filers. Third, we also present estimated participation rates by filers' preparation method. We find that eligible households who claimed the federal EITC were much less likely to also claim the state credit if they filed using a paid preparer, relative to those who filed their own returns themselves or used free tax preparation services.

This paper makes several important contributions to the literature on participation in means-tested programs in general and the EITC in particular. We produce the first-ever estimate of take-up of a state-level EITC, and we demonstrate how non-participation is due to both non-claiming among eligible filers and non-filing among eligible households. These estimates provide valuable insights to both researchers and policymakers. For example, many researchers use the introduction of state supplements as a source of variation to study the EITC's effect on various outcomes (e.g. Bastian and Michelmore, 2018; Kleven, 2019). Our finding suggests these studies should consider the actual reach of these state programs. For policymakers, knowing how many and which types of households are eligible for and not claiming the CalEITC should inform outreach efforts and policies aimed at reducing the barriers to tax filing. Our approach also allows us to identify differences in take-up by income, tax preparation status, and demographic characteristics, all of which provide insights into the potential causes of the take-up gap. Finally, this paper provides a roadmap for researchers and policymakers to measure take-up in their own states.

Second, in addition to the narrower literature investigating EITC participation, our paper also contributes

³We refer to actual and simulated tax units as "households". We recognize that this label is not precise. Tax units and households are not synonymous, as discussed below. However, referring to simulated tax units (i.e., a collection of SNAP enrollees who we predict would appear on a return together if they were to file one) as "tax units," per se, risks even more confusion, since non-filing units do not actually appear on a tax return together. Since the paper is unique in its focus on this issue, we are especially sensitive to that source of possible confusion. Instead, we use the more commonly used label of "household" to refer to immediate families that could appear on a return and likely reside together. Ultimately, like the phenomenon we study, the language is necessarily nebulous. Indeed, a contribution of this paper is to document the extent to which the same households or families present differently with respect to a safety net program and on a tax return.

⁴We also replicate our results for tax year 2016 in Online Appendix I, finding a take-up rate of 43%. The increase in the take-up rate between 2016 and 2017 was driven by a sharp growth in the number of eligible filers.

to a broader literature studying participation in an array of means-tested programs, investigating reasons for incomplete take-up, and documenting the role that administrative burdens play in lowering enrollment (Currie, 2006; Bhargava and Manoli, 2015; Herd and Moynihan, 2019; Finkelstein and Notowidigdo, 2019). Broadly, our results document an important challenge with administering an income support program through the tax code. Policymakers must reckon with limited take-up of these programs among the lowest-income non-filers. Practically, by separately estimating participation rates for filers and non-filers and highlighting the components of eligibility that tax administrators can and cannot easily confirm, our analysis suggests multiple strategies for increasing take-up of the CalEITC among eligible families. Notably, we find disproportionate non-claiming among filers who used paid tax preparers, suggesting an important role for compliance costs as an explanation for non-participation.

Third, we contribute to a smaller literature studying how shifting household composition interacts with social and tax policy (Jones and O’Hara, 2016; Splinter, Larrimore and Mortenson, 2017; Larrimore, Mortenson and Splinter, 2021). We extend this work by studying household presentations on state tax returns and in one of the largest safety net programs, documenting the extent to which SNAP cases overlap with tax units. For example, we find that 42 percent of individuals who filed both federal and state taxes and claimed SNAP in 2017 appeared on a return where at least one individual did not receive SNAP. We also find that one out of five children who was enrolled in SNAP and appeared on a return was claimed by an adult who was not on the child’s primary SNAP case.

The paper proceeds as follows. In Section 2, we describe the federal and California EITC and summarize previous work estimating EITC participation, as well as potential explanations for incomplete take-up. In Section 3, we describe the unique linked data that make our project possible. In Section 4, we describe how we identify CalEITC-eligible SNAP recipients. Section 5 presents estimates of take-up by filing and tax-preparation status. In Section 6, we summarize and discuss the relevance of our findings, specifically as they relate to strategies for increasing take-up.

2 Background

Figure 1 shows the federal and state EITC schedule for a single filer with two children in California in tax year 2017. The general shape of the schedule is the same for all households, but the quantitative parameters differ. Families with children qualify for larger credits and at higher earnings levels than families without children. Married couples can have higher earnings before the credit begins to phase out than can single filers. The maximum credit, available to filers with earnings between \$14,040 and \$18,340, was close to \$6,000. Filers with earnings above or below this range qualified for smaller credits, so long as their earnings were positive and did not exceed \$45,007.⁵

In 2015, California joined 27 other states and the District of Columbia in offering eligible taxpayers a supplement to the federal credit. Unlike most other states which offer a match equal to some percentage of the federal credit, California adopted its own schedule, targeting assistance at households with the lowest

⁵This schedule assumes the filer does not have investment or other unearned income which can cause them to lose eligibility.

earnings. The gold area in Figure 1 shows the California schedule in tax year 2017. The largest credit is available to families with earnings around \$7,500, though households with earnings up to \$25,000 can still qualify for smaller credits.

To be eligible for the federal or California EITC, taxpayers must file as single, head of household, or married filing jointly and have positive earned income and adjusted gross income (AGI) below a certain maximum threshold, which varies by household size, filing status, and tax year.⁶ Tax units must also have investment income below a set threshold (\$3,450 in 2017). Tax units are eligible for much larger credits if they have qualifying children. To be a qualifying child for the EITC, a child must be younger than 19, younger than 24 if a full-time student, or any age if they have a total or permanent disability ("age test"); must reside in their filer's household for at least half the year ("residency test"); must be a near relation or an adopted or foster child of the filer ("relationship test"); have a valid SSN ("SSN test"); and cannot be claimed by a different filer.⁷

A family with very low earnings is typically not required to file a tax return, and only their eligibility for the EITC, other tax credits, or a refund of overly withheld income taxes creates an incentive for them to do so. Prior to the introduction of the CalEITC, there was little reason for the lowest-income California families to file a state return, raising the concern that take-up might be lower for this state credit than for the federal one. This issue is relevant to all state supplements, but the concentration of CalEITC benefits at very low earnings levels heightens the concern in this setting.

3 Data

We draw on data from several California administrative data systems to identify the family structure, income, and tax filing status of individuals that participated in the SNAP program in 2017.

We start with the universe of individual- and case-level SNAP enrollment records.⁸ In 2017, 5.3 million unique individuals enrolled in SNAP, representing 48.4 million person-months.⁹ We observe each SNAP recipient's date of birth, sex, language, race and ethnicity, as well as the months and cases in which they were enrolled. Below, we explain how we use ages and monthly snapshots of household composition to

⁶Tax units with income from sources other than earnings and whose AGI is above a certain level are instructed to calculate their EITC amount according to both their earned income and their AGI, and claim the lesser of the two amounts.

⁷We do not observe relationships within SNAP cases, so we cannot verify the relationship element of the qualifying child test. However, prior research suggests this limitation is unlikely to have a large effect on our estimates, at least among those SNAP recipients who file taxes. Using merged IRS and SNAP data from Florida, Maag et al. (2015) show that, among federal EITC claimants, 99% of all claimed qualifying children pass the relationship test and 77% of qualifying children appear to pass the residency test.

⁸Californians who enroll in SNAP are a subset of the population eligible for the CalEITC. In Online Appendix A, we consider how representative SNAP enrollees are of the broader low-income population in the state. Using the ACS, we find that households that reported receiving SNAP have, on average, one more child than non-SNAP households and almost \$12,000 less in reported family income. These characteristics suggest that households receiving SNAP are more likely to be eligible for the federal EITC and CalEITC.

⁹We observe SNAP enrollment using a dataset of individual-level enrollment records compiled by the California Department of Social Services (CDSS). These data originate in a data system maintained by the California Department of Health Care Services to determine and track Medicaid eligibility. Based on guidance from staff at CDSS, we identify an individual as enrolled in SNAP if s/he is recorded as enrolled in both data systems. The first version of this paper, released in July 2021, did not apply this restriction, leading us to slightly overstate SNAP enrollment and the number of eligible non-claimants in this population.

group non-filers into likely tax units and identify which SNAP-enrolled dependents on tax returns, as well as non-filing children, pass the EITC's age and residency tests.

Second, we link adult SNAP enrollees to their quarterly wage records filed with the California Employment Development Department (EDD), which administers the state's unemployment insurance program. This allows us to observe wage and salary earnings (though not cash or self-employment earnings) for all adults who appear in the SNAP data, including non-filers.

Third, we link all adults and children enrolled in SNAP to the universe of personal state income tax returns filed with the California Franchise Tax Board for tax year 2017. To match individuals between the CDSS and FTB data, we used a fuzzy linking algorithm, identifying both exact and near matches on names, birth dates, and Social Security numbers.¹⁰ Roughly 34 million of the 39 million individuals residing in California in 2017 are represented on these returns. For the 88% of California filers who submitted their state return electronically, we also observe information from their federal return. Given the importance of federal tax information to our analysis, all statistics presented below are restricted to this population of e-filers.¹¹ To be clear: Our tax data is limited to individuals who appear on a state tax return. The absence of federal-only filers does not bias our estimates of CalEITC participation, because one must file a state return to claim the state EITC. However, it does preclude us from estimating take-up of the federal EITC for the full SNAP population, since some recipients might have submitted only a federal return. These individuals would appear as non-filers in our data, but they still could have claimed the federal EITC.¹²

Table 1 presents summary statistics for the SNAP population, focusing on linkage rates and tax information.¹³ We report statistics separately for adults and children who each comprise roughly half of enrollees. We also distinguish between three groups of SNAP cases: those for which all members appear on a tax return; those for which some but not all members appear on a return; and those for which none of the members appear on a return. Overall, of the 5.0 million individuals receiving SNAP in 2017, 3.2 million (or 64% of SNAP recipients) appeared on a state tax return. Of these, 1.2 million were heads or spouses and 2.0 million were claimed as dependents (who could be either adults or children). Hereafter, we refer to heads and spouses collectively as *primary filers*.

The number of observations in Column 2 illustrates a key challenge in our analysis: SNAP cases and tax units often do not align. For example, nearly 20% of SNAP enrollees appear on a case in which some members appear on a state tax return but others do not. A major feature of this project involves addressing

¹⁰The datasets used for the linkage were more expansive than those used for our analysis: All tax returns from tax years 2015-2018, and all individuals enrolled in any safety net programs administered by the CDSS between 2012-2019. The inclusion of additional years and observations improves match quality and lower false positive matches in our focal samples. The research team never had access to personally identifying information from either dataset.

¹¹Since paper filers have lower average incomes, we anticipate that excluding paper filers from our analysis will bias our estimate of non-claiming downwards. We explore this issue further in Online Appendix B.

¹²In Online Appendix Appendix D, we present take-up estimates for the federal EITC among the narrower population of e-filed tax returns containing a SNAP-enrolled head or spouse, for whom we can observe a federal return, a federal EITC claim if there is one, and whether dependents are likely qualifying children. We find that out of 1,035,623 tax units, 80% are eligible for the federal EITC, and of those, 12% (or 97,120) did not claim the federal credit. These tax units left on the table \$385 on average and \$37 million in total.

¹³Online Appendix Table B.1 presents similar summary statistics for the full FTB filer population.

this nonalignment and sorting individuals into appropriate tax units.¹⁴

Our final sample includes 2.3 million SNAP recipients who appear on a state tax return in 2017 and 1.6 million who do not. Among the SNAP recipients who appear on a state tax return in 2017, 80% include claims for the federal EITC and 48% (24% of all recipients) include claims for the state credit. Of the over 1 million tax units in 2017 containing a SNAP-enrolled primary filer, 71% claimed the federal EITC and 47% claimed the CalEITC. Their average federal and state EITC claims were \$3,109 and \$402, respectively.

4 Measuring Eligibility and Take-up

Our primary methodological challenge is determining whether an individual who does not claim the EITC is in fact eligible. This entails measuring three components of eligibility: the composition of the filing unit on which the individual would appear if they filed a return; that unit's AGI and total earned income, and the unit's number of EITC qualifying children. We measure the extent of eligibility and non-claiming across three distinct populations for whom we have different information about these three components: (1) SNAP participants who appear on a state return and claim the federal EITC; (2) SNAP participants who appear on a state return but do not claim the federal EITC; and (3) SNAP participants who do not appear on a state return. This section describes how we define each eligibility component for each of these three populations. Refer to Online Appendix C for a fuller explanation of each step of our process, an assessment of our how accurate our simulations and imputations are, and detailed take-up estimates by household composition and earnings within each population.

4.1 Among Filers

For those who file a state return *and* claim the federal EITC, we observe nearly all of the information needed to simulate eligibility for the CalEITC, including AGI, earned income, and filing status, directly from the filers' state and federal returns.¹⁵ The only variable necessary to identify CalEITC eligibility that we do not directly observe is each unit's number of qualifying children. However, since there is a unique number of qualifying children that can rationalize the unit's federal EITC claim given their filing status, AGI, and earned income, we can use these variables from the unit's return to infer their number of claimed qualifying children.

¹⁴Refer to Online Appendix H for more information about how SNAP cases do not align with tax units and how many children are claimed by adults other than those who appear in their SNAP cases. A related and unique challenge is the nearly 900,000 SNAP-enrolled dependents, almost all children, who were claimed on a tax return by an adult who never enrolled in SNAP in 2017. Under our approach, we can only verify these children's eligibility for the CalEITC if they appeared on a return with a federal EITC claim, because we do not observe case files or earnings records for the adults who claimed them. Nearly 60 percent of these dependents appear on a return without a federal EITC claim, however. Instead of risking confusion in extending our sample to many adults who never enrolled in SNAP and introducing an imbalance by including children if their filer claimed the federal EITC but excluding them if they did not, we exclude all of these children from our analysis. We also choose not to associate these dependents with another adult who appears on their SNAP cases, since we already observe they were claimed by a different primary filer. We are also unable to match another 180,000 SNAP-enrolled children who are not claimed on a return and never appear on a SNAP case with another adult. We discuss their omission from our analysis in Section 4.2.

¹⁵The only relevant income sources we do not observe are interest and dividend income, which SNAP-enrolled filers rarely have.

For those who file but *do not* claim the federal EITC, we supplement tax unit composition, as well as income and earnings reported on their return, with information from the SNAP records. As with the units that claim the federal EITC, we observe each tax unit's filing status and relevant earned income. However, we do not observe these tax units' number of EITC qualifying children directly, nor can we infer the number from a federal EITC claim. Instead, we identify which of the dependents on the tax unit also appear in the SNAP data and meet the eligibility requirements to be a qualifying child. Specifically, we use the SNAP data to identify each dependents' age ("age test") and the number of months in which we observe them on the same SNAP case as the tax unit filer ("residency test").¹⁶

4.2 Among Non-Filers

The most complex part of our analysis is measuring eligibility among SNAP participants who did not appear on a 2017 California tax return. Among these individuals, we construct simulated tax units from SNAP casefiles and simulate eligibility using those data and linked earnings records. Transforming SNAP cases into tax units is not straightforward. SNAP cases represent groups of individuals who eat and prepare meals together, while tax units generally reflect immediate families. These two types of households might not coincide. For example, there may be individuals in the SNAP case (e.g., extended family or unrelated roommates) who are not part of the tax unit, and individuals in a tax unit (e.g., dependents of non-custodial parents) who do not share a SNAP case. We do not observe household relationships, which would allow us to associate filers with their spouses and children and vice versa. That said, measuring eligibility among non-filers (or non-participants across a range of public programs) is not a new challenge, and our administrative data boasts several advantages over more commonly used survey data.¹⁷

Below, we provide an overview of how we construct these simulated filing units – that is, groups of SNAP recipients who would likely appear on a tax return together if a return had been filed. We proceed in several steps. We disambiguate SNAP cases, classify individuals as primary filers or dependents, identify married couples, assign dependents to filers, test which of those dependents might be a qualifying child, and construct a measure of earned income.

First, we assign each SNAP recipient to a single representative SNAP case. For the 95% of individuals who appear on only a single SNAP case in 2017, this assignment is straightforward. For the remaining 5% who appear on multiple cases, we assign individuals to the case they appeared on most frequently. In the rare event of a tie, we use the most recent case. Hereafter, we refer to SNAP cases to which recipients are assigned as the their *reference case*.

Second, we predict whether each non-filing individual on a SNAP reference case is likely to be a primary filer or dependent using their earnings, age, sex, race, language spoken, disability status, number of months on SNAP, participation in other safety net programs, and whether they were observed as a primary filer or

¹⁶We assume that other dependents who were not enrolled in SNAP but were claimed by a SNAP-enrolled primary filer are qualifying children, even though we cannot verify their eligibility. This assumption has little effect on our results, however, because nearly all seemingly eligible filers who failed to claim either the CalEITC or federal EITC are single adults with no dependents.

¹⁷Refer to Online Appendix H for a fuller discussion of the nonalignment between households observed in our case records and those observed in our tax records.

dependent on a tax return from the prior year.

Third, we predict which recipients assigned to be primary filers would file as a single adult or married couple. To identify likely married couples, we first carry forward filing status from prior years if that information is available. Otherwise, we use the relative age of each adult in a reference case to decide whether there is one or more likely married couples in the reference case.

Fourth, we assign imputed dependents to the imputed tax units (i.e., the married or single cases constructed above) according to with which adults they shared a SNAP reference case. When there are multiple potential imputed tax units on a reference case, we use a series of predetermined rules, first assigning dependents to adults with whom the child appeared in the same SNAP cases most often, then to an adult who claimed the dependent in a prior tax year, and finally to an adult who is more likely a parent given their age difference. Given these assignments, we then determine which of the imputed dependents assigned to each simulated tax unit might be a qualifying child using the same procedure used for filers who did not claim the federal EITC.

Fifth, we sum all adults' quarterly EDD wage earnings within each imputed tax unit, and we assume that this total reflects both the AGI and earned income that the tax unit would report on their return if they were to file. We do not observe any other forms of income, such as self-employment and investment income, for this population. This omission might lead us to overestimate eligibility if non-filing households have both self-employment and wage earnings, and the combination pushes some households above the maximum eligible earnings limit. It is also possible, and to our minds more likely, that this omission results in our underestimating eligibility and overestimating take-up, because we assume many households with no wage earnings are ineligible, even though they might have some positive self-employment earnings which could make them eligible.¹⁸

The full imputation process for SNAP recipients who did not file taxes is complex and described in detail in Online Appendix C. We also report accuracy rates for each step, which we calculate by constructing tax units for the SNAP recipients who *do* appear on a state return and then comparing the results of our simulation to the tax unit composition and income observed on those observations' actual returns. We find that the largest error in our process comes in the assignment of imputed dependents to any imputed tax unit; approximately 280,000 children, most of whom have no adults on their reference case, are unattached to any imputed tax unit.¹⁹ Omitting these children biases our estimate of the count of eligible non-claimants downward, since these children, if claimed, presumably would have allowed some number of lower-income adults to receive the CalEITC.

¹⁸Refer to Online Appendix C.3.6 for an additional discussion of how our estimates might be affected by the lack of information on self-employment earnings.

¹⁹If a child appears on a SNAP case by themselves, it's generally because their parents or guardians are not eligible for SNAP due to their immigration status. In 2017, adults without a Social Security number were also ineligible for the CalEITC, though this restriction has since been lifted. Refer to Online Appendix E for more information about these adults' eligibility for SNAP and the CalEITC.

5 Results

Table 2 presents estimates of eligibility and participation for all three populations. Overall, 883,440 (49%) of SNAP-participating tax units — either actual or imputed — were eligible for the CalEITC. Among these eligible tax units, 406,455 (46%) did not claim the CalEITC, forgoing \$175 on average and over \$71 million in total. Over 600,000 actual tax units with a SNAP-enrolled primary filer appeared eligible for the CalEITC (60% of all such units), and among those households, over 138,000 (22%) did not receive the CalEITC. These units forwent an average credit of \$129. The other two-thirds of non-claimants were non-filers. Among non-filing SNAP households, 35%, or over 268,000 imputed tax units, were eligible for the CalEITC, forgoing an average of \$199.

Figure 2 summarizes the distribution of eligible non-claimants by estimated credit amounts and earned income, broken out by units with zero or one or more qualifying children. Panels A and B present counts for units with zero qualifying children, and Panels C and D present counts for units with one or more qualifying children. Together, these histograms contain a number of important facts about sources of and patterns in non-claiming. First, three-quarters of non-claiming units have zero qualifying children, and among these non-claimants, two-thirds are eligible for less than \$100. Second, most non-claimers of the federal EITC are single filers without qualifying children, which helps to explain why these units did not claim the Federal EITC and should allay concerns about how we infer the number of qualifying children for these filers. Third, most non-claimants, especially those eligible for more than \$500, are non-filers. The average forgone credit was \$264 for filers with children and \$81 for filers without children. The average forgone credit was \$649 for non-filers with children and \$87 for non-filers without children.²⁰

Why would any eligible filer not claim the CalEITC? One explanation we consider is the role of tax preparers. Paid preparers may charge clients additional fees for each schedule attached to their return, including the one needed to claim the CalEITC (Form 3514). These fees may dissuade some eligible filers from claiming the credit. Table 3 reports estimates of eligibility and participation by the three methods of tax preparation that we observe in the FTB records: self-prepared, prepared by a paid professional, and prepared through the Volunteer Income Tax Assistance (VITA) program. We find that, among filers that claimed the federal EITC, non-claimants were disproportionately likely to have used a paid preparer. Among all returns in our sample containing a federal EITC claim, 63% were filed by a paid preparer. Among the 40,000 tax units who claimed the federal EITC and were eligible for but did not claim the CalEITC, 92% were filed by a paid preparer. Among tax units on SNAP who did not claim the federal EITC, we see a higher rate of eligible non-claiming among self-prepared returns (36% for the federal EITC and for the CalEITC) than among returns prepared by VITA or paid preparers (between 27% and 33%). The forgone credit amounts are similar across self-prepared and paid prepared returns, with the exception of forgone CalEITC dollars among federal EITC claimants who used VITA services, which were \$100 less than the mean amount

²⁰We also replicate these results for tax year 2016 (Online Appendix I), finding a lower take-up rate of 43%. The increase in the take-up rate between 2016 and 2017 is largely driven by the substantial increase in the number of eligible filers. We also estimate take-up for each racial group reported in the CDSS records (Online Appendix J). We find lower take-up rates among Black and Hispanic individuals.

forgone among paid and self-preparers.

6 Conclusion

In this paper, we use California administrative data to measure eligibility for and participation in the state's Earned Income Tax Credit (CalEITC) program among households who enrolled in the state's Supplemental Nutrition Assistance Program (SNAP). We match state program enrollment data, as well as linked earnings records, to the universe of state tax returns in tax year 2017. We use SNAP casefiles and earnings records to measure eligibility among non-filers, and these casefiles plus information from households' own returns to measure eligibility and participation among filers. We find that nearly 140,000 actual tax units failed to claim the state EITC, totaling almost \$18 million in unclaimed state benefits. We identify another almost 270,000 SNAP households were eligible for the CalEITC but did not file a state return, forgoing an estimated \$53 million dollars in CalEITC benefits. The overall household-level take-up rate of the California EITC within the SNAP population is 54%. The average unclaimed benefit for both filers and non-filers is fairly low (\$129 and \$199, respectively). Participation is lower for childless adults and for filers who use paid preparers.

Our study suffers from a few data limitations, each of which suggest our estimate of the number of eligible non-claimants is an undercount. First, we are forced to exclude paper filers. We expect that doing so results in our underestimating the size of the take-up gap (Refer to Appendix B). Second, we are unable to match many SNAP-enrolled children to a plausible non-filing adult claimer. If near-relations with low incomes could claim these children, many would presumably be eligible for the CalEITC. Third, some non-filing adults with no EDD earnings might have positive self-employment income. Since we do not observe self-employment earnings, we are forced to assume these non-filing adults are ineligible. Fourth, we examine only the population of SNAP participants. We do not estimate eligibility or take-up rates for the much larger population of California families who do not receive SNAP benefits, but are still low-income and may be eligible for the CalEITC. This might include a large number of households who are also eligible but do not take up SNAP. In fact, the participation rate for SNAP in California is generally one of the lowest in the country (roughly 70 percent in 2017) (Cunningham, 2020). If shared factors predict both not enrolling in SNAP and not claiming the EITC, such as unawareness of government programs, distrust in government, or concerns about stigma, including these households would likely lower our estimated take-up rate and increase the number of non-claimers. If SNAP non-participation is inversely related to tax filing (for example, relatively more advantaged households do not enroll in SNAP but do file a return and claim the EITC), including these households would increase our estimated take-up rate. A final limitation is our inability to estimate take-up of the more valuable federal credit, because we only observe federal filing among those who who filed a state return.²¹ Extension of our methods to incorporate federal-only returns would allow analysis of federal EITC participation in this population, but this would likely require data-sharing between a state social service agency, like CDSS, and the IRS.

²¹ Refer to Online Appendix D for estimates of federal EITC take-up among state filers.

An important avenue for future work would be replicating this analysis using a fuller array of state administrative data – namely, Medicaid case files. Not only are many more households enrolled in Medicaid than SNAP, providing researchers a larger snapshot of the possibly eligible population, Medicaid cases tend to more closely resemble tax units. Using Medicaid case composition information would also improve upon our processes for associating filers with partners and dependents.

Our analysis suggests multiple strategies for increasing take-up of the CalEITC among eligible families. Increasing take-up among households who file a state return and claim the federal credit would be simplest. California tax administrators observe nearly all the information they need to confirm these households' eligibility and predict their correct CalEITC amount. The state tax agency should be able to distribute these unclaimed dollars on their own. If necessary, the state could also ask these households to attest to the information submitted on their return first. Increasing take-up among eligible filers who do not claim the federal credit would be more complicated, but certainly possible. Estimating likely EITC amounts for this group requires imputing the correct number of qualifying children. As we have shown, tax administrators can use SNAP records to verify residential arrangements and identify likely eligible households. This process is imperfect, but largely accurate. A state tax agency could use this process to focus on those tax units that are most likely eligible, and then contact those households to confirm their dependents are qualifying children. Prior research suggests such outreach will not close the take-up gap, but the benefits might still outweigh the costs (Bhargava and Manoli, 2015; Linos et al., 2022; Goldin et al., 2022).²² Those who do not file a state return are the hardest to reach. We expect that our imputation process yields reliable estimates of average eligibility and participation, but we are not able to guarantee accuracy at the individual tax unit level. The tax agency would need to engage these recipients and encourage them to file a return so as to confirm family structure and earnings.

In addition to providing the first estimate of take-up of a state EITC program, a principal contribution of this paper is to provide a roadmap to other researchers to measure EITC participation in other states.

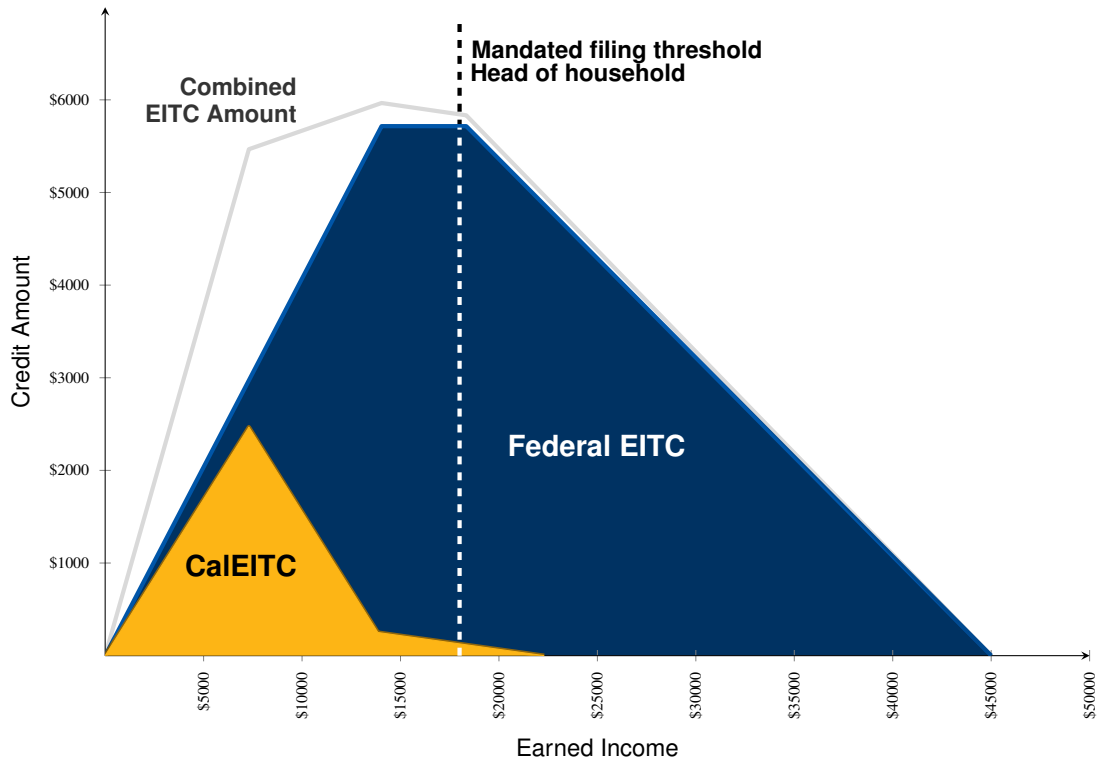
²²That said, the large majority of non-claimants in this population are single filers without dependents, for whom imputing qualifying children would not be necessary. Tax administrators can estimate a likely credit amount for these filers using information contained within their tax returns.

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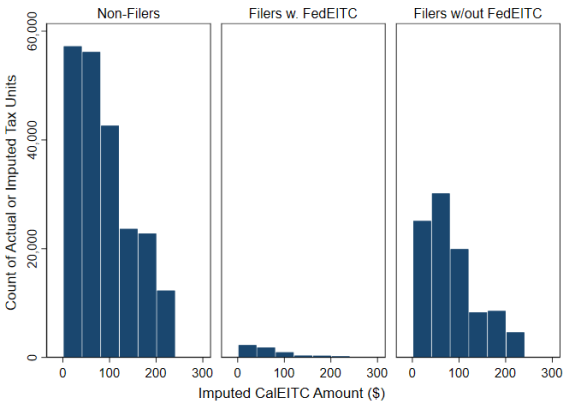
Figure 1: Federal and California EITC schedules for a single-parent family with two children, tax year 2017



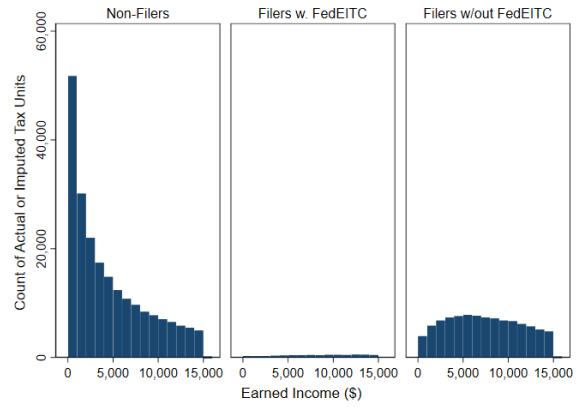
Notes. Figure 1 illustrates the federal (blue) and state (gold) EITC schedules for a head of household with two children. The gray line illustrates the combined value of the EITC for a filer who claims both credits. The dotted line denotes the filing threshold for a head of household in tax year 2017, which was \$18,000; families with incomes below this threshold are generally not required to file returns.

Figure 2: Distribution of eligible non-claimants by estimated credit amount and earned income

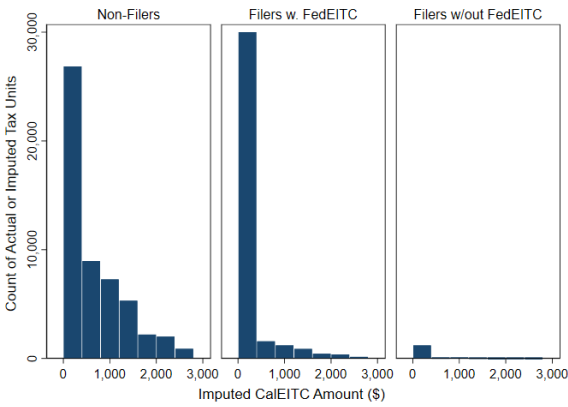
(A) By estimated credit amount, 0 qualifying children



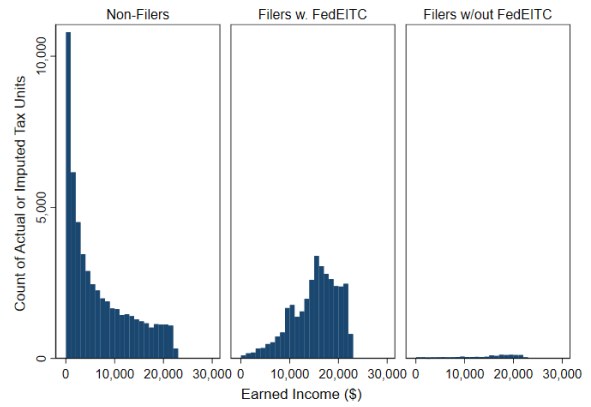
(B) By earned income, 0 qualifying children



(C) By estimated credit amount, 1+ qualifying children



(D) By earned income, 1+ qualifying children



Notes. Figure 2 plots the frequency of eligible non-claiming tax units by estimated credit amount and earned income. Panels A and C presents counts for units with zero qualifying children. Panel B and D present counts for units with one or more qualifying children. Panels B and D have bin widths of \$1,000. Panels A and C have bins widths of \$40 and \$400, respectively.

Table 1: Summary statistics for SNAP sample

| | By case-level filing status | | | Total |
|--|-----------------------------|-----------|--------------|-----------|
| | Everyone files | Some file | No one files | |
| Number of individuals | 2,638,606 | 946,392 | 1,404,030 | 4,989,028 |
| Row percent | 53% | 19% | 28% | 100% |
| Mean case size | | | | |
| Total | 2.2 | 3.6 | 1.4 | 2.0 |
| Adults | 1.1 | 1.4 | 1.0 | 1.1 |
| Children | 1.2 | 2.2 | 0.4 | 0.9 |
| Adults | | | | |
| Number | 1,264,067 | 370,066 | 1,035,888 | 2,670,021 |
| Average age | 36.8 | 33.5 | 44.7 | 39.4 |
| Share non-Hispanic white | 22.2 | 19.7 | 35.3 | 27.0 |
| Mean months enrolled in CF | 8.6 | 9.4 | 8.8 | 8.8 |
| Linked to EDD wages | 67.7 | 51.5 | 28.2 | 50.1 |
| Mean EDD wages if positive | \$15708 | \$13205 | \$8944 | \$13877 |
| Linked to tax return | 100.0 | 46.5 | 0.0 | 53.8 |
| Share linked to tax return claiming Federal EITC | 67.1 | 34.0 | 0.0 | 36.5 |
| Share linked to tax return claiming CalEITC | 41.0 | 20.5 | 0.0 | 22.3 |
| Mean CalEITC claim | \$390 | \$514 | | \$406 |
| Share linked to imputed tax return | 87.7 | 88.2 | 64.7 | 78.9 |
| Children | | | | |
| Number | 1,374,539 | 576,326 | 368,142 | 2,319,007 |
| Average age | 8.3 | 7.9 | 8.2 | 8.2 |
| Share non-Hispanic white | 12.8 | 12.6 | 18.5 | 13.7 |
| Mean months enrolled in CF | 8.6 | 9.4 | 8.8 | 8.8 |
| Linked to tax return | 100.0 | 66.0 | 0.0 | 75.7 |
| Share linked to tax return claiming Federal EITC | 72.0 | 47.9 | 0.0 | 54.6 |
| Share linked to tax return claiming CalEITC | 36.8 | 25.1 | 0.0 | 28.1 |
| Mean CalEITC claim | \$536 | \$573 | | \$544 |
| Share linked to imputed tax return | 69.8 | 40.1 | 61.3 | 61.1 |

Notes. Universe is all SNAP recipients in tax year 2017, excluding tax filers who did not e-file their tax returns. Statistics are reported at the individual and reference case level. Refer to Section 4.2 for more information about how reference cases are defined. Column 1 reports means within cases in which every member appears on a 2017 state tax return. Column 2 reports means within cases in which at least one member, but not all, appear on a 2017 state tax return. Column 3 reports means within cases in which no members appear on a 2017 tax return.

Table 2: CalEITC take-up among SNAP recipients

| | Total | CalEITC eligible | | Eligible non-claimants | | | |
|---------------------------|------------------|-------------------------|------------|-------------------------------|------------|--------------|---------------------|
| | Count | Count | Share | Count | Share | Mean amount | Total amount |
| Filers | | | | | | | |
| Fed EITC claimants | 721,354 | 514,469 | 71% | 40,366 | 8% | \$235 | \$9,503,865 |
| Non Fed EITC claimants | 302,791 | 100,881 | 33% | 97,999 | 97% | \$85 | \$8,305,715 |
| Imputed Non-Filers | | | | | | | |
| All | 762,102 | 268,090 | 35% | 268,090 | 100% | \$199 | \$53,329,123 |
| Total | 1,786,247 | 883,440 | 49% | 406,455 | 46% | \$175 | \$71,138,703 |

Notes. The universe for Table 2 is actual and imputed tax units constructed from the population of SNAP recipients in 2017. Column 1 reports the count of actual or imputed tax returns in each population. Columns 2 and 3 reports the count and share of actual or imputed tax units who are eligible for the CalEITC. Columns 4 and 5 report the count and share of actual or imputed tax units who are eligible for the CalEITC but do not claim the credit. Columns 6 and 7 report the mean and total forgone CalEITC amounts. The details on the construction of the actual and imputed tax returns are discussed in 4.

Table 3: CalEITC take-up among SNAP recipients by tax preparation method

| | Tax Preparation Method | | | Total |
|---------------------------------------|-------------------------------|------------|-----------|--------------|
| | Paid | Self | VITA | |
| Number of tax returns | 630,424 | 346,893 | 44,821 | 1,022,138 |
| Claimed the Federal EITC | | | | |
| Number of tax returns | 455,147 | 238,235 | 26,758 | 720,140 |
| <i>CalEITC</i> | | | | |
| % eligible | 69% | 74% | 80% | 71% |
| % Non-claiming among eligible | 11.8% | 1.6% | 0.4% | 7.8% |
| Mean unclaimed amount | \$234 | \$255 | \$139 | \$235 |
| Total unclaimed amount | 8,736,498 | 733,815 | 11,813 | 9,482,126 |
| Did Not Claim the Federal EITC | | | | |
| Number of tax returns | 175,277 | 108,658 | 18,063 | 301,998 |
| <i>CalEITC</i> | | | | |
| % eligible | 32% | 36% | 33% | 33% |
| % Non-claiming among eligible | 99.0% | 94.1% | 99.9% | 97.2% |
| Mean unclaimed amount | \$85 | \$83 | \$91 | \$85 |
| Total unclaimed amount | 4,696,586 | 3,049,404 | 540,389 | 8,286,379 |
| <i>Federal EITC</i> | | | | |
| % eligible | 30% | 36% | 27% | 32% |
| % non-claiming among eligible | 100.0% | 100.0% | 100.0% | 100.0% |
| Mean unclaimed amount | \$381 | \$396 | \$343 | \$385 |
| Total unclaimed amount | 20,069,306 | 15,613,368 | 1,647,044 | 37,329,718 |

Notes. Universe is e-filed tax returns linked to at least one primary filer who was enrolled in SNAP. The top panel is restricted to tax returns in which there was a positive federal EITC claim, and the bottom panel is restricted to returns with no federal EITC claim. For each population, we report the number of returns filed via each of the three preparation methods: paid preparer, self-prepared, or VITA. For each method, we report the share of returns that appeared eligible for the CalEITC (and the federal EITC for those that did not claim the Federal EITC), and among those deemed eligible, the share that did not claim. For eligible non-claimers, we also report the mean unclaimed amount and the total unclaimed dollars. The share of eligible non-claimants among tax units who claimed the federal EITC and used VITA is 0.4 percent, which we round down to 0%. A small number do not claim the state EITC, and the average unclaimed amount for this group was \$145 and the total was \$12,789.