Helping Children Access Supplemental Security Income Benefits: Pre-analysis plan

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Abstract

Children can qualify for Supplemental Security Income (SSI) benefits if they have a disability and come from families with limited income and resources. This pre-analysis plan describes an experiment that will test the extent to which incomplete take-up of SSI among eligible children is due to imperfect information, administrative burdens in the application process, or other factors. We will conduct an RCT among 3,500 children in Allegheny County, Pennsylvania who do not receive SSI but have a relatively high predicted likelihood of being eligible. Each parent will be randomly assigned to receive either 1) An informational message about their child's potential SSI eligibility, 2) The same informational message paired with an offer of help completing the SSI application, or 3) No outreach. We will estimate the effect of the intervention on SSI application and enrollment rates to better understand the barriers families face in applying for and enrolling in SSI.

Keywords: Supplemental Security Income (SSI), child disability, benefit take-up

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1 Introduction

The take-up of social safety net programs is often incomplete, with numerous eligible individuals who do not participate (Currie, 2006; W. Ko & Moffitt, 2024). Factors that contribute to this limited take-up include administrative burdens and hassle costs (Herd & Moynihan, 2025), information frictions (Chetty et al., 2013), and stigma (Celhay et al., 2025; Pukelis & Holcomb, 2025; Friedrichsen et al., 2018). Supplemental Security Income (SSI) offers a monthly federal cash benefit up to $967 to low-income families that have an elderly or disabled member. This program serves some of the most disadvantaged members of society with its resource limit for individuals of only $2,000. Some research shows that SSI may improve outcomes for children and their families (Duggan & Kearney, 2007; Deshpande & Mueller-Smith, 2022; Guldi et al., 2024; H. Ko et al., 2020), though the evidence is mixed (Levere, 2021; Hawkins et al., 2025). Only an estimated 70% of eligible children receive SSI (Levere & Wittenburg, 2026).

Our study will use a randomized controlled trial (RCT) to explore the barriers that prevent families where a child has a disability from enrolling in SSI. We are conducting the RCT in partnership with the Allegheny County Department of Human Services (ACDHS), a local government agency in Pittsburgh, Pennsylvania.[1] To build the study sample, we followed a similar process to Levere and Wittenburg (2026) to develop a predictive model that identifies children in Allegheny County who are currently receiving income-based Medicaid and not currently receiving SSI but are likely eligible. The model draws upon an array of data from ACDHS administrative records, including Medicaid claims, parental income, and participation in other social services. The model predicts the probability that each child not receiving SSI is in fact eligible.

For the RCT, we will randomly assign children with a high likelihood of SSI receipt to one of three study arms: 1) A control group that is not contacted, 2) An information-only group that receives an outreach message about the child's potential eligibility for SSI, or 3) An information-plus-assistance group that receives the same outreach plus an offer of help from ACDHS with completing the SSI application. Parents in the information-plus-assistance group who engage with the intervention will complete a step-by-step online form with information about their child's health diagnoses and functional limitations. ACDHS will then use this self-reported information, combined with the child's Medicaid claims data, to automatically complete the Disability Report (DR) form,[2] one of the key SSI application

[1]ACDHS is conducting the experiment for its own internal evaluation purposes rather than for generalizable academic knowledge. For author Mike Levere, Colgate University IRB has approved an academic study based on the data from the experiment.

[2]The form is available at https://www.ssa.gov/forms/ssa-3820.pdf

forms for the child. It will then mail the completed form to their parent, along with instructions for the next steps of the application process. We will use administrative data to estimate the causal effect of the intervention on two binary outcomes measured 12 months after randomization: 1) Whether the child has applied for SSI, and 2) Whether the child has been awarded SSI.

Our study will provide the first experimental evidence on the reasons for incomplete take-up of SSI among children. Administrative burden likely plays an outsize role in impeding child take-up of SSI because of the difficulty of the application process. A parent must first fill out a lengthy and complicated DR form that covers the child's health history, doctor visits, hospitalizations, and medications. The parent must then complete an interview with their local Social Security Administration (SSA) field office in person or over the phone. SSA then collects its own information from the child's teachers and medical providers. For applicants who pass the financial means test, SSA sends the application to state Disability Determination Services examiners to determine if the child has a qualifying disability.[3] Research has demonstrated that hassle costs deter participation in SSI among adult applicants (Deshpande & Li, 2019) but there is little direct evidence on the effects of hassles for child applicants. At the same time, information and awareness also appear to influence SSI take-up. Hemmeter et al. (2025) find that a simple letter communicating a person's potential SSI eligibility increases take-up among older adults. Levere et al. (2024) observe a decrease in child SSI applications in response to school closings during COVID-19 and highlight the role of information channels, such as parental networks and referrals from school psychologists, in driving SSI child participation.

Our study will build upon this work by cleanly identifying the extent to which non-take-up is driven by imperfect information, administrative burdens, or other factors. Our assistance treatment substantially reduces burden for parents by delivering them a fully completed DR form with the child's detailed health care records pre-populated using administrative data. This may make the parent more likely to complete the rest of the SSI application process and may increase their child's chances of being deemed eligible due to a higher-quality application. Pre-populating application forms has shown promise as a strategy for increasing enrollment in student loan repayment programs (Mueller & Yannelis, 2022) and increasing rates of renewal form submissions for the Supplemental Nutrition Assistance Program (SNAP) (Herd et al., 2022), but it has not been tested in the context of

[3]Children medically qualify for SSI if they have a "medically determinable physical or mental impairment or combination of impairments that causes marked and severe functional limitations, and that can be expected to cause death or that has lasted or can be expected to last for a continuous period of not less than 12 months." (CFR § 416.906 2000).

other social welfare programs to our knowledge.[4]

We also contribute to the broader experimental literature that tests the effectiveness of various outreach and assistance interventions at increasing take-up of social programs.[5] In a recent review of this literature, Daigneault et al. (2025) emphasize that informational nudges are unlikely to increase take-up in situations where recipients have trouble acting on the information, and that more proactive assistance seems necessary for the hardest-to-reach populations. In contrast, Linos et al. (2025) find in multiple large-scale experiments that higher-touch assistance was no more effective than light-touch outreach at increasing take-up of cash transfers. The outreach was no more effective even when targeted to people predicted to be more responsive to the message. Our results will add new evidence to this active debate on the value-added of proactive assistance relative to light-touch information. Other recent syntheses of the literature point to the use of technology as a promising approach to alleviating burden and suggest that outreach may be more effective when directed at those who already receive other forms of public assistance (W. Ko & Moffitt, 2024; Herd & Moynihan, 2025). We follow these ideas both by using technology (automatically populating a key application form) and in targeting children already receiving some safety net benefits (Medicaid).

2 SSI predictive model

We seek to target our intervention towards children who have a relatively high likelihood of qualifying for SSI. To identify these children, we follow a similar approach to Levere and Wittenburg (2026) and use a predictive model to estimate the probability that a child is eligible for SSI. We developed the model using 102,519 children ages 0 to 17 in Allegheny County who had ever received any type of social service according to ACDHS records as of December 31, 2022 (i.e. the model "run date").[6] The model outcome is whether the child

[4] In the framework of Herd et al. (2013), pre-completion of paperwork falls within a spectrum of policies that shift administrative burden from the citizen to the government. These policies range from fully-automatic enrollment to partial measures such as form simplification and presumptive eligibility.

[5] Experiments in this domain have focused on the Earned Income Tax Credit (Bhargava & Manoli, 2015; Linos et al., 2022), SNAP (Finkelstein & Notowidigdo, 2019), unemployment insurance (McQuillan & Moore, 2026), college financial aid applications (Bettinger et al., 2012), Canadian job-seeker services (Hopkins & Dorion, 2024), Medicaid coverage renewals (Myerson et al., 2025), the Women, Infants, and Children (WIC) nutrition program (Wang & Ahn, 2025), and French welfare benefits (Castell et al., 2025), among other programs. The sole SSI experiment to date focused on older adults rather than children (Hemmeter et al., 2025).

[6] This sample definition differs somewhat from Levere and Wittenburg (2026) in that it includes a broader group of children who have received any type of social service, not just those who are on Medicaid.

received SSI sometime in the subsequent 12 months.[7] We use the fitted values from the model to assign each child an "SSI risk score". The model uses a random forest of 1,000 estimators with five-fold cross-validation and 415 predictor variables based on the child's medical, demographic, and socioeconomic characteristics measured on or prior to the model run date.

Table 1 shows the predictor variables from the model that most strongly influence the fitted SSI risk score. The most influential predictor is the number of days that the child was enrolled in Medicaid prior to the model run date, followed by an indicator for being Black and the median home value of the child's home census tract. The model has strong predictive accuracy overall, with an area under the ROC curve (AUC) of 0.967 and a log-loss of 0.084 (Table 2).

Consistent with Levere and Wittenburg (2026), the children with higher risk scores had more intensive usage of Medicaid-funded health care and were more likely to have various mental health diagnoses in the year before the model run date (Figures 1 and 2). The figures include only children not receiving SSI. Children are divided into equally sized ventiles covering each 5-percentile bucket of the risk score distribution. As the risk score increases, so does the number of claims for case management, mental and behavioral health, and prescription fills. Interestingly, ER visits do not show a similar pattern, which is perhaps consistent with emergencies being more random and not as indicative of the persistent underlying health condition that leads one to be considered as having a disability. Patterns with diagnoses are similar, with far higher rates of mental health diagnoses like ADHD, mood disorder, and anxiety disorder for those who have high risk scores than those with low risk scores.

3 Study sample

To construct our study sample, we took the predictive model from Section 2 and applied it to all children in Allegheny County who were under 16 years old as of April 30, 2026 and were receiving Medicaid but not SSI as of this date.[8] 67,555 children met these basic characteristics. We used the fitted values of the model to assign each child an SSI risk score. We henceforth refer to these children as the "risk-scored pool".

[7]We use SSI receipt as the model dependent variable because it is an observable proxy for SSI *eligibility*, which is the actual latent characteristic that we seek to target. SSI eligibility cannot be discerned from administrative data because it involves a state review and determination of the child's medical condition.

[8]We exclude 16 and 17 year-old children from the study because all child SSI recipients must undergo an age 18 redetermination that assesses whether they meet the adult definition of disability. This definition differs from the child definition as it assesses the person's ability to perform substantial gainful activity, or essentially to work, whereas the child definition is based on functional limitations.

We further restricted the risk-scored pool in two ways. First, we removed children who were enrolled in Medicaid under the "PH95" eligibility category. This category covers children with disabilities whose parents earn too much money to qualify for traditional income-based Medicaid. Table 3 shows that these children have disproportionately high SSI risk scores, reflecting that they qualify for Medicaid specifically because of a disability. They are also disproportionately White and tend to come from families with higher average earned income, which suggests that they are unlikely to meet the stringent income and resource limits for SSI eligibility. After removing these children, we are left with 60,861 children in the risk-scored pool. Second, we included only one child per household, where a household was defined based on ACDHS records from various social services and programs. This was intended to prevent treatment spillovers within households. We kept the child in each household who has the highest SSI risk score. This led us to drop 25,861 children, reducing the pool to exactly 35,000 children.

For the final study sample, we selected the 3,500 children in the remaining risk-scored pool who were in the top decile of risk scores. Table 4 shows that these top-decile children have much more intensive usage of health care than the children who have lower risk scores. In the year before April 30, 2026, children in the top decile have more than eight times as many days with a mental health care Medicaid claim, eight times as many days with a claim for an inpatient hospitalization starting in the emergency room (ER), and nearly five times as many days with a claim for outpatient care not in the ER than the lower-risk score children. Children in the top decile also have six times as many distinct mental health diagnoses, with particularly higher rates of autism spectrum disorders and intellectual disabilities. Demographically, children in the top decile are somewhat more likely to be older, non-Black, and male, and to come from households with higher earnings, than the lower-risk score children.

We focus on the top decile because, as discussed in more detail in Section 7, a simulation with a historical version of the risk-scored pool showed that the top decile of risk score was much more strongly correlated with future SSI enrollment than lower deciles (Figure 3). Using the simulation sample, we calculated the percentage of children in each decile of risk score who go on to receive SSI over the ensuing year. About six percent of children in the top decile went on to receive SSI in the subsequent year. This rate of SSI receipt was three times that of the second-highest decile, and was 11.6 times higher than that of the average child in all remaining deciles.

3.1 Random assignment

We randomly assigned each of the 3,500 study participants to one of three groups:

1. A control group that will not be contacted
2. An "information only" treatment group that will receive a message with information about the child's potential eligibility for SSI.
3. An "information plus assistance" treatment group that will receive the same message with information about the child's potential eligibility for SSI and an offer of application assistance from ACDHS

We randomly assigned 1/4 of the study candidates to the control group, 1/4 to the information only group, and 1/2 to the information-plus-assistance group.[9] Table 6 shows that the random assignment worked as intended and yielded groups that are well-balanced on characteristics measured on or before the sample creation date.

We then conducted a second layer of random assignment within the information-plus-assistance group. We randomly assigned half of this group to receive an extra line of text in the letter that accompanies their completed DR form (See the letters in Section 9.1). The extra text refers them to a Pittsburgh-based nonprofit organization called Achieva Family Trust if they wish to receive further assistance with the next steps of the SSI application process. Achieva Family Trust provides supportive services for people with disabilities, and they have a team of caseworkers who help families with each step of the SSI application process. We refer to this half of the information-plus-assistance arm as the "Achieva referral" group and the other half as the "No Achieva referral" group. This additional layer of random assignment will enable us to test whether our information-plus-assistance treatment is more effective at connecting children to SSI when it is paired with a subtreatment offering personalized case management from an organization that specializes in SSI application support, recognizing that our form-filling intervention only helps families overcome one of several potentially difficult steps in the SSI application process.

3.2 Study enrollment

We will enroll all of the 3,500 children in the final study sample into the RCT over a 12 month period. We will stagger the enrollment, with new cohorts enrolled roughly every two weeks, to avoid overwhelming ACDHS's staffing capacity to manage the outreach and

[9] This treatment allocation, compared with an equal 1/3 allocation, provides greater statistical power to detect an effect of information plus assistance (see the calculations in Section 7). We prioritize power for the information-plus-assistance treatment based on an a priori assumption that it is more likely than the information-only treatment to produce an economically meaningful effect on our primary outcomes.

assistance processes. Thus, in addition to a study arm, we also randomly assigned each child in the final study sample to a replicate number that defines the sequential order they will be enrolled into the demonstration. Based on staff capacity, we will select the number of replicates that can be included in each bi-weekly cohort. Each child will be assigned a "study enrollment" date that is the day their cohort was officially enrolled in the study (the date of the mailing for those in the information only and information plus assistance groups). We will measure outcomes relative to this date (see Section 5 for details).

We will enroll all 3,500 children into the study and analyze impacts in an intent-to-treat framework. Therefore, children will still be included in the impact analysis even if they started receiving SSI or moved onto the PH95 Medicaid category in the time between the creation of the risk-scored pool based on data as of April 30, 2026 and their study enrollment date. Though such children will be part of the analysis, we will not contact them if they are in the information-only or information-plus-assistance group (as they do not need information or assistance if they already got onto SSI, and will be highly unlikely to qualify for SSI if they qualify for Medicaid through the PH95 category).

4 Intervention details

4.1 Intervention sequence

Initial outreach: The study enrollment date will be defined by the date that we mail initial outreach letters to members of the cohort in the information-only and information-plus-assistance group (Figures 5 and 6 show these letters). To receive the application assistance, parents in the information-plus-assistance group can either complete an online Qualtrics survey (following the personalized link in their letter) or call ACDHS to have the same survey administered verbally over the phone by a staff member. We henceforth refer to this survey as the "online assistance form". This form is available on the American Economic Association (AEA) RCT registry page for our study.

Reminder outreach: In addition to the initial outreach letter, we will provide several rounds of follow-up reminder outreach to increase the likelihood that people in the information-only and information-plus-assistance groups engage with the intervention. Follow-up contact reminders will include a text message two weeks after the initial letter, a phone call from an ACDHS staff member three weeks after the initial letter, and a final text message four weeks after the initial letter. The staff member will leave a voicemail in the phone call if nobody answers. The contents of these messages are in Section 9.1.

As with the initial outreach letter, the outreach content will be aligned with the study group assignment – for example, the text messages to the outreach plus assistance group will include the link to the online assistance form. Additionally, the voicemail script will slightly differ if the parent has already started the online assistance form. We will exclude members of the information-plus-assistance group from any follow-up contact if they have already completed the online assistance form when the contact is scheduled to go out.

DR form completion: ACDHS will run a daily automated process that combines the self-reported information from any newly-completed online assistance forms with existing Medicaid claims data for the child, and uses this combined information to pre-fill the SSI DR form for the child. ACDHS will send a digital and physical copy of the completed DR form to the parent within a few business days after they complete the online assistance form. The physical copy will be mailed in a large yellow envelope along with a letter that provides instructions on the next steps in the SSI application process (Figures 7 and 8 show these letters for the Achieva referral and no Achieva referral groups). We will also enclose a smaller stamped envelope for the participant to mail their completed DR form to SSA. The digital copy of the DR form will be attached to an email along with a PDF version of the next-steps letter.

4.2 Measuring receipt of the initial outreach letters

The initial outreach letters will be mailed to parents using their address on file with ACDHS and will rely on parent-child relationship data from ACDHS records. These mailing addresses and inferred parent-child relationships may be incorrect in some cases due to ACDHS data quality issues. To gain some insight into whether the outreach letter successfully reached the intended parent (and to collect updated phone numbers to help with the reminder outreach), we put a message at the bottom of the letter instructing the recipient of the letter to text the word 'received' to an ACDHS phone number. This text will trigger an auto-response from ACDHS that asks the parent to confirm they are the parent or legal guardian of the target child. The results will provide partial evidence on the extent to which our treatment effects are dampened by a general failure to contact the intended individuals.

4.3 Conditions for excluding participants from outreach

We will exclude participants from some or all of the above outreach under three conditions:

1. 14.9% of children in the information-only and information-plus-assistance groups do

not have an existing parental phone number on file with ACDHS. We therefore cannot text or call the parents of these children unless they reveal their phone number to ACDHS by texting the word 'received' as described in Section 4.2.

2. We will stop contacting parents at any stage of the above outreach if we see that their child is currently receiving SSI or receiving PH95 Medicaid. This includes not mailing the initial outreach letter for children who meet one of these conditions on their study enrollment date.

3. We will stop texting or calling parents if they tell us at any point that they are not interested and do not wish to be further contacted.

4.4 Partial completions of the online assistance form

Some parents in the information-plus-assistance group may start to fill out the online assistance form but not fully complete it. For the partial-completers who at minimum reported their home address and confirmed their relationship to the child in the online form, ACDHS will "close out" their online form 60 days after the initial letter and use the partially-completed information to populate the DR form as best as possible and send it to the parent. Figures 9 and 10 show the letters that accompany the DR forms in this scenario.

Additionally, if the parent starts filling out the form for the first time *after* the final text message, ACDHS will call them one more time seven days after they started working on the form, assuming it was not yet completed in that subsequent week. In this call, we will ask if they need help or have any questions.

4.5 Expanding the study sample

We plan to assess the cumulative level of engagement with our offered assistance 6 months into the 12-month study enrollment period. If fewer than 20 percent of participants in the information-plus-assistance group have completed the online assistance form (either filling it out themselves or over the phone with ACDHS), we will consider expanding the study sample to increase power.

To identify new study participants, we would create an updated risk-scored pool of children who meet the same criteria as the original risk-scored pool: children age 0 to 15 who are currently receiving non-PH95 Medicaid and not receiving SSI, keeping only the highest-risk score child in each household. We would then randomize and enroll any new children who are in the top decile of risk scores in this pool, as long as they do not live in the same household as an existing study participant. Some new children will newly appear in

the top decile because they newly entered Medicaid in the time since the original risk-scored pool was created. Others will newly appear because their risk score moved up into the top decile with more recent medical claims information since the scores were first generated based on data as of April 30, 2026.

Based on an analysis of a historical version of the risk scored pool discussed in Section 7, we estimate that approximately 1,300 new children could be added to the study sample 6 months after the start of the study.[10] These newly eligible children have somewhat less intensive usage of care than those children initially included in the historical version of the risk scored pool (see Table 5), though are broadly similar and high risk relative to the broader population.[11]

Our decision to expand the sample will be based solely on the percentage of participants in the information-plus-assistance group that have received a fully-completed DR form from ACDHS. We will not estimate treatment effects on any outcomes until after study enrollment has permanently closed.

5 Outcomes

5.1 Primary outcomes

We will estimate treatment effects on two primary outcomes:

- **Application rate for SSI.** This is a binary outcome equal to 1 if the child applies for SSI within one year after their study enrollment date. This will be measured using SSA administrative data and will be available for everyone in the sample for whom we have a valid Social Security Number (SSN). For context, 98.7% of the children in the study sample have a valid SSN on file with ACDHS.

[10] The historical version of the risk scored pool includes those meeting the sample definitions as of November 30, 2024. We then created a new, updated version of this risk scored pool as of 6 months later (May 31, 2025). Following the criteria laid out above, an additional 1,324 children would have been newly eligible to be in the sample. This represents an increase of 37% relative to the initial sample size of 3,569 of children in the top decile of risk score from the sample created as of November 30, 2024.

[11] We alternatively considered potentially including children in the 85th to 89th percentile of risk scores in the event we would need to expand the study sample. However, these children were more dissimilar from the children initially included in the simulated study sample than those newly identified as in the top decile six months later. It is unsurprising that these newly identified children are different from the original sample members: only about 25% of them were new to Medicaid, with the remaining 75% already receiving Medicaid, indicating that they had lower risk scores in the original sample. Thus, this population is more like the marginal study sample member (those with risk scores closest to the 90th percentile) than the average study sample member (with the average potentially influenced by the riskiest children, many of whom are super-users of care).

- **Award rate for SSI.** This is a binary outcome equal to 1 if the child has an SSI payment due (i.e. they "receive" SSI) at any time within one year after their study enrollment date. Payment due dates are based on the date the child first became eligible to receive monthly SSI payments, which is the date of their application, not the date the award was officially processed. This outcome will be measured using ACDHS administrative data that is available for all children in the sample.[12]

5.2 Secondary outcomes

5.2.1 SSA administrative outcomes

Through a data sharing agreement with SSA, we will examine a set of additional outcomes from administrative data. These measures include the extent to which our intervention affects SSA's operating efficiency. This includes the number of days between the application date and when the filing was sent to the state Disability Determination Services office; the number of days it takes the Disability Determination Services office to make an initial decision on the application; the number of appeals (and successful appeals); and the number of applicants for whom SSA conducts a consultative examination and purchases additional patient records (as discussed in Strand and Anstreicher (2025)).

We hypothesize that our application assistance, which draws on Medicaid claims data to pre-populate the child's medical information, may provide SSA with more complete and accurate information than the applicant would have provided on their own. This could lead to faster processing and/or fewer appeals (if a correct decision is made in the first place) and thus reduce administrative burden for SSA staff.

Additionally, we will examine a range of other outcomes in SSA data. These include benefit payments, award rates conditional on application, and various reasons for application denial. The latter will help us better characterize the points at which people fall out of the application process: for example, whether they completed the ACDHS application assistance but never sent the form in, whether they sent the form in but did not schedule or attend an interview, and so on.

[12] As explained in Section 3.2, it is possible that some children in the study sample will *already* be receiving SSI as of their study enrollment date. We will retain all children in the impact analysis, but will exclude children from the outreach activities who we already know are receiving SSI as of their study enrollment date so as not to bother their parents with unnecessary information.

5.2.2 Follow-up survey outcomes

We will invite study participants to complete a follow-up survey 180 days after their study enrollment date.[13] We will select half of the control group to randomly exclude from the follow-up survey, while the other half of control group members will still get the survey. We will do this because of the potential that the survey itself could influence outcomes: the survey will be sent 6 months after study enrollment and will ask questions about SSI, whereas our primary outcomes measure applications and awards within 12 months after study enrollment. Thus, withholding a portion of the control group will allow us to potentially assess the extent to which the survey itself influenced SSI participation. Participants will have 30 days to complete the survey and will receive an incentive payment for their response. The survey will collect self-reported information on the following topics:

- Ratings of the difficulty of various aspects of the SSI application process
- Rating of how helpful it was to receive a pre-populated DR form from ACDHS (for information-plus-assistance group members only)
- Factual questions on basic SSI rules
- The perceived likelihood that the person's child qualifies for SSI
- Feelings of stigma related to SSI receipt
- Feelings of trust towards SSA

The complete survey instrument is available on the AEA RCT registry page for our study. This survey is primarily intended to provide additional descriptive information to help contextualize the causal impact analysis and explore mechanisms behind the observed effects. However, given that all three study groups will receive the survey, we may also attempt to estimate treatment effects on self-reported outcomes measured from the survey. We will use observable baseline characteristics to adjust for potential non-response bias when estimating impacts on these survey-based outcomes.

5.2.3 Downstream socioeconomic outcomes

If our intervention significantly increases the rate of SSI receipt, we may leverage this first-stage increase in an instrumental variables (IV) setting to estimate the causal effects of SSI receipt on downstream socioeconomic outcomes for the parent and child. Such outcomes could include health care usage, parental employment and earnings, education-related outcomes (such as absences, suspensions, and grades), and criminal justice-related outcomes.

[13] The message at the bottom of the initial outreach letter implies that participants can only receive this survey by texting ACDHS, but in truth we will send the survey to all participants.

We can access these outcomes in ACDHS administrative data. Assuming that the only way the intervention affected these downstream outcomes was by affecting the likelihood of being awarded SSI, this IV analysis would reveal the causal effect of SSI receipt.

6 Empirical strategy

6.1 Intent-to-treat (ITT) effects

For our primary analysis, we will estimate ITT effects using regressions of the form:

$$y_i = \alpha + \beta_1 T1_i + \beta_2 T2_i + X_i \gamma + \epsilon_i \tag{1}$$

where y_i is the outcome of interest (e.g. SSI award) and $T1_i$ is an indicator variable for individual i being assigned to the information only group, and $T2_i$ is an indicator variable for individual i being assigned to the information plus assistance group. The omitted category is the no-outreach control group.

The coefficients β_1 and β_2 are the parameters of interest and measure the effect of being randomized into each of the two treatment arms relative to the control. The X_i term is a vector of baseline covariates that are included to reduce the residual variance of the outcome and improve the precision of the treatment effect estimate. Our benchmark set of covariates includes the child's SSI risk score, age at study enrollment (years), female (1/0), Black (1/0), and ever received SSI prior to study enrollment (1/0). A small number of observations have missing values for one or more of these covariates. We will impute the within-arm median value of the covariate for any missing values. We will report treatment effects on our primary outcomes from a specification with no covariates and from a specification with the benchmark covariates. We may also test other covariate sets for robustness. We will use heteroskedasticity-robust standard errors.

We will make the following comparisons to test the effectiveness of our intervention:

1. Information-only vs. control: β_1
2. Information-plus-assistance vs. control: β_2
3. Information-plus-assistance vs. information-only: $\beta_2 - \beta_1$

If the impact of the information alone (β_1) is sufficiently small or insignificant, we will also estimate impacts pooling the information-only and control groups together. This effect is not possible to estimate in equation 1 because the control group is coded as the omitted

category. For this effect, we will instead use the regression:

$$y_i = \theta + \delta_1 T_i + X_i\psi + \omega_i \tag{2}$$

where T_i is now an indicator that equals 1 for participants in the information-plus-assistance group and equals 0 otherwise.

We will account for multiple hypothesis testing by reporting both unadjusted p-values and sharpened q-values that control the false discovery rate (Anderson, 2008). The q-values will be calculated within each outcome domain.

6.2 Independent effect of the Achieva referral

We will use the second layer of randomization within the information-plus-assistance group to estimate the effect of the subtreatment offering a referral to Achieva, relative to not receiving a referral. We will estimate this effect using the regression:

$$y_i = \kappa + \lambda_1 T_i + X_i\phi + \nu_i \tag{3}$$

Recall that the Achieva referral subtreatment consists only of an additional line of text in the mailed letter that accompanies a partially completed or fully completed DR form. Therefore, the analytic sample for this regression only includes participants in the information-plus-assistance group who engaged with our offer of assistance and received a partially completed or fully completed DR form from us. T_i is an indicator that equals 1 for participants in the Achieva referral subtreatment and equals 0 for participants who are in the information-plus-assistance group but not in the Achieva referral subtreatment.

6.3 Effects of SSI receipt on downstream outcomes

As mentioned in Section 5.2.3, we may endeavor to estimate the effect of SSI receipt on downstream socioeconomic outcomes by using the random assignment as an instrument that exogenously increases SSI receipt. If we do this, we will use two-stage least squares (TSLS) instrumental variables (IV) methods where the first stage outcome is an indicator for whether the child went on to receive SSI and the second stage regresses a downstream outcome on the first-stage fitted value. We may also test robustness with non-parametric IV methods to account for the interpretive difficulties of TSLS with covariates (Blandhol et al., 2026; Sloczynski, 2026).

This instrumental variables analysis will estimate the downstream effect of SSI enrollment among the study participants who were induced to receive SSI by the random assign-

ment. The credibility of this estimate will depend on the exclusion-restriction assumption that the treatment only affects downstream outcomes through its effect on SSI receipt. This is likely to be a reasonable assumption given that an offer of application assistance and/or information about SSI would likely only affect outcomes by increasing SSI receipt – the value of the application assistance and information is that it may help someone get on SSI, not in the assistance and information itself.

6.4 Treatment effect heterogeneity

We will estimate subgroup impact analyses by several characteristics measured on or prior to study enrollment to assess if treatment effects differ for those with certain characteristics. This will include comparing effects by SSI risk score (e.g. those above versus below the median for those in the final study sample), and by household income (e.g. those with some household income versus those with no household income). We will measure household income using parental earnings according to Pennsylvania unemployment insurance (UI) administrative wage records.

7 Power calculations

We use simulations to calculate the ex ante power of our experiment to detect a significant effect on the primary outcome of SSI receipt in the 12 months after study enrollment. We conduct the simulations using historical versions of the same ACDHS administrative data that we use to construct the actual study sample and measure actual SSI receipt among this historical sample.

We use a simulated study enrollment date of November 30, 2024. The simulation sample starts with all children who were receiving Medicaid in Allegheny County as of November 30, 2024 and were not receiving SSI as of this date. As with the actual study sample, we then exclude children who were receiving Medicaid under the PH95 eligibility category and we limit the sample to one child per household, keeping the child with the highest SSI risk score. This yielded a risk-scored pool of 35,695 children.[14] The final simulated study sample consists of the children with the 3,500 highest risk scores. We use a type I error rate of $\alpha = 0.05$ and target an 80% power level. We simulate power for a range of impact estimates and use 500 simulations for each impact estimate.

[14]Figure 3 shows the percentage of children in each risk score decile of the simulated risk-scored pool that go on to receive SSI in the year after the simulated study enrollment date. The top-decile children have a much higher rate of SSI receipt than the lower deciles. This affirms the predictive accuracy of our SSI risk scores and justifies our prioritization of the top-decile children for enrollment in the actual study.

Table 7 and Figure 4 present the results. The MDE's vary by treatment contrast because of the unbalanced random assignment scheme (1/4 of the sample in control, 1/4 in information-only, and 1/2 in information-plus-assistance). The minimum detectable effect (MDE) for information-only versus control is 3.6 pp. The MDE for information-plus-assistance versus control is 2.9 pp with no covariates and 3.1 pp with covariates. The MDE for the independent causal effect of the Achieva referral in the post-assistance letter (versus the no Achieva referral information plus assistance group) is 3.5 to 3.7 pp.

A 3.6 pp information-only treatment effect is somewhat smaller than the effect found by Finkelstein and Notowidigdo (2019) in their RCT that provided information through a mailing and follow-up postcard to potentially eligible SNAP beneficiaries. In our study, we will provide a more intensive set of follow-up beyond the initial mailing in the form of two text messages and one phone call. Finkelstein and Notowidigdo (2019) found a 4.7 pp effect of the Information Only treatment. This effect was on a base award rate of 5.8%, which is incidentally the same as the control group award rate of 5.8% in our own simulation sample. While our study involves children instead of older adults, the smaller MDE for our study than the results found in Finkelstein and Notowidigdo (2019) provides some reassurance that we are reasonably well-powered to detect an effect of pure information on SSI award rates.

For the form-filling assistance treatment, our power to detect an effect will depend on the level of engagement with our offer of assistance. In a preliminary pilot test, six out of 30 parents (20%) engaged with our assistance to the point that they received at least a partially-completed DR form from ACDHS. Publicly available data implies a 42% SSI award rate conditional on application among U.S. children in 2024.[15] Therefore, a 20% rate of engagement with our form-filling assistance could translate into a $0.2 \times 0.42 = 8.4$ pp effect size, which is well above the MDE of 2.9 pp. Multiple factors mean the impact in our study may be higher or lower even with the same 20% rate of engagement (not all children who receive a pre-filled DR form will end up submitting a complete application to SSA; the conditional award rate may be higher than 42% because we focus on children who have a relatively high predicted likelihood of qualifying for SSI; some people may apply based on the information alone but not use the assistance). Additionally, Finkelstein and Notowidigdo (2019) found an 11.8 pp effect of their Information Plus Assistance treatment, which entailed benefit counselors helping them fill out the application for SNAP benefits. This further suggests we are well-powered to detect an impact. Nonetheless, given the ex ante uncertainty in these determinants of the effect of our assistance on SSI applications and awards, particularly in light of the relatively more complicated application process for

[15]See Tables 57 and 63 in SSA (2025)

SSI than for SNAP, we may take actions midway through the study enrollment period to expand the sample size beyond 3,500 as described in Section 4.5.

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8 Figures and tables

Table 1: Predictor variables with strongest influence on individual risk scores

Predictor variable	**Variable type**	**Rank**
Number of days the child has been enrolled in Medicaid	Count	1
Race: Black	Indicator	2
Median home value ($) in child's home census tract	Continuous	3
Number of distinct Medicaid claims with a diagnosis of Pervasive Developmental Disorder	Count	4
Number of distinct Medicaid claims for an outpatient physical health-related emergency department visit	Count	5
Difference between top and bottom quintile of household income in child's home census tract	Continuous	6
Number of days since last Medicaid claim with a diagnosis of Pervasive Developmental Disorder	Continuous	7
Percent of residents below 150% of poverty line in child's home census tract	Continuous	8
Number of distinct Medicaid claims with a diagnosis of ADHD	Count	9
Number of days since the child was last enrolled in Medicaid	Continuous	10
Race: White	Indicator	11
Median family income ($) in child's home census tract	Continuous	12
Median monthly mortgage amount ($) in child's home census tract	Continuous	13
Number of days since child's last outpatient physical health-related emergency department visit	Continuous	14
Number of days since the child's last Medicaid claim with a diagnosis of Somatic Symptom Disorder	Continuous	15
Number of distinct Medicaid claims with a diagnosis of Specific Developmental Disorder	Count	16
Percent of families below 100% of poverty line in child's home census tract	Continuous	17
Number of distinct Medicaid claims for an inpatient physical health-related emergency department visit	Count	18
Percent of households that own a vehicle in child's home census tract	Continuous	19
Number of distinct Medicaid claims with a diagnosis of Conduct Disorder	Count	20
Percent of residents age 16+ in child's home census tract that are employed in white collar occupation	Continuous	21
Number of distinct Medicaid claims with a diagnosis of Intellectual Disability	Count	22
Number of distinct Medicaid claims with a diagnosis of Anxiety Disorder	Count	23
Number of distinct Medicaid claims with a diagnosis of Psychological Development Disorder	Count	24

Notes: This table presents the predictor variables in our SSI risk-scoring model that have the strongest influence on the individual child risk scores. We measure influence using Shapley Additive Explanation (SHAP) values. The counts of Medicaid enrollment days and Medicaid claims are measured over various time periods prior to the model run date of December 31, 2022. The variables that are characteristics of the child's home census tract come from American Community Survey (ACS) 2019-2023 5-year estimates: median home value (ACS Table B25077), median mortgage (ACS Table B25088), income disparity (ACS Table B19009), families below poverty line (ACS Table B17010), residents below 150% of poverty line (ACS Table C17002), white collar occupation (ACS Table C24010), median family income (ACS Table B19113), owns a motor vehicle (ACS Table B25044).

Table 2: SSI risk-scoring model performance metrics

Metric	**Value**
Area under the ROC curve (AUC)	0.967
Log-loss	0.084
Precision/Recall (Top 1%)	0.935 / 0.168
Precision/Recall (Top 5%)	0.761 / 0.685
Precision/Recall (Top 10%)	0.487 / 0.877
Calibration Coefficient	1.053
N	**102,519**

Notes: This table presents various measures of the performance of the SSI risk-scoring model. The dependent variable is a binary indicator for whether the child enrolls in SSI in the 12 months after the model run date. The AUC measures overall model discrimination, where a value of 1 indicates perfect classification. Log-loss measures prediction accuracy when penalizing confident misclassifications, where lower values indicate better performance. Precision and recall are reported at three risk-score thresholds (top 1%, 5%, and 10% of predicted scores). Precision is the share of predicted SSI enrollments that actually end up enrolling, and recall is the share of all actual SSI enrollments that were predicted to enroll. The calibration coefficient is the ratio of predicted to actual SSI enrollments, where a value near 1 indicates well-calibrated predictions.

Table 3: Characteristics of children in the risk-scored pool that forms the base of the study sample, by Medicaid PH95 status

	Sample mean				
	PH95	Non-PH95	Difference	Std. err.	p-value
SSI risk score	0.107	0.012	0.095	0.002	<0.001
Demographics					
Age as of April 30, 2026 (years)	8.94	7.39	1.54	0.052	<0.001
Black	0.086	0.517	-0.431	0.004	<0.001
Female	0.347	0.497	-0.149	0.006	<0.001
Mean quarterly household earnings in 2 yrs before April 30, 2026 ($)	15,846	7,426	8,420	371.8	<0.001
Has ever been on SSI prior to April 30, 2026	0.030	0.013	0.017	0.002	<0.001
Days with a Medicaid claim in year before April 30, 2026 (N)					
Inpatient hospitalization starting in ER	0.090	0.059	0.031	0.018	0.083
Inpatient hospitalization not starting in ER	0.055	0.215	-0.160	0.015	<0.001
Outpatient care in ER	0.271	0.423	-0.152	0.010	<0.001
Outpatient care not in ER	20.17	6.02	14.15	0.533	<0.001
Mental health care	11.81	4.45	7.36	0.416	<0.001
Prescription fill	8.00	3.29	4.71	0.149	<0.001
Ever had a mental health diagnosis before April 30, 2026					
Anxiety, trauma, and stress-related disorders	0.297	0.190	0.107	0.006	<0.001
Attention disorders	0.301	0.106	0.194	0.006	<0.001
Autism spectrum	0.404	0.067	0.337	0.006	<0.001
Behavioral and impulse control disorders	0.130	0.071	0.059	0.004	<0.001
Intellectual disability	0.029	0.004	0.024	0.002	<0.001
Mood and depressive disorders	0.062	0.036	0.025	0.003	<0.001
Speech, language, and learning disorders	0.336	0.080	0.255	0.006	<0.001
Social, attachment, and emotional disorders	0.013	0.009	0.004	0.001	0.003
Distinct mental health diagnoses in year before April 30, 2026 (N)	1.31	0.430	0.876	0.020	<0.001
Months enrolled in public benefits in year before April 30, 2026 (N)					
Medicaid	10.74	10.80	-0.061	0.035	0.079
SNAP	0.180	7.30	-7.12	0.024	<0.001
TANF	0.000	0.859	-0.859	0.011	<0.001
N	**6,694**	**60,861**			

Notes: This table presents the characteristics of the children in the risk-scored pool who were receiving PH95 Medicaid versus non-PH95 Medicaid as of April 30, 2026. The analytic sample in this table consists of all children in the risk-scored pool, including those who live in the same household as another child in the pool. The final study sample only includes children on non-PH95 Medicaid as of April 30, 2026 and only includes one child per household.

Table 4: Characteristics of children in the risk-scored pool that forms the basis of the study sample, by risk score

	Sample mean		Difference	Std. err.	p-value
	Sample children	Non-sample but eligible children			
SSI risk score	0.135	0.005	0.130	0.002	<0.001
Demographics					
Age as of April 30, 2026 (years)	7.68	6.89	0.786	0.076	<0.001
Black	0.439	0.508	-0.069	0.009	<0.001
Female	0.337	0.470	-0.133	0.008	<0.001
Mean quarterly household earnings in 2 yrs before April 30, 2026 ($)	8,229	7,231	998.1	191.3	<0.001
Has ever been on SSI prior to April 30, 2026	0.083	0.010	0.073	0.005	<0.001
Days with a Medicaid claim in year before April 30, 2026 (N)					
Inpatient hospitalization starting in ER	0.417	0.051	0.366	0.069	<0.001
Inpatient hospitalization not starting in ER	0.861	0.216	0.646	0.114	<0.001
Outpatient care in ER	0.721	0.446	0.275	0.026	<0.001
Outpatient care not in ER	26.68	5.51	21.17	0.915	<0.001
Mental health care	30.18	3.53	26.65	1.05	<0.001
Prescription fill	9.52	3.33	6.19	0.240	<0.001
Ever had a mental health diagnosis before April 30, 2026					
Anxiety, trauma, and stress-related disorders	0.377	0.189	0.188	0.008	<0.001
Attention disorders	0.377	0.113	0.265	0.008	<0.001
Autism spectrum	0.646	0.040	0.606	0.008	<0.001
Behavioral and impulse control disorders	0.257	0.073	0.185	0.008	<0.001
Intellectual disability	0.050	0.002	0.048	0.004	<0.001
Mood and depressive disorders	0.117	0.036	0.081	0.006	<0.001
Speech, language, and learning disorders	0.355	0.084	0.270	0.008	<0.001
Social, attachment, and emotional disorders	0.040	0.008	0.032	0.003	<0.001
Distinct mental health diagnoses in year before April 30, 2026 (N)	2.37	0.392	1.98	0.038	<0.001
Months enrolled in public benefits in year before April 30, 2026 (N)					
Medicaid	10.65	10.58	0.066	0.053	0.215
SNAP	5.71	6.77	-1.07	0.090	<0.001
TANF	0.610	0.727	-0.117	0.043	0.007
N	**3,500**	**31,500**			

Notes: Table presents the characteristics of the children in the risk-scored pool who were selected versus not selected to participate in the study, based on whether their SSI risk score is in the top decile of scores. The analytic sample in this table is limited to one child per household and excludes the children who were on PH95 Medicaid as of April 30, 2026.

Table 5: Characteristics of simulated study sample versus simulated additional sample

	Sample mean				
	Simulated study sample	Simulated additional sample 6 months later	Difference	Std. err.	p-value
SSI risk score	0.150	0.090	-0.060	0.003	<0.001
Demographics					
Age as of simulated study enrollment date	7.15	6.68	-0.465	0.156	0.003
Black	0.485	0.454	-0.031	0.018	0.083
Female	0.346	0.358	0.013	0.017	0.458
Mean quarterly household earnings in 2 yrs before simulated study enrollment date	7,439	6,853	-585.7	308.3	0.058
Has ever been on SSI prior to simulated study enrollment date	0.065	0.043	-0.022	0.008	0.004
Days with a Medicaid claim in year before risk-scoring date (N)					
Inpatient hospitalization starting in ER	0.477	0.267	-0.209	0.086	0.015
Inpatient hospitalization not starting in ER	1.08	0.767	-0.313	0.225	0.165
Outpatient care in ER	0.870	0.731	-0.139	0.052	0.007
Outpatient care not in ER	26.50	18.31	-8.19	1.36	<0.001
Mental health care	27.94	14.94	-13.00	1.67	<0.001
Prescription fill	9.20	7.44	-1.76	0.413	<0.001
Ever had a mental health diagnosis before risk-scoring date					
Anxiety, trauma, and stress-related disorders	0.343	0.321	-0.022	0.017	0.198
Attention disorders	0.341	0.312	-0.029	0.017	0.083
Autism spectrum	0.484	0.315	-0.169	0.017	<0.001
Behavioral and impulse control disorders	0.255	0.213	-0.042	0.015	0.004
Intellectual disability	0.042	0.025	-0.017	0.006	0.005
Mood and depressive disorders	0.111	0.091	-0.020	0.010	0.055
Speech, language, and learning disorders	0.309	0.219	-0.090	0.015	<0.001
Social, attachment, and emotional disorders	0.041	0.027	-0.014	0.006	0.022
Distinct mental health diagnoses in year before simulated study enrollment date (N)	2.23	1.57	-0.655	0.069	<0.001
Months enrolled in public benefits in year before risk-scoring date (N)					
Medicaid	10.74	11.09	0.356	0.089	<0.001
SNAP	5.95	5.82	-0.130	0.185	0.482
TANF	0.700	0.697	-0.003	0.091	0.973
N	**3,569**	**1,324**			

Notes: Table compares the characteristics of the children in the simulated study sample (N = 3,569, simulated study enrollment date of November 30, 2024) with the characteristics of the children who would qualify to be added to the study sample 6 months later (N = 1,324, simulated study enrollment date of May 31, 2025) based on our criteria for expanding the study sample as described in Section 4.5.

Table 6: Randomization balance

	Control	Info only	Info plus assistance	Info-only vs. control Diff.	Info-only vs. control p-value	Info-plus-assistance vs. control Diff.	Info-plus-assistance vs. control p-value
SSI risk score	0.132	0.137	0.135	0.005	0.403	0.003	0.502
Demographics							
Age as of April 30, 2026 (years)	7.97	7.73	7.51	-0.242	0.223	-0.467	0.006
Black	0.443	0.411	0.451	-0.032	0.179	0.008	0.714
Female	0.341	0.330	0.338	-0.010	0.649	-0.002	0.907
Mean quarterly household earnings in 2 yrs before April 30, 2026 ($)	7,853	8,832	8,134	978.8	0.075	281.5	0.508
Has ever been on SSI prior to April 30, 2026	0.082	0.079	0.085	-0.003	0.792	0.003	0.803
Days with a Medicaid claim in year before April 30, 2026 (N)							
Inpatient hospitalization starting in ER	0.480	0.447	0.370	-0.033	0.878	-0.110	0.571
Inpatient hospitalization not starting in ER	0.666	1.06	0.861	0.390	0.258	0.195	0.475
Outpatient care in ER	0.696	0.714	0.736	0.018	0.808	0.040	0.542
Outpatient care not in ER	25.55	26.01	27.57	0.465	0.853	2.02	0.361
Mental health care	31.44	30.72	29.28	-0.722	0.810	-2.16	0.408
Prescription fill	9.09	9.73	9.63	0.643	0.324	0.546	0.333
Ever had a mental health diagnosis before April 30, 2026							
Anxiety, trauma, and stress-related disorders	0.408	0.376	0.363	-0.032	0.171	-0.045	0.026
Attention disorders	0.397	0.376	0.369	-0.021	0.377	-0.028	0.165
Autism spectrum	0.650	0.648	0.643	-0.002	0.920	-0.007	0.707
Behavioral and impulse control disorders	0.266	0.269	0.247	0.002	0.914	-0.019	0.299
Intellectual disability	0.058	0.053	0.045	-0.006	0.602	-0.014	0.142
Mood and depressive disorders	0.127	0.125	0.109	-0.002	0.885	-0.018	0.190
Speech, language, and learning disorders	0.353	0.345	0.360	-0.008	0.726	0.007	0.729
Social, attachment, and emotional disorders	0.042	0.045	0.037	0.002	0.815	-0.005	0.529
Distinct mental health diagnoses in year before April 30, 2026 (N)	2.39	2.45	2.32	0.064	0.555	-0.066	0.462
Months enrolled in public benefits in year before April 30, 2026 (N)							
Medicaid	10.67	10.60	10.66	-0.064	0.650	-0.004	0.974
SNAP	5.78	5.47	5.79	-0.312	0.197	0.002	0.994
TANF	0.727	0.494	0.610	-0.233	0.042	-0.117	0.270
F-stat				0.926		0.745	
p-value				0.558		0.855	
Total sample size (N)	**875**	**875**	**1,750**				

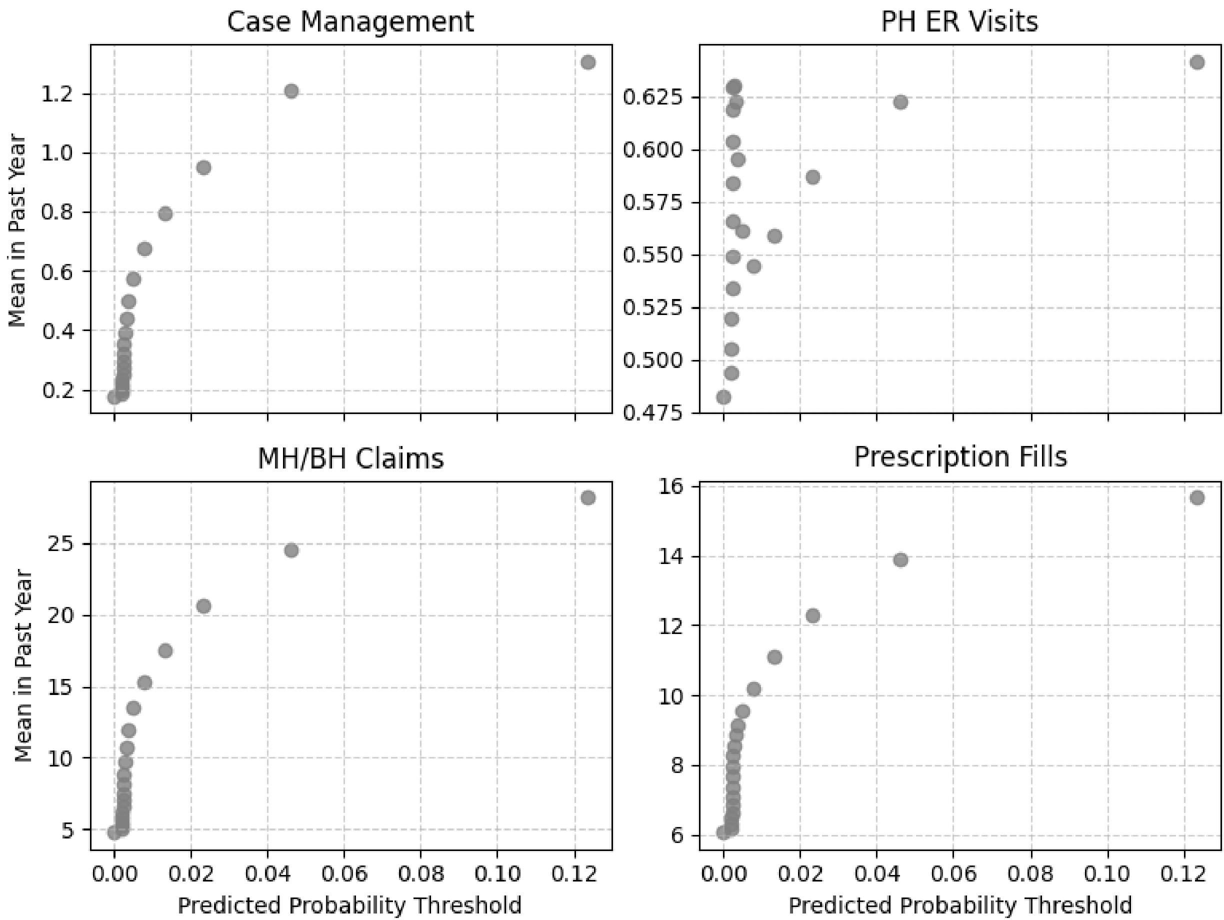
Notes: Table shows mean baseline characteristics of the study sample. All characteristics are measured on or before April 30, 2026, which is the date that we created the risk-scored pool of children that forms the basis of the study sample. The joint F test is conducted using randomization inference.

Table 7: Minimum detectable effect on SSI award outcome

Treatment contrast	Size of arms being contrasted	MDE w/o covariates	MDE w/covariates
Info + assistance vs. Control	1/2 vs. 1/4	0.029	0.031
Info + assistance vs. Info only	1/2 vs. 1/4	0.031	0.030
Info only vs. Control	1/4 vs. 1/4	0.036	0.036
Info + assistance w/Achieva vs. Info + assistance w/o Achieva	1/4 vs. 1/4	0.035	0.037
Info + assistance vs. Info only and Control combined	1/2 vs. 1/2	0.025	0.026

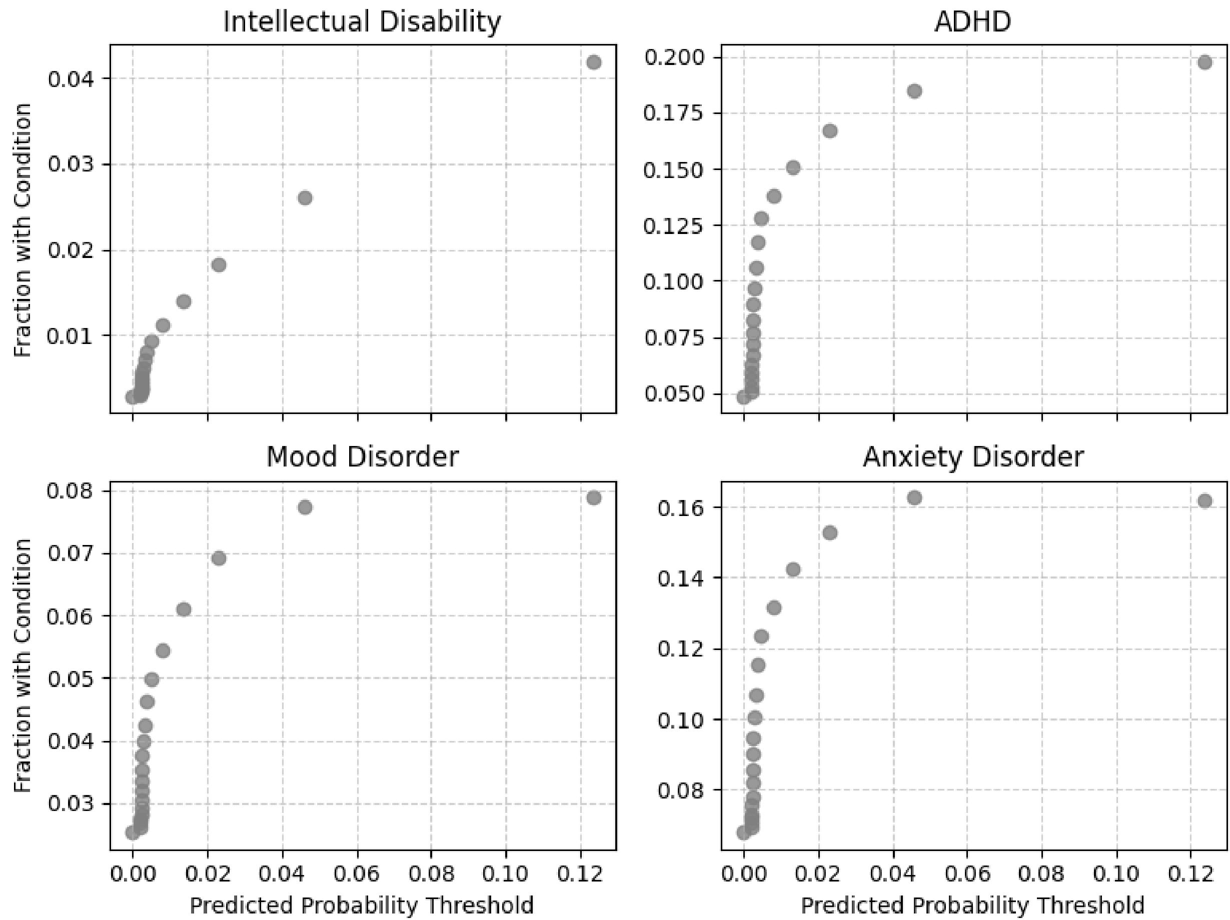
Notes: Table presents minimum detectable effects on the likelihood of receiving SSI in the 12 months after study enrollment.

Figure 1: Medicaid-funded health care usage in calendar year 2022 by SSI risk score ventile, among children in risk-scoring cohort who were not on SSI as of model run date



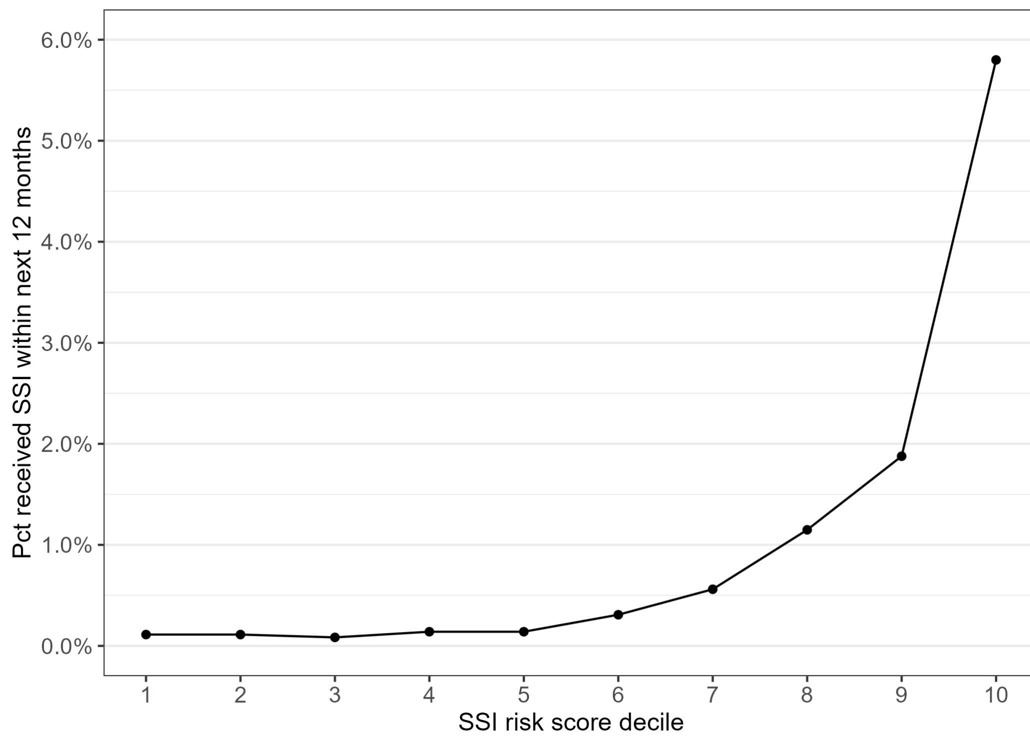
Notes: This figure plots various measures of Medicaid-funded health care usage by ventile of predicted SSI risk score among the children in the risk-scoring cohort who were not on SSI as of the model run date (December 31, 2022). Care usage is measured during calendar year 2022.

Figure 2: Diagnoses in calendar year 2022 by SSI risk score ventile, among children in risk-scoring cohort who were not on SSI as of model run date



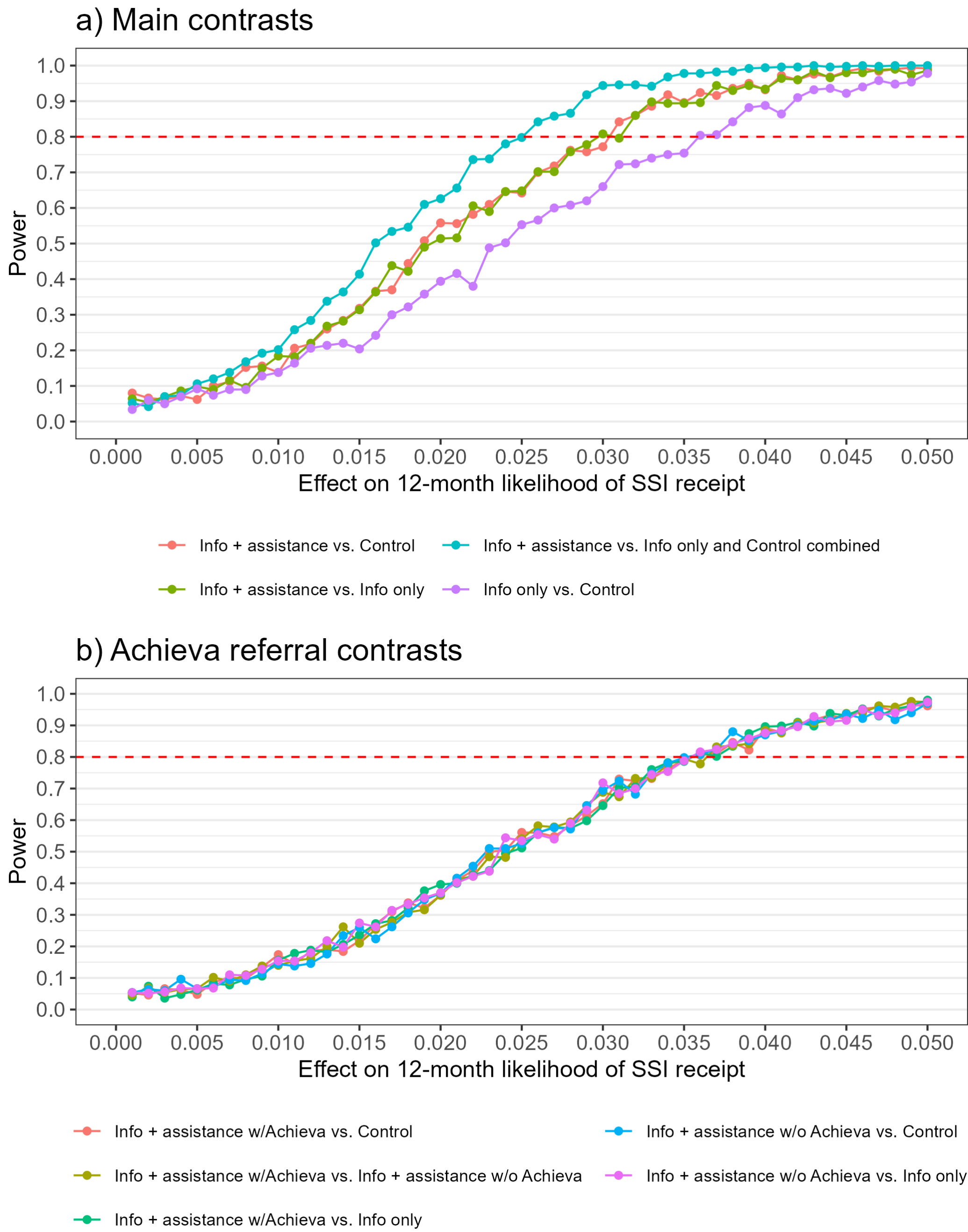
Notes: This figure plots various diagnosis measures by ventile of predicted SSI risk score among the children in the risk-scoring cohort who were not on SSI as of the model run date (December 31, 2022). Diagnoses are measured during calendar year 2022.

Figure 3: SSI award rate in the 12 months after November 30, 2024 among the simulated risk-scored pool



Notes: This figure presents the percentage of children in the simulated risk-scored pool (N = 35,695) in each risk score decile that received SSI at some point in the 12 months after their simulated study enrollment date of November 30, 2024

Figure 4: Power to detect effect on SSI award outcome by effect size



Notes: Figure presents power to detect a significant effect on the SSI award outcome over a range of simulated effect sizes.

9 Appendix

This appendix presents the outreach materials that will be sent to the study participants. The $1,016 maximum monthly SSI benefit amount mentioned in the letters and text messages is the sum of the maximum monthly federal benefit as of January 1, 2026 ($994 according to https://www.ssa.gov/ssi/amount) and the Pennsylvania state-level monthly SSI payment of $22.10 that augments the federal payment (see http://services.dpw.state.pa.us/oimpolicymanuals/ma/387_SSI/387_3_SSI_Benefits.htm for details on the state-level payment).

9.1 Outreach materials

9.1.1 Letters

Figure 5: Information-only outreach letter

Reference ID: [study_id]

Dear parent or guardian of [child's 1st and last name],

Did you know that the **Supplemental Security Income (SSI)** program provides cash payments of up to **$1,016 per month** (up to $12,192/year) to families with limited resources and a child with a disability?

Many children with a medical history like [child's first name]'s already receive SSI benefits. Depending on your annual income, your family may be eligible for these valuable monthly payments.

You can begin the SSI application process by visiting www.ssa.gov/apply/ssi or by calling 1-800-772-1213 to schedule an appointment at your local Social Security office.

Consider applying for SSI today!

PS: Please text the word 'received' to to confirm that you received this letter. This will enable you to receive a **paid** survey in a few months to provide your feedback on this outreach.

Figure 6: Information-plus-assistance outreach letter

Allegheny County
Department *of*
Human Services

Reference ID: [study_id]

Dear parent or guardian of [child's 1st and last name],

Did you know that the **Supplemental Security Income (SSI)** program provides cash payments of up to **$1,016 per month** (up to $12,192/year) to families with limited resources and a child with a disability?

Many children with a medical history like [child's first name]'s already receive SSI benefits. Depending on your annual income, your family may be eligible for these valuable monthly payments.

The Allegheny County Department of Human Services (DHS) can help you complete the first step of the SSI application, called the Child Disability Report. You have **two options** to get our help:

1. Fill out this online form with information about your child's health and medical history: [survey link]

2. Or call us at ██████ A representative will ask you some questions about your child's health and medical history. If we do not answer, please leave us a message with the reference ID number at the top of this letter, and we'll get back to you quickly!

Then we will send you the completed Child Disability Report, along with instructions for the next steps in the SSI application process.

You can also apply for SSI without our help by visiting www.ssa.gov/apply/ssi or by calling 1-800-772-1213 to schedule an appointment at your local Social Security office.

Consider applying for SSI today!

PS: Please text the word 'received' to ██████ to confirm that you received this letter. This will enable you to receive a **paid** survey in a few months to provide your feedback on this outreach.

Figure 7: Post-assistance letter for fully-completed forms, with Achieva referral

Allegheny County
Department *of*
Human Services

Reference ID: «study_id»

Dear parent or guardian of «child_fname» «child_lname»,

Thank you for providing the necessary information to start «child_fname»'s Supplemental Security Income (SSI) application. We have enclosed the completed Child Disability Report for «child_fname». You have now completed the most difficult part of the application process – you are well on your way to applying for SSI!

To complete your child's application for SSI, you need to do the following:

Step 1: Call 1-800-772-1213 to schedule a meeting with the local Social Security Administration (SSA) office. (Tip: say "agent" when you call to be connected to a human.) This meeting can be done over the phone or in person. *Please schedule this meeting before completing the next steps.* If your meeting will be over the phone, let the representative know you plan to mail your completed form, and get the address of the local SSA office to send it to (the addresses of the SSA offices in Allegheny County are also on the back of this letter for reference).

Step 2: Gather the following things for your meeting with SSA (it is okay if you don't have all of them):

a. An original or certified copy of the child's birth certificate. If the child was born in another country, please also include proof of U.S. citizenship or legal residency
b. Names and Social Security Numbers for all children and adults who live in the household
c. The child's Individualized Family Service Plan (IFSP) for Early Intervention services or Individualized Education Program (IEP) for special education services, if the child has one
d. Proof of current income for the child and family members living in the household (for example, pay stubs, self-employment tax returns, unemployment or other program benefits, child support)
e. Proof of resources for the child and parents living in the household (for example, bank account statements, life insurance policies, certificates of deposit, stocks or bonds)

Step 3: Review the enclosed Child Disability Report to ensure it covers all important information. **Please write your child's Social Security number in Section 1B of the form.** In Section 10, you can add information about any doctor or hospital visits not included elsewhere. You can also add dates of upcoming doctor appointments (if known). It is okay if some fields are left blank.

Step 4: *If your meeting with SSA is in-person:* Bring the enclosed Child Disability Report to your meeting with SSA. *If your meeting with SSA is over the phone:* Address and mail the enclosed Child Disability Report to SSA using the prepaid envelope that is provided here. Mail the form at least one week before your meeting.

Extra tip: You are welcome to call ███ at Achieva Family Trust at ███ for help with the next steps in the SSI application process. Achieva helps families like yours apply for SSI every day!

As a reminder, the SSI program provides cash payments of up to $1,016 per month to families that have limited resources and a child with a disability.

Good luck with your application!

One Smithfield Street, Pittsburgh, PA 15222 | 412-244-3549 | alleghenycounty.us/dhs

Figure 8: Post-assistance letter for fully-completed forms, without Achieva referral

Allegheny County
Department *of*
Human Services

Reference ID: «study_id»

Dear parent or guardian of «child_fname» «child_lname»,

Thank you for providing the necessary information to start «child_fname»'s Supplemental Security Income (SSI) application. We have enclosed the completed Child Disability Report for «child_fname». You have now completed the most difficult part of the application process – you are well on your way to applying for SSI!

To complete your child's application for SSI, you need to do the following:

Step 1: Call 1-800-772-1213 to schedule a meeting with the local Social Security Administration (SSA) office. (Tip: say "agent" when you call to be connected to a human.) This meeting can be done over the phone or in person. *Please schedule this meeting before completing the next steps.* If your meeting will be over the phone, let the representative know you plan to mail your completed form, and get the address of the local SSA office to send it to (the addresses of the SSA offices in Allegheny County are also on the back of this letter for reference).

Step 2: Gather the following things for your meeting with SSA (it is okay if you don't have all of them):

a. An original or certified copy of the child's birth certificate. If the child was born in another country, please also include proof of U.S. citizenship or legal residency
b. Names and Social Security Numbers for all children and adults who live in the household
c. The child's Individualized Family Service Plan (IFSP) for Early Intervention services or Individualized Education Program (IEP) for special education services, if the child has one
d. Proof of current income for the child and family members living in the household (for example, pay stubs, self-employment tax returns, unemployment or other program benefits, child support)
e. Proof of resources for the child and parents living in the household (for example, bank account statements, life insurance policies, certificates of deposit, stocks or bonds)

Step 3: Review the enclosed Child Disability Report to ensure it covers all important information. **Please write your child's Social Security number in Section 1B of the form.** In Section 10, you can add information about any doctor or hospital visits not included elsewhere. You can also add dates of upcoming doctor appointments (if known). It is okay if some fields are left blank.

Step 4: *If your meeting with SSA is in-person:* Bring the enclosed Child Disability Report to your meeting with SSA. *If your meeting with SSA is over the phone:* Address and mail the enclosed Child Disability Report to SSA using the prepaid envelope that is provided here. Mail the form at least one week before your meeting.

As a reminder, the SSI program provides cash payments of up to $1,016 per month to families that have limited resources and a child with a disability.

Good luck with your application!

One Smithfield Street, Pittsburgh, PA 15222 | 412-244-3549 | alleghenycounty.us/dhs

Figure 9: Post-assistance letter for partially-completed forms, with Achieva referral

Allegheny County Department *of* Human Services

Reference ID: «study_id»

Dear parent or guardian of «child_fname» «child_lname»,

We recently contacted you with an offer to help you apply for Supplemental Security Income (SSI) benefits on behalf of your child «child_fname». Enclosed is a partially-completed Child Disability Report for «child_fname». We filled out this form as best we could using our existing records.

To complete your child's application for SSI, you need to do the following:

Step 1: Review the enclosed Child Disability Report and fill in any missing information as best you can. **Please write your child's Social Security number in Section 1B of the form.** In Section 10, you can add information about any doctor or hospital visits not included elsewhere. You can also add dates of upcoming doctor appointments (if known). It is okay if some fields are left blank.

Step 2: Call 1-800-772-1213 to schedule a meeting with the local Social Security Administration (SSA) office. (Tip: say "agent" when you call to be connected to a human.) This meeting can be done over the phone or in person. *Please schedule this meeting before completing the next steps.* If your meeting will be over the phone, let the representative know you plan to mail your completed form, and get the address of the local SSA office to send it to (the addresses of the SSA offices in Allegheny County are also on the back of this letter for reference).

Step 3: Gather the following things for your meeting with SSA (it is okay if you don't have all of them):

a. An original or certified copy of the child's birth certificate. If the child was born in another country, please also include proof of U.S. citizenship or legal residency
b. Names and Social Security Numbers for all children and adults who live in the household
c. The child's Individualized Family Service Plan (IFSP) for Early Intervention services or Individualized Education Program (IEP) for special education services, if the child has one
d. Proof of current income for the child and family members living in the household (for example, pay stubs, self-employment tax returns, unemployment or other program benefits, child support)
e. Proof of resources for the child and parents living in the household (for example, bank account statements, life insurance policies, certificates of deposit, stocks or bonds)

Step 4: *If your meeting with SSA is in-person:* Bring the enclosed Child Disability Report to your meeting with SSA. *If your meeting with SSA is over the phone:* Address and mail the enclosed Child Disability Report to SSA using the prepaid envelope that is provided here. Mail the form at least one week before your meeting.

Extra tip: You are welcome to call [redacted] at Achieva Family Trust at [redacted] for help with the next steps in the SSI application process. Achieva helps families like yours apply for SSI every day!

As a reminder, the SSI program provides cash payments of up to $1,016 per month to families that have limited resources and a child with a disability.

Good luck with your application!

One Smithfield Street, Pittsburgh, PA 15222 | 412-244-3549 | alleghenycounty.us/dhs

Figure 10: Post-assistance letter for partially-completed forms, without Achieva referral

Allegheny County Department *of* Human Services

Reference ID: «study_id»

Dear parent or guardian of «child_fname» «child_lname»,

We recently contacted you with an offer to help you apply for Supplemental Security Income (SSI) benefits on behalf of your child «child_fname». Enclosed is a partially-completed Child Disability Report for «child_fname». We filled out this form as best we could using our existing records.

To complete your child's application for SSI, you need to do the following:

Step 1: Review the enclosed Child Disability Report and fill in any missing information as best you can. **Please write your child's Social Security number in Section 1B of the form.** In Section 10, you can add information about any doctor or hospital visits not included elsewhere. You can also add dates of upcoming doctor appointments (if known). It is okay if some fields are left blank.

Step 2: Call 1-800-772-1213 to schedule a meeting with the local Social Security Administration (SSA) office. (Tip: say "agent" when you call to be connected to a human.) This meeting can be done over the phone or in person. *Please schedule this meeting before completing the next steps.* If your meeting will be over the phone, let the representative know you plan to mail your completed form, and get the address of the local SSA office to send it to (the addresses of the SSA offices in Allegheny County are also on the back of this letter for reference).

Step 3: Gather the following things for your meeting with SSA (it is okay if you don't have all of them):

a. An original or certified copy of the child's birth certificate. If the child was born in another country, please also include proof of U.S. citizenship or legal residency
b. Names and Social Security Numbers for all children and adults who live in the household
c. The child's Individualized Family Service Plan (IFSP) for Early Intervention services or Individualized Education Program (IEP) for special education services, if the child has one
d. Proof of current income for the child and family members living in the household (for example, pay stubs, self-employment tax returns, unemployment or other program benefits, child support)
e. Proof of resources for the child and parents living in the household (for example, bank account statements, life insurance policies, certificates of deposit, stocks or bonds)

Step 4: *If your meeting with SSA is in-person:* Bring the enclosed Child Disability Report to your meeting with SSA. *If your meeting with SSA is over the phone:* Address and mail the enclosed Child Disability Report to SSA using the prepaid envelope that is provided here. Mail the form at least one week before your meeting.

As a reminder, the SSI program provides cash payments of up to $1,016 per month to families that have limited resources and a child with a disability.

Good luck with your application!

One Smithfield Street, Pittsburgh, PA 15222 | 412-244-3549 | alleghenycounty.us/dhs

9.1.2 Text messages

Text message for information-only group: "Important message from Allegheny County Dept of Human Services: Your child [child's name] might be eligible to receive Supplemental Security Income (SSI) benefits. SSI provides cash payments of up to $1,016 per month to families with limited resources and a child with a disability. You can begin the application process by visiting www.ssa.gov/apply/ssi. Msg&data rates may apply. Reply STOP to opt-out."

Text message for information-plus-assistance group: "Important message from Allegheny County Dept of Human Services: Your child [child's name] might be eligible to receive Supplemental Security Income (SSI) benefits. SSI provides cash payments of up to $1,016 per month to families with limited resources and a child with a disability. We'd like to help you complete the SSI application for [child's name]. Click here to get started: [link to assistance form]. You can also call us for help at [ACDHS phone number]. Your reference # for this assistance is [child study ID].Msg&data rates may apply. Reply STOP to opt-out."

9.1.3 Voicemail scripts

Voicemail for information-only group: "Hello, my name is [caller's name] and I'm calling from the Allegheny County Department of Human Services. This message is for the parent of [child's name]. We recently sent you a letter and text message to let you know that [child's name] might be eligible to receive SSI benefits. SSI provides cash payments of up to $1,016 per month to families with limited resources and a child with a disability. You can begin the SSI application process by visiting www.ssa.gov/apply/ssi or by calling 1-800-772-1213. Thanks and have a nice day."

Voicemail for information-plus-assistance group members who have not started the ACDHS assistance form yet: "Hello, my name is [caller's name] and I'm calling from the Allegheny County Department of Human Services. This message is for the parent of [child's name]. We recently sent you a letter and text message to let you know that [child's name] might be eligible to receive SSI benefits. SSI provides cash payments of up to $1,016 per month to families with limited resources and a child with a disability. We'd like to help you complete the first step of the SSI application for [child's name] You can follow the link in the letter that we sent and work through the form yourself, or you can call us at [ACDHS phone number] and we'll help you complete the form over the phone. You can get the link to the form again by texting the word SSI to [ACDHS phone number]. Thanks and have a nice day."

Voicemail for information-plus-assistance group members who started the ACDHS assistance form but have not finished it: "Hello, my name is [caller's name] and I'm calling from the Allegheny County Department of Human Services. This message is for the parent of [child's name]. We recently sent you a letter and text message to let you know that [child's name] might be eligible to receive SSI benefits. SSI provides cash

payments of up to $1,016 per month to families with limited resources and a child with a disability. It looks like you already started working through the online form that we sent you, but you haven't completed it yet. Please call us at [ACDHS phone number] if you'd like our help with completing this form or if you have any questions about it. You can get the link to the form again by texting the word SSI to [ACDHS phone number]. Thanks and have a nice day."