

Testing the Impact of Guaranteed Basic Income for Low-Income Households in Rochester: Pre-Analysis Plan

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Introduction

This plan outlines the hypotheses and empirical approach used to measure the impact of the guaranteed basic income pilot program being administered by the City of Rochester, NY. This pre-analysis plan has been created prior to the receipt of any post-randomization data.

Overview of the Study

The City of Rochester is piloting a new guaranteed basic income program. Interested low-income residents applied to the pilot, and a subset of applicants were randomly selected to receive payments of \$500 each month for a year. The program was administered in two cohorts, with the first cohort receiving monthly payments from September 2023 through August 2024, and the second cohort receiving monthly payments from December 2023 through November 2024. Recipients faced no restrictions on how they could use the cash payments. The City of Rochester (City) and the Black Community Focus Fund (BCFF) are collaborating with the Wilson Sheehan Lab for Economic Opportunities (LEO) on an impact evaluation testing the effect that receiving these payments had on low-income Rochester residents.

Evaluation Design

Eligibility

Individuals were eligible to apply for the program if they met the following criteria:

- Have household income at or below 185% federal poverty level (FPL)
- Be 18 years of age or older
- Be a City of Rochester resident and have been a resident for one year prior to applying
- Reside in a qualifying census tract

Additionally, while multiple individuals from the same household could apply for the GBI pilot, only one individual within a household was eligible to be selected for the program.

Randomization

The authorizing legislation required that the program be administered across two separate program cohorts. The City had funding to enroll 351 applicants into the GBI pilot and 175 program slots were allocated to the first program cohort and the remaining 176 program slots were allocated to the second cohort. Applications were accepted for both program cohorts at the same time. The program application was open on the City website for one week from June 22, 2023, through June 29, 2023. Applicants

completed the online application, which collected contact information as well as baseline demographic information and some baseline measures of outcomes. Applicants self-attested to program eligibility (i.e., age, income, residency status within a qualifying census tract) at the time of the application.

Program slots were allocated to applicants through a randomly sorted list. The City provided the research team with application information for all program applicants. The research team first cleaned the list of applications and removed duplicate applications in the instances where the same individual applied for the program multiple times. In total, there were 11,698 eligible and unique applicants.

The research team then identified household groups within the application data. Applicants provided names and ages of other household members in the application. Applicants were grouped into households based on address information and matching names across listed household members. Each individual on the list of unique applicants was assigned a random number and the list was sorted from smallest to largest numbers. In total, there were 11,590 household groups among the 11,698 applicants. During each cohort’s enrollment period, the research team provided contact information to BCFF working down the randomly sorted list until all program slots were filled. If an individual was selected from a household group with more than one applicant, all subsequent individuals in that household group would be skipped even if they had a sufficiently low random number to be selected. Thus, the number of applications in a household group slightly affected an applicant’s treatment probability. In total, 203 and 207 individuals were contacted to enroll the 175 and 176 program participants in cohorts 1 and 2, respectively.

Intervention

The treatment group is composed of individuals who were contacted by BCFF for program enrollment. Applicants who were enrolled in the program received \$500 per month over a total of 12 months. The control group, which is composed of all applicants who were not selected to be contacted by BCFF for program enrollment, did not receive monthly GBI payments.

	Application Window	Program Enrollment	First Payment	Final Payment
Cohort 1	Week of June 22, 2023	July 17–August 18, 2023	September 15, 2023	August 15, 2024
Cohort 2	Week of June 22, 2023	September 18 –November 20, 2023	December 1, 2024	November 1, 2024

During the program application, individuals could express interest in the City’s financial coaching program. Those who expressed an interest, both individuals in the treatment and control groups, were contacted by the City’s Office of Financial Empowerment with additional information about the free services offered by the Rochester Financial Empowerment Center.

Data Sources

The following section summarizes the planned primary data sources for this project. Notably, securing access to these data sources is partially complete. Given this, any outcomes for which we do not already have data secured may ultimately be excluded if there are barriers to gathering the needed information.

Rochester GBI Intake Application

The intake application provides information on baseline demographics and socioeconomic characteristics. Additionally, it collects personally-identifiable information that will be used to link to administrative records and to contact study participants to complete a follow-up survey.

Rochester GBI Program Data

Rochester will provide records that will allow the research team to measure program enrollment, participation, and completion of treatment group members.

Web Survey

The research team has contracted with NORC at the University of Chicago to collect a web-based follow-up survey. The survey will be collected during two waves in 2024, roughly 12 months after payments commenced for the two program cohorts. The initial survey collection period will begin August 5, 2024, and proceed for four weeks. The second survey collection period will begin October 14, 2024, and proceed for four weeks. During each collection period, the treatment group from the corresponding program cohort will be contacted via text, email, and phone to complete a survey. An additional 500 control group applicants will also receive survey invitations during each collection period (for a total of 1,000 potential control group survey respondents). Survey respondents will be provided a gift card incentive for their participation. During the survey, respondents will be asked whether they would prefer receiving a \$25 gift card within a week of completing the survey or receiving a \$50 gift at the end of a roughly 4 week waiting period. The survey will ask questions related to income and spending, housing and transportation, financial well-being and banking, financial anxiety, health and well-being, and social connectedness. The survey instrument will be included in the RCT registry.

Experian Credit Records

We will link to data on credit access and utilization through Experian. Experian records provide information on credit scores, debt, credit inquiries, and delinquency. All unique program applicants will be linked to credit records using name, address, and date of birth. Data will be collected on a quarterly basis with one year of lag starting with the year prior to application. For example, data from Q2 2023 will be collected no earlier than July 2024. Using this data, we will construct quarterly measures of credit score, credit usage (by type), and credit repayment (e.g., balance in collections, balance on derogatory accounts).

National Student Clearinghouse

To measure post-secondary educational outcomes, we plan to access data from the National Student Clearinghouse. The research team has not yet established data sharing agreements with this source for this study. However, we do not anticipate significant obstacles to accessing these data.

Infutor

We plan to use data from Infutor to measure the effect of the program on housing stability. Infutor holds data on the address histories of individuals in the United States. With this data, we will be able to measure how frequently study participants have an address change, allowing us to approximate housing stability.

LEO has an existing relationship with Infutor which will allow us to collect this data on study participants.

Proposed Analysis

Specification

This study is an RCT, and those who were randomly selected to treatment (i.e., to be contacted by BCFF) and the control group (i.e., those not selected to be contacted by BCFF) should look similar to each other on average. Thus, any difference in outcomes between groups can be attributed to their treatment status.

The research team will estimate differences in outcomes using the following intent-to-treat (ITT) model:

$$y_i = \alpha + \beta T_i + X_i \Gamma + \sigma_h + \epsilon_i$$

Where y_i is an outcome measure for person i , and X_i represents a vector of observed characteristics for person i measured prior to random assignment. The variables in X will include demographic information and pre-randomization measures of the outcome variable (when available) collected from the GBI application. When using administrative credit data, X will include credit outcomes measured in quarters prior to program application. σ_h is a vector of fixed effects for the number of program applicants within the household group to account for the fact that treatment probability was based on the number of applications received from individuals living in the same household. The key covariate in the analysis will be the dummy variable for treatment status T_i , which equals one if the program applicant was contacted by BCFF for potential program enrollment, and zero otherwise. Note, not all individuals selected to be contacted by BCFF were enrolled in the GBI pilot and received funds. The research team will also report treatment-on-the-treated (TOT) estimates that come from a two-stage model that instruments for the receipt of GBI payments (R_i) with the randomly assigned treatment status (T_i).

We will report estimates of $\hat{\beta}$ from a model that includes fixed effects for the number of applicants submitted from your household group, the value of the outcome measured prior to randomization (if available), and additional demographic controls (age, age-squared, indicators for education level at baseline, gender, indicator for non-hispanic black, indicator for non-hispanic white, indicator for hispanic, indicators for marital status).

We will report heteroskedasticity-robust standard errors.

Outcomes

The two primary sources of outcome data for the study are administrative credit data from Experian and a web survey collected during the final month of the GBI pilot program. We separately specify primary and secondary outcomes for each data source below. The primary outcome domain for this study measures financial distress or financial anxiety.

Primary Credit Outcomes

Our main set of outcomes measure the amount of distressed credit an individual has on their credit report.

- Primary measures:
 - Total balance in collections
 - Total balance in derogatory accounts
- Secondary measures:
 - Credit score
 - Has a prime credit score (≥ 650)
 - Has a poor credit score (< 580)
 - Total debt excluding auto loans and mortgages
 - Credit card balance
 - Has any car loan or lease
 - Has a mortgage
 - Total balance in non-medical collections
 - Total balance in medical collections
 - Number of credit inquiries

Primary Survey Outcome Domain

Our primary set of survey outcomes measure an individual's level of financial distress and financial anxiety. For our primary outcome, we will report the average standardized treatment effect of the outcomes specified below

- Primary measure:
 - Average standardized treatment effect on financial distress and anxiety outcomes
 - Unable to afford enough food (last 12 months)
 - Charged a late fee by landlord or mortgage lender (last 12 months)
 - Utilities disconnected (last 12 months)
 - Evicted or foreclosed on (last 12 months)
 - Worried about eviction or foreclosure (last 12 months)
 - Worried about utilities disconnection (last 12 months)
 - Anticipate actual hardship often or almost always (next 3 months)
 - Somewhat worried or very worried about eviction or foreclosure (next 3 months)
 - Somewhat worried or very worried about utilities disconnection (next 3 months)
 - Selected \$25 gift card survey incentive to be received this week rather than the \$50 gift card in a month
- Secondary outcomes:
 - Effect on each outcome within the domain
 - Average standardized treatment effect on retrospective actual hardship (unable to afford food; charged a late fee; utilities disconnection; eviction/foreclosure)
 - Average standardized treatment effect on retrospective (last 12 month) anxiety (worried about eviction/foreclosure; worried about utilities disconnection)

- Average standardized treatment effect on prospective (next 3 months) anxiety (anticipate actual hardship; worried about eviction/foreclosure; worried about utilities disconnection; selected smaller, near-term survey incentive)

Secondary Survey Outcomes

We will also explore other families of outcomes that are measured in the web-based survey. For each set of outcomes, we will report treatment effects for all individual outcomes in the family and we will report the average standardized treatment effect of the outcome. Outcomes that are labeled with “(-)” will be re-signed so that an increase in the outcome represents an improvement.

- Income and employment
 - Annual gross household income
 - Currently employed
 - Currently full-time employed (at least 35 hours per week)
 - Annual gross household income from earned income
 - Annual gross household income from rental income
 - Annual gross household income from investment income
 - Annual gross household income from public assistance
 - Annual gross household income from basic income payments
 - Annual gross household income from other
- Spending
 - Spending on housing
 - Spending on utilities
 - Spending on food
 - Spending on transportation
 - Spending on healthcare
 - Spending on childcare
 - Spending on other
- Housing and Transportation
 - Driving is primary mode of transportation
 - Public transit is primary mode of transportation
 - Note: left out category is primarily “rides with someone else” and “uses Uber/Lyft/Taxi”
 - Rent or own their own home
 - Do not currently have a stable housing situation (-)
 - Paid rent or mortgage payment on time
- Financial well-being
 - Made progress toward goals stated in program application
 - Have a checking account
 - Have a savings account
 - Any money set aside for savings
 - Money set aside for savings today is more than the amount one year before
 - Amount in savings
 - Paid any overdraft fees on checking account (-)

- Took out a payday loan within last two weeks (–)
- Rolled over a payday loan within last two weeks (–)
- Overall well-being
 - Perceived stress scale (–)
 - Life satisfaction ladder
 - Self-reported health is very good or excellent
 - Self-reported health improved since last year (“much better” or “somewhat better”) or remained very good/excellent if respondent selects “about the same”
 - Participated in an education or training program

Infutor Data Outcomes

- Primary housing stability measures:
 - Did the individual have a new address during the 12 months following random assignment
 - Did the individual have a new address 12–24 months following random assignment

National Student Clearinghouse Outcomes

- Primary education measures:
 - Enrollment in post-secondary schooling
 - Completion of a post-secondary credential
 - Completion of a post-secondary degree

Subgroup Analysis

The research team is interested in determining whether the intervention is more effective for certain populations relative to others. The following are areas of interest for exploratory analysis of subgroups:

1. Race/ethnicity
 - a. Black, Non-Hispanic
 - b. Hispanic
 - c. Non-Black, Non-Hispanic
2. Gender
 - a. Female
 - b. Male
3. Baseline employment status
 - a. Currently employed
 - b. Not currently employed
4. Age
 - a. Above/below median age
5. Marital status
 - a. Never married
6. Gross annual household income
 - a. Above/below median income
7. Household size
8. Educational attainment

9. Interest in enrolling in an education of training program
10. Timing of recent SNAP disbursement relative to survey start-date
11. Baseline levels of outcome
 - a. For each outcome or outcome index, we will look separately at treatment effects by subgroups of above median and below median values of the outcome measure at intake. If the outcome is not observed at baseline, we will follow the procedure of Abadie, Chingos, and West (2018) and stratify the sample by the predicted value of the outcome.

Missing Data

Our approach to measure outcomes relies on linking program applicants to administrative data or receiving a completed follow-up survey. Thus, we will only be able to include study participants in the analysis for whom we can match to an Experian record, for those individuals who respond to the survey, or for whom we can find in the Infutor data.

- In the case of Experian data, we will limit the sample to the set of individuals for whom Experian returns a credit record across all relevant quarters
- For the followup survey, we will restrict the sample to individuals who completed the follow-up survey.
- In the case of Infutor data, we will limit the sample to the set of individuals who match to an Infutor record.

We will adjust our analysis for observable selection into matching or observable non-response. For each dataset, we will construct inverse propensity weights and report both unweighted and weighted estimates.

Multiple Hypothesis Testing

The research team has limited the set of primary outcomes described above, focusing on financial distress observed in credit records and in the follow-up survey. Given the limited number of primary outcomes, we will report unadjusted p -values. When exploring secondary outcomes, we will report traditional standard errors and p -values, as well as p -values that adjust for a family-wise error rate through a standard approach such as the Westfall and Young step-down procedure (Jones, Molitor, and Reif, 2019). We will treat each data source and domain as its own family when making these adjustments.

Power Analysis

We restrict our sample to 11,590 individuals who applied to the program, selecting a single individual with the lowest random number from each of the household groups with multiple applicants. In this sample, there are 410 individuals in the treatment group and 11,180 individuals in the control group. For our power analysis we assume a 5 percent type-1 error rate and 80 percent power. The program take-up rate was approximately 85 percent.

Credit outcomes

We assume that roughly 70 percent of the sample will match to a credit record from Experian (i.e., $N_T = 287$ and $N_C = 7,826$). To estimate the control group means and standard deviations, we use linked Experian data for our sample from pre-randomization quarters.

- Total balance in collections: \$565 reduction in total balance in collections among GBI recipients; \$480 reduction in total balance in collections among all those contacted by BCFF (mean = \$1,430; sd = \$2,850)
- Total balance in derogatory accounts: \$991 reduction in total balance in collections among GBI recipients; \$842 reduction in total balance in collections among all those contacted by BCFF (mean = \$1,140; sd = \$5,000)

Survey outcomes

We assume that roughly 60 percent of the sample invited to complete a survey will complete the survey (i.e., $N_T = 246$ and $N_C = 600$). We compute the minimum detectable effect size of a standardized outcome.

- Standardized outcome: 0.25 SD change in outcome among GBI recipients; 0.21 SD change among all those contacted by BCFF (mean = 0; sd = 1)

References

- Abadie, Alberto, Matthew M. Chingos, and Martin R. West, 2018, “Endogenous Stratification in Randomized Experiments,” *The Review of Economics and Statistics*, 100(4):567–580.
- Jones, Damon, David Molitor, and Julian Reif, 2019, “What Do Workplace Wellness Programs Do? Evidence from the Illinois Workplace Wellness Study,” *The Quarterly Journal of Economics*, 134(4):1747–1791.