

# Hardship and Hope: The Relationship Between Unconditional Prenatal and Infant Cash Transfers, Economic Stability, and Maternal Mental Health and Well-Being

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See also Kerker, p. 1954.

**Objectives.** To examine the impact of Rx Kids—a community-wide and unconditional prenatal and infant cash transfer program in Flint, Michigan—on economic stability, maternal mental health, and well-being.

**Methods.** Using a difference-in-differences framework, we compared outcomes for surveyed Flint mothers who gave birth before and after Rx Kids implementation to those outside the city.

**Results.** Relative to comparisons, mothers exposed to Rx Kids saw improvements in hardship, mental health, and well-being—notably, a 4.2-percentage-point reduction in the risk of eviction ( $P < .05$ ) and a 14.0-percentage-point reduction in screening positive for postpartum depression ( $P < .05$ ). Program exposure was associated with increased trust in institutions and feeling loved, hopeful, respected, and valued.

**Conclusions.** Rx Kids, the United States' first, to our knowledge, community-wide prenatal and infant cash transfer program, is associated with improved economic stability, mental health, and well-being. Rx Kids' place-based scale provides a replicable model for efficiently addressing perinatal poverty and improving health. (*Am J Public Health*. 2025;115(12):2020–2029. <https://doi.org/10.2105/AJPH.2025.308244>)

While the United States spends more on health care than any peer nation,<sup>1</sup> there is a paucity of investment in the health and well-being of mothers and infants. The United States is 1 of only 7 countries without a paid maternity leave policy,<sup>2</sup> the only high-income nation without some form of universal health insurance,<sup>1</sup> and an outlier in its high child poverty rate.<sup>3</sup>

This translates into a public health and global competitiveness crisis, with

the health, well-being, and survival of mothers and infants in the United States generally much worse than in peer countries.<sup>4–6</sup> With highly disparate outcomes for historically marginalized groups,<sup>7</sup> extant efforts to improve perinatal health—including maternal mental health, maternal morbidity and mortality, and infant birth outcomes—have largely failed to address the underlying societal underinvestment in mothers and infants.

Poverty spikes to its highest level throughout the life course perinatally, as income drops and expenses rise.<sup>8,9</sup> At a time of profound neurodevelopmental consequences, perinatal economic insecurity exacerbates housing instability, nutrition insecurity, and other forms of material hardship, with major implications for maternal and infant health.<sup>10</sup> It contributes to poor maternal mental health, including psychological distress, depression, hopelessness, shame, and

limited parenting capacity and bandwidth.<sup>11–14</sup>

Housing instability is common during the perinatal period; up to one third of low-income individuals move during pregnancy,<sup>15,16</sup> and between 4% and 9% experience homelessness.<sup>17</sup> Housing instability is linked with preterm birth, low birth weight, neonatal intensive care admission, delivery complications, and inadequate prenatal care.<sup>17,18</sup> Even the threat of eviction is associated with adverse birth outcomes.<sup>19,20</sup> Postnatally, families with babies and toddlers are the most at-risk age group for eviction,<sup>19</sup> implicating a broad range of health and development consequences.

In addition, mothers and infants in poor communities face particular challenges from long-standing, place-based inequities. These manifest in built environments that impede health, with unsafe housing, limited access to healthy foods, community violence, health care barriers, diminished social cohesion, low trust in institutions, and other adversities.<sup>21–25</sup>

Recognizing the economic and developmental vulnerability of the perinatal period—both at the individual and community level—and that the United States experiences worse maternal and infant health outcomes than its high-income peers, the perinatal period is an opportune moment for prevention and support. Built on global evidence on large-scale government prenatal and child cash transfers and inspired by the COVID-19 pandemic-era expanded Child Tax Credit's success,<sup>26</sup> the nation's first, to our knowledge, community-wide and unconditional prenatal and infant cash transfer program was developed and implemented in Flint, Michigan, as a place-based effort to proactively invest in the health and well-being of mothers and infants.

In a city with one of the country's highest child poverty rates and chronically disparate racial maternal and infant health outcomes, Rx Kids launched in January 2024 as a "prescription for health, hope, and opportunity."<sup>27</sup> All City of Flint expectant mothers are eligible to receive a 1-time transfer of \$1500 after midpregnancy and \$500 per month for 12 months postnatally. Rx Kids has achieved near-universal aggregate take-up (Y. Zamani-Hank, written communication, November 25, 2024) and expanded to other communities. Administered by the nonprofit GiveDirectly, the program is led by Michigan State University–Hurley Children's Hospital Pediatric Public Health Initiative in collaboration with Poverty Solutions at the University of Michigan.

The program's conceptual model (Figure 1) proposes two upstream mechanisms—improved economic stability and a reimagined social contract—by which prenatal and infant cash transfers can have an impact on health and well-being. Cash-transfer-related improvements to economic stability are expected to improve maternal mental health and well-being<sup>11,28–31</sup> and other proximal family-level determinants of maternal and child health, including food security<sup>32,33</sup> and housing stability.<sup>34</sup> The universal, unconditional design minimizes stigma and shame<sup>35</sup> and fosters a relationship built on dignity, deservingness, and trust, with the goal of building a reimagined social contract. We expect Rx Kids' design and messaging, centered on love, hope, and celebration, to improve trust and faith in health care and government, thus leading to improved well-being, health-promoting behaviors, and take-up of other supports.

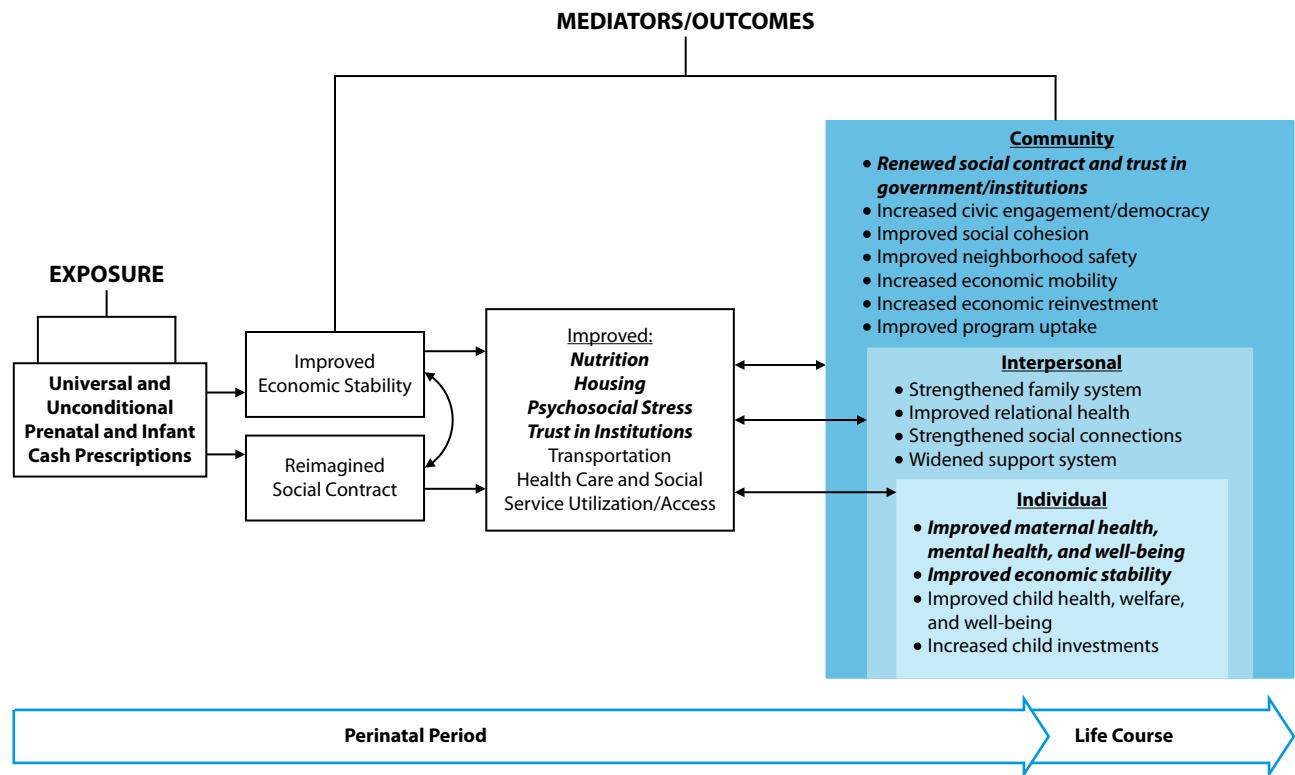
To our knowledge, this program is the first of its kind and this is the first study to examine the effects of Rx Kids on several maternal self-reported outcomes, using a survey developed in collaboration with community partners and administered to mothers who delivered at the largest regional birthing hospital. The aim of this study was to determine whether exposure to Rx Kids is associated with improvements in mothers' self-report of economic stability, mental health, and well-being.

## METHODS

Rx Kids was implemented in Flint, which has a population just under 80 000<sup>36</sup> and approximately 1000 births annually.<sup>37</sup> Because of historic and structural factors, including a recent drinking water crisis,<sup>38</sup> Genesee County's impoverished population is concentrated in Flint, where 40% of residents and 59% of children live in poverty.<sup>39</sup> Racially diverse, 57% of the population identify as Black or African American, and 34% identify as non-Hispanic White.<sup>40</sup>

## Design

The sampling frame included all mothers who gave birth at Hurley Medical Center (HMC), a large public hospital in Genesee County, between July 1, 2023, and June 30, 2024 ( $n = 2073$ ). HMC accounts for 69.4% of Flint births and 47.7% of all county births. A list including addresses, phone numbers, and e-mails for all births was generated from Epic electronic medical records (EMR). Mothers who were aged younger than 18 years on their child's date of birth, those who experienced stillbirths or neonatal death, and those residing outside Michigan were excluded. Parents of multiples received 1 invitation.



**FIGURE 1— Rx Kids Conceptual Model**

Note. Bold and italic variables are measured in this analysis.

Residential status (within vs outside the City of Flint) was geocoded. Based on the child's date of birth (year 2023 vs 2024) and family's residence (Flint vs outside Flint), we categorized potential participants into four cohorts: 2023 non-Flint, 2024 non-Flint, 2023 Flint, and 2024 Flint. The only cohort eligible for Rx Kids was 2024 Flint. Children of mothers from the 2023 cohorts were born, on average, 1 year earlier than those from the 2024 cohorts. Children's ages ranged within each of the four cohorts.

## Procedure

All eligible participants were mailed an invitation—which did not mention Rx Kids—to complete the survey. The same day, e-mails were sent to participants with valid e-mail addresses.

The communications contained informed consent information, a survey link, and a unique, 9-digit code to ensure participants only took the survey once. A text message was sent approximately 7 days later, followed by 3 reminder texts and 2 phone calls the following month. Administered through REDCap electronic data capture tools at Michigan State University,<sup>41,42</sup> the survey was designed for completion in less than 30 minutes. After completion, respondents received a \$50 electronic gift card.

A total of 2073 mothers were invited to take the survey (Appendix Table A, available as a supplement to the online version of this article at <https://ajph.org>). Health system data were available for 2026 of those mothers, and n = 1037 (51%) completed the survey after consenting. The 2024 Flint cohort

had the highest response rate (54%). Survey nonrespondents appeared more likely to have public health insurance than respondents, suggesting nonrespondents may be somewhat more disadvantaged. Appendix Table B reports demographic characteristics for all cohorts. Roughly two thirds of Flint respondents self-reported their race as Black, while nearly 25% self-reported their race as non-Hispanic White. These are approximately reversed for non-Flint respondents. Flint respondents were more likely to be unmarried or unpartnered than those outside Flint, while the non-Flint cohorts reported higher educational attainment and income, on average. Flint 2024 mothers were most likely to report very low income and reported lower incomes than the Flint 2023 cohort, which had a somewhat lower response rate.

This suggests any observed improvements in hardship or mental health outcomes may be modestly biased downward because the Flint 2024 subsample is lower-income and therefore potentially more likely to report material hardship and poor mental health outcomes.

## Measures

All outcome measures are defined in Appendix Table C.

**Hardship.** Housing hardship questions were drawn from Pilkauskas et al., asking respondents if they owed back rent or mortgage and, if so, how much they owed.<sup>43</sup> We calculated the average amount owed among all respondents and the average amount owed if greater than \$1. Reported values greater than \$9000 were excluded as they appeared to report mortgage principal balances. For eviction, respondents were asked if they were "evicted or your landlord forced you to leave your home or apartment for not paying the rent or mortgage?" Responses were coded affirmatively if evicted after birth to account for the timing of Rx Kids transfers.

For food insecurity, an adapted 2-question measure<sup>44</sup> and 1 item asking respondents whether they had "enough of the kinds of food we want"<sup>33</sup> were included. Three additional hardship questions covered diaper use, availability of cash for emergencies, and perceived freedom to spend cash. We recoded outcomes into dichotomous variables (Table C).

**Maternal mental health and well-being.** The 10-item Center for Epidemiologic Studies Depression scale (CES-D-10) measured depression.<sup>45</sup> We assessed

anxiety using 2 items from the Generalized Anxiety Disorder scale (GAD-7).<sup>46,47</sup> We used a Likert scale for self-reported mental health, scored as 1 for good, very good, or excellent, and 0 if fair or poor. We coded the 6-item Perceived Hope Score<sup>48,49</sup> as 1 if a "high score" of 30 or greater, and 0 otherwise. A high score represents an average answer of "agree" or "strongly agree" to each item.

We created 5 items to assess maternal feelings of being loved, valued, respected, empowered, and hopeful. We adapted 2 questions from the Organization for Economic Co-operation and Development Survey on Trust in Public Institutions, rating trust in health care and government on a scale of 1 to 10.<sup>50</sup> We considered respondents to have high trust if they responded with 9 or 10.

## Analysis

Our difference-in-differences analysis accounted for variation across time, inside and outside Flint. We included all 2024 Flint respondents in the treatment group irrespective of program participation (an intent-to-treat approach). Multivariable difference-in-differences models used ordinary least squares regression (linear probability models with binary outcomes) because of problems with interaction terms in nonlinear models.<sup>51</sup> Logistic regression specifications showed directionally similar results (Appendix Table D). To generate the difference-in-differences estimate, each model included a dummy variable for Flint (Flint = 1; non-Flint = 0), time (2024 = 1; 2023 = 0) and an interaction term (Flint\*Time). The primary coefficient was Flint\*Time, which tested whether the differences in outcomes for mothers who gave birth at HMC in Flint before (2023) and after (2024) Rx

Kids implementation were different from the trends in outcomes for ineligible non-Flint mothers in 2023 and 2024. Other control variables included maternal age, number of children, race and ethnicity, educational attainment, marital status, and income. Statistical tests were 2-tailed with a level of significance set at  $P < .05$ . We conducted supplemental significance testing using the Benjamini-Hochberg procedure to account for multiple hypothesis testing.

The key assumption in our difference-in-differences analysis was that—absent Rx Kids—outcomes would have evolved similarly for mothers within and just outside of Flint between 2023 and 2024. This assumption requires that no other interventions coincided with Rx Kids that affected Flint and nearby non-Flint mothers differentially. We queried multi-sector leaders, and no changes were identified in economic conditions, and particularly in prenatal and infant supports or services during this time.<sup>52,53</sup>

## RESULTS

**Table 1** presents unadjusted material hardship estimates. Flint 2024 mothers improved compared with Flint 2023 to a statistically significant degree on 5 of 11 hardship measures. In the other 6, Flint 2024 respondents improved compared with Flint 2023, but the change was not statistically significant.

Mothers exposed to Rx Kids were behind \$177 less on rent or mortgage payments than Flint 2023 mothers; of those behind, Rx Kids-exposed moms owed significantly less than their counterparts. Only 1 Flint 2024 mother (0.5% of sample) reported being evicted since childbirth, a substantial drop from Flint 2023. Flint mothers exposed to Rx Kids saw a statistically significant 12.5-percentage-point

**TABLE 1—** Maternal Reports on Economic Stability Among New Mothers in Flint, MI, and Surrounding Region: 2023–2024

	<b>2023 Non-Flint</b>	<b>2024 Non-Flint</b>	<b>2023 Flint</b>	<b>2024 Flint</b>
No.	361	340	145	190
Owes back rent or mortgage, %	9.2	13.0	22.5	14.8
Average back rent or mortgage owed, \$	90	184	332	155*
Average back rent or mortgage owed if >\$1, \$	997	1438	1475	1011*
Evicted after birth, %	2.8	1.8	5.5	0.5**
Food did not last, %	21.4	18.9	31.8	26.5
Worry about food, %	27.8	24.8	36.6	35.3
Not enough foods we want, %	40.3	40.4	46.9	34.4*
Fewer diapers than would like, %	16.4	13.8	29.0	23.0
Not buy something to buy diapers instead, %	26.6	20.6	40.1	36.4
Free to choose how to spend cash, %	74.4	67.9	65.7	77.9*
Enough cash emergencies, %	61.0	61.5	37.8	41.0

Source. Analysis of survey responses from Hurley Medical Center Maternal Well-Being Survey.

\* $P < .05$ ; \*\* $P < .01$ . Statistical significance for difference between 2023 Flint and 2024 Flint cohorts.

decline in the proportion reporting they did “not have enough of the kinds of foods we want,” compared with Flint 2023.

Table 2 reports descriptive estimates on maternal mental health and well-being. Rx Kids-exposed mothers were

13.0 percentage points less likely to screen positive for postpartum depression than Flint 2023 (CES-D-10 score  $\geq 10$ ).<sup>45</sup> Rx Kids-exposed moms were 12.8 percentage points less likely to report feeling nervous, anxious, or on edge than 2023 Flint, and

8.4 percentage points less likely to report “not being able to stop or control worrying” (GAD-7).<sup>46,47</sup> Moms exposed to Rx Kids were more likely to rate their general mental health as “excellent” or “very good,” compared with 2023 Flint, although non-Flint mothers saw a

**TABLE 2—** Maternal Well-Being and Trust in Institutions Among New Mothers in Flint, MI, and Surrounding Region: 2023–2024

	<b>2023 Non-Flint, %</b>	<b>2024 Non-Flint, %</b>	<b>2023 Flint, %</b>	<b>2024 Flint, %</b>
No.	361	340	145	190
CES-D-10 depression score $\geq 10$	35.3	33.0	46.2	33.2*
GAD-7 question 1 (Feeling nervous, anxious, or on edge)	24.2	19.8	31.7	18.9**
GAD-7 question 2 (Not being able to stop or control worrying)	20.5	17.1	27.3	18.9*
Mental health good, very good, or excellent	64.0	72.3	61.5	72.3*
Perceived Hope Scale score $\geq 30$	47.3	52.3	41.5	56.6**
Feel loved	84.1	85.4	68.8	80.4*
Have hope	72.8	74.6	62.9	76.2**
Feel respected	66.7	65.7	55.6	69.8**
Feel valued	64.0	65.5	53.1	68.8*
Feel empowered	51.0	56.0	46.0	57.4*
High trust in health care	13.3	13.6	22.9	31.7
High trust in government	4.2	4.6	9.2	14.8

Note. CES-D-10 = Center for Epidemiologic Studies Depression scale; GAD = Generalized Anxiety Disorder scale.

Source. Analysis of survey responses from Hurley Medical Center Maternal Well-being Survey.

\* $P < .05$ ; \*\* $P < .01$ . Statistical significance for difference between 2023 Flint and 2024 Flint cohorts.

similar improvement. Rx Kids-exposed mothers were more likely to report feeling loved (11.6 percentage points), hopeful (13.3 percentage points), respected (14.2 percentage points), valued (15.7 percentage points), and empowered (11.4 percentage points), compared with 2023 Flint moms.

**Table 3** reports on multivariable (adjusted) difference-in-differences analyses testing the association between Rx Kids exposure (Flint 2024)

and outcomes presented in **Tables 1** and **2**. The Flint\*Time (2024) term reports the relationship between differences in the outcome for Flint 2023 and Flint 2024, compared with differences between 2023 and 2024 non-Flint mothers. Appendix Table F reports full output.

Nine of 11 coefficients in **Table 3** on material hardship and economic stability are in line with improvements associated with Rx Kids, while two show no change. Six show statistically significant

improvements. Rx Kids exposure is associated with a statistically significant 14.0-percentage-point decrease in reporting not having enough of the kinds of food respondents want. It was associated with a 13.0-percentage-point decrease in owing past-due rent or mortgage. Among those carrying greater than \$1 past due, there was a \$1004 decrease in the amount due. Program exposure was associated with a 4.2-percentage-point decrease in the risk of eviction after childbirth. Finally, program exposure was linked to a 19.0-percentage-point increase in mothers feeling free to choose how to spend the cash they have.

Rx Kids exposure is associated with a 14.0-percentage-point decreased risk of screening positive for postpartum depression. It is associated with a 12-percentage-point increase in having a high perceived hope score, although the change was not statistically significant ( $P < .1$ ). Rx Kids exposure was linked to an 11-percentage-point increase in the likelihood that a mother reported feeling loved, a 13-percentage-point increase in having hope, a 15-percentage-point increase in feeling respected, and a 12-percentage-point increase in feeling valued; all were statistically significant. Finally, program exposure was linked to a statistically significant 10-percentage-point increase in reporting high trust in health care, and point estimates were in line with a 6.4-percentage-point ( $P < .1$ ) increase in high trust in government, but not statistically significant at the  $P < .05$  level.

After accounting for testing of multiple hypotheses, estimates remained statistically significant at a false discovery rate of 10% (Appendix Table E). Appendix Figure A graphically demonstrates the relationship between two key outcomes

**TABLE 3— Association Between Exposure to the Rx Kids Program and Outcomes Among New Mothers in Flint, MI, and Surrounding Region: 2023–2024**

Outcome	b (95% CI)
<b>Material hardship and economic well-being</b>	
Food did not last	-0.05 (-0.11, 0.01)
Worry about food	0.00 (-0.06, 0.06)
Not enough foods we want	-0.14 (-0.20, -0.08)
Owes back rent or mortgage	-0.13 (-0.17, -0.09)
Back rent or mortgage owed, \$	-301.76 (-371.16, -232.36)
Back rent or mortgage owed for if >\$1, \$	-1004.41 (-1254.34, -754.48)
Evicted after birth	-0.04 (-0.06, -0.02)
Fewer diapers than would like	-0.05 (-0.10, 0.00)
Not buy something needed to buy diapers instead	0.00 (-0.06, 0.06)
Free to choose how to spend cash	0.19 (0.13, 0.25)
Enough cash emergencies	0.05 (-0.01, 0.11)
<b>Maternal mental health and well-being</b>	
CES-D-10 depression score $\geq 10$	-0.14 (-0.20, -0.08)
GAD-7 question 1 (Feeling nervous, anxious, or on edge)	-0.08 (-0.16, 0.00)
GAD-7 question 2 (Not being able to stop or control worrying)	-0.06 (-0.11, -0.01)
Mental health good, very good, or excellent	-0.20 (-0.51, 0.11)
Perceived Hope Scale score $\geq 30$	0.12 (0.05, 0.19)
Feel loved	0.11 (0.06, 0.16)
Have hope	0.13 (0.07, 0.19)
Feel respected	0.15 (0.09, 0.21)
Feel valued	0.12 (0.06, 0.18)
Feel empowered	0.09 (0.02, 0.16)
<b>Trust in institutions</b>	
High trust in health care	0.10 (0.05, 0.15)
High trust in government	0.06 (0.03, 0.09)

Note. CES-D-10 = Center for Epidemiologic Studies Depression scale; CI = confidence interval; GAD = Generalized Anxiety Disorder scale. This multivariable difference-in-differences analysis used ordinary least squares regression.

Source. Analysis of survey responses from Hurley Medical Center Maternal Well-Being Survey.

and Rx Kids exposure, holding control variables at their means. In 2023, Flint mothers were roughly as likely to report eviction as non-Flint mothers. In 2024, Flint mothers were substantially less likely to report eviction than non-Flint mothers. Similarly, for postpartum depression, Flint mothers in 2023 were far more likely to screen positive than non-Flint mothers. In 2024, this disparity was completely erased.

## DISCUSSION

The perinatal period is the poorest across the life course, and living in poor places exacerbates the pathogenicity of poverty. A prenatal and infant cash transfer program, Rx Kids launched in the city with one of the nation's highest child poverty rates<sup>39</sup> in a never-done-before, to our knowledge, effort to address the maternal and infant health crisis. Driven by the interconnected pathways of improved economic stability and a reimagined social contract, study results show substantive improvements in several often-intractable domains of material hardship (housing security, nutrition), maternal mental health (depression), maternal well-being (loved, hopeful, respected, valued), and trust in institutions.

Findings were consistent with global and domestic evidence on prenatal and child cash transfers and aligned with insights from Rx Kids participant surveys ( $n = 112$ ; 56% response rate;<sup>27</sup>  $n = 534$ ; 53% response rate<sup>54</sup>) that revealed improvements in family financial security, maternal and infant health, stress reduction, health care services access, and parenting confidence.<sup>27,54</sup> This study, however, further delineated Rx Kids' impact with temporal and geographic controls by comparing outcomes for Flint mothers before and

after program implementation to differences in outcomes for noneligible mothers living outside Flint.

The hardship improvements seen in housing security, and particularly eviction, are important because these outcomes have profound impacts on the health and well-being of both mother and child. That families in Flint were less likely to be evicted than their much-higher-income non-Flint counterparts in 2024, who were not eligible for Rx Kids, is striking.

The maternal mental health and well-being findings are also notable. Not only did Rx Kids-exposed mothers report a major decrease in postpartum depression—with far-reaching implications for maternal and infant health—but they also felt more loved, respected, and hopeful, and expressed more trust in institutions. Buffered from economic hardship, the increase in hope—defined as optimism with belief that one has agency—reflects a powerful determinant of well-being; hopelessness has been linked to depression, and to a rising number of “deaths of despair,” and even vulnerability to misinformation, mistrust, and polarization.<sup>55</sup> Increased trust in institutions is especially consequential, considering this intervention launched where governmental betrayal was central to a public health crisis<sup>38</sup> that resulted in a further corrosion of trust.<sup>56</sup> These findings capture the underpinning of a reimagined social contract—what it means to be part of a society and a community that cares and provides for each other.

Consequently, across both sets of outcomes presented, Flint mothers went from markedly worse off in comparison with non-Flint mothers in 2023 to virtually identical outcomes compared with non-Flint mothers in 2024. Rx Kids may be helping a community

with lower income and education levels “catch up” to its wealthier and more highly educated neighbors. As a panacea of sorts that proactively treats the pathogen of perinatal poverty, programs like Rx Kids may improve the economic stability, health, and well-being of entire disadvantaged places, while infusing hope to reimagine the social contract and bolster democracy.

## Limitations

The analysis assumed that the EMR address accurately represents the mother's living situation. However, because of the nature of self-reported address information, some Rx Kids recipients may be coded incorrectly. In this analysis, we are only able to report “intent-to-treat” (those eligible for the intervention) estimates rather than “treatment-on-the-treated” (eligibles who received the benefit) estimates. Because of the very high take-up, though, these rates (i.e., the intent-to-treat and the treatment-on-the-treated) should be relatively similar. In an ideal difference-in-differences analysis, the treatment and control groups would be more homogenous, and more than 1 preintervention period would be observed to assess whether the assumption of parallel trends holds. The parallel trends assumption is fundamentally untestable because the counterfactual trend for the exposed group is unobserved; our results should thus be interpreted in the context of the assumptions of the difference-in-differences methodology. A test of parallel trends in the preperiod is neither necessary nor sufficient to establish the validity of difference-in-differences.<sup>57</sup>

Given that the control group had higher income and educational attainment on average, it is even more

striking that Rx Kids may have substantially narrowed the gap between Flint and non-Flint mothers on many outcomes in 2024. While it is possible that some other change in the policy landscape was driving these results, no other relevant changes were identified. The 2024 Flint cohort had a somewhat higher survey response rate than other cohorts, and respondents were somewhat less disadvantaged than nonrespondents, which may have impacted the findings. However, available data indicate that the treatment group was the most disadvantaged of all cohorts, indicating that, if anything, there was a downward bias in the probability of seeing impacts. Finally, our data were self-reported survey responses; however, there was no other data source on mothers' perceptions of these outcomes; thus, it is the best-available representation of mothers' perceived financial stressors and well-being.

## Future Directions

This is the first in a series of surveys in Flint that will report on a consistent set of outcomes with cohorts of mothers exposed to Rx Kids. Analysis of future surveys will allow for comparison with this analysis. Rx Kids' universal design, with its near-100% take-up, further permits robust research using geocoded administrative data sources using difference-in-differences analysis comparing temporal and geographic trends. Research on administrative data is in process for many of the potential outcomes in Figure 1, including maternal and infant health, health care utilization, child welfare, voter participation, societal savings, and economic reinvestment. To further delineate the proposed mechanisms of change for key outcomes, in-depth qualitative research is underway. Other research

includes examining the dose-response of cash transfers on desired outcomes, longitudinal follow-up, and replication of the survey in other Rx Kids communities.

## Public Health Implications

As the United States' first, to our knowledge, community-wide prenatal and infant cash transfer program, the scale and design of Rx Kids fills a maternal and infant health research and policy gap, with implications for multiple sectors, including health care, public health, housing, early childhood, racial equity, social services, civil society, national security, and global competitiveness. The results described herein demonstrate the potential for this model to have a positive impact on the economic security, mental health, and well-being of families and entire communities. The place-based and population-level scale mimics government-level interventions, providing a replicable model<sup>58</sup> for efficiently and effectively investing in maternal and infant health and well-being. *AJPH*

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## CONFLICTS OF INTEREST

The authors have no conflicts of interest to report.

## HUMAN PARTICIPANT PROTECTION

This research was approved by the Hurley Medical Center institutional review board (2187211). All survey participants provided informed consent.

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