Loss Of SNAP Is Associated With Food Insecurity And Poor Health In Working Families With Young Children

Article in Health Affairs - May 2019
DOI: 10.1377/hlthaff.2018.05265

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The Supplemental Nutrition Assistance Program (SNAP) helps low-income working families meet their nutritional needs. Families whose earned income increases in a given month may have their SNAP benefits abruptly reduced or cut off in the following month. Using sentinel sample data from 2007–15 for families with children younger than age four, we investigated how SNAP benefit reductions or cutoffs resulting from increased income were related to economic hardships (food and energy insecurity, unstable housing, forgone health and/or dental care, and health cost sacrifices) and to caregiver and child health. After we controlled for covariates, we found that the groups whose SNAP benefits were reduced or cut off had significantly increased odds of household and child food insecurity, compared to a group with consistent participation in SNAP. Reduced benefits were associated with 1.43 and 1.22 times greater odds of fair or poor caregiver and child health, respectively. Policy modifications to smooth changes in benefit levels as work incomes improve may protect working families with young children from increased food insecurity, poor health, and forgone care.

ABSTRACT The Supplemental Nutrition Assistance Program (SNAP) helps working families meet their nutritional needs. Families whose earned income increases in a given month may have their SNAP benefits abruptly reduced or cut off in the following month. Using sentinel sample data from 2007–15 for families with children younger than age four, we investigated how SNAP benefit reductions or cutoffs resulting from increased income were related to economic hardships (food and energy insecurity, unstable housing, forgone health and/or dental care, and health cost sacrifices) and to caregiver and child health. After we controlled for covariates, we found that the groups whose SNAP benefits were reduced or cut off had significantly increased odds of household and child food insecurity, compared to a group with consistent participation in SNAP. Reduced benefits were associated with 1.43 and 1.22 times greater odds of fair or poor caregiver and child health, respectively. Policy modifications to smooth changes in benefit levels as work incomes improve may protect working families with young children from increased food insecurity, poor health, and forgone care.
Study Data And Methods

Children’s HealthWatch is an ongoing five-city sentinel surveillance study in clinical settings that investigates associations among economic hardships, public assistance programs, and the health of young children and their caregivers. Study eligibility details are in the online appendix. Data were collected in the period October 2007–December 2015 with cross-sectional surveys of caregivers of children younger than age four who accessed health care in emergency departments or hospital primary care clinics in Baltimore, Maryland; Boston, Massachusetts; Little Rock, Arkansas; Minneapolis, Minnesota; and Philadelphia, Pennsylvania. All sites had Institutional Review Board approval for data collection and analysis, renewed annually.

Eligibility criteria included the ability to speak English, Spanish, or (Minneapolis only) Somali; state residency; knowledge of the child’s household and health; and having at least one working adult in the family. Caregivers of critically ill or injured children were excluded, as were those who had previously been interviewed by the ongoing study.

Of the 41,699 caregivers approached, 4,448 (10.7 percent) were ineligible for the study; of the remaining 37,251 caregivers, 2,994 (8.0 percent) refused or were unable to complete the interview. As a proxy for low income among households, the sample was restricted to children with public or no health insurance, which resulted in the exclusion of another 3,356 caregivers. Additionally, we excluded 1,370 households with a child who received Supplemental Security Income (SSI) and 377 households with missing SSI information, to reduce the possibility of including families with benefit changes that reflected disability payments. As our focus was on households with at least one employed adult, we excluded 7,214 households with no employed adults and 3,184 households that reported a SNAP benefit increase within the year. We also excluded 7,635 caregivers who had never participated in SNAP or had pending applications and 2,552 caregivers whose SNAP benefits had been cut off or reduced for reasons not related to earned income. Appendix exhibit A depicts the final analysis sample of 8,569 caregiver-child pairs who met all inclusion criteria and completed the interview.

Caregivers provided information on basic demographic characteristics; the employment status of other adults in the household; and children’s age, sex, health insurance, and breastfeeding history.

Program Participation Caregivers reported current household participation in the following programs: the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), Temporary Assistance for Needy Families (TANF), housing subsidies, and energy assistance.

Month and Year of Survey and Consumer Price Index To reduce bias, we accounted for site-level economic differences that were potentially related to outcome variables by including interview site as a fixed effect. Additionally, we used the Consumer Price Index (CPI) for food by month and year for each research site to control for the local macroeconomy external to SNAP benefit level or participation.

Outcome Measures

Food insecurity: Household food insecurity is defined as the inability to consistently afford enough food for active, healthy lives for all household members in the past twelve months, resulting from constrained resources. Households were considered food insecure if three or more of ten household questions were affirmed. Households were considered child food insecure if two or more of eight child-specific questions were also affirmed.

Energy insecurity: Household energy insecurity was indicated by the reporting of one or more of these circumstances in the past year: utility shutoff threatened or occurred, cooking stove used for heat, and one or more days with-
out necessary heat or cooling.23

**Housing Instability:** Housing instability was indicated by a caregiver’s reporting one or more of the following: behind on rent or mortgage in the past year, two or more moves in the past year, and homelessness in the child’s lifetime.24

**Forgone Care:** Caregivers were asked whether the reference child—the young child of interest in the caregiver-child pair—or other household members had unmet needs for health care services, prescriptions, and/or dental care because of the inability to afford care.

**Health Cost Sacrifices:** Health cost sacrifices—that is, families struggling to afford other basic needs because of out-of-pocket medical spending—were measured by asking caregivers whether the cost of medical care or prescription medications made it extremely difficult to afford basic needs such as food, housing, or utilities.25

**Caregiver and Child Health Measures**

**Fair or Poor Health for Caregiver or Child:** Health status was characterized by, respectively, self-rating or caregiver rating of health as excellent, good, fair, or poor, using a question from the National Health and Nutrition Examination Survey.26

**Maternal Depressive Symptoms:** Female caregivers were screened for depressive symptoms using the Kemper scale.27 Since 94.3 percent of caregivers were mothers, we refer to maternal depressive symptoms.

**Developmental Risk:** Developmental risk—that is, a child at risk of developmental delays in one or more domain, such as socioemotional, cognitive, or motor skills—was measured with the Parents’ Evaluation of Developmental Status.28 Two or more concerns reported for children at least four months old indicate risk.

**Main Independent Variable: SNAP Participation** Caregivers were asked whether their household had ever participated in SNAP. Families who reported SNAP participation within the previous twelve months or current participation were asked whether their benefit amount had changed in the previous year. If a reduction in their benefit was reported, the multiple-choice options for indicating the reason why included “earnings changed/welfare benefit changed.” If they reported that their benefit had been cut off, the multiple-choice options for indicating the reason why included “earnings increased.” Affirmative responses to these options were indicative of SNAP benefit reduction or cutoff due to increased income. For clarity, we use the terms *earned income* and *income* interchangeably throughout. SNAP participation was defined by three mutually exclusive groups according to participants’ self-reported income and benefit status within the previous twelve months. The groups were consistent SNAP participation (families with current SNAP participation, no income increase, and no increase or decrease in benefit amount in the past year), SNAP reduction (an increase in earned income and a resulting decrease in SNAP benefit), and SNAP cutoff (an increase in earned income and a cutoff of all SNAP benefits as result of increased income or assets exceeding eligibility).

**Covariates** Covariates were selected based on significant association with exposure (stability of SNAP benefits in relation to income over the previous year) and a priori knowledge of health and hardship outcome associations.

**Analysis** Descriptive statistics for demographic characteristics and public assistance receipt were generated for the overall sample and stratified by SNAP participation. Households in each SNAP participation group were compared using chi-square and analysis-of-variance tests. Similar analyses were performed for economic hardship and health outcomes. Separate logistic regression models were fit to evaluate associations between SNAP participation and outcomes. Effect estimates using consistent SNAP receipt as the reference group were obtained using adjusted odds ratios and corresponding 95% confidence intervals. Primary models adjusted for maternal and child covariates and included site; survey year; mother’s place of birth, race/ethnicity, age, marital status, and educational attainment; child’s age and breast-feeding history; and WIC and TANF participation. Generalized estimating equation logistic regression models were also fit to account for site macroeconomic, as measured by city-specific CPI. Effect estimates and robust standard errors were obtained. All analyses were performed using two-sided tests and a significance level of $p < 0.05$; we used SAS software, version 9.3.

**Study Strengths and Limitations** This study’s strengths include its focus on a large, sentinel, multistate, racially diverse sample of working families with a difficult-to-reach population of young children who have access to health care. The study’s limitations include cross-sectional, sentinel sampling and its potential for selection and reporting bias. The sentinel sample is both a strength and a limitation as a dynamic form of data collection designed to signal early trends and identify and monitor policy effects and disease burdens before they become widely prevalent. Though limited in generalizability, it helps identify emerging health impacts promptly, so that timely interventions can be developed.29,30 Potential for sample selection
bias exists, as participants were caregivers of young children seeking health care in emergency departments or primary care clinics, which could have limited our findings’ generalizability. Children identified in emergency departments may be more vulnerable to negative effects of SNAP reduction or cutoff, and their inclusion may bias health outcomes away from the null.

However, our sample selection diminished the problem of self-selection bias into SNAP and reverse causality by including data only from families who were currently participating in SNAP or had done so within the previous twelve months. We hypothesized that those who experienced a SNAP cutoff or reduction resulting from an income increase would be healthier and more economically secure than those with consistent SNAP participation, biasing these exposure groups’ effect toward the null against finding a significant impact on health or hardship outcomes.

Trade-offs are inherent in using a sample with detailed data on family health and SNAP participation that can be employed as covariates but have less generalizability versus a wider, more representative sample that may be less detailed but has greater generalizability. The cross-sectional design limited the ability to assess causality and timing since income increases and changes to SNAP benefits and outcomes were self-reported in a single interview. Self-reported income may be limited by measurement error, although caregivers reported overall income increases or decreases in response to why their SNAP benefits changed, not specific amounts. Additionally, we did not have detailed information about the employment history of other household adults. Lastly, since caregivers were interviewed at a single point in time, we were unable to show patterns of income volatility over time that would have allowed comprehensive documentation of SNAP benefit fluctuation in relation to income, as well as timing of housing instability and energy insecurity.

Study Results

Sample Characteristics and Unadjusted Results

Of the 8,569 families with at least one employed adult who had participated in SNAP in the past year, 1,765 (20.6 percent) reported reduced SNAP benefits, and 1,407 (16.4 percent) reported cut-off benefits (exhibit 1). There were significant differences between groups by caregiver race/ethnicity, marital status, educational attainment, interview site, public assistance participation, and child’s age, with families of younger children more likely to have consistent SNAP benefits. The majority of families whose SNAP benefits were reduced lived in Baltimore (24.5 percent) or Philadelphia (26.1 percent), and the majority of families whose benefits were cut off were in Little Rock (32.3 percent) or Boston (22.4 percent). A greater share of caregivers who reported that their benefits were cut off were married or partnered, had education beyond high school, and breast-fed their young children, compared to shares in the consistent participation and SNAP reduction groups. Caregivers with consistent participation reported an average of $87 per person in monthly SNAP benefits, while those with SNAP reduction reported an average of $76.

Compared to people with consistent participation, members of the other two groups were significantly more likely to report household and child economic hardships and had higher prevalences of fair or poor caregiver and child health (exhibit 2).

Multivariable Analysis

Compared to households with consistent participation, those with SNAP reduction had increased adjusted odds of household food insecurity (adjusted odds ratio: 1.42; 95% CI: 1.24, 1.62), child food insecurity (AOR: 1.42; 95% CI: 1.20, 1.68), housing instability (AOR: 1.35; 95% CI: 1.18, 1.55), and energy insecurity (AOR: 1.50; 95% CI: 1.32, 1.70) (exhibit 3). They were also more likely to forgo care for family members because they could not afford it (AOR: 1.50; 95% CI: 1.31, 1.70). And compared to caregivers in the consistent participation group, those with SNAP reduction were more likely to report having fair or poor health (AOR: 1.43; 95% CI: 1.25, 1.63) and maternal depressive symptoms (AOR: 1.27; 95% CI: 1.10, 1.46) and to report the reference child’s health as fair or poor (AOR: 1.22; 95% CI: 1.01, 1.47). Developmental risk was marginally associated with reduced SNAP benefits (AOR: 1.22; 95% CI: 0.99, 1.49). Health cost sacrifices and forgone care for the reference child were not significantly associated with reduced benefits.

Compared to caregivers with consistent participation in SNAP, those who reported SNAP cut-off had increased odds of household food insecurity (AOR: 1.65; 95% CI: 1.43, 1.91), child food insecurity (AOR: 1.73; 95% CI: 1.45, 2.06), energy insecurity (AOR: 1.26; 95% CI: 1.09, 1.46), and health cost sacrifices (AOR: 1.55; 95% CI: 1.27, 1.90). They were also more likely to forgo care for family members (AOR 1.23; 95% CI: 1.06, 1.43) and for the reference child (AOR: 1.39; 95% CI: 1.05, 1.86). SNAP benefit cutoffs were also associated with caregivers’ reporting developmental risk (AOR: 1.28; 95% CI: 1.01, 1.63).

Associations of benefit cutoffs with housing instability, fair or poor caregiver and child...
health, and maternal depressive symptoms were nonsignificant.

Secondary analyses that adjusted for the CPI for food showed similar results. All of the significant associations for SNAP reduction reported above remained significant except the association between a reduction and fair or poor child health—which was slightly attenuated (AOR: 1.22; 95% CI: 0.99, 1.51). The associations between SNAP cutoffs and developmental risk and forgone care (for both household and reference child) were also slightly attenuated and no longer significant (data available upon request).

**Discussion**

This study showed that, paradoxically, families with children that participated in the Supplemental Nutrition Assistance Program, increased their earned income, and therefore had their SNAP benefits reduced or cut off in response to economic strain that diminished their ability to pay for housing, utilities, health care, or food—compared to families with consistent SNAP benefits. In turn, this may have adversely affected overall health for caregivers and children and increased household economic hardship. These results expand upon previous research that demonstrated complex dynamics among working families earning low wages and the importance of stable SNAP benefits to the well-being of families with young children.2,4

Aside from food insecurity, there was heterogeneity among families’ difficulty meeting basic needs in the context of SNAP reductions and cutoffs. Most significant outcomes occurred among families that reported reduced benefits. The lack of an association between SNAP cutoffs and housing instability could be explained by the possibility that income increases large

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**EXHIBIT 1**

Sample characteristics, by respondent’s family Supplemental Nutrition Assistance Program (SNAP) status, October 2007–December 2015

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>All (N = 8,569)</th>
<th>Consistent participation (n = 5,397)</th>
<th>SNAP reduction (n = 1,765)</th>
<th>SNAP cutoff (n = 1,407)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean or no.</td>
<td>%</td>
<td>Mean or no.</td>
<td>%</td>
</tr>
<tr>
<td>Child’s age (months)**</td>
<td>19.7</td>
<td>—*</td>
<td>18.5</td>
<td>—*</td>
</tr>
<tr>
<td>Caregiver’s age (years)**</td>
<td>26.8</td>
<td>—*</td>
<td>26.4</td>
<td>—*</td>
</tr>
<tr>
<td>Per person SNAP benefit ($)**</td>
<td>84.3</td>
<td>—*</td>
<td>87.0</td>
<td>—*</td>
</tr>
<tr>
<td>Child breast-fed**</td>
<td>5,263</td>
<td>61.6</td>
<td>3,312</td>
<td>61.5</td>
</tr>
<tr>
<td>Mother US born***</td>
<td>6,595</td>
<td>77.1</td>
<td>3,956</td>
<td>73.4</td>
</tr>
<tr>
<td>Site***</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baltimore</td>
<td>1,681</td>
<td>19.6</td>
<td>1,067</td>
<td>19.8</td>
</tr>
<tr>
<td>Boston</td>
<td>1,641</td>
<td>19.2</td>
<td>966</td>
<td>17.9</td>
</tr>
<tr>
<td>Little Rock</td>
<td>1,778</td>
<td>20.7</td>
<td>919</td>
<td>17.0</td>
</tr>
<tr>
<td>Minneapolis</td>
<td>1,496</td>
<td>17.5</td>
<td>1,230</td>
<td>22.8</td>
</tr>
<tr>
<td>Philadelphia</td>
<td>1,973</td>
<td>23.0</td>
<td>1,215</td>
<td>22.5</td>
</tr>
<tr>
<td>Race/ethnicity***</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hispanic</td>
<td>2,551</td>
<td>30.1</td>
<td>1,781</td>
<td>33.4</td>
</tr>
<tr>
<td>Non-Hispanic black</td>
<td>4,545</td>
<td>53.6</td>
<td>2,766</td>
<td>51.9</td>
</tr>
<tr>
<td>Non-Hispanic white</td>
<td>1,104</td>
<td>13.0</td>
<td>612</td>
<td>11.5</td>
</tr>
<tr>
<td>Non-Hispanic other</td>
<td>275</td>
<td>3.2</td>
<td>175</td>
<td>3.3</td>
</tr>
<tr>
<td>Married or partnered***</td>
<td>3,224</td>
<td>37.7</td>
<td>2,012</td>
<td>37.3</td>
</tr>
<tr>
<td>Education***</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Some high school or less</td>
<td>2,038</td>
<td>23.8</td>
<td>1,561</td>
<td>29.0</td>
</tr>
<tr>
<td>High school graduate</td>
<td>3,462</td>
<td>40.5</td>
<td>2,278</td>
<td>42.3</td>
</tr>
<tr>
<td>Technical school or college or more</td>
<td>3,048</td>
<td>35.7</td>
<td>1,540</td>
<td>28.6</td>
</tr>
<tr>
<td>Caregiver currently employed***</td>
<td>5,073</td>
<td>59.2</td>
<td>2,625</td>
<td>48.6</td>
</tr>
<tr>
<td>Current public assistance received***</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TANF</td>
<td>1,839</td>
<td>21.5</td>
<td>1,526</td>
<td>28.4</td>
</tr>
<tr>
<td>WIC</td>
<td>6,441</td>
<td>75.3</td>
<td>4,270</td>
<td>79.3</td>
</tr>
<tr>
<td>Housing subsidy</td>
<td>1,561</td>
<td>21.0</td>
<td>928</td>
<td>17.7</td>
</tr>
<tr>
<td>Energy assistance</td>
<td>1,663</td>
<td>24.1</td>
<td>985</td>
<td>23.3</td>
</tr>
</tbody>
</table>

**SOURCE** Authors’ analysis of data for 2007–15 from the Children’s HealthWatch survey. **NOTES** SNAP status categories are explained in the text. Significance was measured by chi-square tests for categorical variables and by analysis-of-variance tests for continuous variables. TANF is Temporary Assistance for Needy Families. WIC is the Special Supplemental Nutrition Program for Women, Infants, and Children. **Not applicable.** Since SNAP benefit amount is only relevant for those participating in SNAP, the sample size is smaller than the total sample (n = 6,623). **Includes Puerto Rico.** 

**p < 0.05:** **p < 0.001**
enough to result in such cutoffs may help buffer families from housing hardships. Alternatively, families may have placed a higher priority on maintaining a stable place to live and had greater willingness to tolerate other material hardships such as energy insecurity, given constrained resources.

Among the SNAP cutoff group, there was a strong association with health cost sacrifices. Families whose benefits were reduced were more likely to have forgone health and/or dental care for family members because of constrained household resources, potentially affecting overall health.31

Caregivers and children in families whose incomes were not high enough to trigger a complete cutoff but that experienced benefit reductions resulting from increased earned income were more likely to report fair or poor health than those with consistent SNAP participation, though this finding was attenuated somewhat with consideration of the CPI. Possible pathways to poor health could include stress associated with economic hardships or inadequate nutrition and compromised immune systems resulting from increased food insecurity.32 Fair or poor health is highly predictive of increased health services use and higher health care costs.3,5,33

Mothers with SNAP reduction were more likely to report maternal depressive symptoms—a known child health and development risk.34
Policy Implications
Some policy makers may consider a reduction in or loss of Supplemental Nutrition Assistance Program benefits resulting from increased earned income to be a potential disincentive to participants to increase their income. However, research on work disincentives in public assistance programs, including SNAP, has demonstrated that SNAP is unlikely to affect workforce participation.35,36 If indeed some work disincentive does exist, policies could be implemented that would make SNAP reduction less abrupt. Any policy proposals that change SNAP eligibility and benefit amounts should also take into account the timing and amount of income in relation to SNAP benefits, as well as household health and potential increases in health care costs associated with changes to SNAP.38,36

Policy makers at the federal and state levels have debated SNAP eligibility restrictions and implementing work requirements for adults with children, who are currently excluded from such requirements. Proposals being debated would determine SNAP eligibility based on monthly reporting of work activities without regard to the stability of employment or the adequacy of income. People with volatile employment participating in SNAP, therefore, may be placed at even greater risk of fluctuations in their eligibility, resulting in SNAP reductions or cutoffs.37 These policy proposals deviate from the program goal of reducing food insecurity and are particularly concerning because they may also result in families’ losing eligibility for other critical supports that are often tied to SNAP eligibility—such as free or reduced-price school meals,38 utility discounts, and potentially Medicaid.39 This benefit loss cascade may leave families worse off than they were before increasing their income.30 Loss of SNAP and related resources may also require families to reapply for SNAP or other benefits to make ends meet. Such churning causes family strain and increases government administrative costs.41,42

Policy proposals that improve families’ upward economic mobility without placing them at risk of increased economic hardships or poor health are necessary.42 For example, instead of calculating documented income monthly, averaging income over a longer period of time, such as three to six months, could provide a more realistic picture of family employment and income stability and contribute to a smoother and more effective “off-ramp” from SNAP.41,43

Conclusion
Though the Supplemental Nutrition Assistance Program theoretically provides gradually declining benefits as participants’ household income increases, in practice, families that increase their earned income and whose SNAP benefits consequently are reduced or cut off may face economic strain that may in turn affect children’s and caregivers’ health and well-being. Implementing SNAP policies that buffer the unintended impacts of potentially short-lived income increases in a population prone to unstable employment and with limited reserves to compensate for sudden SNAP reductions or losses may promote family health and well-being. Additionally, smoothing the path for working families to transition out of receiving SNAP benefits as they increase their incomes and remain stable in their jobs may promote family economic stability. ■

The Annie E. Casey Foundation provided a grant to Children’s HealthWatch, which supported a prior version of these analyses. The authors thank Richard Sheward, Ana Poblacion, Megan Sandel, and Eduardo Ochoa Jr. for their thoughtful contributions to this article. This is an open access article distributed in accordance with the terms of the Creative Commons Attribution (CC BY 4.0) license, which permits others to distribute, remix, adapt, and build upon this work, for commercial use, provided the original work is properly cited. See https://creativecommons.org/licenses/by/4.0/.
NOTES


19 To access the appendix, click on the Details tab of the article online.


33 O’Hara B, Caswell K. Health status, health insurance, and medical services utilization: 2010 [Internet].


