

Welcome to the Food Research & Action Center's spring issue of *ResearchWIRE*. This quarterly newsletter focuses on the latest research, reports, and resources from government agencies, academic researchers, think tanks, and elsewhere at the intersection of food insecurity, poverty, the federal nutrition programs, and health.



## IN FOCUS

### Research Shows WIC is an Important and Cost-Saving Nutrition Program for Children and Families

Poverty and food insecurity have detrimental impacts on infant, child, and maternal health and well-being in both the short and long terms. One critical strategy to address these issues is connecting vulnerable families to the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC). Decades of research have demonstrated the effectiveness of WIC in reducing food insecurity, and improving health, nutrition, development, and well-being.<sup>1,2</sup>

Two new briefs from FRAC take a fresh look at the latest research on WIC's importance and cost-savings for society. The first brief highlights recent research on the effective role of WIC in improving food and economic security, dietary intake, weight outcomes, health, and learning. The second, an update from a 2014 brief, demonstrates that the revised WIC food packages have had favorable impacts on dietary intake, breastfeeding outcomes, obesity rates, and neighborhood food environments. (The WIC food packages were revised in 2007 to align the authorized foods with the latest nutrition science and guidance.) Highlights from, and links to, the briefs are provided below.

## SPRING 2019 IN THIS ISSUE

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### Background of WIC

WIC provides low-income pregnant women, breastfeeding women, non-breastfeeding postpartum mothers, infants, and children up to the age of 5 with nutritious foods, nutrition education and counseling, and referrals to health care and social services.<sup>3</sup> Women and children are eligible for the program if they meet the statutory income guidelines

(i.e., at or below 185 percent of the federal poverty line) or are income-eligible based on participation in other programs, such as Medicaid, the Supplemental Nutrition Assistance Program, or Temporary Assistance for Needy Families. In addition to being income-eligible, applicants must be at nutritional risk (e.g., underweight, overweight, anemic, poor dietary intake) as determined through a

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nutrition assessment conducted by a health professional. In fiscal year 2018, WIC provided services to approximately 1.6 million women, 1.7 million infants, and 3.5 million children in an average month.<sup>4</sup>

## WIC Improves Health and Well-Being

A large body of research shows that WIC is a profoundly important program with well-documented benefits to the health and well-being of infants, children, pregnant women, and their families. The following selection of studies demonstrates these points.

### The WIC program:

- reduces food insecurity;
- alleviates poverty;
- supports economic stability;
- improves dietary intake;
- protects against obesity;
- improves birth outcomes;
- improves health outcomes;
- supports learning and development;
- reduces health care and other costs; and
- improves retail food environments.



## WIC Reduces Food Insecurity, Alleviates Poverty, and Supports Economic Stability

- WIC reduces the prevalence of household food insecurity in recipient households with children under 5 years old by at least 20 percent.<sup>5</sup>
- Nationally, WIC lifted 279,000 people above the poverty line in 2017, based on Census Bureau data on poverty and income in the U.S.<sup>6</sup>
- WIC, along with other social safety net programs, is a buffer against the harmful impacts of economic hardship and responsive to increased need during economic downturns. For example, program participation increased among eligible children before and during the Great Recession.<sup>7</sup>

## WIC Improves Dietary Intake

- WIC participation is associated with better dietary intake and overall dietary quality, including increased iron density of the diet, increased consumption of fruits and vegetables, a greater variety of foods consumed, and reduced added sugar intake.<sup>8,9,10</sup>
- The overall diets of young children enrolled in WIC are more nutrient-rich and lower in calories from solid fats and added sugars than the diets of income-eligible non-participants.<sup>11</sup>
- Multiple studies link the revised WIC food packages with improvements in overall dietary quality, healthful food purchases, and the consumption of fruits, vegetables, whole-grains, and lower-fat milk.<sup>12,13</sup> Research also finds improvements in infant feeding practices in terms

of the appropriate introduction of solid foods as well as increases in breastfeeding initiation.

## WIC Protects Against Obesity

- A growing body of evidence suggests that the WIC food package revisions are associated with favorable impacts on the prevalence of obesity among young children.<sup>14,15,16</sup> For example, in a study using data from 2000 through 2014, obesity rates among 2-to-4-year-old WIC participants were increasing by 0.23 percentage points per year before the 2009 revisions, but obesity rates declined by 0.34 percentage points per year after the revisions.<sup>17</sup>
- Other research suggests WIC may protect against obesity among young children in families facing multiple stressors (i.e., household food insecurity and caregiver depressive symptoms).<sup>18</sup>

## WIC Improves Birth Outcomes

- Investing \$1 in prenatal WIC services saves about \$2.48 in medical, educational, and productivity costs over a newborn's lifetime by preventing preterm birth, based on simulations of WIC participation in California.<sup>19</sup>
- WIC enrollment and greater WIC food package utilization during pregnancy are associated with improved birth outcomes, including lower risk of preterm birth, low birth weight, and perinatal death.<sup>20,21</sup>
- Prenatal WIC participation is associated with lower infant mortality rates, especially for African Americans.<sup>22</sup> Similarly, WIC participation is associated with lower odds of stillbirth among African American women.<sup>23</sup>

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## WIC Improves Health Outcomes

- Prenatal WIC participation is associated with increased infant health care utilization in the first year of life, in terms of increased well-child visits and vaccinations.<sup>24</sup> Prenatal participation also is linked to decreases in the average number of days an infant is hospitalized in the first year of life.
- Children who participate in WIC are more likely to have well-child and emergency room visits than similar nonparticipants, and also more likely to be diagnosed and treated for common childhood illnesses (e.g., ear infection, upper respiratory infection, asthma).<sup>25</sup> The results demonstrate “that child WIC participants are better connected to the health care system than nonparticipants.”

- Even in the face of family stressors, such as household food insecurity and maternal depressive symptoms, children who receive WIC, compared to those who do not, are less likely to be in fair or poor health and more likely to meet well-child criteria.<sup>26</sup> (For this particular study, children met “well-child” criteria if they were in good or excellent health per parent report, were developing normally, were not overweight or underweight, and had not been hospitalized.)

## WIC Supports Learning and Development

- Children whose mothers participate in WIC during the prenatal period are less likely to repeat a grade later in childhood, compared to their non-WIC-siblings.<sup>27</sup>
- Maternal participation in WIC has a strong and direct effect on early childhood language development, especially for receptive communication



outcomes (e.g., pointing to common objects or pictures of actions in a picture book).<sup>28</sup>

- Prenatal and early childhood participation in WIC is associated with stronger cognitive development at 2 years old, and better performance on reading assessments in elementary school, leading researchers to conclude that “these findings suggest that WIC meaningfully contributes to children’s educational prospects.”<sup>29</sup>

## Conclusion

Protecting and improving the public’s health is critically important. Children, communities, and the nation are facing levels of poverty, food insecurity, inadequate dietary intake, and obesity that are far too high. Research shows that WIC can alleviate these problems for children, mothers, and their families, and improve overall health and well-being. Increasing access to, and strengthening, WIC would further the program’s role in improving the health of the nation.

Read [\*WIC is a Critical Economic, Nutrition, and Health Support for Children and Families\*](#) and [\*Impact of the Revised WIC Food Packages on Nutrition Outcomes and the Retail Food Environment\*](#).



# Research Highlights

## Supplemental Nutrition Assistance Program (SNAP)

### How did the American Recovery and Reinvestment Act affect the material well-being of SNAP participants?

#### A distributional approach

A study in *Applied Economic Perspectives and Policy* found that the temporary increase in SNAP benefits from the American Recovery and Reinvestment Act (ARRA) of 2009 was associated with improvements in material well-being for SNAP households at all expenditure levels. Conversely, when the temporary ARRA boost was prematurely terminated in November 2013, material well-being was reduced for the most disadvantaged SNAP households. These changes in material well-being during and after the ARRA boost were largely driven by increases and reductions in food rather than nonfood spending, respectively. In this study that used national survey data, material well-being was defined as total nondurable expenditures, which includes, for example, spending on

food, personal care, transportation, and household operations. The findings demonstrate the positive impact on well-being from increasing SNAP benefits to more adequate levels.

### An examination of medically necessary diets within the framework of the Thrifty Food Plan

The Thrifty Food Plan allocation falls short of meeting the needs of women following a special diet for lactose intolerance, diabetes, or pregnancy, based on estimates in *Ecology of Food and Nutrition*. The monthly SNAP allotment is based on the Thrifty Food Plan, which the U.S. Department of Agriculture defends as a national standard for a minimal cost, nutritionally adequate diet. In the current study of adults 20 to 50 years old, researchers estimated the cost of three diet plans in comparison to the cost of the Thrifty Food Plan. The Lactose Intolerance diet contained no fluid milk, the Type 2 Diabetes diet was low in carbohydrates, and the Pregnancy diet followed the Institute of Medicine's recommendations for pregnant women.



For men, the Lactose Intolerance and Type 2 Diabetes plans were consistent with the cost of the Thrifty Food Plan. However, for women, all three diet plans exceeded the cost of the Thrifty Food Plan, leading the researchers to conclude that the Thrifty Food Plan “provides an unrealistic assessment of need among 20-to-50-year-old females with relatively common dietary needs.” (These findings are consistent with a prior [analysis](#) from FRAC that outlined the key weaknesses of the Thrifty Food Plan, including how the plan ignores special dietary and nutritional needs.)

## Child Nutrition Programs

### School nutrition and meal cost study

The nutritional quality of school lunches increased by 41 percent and by 44 percent for school breakfasts after implementation of the updated school meal nutrition standards, according to the first national, comprehensive assessment of school meal programs since the standards went into effect starting in the 2012–2013 school year. The study was funded and published by the U.S. Department of Agriculture. The assessment of school meals examined a number of important factors, including food service operations, the food and nutrient content of school meals, meal



costs and revenues, and student participation, dietary intake, and plate waste.

While the nutritional quality of school meals improved between the 2009–2010 and 2014–2015 school years, serving lunches of higher nutritional quality was not significantly associated with higher costs per lunch. However, serving lunches of higher nutritional quality was associated with higher school lunch participation rates. In terms of impacts on student dietary intake, school lunch participants consumed lunches of higher nutritional quality than their nonparticipating peers (Healthy Eating Index score of 80.1 versus 65.1 out of a possible 100). These differences in overall dietary quality between participants and nonparticipants persisted over a 24-hour time period (Healthy Eating Index score of 65.2 versus 60.6 out of a possible 100). The report has additional positive findings and offers valuable information for stakeholders on program operations, including areas for improvement for school meals programs. For example, more progress is needed on compliance with the updated nutrition standards (particularly

the calorie ranges) and reductions in plate waste (particularly for vegetables).

### [A group randomized intervention trial increases participation in the School Breakfast Program in 16 rural high schools in Minnesota](#)

Efforts to improve access to and promote school breakfast resulted in significant increases in school breakfast participation among rural high school students, according to new research published in the *Journal of the Academy of Nutrition and Dietetics*. The study was set in 16 rural schools in Minnesota (eight intervention and eight control schools), and addressed known barriers to breakfast participation among high school students. The intervention included the creation of a School Breakfast Expansion Team, collaboration between students and a marketing firm on a school-specific marketing campaign, implementation of “grab-and-go” breakfast carts outside of the cafeteria and second chance breakfast, and changes in school policy to allow students to eat breakfast in the classroom or hallway. Given the success of the intervention in improving breakfast participation

over the course of one school year, the strategies implemented here can help inform and improve school food environment policies and practices in other schools.



### [The academic, behavioral, and health influence of summer child nutrition programs: a narrative review and proposed research and policy agenda](#)

A review in the *Journal of the Academy of Nutrition and Dietetics* concludes that the Summer Nutrition Programs alleviate food insecurity for vulnerable children, but that more research is needed on the programs’ characteristics and impacts on dietary patterns, weight, academics, and behavior. The review summarized existing literature on the reach, utilization, and impact of Summer Nutrition Programs, and identified knowledge gaps and opportunities for future research. One of the primary findings was the “dearth” of research on Summer Nutrition Programs, especially research on the types of sponsors, programs’ locations and practices, nutritional quality of foods and beverages served, and demographic characteristics of program participants. Forthcoming reports from the U.S. Department of Agriculture will close some of these gaps. In addition, more research is needed on the programs’ influence on child nutrition and health. Several



studies demonstrate the important role of the Summer Nutrition Programs in mitigating summertime increases in food insecurity, but few or no studies have specifically examined the programs' influence on dietary intake, weight-related outcomes, or academic, behavioral, and cognitive outcomes.

### [Identifying gaps in the food security safety net: the characteristics and availability of summer nutrition programmes in California, USA](#)

According to research in *Public Health Nutrition*, gaps exist in the availability of Summer Nutrition Programs in California, especially in rural areas. Researchers examined program availability and characteristics as well as summer meal uptake patterns using data on school meals and 4,685 Summer Nutrition Programs in California. Overall summer lunch uptake for the state was 18.5 percent, with urban counties generally having higher uptake than rural counties. (Summer meal uptake was calculated by dividing the number of summer lunches served daily in July 2016 by the number of free or reduced-price lunches served daily in October 2015). Summer meal availability was

substantially lower in August compared to the rest of the summer: about 3,700 sites served lunch in June and July, but only 1,639 did so in August.

The study not only provided useful information on where Summer Nutrition Programs were available, but also described how availability varied by school and community characteristics. For example, urban schools were more likely to have a Summer Nutrition Program nearby if the school was a middle or high school (versus elementary school), had a diverse or non-White majority student population, had a high percentage of students eligible for free or reduced-price meals, or had a high rate of school-year breakfast participation. Rural schools had greater availability of Summer Nutrition Programs if they were large in size, had a diverse or majority non-White student population, or had a high percentage of students eligible for free or reduced-price meals. To close the gaps in program availability and uptake observed in the study, the researchers recommend using resources provided by the U.S. Department of Agriculture and nonprofit organizations, including FRAC.



### [Evaluation of demonstration projects to end childhood hunger](#)

The 2010 Child Nutrition Reauthorization provided funding to implement and evaluate innovative strategies to end childhood hunger. Evaluations of four of these demonstration projects were published recently by the U.S. Department of Agriculture. They show mixed results. The four demonstration projects were set in the Chickasaw Nation, Kentucky, Nevada, and Virginia; and had variations in project objectives, target populations, and intervention components; however, all four estimated the impact on food insecurity. Few projects found favorable impacts on child, adult, or household food insecurity. One notable exception is the Virginia project, which found an 18 percent reduction in very low food security among children. The components of that intervention included providing three meals during the school day, food packages for out-of-school time, \$60 in Electronic Benefit Transfer assistance during the summer months, and nutrition education for parents. Overall, the four evaluations provide important insight into the implementation and effectiveness of various strategies intended to reduce food insecurity.



### Food Insecurity and Health

#### Assessing the relationship between food insecurity and mortality among U.S. adults

Very low food security (the most severe level of food insecurity) was associated with higher mortality in U.S. adults, according to a study in *Annals of Epidemiology*. Using a national sample of 20,918 adults, researchers examined the relationship between food insecurity and mortality as well as demographic, medical, and lifestyle factors that potentially explain a relationship between the two. When examining the severity of food insecurity, those reporting very low food security had a 46 percent higher risk of death (compared to those reporting food security), after accounting for demographics, medical conditions, lifestyle factors (e.g., physical activity, smoking history, caloric intake, total fat intake), and body mass index. The finding adds to the existing evidence that food insecurity is an important social determinant of health.

#### Food insecurity and 10-year cardiovascular disease risk among U.S. adults

A study in the *American Journal of Preventive Medicine* found an association between very low food security and excess predicted 10-year risk of cardiovascular disease (CVD) among middle-aged to older adults.



This relationship persisted even when accounting for age, gender, race/ethnicity, education, marital status, household income, household participation in the Supplemental Nutrition Assistance Program, and physical activity. The study used national data on 40-to-79-year-old adults to estimate 10-year CVD risk, and then a national sample of adults 20 to 64 years old to investigate individual CVD risk factors and adiposity. In the latter sample, marginal, low, and very low food security each were associated with higher body mass index, higher waist circumference, and a greater likelihood of being a current smoker. When compared to adults in food-secure households, those experiencing marginal food security had higher systolic blood pressure (all adults) and lower HDL (“good”) cholesterol (females), those experiencing low food security had higher total cholesterol (males) and fasting glucose (females), and those experiencing very low food security had higher triglycerides (females). According to the study’s authors, “substantially improving food security may be an important public health intervention to reduce future CVD.”

#### Food insecurity and disability in the United States

In the *Disability and Health Journal*, researchers identified independent pathways linking disability to food insecurity among adults and older adults, including a work-limiting disability and trouble seeing and hearing. The pathways under investigation fell into four broad categories: work-limiting health conditions, physical limitations, cognitive limitations, and hearing. The study examined differences in these pathways between “prime-age” adults (adults 19 to 59 years old) and “older” adults (60 years and older) using national survey data.

For both groups of adults, work-limiting disability, functional limitation, and trouble managing money (due to a long-term physical, mental, or emotional problem or illness) increased the likelihood of being food insecure. For “prime-age” adults only, trouble seeing and hearing increased the likelihood of being food insecure. These findings are based on analyses that accounted for demographics, household income and size, Supplemental Nutrition Assistance Program participation,

and other measures of disability. Similar results also were observed in analyses that used a broader measure of food insecurity that included marginal food security. The researchers conclude that “the prevalence of food insecurity among the disabled population represents a policy failure at the national level” and call for clinical, programmatic, and policy efforts to address this important public health issue.

### [Food insecurity associated with self-reported falls among Medicare Advantage members](#)

Food-insecure Medicare Advantage members had a 1.69 times greater likelihood of experiencing a fall in the past year, compared to their food-secure peers, according to an analysis in *Population Health Management*. This finding was based on statistical models that accounted for age, gender, socioeconomic status, disease burden, and health care utilization among a sample of 26,525 Medicare Advantage members at Kaiser Permanente Northwest. The researchers recommend routine screening for food insecurity in health care settings and appropriate referrals to food resources as a strategy to reduce falls among older adults.



samples of adults (i.e., a pre-entry sample and a post-entry sample). In the pre-entry analysis, food insecurity rates increased from 18 percent at 16 to 24 months prior to SSI receipt to 30 percent just before SSI receipt among eventual SSI recipients, compared to an increase from 17 to 18 percent for eligible non-recipients during the same time period. In the post-entry analysis, food insecurity fell from 28 percent just before SSI receipt to 16 percent 4 to 8 months after SSI receipt, but increased from 16 to 17 percent among eligible nonrecipients.

Additional analyses accounting for important factors (e.g., race/ethnicity, gender, education) found a statistically significant increase in food insecurity prior to SSI entry among eventual recipients, and a marginally significant decrease in food insecurity after SSI receipt. The researchers recommend expanding interim benefit programs for those awaiting SSI decisions and

receipt, and focusing future research on the impact on food insecurity from increasing SSI benefit levels and improving coordination between SSI and the Supplemental Nutrition Assistance Program.

### [Examining food insecurity among high school students: a risks and resources model](#)

A study in *Appetite* identified risk factors for food insecurity among high school students, including being male or non-Hispanic, having foreign-born parents, receiving a free or reduced-price school lunch, reporting depressive symptoms, living in an unsafe neighborhood, having a less intact family, and experiencing social stressors. (In this study, social stressors included going to the principal’s office, skipping school, being in a physical fight, and being threatened by someone. Family intactness was based on reports of living with both parents, one parent, or neither parent.) A number of factors were associated with lower levels of food insecurity, including higher self-esteem, eating meals with family, and higher levels of peer social capital. The study, based on a sample of 1,493 students in a northwest Arkansas high school, makes an important contribution to the

research literature by examining factors at the individual, family, school/peer, and community levels that may increase the risk for or provide protection from food insecurity among adolescents.

## Special Populations

### [Food insecurity patterns before and after initial receipt of Supplemental Security Income](#)

New research in *Public Health Nutrition* suggests that Supplemental Security Income (SSI) benefits may alleviate food insecurity. Researchers compared food insecurity patterns between eventual SSI recipients and eligible non-recipients in two national



## SNAP Benefit Reductions and Cutoffs may put Children's and Families' Health at Risk



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**T**he Supplemental Nutrition Assistance Program (SNAP) is an essential and effective nutrition program that helps people of all ages stay healthy. Though the program's explicit goal is to improve food security by providing consistent, adequate access to enough food for an active, healthy life, it also acts as a work support. More than half of all households with children who participated in SNAP in 2016 had earned income.

Despite the fact that so many families are employed, many earn low wages, have unpredictable schedules, work seasonally, or have sporadic overtime hours resulting in unstable or unpredictable income. Such changes in income, especially increases, can cause families' SNAP benefits to be reduced or even cut off, leading to further income volatility.

While SNAP eligibility can be complex, it theoretically provides a smooth gradient for people to increase their income and SNAP benefits gradually reduce until the household is no longer eligible for the program. In practice, however, this does not necessarily happen, and the sharper cutoffs and reductions that families may experience have health implications, especially for families with children.

**New research** from Children's HealthWatch published in *Health Affairs* demonstrates that families with young children whose SNAP benefits were reduced or cut off due to increased earned income were at risk of poor parent and child health, child developmental delays, maternal depressive symptoms, household and child food insecurity, as well as other material (housing instability, energy insecurity) and health care hardships.

The research described in this study highlights that basic needs in the family budget do not exist in isolation: reductions or loss in one area have ripple effects on other needs. Despite increased income, families in the current study who experienced reduced SNAP benefits or those who were cut off of SNAP entirely were impacted across a variety of basic needs. Further losses not examined in the study also are possible, such as the loss of other benefits that are linked to SNAP participation (e.g., utility rate discounts, direct certification for free school meals).

Improvements to SNAP policy could help smooth the decline in SNAP benefits for families who increase their income. This includes changing some of the fundamental assumptions governing how the SNAP benefit is calculated. For example, using a more updated and realistic market basket of foods to drive the annual calculation of the maximum SNAP benefit would raise the financial value of the benefit and give a family a greater buffer as their income — and expected contribution to their food budget — increases.

In conclusion, the attainment of a livable wage is an important part of the solution to helping low-income families, but policymakers must be careful to ensure that key supports, such as SNAP, are not cut back or terminated before a family is truly financially stable.

## Endnotes

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