

## Can Food Insecurity Be Reduced in the United States by Improving SNAP, WIC, and the Community Eligibility Provision?

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*Adequate nutrition is essential to children's rapidly developing brains and bodies. Lack of resources can lead to inadequate access to sufficient food (food insecurity). Fortunately, the United States has programs to provide children and families with nutritional support. Using simulation modeling, we identify three policies that ensure young children have reliable access to food. (i) If SNAP benefits are increased by basing benefit calculations on the Low Cost Food Plan (vs. the Thrifty Food Plan), participant families with children have an 8 percent increase in food purchasing power, and 5.31 percent of food-insecure people in those families become food secure. (ii) If WIC age-eligibility is increased from age 5 years to 6 years, 1.47 percent of newly eligible 5-year-olds' families increase their food purchasing power, and become food secure. (iii) Through school meal programs under current Community Eligibility Program (CEP) criteria, 3.17 percent and 3.77 percent of all children whose family food purchasing power is increased by participation in the National School Lunch Program and the School Breakfast Program, free and reduced-price meals respectively, shift into higher income-to-poverty-ratio categories. Consequently, 3.23 percent of food-insecure School Meals participants' families became fully food secure. If CEP eligibility criteria increase, these improvements are jeopardized.*

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**KEY WORDS:** food insecurity, SNAP, WIC, school meal

### Introduction

Food is one of our most basic needs (Poblacion, Cook, & Taddei, 2016). Along with oxygen, water, regulated body temperature, shelter, sex, and sleep, food is a basic necessity for human survival. Food and food security are in the lowest level of Maslow's hierarchy of needs (Maslow, 1970). Until we satisfy our need for food, we are not much interested in trying to fulfill any of our higher needs, such as love, empathy, friendship, intimacy, self-esteem, independence, knowledge, appreciation of beauty, self-fulfillment, concern for the public good, or helping others.

In January of 2014 the United Nations' Special Rapporteur on the Right to Food (SRRF) published his final report based on 6 years of investigation, discovery, and "listening." In Section II of the report the SRRF summarizes what it means to have "a right to food" as follows:

The right to food is the right of every individual, alone or in community with others, to have physical and economic access at all times to sufficient, adequate and culturally acceptable food that is produced and consumed sustainably, preserving access to food for future generations. Individuals can secure access to food (a) by earning incomes from employment or self-employment; (b) through social transfers; or (c) by producing their own food, for those who have access to land and other productive resources. Through these channels, which often operate concurrently, each person should have access to a diet that as a whole contains a mix of nutrients for physical and mental growth, development and maintenance, and physical activity that are in compliance with human physiological needs at all stages throughout the life cycle and according to gender and occupation. (De Schutter, 2014)

Given the nature of food as a "basic necessity," access to adequate nutritious food can be considered a basic human right (Maslow, 1970). That is, we humans all have a right to adequate nutritious food, and that right is a basic right. Basic rights are special in that they carry a meaning and status that sets them apart from other rights. Philosopher Henry Shue defines a "basic right" as a right whose nature is such that, if we do not receive the object of that right (food in this case), we are prevented from seeking to fulfill any of our other rights (by death from starvation, or debilitation from food insecurity and hunger) (Shue, 1980). Shue also reminds us that all rights are the right to something; the object of the right, in this case, is food.

Moreover, a right is not just an abstract idea that we all should have the object of the right (food), or that it would be nice if we had the object of the right. Neither are rights optional, or up to the arbitrary whim of any particular policymakers or politicians. Rights are real, concrete, and they embody the standing to make a claim on the object of the right. Shue goes on to point out that all rights, and especially basic rights, also imply duties. If someone has a right to something, then all others have a duty to actively avoid preventing that person from obtaining the object of that right. But basic rights imply even stronger duties, as Shue (1980) notes; if a person has a basic right, then not only do all others have a duty to actively avoid preventing that person from obtaining the object of that right, they also have a duty to ensure that the person obtains the object of that right.

Our basic right to food gives us standing to make a claim on food, or to demand it. And if we lack the resources necessary to obtain adequate food, then society (through our democratically elected governments) has a duty to provide it (Shue, 1980). That is the nature of basic rights, and the reason they are precious

and must be cherished, exercised, and protected. They are a fundamental part of what makes us human, and when they are violated or denied our humanity is demeaned and lessened, as is that of those responsible. Without the objects of our basic rights, we are not able to seek to fulfill any of our other rights, and in the extreme, we are not able to survive, or live.

So food security, defined by the U.S. Department of Agriculture (USDA) as “limited or uncertain availability of nutritionally adequate and safe foods or limited or uncertain ability to acquire acceptable foods in socially acceptable ways” (Anderson, 1990) is critically important to all of us. It is one of our core basic human rights, and we must not take it for granted, or treat it lightly. Moreover, it is a public good that belongs to all of us, and it is up to all of us to protect and preserve it. Because without it, we cannot prosper, and we will not achieve a prosperous future for ourselves, or our children, or future generations.

There is a large body of research demonstrating the importance of consistent access to nutritious food to support the health and well-being of children from early childhood through adulthood (Cook & Frank, 2008). The rapidly developing brains and bodies of young children require healthful, adequate nutrition. Children who have enough healthy food throughout early childhood have better health and development outcomes compared to similar children whose families struggle to provide enough food. The benefits of such healthful nutrition include substantial long-term savings through reduced costs of health care and education (Beaulieu, 2014). By eliminating health problems attributable to food insecurity in children under age 4 years alone, it has been estimated that the United States could save approximately \$1.2 billion in health-related expenditures annually (in 2015 dollars) (Cook et al., 2015).

Food insecurity, like any serious illness, threatens the health and development of our nation’s children. Strategies to address food insecurity and prevent its reoccurrence exist. The United States has the opportunity to improve the health of tens of millions of people nationwide by increasing their ability to afford healthful food.

Recognizing the public necessity of ensuring families, especially those with children, have resources needed to purchase food, the U.S. government has 15 domestic food and nutrition assistance programs to provide eligible children and their families with nutritional support (Coleman-Jensen, Rabbitt, Gregory, & Singh, 2016). Programs including the Supplemental Nutrition Assistance Program (SNAP); the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC); the National School Lunch Program (NSLP); and the School Breakfast Program (SBP) are critical and have been shown to reduce food insecurity and improve health and development in early childhood and school-age children’s health and academic performance (Ettinger de Cuba et al., 2012; Frank et al., 2010; Hoynes, Schanzenbach, & Almond, 2016; United States Department of Agriculture [USDA], 2016a). However, inadequate funding and participation barriers have limited these programs’ ability to reach their potential and alleviate food insecurity. While the growing U.S. economy has contributed to reductions in food insecurity since the end of the great recession in 2009, (Coleman-Jensen et al., 2016), there is still an urgent need and significant opportunity to make critical policy

changes that will support further reductions and better protect families in future economic downturns.

During the months prior to December 2015, about 59 percent of food-insecure households reported receiving assistance from one or more of the three largest Federal food and nutrition assistance programs (SNAP, National School Lunch Program, and WIC, in that order) (Coleman-Jensen et al., 2016).

SNAP (formerly "Food Stamps"), the country's largest food and nutrition program, is an entitlement program that provides nutrition assistance to low-income families and individuals. SNAP eligibility is determined by an equation that considers the household income, with deductions for certain allowable expenses. If eligible, the household receives a monthly allotment equal to the difference between the amount of earned money available for food and the maximum SNAP benefit. The benefit is transferred electronically via an electronic benefit transfer (EBT) card, with which a participant is able to purchase eligible food items at participating stores (USDA, 2016a).

WIC serves pregnant women, breastfeeding women (up to the child's first birthday), nonbreast-feeding postpartum women (up to 6 months postpartum), infants (up to their first birthday), and children up to their fifth birthday. The program assists women, infants, and young children at nutritional risk by providing electronic vouchers for specific nutritious foods to supplement the diets of participants, information on healthy eating, and referrals to healthcare (USDA, 2013).

NSLP offers nutritionally balanced, low-cost or free lunches in public and nonprofit private schools and residential childcare institutions. SBP serves low-cost or free, nutritionally balanced breakfasts in many schools that also participate in the NSLP. In 2010, the Healthy, Hunger-Free Kids Act established the Community Eligibility Provision (CEP), which allows schools in high-poverty areas (>40 percent) to offer both breakfast and lunch at no charge to all students while eliminating the burdensome school meal application process. Implementation of the CEP has resulted in significant administrative cost savings for schools, and more importantly has provided much-needed meals for children without stigmatizing students (USDA, 2016a).

The objective of this research is to examine the potential effects of policy changes on food insecurity among people in households with children. Three policy changes were modeled: (i) changing the basis for determining the maximum SNAP allotment from the "Thrifty Food Plan" to the "Low Cost Food Plan"; (ii) Changing the upper age limit of WIC eligibility for children from the day before a child's fifth birthday to the day before the child's sixth birthday; (iii) Maintaining the area eligibility provision criteria of 40 percent in both School Feeding Programs, Breakfast and Lunch.

## Materials and Methods

Using Stella Systems Simulation Modeling Software v.10.06 (ISEE Systems Inc., 2015) we simulated the impact of each policy change on income-to-poverty

ratios of food-insecure people in households with children. These changes were then used to simulate how many program participants and their families would be able to move into food security because of an increase in food purchasing power, which formed the findings of these analyses.

### *SNAP*

Maximum SNAP allotments are currently based on the cost of the USDA's Thrifty Food Plan (TFP), the lowest-cost of four food plans developed by USDA's Center for Nutrition Policy and Promotion reflecting successively more generous definitions of nutritious diets. The Low-Cost Food Plan (LCFP) costs approximately 28–30 percent more than the TFP (USDA, 2016b). To simulate the increase in food purchasing power due to the proposed change in basis for determining the maximum SNAP allotment from the TFP to the LCFP, we gathered information from various national data sources on food-insecure families with children receiving SNAP by income to poverty threshold in 2014, as indicated below.

Based on 2014 data on characteristics of SNAP households with children (United States Census Bureau), we focused our analysis on three-person single-adult households (Gray and Kochhar, 2015). For consistency, we also used the 2014 poverty threshold for an average family of three people with two children (\$19,073/year).

Using published food insecurity methodology and prevalence estimates from 2014 national data (Coleman-Jensen, Rabbitt, Gregory, & Singh, 2015) we estimated the prevalence of food insecurity among all people in households with children by income-to-poverty ratio categories to be 45.5 percent among those with incomes <100 percent of the poverty threshold (12,309,000 people); 35.1 percent among those between 100 percent and <130 percent of the poverty threshold (2,779,000 people); 30.9 percent of those with incomes between 130 percent and <185 percent of the poverty threshold (5,149,000 people); and 8 percent among those with incomes  $\geq$ 185 percent of the poverty threshold (6,171,000 people).

Using average differences between the costs of food at home represented by the TFP and the costs under the LCFP, for people of different ages and sex, and for different household or family types and composition, we estimated that changing the basis for SNAP allotments to the LCFP would lead, on average, to an across-the-board increase in the dollar value of benefits to SNAP participants of approximately 30 percent.

The 30 percent increase in SNAP benefits to all participants would be experienced as an increase in food purchasing power, though their actual earned incomes would remain unchanged. Participants in each income-to-poverty ratio category would experience a different amount of increased benefits based on the percent of the maximum SNAP benefit they received. Using the average plan costs for families composed of one adult and two children, the maximum SNAP allotment would increase by \$1,547/year, which is approximately 8 percent of the 2014 poverty threshold for an average family

of three people, including two children (\$19,073/year). In other words, all SNAP participants would experience around an 8 percent increase in food purchasing power.

Although some people would enjoy the food purchasing power of the next higher income-to-poverty ratio category, not all would escape food insecurity, since they would still be subject to the food insecurity prevalence in that category. However, more people would achieve food security as the prevalence of food insecurity decreases in each higher income-to-poverty threshold category. In addition, we would expect the severity of food insecurity to decrease within higher income-to-poverty poverty threshold categories (not calculated). The average number of newly food-secure people was estimated by subtracting the number of people who remained food-insecure in the next income-to-poverty-ratio category, based on the FI prevalence for that category, from the pool of people shifted from the previous lower category.

It is important to note, however, that the numbers estimated in this simulation were based on the prevalence of food-insecure households with incomes below 185 percent of the poverty threshold who received SNAP within the 30 days prior to the 2014 Current Population Survey—December supplement (United States Census Bureau). Different proportions of food-insecure households may have received SNAP at some time prior to that during the year. In addition, it is known that only about 83 percent of all eligible people participate in SNAP (USDA, 2016b).

In theory, food purchases of households receiving food assistance may not necessarily increase by the entire amount of their resulting increased food purchasing power. In practice, the benefit is set to purchase food. The difference is considered due to potential substitution of out-of-pocket expenditures for food for purchase of other goods and services after food assistance is received, and results of some recent empirical research have questioned this hypothesis specifically with respect to SNAP benefits, finding increases in SNAP allotments leading to relatively larger increases in expenditures for food than theory predicts (Beatty & Tuttle, 2014; Hoynes & Schanzenbach, 2009; Mabli, Ohls, Dragoset, Castner, & Santos, 2013). For simplicity, since the evidence on this point is not conclusive, in our simulations of SNAP benefit increases, and in simulations of increases in WIC, NSLP, and SBP benefits, we assumed that the entire increase in households' food assistance benefits could legitimately be considered an increase in food purchasing power. We also assume that the full amount of the increase could be spent on food and lead to increased availability of food in households, with reductions in food insecurity at least consistent with the food insecurity prevalence and severity among households in the higher income-to-poverty-ratio category.

#### WIC

Using evidence from a series of studies (Johnson, Huber, Giannarelli, & Betson, 2015; Thorn, Tadler, Huret, Ayo, & Trippe, 2015; United States Census Bureau, 2016) the second policy change we simulated aimed to raise the maximum age

cutoff for WIC receipt. The current policy grants benefits up to the day before the child's fifth birthday, and we simulated an addition in the benefit for a child up to the day before their sixth birthday, henceforth referred as "WIC to Six."

After WIC eligibility and coverage rates are applied, some 5-year-old children in the population are considered potentially eligible for a "WIC to Six" policy. The newly 5-year-old children would come from two different scenarios: (i) some would be determined eligible upon application coming from existing 4-year-old WIC participants "aging up" into their fifth year and (ii) some coming from 5-year-old children who may or may not have participated previously but could become eligible under WIC to Six.

The average WIC eligibility rate for children ages 1–4 years in 2013 was 55.9 percent. This was also the eligibility rate for 4-year-olds children that year and thus the rate we used for 5-year-olds entering or being retained in the program under WIC to Six. With the latest available population estimate of 4,018,518 5-year-old children (both sexes in 2015) used as the base for estimating the number of eligible 5-year-old in the simulation, (United States Census Bureau, 2015) we estimated 2,246,150 (55.9 percent) 5-year-old children eligible for WIC.

There is variation in the proportions of eligible women, infants, and children who receive WIC benefits. The coverage rate for all children ages 1–4 years was 49.8 percent, and only among children age 4 years (32.9 percent), both in 2013 (Johnson et al., 2015). The year-over-year attrition rates for children ages 1–4 years were calculated using the latest available data, and averaged by year, yielding a mean attrition rate of 21.1 percent. Adjusting the 2013 coverage rate for 4-year-old children (32.9 percent) by this average attrition rate produced an estimated hypothetical coverage rate of 26 percent for 5-year-olds. Applying the adjusted coverage rate of 26 percent to this estimated number of eligible 5-year-olds yielded an estimated 583,999 5-year-old children who would likely be added to the WIC rolls under WIC to Six.

Under the described scenario, having a 5-year-old child participating in WIC would essentially add the value of benefits received for that child to the family's purchasing power for approved WIC foods. In 2015, the average cost of food per WIC participant was \$43.37 per person per month, or \$520.44 per year. This does not include the value of WIC Farmers' Market coupons, or other special benefits for fresh produce. Within certain constraints on types of foods that could be bought, the additional \$520 per year, on average, would serve to shift the family's purchasing power up the income-to-poverty-ratio scale by a factor equal to the proportion it comprises of the poverty threshold. Noting that the average family size for WIC children is 4.1 people (Thorn et al., 2015), the \$520 would represent 2.17 percent of the poverty threshold of a family of four, composed by two adults and two children (\$24,008).

### *School Meals*

Using the same methodology regarding prevalence of food insecurity described for SNAP and WIC, estimated annual values for free and reduced price school lunches were calculated using the proportion of relevant poverty thresholds

they comprise for a single adult with two children family scenario. In other words, a proportion of people were considered to have their food purchasing power increased to the level enjoyed by the next higher income-to-poverty-ratio category, enabling some of them to become food secure.

*Free School Breakfast and Lunch.* In 2014, approximately 10.54 million students living in families with incomes below 130 percent of the poverty threshold received an average of 167 free school breakfasts each. Among those, we estimate 43 percent were living in food-insecure households (4,532,200 million children). The cost of each meal was between \$1.62 and \$1.93, depending on the area eligibility status of the school, and other factors, or approximately \$1.78 on average. At this average cost, the 167 breakfasts were valued at \$297.26 per student per school year.

If both children in our simulated family of three people, one adult and two children, were school-age and participated in the SBP, the value of their free breakfasts would be \$594.52, and comprise 3.12 percent of their family's poverty threshold of \$19,073/year. This percentage was used to shift the family's food purchasing power up the range of income-to-poverty-ratio categories, moving some into the next higher category.

To those children eligible to enjoy the next higher range of income-to-poverty-ratio category food purchase power (130–185 percent) we applied the prevalence of food insecurity (30.1 percent) for that category. The result indicates that although some children enjoyed a higher purchasing power, it was not enough to shift them all from food insecurity to food security. However, 69.9 percent were able to become newly food secure.

Similarly, approximately 19.2 million students living in families with incomes below 130 percent of the poverty threshold received an average of 166 free school lunches each in 2014. Among those, 8,256,000 million children were food insecure. Also, depending on the area eligibility status of the school, and other factors, these 166 meals were valued at between \$2.98 and \$3.21 each, or at approximately \$3.10 on average. At this average cost, the 166 lunches were valued at \$513 per student per year on average. Receipt of these free lunches could be viewed as increasing each child's family's food purchasing power by \$513 that year.

If both children participated in the NSLP, the amount would double (\$1,029.2) and comprise 5.4 percent of their family's poverty threshold of \$19,073/year. Some of them would then enjoy the following, or next higher, income-to-poverty-ratio category's food purchasing power, and some of those would be made food secure.

*Reduced-Price School Breakfast and Lunch.* In 2014, 1.01 million children living in families with incomes between 130 percent and 185 percent of the poverty threshold received the same number of reduced-price breakfasts each. Among those, 434,300 children lived in food-insecure households. Those meals were reimbursed to the school at an average rate of about \$1.48 each. At this average cost, the 167 reduced-price breakfasts were valued at \$247.16 per student on average. If these students were one of two children in single-parent families, and they and their siblings both received reduced-price breakfasts, this would amount to

\$494.32 or 2.59 percent of their poverty threshold, shifting the food purchasing power of these families into a higher income-to-poverty-ratio category. Applying the higher income-to-poverty-ratio category's prevalence of food insecurity, we simulated how many people would become food secure and how many would remain food insecure.

In addition, 2.5 million children living in families with incomes between 130 percent and 185 percent of the poverty threshold received a similar number of reduced-price meals each in 2014, and 43 percent of those (1,075,000) were living in food-insecure households. In that year, those meals were reimbursed to the school at an average rate of about \$2.70 each. At this average cost, the 166 reduced-price meals were valued at \$448.20 per student on average. Thus, these students' families saw their food purchasing power increase by \$448.20 on average as a result of their children's receipt of the reduced-price meals. If the child had a sibling also participating and receiving reduced-price meals, the 332 total meals received would be valued at \$896.40, comprising 4.7 percent of her family's poverty threshold.

## Results

### *SNAP*

Conceptually, switching the basis for determining SNAP allotments from the Thrifty Food Plan to the Low Cost Food Plan is equivalent to shifting the distribution of food purchasing power among all food-insecure SNAP participants in households with children upward toward higher income-to-poverty-ratio categories.

As explained in the Methods section, that means that 8 percent of 7,506,594 food-insecure people in families with children and incomes  $\leq 100$  percent of the poverty threshold, or 600,528, would share the food purchasing power characteristics, and be subject to the food insecurity prevalence, of people in households with children and incomes between 100 percent and  $< 130$  percent of the poverty threshold (from 44.5 percent to 35.1 percent). Therefore, this increase in food purchasing power could enable some proportion of the 600,528 food-insecure people to achieve food security.

Similarly, 8 percent of the 1,086,364 people in families with children and incomes between 100 percent and  $\leq 130$  percent of poverty threshold, or 86,909 people, would enjoy the food purchasing power and food insecurity characteristics of people in households with incomes  $> 130$  percent of the poverty threshold (from 35.1 percent to 30.9 percent).

Likewise, 8 percent of the 320,566 food-insecure SNAP participants with incomes  $> 130$  percent of poverty and receiving benefits for special reasons (e.g., disabilities or special health care needs), or 26,645 food-insecure people, would also enjoy greater food purchasing power (from 30.9 percent to 8 percent). All the people in households whose food purchasing power is "shifted" into the next higher income-to-poverty-ratio category form a pool of people who could become food secure as a result of receiving higher SNAP benefits, though it is unlikely that all would.

These simulated changes in food insecurity attributable to changing the basis for maximum SNAP allotments from the TFP to the LCFP are summarized in Table 1. The total number, across all income categories, of people who could

**Table 1.** Changes in Food Insecurity Resulting From Shift to the Low Cost Food Plan for SNAP Participants

Basis for Change SNAP Allotments' Increase by 30%, Increases Food Purchasing Power:	Number of People Elected for Change to Food Security (8%)	Number Remaining Food Insecure After Change	Number		% of Those Elected for Change Becoming Food Secure
			Newly Secure	Secure	
From that of $\leq 100\%$ of poverty to that of $100\%$ to $\leq 130\%$	600,528	210,785	389,742		5,19%
Food insecurity prevalence changes from 45.5% to 35.1%					
From that of $100\%$ to $\leq 130\%$ of poverty to that of $130\%$ to $\leq 185\%$	86,909	26,855	60,054		5,53%
Food insecurity prevalence changes from 35.1% to 30.9%					
From that of $130\%$ to $\leq 185\%$ of poverty to that of $> 185\%$	26,645	2,052	24,513		7,36%
Food insecurity prevalence changes from 30.9% to 8%					
Totals	713,082	239,692	474,390		5,31%

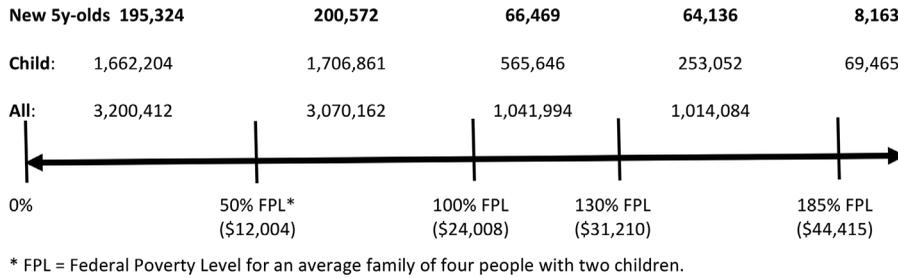


Figure 1. WIC Participants by Ratio of Family Income to the Federal Poverty Threshold (FPL), 2014.

become newly food secure in our simulation accounted for 5.31 percent (nearly half a million people) of the total 8,913,524 food-insecure SNAP participants in families with children.

### WIC

According to 2014 data (Thorn et al., 2015), WIC participants (new 5-year-old, child participants, and all participants) were distributed among income-to-poverty-ratio categories as in Figure 1. Using these numbers, we estimated the distribution of new 5-year-old participants added under WIC to Six policy, also shown in Figure 1.

Among households with children under 5 with incomes  $\leq 185$  percent of poverty, and receiving WIC, 41.1 percent were food insecure (Thorn et al., 2015). Following the methodology used for SNAP participants, 2.17 percent of the new 5-year-old children in food-insecure households would have their household food purchasing power shifted to a higher income-to-poverty-ratio category by the WIC benefits they received. Together these 4,684 children represent a pool of families whose increases in food purchasing power will enable them to become food secure (Table 2).

Table 2. Summary of Simulated Effects of Adopting WIC to Six With All 5-Year-Old Children Potentially Eligible; Based on 2014 Eligibility and Coverage Rates and 2015 Population Estimates

Income-to-Poverty-Ratio Category	All Elected 5-Year-Olds Covered	Elected 5-Year-Old Covered and Food Insecure (41.1%)	Elected 5-Year-Old Moved up in Income Category by WIC Benefit (2.17%)	Number Remaining Insecure After Moving up in Income Category	Number Newly Food Secure	% of Those Elected for Change and Becoming Food Secure
$\leq 100\%$	395,896	162,317	3,523	1,236	2,286	1.41%
100 to $\leq 130\%$	66,469	27,252	591	183	409	1.50%
130 to $\leq 185\%$	64,136	26,296	571	46	525	2.00%
$> 185\%$	8,163	3,347	NA	NA	NA	NA
Total 5-year-olds	534,664	219,212	4,684	1,465	3,220	1.47%
Total family members*	2,192,122	898,770	19,206	6,005	13,200	1.47%

\*The difference is regarding the unknown income.

Assuming the same food insecurity prevalence values for people in households with children by income-to-poverty ratio as used for our SNAP simulation, we shifted the 5-year-old children into the next higher income-to-poverty-ratio category.

Taking the differences between the numbers of food-insecure 5-year-olds implied by the food insecurity prevalence rates of each two adjacent categories, as some are shifted up to the next higher category, yields an estimate of the number of food-insecure 5-year-old WIC participants that would become food secure under the first year of simulation of WIC to Six. This amounts to all people in the families of 3,220 5-year-old children becoming food secure.

Using an average family size of 4.1 people, this implies that 13,202 people in WIC families with new 5-year-old participants, including the 3,220 5-year-olds, would become food secure in this first year of WIC to Six. This is a reduction of 1.47 percent in food insecurity among the food-insecure 5-year-old children added to WIC under the WIC to Six policy. WIC to Six would benefit the whole family, however, as the increase in food purchasing power affects the resources available to the entire family, as shown in Table 2.

### *School Meals*

*Free School Breakfast and Lunch.* Under a three-person-family scenario, with one parent and two school-age children, we assumed both children would be participants in school meal programs, receiving free or reduced-price breakfast and lunch at school. We modeled the impact of the school meal programs on food insecurity in participating students' families under the existing 40 percent cut-off for community eligibility provision (CEP). We estimate that in 2014, under the CEP then in place, the SBP enabled 97,614 food-insecure students to become food secure (2.15 percent). Since both children in our hypothetical three-person family were eligible to receive free breakfasts, they were also eligible to receive free lunches. In 2014, under the 40 percent CEP cut-off, the NSLP enabled 307,826 students (3.73 percent) to move into food security because their families could use money previously spent on school meals to increase their food purchasing power. When all family members are included, the estimated total number of food insecure people who would be enabled to become food secure by the SBP in our simulation (using data for 2014) is 608,160 (3.17 percent) (see Table 3).

*Reduced School Breakfast and Lunch.* In the same fashion, we simulated the increase in families' food purchasing power resulting from receipt of reduced-price breakfasts and lunches, and the implications for food security. As an example, we used both children of a family composed by 1 adult and 2 children eligible to receive reduced-price breakfast and lunch at school. We estimate that in 2014, under the CEP in place, the SBP enabled 10,355 food-insecure students to become food secure (2.38 percent). In addition, the NSLP enabled 46,479 students to become food secure (4.32 percent). When all family members are included, the

**Table 3.** Changes in Food Insecurity Resulting From the Maintenance of 40% Eligibility Provision Criteria

Basis for Change	Number of People Elected for Change to Food Security (3.12%—Breakfast); (5.40%— Lunch)	Number Remaining Food Insecure After Change	Number Newly Food Secure	% of Those Elected for Change Becoming Food Secure
Free Breakfast	141,265	43,651	97,614	2.15%
From that of 0% to ≤130% of poverty to that of 130% to ≤185%;				
Food insecurity prevalence changes from 43.1% to 30.9%				
Free Lunch	445,479	137,653	307,826	3.73%
From that of 0% to ≤130% of poverty to that of 130% to ≤185%;				
Food insecurity prevalence changes from 43.1% to 30.9%				
Totals including just children	586,744	181,304	405,440	3.17%
Totals including all family members	880,116	271,956	608,160	3.17%

estimated total number of food-insecure people who were enabled to become food secure in 2014 is 85,252 (3.77 percent) (see Table 4).

The increased food purchasing power obtained through the SBP and the NSLP enabled 693,411 families to enjoy the purchasing power of a next-higher income-to-poverty-ratio category, and approximately 3.23 percent of all estimated food-insecure children and their parent (in our hypothetical three-person families with two children) receiving free or reduced-price school breakfasts and lunches under 2014 conditions. Since these students' family incomes are close to the threshold values, within approximately 4–6 percent of the relevant income-to-poverty-threshold values, they are also likely to be the most vulnerable to becoming food insecure if CEP criteria were made more stringent (e.g., by changing from 40 percent to 60 percent), or if the CEP were eliminated.

### Discussion

The present study modeled SNAP, WIC, and the school meal programs under existing CEP components in search of a feasible plan for decreasing high prevalence of food insecurity, and aiming to define policy solutions that contribute to a healthier population and a better United States. These analyses demonstrate that increasing the basis of SNAP allotments from the Thrifty Food Plan to the Low Cost Food Plan could enable 5.31 percent of people in food-insecure participating households with children to become fully food secure. WIC to Six could enable 1.47 percent of newly eligible 5-year-olds and their families to become fully food secure. Maintaining the CEP cut-off at 40 percent of all students eligible for school meal programs could enable 3.23 percent of students and their families to become fully food secure. While the changes reflected in the models appear modest, the number of people positively affected by the policy changes modeled is significant. In addition to those moved into food insecurity, families at lower income-to-poverty-ratio levels were also positively affected by the simulated policies, even though they did not become food secure.

Food insecurity and its consequences for the future of our nation are disastrous. Previous research from Children's HealthWatch, in partnership with Bread For The World Institute, estimated the health-related costs of food insecurity and hunger to be close to \$180 billion dollars per year in 2014 (Cook & Poblacion, 2015). In a related analysis, Children's HealthWatch estimated health-related costs of food insecurity among families with children under age four in the United States to be \$1.2 billion in 2014 dollars alone (Cook et al., 2015). The price we pay as a nation for food insecurity is much higher when considering that the average lifespan is approximately 80 years. If instead of spending reactively to alleviate and cure diseases, we invested in childhood nutrition programs, we would positively affect health throughout childhood and adolescence, and on into adulthood. These healthier people would be better able to accumulate human capital and be productive, contributing members of society. A healthier population would also impact the way the United States collects and spends tax dollars,

**Table 4.** Changes in Food Insecurity Resulting From the Maintenance of 40% Eligibility Provision Criteria

Basis for Change	Number of People Elected for Change to Food Security (2.59%—Breakfast); (4.70%—Lunch)	Number Remaining Food Insecure After Change	Number Newly Food Secure	% of Those Elected for Change Becoming Food Secure
Reduced-price Breakfast	11,256	900	10,355	2.38
From that of 130% to ≤185% of poverty to that of >185%; Food insecurity prevalence changes from 30.9% to 8%				
Reduced-price Lunch	50,521	4,042	46,479	4.32
From that of 130% to ≤185% of poverty to that of >185%; Food insecurity prevalence changes from 30.9% to 8%				
Totals including just children	61,776	4,942	56,834	3.77
Totals including all family members	92,665	7,413	85,252	3.77

allowing fewer dollars to be spent on expensive treatments for chronic diseases that could have been prevented with sustained access to nutritious food starting in childhood.

According to the models in this study, changing the basis for determining the maximum SNAP allotment to the LCFP, changing the upper age limit for WIC eligibility to the day before the child's sixth birthday, and maintaining the CEP at 40 percent would have a significant impact on food-insecure families' lives, and therefore on the future of the United States.

### *Increasing the SNAP Benefit to Reflect the Real Cost of a Healthy Diet*

The USDA utilizes the following four food plans to represent a household diet at four different cost levels: The Thrifty Food Plan (minimal cost), Low-Cost Food Plan, Moderate-Cost Food Plan, and Liberal Food Plan (highest cost). Designed to provide a nutritious diet at a minimal cost, the Thrifty Food Plan can help families temporarily manage their market baskets during times of economic uncertainty, but as a treatment to alleviate food insecurity it is ineffective. According to a growing body of evidence, the current level of benefits do not last through the end of each month, preventing families from purchasing an adequate, healthy diet (Executive Office of the President of the United States, 2015; Institute of Medicine and National Research Council, 2013; McGuire, 2013). Given that, and the results of our analyses, we recommend replacing the Thrifty Food Plan with the Low-Cost Food Plan as the basis for calculating a household's SNAP benefit allotment to reflect the real cost of a healthy diet and ensure a more effective dose of SNAP.

In 2015, a typical household spent \$50.00 per person each week for food. This amount accounts for 18 percent more than the cost of the TFP for that household. The same study showed that a household headed by a single parent with children spent around 3 percent less than the TFP, which indicates low food expenditures, far below what is intended to be a minimal-cost nutritious diet (Coleman-Jensen et al., 2016). If a family is food insecure, the deficit is even higher (5 percent). Substandard food expenditures might also indicate that the family is trading-off food money for other essential needs, such as more stable housing (e.g., paying rent), stable energy (utilities), or health care/medications.

If SNAP benefits were increased to levels determined by the LCFP, we estimate that 5.31 percent of currently food-insecure people living in families with children participating in SNAP would become food secure, due to increased purchasing power for food. This means that nearly 710,000 people of the 13.370 million people in families experiencing food insecurity, even though they receive SNAP benefits, will get enough of a boost in the amount of money they are able to spend on food to provide meals for all family members to live active, healthy lives. Not only these families would benefit from this change, however, but also the entire nation, with short-run and long-run positive impacts on health, education, and their costs, as well as the overall economy.

The USDA Economic Research Service estimates that every \$1.00 of food assistance spent on food in the U.S. economy creates \$1.79 worth of economic

activity. That is, every \$5.00 of food assistance spent on food generates \$9.00 in additional economic activity in the economy. Moreover, from each \$1 billion of food assistance spent on food, 9,800 full-time and part-time jobs plus self-employed positions are added, helping ensure that working family members remain employed (Hanson, 2010).

It is even more important to point out that those people whose food purchasing power moves from one food insecurity prevalence category to the next higher in these simulations are not the only persons benefiting from the increase in SNAP allotments. All recipients benefit from the increased food purchasing power, even though not all food-insecure participants are enabled to become food secure.

### **Expanding WIC Eligibility to Age 6 to Ensure Continuity of Care**

Currently, WIC provides nutrition services for children up to a child's fifth birthday, when in general children are enrolled in kindergarten and become eligible for school meals. However, many children do not enter school until after age 5 or as late as their sixth birthday, and are left ineligible for both WIC and school meals, and thus experience a gap in food and nutrition "treatment," putting them at increased risk of food insecurity and its adverse health effects. We recommend expanding WIC to age 6 to ensure children receive a consistent course of nutritional support.

If WIC age eligibility were increased to age 6, there would be a reduction of 1.47 percent in food insecurity among WIC eligible and food-insecure 5-year-olds and their families. This means that of the 898,770 family members in food-insecure WIC eligible families with 5-year-olds, 13,200 people, including 3,220 5-year-olds, would receive necessary support from WIC to obtain enough healthful food for active, healthy lives.

### **Ensure High-Poverty School Districts Provide Low-Income Children Healthy Meals**

The CEP is a powerful tool that allows school districts with high-poverty schools to provide all students with breakfast, lunch, and after-school meals at no charge to students and without requiring an application. By eliminating the administrative burdens of screening and verifying large numbers of individual applications, CEP decreases school and federal administrative costs, increasing both efficiency and participation in school meal programs. Further, these programs increase access to food for children in food-insecure households (Potamites & Gordon, 2010; Stallings, 2015) by simplifying how students receive meals, and eliminating students' stigma associated with not paying for or paying a reduced price for meals (Potamites & Gordon, 2010). In spite of the nearly universal popularity of the CEP among school administrators and teachers, there are recurring efforts on the part of some members of Congress to either increase the percentage of students required to be directly certified for free or reduced-price meals, or to eliminate the CEP altogether. Recently, proposals have been made to increase the required percentage of students in a Local Educational

Agency (LEA) who must be identified as eligible for free or reduced-price meals via direct certification from 40 percent to 60 percent. Such an increase would likely mean far fewer students would receive free and reduced price school breakfasts and lunches. We recommend maximizing school meal participation by maintaining CEP criteria at 40 percent and continuing to ensure that all eligible schools utilize this provision to provide meals to students.

We found that providing the SBP and the NSLP to those entitled to receive free meals under the existing CEP enabled 3.17 percent of all children whose family food purchasing power was increased by shifting into a higher income-to-poverty-ratio category under the 40 percent cut-off for the CEP to become food secure. In 2014, 2.15 percent and 3.73 percent of all food-insecure children participating in the SBP and NSLP became food secure, respectively. SBP and NSLP provided 608,160 students and their food-insecure families with access to nutritious food, boosting their families' abilities to purchase additional meals. This resulted in nearly one-quarter of a million people becoming food secure.

The SBP and the NSLP also enabled similar increases in purchasing power to children entitled to receive reduced-price meals, which also shifted families into higher income-to-poverty categories. In 2014, 3.77 percent of food-insecure children participating in both school nutrition programs became fully food secure. These programs enabled 85,252 food-insecure students and their families to become fully food secure.

Proposals to raise the threshold for the CEP (i.e., requiring 60 percent of students to be at risk of food insecurity) would likely increase, rather than decrease, the risk of food insecurity among these students and their families. School districts across the nation continue to enroll in CEP, leveraging it to increase participation in the NSLP, SBP, and the After-school Meal Program. Through those programs, keeping the CEP at its current threshold of 40 percent will maintain food security for many families and help more families to become food secure.

### **Conclusions and Policy Implications**

Policy solutions for creating an effective treatment plan for food insecurity are available and within easy reach. Improvements to SNAP and WIC and support for the current implementation of the CEP for the NSLP and SBP would help hundreds of thousands of food-insecure families with children to afford enough food. These changes would not only benefit struggling families across the country but also have the potential to reduce health-care costs associated with food insecurity considerably. In an age of uncertainty for families in need of assistance, ensuring that we make our nutrition assistance programs stronger rather than weaker will be critical for reaching a healthier and more prosperous future for all Americans.

## Limitations and Bias

Each of the situations described in this manuscript reflects the policy examined in isolation; the results given here do not reflect the potentially larger synergistic effects of combining two or more of these policies, though this is an interest for future work. These findings are conservative estimates of the impacts of each policy, and the true impact is likely far greater.

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## Notes

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