

# **IMPACT AND EFFECTIVENESS TABLE 28**

## **Government Nutrition Assistance Programs**

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# **EFFECTIVENESS TABLES**

Study Description	Measures & Outcomes	Effect Size or % Change	Effectiveness	Maintenance & Representativeness
<b>United States</b>				
<p><b>Author</b> Herman, Harrison (2008); Herman, Harrison (2006)</p> <p>California</p> <p><b>Design</b> Intervention Evaluation</p> <p>Non-randomized trial</p> <p><b>Duration</b> Medium 8 months</p>	<p><b>Measures</b> <i>Access to healthy food options using WIC resources (vouchers for purchasing fruits and vegetables [F&amp;V])</i></p> <p><b>Outcome(s) Affected</b> Dietary consumption (interviews with 24-hour recall)</p>	<p><b>Net Positive for Nutrition in Lower-income Women (Government Nutrition Assistance Programs)</b></p> <p><b>Government Nutrition Assistance Programs</b></p> <p><u>NUTRITION:</u></p> <ol style="list-style-type: none"> <li>1. F&amp;V intake increased at both the farmers market site (from 5.4 servings to 7.8 servings) and at the supermarket site (from 6.9 servings to 7.8 servings) over the course of the intervention, but decreased at the control site from 5.0 to 4.8 servings. The difference in F&amp;V intake between each of the intervention sites and the control site was statistically significant (F=9.75, p&lt;0.001).</li> <li>2. Six months post-intervention, the increase in F&amp;V intake reported by participants at intervention sites was sustained. Participants at both intervention sites reported eating an average of 7.5 servings (farmers market site) and 7.4 servings (supermarket site) while those at the control site reported an average of 4.9 servings. The difference in consumption between each of the intervention sites and the control site was statistically significant (F=6.66, p=0.001).</li> <li>3. There was no significant difference in consumption of fruit alone between the 2 intervention sites and the control site at baseline (p=0.12) and this remained true at the end of the intervention (p=0.39) and at the 6-month post-intervention follow-up.</li> <li>4. Post-intervention, participants at both intervention sites reported eating more servings of vegetables on average than the control site and this difference was statistically significant (F=11.0, p&lt;0.001)</li> <li>5. Higher reported intake of F&amp;V 6 months post-intervention was associated with higher reported F&amp;V intake at baseline, preference for speaking Spanish, and being in one of the intervention groups. This model explained 14% of the variance in the study (p&lt;0.001).</li> </ol> <p>(Note: All mothers were eligible for Special Supplemental Program for Women, Infants, and Children [WIC].)</p>	<p><b>Effective for Nutrition in Lower-income Women</b></p> <p>Study design = Intervention evaluation</p> <p>Intervention duration = Medium</p> <p>Effect size = Net positive for healthy rating in lower-income women</p>	<p><b>Maintenance</b></p> <p>Six months post-intervention, both of the intervention sites sustained their higher average intake of servings of vegetables compared to the control site, however, only the supermarket site was significant (F=0.59, p=0.01).</p> <p><b>Sampling / Representativeness</b> Not Reported</p>
<p><b>Author</b> Anderson, Bybee (2001)</p> <p>Michigan</p> <p><b>Design</b> Intervention Evaluation</p> <p>Non-randomized trial</p> <p><b>Duration</b> Low &lt;6 months</p>	<p><b>Measures</b> <i>Access to farmers markets using WIC resources (vouchers for purchasing fresh fruits and vegetables [F&amp;V] at farmers markets)</i></p> <p><b>Outcome(s) Affected</b> Dietary consumption (questionnaire)</p>	<p><b>Net Positive for Nutrition in Lower-income Women (Government Nutrition Assistance Programs)</b></p> <p><b>Government Nutrition Assistance Programs</b></p> <p><u>NUTRITION:</u></p> <ol style="list-style-type: none"> <li>1. There was a significant positive change in F&amp;V consumption for the coupon component (<math>\beta=0.33</math>, p&lt;0.01).</li> <li>2. Although the education component had no significant direct effect on consumption behavior change, it was indirectly associated through the strong relationship between attitude and consumption behavior (<math>\beta =0.80</math>, p&lt;0.001). The magnitude of the indirect impact was <math>\beta =0.14</math>.</li> <li>3. When indicators of attitude and consumption were examined together, significant positive effects for education and coupons were found.(education: F=3.551, effect size=.07, p&lt;0.001; coupons: F=2.976, effect size=.06, p&lt;0.001).</li> </ol> <p><u>USE OF RESOURCES:</u></p> <ol style="list-style-type: none"> <li>4. 87% of posttest completers had redeemed at least some of their coupons, 58% had redeemed them all, and 8% had redeemed less than half.</li> <li>5. Participants in the 2 groups that received coupons were more likely to report visiting the farmers' market during the preceding 2 months (OR=69.91, p&lt;0.001).</li> </ol> <p>(Note: All mothers were eligible for the Special Supplemental Program for Women, Infants, and Children [WIC].)</p>	<p><b>Somewhat Effective for Nutrition in Lower-income Women</b></p> <p>Study design = Intervention evaluation</p> <p>Intervention duration = Low</p> <p>Effect size = Net positive for nutrition in lower-income women</p>	<p><b>Maintenance</b> Not Reported</p> <p><b>Sampling / Representativeness</b> Not Reported</p>

Study Description	Measures & Outcomes	Effect Size or % Change	Effectiveness	Maintenance & Representativeness
<p><b>Author</b> Gibson (2003) United States</p> <p><b>Design</b> Intervention Evaluation</p> <p>Retrospective cohort study</p> <p><b>Duration</b> High &gt;24 months</p>	<p><b>Measures</b> <i>Provision of resources - FSP (participation in the Food Stamp Program)</i></p> <p><b>Outcome(s) Affected</b> Overweight/obesity (National Longitudinal Survey of Youth NLSY79 self-reported height, weight)</p>	<p><b>Net Negative for Overweight/obesity in Lower-income Women (Government Nutrition Assistance Programs)</b></p> <p><b>Net Negative for Overweight/obesity in Lower-income Men (Government Nutrition Assistance Programs)</b></p> <p><b>Government Nutrition Assistance Programs</b></p> <p><u>OVERWEIGHT/OBESITY:</u></p> <ol style="list-style-type: none"> <li>In bivariate analysis, current FSP participation was significantly related to obesity status among women (<math>\chi^2=172.1</math>, <math>p=0.001</math>) and among men (<math>\chi^2=33.5</math>, <math>p=0.001</math>) - no other results reported for men.</li> <li>After including individual fixed effects (e.g., age, race/ethnicity, marital status, family size), the coefficients on many of the variables declined in magnitude and significance indicating that models of obesity without them were subject to omitted variable bias.</li> <li>In ordinary least squares models after adjusting for individual fixed effects, current and long-term FSP participation were significantly related to the obesity of low income women (<math>p&lt;0.05</math> for both), but not of low income men.</li> <li>A woman who was not a current or former FSP participant whose other characteristics were equal to the sample averages had a predicted probability of obesity of 21.9%. All other variables constant, current participation in the FSP increased the predicted probability of current obesity by 2.0 percentage points or by 9.1%. Participation in the FSP in all of the 5 previous years increased the predicted probability of current obesity by 4.50 percentage points or by 20.5%.</li> </ol> <p>(Note: All adults were eligible for Food Stamp Program [FSP].)</p>	<p><b>Not Effective for Overweight/obesity in Lower-income Women</b></p> <p><b>Not Effective for Overweight/obesity in Lower-income Men</b></p> <p>Study design = Intervention evaluation</p> <p>Intervention duration = High</p> <p>Effect size = Net negative for overweight/obesity in lower-income women and men</p>	<p><b>Maintenance</b> Not Reported</p> <p><b>Sampling / Representativeness</b> High</p> <p>Black, Hispanic, and economically-disadvantaged individuals were over-sampled</p>
<p><b>Author</b> Dundas, Cook (2004) Idaho</p> <p><b>Design</b> Intervention Evaluation</p> <p>Before and after study</p> <p><b>Duration</b> Medium 6 months</p>	<p><b>Measures</b> <i>Provision of resources - WIC (Caloric intake and distribution for participants in the Women, Infants and Children nutrition program)</i></p> <p><b>Outcome(s) Affected</b> Eating behaviors (24-hour dietary recall, Healthy Eating Index [HEI] nutritious eating patterns)</p>	<p><b>Net Positive for for Nutrition in Lower-income Children (Government Nutrition Assistance Programs)</b></p> <p><b>Government Nutrition Assistance Programs</b></p> <p><u>NUTRITION:</u></p> <ol style="list-style-type: none"> <li>The proportion of diets classified as good diets (HEI score &gt; 80) at 6-month certification increased from 26% to 43%. Diets classified as needing improvement (HEI score 51-80) decreased from 71% to 56% at 6-month certification.</li> <li>There was a significant difference between initial and 6 month follow-up mean scores for the HEI and the Pyramid. The mean HEI score increased 3.3 points (from <math>73.3 \pm 9.9</math> to <math>76.6 \pm 10.4</math> [95%CI -6.1, -0.6], <math>p=0.01</math>) and the Pyramid mean score (sum of 5 components) increased 3.9 points (from <math>32.9 \pm 6.8</math> to <math>36.8 \pm 6.4</math> [95%CI -5.7, -2.1], <math>p&lt;0.001</math>).</li> <li>Significant differences between initial and 6 month follow-up measures in the 5 Pyramid components were found for: vegetable (from <math>3.7 \pm 3.2</math> to <math>4.8 \pm 2.9</math> [95%CI -1.9, -0.3], <math>p&lt;0.01</math>), fruit (from <math>7.5 \pm 3.4</math> to <math>8.5 \pm 2.9</math> [95%CI -1.8, -0.2] <math>p=0.01</math>) and meat (from <math>6.0 \pm 3.2</math> to <math>7.3 \pm 2.9</math> [95%CI -2.2, -0.5] <math>p&lt;0.01</math>) intake.</li> <li>There was a significant 13% increase in the fruit component HEI mean score after 6 months (<math>p=0.01</math>, no other results).</li> <li>There was a 34% increase in the mean intake of fruit servings at the 6-month evaluation (no results).</li> <li>There was a significant 30% increase in the vegetable component HEI mean score after 6 months (<math>p=0.001</math>, no other results).</li> <li>Six percent of children met the recommended servings for vegetable before the WIC program and 7% met the recommendation after 6 months.</li> <li>The number of children meeting the recommended meat servings increased from 22.2% to 35.6% (<math>p&lt;0.01</math>, no other results).</li> <li>There was not a significant increase in the HEI grain and milk components or in the level of total fat, saturated fat, and cholesterol.</li> </ol> <p>(Note: All children were eligible for the Special Supplemental Program for Women, Infants, and Children [WIC].)</p>	<p><b>Effective for Nutrition Lower-income Children</b></p> <p>Study design = Intervention evaluation</p> <p>Intervention duration = Medium</p> <p>Effect size = Net positive for for nutrition in lower-income children</p>	<p><b>Maintenance</b> Not Reported</p> <p><b>Sampling / Representativeness</b> Not Reported</p>

Study Description	Measures & Outcomes	Effect Size or % Change	Effectiveness	Maintenance & Representativeness
<p><b>Author</b> Ver Ploeg, Mancino (2008)</p> <p>United States</p> <p><b>Design</b> Association</p> <p>Retrospective cross-sectional study</p> <p><b>Duration</b> Not applicable</p>	<p><b>Measures</b> <i>Provision of resources - WIC &amp; FSP</i> (participation in the Women, Infants and Children nutrition program and/or the Food Stamp Program)</p> <p><b>Outcome(s) Affected</b> Overweight/obesity (body mass index [BMI]) (National Health and Nutrition Examination Survey - weight, height)</p>	<p><b>No Association for Overweight/obesity in Lower-income Children (Government Nutrition Assistance Programs)</b></p> <p><b>Government Nutrition Assistance Programs</b></p> <p><b>OVERWEIGHT/OBESITY:</b></p> <p><i>School aged children (aged ≥ 5 years):</i></p> <ol style="list-style-type: none"> <li>1. Results show an inconsistent association between FSP participation and weight for school-aged children.</li> <li>2. For boys, few differences were found between FSP participants and eligible non-participants throughout the 3 waves of data.</li> <li>3. Trend analysis for non-Hispanic Black boys showed a slight reversal in the trend of FSP participants to have lower BMI and lower probabilities of at-risk of overweight and overweight than some non-participants. In 1999-2002, non-Hispanic Black boy participants were more likely to be at risk of overweight relative to eligible non-participants, although statistically significant only at the 10% level.</li> <li>4. No consistent relationship between FSP participation and weight for girls was found.</li> <li>5. When comparing girls who receive FSP benefits with higher income non-participants, the authors found that the association varied over time and across race and ethnicity groups. For non-Hispanic white and Mexican-American girls, FSP participants were heavier than higher income girls in the earlier waves, but in 1999-2002, none of these differences were statistically significant.</li> </ol> <p><i>Young children (aged 2-4 years):</i></p> <ol style="list-style-type: none"> <li>6. Young children participating in WIC had similar BMI and similar probabilities of being at risk of overweight as eligible non-participants. This was true for both boys and girls and for both time periods for which data were available (1988-1994, 1999-2002).</li> </ol> <p>(Note: All children were eligible for Food Stamp Program [FSP] and/or Special Supplemental Program for Women, Infants, and Children [WIC].)</p>	<p><b>No Association for Overweight/obesity in Lower-income Children</b></p> <p>Study design = Intervention evaluation</p> <p>Intervention duration = High</p> <p>Effect size = No association for overweight/obesity in lower-income children</p>	<p><b>Maintenance</b> Not Applicable</p> <p><b>Sampling / Representativeness</b> High</p> <p>NHANES sampling method was designed to be representative of a civilian, non-institutionalized population</p>
<p><b>Author</b> Hofferth, Curtin (2005)</p> <p>United States</p> <p><b>Design</b> Association</p> <p>Cross-sectional study</p> <p><b>Duration</b> Not Applicable</p>	<p><b>Measures</b> <i>Provision of resources- NSLP/NSBP &amp; FSP</i> (participation in the National School Lunch and/or School Breakfast program, and the Food Stamp Program)</p> <p><b>Outcome(s) Affected</b> Overweight/obesity (body mass index [BMI]) in children (parent-reported height and weight)</p>	<p><b>Negative Association for Overweight/obesity in Lower-income Children (Government Nutrition Assistance Programs)</b></p> <p><b>(Assumption: Children's participation in FSP, NSLP, and/or SBP leads to healthy food consumption resulting in lower body mass index.)</b></p> <p><b>Government Nutrition Assistance Programs</b></p> <p><b>OVERWEIGHT/OBESITY:</b></p> <ol style="list-style-type: none"> <li>1. Neither the dollar amount of food expenditures nor the amount of FSP income is linked to child overweight or BMI. Dollars spent eating out are linked to the child's BMI at the <math>p=0.10</math> level.</li> <li>2. In all income groups except the near-poor, children who eat a school lunch are more likely to be overweight and their BMIs are higher than those who do not. Except for the near-poor and working class, the same holds true for those who eat a breakfast. Eating a school lunch is associated with a higher probability of being overweight (<math>p&lt;0.10</math>) and a significantly higher BMI (<math>p&lt;0.05</math>).</li> <li>3. Eating breakfast as well as lunch does not increase probability of overweight or increase BMI over that for children eating lunch only.</li> </ol> <p>(Note: All children were eligible for Food Stamp Program [FSP], National School Lunch Program [NSLP] and/or School Breakfast Program [SBP].)</p>	<p><b>Negative Association for Overweight/obesity in Lower-income Children</b></p> <p>Study design = Association</p> <p>Effect size = Negative association for overweight/obesity in lower-income children</p>	<p><b>Maintenance</b> Not Applicable</p> <p><b>Sampling / Representativeness</b> Not Reported</p>

Study Description	Measures & Outcomes	Effect Size or % Change	Effectiveness	Maintenance & Representativeness
<p><b>Author</b> Siega-Riz, Kranz (2004)</p> <p>United States</p> <p><b>Design</b> Association</p> <p>Cross-sectional study</p> <p><b>Duration</b> Not Applicable</p>	<p><b>Measures</b> <i>Access to healthy food options using WIC resources</i> (participation in the WIC program)</p> <p><b>Outcome(s) Affected</b> Eating behavior in children (24-hour parent recall from USDA CSFII surveys)</p>	<p><b>Positive Association for Nutrition in Lower-income Children (Government Nutrition Assistance Programs)</b> <b>(Assumption: Participation in the Special Supplemental Nutrition Program for Women, Infants and Children (WIC) leads to greater access to healthy foods which leads to higher nutrient intake.)</b></p> <p><b>Government Nutrition Assistance Programs</b> <u>NUTRITION:</u></p> <ol style="list-style-type: none"> <li>1. Among WIC participants, the prevalence of snacking was significantly lower (68%) compared with non-participants (72%) (<math>\chi^2=5.9</math>, <math>p=0.01</math>)</li> <li>2. For those &lt;130% of poverty, WIC had a beneficial effect on the intake of fat (<math>\beta=-0.96</math>; <math>p=0.02</math>), carbohydrates (<math>\beta=1.16</math>; <math>p=0.03</math>), added sugar (<math>\beta=-1.44</math>; <math>p=0.007</math>), and fruit intake (<math>\beta=0.54</math>; <math>p=0.05</math>) from the total diet.</li> <li>3. For nutrient intake attributable to snacking, WIC had a beneficial effect on added sugar intake (<math>\beta=-4.24</math>; <math>p=0.003</math>) and a suggestive beneficial effect on iron (<math>\beta=0.58</math>; <math>p=0.05</math>) and fruit and vegetable intake (<math>\beta=0.33</math>; <math>p=0.06</math>).</li> <li>4. For those with higher incomes (130%-185% of poverty), the beneficial effects of WIC participation was limited to added sugar (<math>\beta=-3.23</math>; <math>p&lt;0.001</math>), iron density (<math>\beta=1.06</math>; <math>p=0.002</math>), fruit intake (<math>\beta=0.4</math>; <math>p=0.02</math>), and fruit and vegetable intake (<math>\beta=0.64</math>, <math>p=0.01</math>) for the total diet.</li> <li>5. A similar significant effect of decreased added sugar intake from snacks (<math>\beta=-5.97</math>; <math>p=0.01</math>) was seen in this income group as in the lower income group.</li> </ol> <p>(Note: All children were enrolled in the Special Supplemental Program for Women, Infants, and Children [WIC].)</p>	<p><b>Positive Association for Nutrition in Lower-income Children</b></p> <p>Study design = Association</p> <p>Effect size = Positive association for nutrition in lower-income children</p>	<p><b>Maintenance</b> Not Applicable</p> <p><b>Sampling / Representativeness</b> Not Reported</p>
<p><b>Author</b> Webb, Schiff (2008)</p> <p>Massachusetts</p> <p><b>Design</b> Association</p> <p>Cross-sectional study</p> <p><b>Duration</b> Not Applicable</p>	<p><b>Measures</b> <i>Access to healthy food options while participating in FSP</i> (participation in the Food Stamp Program)</p> <p><b>Outcome(s) Affected</b> Adult overweight/obesity (body mass index [BMI]) (self-reported height and weight from telephone surveys)</p>	<p><b>Negative Association for Overweight/obesity in Lower-income Adults (Government Nutrition Assistance Programs)</b> <b>(Assumption: Participation in FSP leads to greater access to healthy food which leads to higher nutrient intake resulting in lower body mass index.)</b></p> <p><b>Government Nutrition Assistance Programs</b> <u>OVERWEIGHT/OBESITY:</u></p> <ol style="list-style-type: none"> <li>1. For current FSP participants, BMI was significantly lower in respondents whose households had participated in the program for <math>\geq 6</math> months compared with those whose households had participated for &lt;6 months (mean=26.9; SE=1.2; <math>p&lt;0.01</math>), and this difference remained statistically significant after adjustment for food insecurity.</li> <li>2. Those who reported household participation in the FSP, WIC, and/or free/reduced price school meals during the 12 months prior had significantly higher BMI than those who reported no federal nutrition assistance (mean=28.4; SE=0.9; <math>p&lt;0.01</math>), and this difference remained statistically significant after adjustment for sociodemographic factors.</li> <li>3. BMI was significantly higher in those who reported their households ever participating in the FSP (mean=27.9; SE=0.8; <math>p&lt;0.01</math>).</li> </ol> <p>(Note: All adults were eligible for Food Stamp Program [FSP].)</p>	<p><b>Negative Association for Overweight/obesity in Lower-income Adults</b></p> <p>Study design = Association</p> <p>Effect size = Negative association for overweight/obesity in lower income adults</p>	<p><b>Maintenance</b> Not Applicable</p> <p><b>Sampling / Representativeness</b> Not Reported</p>
<p><b>Author</b> Kropf, Holben (2007)</p> <p>Ohio</p> <p><b>Design</b> Association</p> <p>Cross-sectional study</p> <p><b>Duration</b> Not Applicable</p>	<p><b>Measures</b> <i>Access to healthy food options using WIC Farmers Market Nutrition Program</i> (participation in the Women, Infants and Children (WIC) Farmers' Market Nutrition Program)</p> <p><b>Outcome(s) Affected</b> Dietary consumption (self-reported intake on paper survey)</p>	<p><b>Positive Association for Nutrition in Lower-income Women (Government Nutrition Assistance Programs)</b> <b>(Assumption: Participation in Farmers' Market National Program [FMNP] in comparison to the Women, Infants, and Children [WIC] program leads to increased fruit and vegetable purchases, which leads to increased fruit and vegetable consumption.)</b></p> <p><b>Government Nutrition Assistance Programs</b> <u>NUTRITION:</u></p> <ol style="list-style-type: none"> <li>1. Daily vegetable servings for women from the FMNP group (<math>2.23 \pm 1.18</math>) was significantly greater than for the WIC only group (<math>1.91 \pm 0.98</math>), <math>p=0.040</math>.</li> <li>2. Daily fruit intake did not differ between groups (<math>1.69 \pm 0.97</math> servings for FMNP vs. <math>1.64 \pm 1.21</math> for WIC, <math>p=0.769</math>).</li> <li>3. No other variations in behaviors related to fruit and vegetable (F&amp;V) intake (F&amp;V variety, eating F&amp;V as snacks) were significantly different between groups (<math>p&gt;0.05</math>).</li> </ol> <p>(Note: All women were eligible for Special Supplemental Program for Women, Infants, and Children [WIC] and/or Farmers' Market Nutrition Program [FMNP].)</p>	<p><b>Positive Association for Nutrition in Lower-income Women</b></p> <p>Study design = Association</p> <p>Effect size = Positive association for nutrition in lower-income women</p>	<p><b>Maintenance</b> Not Applicable</p> <p><b>Sampling / Representativeness</b> Not Reported</p>

Study Description	Measures & Outcomes	Effect Size or % Change	Effectiveness	Maintenance & Representativeness
<p><b>Author</b> Gibson (2004) United States</p> <p><b>Design</b> Descriptive Non-comparative study</p> <p><b>Duration</b> Not Applicable</p>	<p><b>Measures</b> <i>Provision of resources - FSP (participation in the Food Stamp Program)</i></p> <p><b>Outcome(s) Affected</b> Overweight/obesity (BMI) (secondary data from the National Longitudinal Survey of Youth 1979)</p>	<p><b>Negative Association for Overweight/obesity in Lower-income Young Girls (Government Nutrition Assistance Programs)</b></p> <p><b>Positive Association for Overweight/obesity in Lower-income Boys (Government Nutrition Assistance Programs)</b></p> <p><b>(Assumption: Long-term FSP participation leads to greater access to healthy foods which leads to improved dietary intake which leads to lower body mass index.)</b></p> <p><b>Government Nutrition Assistance Programs</b></p> <p><b>OVERWEIGHT/OBESITY:</b></p> <ol style="list-style-type: none"> <li>1. In Ordinary Least Squares models, long-term FSP participation was positively and significantly related to overweight in young girls (<math>p=0.048</math>) with child fixed effects, and negatively and significantly related to overweight in young boys (<math>p=0.10</math>).</li> <li>2. The prevalence of overweight by FSP participation was significantly different for girl-year observations (Pearson <math>\chi^2=15.65</math>; <math>p&lt;0.01</math>) but not boy-year observations (Pearson <math>\chi^2=0.42</math>; <math>p=0.52</math>).</li> <li>3. Compared to children whose families did not participate in FSP the previous 5 years, children whose families did participate in FSP during all of the previous 5 years were associated with a 42.8 % increase for young girls and a 28.8% decrease for young boys in the predicted probability of overweight.</li> <li>4. In the models for family fixed effects and child fixed effects, long-term FSP participation was positively and significantly related to overweight in the younger sample of girls (5-11 yrs) but was not significant for other age ranges (family fixed: coefficient=0.088, SE=0.036, <math>p&lt;0.05</math>; child fixed: coefficient=0.062, SE=0.031, <math>p&lt;0.05</math>).</li> <li>5. In the models for family fixed and child fixed effects, long-term FSP participation was negatively and significantly related to overweight in younger boys (family fixed: coefficient=-0.061, SE=0.035, <math>p&lt;0.10</math>; child fixed: coefficient=-0.053, SE; 0.032, <math>p&lt;0.10</math>).</li> <li>6. Without fixed effects, long-term FSP participation was not significantly related to overweight in boys.</li> <li>7. Without fixed effects, long-term FSP participation was positively and significantly related to overweight in girls in the full sample of 5-18 years (coefficient=0.032, SE=0.016, <math>p&lt;0.05</math>) and the older sample of 12-18 years (coefficient=0.061, SE=0.025, <math>p&lt;0.05</math>).</li> </ol> <p>(Note: All children were eligible for Food Stamp Program [FSP].)</p>	<p><b>Negative Association for Overweight/obesity in Lower-income Young Girls</b></p> <p><b>Positive Association for Overweight/obesity in Lower-income Boys</b></p> <p><b>(Note: all children eligible for FSP)</b></p> <p>Study design = Descriptive</p> <p>Effect size = Negative association for overweight/obesity in lower-income young girls and positive association for overweight/obesity in lower-income boys</p>	<p><b>Maintenance</b> Not Applicable</p> <p><b>Sampling / Representativeness</b> Not Reported</p>

# **IMPACT TABLES**



Study Description	Population	Reach	Intervention	Impact & Sustainability	Other Results	Related Benefits & Consequences
<b>United States</b>						
<p><b>Author</b> Herman, Harrison (2008); Herman, Harrison (2006) California</p>	<p><b>Participation/Potential Exposure</b> Participation = Not Reported Exposure = Not Reported</p> <p><b>High-Risk Population</b> High All mothers receiving the intervention were eligible for WIC (lower-income) 89.1% Hispanic, 5.9% African American, 2.8% non-Hispanic White, 1.9% Asian American, 0.2% American Indian (evaluation sample)</p>	<p><b>Representative Potential Population Reach</b> Not Reported More Evidence Needed Participation = Not reported Exposure = Not reported Representativeness = Not reported</p> <p><b>Potential High Risk Population Reach</b> More Evidence Needed High-risk population = High Representativeness = Not reported</p>	<p><b>Intervention Components</b> Simple Vouchers redeemable at farmers' markets and supermarkets</p> <p><b>Feasibility</b> Intervention Feasibility = Low Policy Feasibility = High Intervention activities: \$10 produce vouchers given to WIC mothers Specialized expertise: Not reported Resources needed: funds to reimburse restaurants and farmers' markets for vouchers Cost: Not reported</p> <p><b>Implementation Complexity</b> Low Intervention components = Simple Feasibility = High</p>	<p><b>Population Impact</b> More Evidence Needed Effectiveness = Not reported Potential population reach = More evidence needed Implementation complexity = High</p> <p><b>High-risk Population Impact</b> More Evidence Needed Effectiveness = Effective for nutrition in lower-income women Potential high-risk population reach = More evidence needed Implementation complexity = Low</p> <p><b>Sustainability</b> Not Reported</p>	<p>Not Reported</p>	<p>1. Voucher redemption rates were 90.7% for the farmers market and 87.5% for the supermarket.</p>

Study Description	Population	Reach	Intervention	Impact & Sustainability	Other Results	Related Benefits & Consequences
<p><b>Author</b> Anderson, Bybee (2001) Michigan</p>	<p><b>Participation/Potential Exposure</b> Participation = Not Reported Exposure = Not Reported</p> <p><b>High-Risk Population</b> High All mothers receiving the intervention were eligible for WIC (lower-income) 43% African American, 49% White, 7% Other (evaluation sample)</p>	<p><b>Representative</b> Not Reported</p> <p><b>Potential Population Reach</b> More Evidence Needed</p> <p>Participation = Not reported Exposure = Not reported Representativeness = Not reported</p> <p><b>Potential High Risk Population Reach</b> More Evidence Needed</p> <p>High-risk population = High Representativeness = Not reported</p>	<p><b>Intervention Components</b> Complex</p> <p>Provision of \$20 coupons to WIC participants, redeemable at farmers' markets</p> <p><u>COMPLEX:</u> 1. Twenty-minute education session on health, buying power, seasonality, storage, and preparation of F&amp;V</p> <p><b>Feasibility</b> Intervention Feasibility = Low Policy Feasibility = High</p> <p>Intervention activities: \$20 produce coupons given to WIC mothers, education session</p> <p>Specialized expertise: Not reported</p> <p>Resources needed: Funds to reimburse restaurants and farmers' markets for coupons, resources for education component</p> <p>Costs: Not reported</p> <p><b>Implementation Complexity</b> High</p> <p>Intervention components = Complex Feasibility = High</p>	<p><b>Population Impact</b> More Evidence Needed</p> <p>Effectiveness = Not reported</p> <p>Potential population reach = More evidence needed</p> <p>Implementation complexity = High</p> <p><b>High-risk Population Impact</b> More Evidence Needed</p> <p>Effectiveness = Somewhat effective for nutrition in lower-income women</p> <p>Potential high-risk population reach = More evidence needed</p> <p>Implementation complexity = High</p> <p><b>Sustainability</b> Not Reported</p>	<p>Not Reported</p>	<p>Not Reported</p>

Study Description	Population	Reach	Intervention	Impact & Sustainability	Other Results	Related Benefits & Consequences
<p><b>Author</b> Gibson (2003) United States</p>	<p><b>Participation/Potential Exposure</b> Participation = Not Reported Exposure = Not Reported</p> <p><b>High-Risk Population</b> High All adults participated in FSP (lower-income) - Black, Hispanic and economically disadvantaged individuals were oversampled</p>	<p><b>Representative</b> High Black, Hispanic, and economically-disadvantaged individuals were over-sampled</p> <p><b>Potential Population Reach</b> More Evidence Needed Participation = Not reported Exposure = Not reported Representativeness = High</p> <p><b>Potential High Risk Population Reach</b> High-risk population = High Representativeness = High</p>	<p><b>Intervention Components</b> Simple Participation in the Food Stamp Program (FSP)</p> <p><b>Feasibility</b> Intervention Feasibility = High Policy Feasibility = High Intervention activities: Participation in WIC Specialized expertise: Not reported Resources needed: Not reported Cost: Not reported</p> <p><b>Implementation Complexity</b> Low Intervention components = Simple Feasibility = High</p>	<p><b>Population Impact</b> More Evidence Needed Effectiveness = Not effective for overweight/obesity in the study population Potential population reach = More evidence needed Implementation complexity = Low</p> <p><b>High-risk Population Impact</b> No Impact for Overweight/obesity in Lower-Income Women and Men Effectiveness = Not effective for overweight/obesity in lower-income women and men Potential high-risk population reach = High Implementation complexity = Low</p> <p><b>Sustainability</b> Not Reported</p>	<p>Not Reported</p>	<p>Not Reported</p>

Study Description	Population	Reach	Intervention	Impact & Sustainability	Other Results	Related Benefits & Consequences
<p><b>Author</b> Dundas, Cook (2004) Idaho</p>	<p><b>Participation/Potential Exposure</b> Participation = Not Reported Exposure = Not Reported</p> <p><b>High-Risk Population</b> High All children were enrolled in WIC (lower-income); 3-4 years old (evaluation sample)</p>	<p><b>Representative</b> High NHANES sampling method was designed to be representative of a civilian, non-institutionalized population</p> <p><b>Potential Population Reach</b> More Evidence Needed Participation = Not reported Exposure = Not reported Representativeness = High</p> <p><b>Potential High Risk Population Reach</b> High-risk population = High Representativeness = High</p>	<p><b>Intervention Components</b> Simple Participation in Special Supplemental Nutrition Program for Women, Infants and Children (WIC)</p> <p><b>Feasibility</b> Intervention Feasibility = High Policy Feasibility = High Intervention activities: Participation in FSP Specialized expertise: Not reported Resources needed: Not reported Costs: Not reported</p> <p><b>Implementation Complexity</b> Low Intervention components = Simple Feasibility = High</p>	<p><b>Population Impact</b> More Evidence Needed Effectiveness = Not reported Potential population reach = More evidence needed Implementation complexity = Low</p> <p><b>High-risk Population Impact</b> High Impact for Nutrition in Lower-Income Children Effectiveness = Effective for nutrition in lower-income children Potential high-risk population reach = High Implementation complexity = Low</p> <p><b>Sustainability</b> Not Reported</p>	<p>Not Reported</p>	<p>Not Reported</p>

Study Description	Population	Reach	Intervention	Impact & Sustainability	Other Results	Related Benefits & Consequences
<p><b>Author</b> Ver Ploeg, Mancino (2008) United States</p>	<p><b>Participation/Potential Exposure</b> Not applicable</p> <p><b>High-Risk Population</b> Not Applicable</p> <p>All children were enrolled in WIC or FSP (lower-income); 2-19 years old (evaluation sample)</p>	<p><b>Representative</b> Not Applicable</p> <p><b>Potential Population Reach</b> Not Applicable</p> <p><b>Potential High Risk Population Reach</b> Not Applicable</p>	<p><b>Intervention Components</b> Not Applicable</p> <p>Participation in Food Stamp Program (FSP) or Special Supplemental Nutrition Program for Women, Infants and Children (WIC) (depending on age of child)</p> <p><b>Feasibility</b> Not Applicable</p> <p><b>Implementation Complexity</b> Not Applicable</p>	<p><b>Population Impact</b> Not Applicable</p> <p><b>High-risk Population Impact</b> Not Applicable</p> <p><b>Sustainability</b> Not Applicable</p>	Not Reported	Not Reported
<p><b>Author</b> Hofferth, Curtin (2005) United States</p>	<p><b>Participation/Potential Exposure</b> Not Applicable</p> <p><b>High-Risk Population</b> Not Applicable</p> <p>Only cross-sectional data provided</p> <p>Children 6-12 years old, Lower- income (evaluation sample)</p>	<p><b>Representative</b> Not Applicable</p> <p><b>Potential Population Reach</b> Not Applicable</p> <p><b>Potential High Risk Population Reach</b> Not Applicable</p>	<p><b>Intervention Components</b> Not Applicable</p> <p>Participation in the Food Stamp Program (FSP), the National School Lunch Program (NSLP), and the School Breakfast Program (SBP)</p> <p><b>Feasibility</b> Not Applicable</p> <p><b>Implementation Complexity</b> Not Applicable</p>	<p><b>Population Impact</b> Not Applicable</p> <p><b>High-risk Population Impact</b> Not Applicable</p> <p><b>Sustainability</b> Not Applicable</p>	Not Reported	<p>1. Income is linked significantly and non-linearly to overweight and BMI. The coefficients were negative for children in poor families (significant, <math>p &lt; 0.05</math> or <math>p &lt; 0.10</math>, in 5 of the 6 models) compared with those in moderate-income families.</p> <p>2. Analysis of the interaction between school lunch and family income showed no significant effect of eating either school lunch or school breakfast on overweight and BMI.</p>
<p><b>Author</b> Siega-Riz, Kranz (2004) United States</p>	<p><b>Participation/Potential Exposure</b> Not Applicable</p> <p><b>High-Risk Population</b> Not Applicable</p> <p>Only cross-sectional data provided</p> <p>Children 2-5 years old, Lower-income (evaluation sample)</p>	<p><b>Representative</b> Not Applicable</p> <p><b>Potential Population Reach</b> Not Applicable</p> <p><b>Potential High Risk Population Reach</b> Not Applicable</p>	<p><b>Intervention Components</b> Not Applicable</p> <p>Participation in the Special Supplemental Nutrition Program for Women, Infants and Children (WIC)</p> <p><b>Feasibility</b> Not Applicable</p> <p><b>Implementation Complexity</b> Not Applicable</p>	<p><b>Population Impact</b> Not Applicable</p> <p><b>High-risk Population Impact</b> Not Applicable</p> <p><b>Sustainability</b> Not Applicable</p>	Not Reported	Not Reported

Study Description	Population	Reach	Intervention	Impact & Sustainability	Other Results	Related Benefits & Consequences
<p><b>Author</b> Webb, Schiff (2008) Massachusetts</p>	<p><b>Participation/Potential Exposure</b> Not Applicable</p> <p><b>High-Risk Population</b> Not Applicable</p> <p>Only cross-sectional data provided</p> <p>Adults, Lower income; 17.6% Hispanic, 20.2% African American, 60.2% White, 2% Other (evaluation sample)</p>	<p><b>Representative</b> Not Applicable</p> <p><b>Potential Population Reach</b> Not Applicable</p> <p><b>Potential High Risk Population Reach</b> Not Applicable</p>	<p><b>Intervention Components</b> Not Applicable</p> <p>Participation in Food Stamp Program (FSP) and other federal nutrition programs</p> <p><b>Feasibility</b> Not Applicable</p> <p><b>Implementation Complexity</b> Not Applicable</p>	<p><b>Population Impact</b> Not Applicable</p> <p><b>High-risk Population Impact</b> Not Applicable</p> <p><b>Sustainability</b> Not Applicable</p>	<p>Not Reported</p>	<ol style="list-style-type: none"> <li>1. Respondents classified as food-insecure or food-insecure with hunger had significantly higher BMI than those classified as food-secure (mean=25.9; SE=0.5; p&lt;0.01).</li> <li>2. Respondents whose food supplies did not last, who were unable to afford balanced meals, cut meal sizes, and ate less than their perceived need had significantly higher BMI than those who reported never having those experiences (p&lt;0.01, p&lt;0.01, p=0.02, p&lt;0.01, respectively).</li> <li>3. BMI (kg/m<sup>2</sup>) was significantly higher among those who obtained food from charitable sources (mean=28.5; SE=1.1), those who reported shopping at convenience stores (mean=27.2; SE=0.6), and those who consumed fast foods in the month prior to the survey (mean=27.2; SE=0.6) versus those who did not (p&lt;0.01, p=0.04, p&lt;0.01, respectively). Eating fast food remained significantly associated with higher BMI after adjustment for sociodemographic characteristics and food insecurity.</li> </ol>

Study Description	Population	Reach	Intervention	Impact & Sustainability	Other Results	Related Benefits & Consequences
<p><b>Author</b> Kropf, Holben (2007) Ohio</p>	<p><b>Participation/Potential Exposure</b> Not Applicable</p> <p><b>High-Risk Population</b> Not Applicable</p> <p>Only cross-sectional data provided</p> <p>Adults, Lower-income; 0.1 % Hispanic, 1.2% Asian, 3.0% African American, 93% White (evaluation sample)</p>	<p><b>Representative</b> Not Applicable</p> <p><b>Potential Population Reach</b> Not Applicable</p> <p><b>Potential High Risk Population Reach</b> Not Applicable</p>	<p><b>Intervention Components</b> Not Applicable</p> <p>Special Supplemental Nutrition Program for Women, Infants and Children (WIC) Farmers' Market Nutrition Program (WIC/FMNP) participation</p> <p><b>Feasibility</b> Not Applicable</p> <p><b>Implementation Complexity</b> Not Applicable</p>	<p><b>Population Impact</b> Not Applicable</p> <p><b>High-risk Population Impact</b> Not Applicable</p> <p><b>Sustainability</b> Not Applicable</p>	Not Reported	<ol style="list-style-type: none"> <li>For the entire sample, food insecurity was negatively associated with perceived diet quality (<math>r=-0.248</math>, <math>p&lt;0.001</math>).</li> <li>Food security status of participant households did not differ significantly between groups (<math>\chi^2 = 2.117</math>, <math>p=0.548</math>).</li> <li>Women from the FMNP group showed higher scores in perceived benefit of fruit and vegetable intake (<math>\chi^2 = 4.574</math>, <math>p=0.032</math>), perceived diet quality (<math>\chi^2 = 7.219</math>, <math>p=0.027</math>), and stages of change continuums for both fruit intake and vegetable intake (<math>\chi^2 = 12.171</math>, <math>p=0.007</math> and <math>\chi^2 = 10.238</math>, <math>p=0.017</math> respectively).</li> </ol>
<p><b>Author</b> Gibson (2004) United States</p>	<p><b>Participation/Potential Exposure</b> Not Applicable</p> <p><b>High-Risk Population</b> Not Applicable</p> <p>Children 5-18 yrs; Lower-income (evaluation sample)</p>	<p><b>Representative</b> Not Applicable</p> <p><b>Potential Population Reach</b> Not Applicable</p> <p><b>Potential High Risk Population Reach</b> Not Applicable</p>	<p><b>Intervention Components</b> Not Applicable</p> <p>Long-term Food Stamp Program (FSP) participation</p> <p><b>Feasibility</b> Not Applicable</p> <p><b>Implementation Complexity</b> Not Applicable</p>	<p><b>Population Impact</b> Not Applicable</p> <p><b>High-risk Population Impact</b> Not Applicable</p> <p><b>Sustainability</b> Not Applicable</p>	Not Reported	Not Reported