IOM/FNB Project
Comprehensive Scientific Review of the WIC Food Packages

Presentation to the IOM/FNB Expert Committee
by
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USDA Food and Nutrition Service
Washington DC   October 15, 2014
Purpose of This Study

• FNS wants to use the IOM study to determine if the preponderance of scientific evidence warrants development of a Rule to update the WIC food packages so that WIC foods continue to meet current nutritional standards and will best improve the nutritional well-being and food security of the WIC population.

• FNS needs specific documents for the clearance procedure (from clearing the Rule through the Department to clearing the Rule with OMB), including:
  – Food item definitions
  – Allowable substitutions
  – Monthly per person quantities for each food item
  – The scientific justification for each of the above
  – A Regulatory Impact Analysis, which includes an economic impact analysis
Basic & Clinical Research
- Human nutrient requirements
- Metabolic pathways for nutrients, energy
- Developmental nutrition
- Nutritional epigenetics
- Food composition
- Biological measures of nutritional status
- Survey methodology

NHANES and other population surveys

USDA/CNPP Nutrition Evidence Library

Other Systematic Reviews

Dietary Intake Analysis

Food Pattern Modeling

IOM Dietary Reference Intakes (DRIs)

Report of the Dietary Guidelines Advisory Committee

IOM Expert Committee Reports and Workshops

Dietary Guidelines for Americans

Public Comments

Legal Requirements

Proposed Rules

Final Rules

Program Experience

Program Studies

Improved Program Benefits
# FNS Programs: FY2013 Funding and Participation

<table>
<thead>
<tr>
<th>Program</th>
<th>Cost ($ M)</th>
<th>Partic. (M)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SNAP</td>
<td>79,818</td>
<td>47.6</td>
</tr>
<tr>
<td>National School Lunch Program</td>
<td>12,164</td>
<td>30.6</td>
</tr>
<tr>
<td><strong>WIC</strong></td>
<td><strong>6,418</strong></td>
<td><strong>8.7</strong></td>
</tr>
<tr>
<td>School Breakfast Program</td>
<td>3,498</td>
<td>13.1</td>
</tr>
<tr>
<td>Child &amp; Adult Care Food Program</td>
<td>2,980</td>
<td>3.5</td>
</tr>
<tr>
<td>Nutrition Assistance for Puerto Rico</td>
<td>1,922</td>
<td>1.4</td>
</tr>
<tr>
<td>The Emergency Food Assistance Program</td>
<td>688</td>
<td>637 m lbs</td>
</tr>
<tr>
<td>Summer Food Service Program</td>
<td>424</td>
<td>2.4</td>
</tr>
<tr>
<td>Commodity Supplemental Food Program</td>
<td>204</td>
<td>0.580</td>
</tr>
<tr>
<td>Fresh Fruit and Vegetable Program</td>
<td>164</td>
<td>n/a</td>
</tr>
<tr>
<td>Food Distribution Program on Indian Reservations</td>
<td>99</td>
<td>0.076</td>
</tr>
<tr>
<td>Senior Farmers’ Market Nutrition Program</td>
<td>20</td>
<td>1.2</td>
</tr>
<tr>
<td>WIC Farmers’ Market Nutrition Program</td>
<td>19</td>
<td>1.6</td>
</tr>
<tr>
<td>Special Milk Program</td>
<td>11</td>
<td>55m ½ pints</td>
</tr>
</tbody>
</table>

Source: FNS November 2013 Keydata Report and 2015 Budget Explanatory Notes
USDA Food and Nutrition Service Programs
The National Food Security Net

CACFP
Child Care Meal Reimbursements for Licensed Providers

WIC
Prenatal-4yrs

Child Nutrition Programs
School Lunch
School Breakfast
Summer Feeding

SNAP (formerly Food Stamp Program)
1st line defense against hunger
FDPIR: Alternate for Indian Reservations
NAP: Alternate for Puerto Rico

Commodities for Soup Kitchens/Food Banks (emergency food or meals)
Food subsidy programs and the health and nutritional status of disadvantaged families in high income countries: a systematic review.

• **Methods:** This review was undertaken based on the methods outlined in the Cochrane Handbook and the Cochrane health promotion and public health guidelines.

• **Results**
  – Systematic literature searching identified 5,328 articles from which 684 were retrieved for abstract review (see Figure1). There were 16 articles (14 separate studies) which met the inclusion criteria and were included in the systematic review.

  – Fourteen studies were included, with most reporting on the Special Supplemental Nutrition Program for Women, Infants and Children in the USA. Food subsidy program participants, mostly pregnant or postnatal women, were shown to have 10–20% increased intake of targeted foods or nutrients. Evidence for the effectiveness of these programs for men or children was lacking. The main health outcome observed was a small but clinically relevant increase in mean birthweight (23–29g) in the two higher quality WIC studies.

Debra Whitford
National WIC Director

Anne Bartholomew
Chief, WIC Nutrition Branch
Overview of WIC
Participant Demographics
Over Half of Pregnant Women Participating in WIC Enroll in the 1st Trimester

Source: *WIC Participant and Program Characteristics 2012*
Among those 983,192 of (0.6% not report trimester of enrollment)
Percent of Pregnant Women Enrolling in the 1st Trimester is at an All-Time High

And the % enrolling 3rd trimester is half of what it was 20 years ago
WIC Participant Characteristics

Income

Mean Annualized Family or Economic Unit Income of WIC Participants by Participant Category

- Pregnant Women: $16,174
- Breastfeeding Women: $17,958
- Postpartum Women: $14,749
- Infants: $15,925
- Children: $17,462
- Total WIC: $16,842
- Total SNAP: $9,060

$23,050 – Family of four income at 100% of poverty in 2012.
$42,643 – Family of four income at 185% of poverty in 2012.

Source: WIC Participant and Program Characteristics 2012 (adapted from p.39) & Characteristics of SNAP Program Households: Fiscal Year 2012 (p.13).
WIC is exceptionally well targeted...

**About 70% of WIC participants are below poverty**

* Source: WIC PC2012 Exhibit 3.11, p.54, among those reporting (8.3% not reporting)
WIC Participant Characteristics

Category
Distribution of Individuals Enrolled in the WIC Program

- Infants: 23%
- Children: 53%
- Infants: 6.8%
- PP: 6.7%
- BF: 10%
- PG: 9%
- Child-1: 12%
- Child-2: 13%
- Child-3: 19%

Source: WIC Participant and Program Characteristics 2012 (adapted from p.iv)
WIC Enrollment by Category & Child Age
April 2012

Source: WIC Participant and Program Characteristics 2012 (adapted from p.21)
WIC is exceptionally well targeted... by age of participant
and has been since the program began!

* In the very early days of the Program, 4 year old children and non-breastfeeding postpartum women were not eligible for WIC
### WIC Enrollment by Category & Child Age

**April 2012**

<table>
<thead>
<tr>
<th>Category</th>
<th>Age 1</th>
<th>Age 2</th>
<th>Age 3</th>
<th>Age 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pregnant</td>
<td>983,192</td>
<td>665,526</td>
<td>858,368</td>
<td>651,347</td>
</tr>
<tr>
<td>Postpartum</td>
<td>651,347</td>
<td>1,211,584</td>
<td>1,315,471</td>
<td>1,808,935</td>
</tr>
<tr>
<td>Infants</td>
<td>2,240,045</td>
<td>1,315,471</td>
<td>1,808,935</td>
<td>2,240,045</td>
</tr>
<tr>
<td>Not BF</td>
<td>1,315,471</td>
<td>1,808,935</td>
<td>2,240,045</td>
<td>2,240,045</td>
</tr>
</tbody>
</table>

**Source:** *WIC Participant and Program Characteristics 2012* (adapted from p.21)

*About 40 percent of women having live births in the US participated in WIC during pregnancy.*
WIC Enrollment by Category & Child Age
April 2012

WIC serves about half of all infants in the US...

Source: WIC Participant and Program Characteristics 2012 (adapted from p.21)
WIC Enrollment by Category & Child Age
April 2012

...and about 40% of all 1 year old children in the US.

Source: WIC Participant and Program Characteristics 2012 (adapted from p.21)
...but some WIC eligibles do not currently participate

- **2011 Coverage rates** *(percent of eligible individuals who participate in an average month)*:
  - Pregnant Women 70%
  - Postpartum (BF+notBF) Women 76%
  - Infants 83%
  - Children: 54%

Source: National and State Level Estimates of WIC Eligibles and Program Reach for 2011
WIC Participant Characteristics

Race

Distribution of Racial Characteristics of WIC Participants

- **58%** White
- **20%** Black or African American
- **12%** American Indian or Alaska Native
- **3%** Asian
- **1%** Native Hawaiian or Other Pacific Islander
- **1%** Multiple races
- **1%** Race not reported

Source: *WIC Participant and Program Characteristics 2012 (adapted from p.27)*
WIC Participant Characteristics

Ethnicity

Distribution of Ethnic Characteristics of WIC Participants

- 42% Hispanic/Latino
- 58% Not Hispanic/Latino
- 1% Ethnicity not reported

Source: WIC Participant and Program Characteristics 2012 (adapted from p.28)
WIC Participant Characteristics

Language

Primary Language of Household

63.9
30.9
5.1

English
Spanish
Other

Source: National Survey of WIC Participants-II. Exhibit 3.6 (p.26) (2009 data)
Breastfeeding WIC Moms are more likely to be Hispanic and more likely to speak Spanish at home.

Breastfeeding
(about 55% Hispanic)

- English: 52.4
- Spanish: 41.1
- Other: 6.5

Postpartum NonBreastfeeding
(about 31% Hispanic)

- English: 74.8
- Spanish: 20.5
- Other: 4.6

Source: National Survey of WIC Participants-II. Exhibit 3.6 (p.26) (2009 data)
Women’s Age
Distribution of Age of WIC Participants at Certification by Category

- **Pregnant women**
- **Breastfeeding women**
- **Postpartum women**

*Includes about 3,000 pregnant girls under the age of 15 at time of certification.*

Source: *WIC Participant and Program Characteristics 2012 (adapted from p.21)*
WIC Participant Characteristics

Food Security

National sample; 1210 respondents (>200/category) with at least 4 months WIC participation

Percent of WIC Participants Food Insecure

- **Low**: 9.3, 8.0, 9.0, 11.2, 11.0, 8.6
- **Very Low**: 7.7, 9.9, 10.0, 8.4, 5.4, 8.0

% Hispanic:
- All WIC: ~42%
- Pregnant: ~55%
- BF: ~31%
- PP: ~31%
- Infant: ~31%
- Child: ~31%

WIC Participant Characteristics

Food Security

National sample; 1210 respondents (>200/category) with at least 4 months WIC participation

Percent of WIC Participants Food Insecure

- All WIC: 9.3%
- Pregnant: 8.0%
- Breastfeeding (BF): 9.0%
- Postpartum (PP): 11.2%
- Infant: 11.0%
- Child: 8.6%

WIC Participant Characteristics

Education

Highest Grade of Women Participants

- Less than High School: 27.1%
- High School/GED: 39.7%
- More than High School: 33.2%

National Survey of WIC Participants II

Education

Education of WIC Pregnant, Postpartum, and Breastfeeding Women (2012)

WIC Participant Characteristics

Nutritional Risks (WIC PC 2012)

• Women
  – High weight for height (53.4%)
  – Dietary risks (42.6%)

• Children
  – Anthropometric risks (high weight for height, for example) (39.7%)
  – Dietary risks as their most frequently recorded risks. (77.2%)

• Infants
  – About 82 percent of WIC infants were recorded at risk due, at least in part, to the WIC-eligibility of their mothers or because their mothers were at risk during pregnancy.
Anemia is Notable Higher Among Pregnant Black WIC Women

<table>
<thead>
<tr>
<th></th>
<th>Black</th>
<th>All Other Races Combined</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not Anemic</td>
<td>78.4%</td>
<td>84.1%</td>
</tr>
<tr>
<td>Anemic</td>
<td>15.1%</td>
<td>5.6%</td>
</tr>
<tr>
<td>Not Reported</td>
<td>6.5%</td>
<td>10.2%</td>
</tr>
</tbody>
</table>
Prevalence of **overweight** and **at risk of overweight** by age in 3.4m WIC children

Source: WIC PC2012 Table IV.41

At risk of overweight if BMI ≥ 85th percentile and <95th percentile

Overweight if BMI ≥ 95th percentile
Prevalence of overweight and overweight risk by race in 3.4m WIC children aged 2 and over

Source: *WIC Participant and Program Characteristics 2012 (adapted from p.118)*
Prevalence of overweight and overweight risk by race in 3.4m WIC children aged 2 and over
Forms of Benefits in USDA/FNS Programs

- Limited EBT account for non-specific food (SNAP)
- Coupons for a specific group of foods (FMNP; WIC CVV)
- Coupons or EBT for specific foods (WIC)
- USDA Foods (formerly “commodities”) to families (FDPIR; CSFP)
- Meals
  - subsidized by meal-specific reimbursements and commodities (NSLP, SBP, CACFP, SFSP)
- Food group-specific snack, annually subsidized (FFVP)
<table>
<thead>
<tr>
<th>Form of the Benefit &amp; (Programs)</th>
<th>Key Issues in Defining the Benefit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Limited cash value EBT account for non-specific foods (SNAP; SEBTC)</td>
<td>Maximum monthly allotment; benefit reduction rate; hot prepared foods</td>
</tr>
<tr>
<td>Limited cash value coupons or EBT for specific groups of foods (FMNP; WIC Cash Value Benefit)</td>
<td>Dollar amount; type and source of produce allowed; allowable vendors</td>
</tr>
<tr>
<td>Coupons or EBT for specific foods (WIC; SEBTC)</td>
<td>Which specific foods &amp; substitutions? What quantities?</td>
</tr>
<tr>
<td>Commodities to families (FDPIR; CSFP)</td>
<td>Commodity specifications for specific foods; foods &amp; quantities for monthly foods packages</td>
</tr>
<tr>
<td>Subsidized Meal Programs (NSLP, SBP, CACFP, SFSP)</td>
<td>Define a minimum reimbursable meal or snack; define maximum</td>
</tr>
<tr>
<td>Subsidized food group-specific snack at school (FFVP)</td>
<td>Type and source of produce allowed; acceptable processing; acceptable additions (e.g., dip); frequency of offering (# days/week)</td>
</tr>
</tbody>
</table>
Food Supplementation in Pregnancy
Early Randomized Study on Outcomes

• Prior to 1941, “fetus as effective parasite”
• 1941: J.H. Ebbs, F.F. Tisdall and W.A. Scott
  “The Influence of Prenatal Diet on the Mother and Child”
  – U. of Toronto Depts of Paediatrics and Obstetrics
  – Presented April 16, 1941 at the eighth annual meeting of the American Institute of Nutrition in Chicago
  – Published in the Journal of Nutrition later in 1941

Journal of Nutrition, 1941 pp515 - 525
• Dietary assessment of 380 low income pregnant women in 4th or 5th month of pregnancy
  – Classified into 2 groups: Poor v. Good diet

• Alternately assigned “poor diet” women to 2 groups:
  – Poor Diet (control)
  – “Supplemented-to-Good” (intervention)

• “Supplemented-to-Good” group also received free supplemental foods
Ebbs, Tisdall and Scott’s Intervention (1940-41)
Foods Provided (delivered to home)

• Daily
  – 30 oz. fluid milk
  – 1 fresh egg
  – 1 fresh orange
  – Vitamin D capsule

• Weekly
  – 0.5 lb cheese
  – 32 oz canned tomatoes

• Gave at clinic
  – wheat germ (with malt + iron) to provide 0.5 oz/day

• Dietitian gave dietary advice to the “Good” and “Supplemented-to-Good” groups: diet + budgeting for food + “switch to whole grain bread”

• Social worker did home visit to Supplemented group to check consumption of foods delivered to the home
<table>
<thead>
<tr>
<th>Percent of cases</th>
<th>Poor Diet (control)</th>
<th>Supplemented-to-Good</th>
<th>Good Diet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anemia</td>
<td>28.6</td>
<td>16.1</td>
<td>21.6</td>
</tr>
<tr>
<td>Toxemia</td>
<td>7.6</td>
<td>3.4</td>
<td>3.0</td>
</tr>
<tr>
<td>Miscarriage</td>
<td>6.0</td>
<td>0</td>
<td>1.2</td>
</tr>
<tr>
<td>Stillbirth</td>
<td>3.4</td>
<td>0</td>
<td>0.6</td>
</tr>
<tr>
<td>Mastitis</td>
<td>4.5</td>
<td>1.1</td>
<td>2.0</td>
</tr>
</tbody>
</table>
In 1948, began doing diet counseling for very poor pregnant women at the Montreal Diet Dispensary.

Started a study including counseling and supplemental food for very poor pregnant women in 1963 – eggs, oranges, “tickets” for milk. Long before desktop computers, Mrs. Higgins kept meticulous records on pregnancy outcome among the women receiving food from the MDD.

She analyzed her findings and was a vocal advocate for supplemental feeding of poor women during pregnancy.
The Commodity Supplemental Food Program (CSFP)

- Starts in 1968-69
- Administrative action by USDA (that is, no specific authorizing legislation). Rod Leonard key USDA player
- Serves pregnant and postpartum women, infants and children under the age of 6 years
- Provides USDA commodities (foods) such as:
  - Milk (Evaporated or powdered)
  - Canned meats
  - Canned juice
  - Cereals
  - Canned vegetables
  - Peanut butter
  - Egg mix
  - Instant potatoes
  - Corn Syrup
A few years before legislation for a WIC pilot program, Dr. Paige started a program distributing food vouchers to women, infants and children at Johns Hopkins University Hospital in Baltimore, MD.

He has been called “The grandfather of WIC”
Impact on nutrition

• St. Jude had a major impact on children’s nutrition in the United States. In the early 1970s, St. Jude physicians set up a volunteer clinic to provide health care to some of the poorer areas of Memphis. At the clinic, the doctors made a startling discovery: Many members of the community were malnourished.

• Pinkel declared that malnutrition was indeed a catastrophic disease and started a study to research it. The study found that a child’s growth pattern was established in the first six months of life. This discovery led to the establishment of a food program in Memphis for children and expectant mothers.

• When Senator Hubert Humphrey of Minnesota happened to see a local TV station documentary about the program, his interest piqued. He initiated legislation to change the Child Nutrition Act using data supplied by St. Jude. This led to the creation of the WIC (Women, Infant and Children) program that serves 53 percent of the infants born in the United States today.
Dena Herman, Gail Harrison. AA Afifi and Eloise Jenks

WIC Fruit & Vegetable Cash Value Benefits

- Study of women enrolling in WIC in Los Angeles in 2001
The Institute of Medicine provided USDA with a sound scientific basis for developing a new set of food packages for the WIC Program.
IOM WIC Food Package Expert Committee

Suzanne Murphy*, Chair 2003-2006

• Barbara Devaney
• George Gray
• Gail Harrison*
• Helen Jensen
• Lucia Kaiser
• Jean Kinsey*
• Angela Odoms-Young
• Karen Peterson
• Anna-Maria Siega-Riz
• Virginia Stallings*
• Carol West Suitor*
• FNB Liason: Nancy Krebs

• IOM Staff
  – Linda Meyers*, Director Food and Nutrition Board
  – Janice Okita*, Project Director
  – Tazima Davis
  – Alice Vorosmarti
  – Jon Sanders*
Some other recent and possibly useful reports/studies
FY2010 WIC Food Package Cost Report

- Published by FNS August 2013
- Central Findings:
  - In FY 2010, average monthly food package costs were $41.44, after rebates.
  - Without rebates, average monthly food package costs would have been $56.80.
  - Breastfeeding women and infants had the most expensive post-rebate food package costs.
  - We spent over $600 million on fruit & vegetable benefits in the first full year
- Contractor: The Urban Institute
## Food Package Costs

**FY2010 Estimated Average Monthly Food Package Cost per Person in $**

<table>
<thead>
<tr>
<th>Category</th>
<th>% of Total WIC Participants</th>
<th>Average Pre-Rebate Food Package Cost</th>
<th>Average Post-Rebate Food Package Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pregnant</td>
<td>10%</td>
<td>$45.79</td>
<td>$45.79</td>
</tr>
<tr>
<td>Breastfeeding</td>
<td>6%</td>
<td>$49.16</td>
<td>$49.16</td>
</tr>
<tr>
<td>Postpartum</td>
<td>7%</td>
<td>$35.54</td>
<td>$35.54</td>
</tr>
<tr>
<td>Infants</td>
<td>24%</td>
<td>$114.21</td>
<td>$49.36</td>
</tr>
<tr>
<td>Children</td>
<td>53%</td>
<td>$36.94</td>
<td>$36.94</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>100%</strong></td>
<td><strong>$56.80</strong></td>
<td><strong>$41.44</strong></td>
</tr>
</tbody>
</table>

### Table 4. Estimated Contribution to WIC Food Costs by WIC-Eligible Food Item, FY 2010

<table>
<thead>
<tr>
<th>Food Item Category</th>
<th>Pre-rebate Contribution (%)</th>
<th>Post-rebate Contribution (%)</th>
<th>Pre-rebate Food Costs ($ mil)</th>
<th>Post-rebate Food Costs ($ mil)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Infant Foods</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Infant formula</td>
<td>42</td>
<td>20</td>
<td>2,615.7</td>
<td>926.6</td>
</tr>
<tr>
<td>Infant fruits and vegetables</td>
<td>4</td>
<td>6</td>
<td>260.5</td>
<td>259.8</td>
</tr>
<tr>
<td>Infant cereal</td>
<td>1</td>
<td>2</td>
<td>70.1</td>
<td>68.9</td>
</tr>
<tr>
<td>Infant food meat</td>
<td>1</td>
<td>1</td>
<td>32.0</td>
<td>32.0</td>
</tr>
<tr>
<td><strong>Foods for Women and Children</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Milk</td>
<td>14</td>
<td>20</td>
<td>898.8</td>
<td>898.8</td>
</tr>
<tr>
<td>Fruits and vegetables*</td>
<td>10</td>
<td>13</td>
<td>614.3</td>
<td>614.3</td>
</tr>
<tr>
<td>Breakfast cereal (except infant cereal)</td>
<td>8</td>
<td>11</td>
<td>493.1</td>
<td>493.1</td>
</tr>
<tr>
<td>Juice</td>
<td>7</td>
<td>9</td>
<td>423.5</td>
<td>423.5</td>
</tr>
<tr>
<td>Cheese</td>
<td>5</td>
<td>6</td>
<td>291.6</td>
<td>291.6</td>
</tr>
<tr>
<td>Whole-grain bread</td>
<td>3</td>
<td>4</td>
<td>167.6</td>
<td>167.6</td>
</tr>
<tr>
<td>Eggs</td>
<td>2</td>
<td>2</td>
<td>109.7</td>
<td>109.7</td>
</tr>
<tr>
<td>Peanut butter</td>
<td>1</td>
<td>2</td>
<td>93.1</td>
<td>93.1</td>
</tr>
<tr>
<td>Other whole grains</td>
<td>1</td>
<td>2</td>
<td>87.7</td>
<td>87.7</td>
</tr>
<tr>
<td>Mature legumes</td>
<td>1</td>
<td>1</td>
<td>50.3</td>
<td>50.3</td>
</tr>
<tr>
<td>Soy-based beverages</td>
<td>0</td>
<td>1</td>
<td>27.9</td>
<td>27.9</td>
</tr>
<tr>
<td>Canned fish</td>
<td>0</td>
<td>0</td>
<td>15.9</td>
<td>15.9</td>
</tr>
<tr>
<td>Tofu</td>
<td>0</td>
<td>0</td>
<td>1.9</td>
<td>1.9</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>100</td>
<td>100</td>
<td>6,253.9</td>
<td>4,562.7</td>
</tr>
</tbody>
</table>

*Estimated cost reflects the value of the cash value vouchers (CVVs) for fruit and vegetable purchases.*
Table 2. Estimated Average Quantities of WIC-Eligible Foods Prescribed Per Month by Participant Category, FY 2010

<table>
<thead>
<tr>
<th>Category</th>
<th>Infant Formula</th>
<th>Infant Cereal</th>
<th>Infant Fruits and Vegetables</th>
<th>Infant Food Meats</th>
<th>Cow’s Milk</th>
<th>Soy-Based Beverages</th>
<th>Tofu</th>
<th>Cheese</th>
<th>Eggs</th>
<th>Fruit and Vegetables</th>
<th>Breakfast Cereal</th>
<th>Whole-grain Bread</th>
<th>Other Whole Grains</th>
<th>Juice</th>
<th>Peanut Butter</th>
<th>Mature Legumes</th>
<th>Canned Fish</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pregnant women</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>18.6</td>
<td>0.3</td>
<td>0.0</td>
<td>1.0</td>
<td>10.0</td>
<td>35.8</td>
<td>0.6</td>
<td>0.4</td>
<td>141.6</td>
<td>16.0</td>
<td>16.3</td>
<td>0.0</td>
</tr>
<tr>
<td>Breastfeeding women (up to 1 year postpartum)</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>18.6</td>
<td>0.3</td>
<td>0.0</td>
<td>1.2</td>
<td>1.4</td>
<td>10.0</td>
<td>36.1</td>
<td>0.4</td>
<td>131.0</td>
<td>13.9</td>
<td>15.4</td>
<td>13.0</td>
</tr>
<tr>
<td>Postpartum women (up to 6 months postpartum)</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>13.1</td>
<td>0.2</td>
<td>0.0</td>
<td>1.0</td>
<td>10.0</td>
<td>35.8</td>
<td>0.0</td>
<td>0.0</td>
<td>91.6</td>
<td>9.1</td>
<td>7.4</td>
<td>0.0</td>
</tr>
<tr>
<td>Infants</td>
<td>628.4</td>
<td>12.3</td>
<td>71.4</td>
<td>3.3</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
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<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Children</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>13.2</td>
<td>0.2</td>
<td>0.0</td>
<td>1.0</td>
<td>6.0</td>
<td>35.7</td>
<td>1.1</td>
<td>0.9</td>
<td>121.9</td>
<td>8.3</td>
<td>8.2</td>
<td>0.0</td>
</tr>
</tbody>
</table>

“Because of the magnitude of the changes proposed and because it is not possible to determine \textit{a priori} the impacts of the proposed changes, the committee \textbf{urges} that well-designed pilot testing and randomized, controlled trials of the revised food packages be conducted before full-scale implementation of the revised food packages....” (from page 167 for 2006 IOM report; highlight added)
"One recommendation, in particular, is likely to be controversial, namely the recommendation that infant formula not routinely be provided during the first month postpartum for infant/mother pairs initiating breastfeeding....However, the committee recognizes the potential for some undesirable consequences of the recommended changes in the WIC food packages....The committee intends for the revised WIC food packages and policies to be supportive of breastfeeding. Recognizing potential adverse consequences associated with this proposal, the committee urges that before full implementation, well-designed pilot studies be conducted to determine the effect of the recommended changes on the initiation and duration of breastfeeding, as well as on WIC participation rates...." (from page 168 for 2006 IOM report; highlight added)
The WIC Birth Month Study

5 Domains Studied
1. WIC Participation
2. Food Package Choices & Infant Formula Amounts
3. Breastfeeding Initiation
4. Breastfeeding Duration
5. Breastfeeding Intensity

- Pre-Post design
- 17 Local agencies
- 800 Mom-baby dyads
- >77,000 administrative records
WIC Birth Month Study

- Breastfeeding initiation rate was essentially unchanged
- There was at most a small positive impact on breastfeeding duration
**WIC Birth Month Study:** Pre- and Post-Interim Rule
Food Packages Issued to New Mothers, by Age of Infant

![Chart showing food packages issued to new mothers by age of infant before and after the interim rule.](chart_image)
WIC Birth Month Study: Pre- and Post-Interim Rule Food Packages Issued to New Mothers, by Age of Infant

Here is a diagram showing the percentage distribution of food packages issued to new mothers, categorized by age of infant and whether they were pre- or post-interim rule. The diagram highlights the percentage of mothers receiving specific types of packages, such as full breastfeeding, partial breastfeeding, full formula feeding, pregnant package, not receiving WIC, and food package unknown, for different age groups ranging from 0 to 5 months.
**WIC Birth Month Study**

**Exhibit ES.2** Infant Formula Amounts (Ounces) Issued for Infants in the Birth Month

- **Pre**
  - No formula: 12.2%
  - 104 oz or less: 13.8%
  - 105 oz - 800 oz: 24.5%
  - Maximum amount: 49.4%

- **Post**
  - No formula: 19.7%
  - 104 oz or less: 5.9%
  - 105 oz - 800 oz: 17.9%
  - Maximum amount: 56.4%

**Sample**: Administrative records, all dyads with infants in the birth month in analysis months 1-2 (pre) and analysis months 5-12 (post).

**Interpretation Guide**: Among dyads with infants in the birth month, the percentage that receives the maximum amount of formula increased from 49.4% (pre) to 56.4% (post).
WIC Infant and Toddler Feeding Practices – 2
The “Feeding My Baby” Study

- 80 local WIC agencies selected to provide a national sample

- 4,367 Participants recruited in 2013
  - Pregnant women at the time of WIC enrollment
  - Mothers of newborns who did not participate during pregnancy

- Data collection 2013 ~ 2017: A longitudinal data collection with 24-hour recalls and feeding practices questionnaires at ages 1, 3, 5, 7, 9, 11, 13, 15, 18, 24 and 36 months of age. Weight and length will also be collected.

- WIC and “former WIC” infants only (no “WIC-eligible non-participants or higher income infants/toddlers)

- Final reports - series starting ~ 2014 and continuing through ~ 2018

Contractor: Westat; Gail Harrison is PI
A hallmark of the set of revised food packages is the increased flexibility to be offered to the WIC state and local agencies and the increased variety and choice to be offered to WIC participants. Flexibility provides a valuable means of responding to the needs of persons of different cultures and food preferences and/or with limited cooking facilities, skills, or time. The committee urges the Food and Nutrition Service (FNS) to retain, and possibly expand, the flexibility proposed for the revised food packages, so as to allow state and local agencies to adapt the packages to the needs of their WIC populations.….” (from page 171 for 2006 IOM report; highlight added)
Figure 7. Whole Grain Alternatives to Whole-Wheat Bread, October 2009

Notes: A star indicates that whole-wheat rolls and/or buns are authorized on the WIC food list.
Bulgar and barley are authorized in the States where noted.
Other Recent Studies Relating to the WIC Food Packages and Food Delivery

- Researchers such as:
  - Shannon Whaley, PHFE
  - Tatiana Andreyeva, Yale Rudd Center

- USDA/ERS

- Altarum (Loren Bell & Stacy Gleason)

- NATFAN/TEXFAN

- NWA Evaluation Committee
Examples of Other Recent Studies

Shannon Whaley, PHFE


More Examples of Other Recent Studies

Tatiana Andreyeva, Yale Rudd Center


Thank you!

WIC studies sponsored by FNS are available on the web at:

http://www.fns.usda.gov/ops/research-and-analysis
Current Relevant WIC Research

- Whaley, S. E., Koleilat, M., & Jiang, L. (2012). WIC infant food package issuance data are a valid measure of infant feeding practices.
Current Relevant WIC Research

- Jensen, E., & Labbok, M. (2011). Unintended consequences of the WIC formula rebate program on infant feeding outcomes: Will the new food packages be enough?
Current Relevant WIC Research