

# Modifiable Protective & Risk Factors Associated with Overweight and Obesity Birth through age 5

## Complimentary Feeding



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# The First 1,000 Days

A unique window of opportunity



**Conception to  
birth**

**1st year**

**2nd year**

## Early Programming

Metabolic - Immunologic - Sensory  
Satiety - Behavioral - Developmental  
Somatic growth & composition

# Overweight and Obesity in the first Two years of Age

**Objective:** Comprehensively identify actionable, modifiable factors associated with overweight in the first two years of life.

## **Definitions:**

Potentially **modifiable factors** associated with weight defined as *feeding and related dietary, environmental, or behavioral practices that could be potentially modified by parents and caregivers with interventions beginning at birth, in the first two years of life*

# **Modifiable factors associated to childhood obesity. in the first two years of age**

- **Lack of Breastfeeding**
- **Early introduction (< 4 months) of complementary foods**
- **High intake of sweetened beverages**
- **Low intake of fruit and vegetables**

**Food &  
Diet Related**

- **Lack of breast feeding**
- **Lack of responsive feeding practices by caregiver**
  - Low attention to hunger and satiety cues
  - Use of overly restrictive, controlling, rewarding, or pressure feeding
- **Low total and nocturnal sleep**
- **Lack of family meals**
- **TV / Screen viewing time**
- **Decreased active play**

**Feeding &  
Behavior  
Related**

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**Feeding &  
Behavior  
Related**

# Infant Feeding Practices Study - IFPS II

- 2005-2007
- Infant feeding and care practices in the first year of life.
- Longitudinal diet assessment
- 7 day FFQ questionnaires, by mail
- N = 2,907 at birth to 1,782 at 12 mo of age.
- Response rates ranged from 63% to 87%
- Higher risk groups underrepresented



Infant Feeding Practices Study II and Its Year Six Follow Up

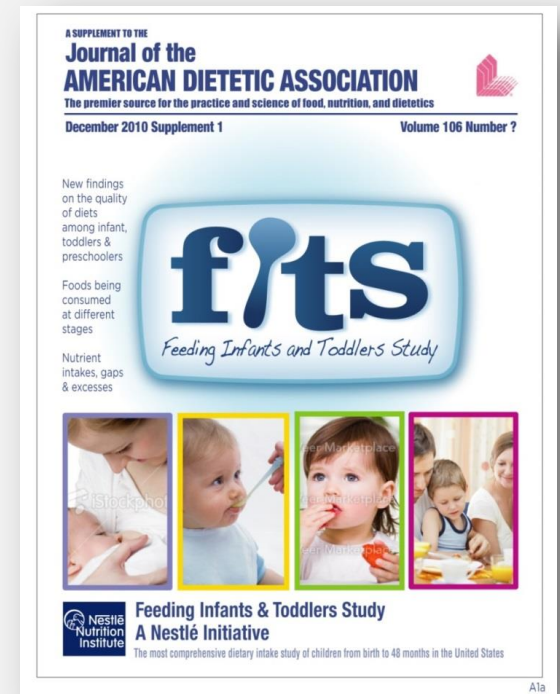


Division of Nutrition, Physical Activity, and Obesity

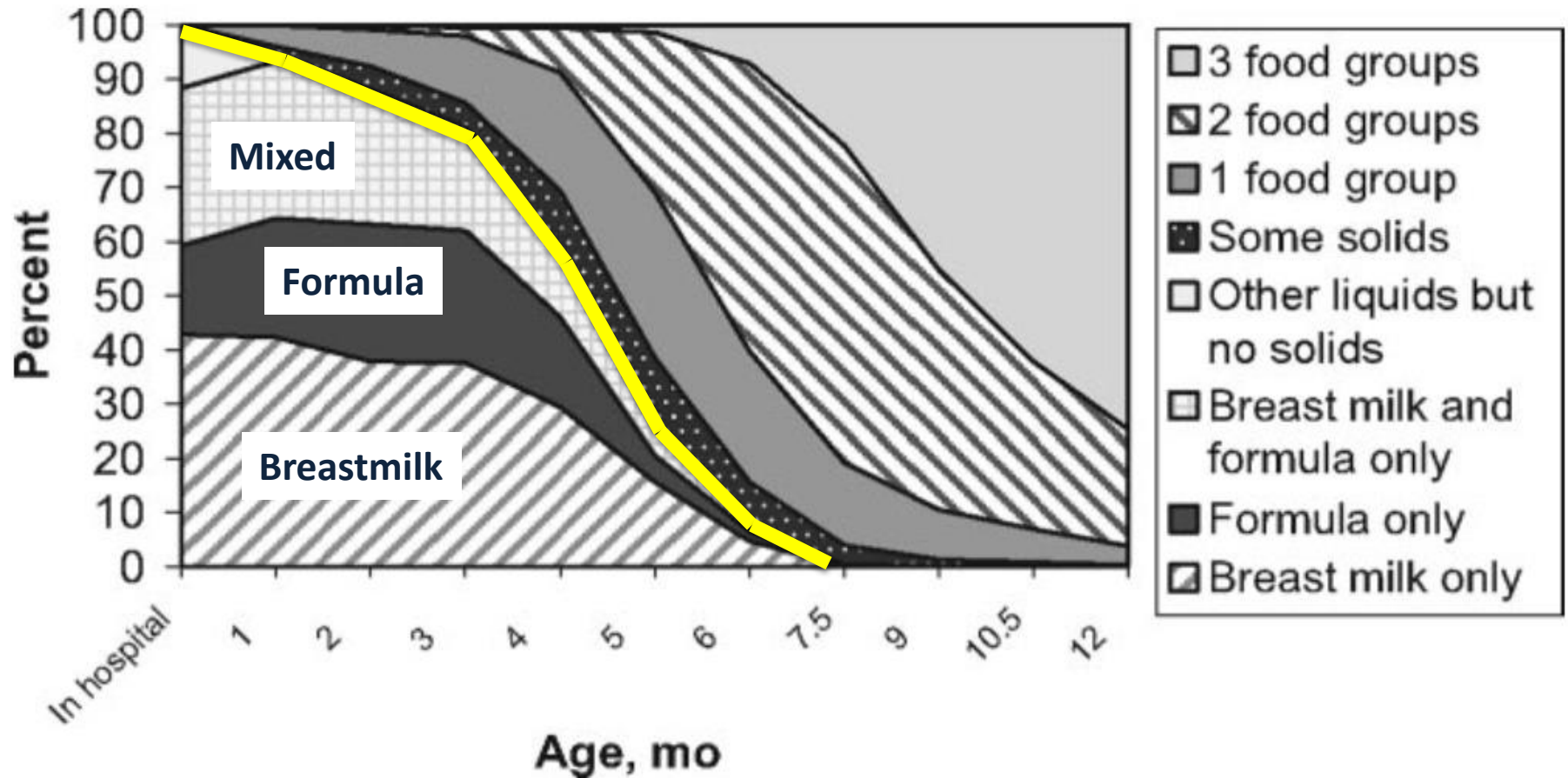
*Pediatrics*  
2008;122:S28

# Nestlé Feeding Infants and Toddlers Study - FITS

- 2002 and 2008
- Nationally representative
- Cross-sectional household survey of parents and caregivers
- Birth to 4 years of age
- 24-hr dietary recall of foods, beverages, and supplements, by phone
- N= 3,273 infants 0-4 y of age
- 2nd recall on a random subsample

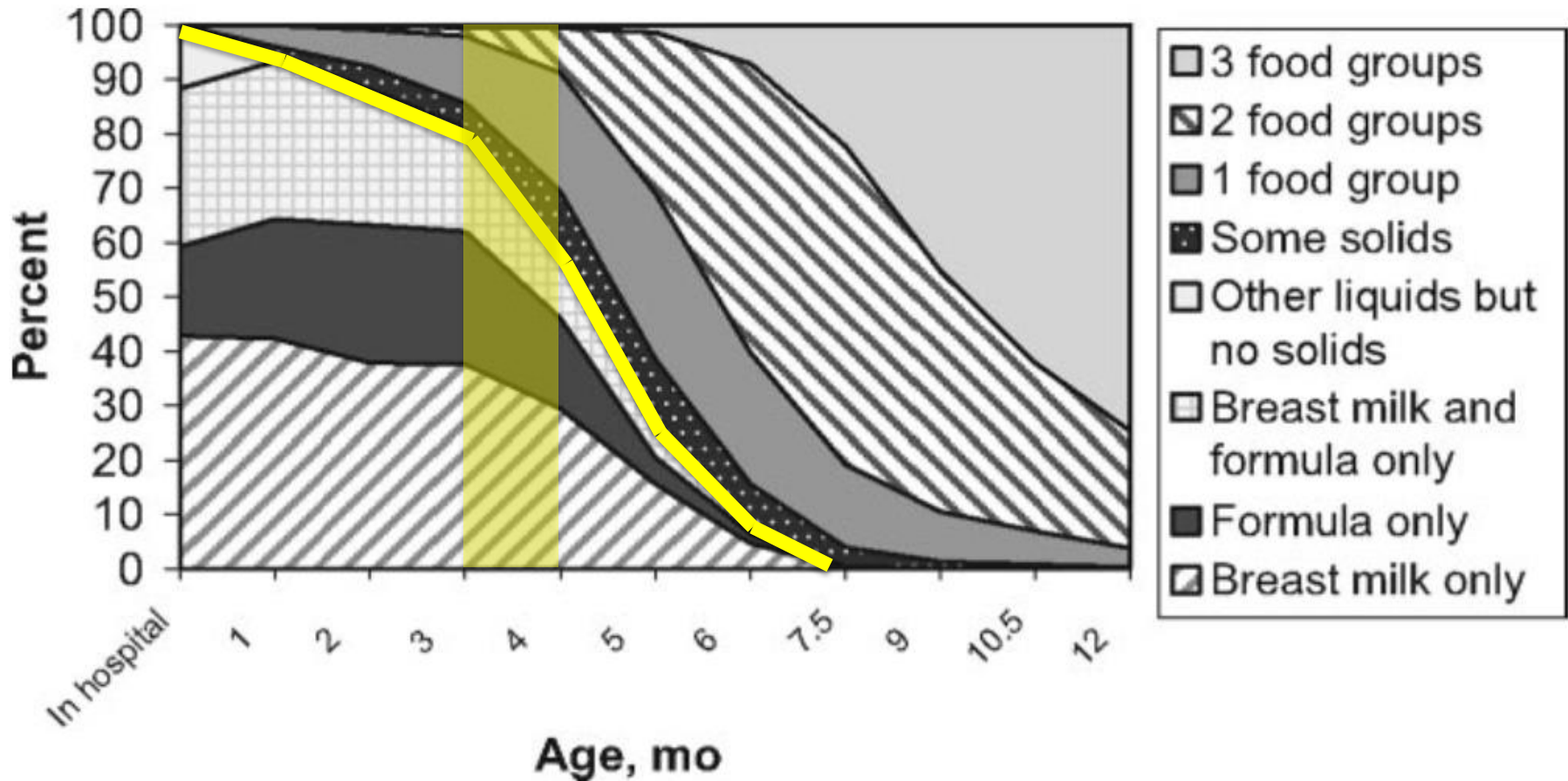


# Infant Feeding and Feeding Transitions During the First Year of Life

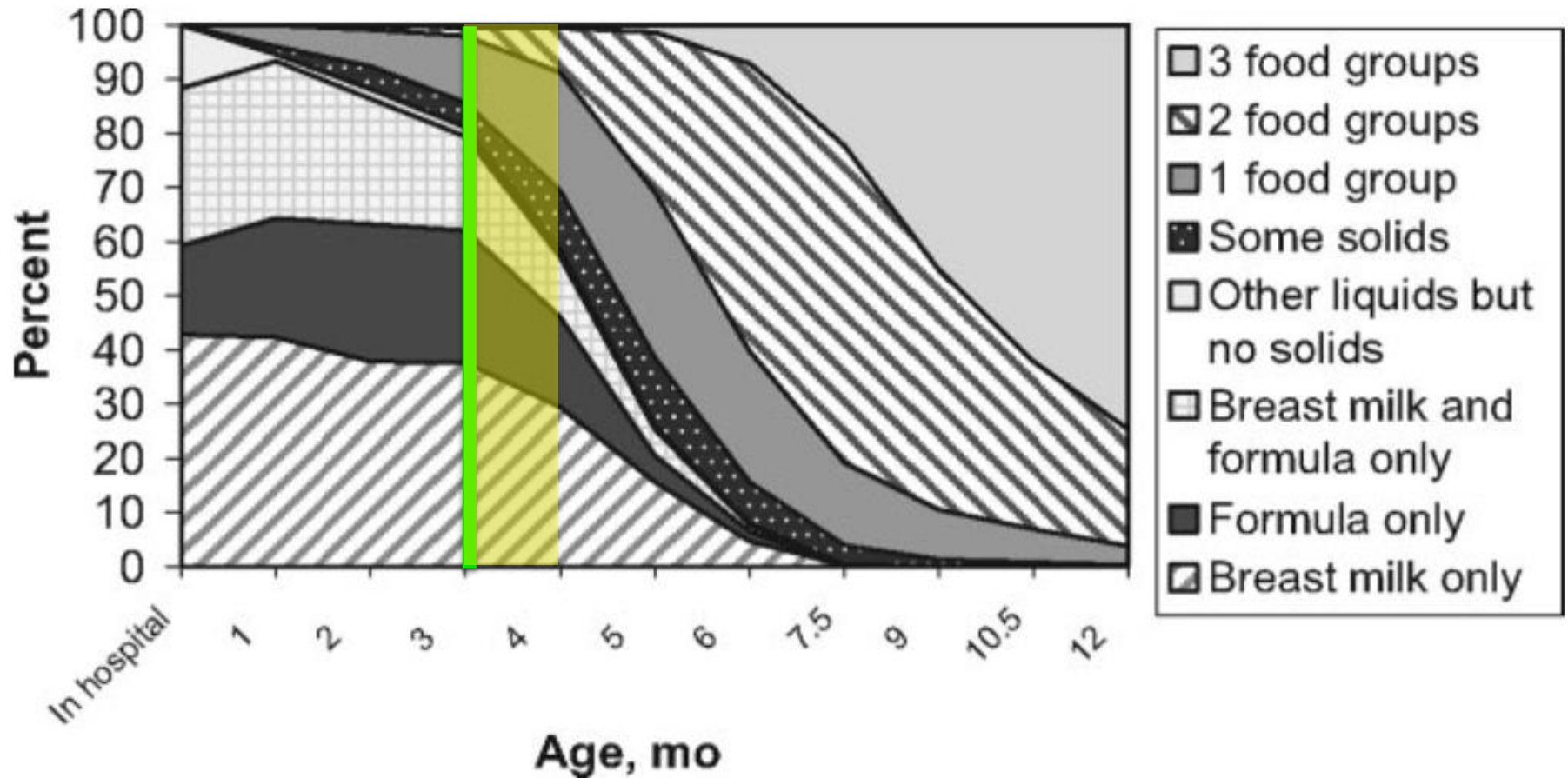




# Time of solid food Introduction in the US



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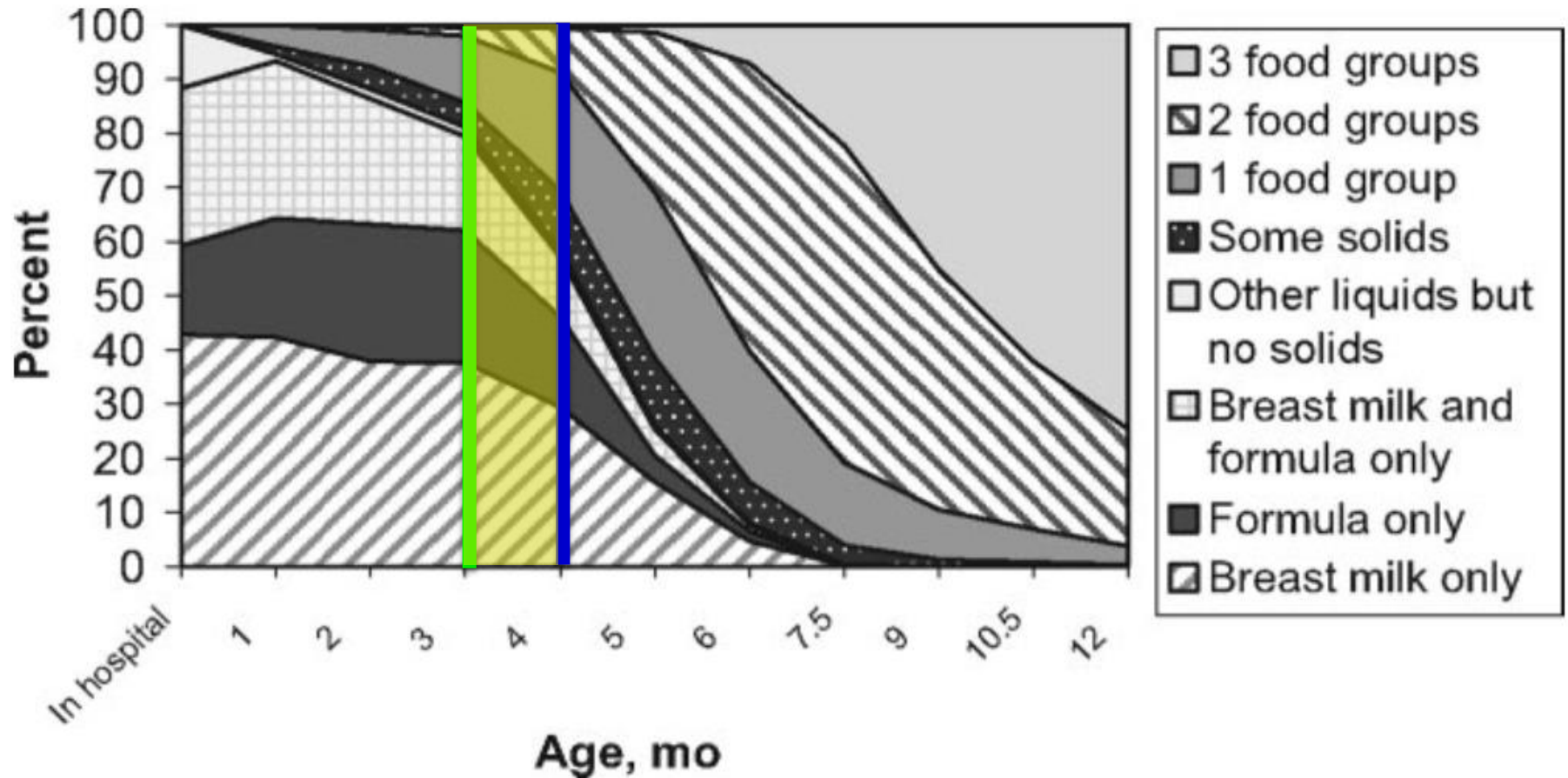
Fein 2008

IFPS II



Adapted  
From IFPS II  
Grummer-Strawn 2008

# Time of solid food Introduction in the US



Fein 2008

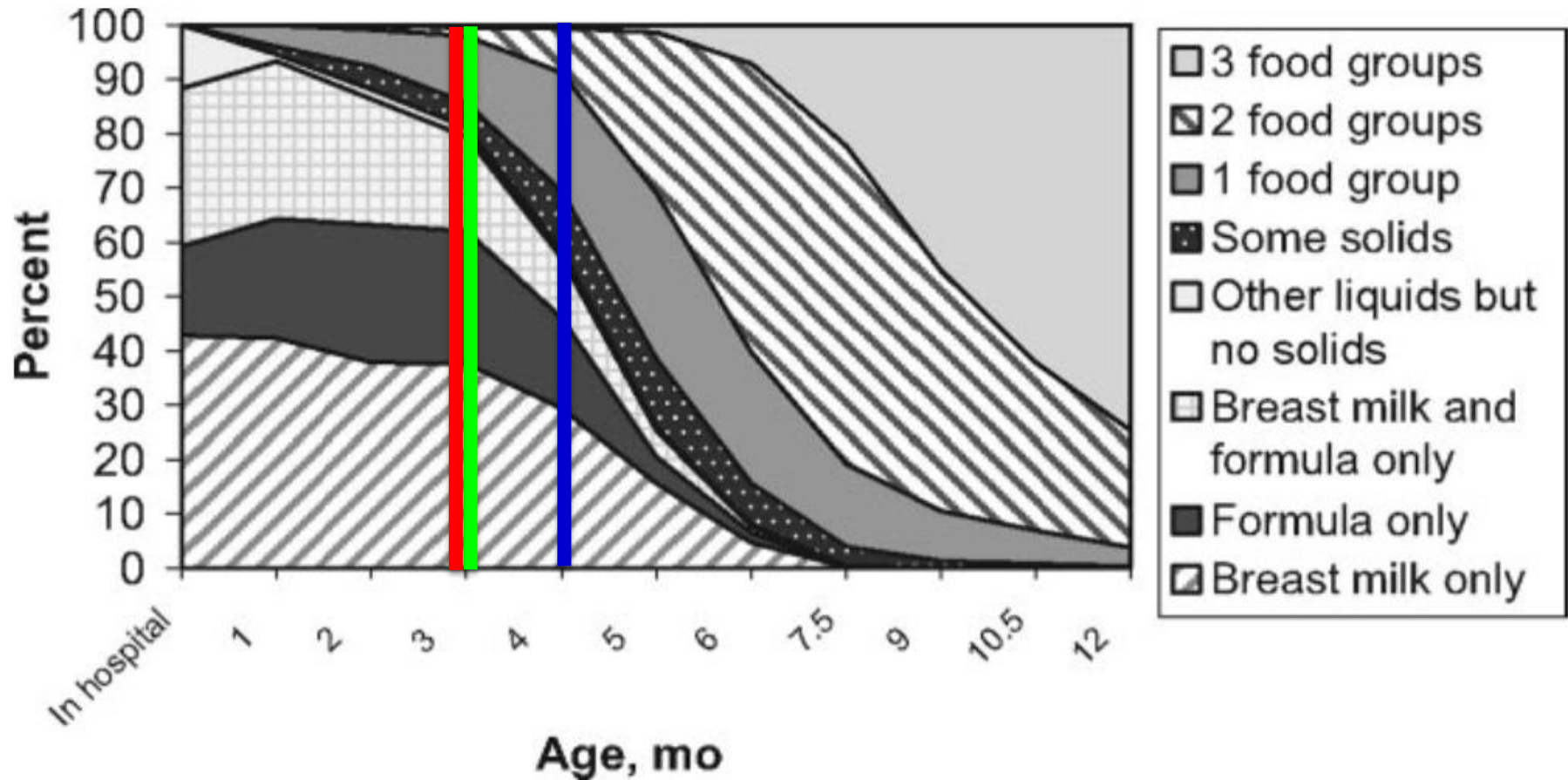
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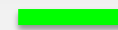
Grummer-Strawn 2008

Siega-Riz 2010

IFPS II

IFPS II

FITS 2008



Adapted  
From IFPS II  
Grummer-Strawn 2008

# **Infant Feeding and Feeding Transitions During the First Year of Life**

**Introduction of solid foods before 4 mo was associated with:**

- **Not initially breastfed infants**
- **Not breastfed until 6 months**
- **Less educated (non-College educated mothers),**
- **Single mothers**
- **Mothers <25 years old,**
- **Living outside western region of the country**
- **Participating in the WIC program**

IFPS II

Clayton 2013

Fein 2008

Grummer-Strawn 2014



## Prevalence and Reasons for Introducing Infants Early to Solid Foods: Variations by Milk Feeding Type

### Top Six Most Commonly Cited Reasons for Early Introduction of Solid Food

- “My baby was old enough,” 88.9%
- “My baby seemed hungry,” 71.4%
- “My baby wanted the food I ate,” 66.8%
- “I wanted to feed my baby something in addition to breast milk or formula,” 64.8%
- “It would help my baby sleep longer at night.” 46.4%

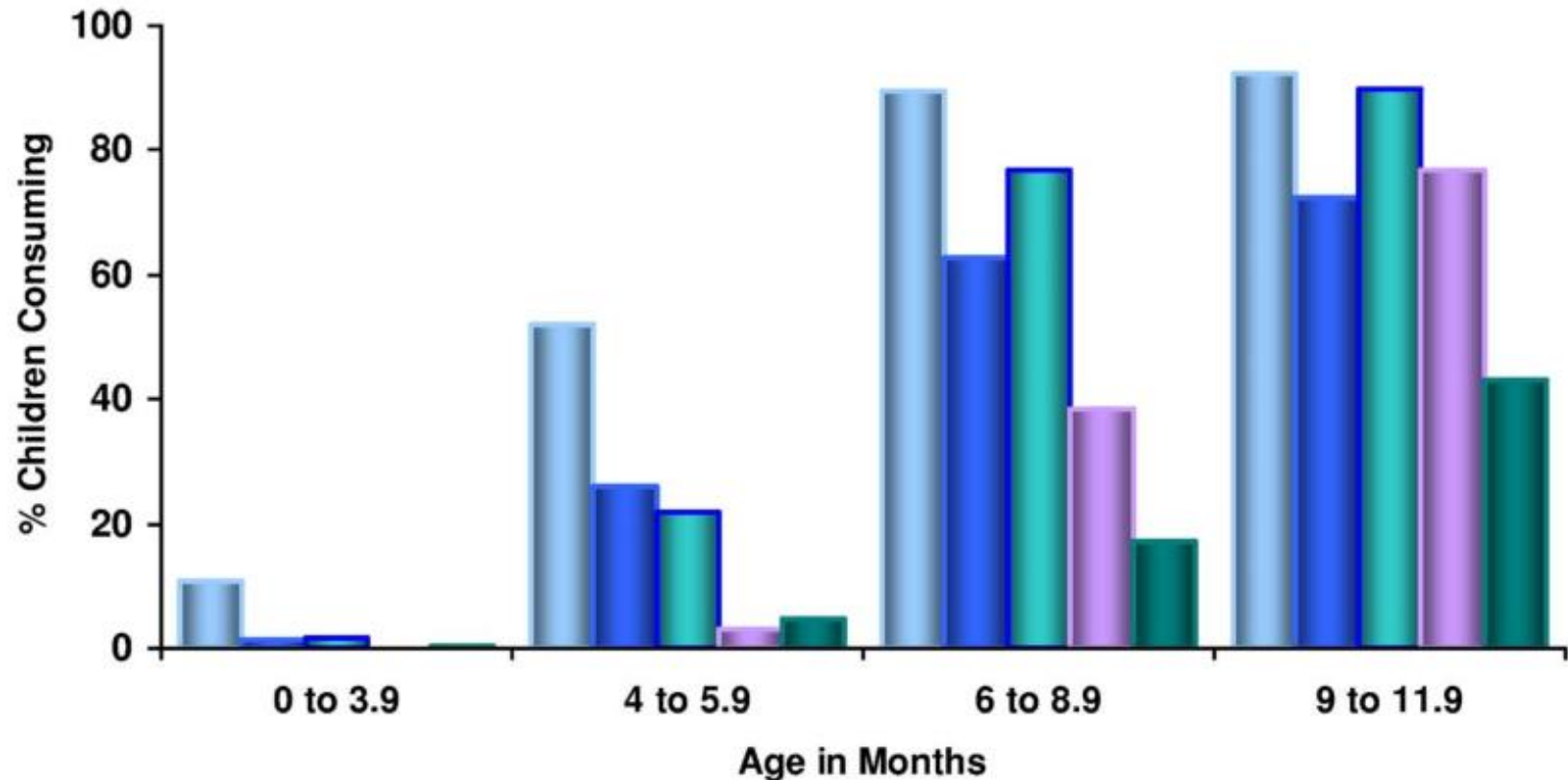
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- “A doctor or health care professional said my baby should begin eating solid food” 55.5%

# FITS 2008

## Solid food introduction

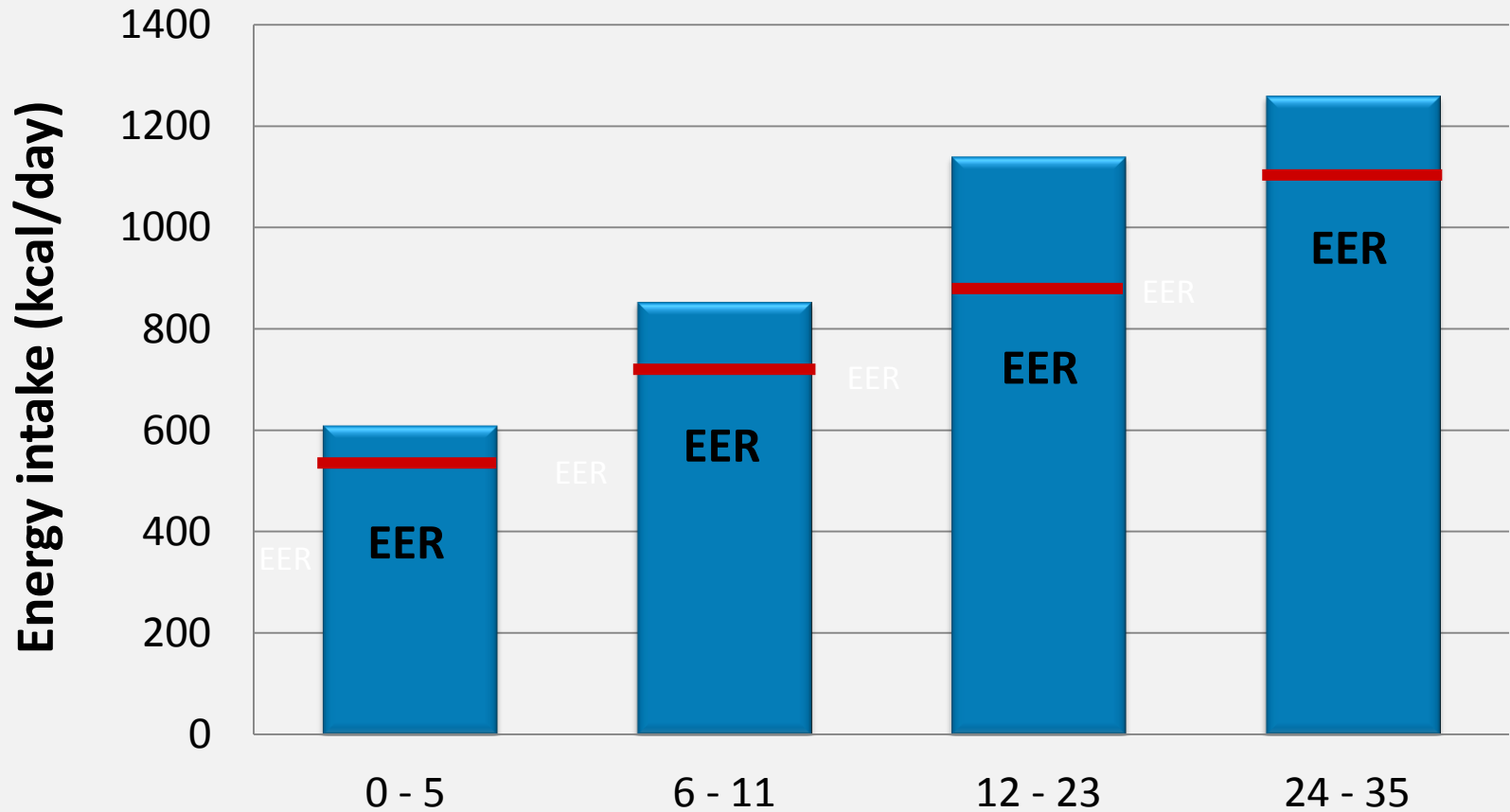


Grains Vegetables Fruits/Juices Meats/Protein Desserts, Sweets, or Sweetened Beverages

**Figure 1.** Percentage of children consuming any complementary foods by age groupings in the first year of life in the Feeding Infants and Toddlers Study 2008. Boxes in various shades represent the different food groups.



# Average Energy (kcal/d) Intakes: FITS 2008 Compared to Estimate Energy Requirements

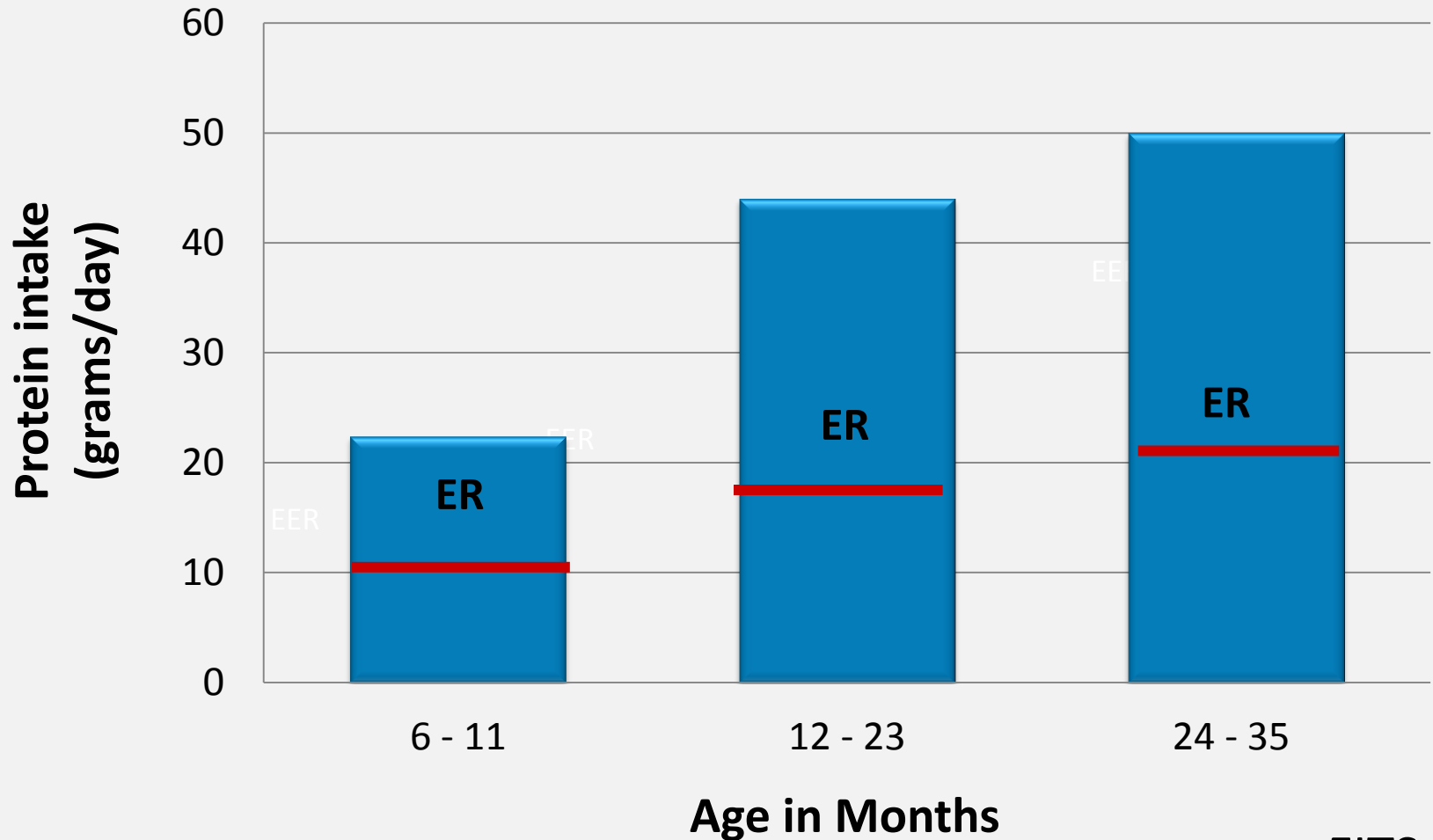


Age in Months

FITS 2008

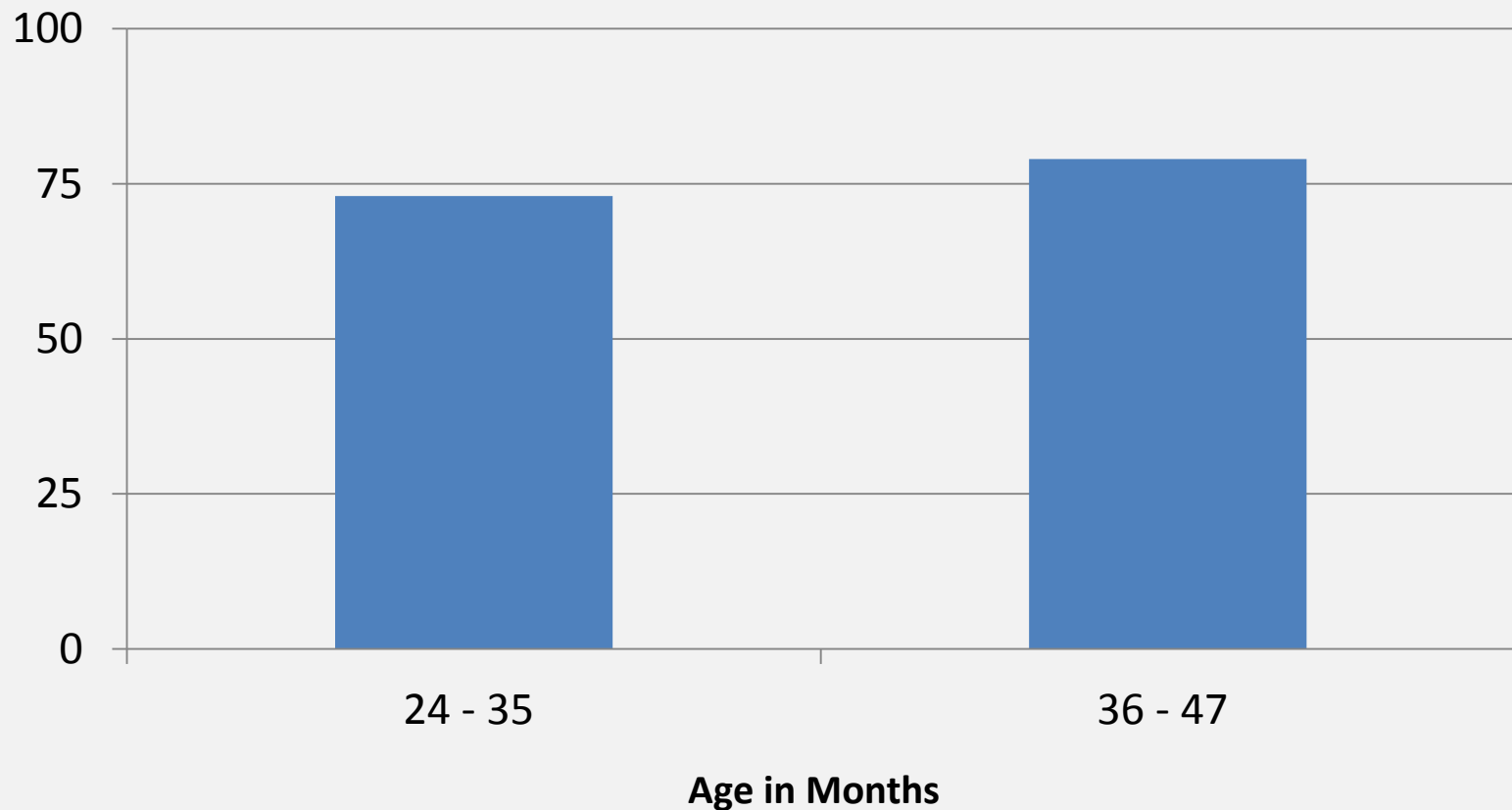
# Average Protein Intake (grams/d) : FITS 2008

## Compared to Estimated Requirements

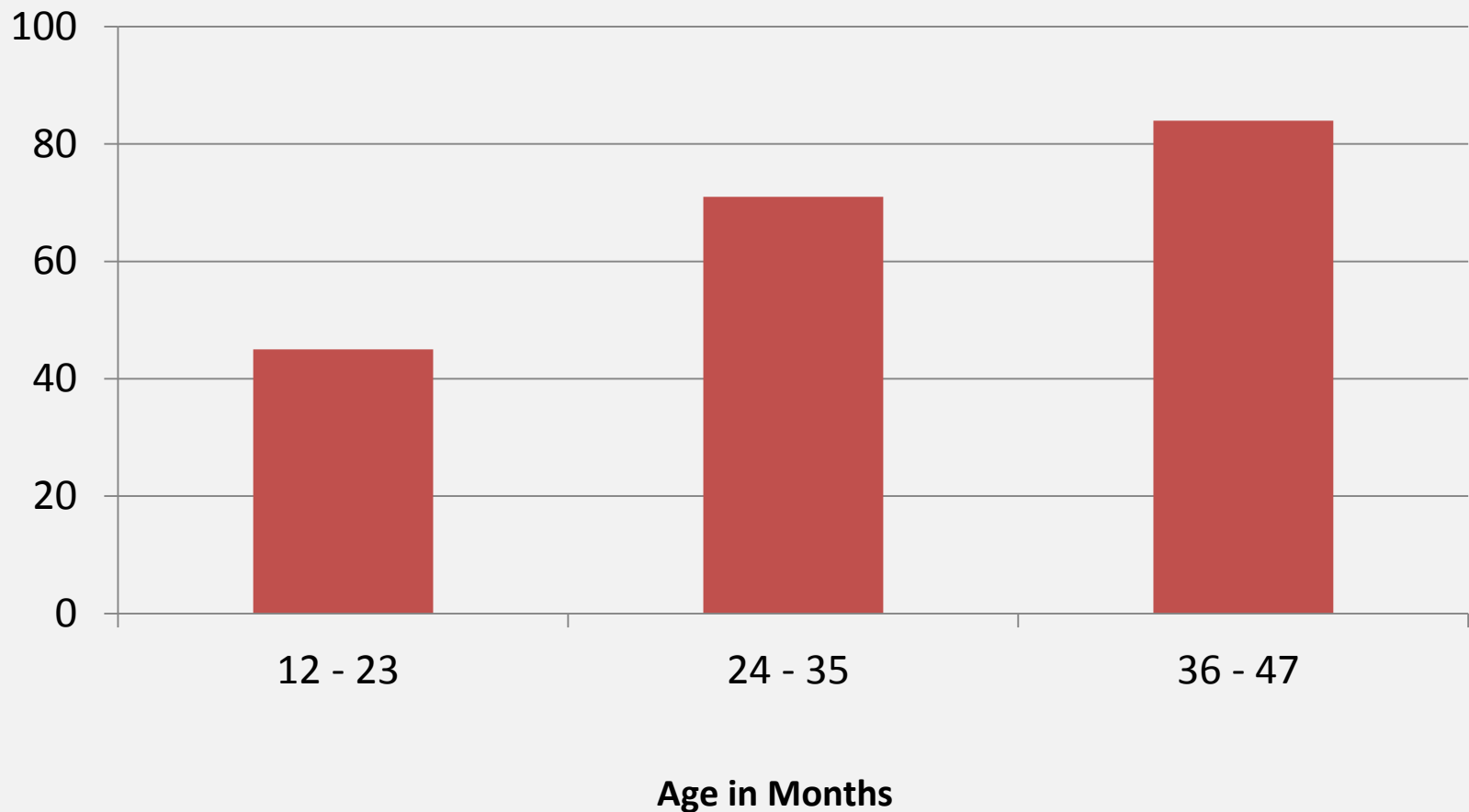


FITS 2008

# Percent of Children Above Dietary Guidelines for Saturated Fat (% Total Energy)



# Percent of Children Exceeding the UL for Sodium from Food

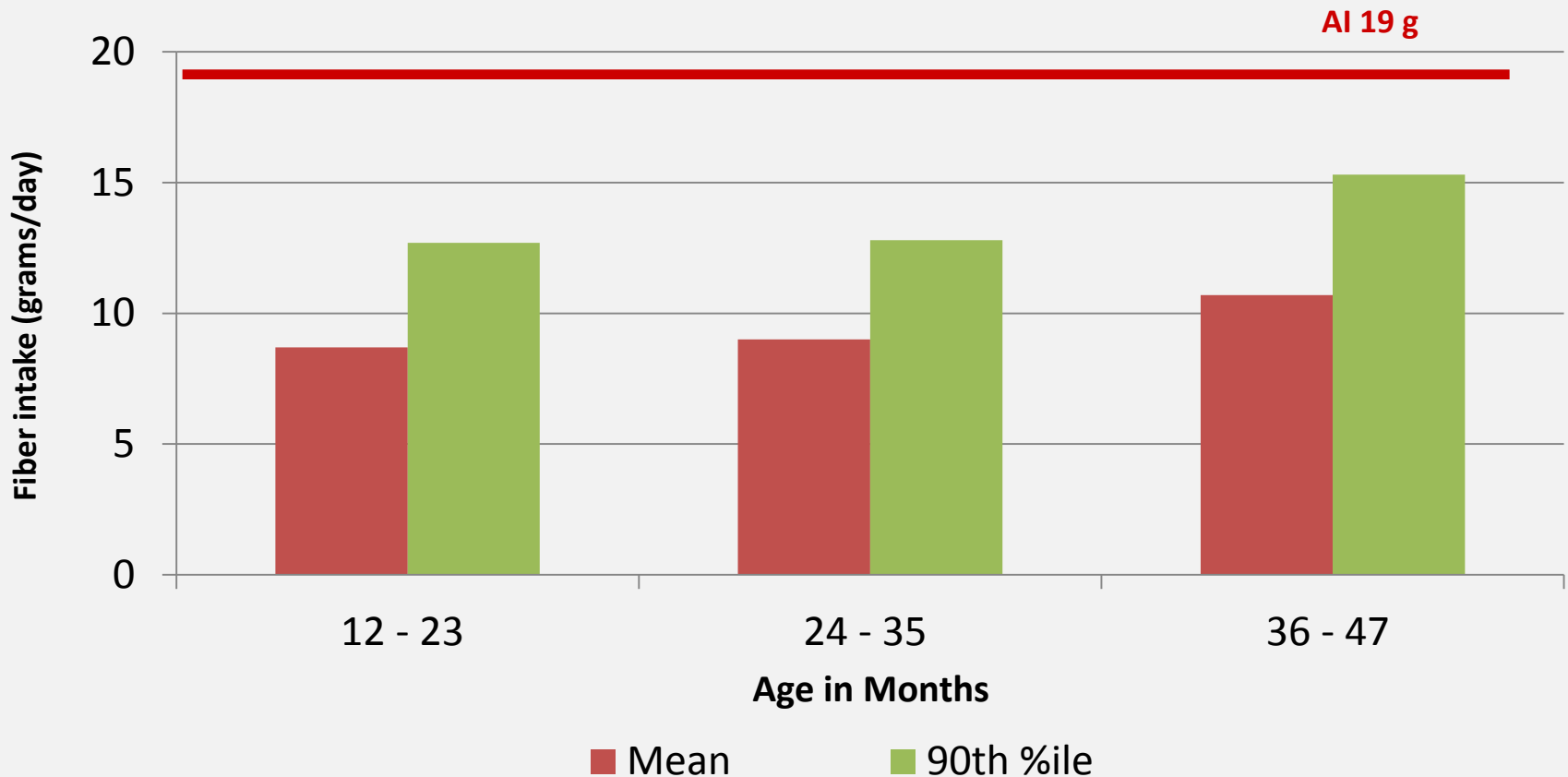


UL not determined for infants ages 0-11 months AI: 1,000 mg UL- 1,500mg

FITS 2008

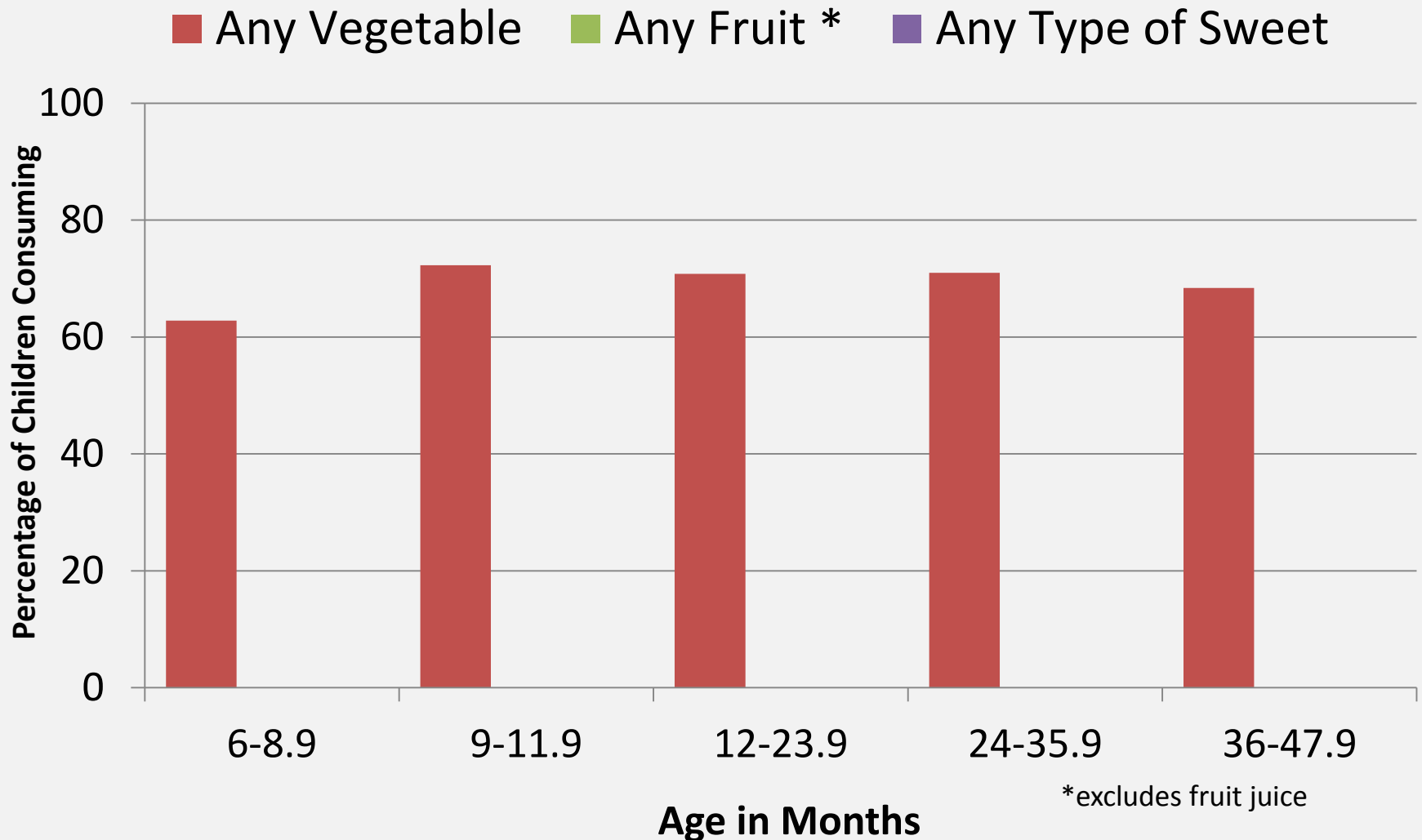
# No Child Meets Current Recommendation for Fiber Intake

## Mean Fiber Intake Among Toddlers and Preschoolers

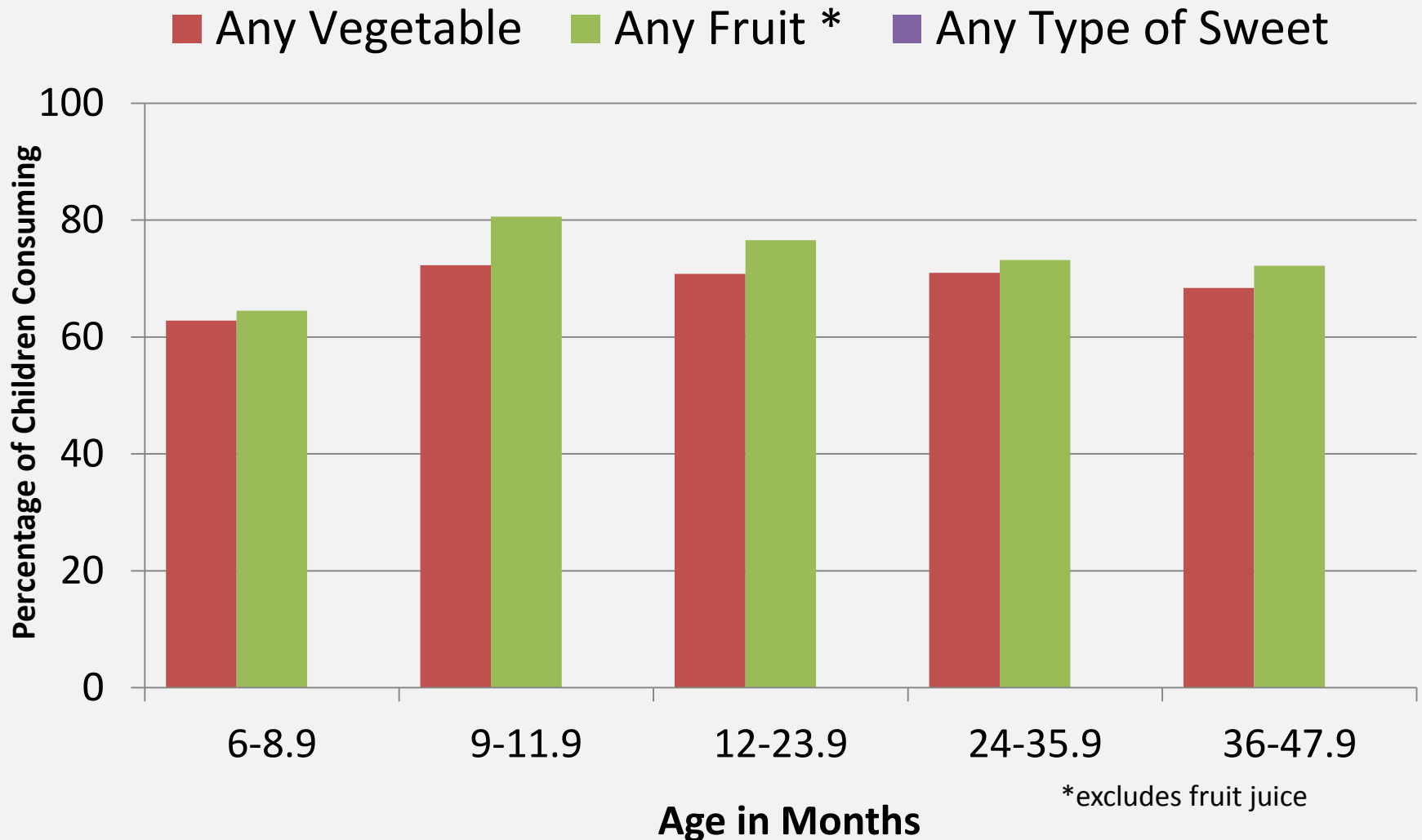


# Consumption on a given day

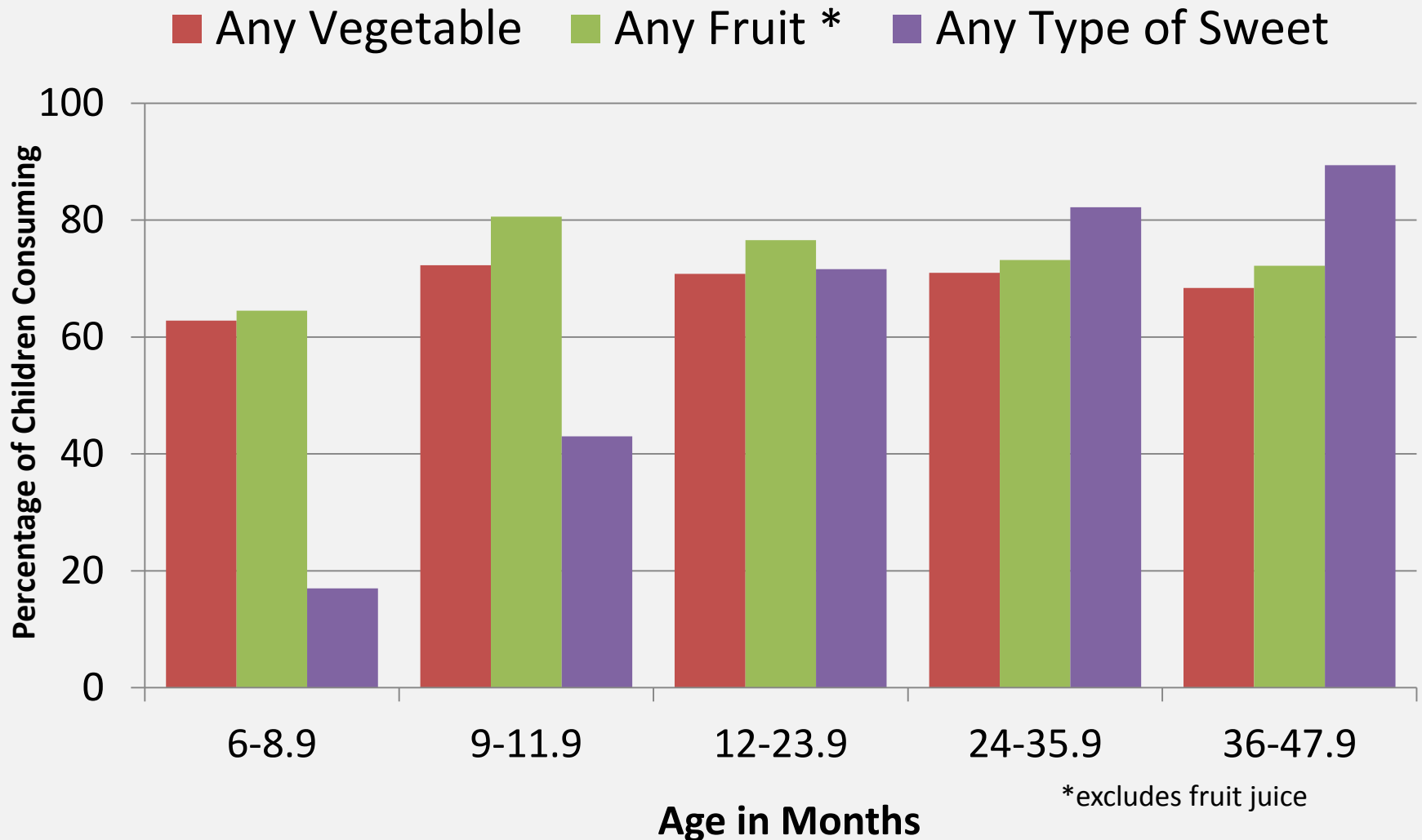
## Sweets, Fruit, and Vegetable



# Sweets, Fruit, and Vegetable consumption on a given day



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# More than a third of the calorie increase from 6 to 48 months is from sweets and sweetened beverages

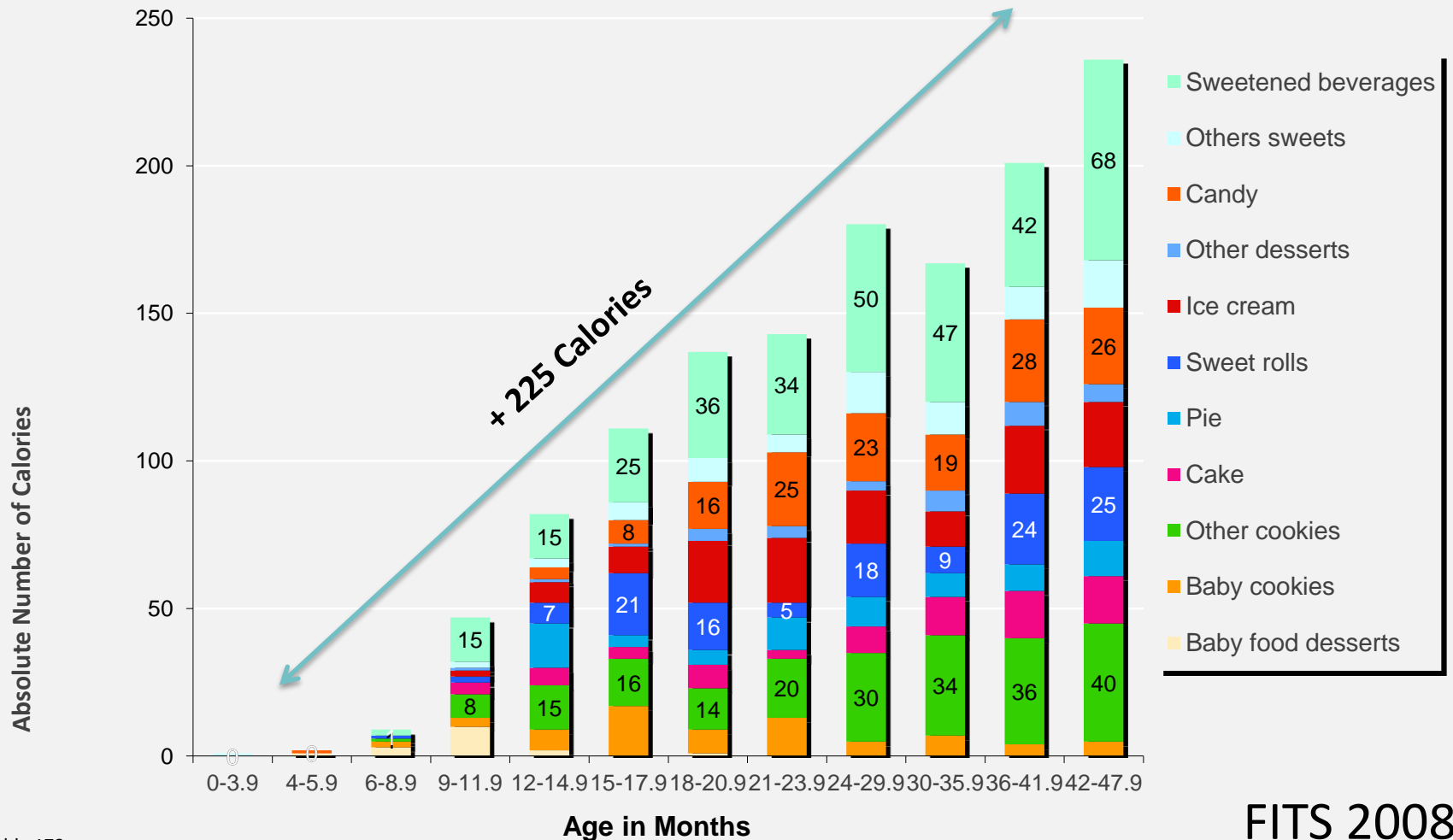
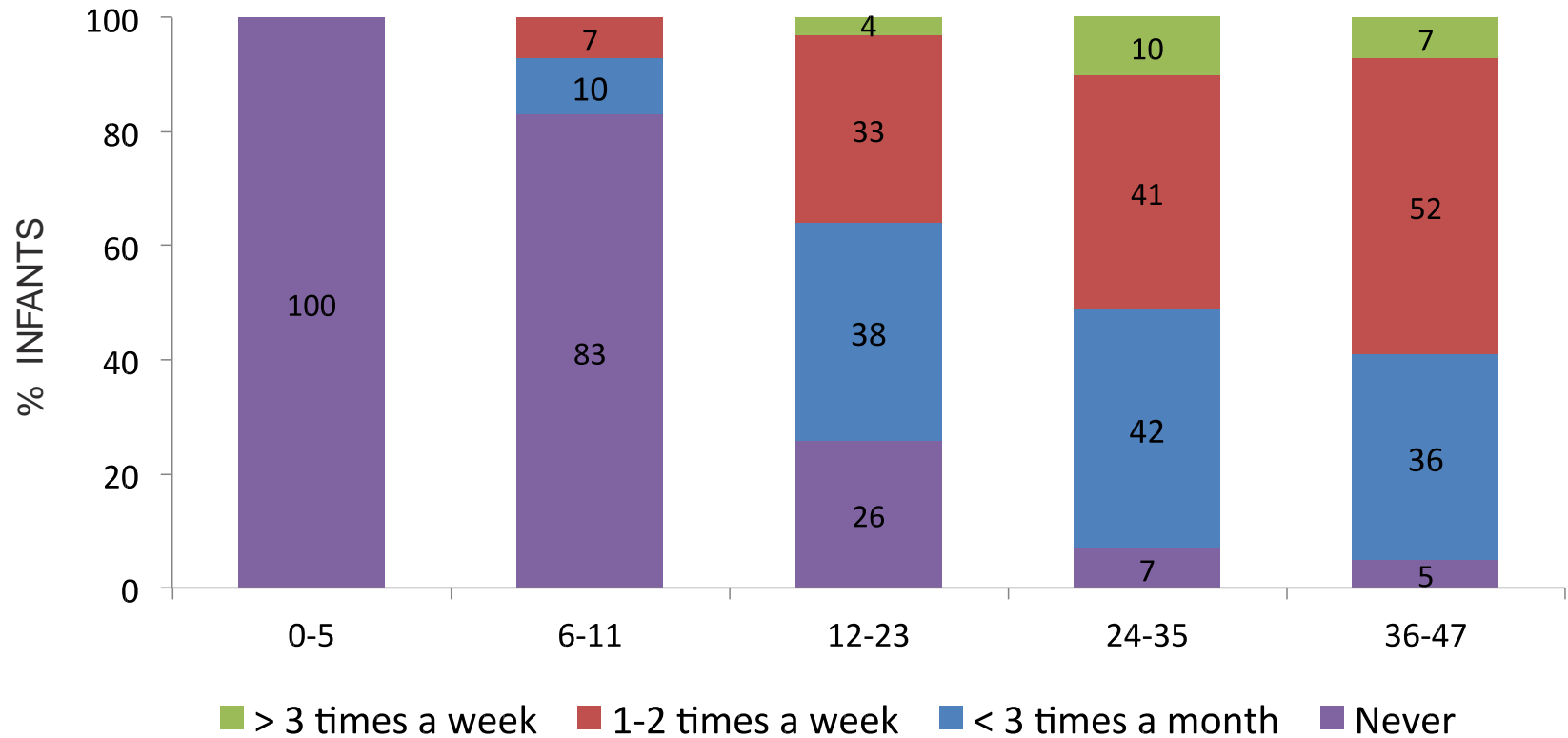


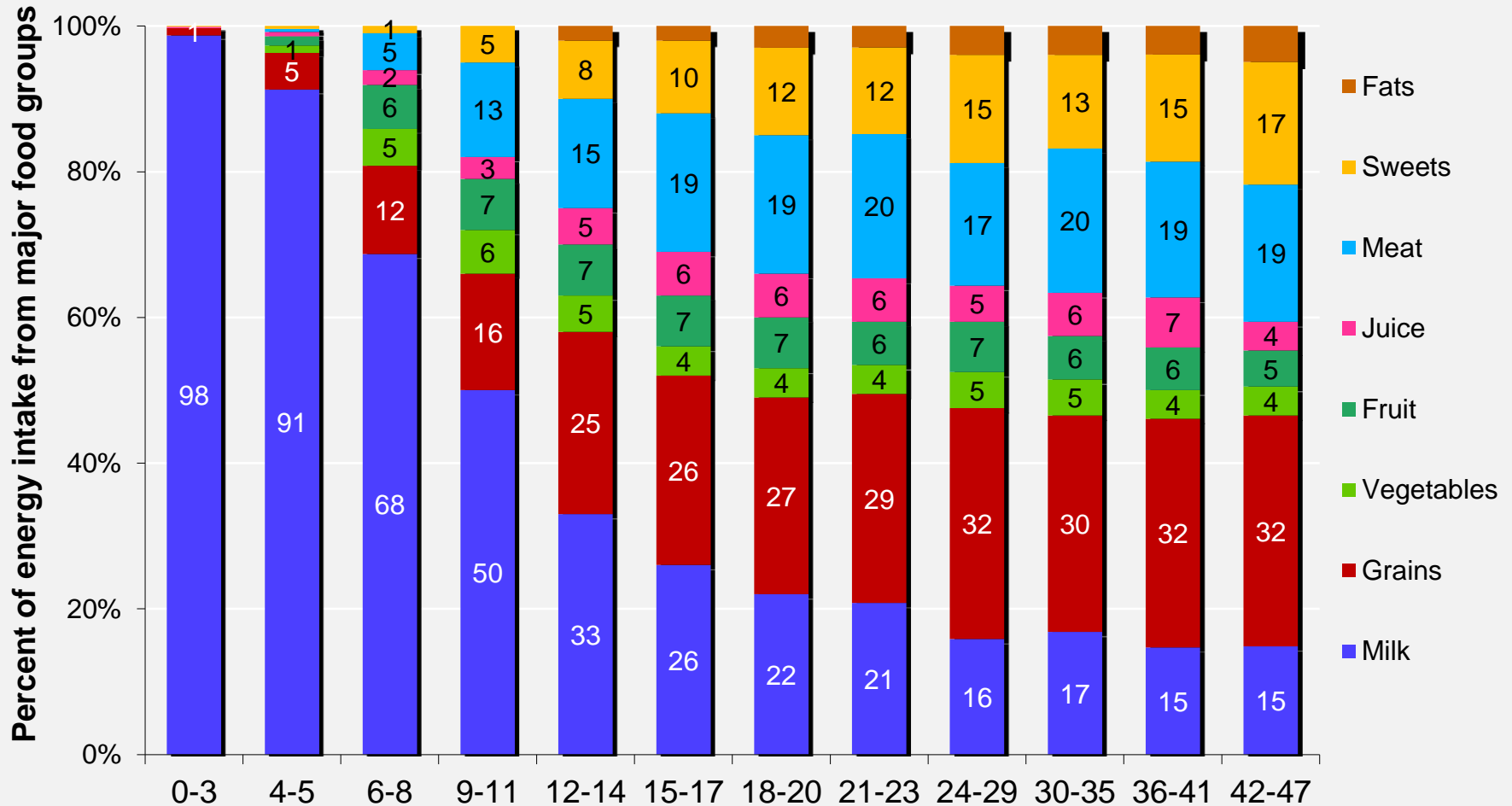
Table 172

# Frequency of eating at a Fast Food Restaurant



**By 4 years of age the majority of toddlers eat at a fast food restaurant 1-3 times a week**

# Dietary food group patterns are set very early in life



# **Infant Feeding and Long-Term Outcomes: Results From the Year 6 Follow-Up of Children in the Infant Feeding Practices Study II**

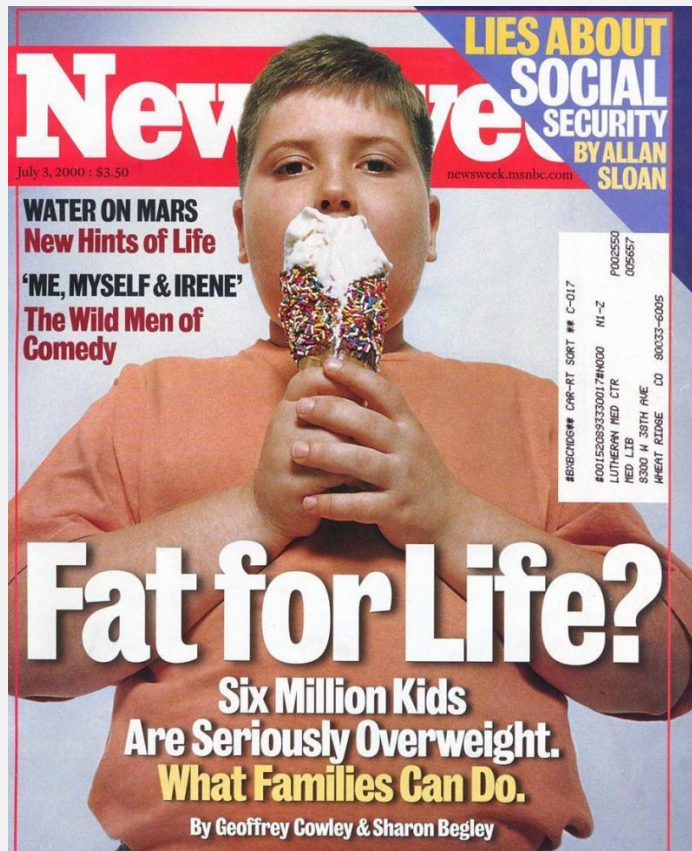
- **Consumption of sugar-sweetened beverages in infancy doubles the odds of consuming them at age 6.**
- **Infrequent consumption of fruits and vegetables during infancy is associated with infrequent consumption of them at age 6.**

The Public interest focus has also shifted  
from children



2000

The Public interest focus has also shifted  
from children to infants



2000



2012

# Conclusions

- Lack of initiation or continuation of breastfeeding are associated to poor eating patterns
- Dietary patterns in the U.S. are poor
  - They start **very early**, and
  - They persist.
- Target messages for education to set adequate dietary patterns seem clear and modifiable: e.g.
  - Breastfeeding
  - Solids “not before 4 months of age”
  - Increased consumption of fruits and vegetables
  - Decreased consumption of sweets & sweetened beverages



# What is needed

- **Education** to parents and caregivers
- to induce **behavior adoption**
- that addresses the **modifiable factors** associated with childhood obesity
- Including **diet and activity**



That are *accessible* and *scalable* → Digital



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Thank  
You

