Subcommittee 1: Food and Nutrient Intakes and Health: Current Status and Trends

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Scope

Current status and trends in:

- Food group, food, and nutrient intake
- Eating behaviors
- Diet-related chronic diseases, weight, and physical activity
- Dietary patterns

Invited Experts and Consultants

Invited Experts

Individuals invited by the SC, usually on a one time basis, to provide their expertise to inform the SC's work. Invited experts do not participate in decisions at the SC level.

Consultant SC Members

Individuals sought by the SC to participate in SC discussions and decisions on an ongoing basis but are not members of the full DGAC. Like DGAC members, consultants complete training and have been reviewed and cleared through a formal process within the Federal government.

Experts & Consultants

Invited Experts (July to Sept 2014)

None

Consultant SC Members

None

Topics Addressed Today

1. Nutrients of Public Health Concern: *Marian Neuhouser and Steve Abrams*
2. Food Group Intakes: *Marian Neuhouser and Mary Story*
3. Food Category Intakes: *Cheryl Anderson*
4. Eating Behaviors—Status and Trends: *Mary Story*
5. Health Conditions—Prevalence and Trends: *Cheryl Anderson and Barbara Millen*
6. Dietary Patterns: *Marian Neuhouser and Cheryl Anderson*

NUTRIENTS OF PUBLIC HEALTH CONCERN

Nutrients of Public Health Concern Questions Addressed Today

1. What are current consumption patterns of nutrients from foods and beverages in the U.S. population?
2. Of the nutrients that are underconsumed or overconsumed, which present a substantial public health concern?
3. Is there evidence of overconsumption of any micronutrients from consumption of fortified foods and supplements?
4. What is the level of caffeine intake derived from foods and beverages by age/sex categories in the U.S. population?
5. How well do updated USDA Food Patterns meet IOM Dietary Reference Intakes and 2010 Dietary Guidelines recommendations? How do the recommended amounts of food groups compare to current distributions of usual intakes for the U.S. population?

Nutrients of Public Health Concern (NOC)

NOC Q1:

What are current consumption patterns of nutrients from foods and beverages in the U.S. population?

Data Analysis

Mean NOC intakes from food and beverages for women 19 to 50 years, by pregnancy status

	Dietary fiber (g/d)	Calcium (mg/d)	Vitamin D (IU/d)	Potassium (mg/d)	Sodium (mg/d)	Saturated fat (g/d)	Iron (mg/d)
Pregnant women 19-50	**17.3** (5% > AI)	**1123** (24% <EAR)	**224** (90% <EAR)	**2660** (<3% >AI)	**3523** (>97% >UL)	**26.3** (30% <10%kcal)	**16.9** (96%< EAR)
Non-pregnant women 19-50	**14.4** (8% >AI)	**885** (43% <EAR)	**156** (>97% <EAR)	**2277** (<3% >AI)	**3111** (84% >UL)	**22.7** (33% <10%kcal)	**13.2** (16%< EAR)
Target amount (preg/non)	AI 25/28	RDA 800	EAR 400	AI 4700	UL <2300	<10% kcal	EAR 22/8.1

What We Eat in America, NHANES 2007-10

Mean NOC intakes from food and beverages by race/ethnicity, all ages 2+

	Dietary fiber (g/d)	Calcium (mg/d)	Vitamin D (IU/d)	Potassium (mg/d)	Sodium (mg/d)	Saturated fat (g/d)
Non-Hispanic White	16.4	1079	224	2728	3511	26.5
Non-Hispanic Black	13.4	865	172	2304	3273	25
Mexican-American	18.1	997	212	2583	3206	23.4
All Hispanic	17.0	992	208	2556	3252	23.3

Mean NOC intakes from food and beverages by income as a percent of the poverty threshold, all ages 2+

	Dietary fiber (g/d)	Calcium (mg/d)	Vitamin D (IU/d)	Potassium (mg/d)	Sodium (mg/d)	Saturated Fat (g/d)
Under 131% poverty:	14.8	977	208	2451	3346	24.7
131-185% poverty:	14.9	973	192	2499	3196	24.7
Over 185% poverty:	16.9	1061	220	2735	3566	26.0

What We Eat in America, NHANES 2009-10

Draft Conclusion Statement—NOC Q1

- Vitamin A, vitamin D, vitamin E, folate, vitamin C, calcium, and magnesium are under-consumed relative to the EAR. Iron is under-consumed by adolescent and premenopausal females.
- Potassium and fiber are under-consumed relative to the AI.
- Sodium and saturated fat are over-consumed relative to the UL or other maximum standard.

NOC1
Draft Implications

- The U.S. population should:
  - decrease consumption of foods high in sodium and saturated fat.
  - increase consumption of foods rich in vitamins A, D, E, C, folate, calcium, magnesium, potassium, and fiber.
  - consume a variety of nutrient-dense foods to meet recommended intake levels of these shortfall and over-consumed nutrients.
- Adolescent and premenopausal females should increase consumption of foods rich in iron.
- The USDA Food Patterns provides guidance for consumption of a nutrient-dense, energy-balanced diet.

Nutrients of Public Health Concern (NOC)

NOC Q2:

Of the nutrients that are under-consumed or over-consumed, which present a substantial public health concern, including consumption over the UL?

Data Analysis

Draft Conclusion Statement—NOC Q2

- Nutrient intake data, together with nutritional biomarker and health outcome data, indicate that vitamin D, calcium, potassium, and fiber are under-consumed and may pose a public health concern.
- Nutrient intake data, together with nutritional biomarker and health outcome data, indicate that sodium and saturated fat are over-consumed and may pose a public health concern.

Draft Implications NOC Q 2

- The U.S. population should adopt the behaviors outlined in the Implications for NOC Q1.
- To help the population adopt these behaviors, strategies should be developed and implemented at both individual and population levels.

Nutrients of Public Health Concern

NOC Q2a:

- What would be the effect on food choices and overall nutrient adequacy of limiting saturated fatty acids to 6% of total calories, replaced with sources of mono- and poly-unsaturated fatty acids?

Food Pattern Modeling

Review of the Evidence—NOC Q 2a

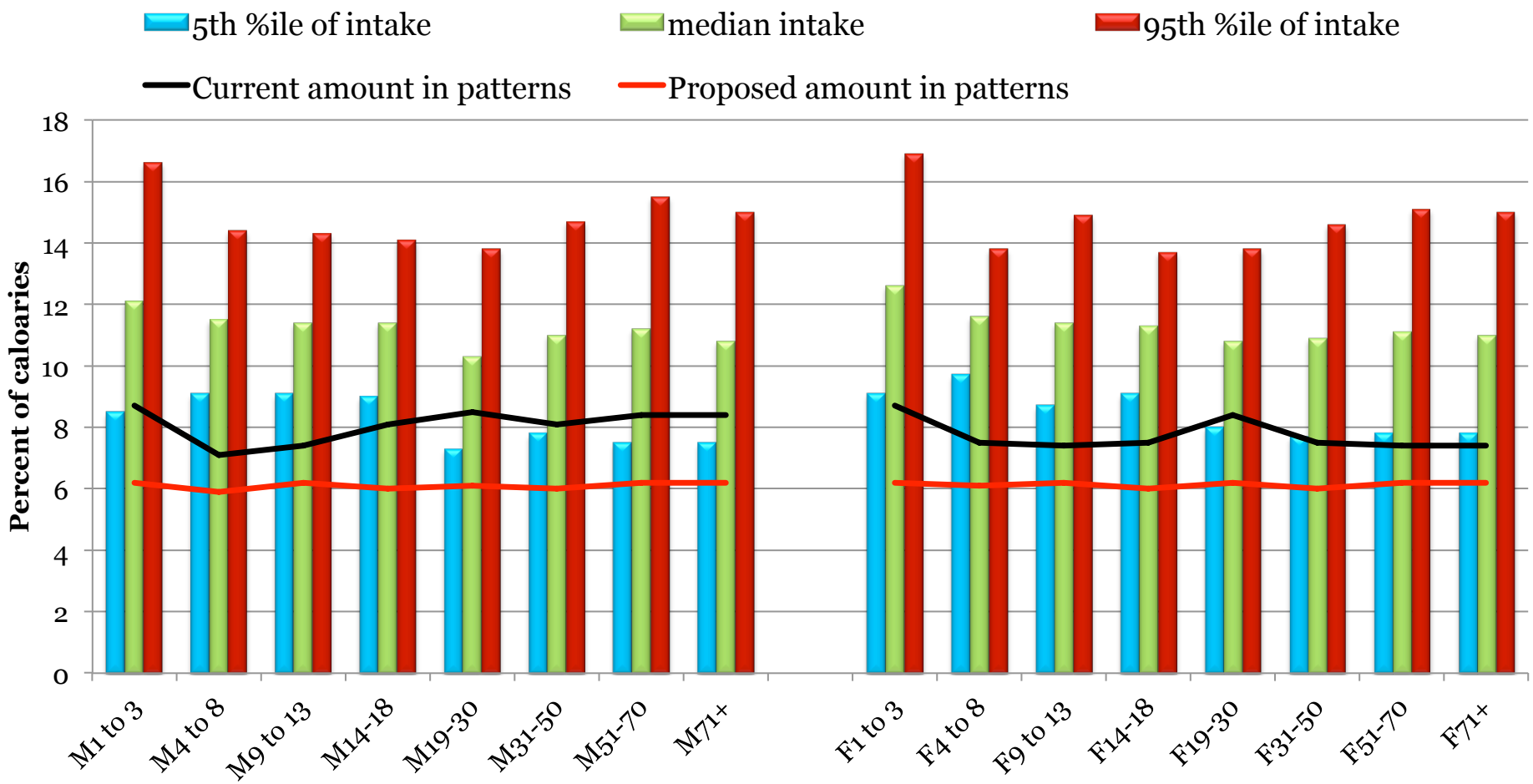
The analysis examined the effect on food choices in the USDA Food Patterns if saturated fat was reduced to 6% total calories.

- Major source of saturated fat in patterns identified as the allowance for solid fat.
- Allowance for solid fat eliminated and calorie deficit identified.
- Allowance replaced iso-calorically with additional oils, using a consumption weighted composite of the types of oils in the loss-adjusted food supply (ERS data).
- Saturated fat levels calculated, and effect on food choices examined.

Saturated fats in original and modified USDA Food Patterns, as a percent of total calories

Calorie level of Pattern	Original USDA Food Patterns	Modified USDA Food Patterns
1200	7.5%	6.1%
1600	7.4%	6.2%
2000	8.4%	6.2%
2400	8.5%	6.1%
2800	8.2%	5.9%

Saturated fat in current and modified USDA Food Patterns compared to Usual Intake Levels



What We Eat in America, NHANES 2007-10

Fatty acid profiles of solid fats and oils included in the USDA Food Pattern analyses

Type of fat or oil	Saturated Fatty Acids	Mono-unsaturated Fatty Acids	Poly-unsaturated Fatty Acids
	Grams per 100 grams of composite		
OILS	13.6	34.2	47.7
SOLID FATS	41.0	34.2	14.4

Examples: Foods with no solid fat content and similar foods with higher solid fat content

Most nutrient-dense form (no solid fat)	Alternate with some solid fat	Additional solid fat in alternate food choice
Fat-free milk	Low-fat (1%) milk Reduced-fat (2%) milk	1 g per cup 3 g per cup
Fat-free yogurt	Low-fat yogurt	2 g per cup
Fat-free mozzarella	Part-skim mozzarella	7 g per 1.5 ounces
95% lean ground beef	85%-89% lean gr. beef	5 g per 3 ounces
Beef steak, lean only eaten	Beef steak, lean and fat eaten	5 g per 3 ounces
Roast chicken no skin	Roast chicken with skin	4 g per 3 ounces
Egg white	Hard cooked egg	2 g per egg

WWEIA, Food Patterns Equivalent Database, 2009-10

Draft Summary of the Evidence—NOC Q 2a

- Food Pattern Modeling explored the use of strategies to replace saturated fats with polyunsaturated fats without reducing the percent of calories from total fat.
- Small changes toward this goal will help shift the overall population mean intake of saturated fat downwards.

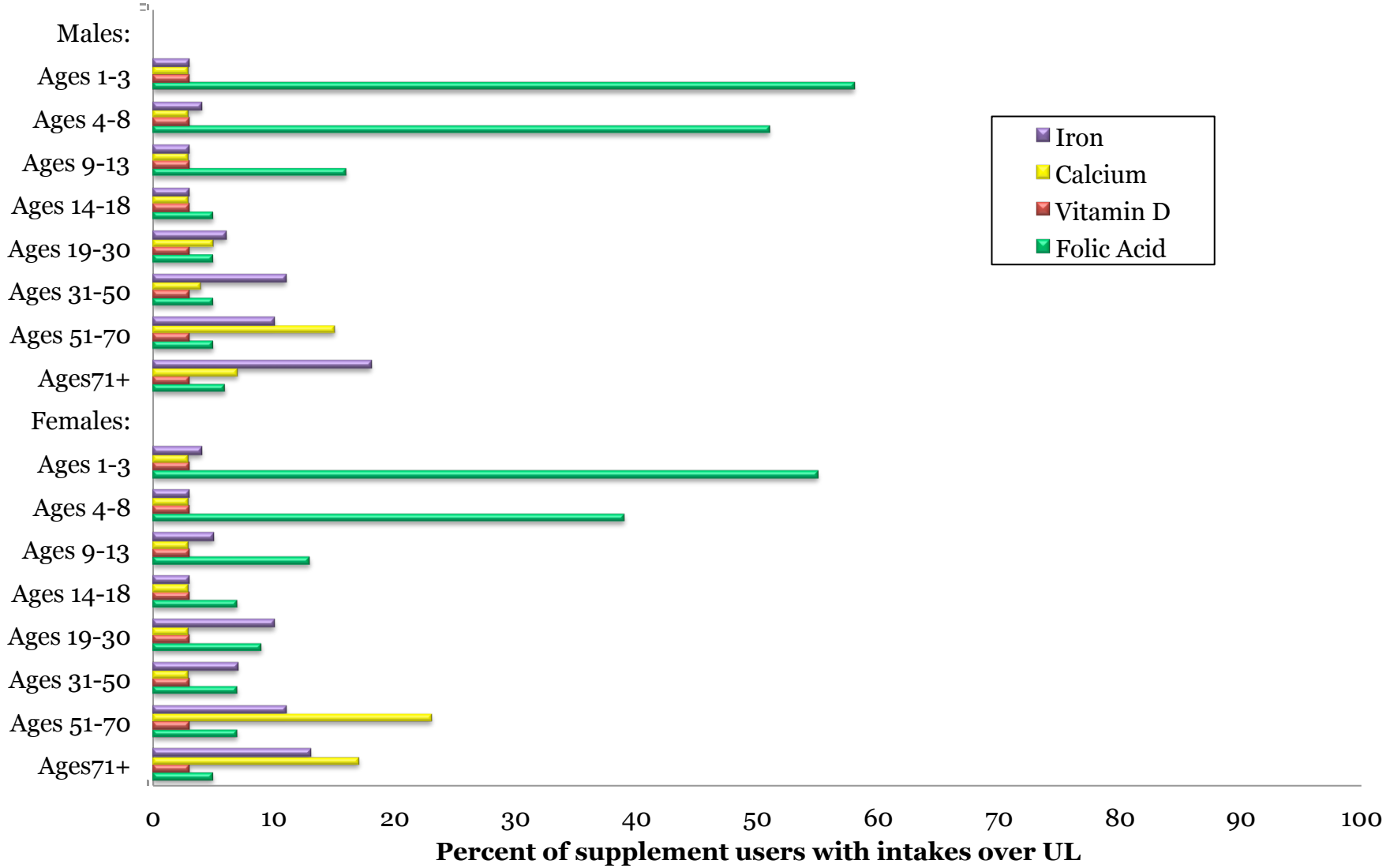
Nutrients of Public Health Concern

NOC Q3:

Is there evidence of overconsumption of any micronutrients from consumption of fortified foods and supplements?

Data Analysis

Supplement Users: Percent with usual intakes from food, beverages, and supplements greater than the UL



Draft Conclusion Statement—NOC Q3

- Dietary patterns in the U.S. population, including typical use of fortified foods, rarely lead to over-consumption of folate, calcium, iron, and vitamin D.
- However, each of these, as well as other nutrients, may be over-consumed in some supplement users, especially those taking high-dose supplements.

Draft Implications NOC Q 3

- The public may safely use dietary supplements containing RDA level of nutrients, so long as total intake from diet plus supplements does not exceed the UL.
- Caution should be used when considering use of high-dose dietary supplements. Use of high-dose products such that total intake exceeds the UL should be discussed with an individual's health care provider.

Nutrients of Public Health Concern

NOC Q4:

What is the level of caffeine intake derived from foods and beverages on the basis of age and gender groups in the U.S. population?

Data Analysis

Draft Conclusion Statement—NOC Q4

- In general, intakes of caffeine do not exceed what are likely safe levels in any age group. Some young adults may have moderately high intakes.
- There is less certainty about the safe level of intake in children and adolescents. However, routine consumption patterns do not suggest that excessive intakes are common in these groups.

Draft Implications NOC Q 4

- The public may safely consume caffeine-containing beverages, such as coffee and tea.
- However, children, adolescents, and pregnant women should be cautious about consuming high levels of caffeine from supplements (e.g., energy shots).

Nutrients of Public Health Concern

NOC Q5:

- How well do updated USDA Food Patterns meet IOM Dietary Reference Intakes and 2010 Dietary Guidelines recommendations? How do the recommended amounts of food groups compare to current distributions of usual intakes for the U.S. population?

Food Pattern Modeling

Draft Conclusion Statement—NOC Q5

- USDA Food Patterns across a broad range of ages and energy intakes meet most goals for nutrient adequacy. Specific nutrients of public health concern for which the patterns do not meet recommendations are potassium and vitamin D.
- Recommended amounts for food groups and their components fall within the broad range of food group intake distributions for the U.S. population.

Draft Implications NOC Q 5

- The USDA Food Patterns provides guidance for consumption of a nutrient-dense, energy balanced diet.
- To achieve nutrient adequacy, the U.S. population should be advised to consume dietary patterns consistent with the USDA Food Patterns.
- In some situations, specific food choices or dietary supplements may be used to increase nutrient intakes not met through the USDA Food Patterns.

Nutrients of Public Health Concern

NOC Q5a:

- Can vitamin D EARs and/or RDAs be met with careful food choices following recommended amounts from each food group in the USDA Food Patterns? How restricted would food choices be, and how much of the vitamin D would need to come from fortified dairy and other food products?

Food Pattern Modeling

Review of the Evidence—NOC Q 5a

- The Food Pattern Modeling examined potential vitamin D levels in the 2000 kcal pattern if:
  - A larger % of dairy intake came from fortified foods (more fluid milk, less cheese).
  - Some fortified fruit juices were included in the fruit group.
  - All grain products allowed to be fortified were fortified (pasta, rice, cereals, cornmeal).
  - Only seafood with high vitamin D levels were consumed.

Review of the Evidence—NOC Q 5a

- Results of the changes in dairy, fruit, and grains:
  - Current Pattern 274 IU vitamin D
  - Revised Pattern 534 IU vitamin D
- To reach the RDA (600 IU) for vitamin D, seafood choices would need to contain at least 96 IU per ounce, if changes above were also made.
  - Only a few seafood choices contain this much vitamin D.

Draft Conclusion Statement—NOC Q 5a

- Through the use of a diet rich in seafood and fortified foods, EAR, but not RDA, levels of vitamin D can be achieved.
- Additional fortification or supplementation strategies would be needed to reach RDA levels of intake consistently, especially in individuals with low intakes of fish or fortified dairy foods and beverages.

Draft Implications NOC Q 5a

- Diet is an important aspect of achieving vitamin D intake targets. Americans should be encouraged to choose foods and beverages with vitamin D.
- When needed, supplementation can be considered to achieve RDA intakes.

Nutrients of Public Health Concern Questions Addressed Today

1. Consumption patterns of nutrients in the U.S. population
2. Nutrients that present a substantial public health concern

   2a. Saturated fat
3. Overconsumption from fortified foods and supplements
4. Caffeine intake in the U.S. population
5. Adequacy of USDA Food Patterns

   5a. Vitamin D

Discussion

FOOD GROUP INTAKES

Food Group Intakes

1. What is current consumption of USDA Food Pattern food groups by the U.S. population?
2. What are the trends in USDA Food Pattern food group consumption by the U.S. population?
3. What would be the impact on the adequacy of the patterns if (1) no Dairy foods were consumed, (2) if calcium was obtained from nondairy sources (including fortified foods), and (3) if the proportions of milk and yogurt to cheese were modified?

Food Group Intakes (FG)

FG Q1:

- What is current consumption of USDA Food Pattern food groups by the U.S. population?

Data Analysis

Draft Conclusion Statement—FG Q1

- Across all age and gender groups, the vast majority of the U.S. population does not meet recommended intakes for fruit, vegetables, whole grains, and dairy food groups.
- Across all age and gender groups, the vast majority of the U.S. population exceeds recommended intakes for refined grains, solid fats, and added sugars.

Draft Implications FG Q 1

To realize the numerous health benefits from a diet high in fruit, vegetables, whole grains, lean protein, and non-fat and low-fat dairy, the U.S. population should:

- increase intake of under-consumed food groups and nutrient-dense foods, while maintaining energy balance.
- decrease consumption of refined grains (as a proportion of total grains), saturated fat, and added sugars.
- increase low-fat/fat-free fluid milk and yogurt and decrease cheese to increase intakes of magnesium, potassium, vitamin A, vitamin D, and choline while decreasing the intake of sodium and saturated fat.

Food Group Intakes Qs 1a-d

1a. Contribution of whole grain foods, fruits, and vegetables to total fiber and total nutrient intake in the USDA Food Patterns? (Food Pattern Modeling)

1b. What is the contribution of fruits and vegetables to current nutrient intake? (Food Pattern Modeling)

1c. Effect on nutrient intakes of decreasing refined/enriched grain intake, or reducing total grain intake? (2005 and 2010 Food Pattern Modeling)

1d. Effect of a substitution of seafood for terrestrial animal foods on diet quality? (2010 Food Pattern Modeling)

Review of the Evidence—FG Q 1a-b

Contributions as a % of total amount in USDA Food Patterns:

Whole grains:	fiber (32%), iron (42%), folate (35%), magnesium (29%) and vitamin A (16%)
Fruits:	fiber (16%) and potassium (17%)
Vegetables:	fiber (38%), potassium (36%),iron (19%), folate (23%), vitamin A (34%)

Estimated contribution of fruit and vegetables in amounts consumed-as % of total consumed:

fiber (40-65%), potassium (33-48%)

Review of the Evidence—FG Q 1c

Conclusions from 2005 & 2010 Grains Modeling reports:

- If all grains (6 oz eq per day) are consumed as whole grains (including fortified whole grain cereals substituted for refined grain cereals) then nutrient adequacy in the Patterns is achieved.
- If only whole grains (at 3 oz eq per day) are consumed without replacement or substitution of refined grains, then nutrient adequacy in the Patterns is not achieved and it would result in nutrient shortfalls.

Review of the Evidence—FG Q 1d

Conclusions from 2010 Seafood Modeling report:

- Increasing seafood intake to 8 ounces/week (for adults) would have no negative impact on nutrient adequacy and offers many benefits.
  - 8 ounces/week increases EPA and DHA substantially from 177mg to 259 mg in the 2000 kcal Pattern.
  - 8 ounces/week increases vitamin D, vitamin B-12 and selenium by more than 10% across the USDA Food Patterns at various calorie levels.

Food Group Intakes (FG)

FG Q2:

- What are the trends in USDA Food Pattern food group consumption by the U.S. population?

Data Analysis

Draft Conclusion Statement—FG Q2

The U.S. population has made few dietary changes over time (2001-04 to 2007-10).

- Fruit intake has remained low but stable.
- Vegetable intake has declined, particularly among children of all ages, adolescents, and young adult males.
- Whole grain intake has slightly increased between 2001-04 and 2007-10, particularly among middle aged and older adults.
- Dairy intake has been relatively constant over time, but has decreased for girls 4 to 8 years and young adult males, and has increased for adults 51 to 70 years.

Draft Implications FG Q 2

- The U.S. population needs to build on the small improvements in dietary intake with regard to increase of whole grains and decrease of added sugars.
- Poor nutritional intake is linked to numerous diet-related chronic diseases and in the U.S the prevalence of these conditions is far too high.
- The health of the nation hinges in part on improving dietary intake.

Food Group Intakes (FG)

FG Q3:

- What would be the impact on the adequacy of the patterns if:
  (1) no Dairy foods* were consumed
  (2) calcium was obtained from nondairy sources (including fortified foods) and
  (3) the proportions of milk and yogurt to cheese were modified?

*includes milk, yogurt, cheese, soymilk

Food Pattern Modeling

Results of Dairy Group Food Pattern Modeling—Energy and Nutrients of Concern in Patterns:

In 2000 kcal Pattern	Energy	Calcium	Vitamin D	Potassium	Sodium	Saturated Fat
% of total from Dairy-with 3 cups in Pattern	12% of total	69% of total	65% of total	21% of total	35% of total	9% of total
Amount (% of target) with 3 cups Dairy in Pattern	2003 kcal	1274 mg (127%)	266 IU (44%)	3348 mg (71%)	1751 mg (76%)	18.7 g (8% kcal)
% of target amount with no Dairy in Pattern	1773 kcal	390 mg (39%)	96 IU (16%)	2642 mg (56%)	1146 mg (50%)	17.1 g (9% kcal)

Results of Dairy Group Food Pattern Modeling—Comparison of nutrients in Dairy Group and possible calcium alternatives:

	Amount	Energy	Protein	Ca	Mg	K	Vit A	Vit D
	Amt	kcal	g	mg	mg	mg	µg RAE	IU
Dairy Group Profile	1 cup equiv	77	8.7	295	20	235	98	59
Soymilk (part of dairy group)	1 cup	80	6.95	301	39	292	134	119
Almond milk, fortified	1 cup	120	1.51	451	29	180	151	101
Rice Drink, fortified	1 cup	113	0.67	283	26	65	151	101
Tofu, made with Ca sulfate	1/2 cup	94	10.02	434	37	150	5	0
Orange juice, fortified	1 cup	117	1.69	349	27	443	5	100
Spinach	1/2 cup	32	3.81	145	78	287	573	0
Broccoli	1/2 cup	26	2.85	30	12	131	47	0
White beans	1/2 cup	149	9.51	96	67	595	0	0
Salmon, canned w/bone	3 oz	120	18.22	212	26	255	15	328

Results of Dairy Group Food Pattern Modeling—Comparison of Nutrients in current and modified Dairy Group:

	Calcium	Vitamin D	Potassium	Sodium	Saturated Fat
	Percent of targets for F 19-30y, 2000 kcal Pattern				
Current Pattern (55% milk and yogurt, 45% cheese)	106%	46%	71%	76%	8.4% kcal
Pattern with 2/3 milk or yogurt, 1/3 cheese	106%	55%	73%	72%	8.3% kcal
Pattern with 100% milk/ yogurt, no cheese	107%	73%	80%	63%	7.8% kcal

Draft Summary Statement—FG Q3

- If no dairy products (including soymilk) are consumed, calcium, magnesium, phosphorus, vitamin A, vitamin D, potassium, and choline are negatively affected.
- None of the calcium alternatives provide a similar enough nutrient profile in terms of these affected nutrients to be considered for inclusion in the dairy group.
- Increasing the proportion of milk and yogurt vs. cheese consumed would increase levels of magnesium, potassium, vitamin A, vitamin D, and choline in the USDA Food Patterns, and decrease amounts of sodium, cholesterol, and saturated fat.

Food Group Intakes

1. What is current consumption of USDA Food Pattern food groups by the U.S. population?
2. What are the trends in USDA Food Pattern food group consumption by the U.S. population?
3. What would be the impact on the adequacy of the patterns if (1) no Dairy foods were consumed, (2) if calcium was obtained from nondairy sources (including fortified foods), and (3) if the proportions of milk and yogurt to cheese were modified?

Discussion

FOOD CATEGORIES

Food Categories Questions Addressed Today

1. What are current consumption patterns by food categories (foods as consumed) in the U.S. population?
2. What are the top foods contributing to energy intake in the U.S. population?
3. What are the top foods contributing to sodium and saturated fat intake in the U.S. population?
4. What is the contribution of beverage types to energy intake by the U.S. population?
5. What are the sources of caffeine from foods and beverages on the basis of DRI age and sex categories in the U.S. population?

Food Categories (FC)

FC Q1:

What are current consumption patterns by food categories (foods as consumed) in the U.S. population?

Data Analysis

Draft Conclusion Statement—FC Q1

- The mixed dishes food category is the major contributor to some USDA Food Pattern food groups—grains, vegetables, and protein foods.
- Fruit and fluid milk intake are seldom part of mixed dishes.
- Mixed dishes contribute substantially to intakes of energy, saturated fat, and sodium, but also make important contributions to intake of vegetables, fiber, grains, and dairy.

Draft Implications FC Q 1

- An important strategy for meeting optimal intake levels of calories, saturated fat, and sodium may be to change the composition of some mixed dishes.

Food Categories (FC)

FC Q2:

What are the top foods contributing to energy intake in the U.S. population?

Data Analysis

Draft Conclusion Statement—FC Q2

- Ninety percent of total energy intake in the U.S. population comes from 16 of the 32 food sub-categories, with mixed dishes, snacks and sweets, and beverages together contributing more than half (56%) of energy intake in the U.S. population.

Draft Implications FC Q 2

- The foods with the highest contribution to energy intake are burgers and sandwiches, desserts and sweet snacks, and sugar-sweetened beverages. Given the link to energy intake, reducing consumption of these foods may lead to weight reduction.
- Public health strategies (e.g., programs, regulations, and policies) are needed to help individuals achieve recommendations.

Food Categories (FC)

FC Q3:

What are the top foods contributing to sodium, saturated fat, and added sugars intake in the U.S. population?

Data Analysis

Review of the Evidence—FC Q 3a-c

3a. What is the current contribution of fruit products with added sugars on intake of added sugars?

3b. What is the current contribution of vegetable products with added sodium on intake of sodium?

3c. What is the current contribution of refined grains to intake of added sugars, saturated fat, some forms of polyunsaturated fat, and sodium in the U.S. population?

Review of the Evidence—FC Q 3a

Contribution of fruit products with added sugars to intake of added sugars:

- Less than 1% of total added sugars come from fruits and 100% fruit juice foods (including fresh, canned, frozen, dried fruit and fruit salads)

Review of the Evidence—FC Q 3b

Contribution of vegetable products with added sodium on intake of sodium:

- 11% of total sodium comes from all vegetables (with starchy vegetables), including beans and peas, vegetable mixtures, lettuce salads, pasta sauces, and vegetable juice
  - 7% from all vegetables except starchy
  - 4% from starchy vegetables, including French fries and other fried potatoes, mashed potatoes, all other potatoes, corn, and other starchy vegetables

Review of the Evidence—FC Q 3c

Contribution of refined grains to intake of added sugars, saturated fat, some forms of polyunsaturated fat, and sodium in the U.S. population:

- Cannot be answered directly with available data, but:
  - The food categories that make up >90% of all refined grain intake (sandwiches, breads, pasta, rice, mixed dishes, pizza, desserts, sweet snacks, crackers, chips) account for:
    - 28% of all added sugars intake
    - 47% of all saturated fat intake
    - 50% of all sodium intake

Draft Conclusion Statement—FC Q3

- Mixed dishes are the largest contributor to intake of the two nutrients of concern for over-consumption—sodium (44%) and saturated fat (38%)
  - the sub-category of burgers and sandwiches is the largest contributor within mixed dishes for both nutrients.
- Snacks and sweets also are a major contributor to saturated fat intake (18% of intake).
- Sodium is ubiquitous in the food supply and many food categories contribute to intake.

Draft Implications FC Q 3

- The foods with the highest contribution to saturated fat and/or added sugars intake are burgers and sandwiches, desserts and sweet snacks, and sugar-sweetened beverages.
- The U.S. population can use a variety of strategies to reduce consumption of these components, including smaller portion sizes, reduced frequency of consumption, and recipe modification.
- Given the ubiquity of sodium in the food supply, concerted efforts to reduce sodium in commercially prepared and processed foods are needed to achieve optimal intake.

Food Categories (FC)

FC Q4:

- What is the contribution of beverage types to energy intake by the U.S. population?

Data Analysis

Draft Conclusion Statement—FC Q4

- Nineteen percent of total energy comes from beverages, including milk and 100% fruit juice.
- Of this 19% of energy, major sources are:
  - Sugar-sweetened beverages (35%)
  - Milk and milk drinks (26%)
  - 100% fruit juices (10%).
- Beverages supply 47% of added sugars intake.

Draft Implications FC Q 4

- To decrease dietary intake from added sugars, the U.S. population should reduce consumption of sugar-sweetened beverages.
- This is especially important for individuals who need to reduce their energy intake.

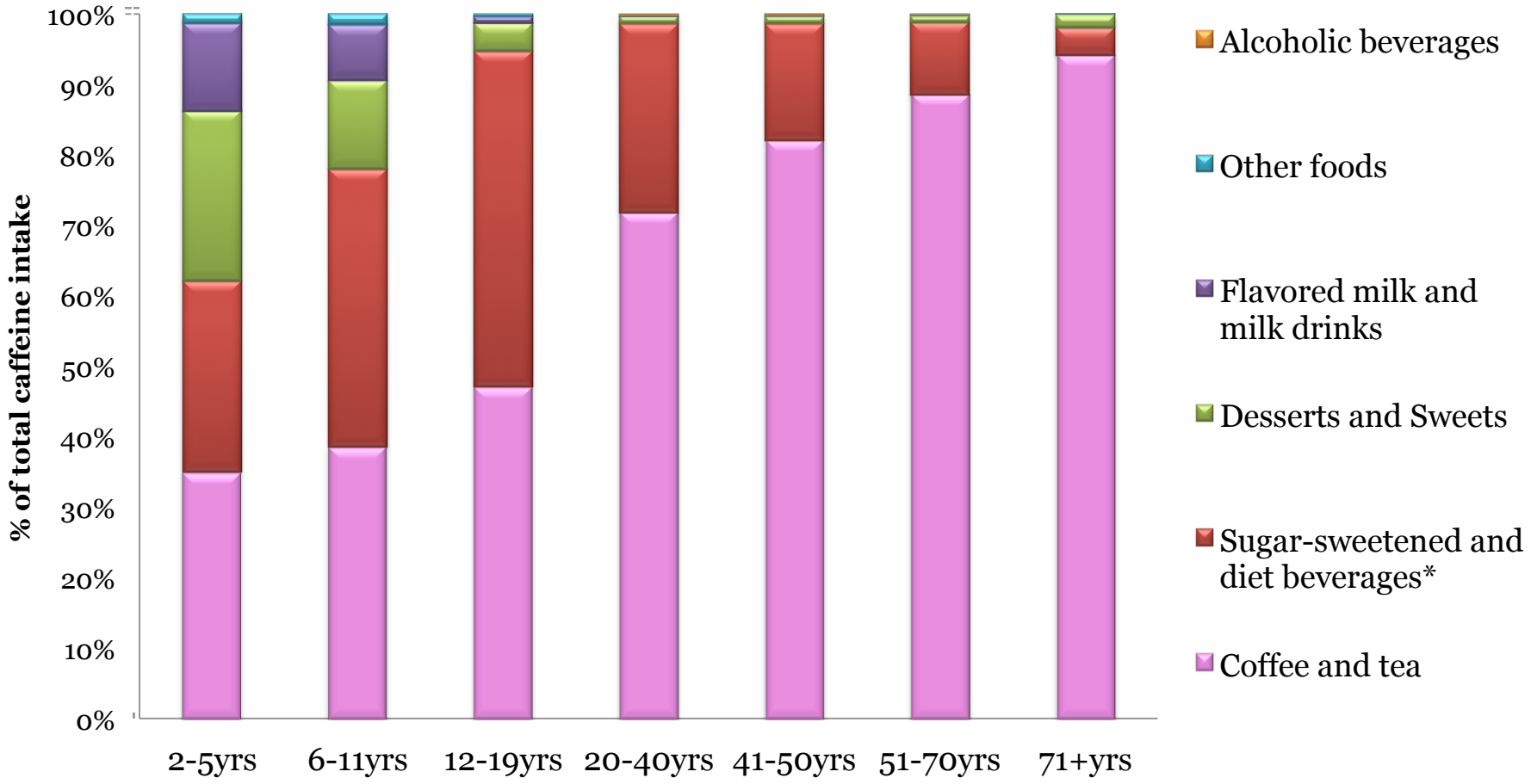
Food Categories (FC)

FC Q5:

- What are the sources of caffeine from foods and beverages on the basis of DRI age and sex categories in the U.S. population?

Data Analysis

Caffeine sources by age group
Percent of total caffeine from each source



Draft Summary Statement—FC Q5

- Among children and adolescents, sugar-sweetened and diet beverages and coffee and tea contribute equally to overall caffeine intake.
- Among adults, the primary source of caffeine is coffee and tea.

Food Categories

1. What are current consumption patterns by food categories (foods as consumed) in the U.S. population?
2. What are the top foods contributing to energy intake in the U.S. population?
3. What are the top foods contributing to sodium and saturated fat intake in the U.S. population?
4. What is the contribution of beverage types to energy intake by the U.S. population?
5. What are the sources of caffeine from foods and beverages on the basis of DRI age and sex categories in the U.S. population?

Discussion

EATING BEHAVIORS

Eating Behaviors Questions Addressed Today

1. What are the current status and trends in the number of daily eating occasions and frequency of meal skipping? How do diet quality and energy content vary based on eating occasion?
2. What are the current status and trends in the location of meal and snack consumption and sources of food and beverages consumed at home and away from home? What is the diet quality and energy content based on the food and beverage source?

Eating Behaviors (EB)

EB Q1:

What are the current status and trends in the number of daily eating occasions and frequency of meal skipping?
How do diet quality and energy content vary based on eating occasion?

Data Analysis

Draft Conclusion Statement—EB Q1

- The majority of the U.S. population consumes three meals a day plus at least one snack. Among all age groups, children 2 to 5 years are most likely to consume all three meals.
- Adolescent girls, young adult males, non-Hispanic Blacks, Hispanics, and individuals with lower incomes are least likely to consume three meals a day. Trend data from 2005-06 to 2009-10 show little change in meal and snack patterns.
- Breakfast tends to have a higher overall dietary quality because of its higher nutrient density compared to other meals and snacks. Snacks contribute about one-fourth of daily energy intake and are lower in key nutrients relative to energy intake. For young children 2-5 29% of daily calories comes from snacks.

Draft Implications
EB Q 1

- Adolescents and young adults are the least likely to eat breakfast, so targeted promotion efforts are needed. The school breakfast program is an important venue for promoting breakfast consumption among adolescents.
- Snack foods/beverages are widely available in multiple settings. Population-level environmental and individual behavioral efforts are needed to improve snack choices.
- Individuals with lower incomes are less likely to eat three meals a day and more likely to be food insecure. Federal nutrition programs play a key role in reducing food insecurity and improving nutritional health.

Eating Behaviors

EB Q2:

What are the current status and trends in the location of meal and snack consumption and sources of food and beverages consumed at home and away from home?

How do diet quality and energy content vary based on the food and beverage source?

Data Analysis

Review of the Evidence—EB Q 2

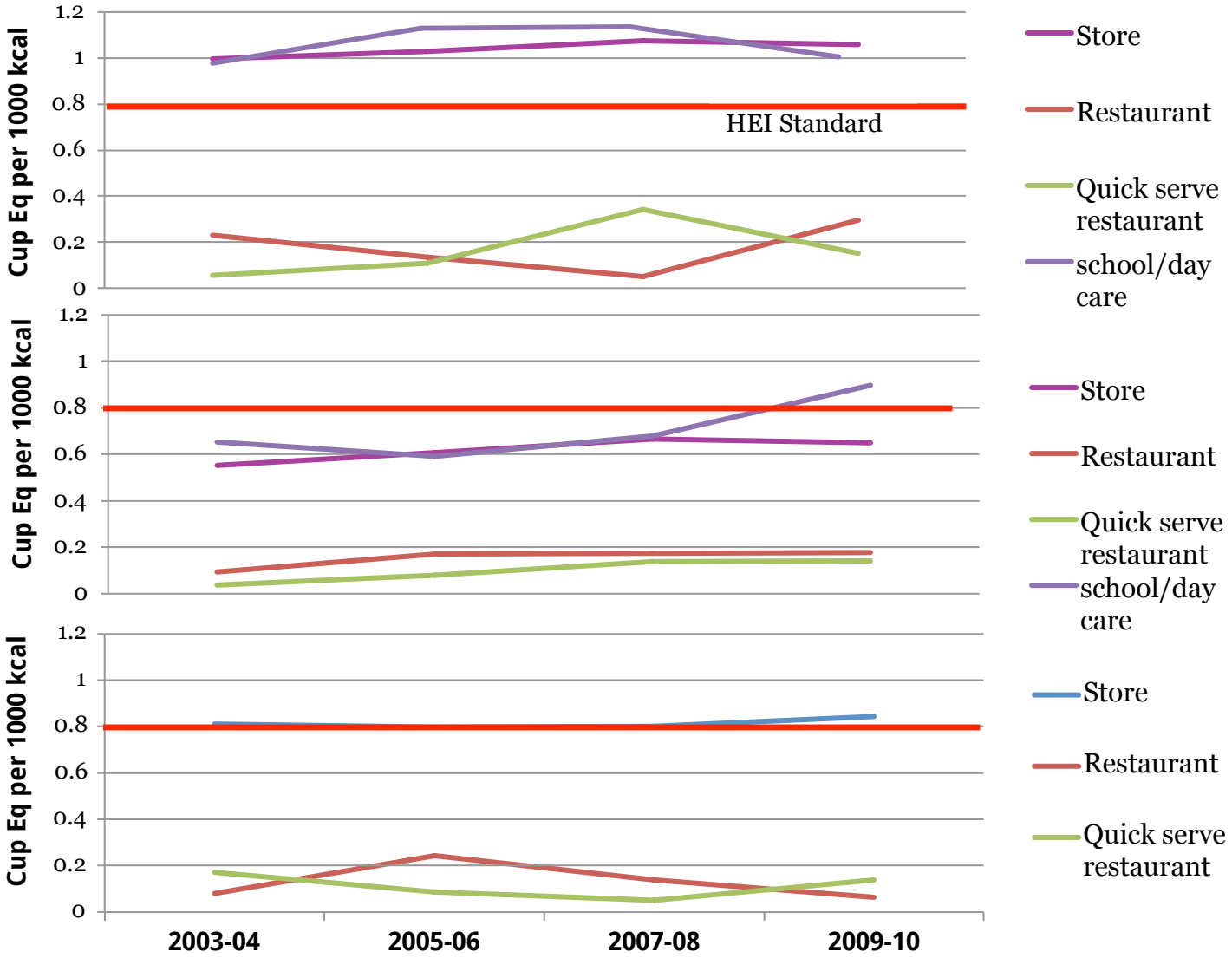
- Similarities and differences by age group for the food group density by point of purchase were examined.
- Results of interest presented.

Fruit Group:
Cup eqs per 1000 kcal by point of purchase for selected age groups

Ages 2 to 5

Ages 6 to 11

Ages 71+

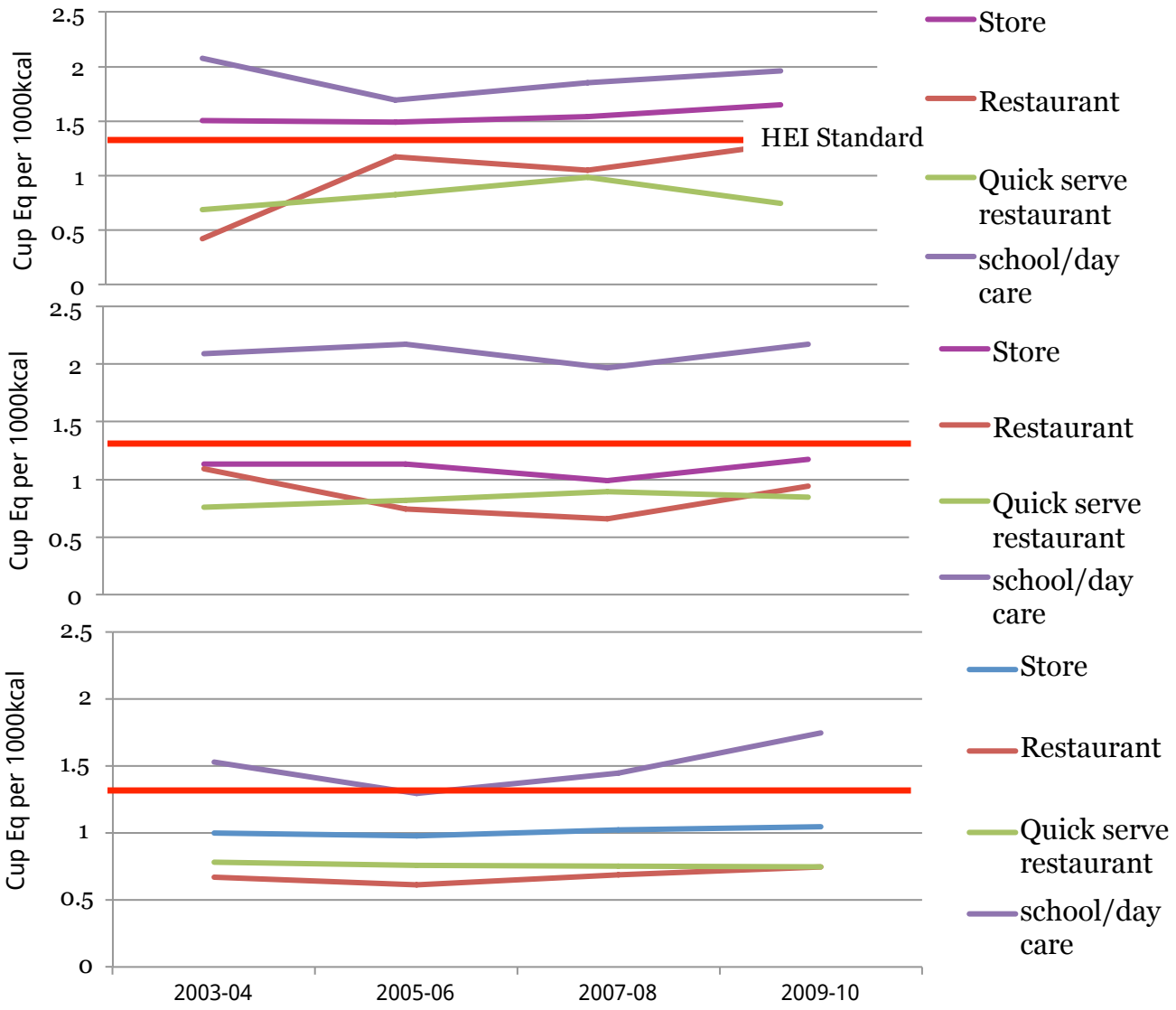


Dairy Group:
cup eqs per 1000 kcal by point of purchase for selected age groups

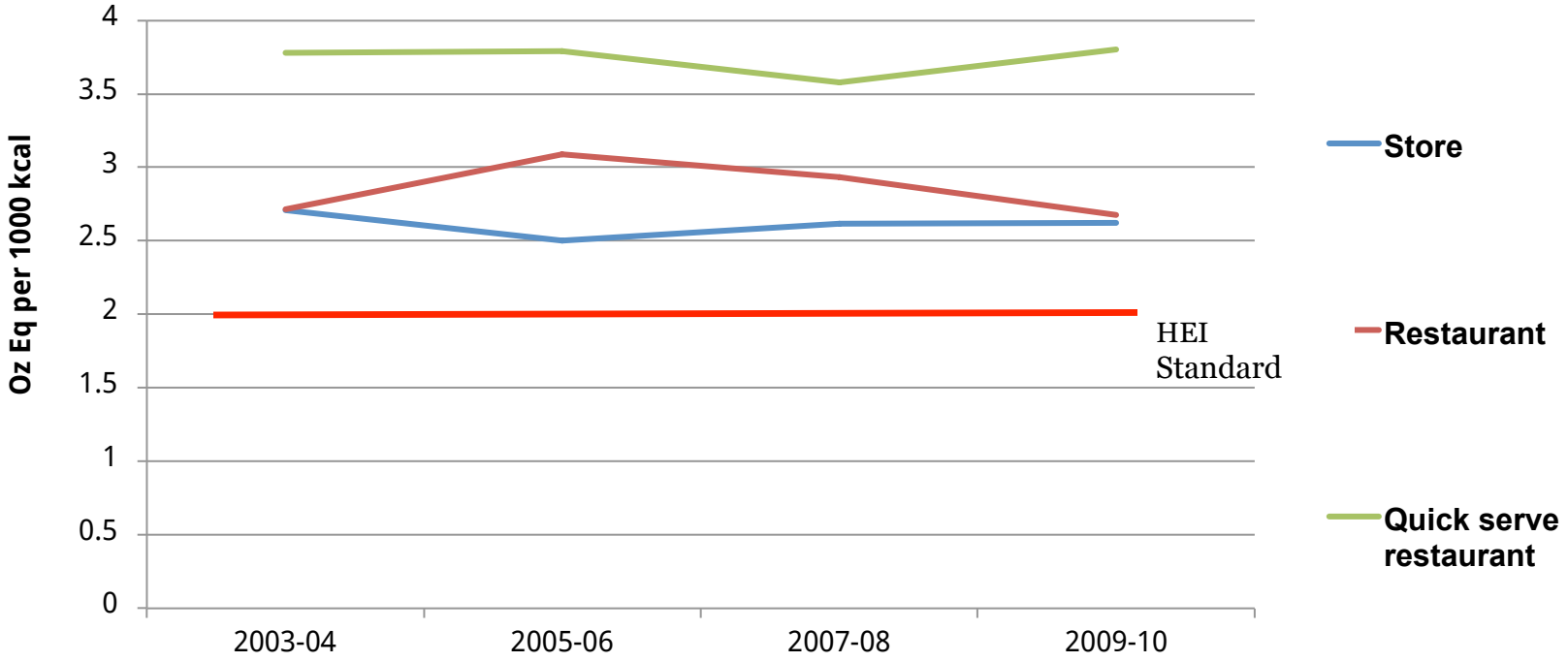
Ages 2 to 5

Ages 6 to 11

Ages 12-19



Refined Grains Group:
ounce eqs per 1000 kcal by point of purchase for adults ages 20 to 40



Draft Conclusion Statement—EB Q2

- Most of the calories consumed by the U.S. population are purchased at a store (69%) and consumed in the home. The percent of calories eaten away from home (34%) has remained about the same since 2003-04.
- Food group and nutrient quality as measured by the Healthy Eating Index vary by where food is obtained.
- Overall, no matter where the food is obtained, diet quality of the U.S. populations does not meet recommendations for fruit, vegetables, dairy, whole grains, and exceeds recommendations for sodium, saturated fats, refined grains, solid fats, and added sugars.

Draft Implications EB Q 2

Bold action is needed at population and individual levels to:

- Pursue intervention and communications strategies.
- Make healthy options the default choice in restaurants.
- Reformulate foods by food manufacturers and in restaurants to lower over-consumed nutrients and calories.
- Implement behavioral strategies in schools, worksites, health care and other community settings.
- Support Federal regulations for food labeling to provide consumers with information to make healthy food decisions and to incentivize food manufacturers to reformulate products.

Eating Behaviors Questions Addressed Today

1. What are the current status and trends in the number of daily eating occasions and frequency of meal skipping? How do diet quality and energy content vary based on eating occasion?
2. What are the current status and trends in the location of meal and snack consumption and sources of food and beverages consumed at home and away from home? How do diet quality and energy content vary based on the food and beverage source?

Discussion

HEALTH CONDITIONS

Health Conditions-Status and Trends Questions Addressed Today

1. What is the current prevalence of overweight/obesity and distribution of body weight, BMI, and waist circumference in the U.S. population and age, sex, racial/ethnic, and income groups? What are the trends in prevalence?
2. What are the current rates of nutrition-related health outcomes (i.e., prevalence of CVD, high blood pressure, and type 2 diabetes, and incidence of and mortality from cancer [breast, lung, colorectal, prostate], **congenital abnormalities, neurological and psychological illness [depression, Alzheimer's], and bone health [osteoporosis, low bone mass])** in the overall U.S. population?
3. What is the relative prevalence of metabolic and cardiovascular risk factors by body weight/waist category in the U.S. population and subgroups?

Health Conditions-Status and Trends (HC)

HC Q1:

What is the current prevalence of overweight/obesity and distribution of body weight, BMI, and waist circumference in the U.S. population and age, sex, racial/ethnic, and income groups? What are the trends in prevalence?

Data Analysis

Draft Conclusion Statement—HC Q1

- Among children, adolescents, and adults, rates of overweight and obesity are extremely high. These high rates have persisted for more than 25 years.
- 65% of adult females and 70% of adult males are overweight or obese, and rates are highest in middle-aged and older adults. Rates of overweight and obesity in adults vary by age and ethnicity.
  - Overweight is most prevalent in those 40+ years of age and in Hispanic American adults.
  - Obesity is most prevalent in African American adults. Obesity is least prevalent in all adults with highest incomes (400+% the poverty threshold).

Draft Conclusion Statement—HC Q1, continued

- Nearly one in three youth 2 to 19 years is now overweight or obese and rates vary by age and ethnicity.
  - Obesity increases with age and is most prevalent in African Americans and Hispanics 2-19 years of age.

Draft Implications HC Q 1

- The long-standing high levels of overweight and obesity require urgent population- and individual-level strategies that will work in multiple settings, including clinical, public health, and community.
- Comprehensive lifestyle interventions should be developed and implemented by trained interventionists and professional nutrition service providers.

Health Conditions-Status and Trends

HC Q2:

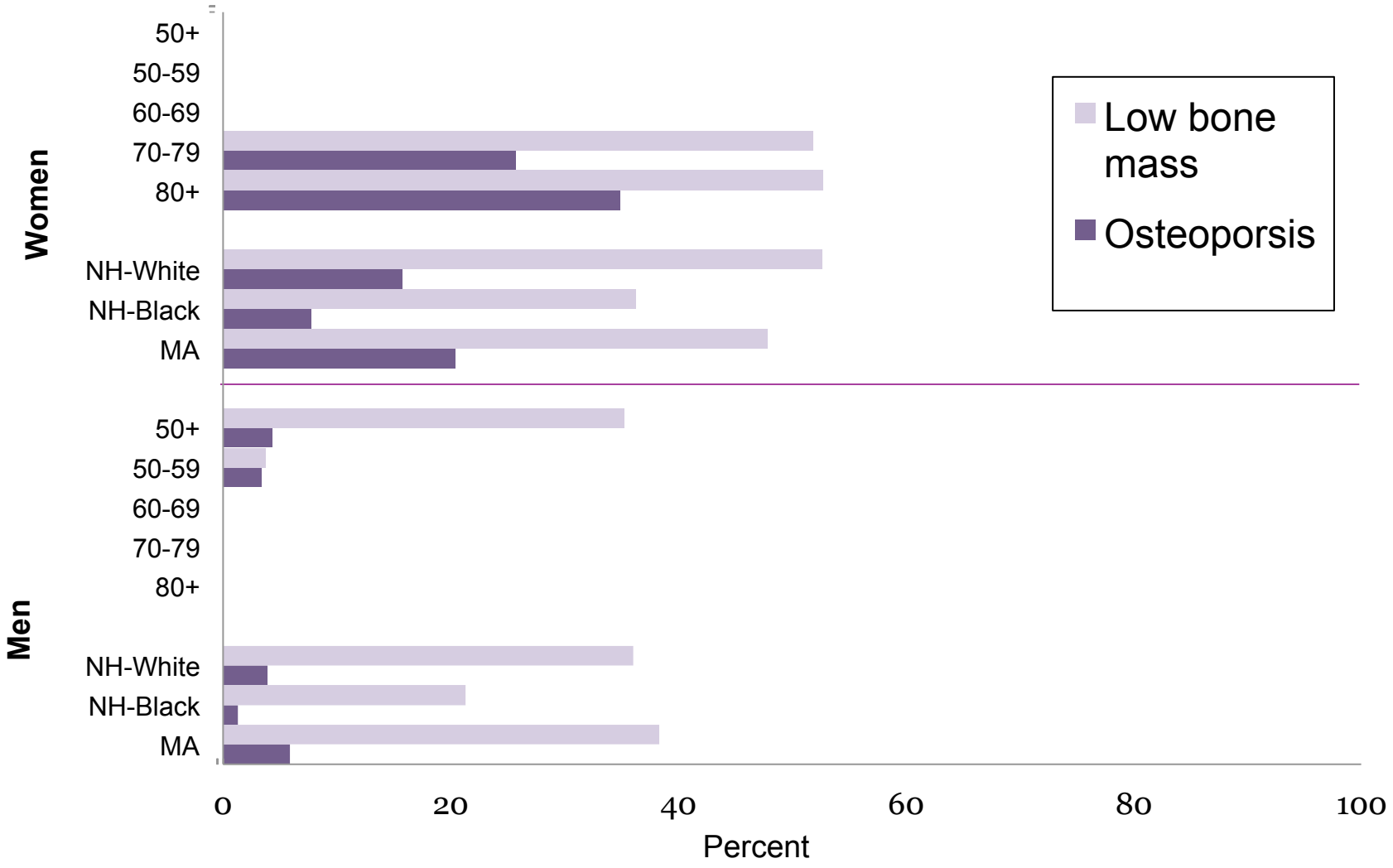
- What are the current rates of nutrition-related health outcomes (i.e., prevalence of CVD, high blood pressure, and type 2 diabetes, and incidence of and mortality from cancer [breast, lung, colorectal, prostate], **congenital abnormalities, neurological and psychological illness [depression, Alzheimer's], and bone health [osteoporosis, low bone mass])** in the overall U.S. population?

Data Analysis

Review of the Evidence—HC Q2

- CDC, Population-based birth defects surveillance system (National Birth Defects Prevention Network)
- CDC, NCHS (NHANES 2007-10)
- Alzheimer's Association, 2014 Facts and Figures
- Wright et al., 2014 (Bone Health, NHANES 2005 -2010)

Prevalence Estimates of Osteoporosis and Low Bone Mass at Either Femoral Neck or Lumbar Spine among Adults, Age 50 and over, by Sex, Race/Ethnicity



Wright et al., 2014, Journal of Bone and Mineral Research (NHANES 2005 -2010)

Congenital Abnormalities

- Complex etiology
- Dietary Patterns data related to:
  - Neural tube defects
  - Congenital heart defects
  - Cleft lip/palate

Neurological and Psychological Conditions

Condition	Estimated Prevalence
Depression	About 8% of persons age 12 and older (6% of males and 10% of females, 2007-10)
Alzheimer's Disease	5 million total ages 65 and older: 3.2 million women, 1.8 million men

Draft Conclusion Statement—HC Q2

- Adults have high rates of nutrition-related chronic diseases, including high blood pressure, CVD, type 2 diabetes, and various forms of cancer.
- Children and adolescents have nutrition-related chronic diseases, including elevated blood pressure and type 2 diabetes.
- At all ages, rates of chronic disease risk are linked to overweight and obesity. These chronic diseases disproportionately affect various racial and ethnic groups.

Draft Conclusion Statement—HC Q2, cont'd.

- Prevalence of osteoporosis is 15% and of low bone mass is about 50% of women ages 50+. This increases with age, and is more prevalent in women.
- Congenital abnormalities are a relatively rare pregnancy outcome.
- Neurological and psychological conditions are a growing concern.

Draft Implications HC Q 2

- Prevention policies that address nutrition-related chronic diseases need to be developed.
- These policies should target all age groups and address nutrition and lifestyle issues.
- Qualified professionals should deliver multidisciplinary interventions that are effective in reducing nutrition-related chronic diseases
- More data are needed to understand the complex etiology of congenital abnormalities and neurological and psychological conditions, so as to inform potential dietary choices by the U.S. population.

Health Conditions-Status and Trends (HC)

HC Q3

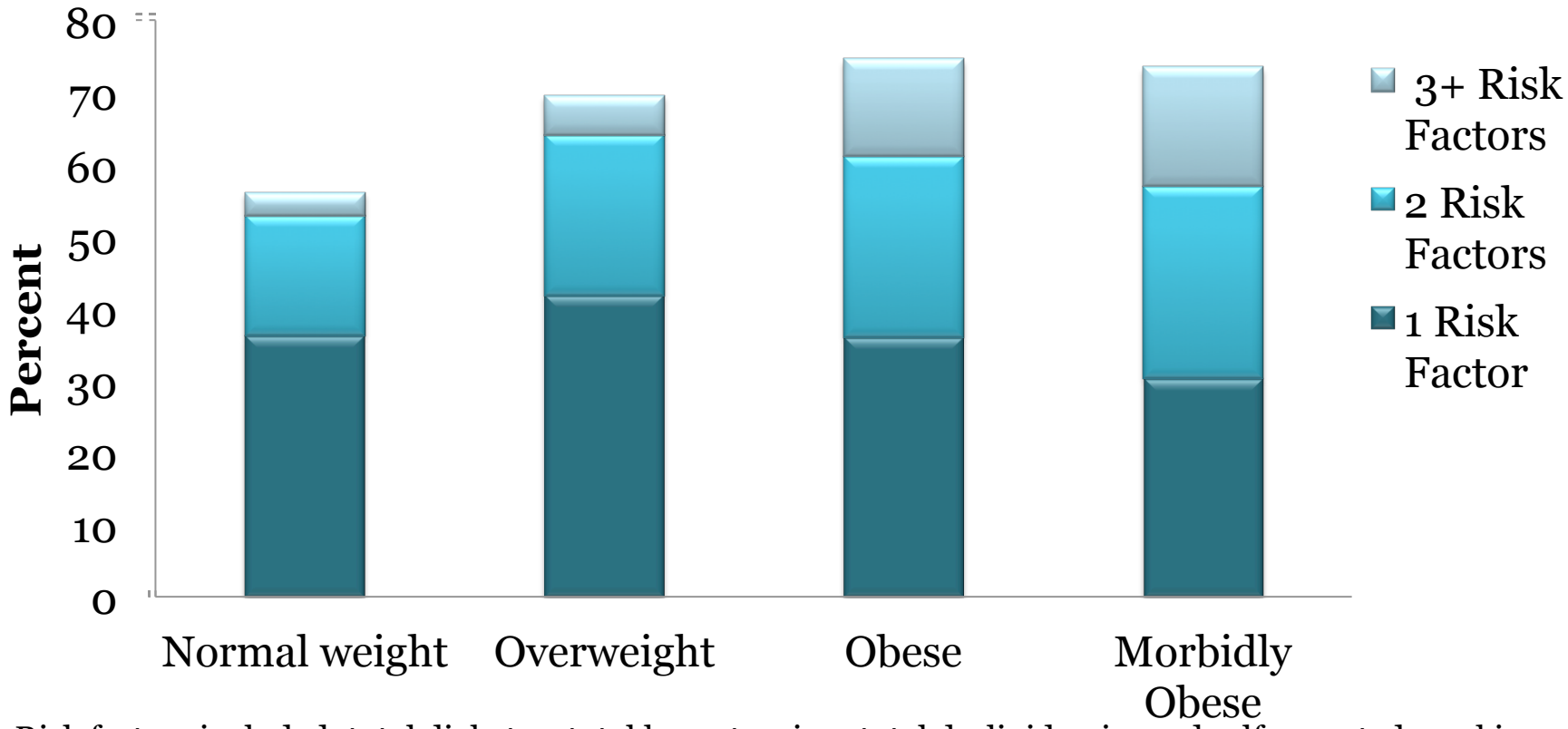
- What is the relative prevalence of metabolic and cardiovascular risk factors by body weight/waist category in the U.S. population?

Data Analysis

Review of the Evidence—HC Q3

- Published peer-reviewed article by CDC authors:
  - Saydah et al., 2014

Prevalence of Number of CVD Risk Factors by Weight Category, among Adults 18 Years and Older



Risk factors included: total diabetes; total hypertension; total dyslipidemia; and self-reported smoking

Saydah et al., Obesity, 2014 (NHANES 2007 -2010)

Draft Conclusion Statement—HC Q3

- About half of normal weight individuals have at least one cardio-metabolic risk factor
- 70+ percent of overweight or obese individuals have one or more cardio-metabolic risk factors
- Percent with 2 or more risk factors increases with BMI

Draft Implications HC Q 3

Because nearly three-fourths of the overweight or obese population also have at least one cardio-metabolic risk factor, they qualify for preventive lifestyle interventions by trained professionals (as recommended by AHA/ACC).

Health Conditions Questions Addressed Today

- What is the relative prevalence of metabolic and cardiovascular risk factors (i.e., blood pressure, blood lipids, and blood sugar) by body weight/waist category in the U.S. population and subgroups?
- What are the current rates of nutrition-related health outcomes:
  - Congenital abnormalities (neural tube defects, congenital heart defect, cleft lip, cleft palate)
  - Neurological and psychological conditions (depression, Alzheimer's),
  - Bone health (osteoporosis, low bone mass)

Discussion

DIETARY PATTERNS COMPOSITION

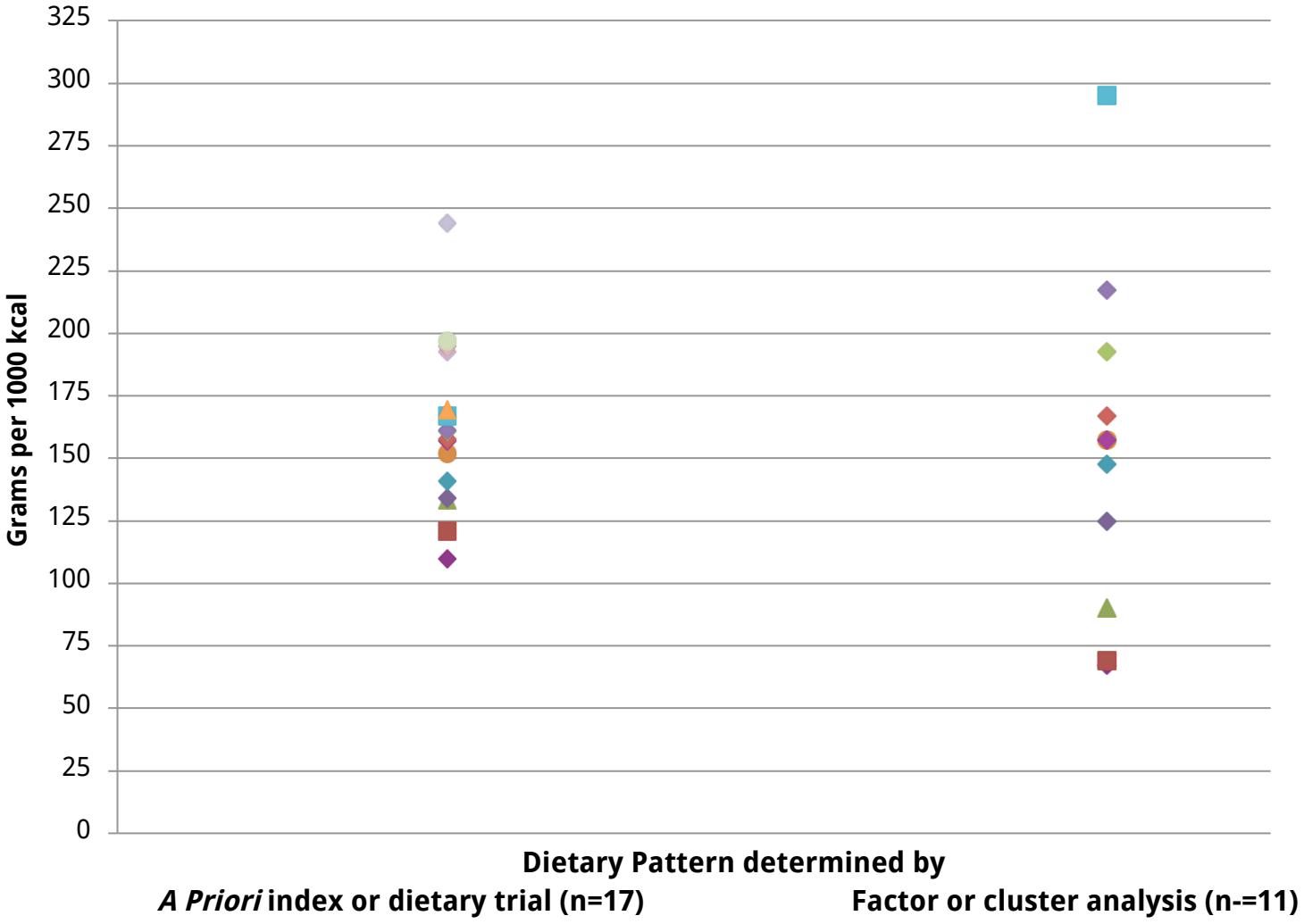
Dietary Patterns Composition Questions to be Addressed

1. What is the composition of dietary patterns with evidence of positive health outcomes (eg., Med, DASH, HEI, Vegetarian), and of patterns commonly consumed in the U.S.?
2. What are the similarities (and differences) within and amongst the dietary patterns with evidence of positive health outcomes and the commonly consumed dietary patterns?

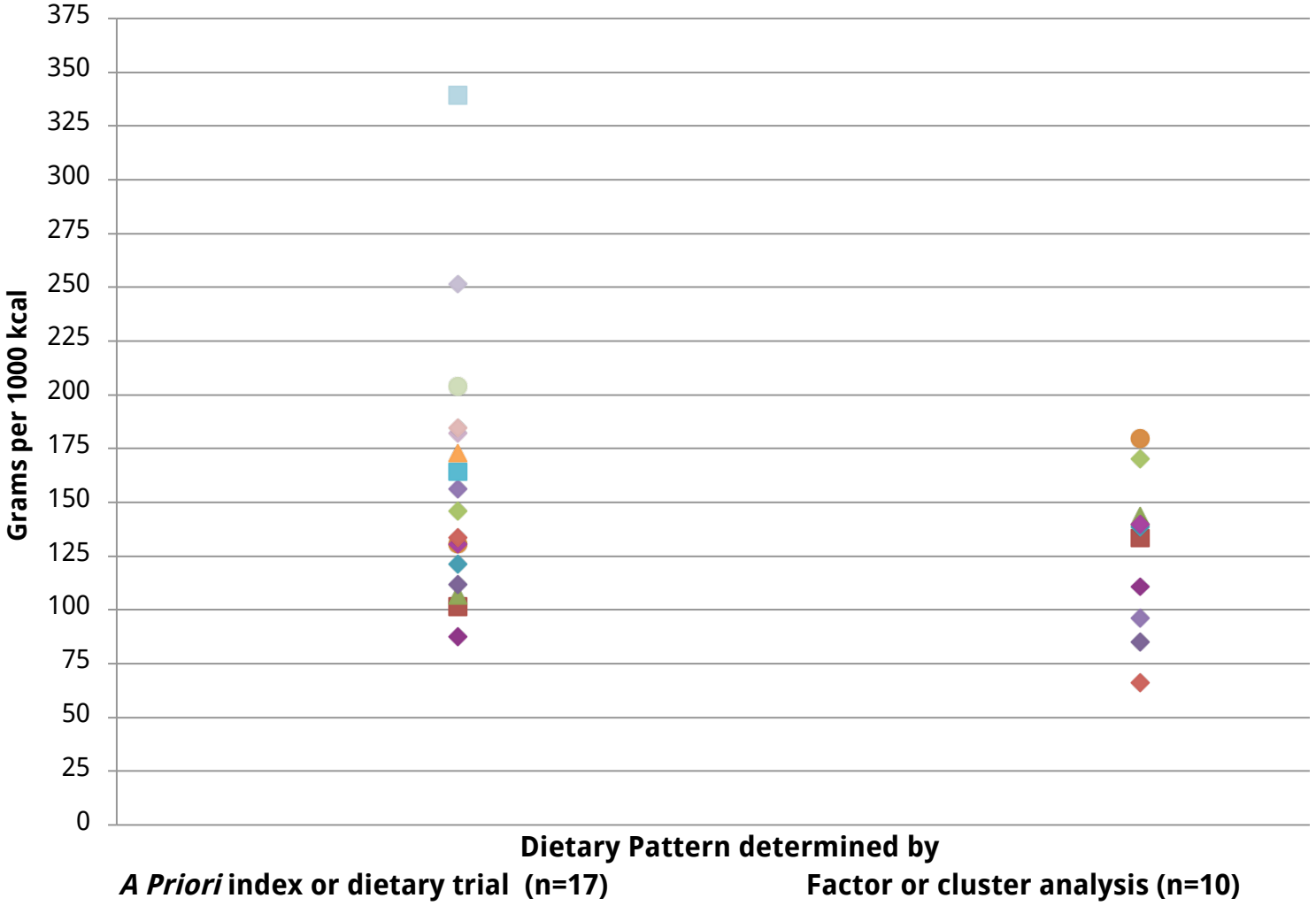
Dietary Patterns Composition Methods

- Review articles from DGAC SC2 evidence reviews to identify prospective cohort studies and interventions with dietary patterns associated with positive health outcomes
- From these articles, identify those with quantitative food group composition data.
- Convert available quantitative food group data to standard amounts in grams per 1000 kcal.
- Compare the food group composition of these patterns to each other, to the USDA Food Pattern recommendations, and to commonly consumed dietary patterns in the US.

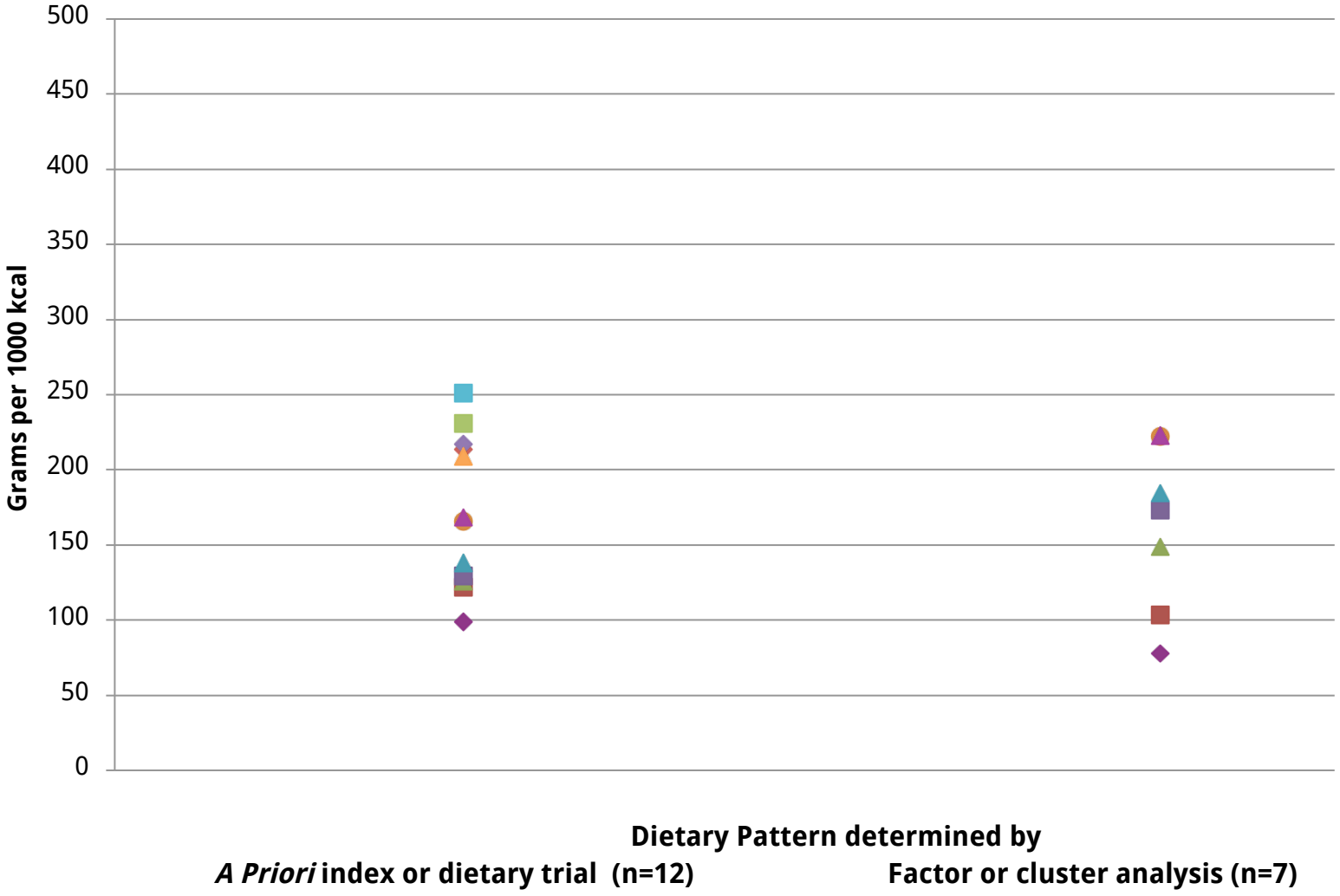
Vegetable intake (grams/1000 kcal) for Dietary Patterns related to positive health outcomes



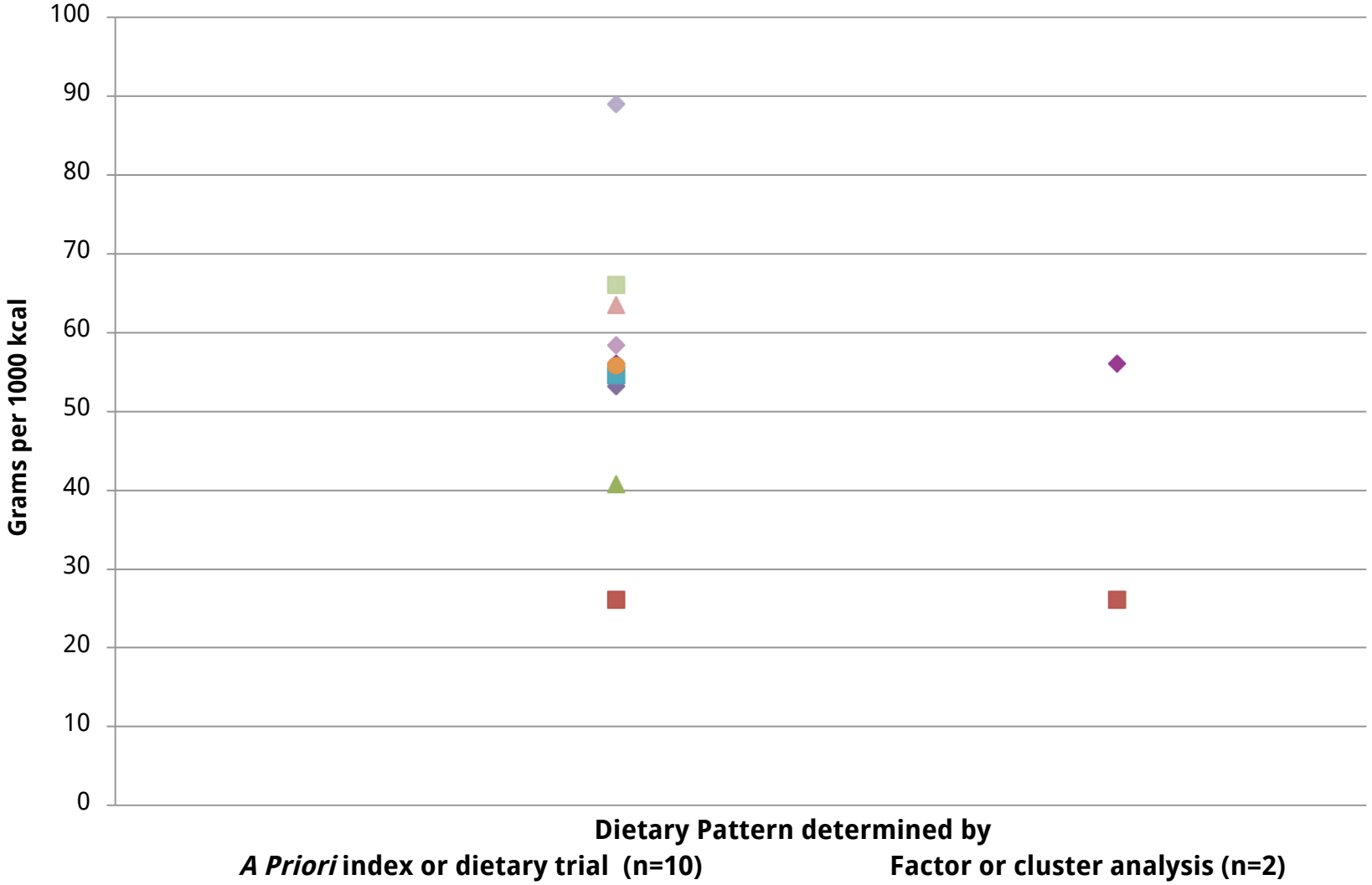
Fruit intake (grams/1000 kcal) for Dietary Patterns related to positive health outcomes



Dairy intake (grams/1000 kcal) for Dietary Patterns related to positive health outcomes



Meat and poultry intake (grams/1000 kcal) for Dietary Patterns related to positive health outcomes



Next Steps

1. Complete analysis on Dietary Patterns composition
2. Review and revise conclusion and implication statements as needed
3. Continue to draft sections for the DGAC report, for review by the full DGAC.

Subcommittee 1: Food and Nutrient Intakes and Health: Current Status and Trends

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