

Using the *MyPyramid Equivalents Database* to Estimate MyPyramid Equivalents for the Third School Nutrition Dietary Assessment Study

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Third School Nutrition Dietary Assessment Study (SNDA-III)

- **Nationally representative sample of 2,314 students in grades 1 to 12 in 2005**
- **In-person 24-hour dietary recalls (on school days)**
- **Data collected and processed using USDA's Dietary Intake Data System**
 - **Food and Nutrient Database for Dietary Studies (FNDDS)**

Gap in SNDA-III Data

- Answered questions about diet *adequacy*
 - Usual nutrient intake
 - Prevalence of inadequate and excessive intake

- Did not assess overall diet *quality*
 - Data on intakes of MyPyramid food groups not available
 - MyPyramid data needed to assess diet quality using the Healthy Eating Index-2005

Obtaining MyPyramid Equivalents for SNDA-III



**Foods
in SNDA-III
Data**



***MyPyramid
Equivalents
Database***



**Number of
MyPyramid
equivalents
in each food**

MyPyramid Equivalents Database, Version 1.0

- Includes data for FNDDS food codes reported in:
 - **NHANES 2001-2002**
 - NHANES 1999-2000
 - CSFII 1994-1996, 1998

32 MyPyramid Food Groups and Subgroups

Fruit Group *cup equivalents*

Total fruits

Citrus fruits, melons, berries
Other fruits

Vegetable Group *cup equivalents*

Total vegetables

Dark-green vegetables
Orange vegetables
White potatoes
Other starchy vegetables
Tomatoes
Other vegetables

Milk Group *cup equivalents*

Total Milk

Milk
Yogurt
Cheese

Grain Group *oz. equivalents*

Total grain

Whole grain
Non-whole grain

Oils *grams*

Discretionary oil

Meat and Beans Group *oz. equivalents*

Meat, poultry and fish

6 subgroups*

Eggs

Cooked dry beans and peas
Soybean products
Nuts and seeds

Discretionary Calories

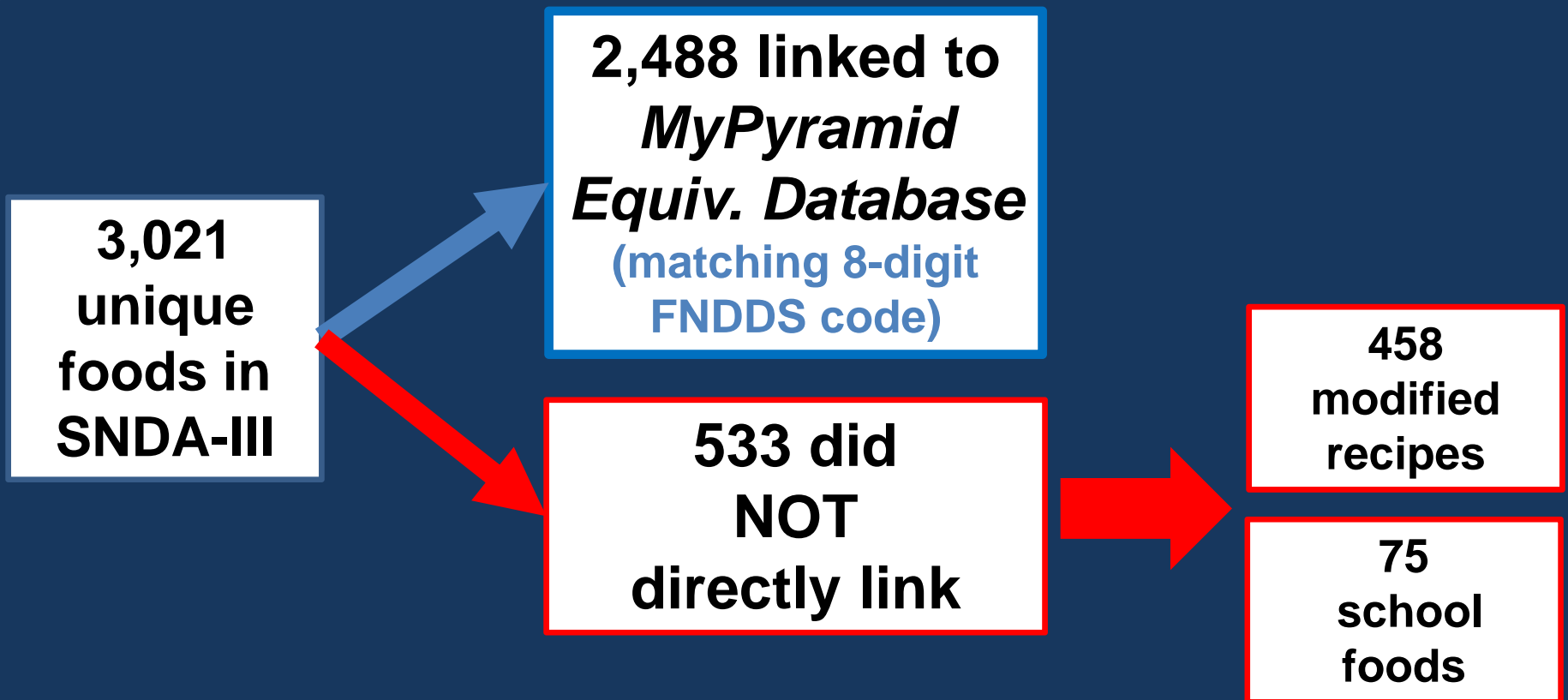
Discretionary solid fat (*grams*)

Added sugars (*tsp*)

Alcoholic beverages (*drinks*)

*Subgroups include: meat; organ meats, frankfurters, sausage, luncheon meats; poultry; fish high in omega-3 fatty acids and fish low in omega-3 fatty acids.

Using the *MyPyramid Equivalents Database* for SNDA-III



SNDA-III Foods That Didn't Link Did NOT Have 8-Digit FNDDS Food Codes

- **Modified recipes**
 - 6-digit food codes specific to SNDA-III
 - *MyPyramid Equiv. Database, version 1.0* does not include modified recipes for NHANES 2001-2002

- **Commercially prepared school foods**
 - 6-digit food codes created for SNDA-III

Why Not Link Modified Recipes to Their “Closest Match?”

Broccoli, cooked from fresh, fat added

FNDDS Recipe Ingredients	
1	BROCCOLI, BOILED, DRND
2	MARGARINE, REG, STICK



SNDA-III Modified Recipe Ingredients	
1	BROCCOLI, BOILED, DRND
2	OIL, OLIVE

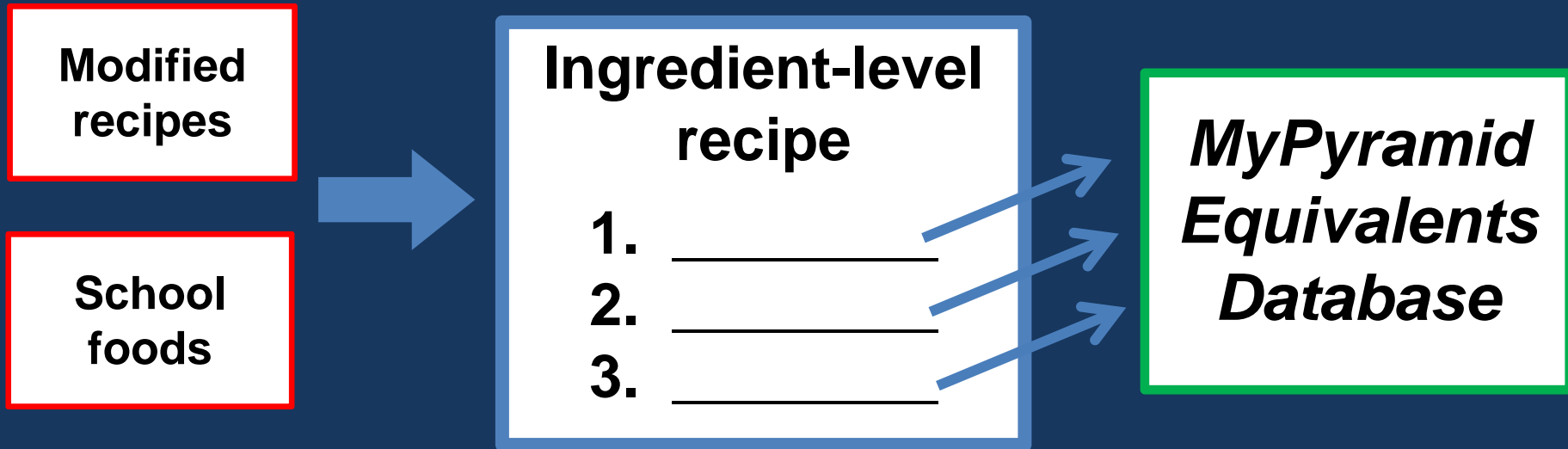
	MyPyramid Equivalents per 100 grams	
	Discretionary Oil	Discretionary Solid Fat
Broccoli with MARGARINE added	0 g	2.29 g
Broccoli with OLIVE OIL added	2.81 g	0 g

Why Not Link Commercially Prepared School Foods to Their “Closest Match?”



(per 100 grams)	Tony's® Smart Pepperoni Pizza	FNDDS Pizza with meat
Calories	238 kcal	293 kcal
Total Fat	9.3 g	14.7 g
Saturated Fat	3.8 g	6.0 g
Ingredients:	<ul style="list-style-type: none"> • Park skim mozzarella • Mozzarella substitute • Pepperoni, beef & pork • Soy burger • Wheat flour, white • Barley flour • Soy flour • Cornmeal 	<ul style="list-style-type: none"> • Park skim mozzarella • Parmesan cheese • Pepperoni, beef & pork • Sausage, beef & pork • Ground beef, 75% lean • Wheat flour, white • Shortening

Our Solution: Link at the Ingredient Level



Challenges with Linking Ingredients

- Ingredient codes differed

Sausage roll		
	Ingredients	SR Code
1	BISCUITS, PLAIN/BUTTERMILK, REFRIGERATED DOUGH, LOW-FAT	18012
2	PORK & BF SAUSAGE, FRESH, CKD	7065
3	TURKEY SAUSAGE, REDUCED FAT, BROWN & SERVE, CKD	7066



<i>MyPyramid Equiv. Database</i>	
FNDDS	Food Code
	52101020
	25221460
	25221860

Challenges with Linking Ingredients (cont.)

- Complex recipes with raw or dry ingredients

Fish fillet, breaded, fried		Moisture %: -5 Fat %: 9
	Ingredients	SR Code
1	POLLOCK, RAW	5011
2	WHEAT FLOUR, WHITE, ALL PURPOSE, ENRICHED	20081
3	WATER, MUNICIPAL	14429
4	CORNSTARCH	20027

<i>MyPyramid Equiv. Database</i>
FNDDS Food Code
50010000
94000000
56201750



Alternative Solution When Ingredient Linking Wasn't Possible

**Complex
recipes**



**Link to similar
modified recipe
(CSFII 1994-96, 98)**

OR

**Link to “closest match”
and ratio adjust data**

Ratio Adjusting: Selected MyPyramid Equivalents

- Based on comparison of nutrients in SNDA-III food and "closest match" food in *MyPyramid Equiv. Database*

(per 100 grams)	Total Fat	Discretionary Solid Fat
<i>SNDA-III:</i> Fish fillet, breaded, fried	7.7 g	???
<i>MyPyramid Equiv. Database:</i> Fish stick, patty or fillet, breaded, fried	11.1 g	9.8 g

Ratio Adjusting: Selected MyPyramid Equivalents (cont.)

Adjusted discretionary solid fat =

$$\left(\frac{\text{SNDA-III total fat}}{\text{Closest match total fat}} \right) \times \text{Closest match solid fat}$$

(per 100 grams)	Total Fat	Discretionary Solid Fat
<i>SNDA-III:</i> Fish fillet, breaded, fried	7.7 g	6.8 g
<i>MyPyramid Database:</i> Fish stick, patty or fillet, breaded, fried	11.1 g	9.8 g

Conclusions

- **Linking modified recipes and specially-formulated foods at the ingredient level can improve the accuracy of MyPyramid equivalents data.**
- **The latest version of the *MyPyramid Equivalents Database* (v. 2.0) has data for modified recipes.**
- **An ingredient-level MyPyramid equivalents database would be ideal.**

Additional Information

- **SNDA-III was funded by USDA's Food and Nutrition Service**
 - SNDA-III Final Reports available online:
<http://www.fns.usda.gov/ora/MENU/Published/CNP/cnp.htm>
- **Work to link SNDA-III data to *MyPyramid Equivalents Database* was funded by USDA's Economic Research Service**
 - Final report forthcoming (summer/fall 2009)