

GUIDELINES FOR NUTRIENT DATA BANKS

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The Guidelines Committee developed a questionnaire to examine the needs and priorities of nutrient data base users. As reflected in the responses, guidelines for standardization of data bases would advance reliability and comparability between different data bases or studies. Of the 925 questionnaires mailed to nutrient data base users, 39 were undeliverable. Of the remaining 886, fifty-three (6.0%) responded.

For each item, number of respondents who marked that line were tabulated and additional suggestions, comments and answers to questions were summarized. Information on a variety of packaging (fresh, canned, frozen, dry) and preparation methods (fried, steamed, roasted, baked) appeared important to many respondents. For food items, measurement by household measure or by 100 gram edible portion were preferred by more respondents. Values per 100 grams were most preferred for nutrient measure. In addition to standard foods, those foods indicative of ethnic groups would be helpful to many data base users. Documentation of a data base was important, especially sources of information. Respondent comments emphasized that documentation aids in interpretation, validation, and updating of a data base.

The Guidelines Committee can now consider several options: 1) feasibility of a workshop to explore what standardization is possible and impacts of such, 2) changing the focus of the Committee to help new users, or 3) identifying projects which will increase the number of credible nutrient programs and the credible uses of the data.

QUANTIFIED RESPONSES

Total responding questionnaires = 53.

= number of questionnaires having that item marked.

% = percent of 53 responding questionnaires having that item marked.

<u>#</u>	<u>%</u>	<u>Item</u>
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I. FOODS - Check the items you want information for in the nutrient data base.

A. DESCRIPTION

<u>#</u>	<u>%</u>	
22	41.5	1. Packaging
49	92.5	a. fresh
47	88.7	b. canned
48	90.6	c. frozen
48	90.6	d. dry
30	56.6	e. microwave pack
38	71.9	f. enrichment noted
15	28.3	2. Preparation
49	92.5	a. fried
47	88.7	b. steamed
47	88.7	c. roasted, baked
45	84.9	d. smoked, cured
43	81.1	e. pickled, packed in brine
9	17.0	3. Source of Consumption
34	64.2	a. home prepared
23	43.4	b. school lunch
31	58.5	c. restaurant
34	64.2	d. fast food restaurants
21	39.6	e. vending machines
7	13.2	4. Data from:
39	73.6	a. USDA, (#8, 456,72, etc.)
34	64.2	b. manufacturers
16	30.2	c. other data bases
28	52.8	d. composite of the above

8	15.1	5. Measurement
37	69.8	a. 100 gram edible portion
48	90.6	b. household measures and gram weights
8	15.1	c. pounds
14	26.4	d. nutrient density/cubic inch
10	18.9	e. grams per ounce
21	39.6	f. actual gram weights for baked goods
11	20.8	6. Recipes - should be based on:
24	45.3	a. USDA samples values
37	69.8	b. edible portion
16	30.2	c. assay values
15	28.3	d. composite values
5	9.4	e. ranges of values
9	17.0	f. imputed values

Check Items in this section only if they would enhance your data base.

<u>#</u>	<u>%</u>	
3	5.7	B. STANDARD FOOD REFERENCE
13	24.5	1. Core foods section
3	5.7	1. Core foods should include:
14	26.4	a. all known food items or,
20	37.7	b. only foods most often consumed by most people
12	22.6	c. foods contributing the majority of macro and micronutrients
4	7.5	2. Modular Foods section - this section should include foods indicative of:
23	43.4	a. religious groups
36	67.9	b. ethnic groups
15	28.3	c. groups who report fad diets
30	56.6	d. regional variations

II. CODING OF FOODS -

I prefer the following system:

<u>#</u>	<u>%</u>	
18	34.0	A. library classification system
4	7.5	B. bar code system
19	35.8	C. universal codes
5	9.4	D. FDA's Factored Food Vocabulary

B. COMPONENTS OF A STANDARDIZED NUTRIENT DATA BASE

I would like the following items included:

#	%	
36	67.9	1. water
44	83.0	2. calories
16	30.2	3. ash
37	69.8	4. caffeine
41	77.4	5. total protein
33	62.3	6. essential amino acids
28	52.8	7. non-essential amino acids
44	83.0	8. total fat
43	81.1	9. total SFA
37	69.8	10. total USFA
42	79.2	11. total poly USFA
21	39.6	12. individual fatty acids
45	84.9	13. total carbohydrates
23	43.4	14. crude fiber
44	83.0	15. dietary fiber
34	64.2	16. alcohol
33	62.3	17. total sugars
29	54.7	18. starch
29	54.7	19. simple sugars
24	45.3	20. complex sugars
42	79.2	21. water soluble vitamins
42	79.2	22. fat soluble vitamins
41	77.4	23. B ₆
40	75.5	24. B ₁₂
26	49.1	25. biotin
18	34.0	26. choline
22	41.5	27. vitamin K
14	26.4	28. inositol
44	83.0	29. calcium
43	81.1	30. phosphorus
44	83.0	31. sodium
44	83.0	32. potassium
44	83.0	33. iron
37	69.8	34. magnesium
38	71.7	35. zinc
35	66.0	36. copper
21	39.6	37. chlorine
25	47.2	38. iodine
34	64.2	39. chromium
17	32.1	40. cobalt
19	35.8	41. manganese
16	30.2	42. molybdenum
17	32.1	43. sulfur
21	39.6	44. flourine

I would like guidelines for the following:

<u>#</u>	<u>%</u>	
25	47.2	1. number of digits in a food code
24	45.3	2. minimal number of codes necessary in a data base
10	18.9	3. code and description for:
31	58.5	a. edible plain food item, e.g. steamed fish
27	50.9	b. edible food item with fat, salt, etc.
29	54.7	c. major ingredients in mixed dishes, e.g., chili
17	32.1	d. generic foods
18	34.0	e. brand named foods
25	47.2	f. a combination of generic and brand name foods

III. NUTRIENTS - I would like information for the following:

<u>#</u>	<u>%</u>	
8	15.1	1. Sources
32	60.4	a. manufacturer
23	43.4	b. independent laboratory
29	54.7	c. USDA, FDA, or other agency
23	43.4	d. composite of data bases
20	37.7	e. imputed data
14	26.4	f. representation of multiple samples of food items
26	49.1	g. procedures for assignment of values
5	9.4	2. Units of Measure - values
42	79.2	a. per 100 grams
37	69.8	b. per household measure
8	15.1	c. per pound
31	58.5	d. per edible parts only
13	24.5	e. on products labels
7	13.2	3. Methods of Measure
35	66.0	a. laboratory analysis
22	41.5	b. imputed values
19	35.8	c. composite values
15	28.3	d. range of values
19	35.8	e. confidence intervals for each nutrient
16	30.2	f. confidence codes
4	7.5	4. Content - include:
21	39.6	a. values for all known nutrients and dietary components
34	64.2	b. only reliable values for nutrients and dietary components

3. The following means of documentation are important.
Check all items applicable to your own data base.

<u>#</u>	<u>%</u>	
43	81.1	a. sources of information
26	49.1	b. methods of analysis
23	43.4	c. footnotes
35	66.0	d. meaning of symbols
30	56.6	e. % of missing values
29	54.7	f. % of blank values
27	50.9	g. % of imputed values
26	49.1	h. % of codes with zero values
18	34.0	i. % of values analyzed in the laboratory
33	62.3	j. definition of zero
33	62.3	k. definition of trace
18	34.0	l. quality control procedures
22	41.5	m. confidence levels or standard deviation of nutrient values
33	62.3	n. sufficient space to add additional codes or values
14	26.4	o. disclaimers
18	34.0	p. confidence codes

V. QUALITY CONTROL - I think guidelines are needed for evaluating the limitations of a data base in the categories of :

<u>#</u>	<u>%</u>	
33	62.3	a. foods
40	75.5	b. nutrients
40	75.5	c. updating the nutrient data base
22	41.5	d. 24 hour recall data resulting from use of a data base

DEFINITION OF A NUTRIENT DATA BASE

AN ORGANIZED COLLECTION OF NUTRITIVE AND NON-NUTRITIVE CONTENTS IN SPECIFIED AMOUNTS OF FOODS USED TO EVALUATE THE FOOD SUPPLY AND INTAKES OF THE GENERAL POPULATION AND SPECIFIC ETHNIC GROUPS. THE COMPILATION OF THESE FOODS AND ASSOCIATED NUTRIENT VALUES SHOULD BE UPDATED TO REFLECT CURRENT KNOWLEDGE OF THE NUTRIENT VALUES OF THE FOOD PRACTICES OF INDIVIDUALS AND GROUPS.

GENERAL DEFINITION OF STANDARDIZATION

-- WEBSTER, 1968

APPLIES TO SOMETHING ESTABLISHED FOR USE AS A RULE OR BASIS OF COMPARISON IN MEASURING OR JUDGING CAPACITY, QUANTITY, CONTENT, EXTENT, VALUE, QUALITY, ETC.

DEFINITION OF STANDARDIZATION

AS IT APPLIES TO NUTRIENT DATA BASES

A SET OF GUIDELINES (TERMINOLOGY, RULES AND PROCEDURES) FOR COMPILING AND REPORTING DATA THAT PROVIDE UNIFORM AND CONSISTENT RESULTS.

COMPONENTS FOR STANDARDIZATION OF A NUTRIENT DATA BASE

1. FOODS

- DESCRIPTION
- MEASURE
- RECIPES
- CODING
- DATA SOURCES

2. NUTRIENTS

- MACRO- AND MICRONUTRIENTS
- DATA SOURCES
- METHODS OF MEASURE
- UNITS OF MEASURE
- RELIABILITY OF VALUES

3. DOCUMENTATION/QUALITY CONTROL

- ANALYTICAL METHODS OF FOOD ANALYSIS
- PROCEDURES FOR IMPUTATION
- METHODS FOR RECIPE CALCULATION
- PROCEDURES FOR ASSIGNING MISSING VALUES
- USE OF GENERIC AND BRAND-NAMED FOODS

REASONS FOR STANDARDIZATION OF NUTRIENT DATA BASES

- PRODUCE A COMMON INTERPRETABLE LANGUAGE FOR COMMUNICATION
- ENABLE USERS TO COMPARE AND INTERFACE DATA BASE SYSTEMS
- ESTABLISH RELIABILITY
- ENABLE SYSTEMATIC UPDATING AND DOCUMENTATION
- MINIMIZE AND/OR UNDERSTAND VARIATION IN THE NUTRIENT SOURCES USED IN FOOD INTAKE CALCULATION
- IMPROVE ACCURACY AND RELIABILITY OF INFORMATION DURING PERIODS OF NUTRITION MONITORING
- IMPROVE REPRODUCIBILITY
- ENABLE COMPARISONS FROM DIFFERENT STUDIES
- BE COST AND TIME EFFECTIVE
- ENSURE UNIFORM PROCEDURES FOR IMPUTING DATA
- BE USEFUL IN ASSESSING THE VALIDITY OF DATA COLLECTION METHODS

PERFORMANCE MEASURES OF STANDARDIZATION

- COMPARE RESULTS OF NUTRIENT ANALYSES AMONG LABORATORIES OR WITH "STANDARD" VALUES
- CODE AND EVALUATE DIET RECALLS USING DIFFERENT DATA BASES
- CALCULATE RECIPES

NUTRIENT DATA BASE COMPONENTS PRIORITIZED BY USER RESPONSES

FOOD DESCRIPTION

1. PACKAGING

	<u>RESPONSE RATE</u>
● FRESH	92.5%
● FROZEN	90.6%
● DRY	90.6%
● CANNED	88.7%
● ENRICHMENT NOTED	71.7%
● MICROWAVE PACK	56.6%

ADDITIONAL SUGGESTIONS

- COMMERCIAL OR HOME PACK
- CHILLED
- CONCENTRATE
- IRRADIATED
- FERMENTED

2. PREPARATION

	<u>RESPONSE RATE</u>
● FRIED	92.5%
● STEAMED	88.7%
● ROASTED, BAKED	88.7%
● SMOKED, CURED	84.9%
● PICKLED, PACKED IN BRINE	81.1%

ADDITIONAL SUGGESTIONS

- RAW
- BROILED
- MICROWAVE
- BOILED
- BRAISED
- STIR-FRIED
- THE MOST POPULAR METHODS USED FOR ALL FOODS,

FOR EXAMPLE:

EGGS - FRIED
HARD-COOKED
SOFT-COOKED
POACHED
ETC.

3. SOURCE OF CONSUMPTION

	<u>RESPONSE RATE</u>
● HOME-PREPARED	64.2%
● FAST-FOOD RESTAURANTS	64.2%
● RESTAURANT	58.5%
● SCHOOL LUNCH	43.4%
● VENDING MACHINES	39.6%

ADDITIONAL SUGGESTIONS

- INSTITUTIONAL FOOD SERVICE
- CAFETERIA

4. DATA FROM:

	<u>RESPONSE RATE</u>
● USDA HANDBOOKS	73.6%
● MANUFACTURERS	64.2%
● COMPOSITE OF ALL OTHERS	52.8%
● OTHER DATA BASES	30.2%

ADDITIONAL SUGGESTIONS

- NON-U.S. DATA BASES, E.G. ASIAN, SWEDISH

5. MEASUREMENT

	<u>RESPONSE RATE</u>
● HOUSEHOLD MEASURES AND GRAM WEIGHTS	90.6%
● 100 GRAM EDIBLE PORTION	69.8%
● ACTUAL GRAM WEIGHTS FOR BAKED GOODS	39.6%
● NUTRIENT DENSITY/CUBIC INCH	26.4%
● GRAMS PER OUNCE	18.9%
● POUNDS	15.1%

6. RECIPES - SHOULD BE BASED ON:

	<u>RESPONSE RATE</u>
● EDIBLE PORTION	69.8%
● USDA SAMPLE VALUES	45.3%
● ASSAY VALUES	30.2%
● COMPOSITE VALUES	28.3%
● IMPUTED VALUES	17.0%
● RANGES OF VALUES	9.4%

CODING OF FOODS - SYSTEM PREFERRED

	<u>RESPONSE RATE</u>
UNIVERSAL CODES	35.8%
LIBRARY CLASSIFICATION SYSTEM	34.0%
FDA'S FACTORED FOOD VOCABULARY	9.4%
BAR CODE SYSTEM	7.5%

**NUTRIENT DATA BASE COMPONENTS
PRIORITIZED BY USER RESPONSES**

STANDARD FOOD REFERENCE

	<u>RESPONSE RATE</u>
1. CORE FOODS SECTION	
● ONLY FOODS MOST OFTEN CONSUMED BY MOST PEOPLE	37.7%
● ALL KNOWN FOOD ITEMS	26.4%
● FOODS CONTRIBUTING THE MAJORITY OF NUTRIENTS	22.6%

2. MODULAR FOODS SECTION

	<u>RESPONSE RATE</u>
● ETHNIC GROUPS	67.9%
● REGIONAL VARIATIONS	56.6%
● RELIGIOUS GROUPS	43.4%
● GROUPS WHO REPORT FAD DIETS	28.3%

ADDITIONAL SUGGESTIONS

- FORMULAS
- NUTRIENT SUPPLEMENTS
- VITAMIN AND MINERAL SUPPLEMENTS
- COMMERCIAL DIETETIC FOODS