

Effects of Nutrient Data Changes on Results of NFCS 1977-78 and NFCS 1987-88

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The 1988 Bridging Study was conducted by the U.S. Department of Agriculture (USDA) to facilitate the comparison of the results of the 1977-78 Nationwide Food Consumption Survey (NFCS) and 1987-88 NFCS (Guenther and Perloff, 1990). The purpose was to determine whether differences between interview and review procedures, food coding and gram weight conversion procedures, and nutrient data bases used could result in differences in estimated food and nutrient intakes.

For example, a series of probing questions was added to assist respondents in recalling food items that were thought to be often forgotten, and the Food Instruction Booklet was expanded from 4 to 18 pages to capture more detailed food descriptions and more accurate quantities of foods eaten. USDA updated the food code manual and weight conversion factors, and coding procedures were partially automated. The nutrient data base was updated to reflect changes in the composition of foods and improvements in the quality of the food composition data.

A field experiment was designed to test the effects of these changes. A split-sample approach was used as subjects were randomly assigned to one of two treatment groups. Group A (N=348) was interviewed by 1987 procedures, and Group B (N=349) by 1977 procedures. Group A dietary recalls, collected by 1987 interview procedures, were reviewed and coded using the 1987 food codes and procedures, and nutrient intakes were calculated using the 1987 nutrient data base. Group B dietary recalls collected by 1977 interview procedures were reviewed by 1977 review procedures and coded twice independently--once using 1987 codes and procedures and once using 1977 food codes and procedures. Nutrient intakes for

respondents interviewed by the 1977 procedures were calculated four ways: (1) using the 1987 codes, weights, and nutrient data base, (2) using the 1977 food codes and the 1987 weights and nutrient data base, (3) using the 1977 codes and weights and the 1987 nutrient data base, and (4) using the 1977 codes, weights, and nutrient data base.

To evaluate the overall differences between the results obtained using 1977 and 1987 procedures, results from the two independent groups, A and B, were compared using two-sample multivariate t-tests. To evaluate the differences due to specific procedures, other than interview, results obtained from Group B, computed in the different ways, were compared using repeated measures techniques. When differences were found among the various 1977 results, paired t-tests were used to determine where the differences existed.

When the intakes of food energy and 14 nutrients by women in the two groups were considered jointly, the overall difference was significant ($p < .10$). The differences found for iron, magnesium, and thiamin--the three nutrients with significant univariate differences--could not be attributed to differences in the interview or coding procedures. Rather, they were due to changes in the nutrient data base and the gram-weight conversion procedures.

For iron, the nutrient data base changes represented a combination of real changes fortification levels for some foods and improvements in the quality of the data for meat. For magnesium, the changes mostly reflected more recent but still limited data for coffee, while for thiamin the changes were mostly real.

For the most part, the effects of the various changes in survey procedures were slight and tended to offset each other. However, for four of the nutrients, we

concluded that revising the 1977 estimated intakes was warranted because of improved data quality. Vitamins B-6 and B-12 and magnesium were revised because the data for them were more limited in 1977 than for the other nutrients reported (U.S. Department of Agriculture, 1984). We also revised the iron data because iron is a public health issue and because several important improvements had been made to the data base for this nutrient since 1977. This study has helped conceptualize the process for systematic tracking and revising of nutrient values for trend analysis.

REFERENCES

Guenther, P.M., and Perloff, B.P. 1990. Effects of Procedural Differences Between 1977 and 1987 in the Nationwide Food Consumption Survey on Estimates of Food and Nutrient Intakes: Results of the USDA 1988 Bridging Study. Washington: U.S. Department of Agriculture, Human Nutrition Information Service. Nationwide Food Consumption Survey 1987-88, NFCS Rep. No. 87-M-1, 48 pp.

U.S. Department of Agriculture, Human Nutrition Information Service. 1984. Nutrient Intakes of Individuals in 48 States, Year 1977-78. Washington; Nationwide Food Consumption Survey 1977-78, NFCS Rep. No. I-2, 437 pp.