

FOOD PRICES DATABASE, 2003-04

USER'S GUIDE



How much does the food an individual consumes actually cost?

The Center for Nutrition Policy and Promotion (CNPP) Food Prices Database presents the cost of these consumed foods for 2003-04. It shows the actual cost of an apple consumed, the cost of a glass of juice drunk, the cost of lasagna eaten, etc. For example, did you know that when you purchase a whole chicken and only consume the meat, your price per pound eaten is actually twice the price per pound purchased? This is because the weight of the skin and bones is about half of the whole chicken purchased. The information in this database should be of interest to nutrition educators and economists who wish to compare relative prices of different foods as consumed, rather than the purchase price.

Specifically, the CNPP Food Prices Database, 2003-04 provides 2003-04 average national prices of approximately 4,600 foods in an “as-consumed” form. These foods include foods that are consumed alone (apples, carrots, etc.), made as a recipe and include different food ingredients (noodle casserole, chicken pot pie, etc.), and commercially prepared foods (frozen dinners, canned soups, etc.). Food “as-consumed” differs from food “as-purchased,” as the former accounts for changes in weight due to cooking and excludes refuse, such as the peel on vegetables and bones on meat.

Sources of Data

The database was developed by using information from four different data sets: The National Health and Nutrition Examination Survey (NHANES), 2003-04; the USDA Food and Nutrient Database for Dietary Studies (FNDDS) version 2.0; the National Nutrient Database for Standard Reference (Release 20); and the Nielsen Homescan™ Consumer Panel.

Our list of foods matches those reported consumed by participants in the 2003-04 NHANES survey. NHANES is a sample of the civilian noninstitutionalized population of the United States, collected by the Centers for Disease Control and Prevention. The survey provides information on people’s consumption of foods and nutrients over 2 days. Individuals report the amount of food they eat in the “as-consumed” form. The nutrient content of these foods is determined by the U.S. Department of Agriculture (USDA), using the FNDDS and the National Nutrient Database. These two databases contain information on recipe ingredients used to prepare foods (U.S. Department of Agriculture, 2004, 2008). CNPP uses these databases to break foods down into the “as-purchased” form, or ingredients, which are then matched to purchase data found in the Nielsen Homescan™ Consumer Panel. This panel tracks about 8,500 households per year regarding their food purchases. Each household is equipped with an electronic home-scanning unit, and household members are expected to record every purchase they make by scanning in the appropriate codes of the food products they purchase or, when foods do not contain codes, hand entering the food information.

The CNPP Food Prices Database is compiled to estimate USDA’s Food Plans, which show the cost of a nutritious diet at four cost levels. While foods are assumed to be prepared at home, common convenience foods, such as canned beans, bottled sauces, pre-packaged mixes, and frozen vegetables, are assumed in the recipes.

Database Features and Limitations

There are a number of unique characteristics and limitations of the CNPP Food Prices Database that users should be aware of. They are as follows:

- (1) Foods were priced in an “as-consumed” form. This differs from an “as-purchased” form, as it takes into account cooking loss or gain, as well as refuse loss, such as the weight of skin, bones, seeds, shells, and other inedible parts.
- (2) Prices are given in dollars per 100 grams consumed because this is the unit of weight used in NHANES data. To convert to dollars per pounds consumed, multiply the price times 4.528. In order to convert liquid items, such as milk or juice to fluid ounces, quarts, or gallons, you will need to look up the number of grams per fluid ounce for each product. These are available in the USDA Standard Reference files found at <http://www.nal.usda.gov/fnic/foodcomp/search/>.
- (3) The food prices used to create the database represent national average prices during the 2003-04 period for the 48 conterminous States. Prices in specific geographic locations in the United States may be more or less. To partially account for this, regional food price data are also included in a “Beta” version for research purposes only. Since these data are for research purposes only, they are only released in the SAS version of the data.
- (4) The food prices used represent a weighted average price paid at all food outlets and for all package sizes. Prices at specific food outlets will be more or less. Prices reflect where the food was purchased by consumers. If a particular food was purchased more often in discount stores, its price reflects this. In addition, prices reflect the container size the food is purchased in by consumers. If a particular food was purchased more often in large sizes, its price reflects this.

- (5) The food prices may be inflated to present day costs by using the Consumer Prices Indexes for individual food items; however, there is not always a good match between a food in the database and a Price Index, so a proxy must be used. Perhaps the database may best be used to see the relative prices of different foods.

Calculating the Prices

Creation of the Food Prices Database, 2003-04, essentially consisted of four steps. First, a list of foods reported as having been consumed in NHANES was developed, as well as whether these foods were commercially prepared or made as a recipe; recipes were further broken down into ingredients.

Second, these foods were converted into an as-purchased form in order to be priced. This required the application of yield factors for many foods to account for changes in weight due to cooking and refuse. For foods made from recipes, all ingredients in the recipe were separated out and converted into as-purchased form (e.g., if a recipe called for cooked rice, the weight of the uncooked form of rice was calculated). To convert all foods and ingredients into the as-purchased form, the Food and Nutrient Database for Dietary Studies (FNDDS) 2.0 and the National Nutrient Database for Standard Reference 20.0 were used. The FNDDS has recipes that break these foods down into ingredients and provides details on the overall moisture and fat losses and gains from the cooking process. The National Nutrient Database for Standard Reference provides information on the percentage of the purchased weight that is considered to be refuse loss. Applying information from these two data sets allowed the pricing of food in an as-purchased form.

Third, a price was attached to each food. These prices were obtained from the Nielsen data, which contains the prices paid by about 16,000 consumers for foods purchased at all outlet channels, including grocery, drug, mass-merchandise, club, supercenter, and convenience stores. National average prices for foods were calculated based on all purchase transactions. If a food reported consumed did not have a

price match, a proxy price was used. Proxy prices were obtained from other similar foods or for specialty products from the Internet.

Fourth, foods in an as-purchased form were converted back into an as-consumed form and priced as such. For foods consumed alone and commercially prepared foods, this again required the application of yield factors (cooking loss or gain and refuse) with the price taking account of these factors. For foods made from a recipe, this required applying yield factors to ingredients, and then pricing the food as-consumed. For more information on the data sets and methods used to create the CNPP Food Prices Database, 2003-04, see Carlson et al. (2008).

The Data Release

The Food Price Database, 2003-04, is summarized in two data files: an Excel file and a SAS file. The Excel file contains the average prices of foods as-consumed for 2003-04, and is intended for all users. These prices are given in dollars per 100 grams.

The SAS file contains more prices, but many are released as a “Beta” version for research purposes only. Please report suspected errors and concerns to CNPP. These additional prices are included so that researchers who may have access to the nonpublic data in NHANES can better estimate expenditures by NHANES participants. The SAS file thus contains (1) the average prices of foods as-consumed for 2003-04, as well as each year separately and (2) the average prices of foods as-consumed for each year separately, for the four Census Bureau regions (Northeast [r1], Midwest [r2], South [r3], and West [r4]). See below for States in each region.

Sample Size: Please note that Nielson recommends at least 75 observations to estimate a price. For the regional and individual year calculations, we followed this rule, and researchers will note a number of missing prices for the regional and annual data. Missing prices reflect foods where there were an insufficient number of purchase observations

or an insufficient number of purchase observations for at least one ingredient in the recipe. However, when data were combined to form a national average price for 2003-04, we relaxed the rule. Furthermore, proxy prices were required for 23 ingredients and 9 foods where even a single purchase could not be found. These are very rarely purchased foods. Proxy prices for foods are only included for national average prices for 2003-04. Proxy prices were not calculated for 2003 and 2004 separately or for the regions. Individual researchers are responsible for determining how best to fill in missing prices for the specific research application. Food price data are not released by Census division (i.e., New England, South Central, etc.) because of insufficient sample sizes.

States in Census Bureau Regions

The Northeast region (r1 in the file) consists of Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont.

The Midwest region (r2 in the file) consists of Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin.

The South region (r3 in the file) consists of Alabama, Arkansas, Delaware, District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia.

The West region (r4 in the file) consists of Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, New Mexico, Nevada, Oregon, Utah, Washington, and Wyoming.

For more information, see http://www.census.gov/geo/www/cob/dv_metadata.html.

References

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June 2009

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