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## Food Companies' Calorie-Reduction Pledges to Improve U.S. Diet

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### Abstract

Heretofore, corporate voluntary pledges to improve the health of Americans have been linked neither to explicit measurable commitments nor to a framework for an independent evaluation. The Healthy Weight Commitment Foundation (HWCF), whose members include 16 of the nation's leading consumer packaged goods food and beverage manufacturers, voluntarily pledged to collectively remove 1 trillion calories from their products by 2012 (against a 2007 baseline), and 1.5 trillion calories by 2015. The pledge is designed to reduce the calorie gap commensurate with the HWCF companies' role in the U.S. diet. To date, no system exists for documenting the nutritional and public health impacts of industry-led changes in the food supply on individual diets.

The current study represents a unique opportunity to understand how the consumer packaged goods food and beverage sector is changing and how these changes are associated with changes in the American diet. It presents data on national caloric sales from this sector, purchases of these goods by various subpopulations, and methods linking these to individual intakes of Americans. Findings show that HWCF companies accounted for approximately 25% of calories consumed in the U.S. in 2007 and that the 1.5 trillion-calorie pledge (about 14 calories/day/capita) accounts for 0.8% of the calories sold across all consumer packaged goods food and beverage brands in 2007. The authors hope that this evaluation will continue to create models and methods for demonstrating the effects of changes in the food supply on individual diets, particularly among those from vulnerable subpopulations.

### Introduction

Reducing overweight and related consequences is a national priority. The important role of food companies in improving the food supply is not disputed.<sup>1–3</sup> Recently, pledges from consumer packaged goods food and beverage companies to reduce calories sold have created a need to understand how changes in this food sector affect U.S. diets.

The current U.S. food monitoring system does not adequately track brand-specific changes in food composition or sales to understand their unique impact. Presented here are baseline data and methods to monitor one set of pledges from these companies. Food and beverage companies globally have made numerous voluntary pledges and commitments to

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reformulate products, improve diet quality, and improve marketing practices targeting children.<sup>4–8</sup> Although scholars have attempted to delineate whether and how such voluntary efforts produce positive outcomes, these evaluations have not tracked actual changes in diets.<sup>9–13</sup>

In this context, the voluntary pledge from the Healthy Weight Commitment Foundation (HWCF) is unique. The HWCF is broad, including initiatives in schools, worksites, and the marketplace. In the marketplace, HWCF's focus is on “reducing or controlling calories while preserving or enhancing the overall nutrition of healthier product options.”<sup>14</sup> Using 2007 as a baseline year, 16 major HWCF food-manufacturing companies pledged to collectively remove 1.5 trillion calories from the marketplace by 2015, with an interim goal of 1 trillion calories by 2012.<sup>15</sup> This target was based on the estimated HWCF company share (25% of total energy consumed in the U.S.) of the published estimates of the calorie gap needed to prevent excessive weight gain.<sup>16–18</sup> The Robert Wood Johnson Foundation (RWJF) committed to fund an independent evaluation of the HWCF marketplace pledge focused on the calorie reduction targets as well as the impact on U.S. child diets.

## The Healthy Weight Commitment Foundation Marketplace Pledge

Sixteen companies pledged to reduce calories sold in the U.S.: Bumble Bee Foods, LLC; Campbell Soup Company; ConAgra Foods; General Mills, Inc.; Kellogg Company; Kraft Foods, Inc.; Mars, Incorporated; McCormick & Company, Inc.; Nestlé USA; PepsiCo, Inc.; Post Foods/Ralston Foods, LLC; Sara Lee Corporation; The Coca-Cola Company; The Hershey Company; The J.M. Smucker Company; and Unilever. Their pledge includes all of their companies' food and beverage products with a barcode or Universal Product Code (UPC) sold through vending machines and in stores (grocery/food stores, drug stores, mass merchandisers, and convenience stores). Excluded products are listed in Appendix A (available online at [www.ajpmonline.org](http://www.ajpmonline.org)).

## Evaluation Overview

This paper provides the baseline benchmarks on which to evaluate the HWCF marketplace efforts. To track how marketplace changes relate to individual diets, the evaluation utilizes existing public and commercial data sets, each with their own strengths and limitations (see Appendix B, available online at [www.ajpmonline.org](http://www.ajpmonline.org), for a comparison of these sources).<sup>19</sup> Consequently, the evaluation is comprised of three distinct studies designed to answer the following questions:

Study 1: Did the HWCF companies reduce their **total calories sold** by 1 trillion between 2007 and 2012, and by 1.5 trillion between 2007 and 2015, and **what food categories were sources of the caloric changes**?

Study 2: What are the changes in **average daily calories purchased** and **top sources of calories purchased** from HWCF, non-HWCF, and private label products by U.S. households with children aged 2–18 years between 2007 and 2012 (and between 2007 and 2015)? Are the changes different for lower-income and race/ethnicity subpopulations at greatest risk for childhood obesity (African Americans and Hispanics)?

Study 3: What are the changes in **average daily calories consumed** and **top sources of calories consumed** from HWCF, non-HWCF, and private label products by U.S. children aged 2–18 years between 2007 and 2012 (and between 2007 and 2015)? Are the changes different for lower-income and race/ethnicity subpopulations at greatest risk for childhood obesity (African Americans and Hispanics)?

To ensure the highest scientific integrity and transparency, RWJF and the University of North Carolina Food Research Program (UNCFRP) established an independent Evaluation Advisory Committee of eminent scholars to provide scientific review and advice.<sup>20</sup> A critical dimension of all work by the UNCFRP and its collaborating groups, the committee, and RWJF, is full transparency in decisions regarding data acquisition, analysis, and interpretation for all three studies.

## Data Sources

For transparency and reproducibility of findings, the proposed evaluation does not utilize proprietary company data. Instead, the authors rely on existing data available either at no cost or for purchase by any research group.<sup>19</sup> To the extent legally permitted, the authors plan to make select data created through the evaluation publically available.

### Commercial Data Sources

**Nielsen Scantrack (consumer packaged goods sales data)**—Nielsen Scantrack data from 2007, 2012 and 2015 will be used to track sales of HWCF products. These store-based scanner data provide records of weekly price, dollar sales, and units sold of all UPC transactions at participating grocery, drug, mass merchandiser, and convenience stores. These represent aggregate sales and are not linked to individuals.<sup>19,21</sup> Scantrack is a stratified systematic probability sample designed to measure consumer sales across 52 major markets and can be projected nationwide for the stores captured within its sample.<sup>19,21</sup> Sampling limitations are offset by combining these data with the Nielsen Homescan data discussed below.

**Nielsen Homescan (consumer packaged goods purchase data)**—Nielsen Homescan data from 2000 through 2015 will be used for longitudinal analyses of purchases of HWCF products. Homescan contains detailed UPC-level information about household food purchases brought into the home and contains all UPC transactions from all outlet channels, including grocery, drug, mass-merchandise, club, supercenter, and convenience stores.<sup>19</sup> The data are collected daily by providing scanning equipment to a sample of over 50,000 households each year from 2000 to 2015.<sup>22–24</sup>

**Nutrition Facts Panel consumer packaged goods nutrition data**—These data are the nutrition data found on food and beverage labels. Label information from each UPC (all macronutrients, other vitamins and minerals, ingredients)<sup>25</sup> is obtained from several commercial sources, the primary source being the Gladson Nutrition Database.

### Public Data Sources

**What We Eat in America (dietary intake data)**—These data come from the dietary intake interview component of the National Health and Nutrition Examination Survey (NHANES) and are released in 2-year survey periods. The 2007/2008 data will be used for the baseline, with 2011/2012 and 2015/2016 being the comparison time periods.<sup>26</sup>

**Food and Nutrient Database for Dietary Studies (food composition data)**—This database, which is the source of nutrient data for the NHANES interview component discussed above, is based on nutrient values in the U.S. Department of Agriculture (USDA) National Nutrient Database for Standard Reference.<sup>27</sup> The baseline assessment presented here uses Version 4.1 of this database, which is based on Standard Reference Release 22 (corresponding to foods and beverages reported in NHANES What We Eat in America 2007/2008<sup>28</sup>).

## Methods

Study 1 is the official evaluation of the HWCF pledge on sales from consumer packaged goods foods and beverages. Studies 2 and 3 examine how these changes are associated with the diets of U.S. individuals and households with a focus on the lower-income and race/ethnicity subpopulations at greatest risk for childhood obesity (African Americans and Hispanics).

### Baseline Total Caloric Sales from Consumer Packaged Goods Products (Study 1)

To determine total caloric sales, data from nutrition facts panels were linked with each Scantrack UPC (accounting for 97% of the volume sales in the 2007 baseline period (Appendix C, available online at [www.ajpmonline.org](http://www.ajpmonline.org)). Nielsen-developed mutually exclusive food (41) and beverage (21) categories were utilized for examining key calorie sources (Appendix D, available online at [www.ajpmonline.org](http://www.ajpmonline.org)). These categories reflect product placement in stores and are not nutritionally based. After completion of the crosswalk (described below) these categories will be revised.

To distinguish the proportion of calories from HWCF companies, non-HWCF companies and private label, foods and beverages have been classified according to brands and product lines. Evaluation-related HWCF products were verified by the HWCF companies. A simple aggregate of Scantrack calories sold underestimates national sales because the Scantrack sample does not include Walmart, club stores and smaller stores that represent a substantial proportion of sales.<sup>19</sup> Using Homescan, food category brand- or outlet-specific proportions of purchases from stores that did not participate in Scantrack were used to adjust Scantrack to more fully capture calories sold (Appendix E, available online at [www.ajpmonline.org](http://www.ajpmonline.org)). These adjusted Scantrack 2007 data provide the baseline measure for total caloric shares of HWCF products sold compared to non-HWCF and private label products.

### Baseline Average Daily Calories Purchased from Consumer Packaged Goods Products by U.S. Households with Children Aged 2–18 Years (Study 2)

Using the same approach used in Study 1 for linking the Homescan purchase data with NFP data, 95% of the volume purchases in Homescan 2007 are accounted for (Appendix C, available online at [www.ajpmonline.org](http://www.ajpmonline.org)). Average daily total calories purchased, the top sources of calories purchased, and the proportion of calories from HWCF companies, non-HWCF companies, and private label brands were derived using the same approach as that in Study 1. Since Homescan data are at the household level, the number of calories from children or adolescents within households is not easily estimated. Therefore, in order to translate Homescan purchases from the household to individual level, regression-based adjustments were conducted to estimate the calories purchased for each child aged 2–18 years from various subpopulations of interest using demographic information on household composition, race/ethnicity of the household head and household income.

### Baseline Average Daily Calories Reported Consumed from Stores and Vending Machines by U.S. Children Aged 2–18 Years (Study 3)

To measure the average daily calories consumed and the sources of these calories by U.S. children and adolescents at baseline, the mean intake of total energy reported in two 24-hour dietary recalls from the NHANES What We Eat in America 2007/2008 was calculated. Because the HWCF pledge only includes products sold through vending machines and in stores (grocery, drug, mass merchandisers and convenience stores), these analyses are limited to intake reported as obtained in stores and through vending machines. To identify top sources of calories consumed, all foods and beverages were classified into mutually

exclusive food (40) and beverage (15) groups (Appendix F, available online at [www.ajpmonline.org](http://www.ajpmonline.org)).

The data from this portion of NHANES do not distinguish manufacturer or brand of all foods and beverages. Further, because the USDA does not conduct comprehensive updates of the food composition data annually, it is unlikely that the nutrient data from the Food and Nutrition Database for Dietary Studies will capture the ongoing reformulations of products linked with the HWCF efforts. Therefore, to distinguish the proportion of calories from HWCF companies and attach up-to-date commercial nutrient information to NHANES What We Eat In America dietary data, a “crosswalk” is being developed between the public consumption and commercial purchase and nutrient data sources.

The crosswalk will connect each of the USDA food codes that appears in the NHANES What We Eat in America dietary intake survey (reported to have been obtained from stores or vending machines) to corresponding UPCs representing food and beverage products that appear in the Homescan data during the equivalent time period (Figure 1). Loose (unpacked) fruits, vegetable items, cut-to-order meats (items without UPCs), and homemade recipe items that do not appear in the commercial data sources will not be linked. These items represent less than 6% of total consumption reported by U.S. children and adolescents in this NHANES 2007/2008 survey.

The crosswalk achieves three important results. First, it allows application of nutrient information from the commercial data to NHANES What We Eat in America survey data. A composite nutrient profile based on the weighted average of volume sales for all appropriate UPC matches is created for each USDA food code. The aggregate of all nutrient profiles is the UNCFRP Nutrient Database. Second, the crosswalk allows determination of the proportion of calories reported as consumed by children and adolescents in this NHANES survey that are attributable to HWCF, non-HWCF and private label products. Finally, completion of the crosswalk facilitates comparisons across public and commercial data sources as the same food-grouping system can be applied to all data sources.

## Results

### Baseline Total Caloric Sales from Consumer Packaged Goods Products (Study 1)

Figure 2 shows the total caloric sales from consumer packaged goods by aggregate HWCF, non-HWCF, and private label brands in 2007 using unadjusted Scantrack data compared to adjusted Scantrack data. Despite differences in the absolute number of calories, the relative caloric shares are comparable. Based on the adjusted Scantrack values, of the 186.2 trillion calories sold from packaged foods and beverages in 2007, a total of 67.3 trillion calories (or 36.2%) were from the 16 HWCF companies.

Non-HWCF brands account for 38.9%, and private label products account for the remaining 24.9%. Given that 69.9% of calories in 2007/2008 came from stores and vending machines, HWCF companies accounted for about 25% of all calories consumed in the U.S. Another way to consider this is the 1.5 trillion-calorie reduction private label edge (about 13–14 calories/day for the average consumer) accounts for 2.2% of the calories that the HWCF companies sold in 2007, and 0.8% of the calories sold across all consumer packaged goods food and beverage brands in 2007.

Appendix G (available online at [www.ajpmonline.org](http://www.ajpmonline.org)) presents results (adjusted Scantrack) for the full list of food and beverage categories ranked by contribution to total calories sold in 2007 as well as caloric sales of consumer packaged goods by food and beverage categories and the proportion of calories attributable to HWCF products within each food

category. Top sources of calories (per day per capita) from consumer packaged goods food categories include shelf-stable snacks (105 calories), ready-to-eat breads (92 calories), candy and gum (85 calories), ready-to-eat cereals and granola (55 calories), cheese (54 calories), refrigerated processed meats (51 calories), and cookies (48 calories). HWCF products account for >50% of calories from these top food categories: shelf-stable snacks (59%), candy and gum (64%), and ready-to-eat cereals and granola (74%). Among beverage groups, the top sources of daily calories per capita for 2007 include fresh plain milk (81 calories), carbonated soft drinks (71 calories), shelf-stable fruit and vegetable drinks and juice (54 calories), and alcohol (54 calories). HWCF caloric shares in the beverage groups were the most pronounced for water (98%), carbonated soft drinks (58%) and beverage powders and concentrates (68%).

### **Baseline Average Daily Calories Purchased from Consumer Packaged Goods Products by U.S. Households with Children Aged 2–18 Years (Study 2)**

To evaluate the relationship between HWCF company efforts and purchases from consumer packaged goods products by U.S. households with children aged 2–18 years, a pre–post longitudinal analysis that allows for control of an array of economic, demographic and related conditions that affect household food purchases was used. Table 1 presents baseline results adjusted only for household age–gender composition, household income, and race/ethnicity of the head of the household to provide a crude measure of marginal intake of calories purchased per child. In 2007, the average daily total calories purchased for the average child aged 2–18 years is 1119 calories, of which 38.5% (432 calories) are from HWCF products, 31% (347 calories) are from non-HWCF products, and 30.4% (341 calories) are from private label products.

Appendix H (available online at [www.ajpmonline.org](http://www.ajpmonline.org)) presents regression-adjusted calories purchased for an average child aged 2–18 years for each food and beverage category as well as the proportion of calories attributable to HWCF products within each category. Among food groups, the top sources of calories per day per child include shelf-stable snacks (75 calories), ready-to-eat cereals and granola (64 calories), ready-to-eat breads (55 calories), candy and gum (50 calories), cheese (36 calories), cookies (31 calories), and refrigerated processed meats (31 calories). HWCF products account for more than 50% of the calories from these top food groups: shelf-stable snacks (58%), ready-to-eat cereals and granola (74%), candy and gum (67%), and cookies (53%). Among beverage groups, the top sources of average daily calories per child include fresh plain milk (68 calories), shelf-stable fruit and vegetable drinks and juices (35 calories), and carbonated soft drinks (29 calories). HWCF caloric shares in these groups were the most pronounced for carbonated soft drinks (57%), beverage powders and concentrates (74%), and waters (98%).

### **Baseline Average Daily Calories Reported Consumed from Stores and Vending Machines by U.S. Children Aged 2–18 Years (Study 3)**

A portion of the crosswalk is complete. Preliminary results are presented and discussed in Appendix I (available online at [www.ajpmonline.org](http://www.ajpmonline.org)). Table 2 presents the calories reported as consumed in NHANES What We Eat in America 2007/2008 by children aged 2–18 years from foods and beverages obtained through vending machines and stores only, applying Food and Nutrition Database for Dietary Studies 4.1. This age group reported consuming 1275 calories from stores and vending machines, representing approximately 68.1% of total daily energy reported. Younger children reported consuming fewer calories than older children, and African Americans and Hispanics reported consuming fewer calories than whites. These subpopulation differences are consistent with what was found in Homescan 2007 (Table 1).

The top food and beverage sources of calories reported as consumed by children and adolescents in NHANES What We Eat in America 2007/2008 (applying Food and Nutrition Database for Dietary Studies data) are presented in Appendix J (available online at [www.ajpmonline.org](http://www.ajpmonline.org)). The top food sources of calories (per day per capita) from stores and vending machines include grain-based desserts (134 calories), savory snacks (120 calories), pasta and pasta dishes (111 calories), breads (105 calories) and ready-to-eat cereals (83 calories). The top beverage sources of calories (per day per capita) from stores and vending machines include fluid milk (143 calories), sugar-sweetened beverages (102 calories) and fruit juice (56 calories). After completion of the crosswalk, these analyses will be updated (applying the UNCFRP Nutrient Database) and the role of HWCF companies will be determined for all food and beverage categories.

### Comparison of Baseline Results Across Studies 1–3

Table 3 provides a summary of results across data sources. As expected, the adjusted Scantrack estimates are higher than Homescan and NHANES What We Eat in America estimates due to differences in possible sources of measurement error across data sources (Appendix B, available online at [www.ajpmonline.org](http://www.ajpmonline.org)). While results from the data sources differ in magnitude, findings across subpopulations are remarkably consistent. The adjusted Scantrack 2007 estimates show that participating HWCF companies produced about 36.2% of consumer packaged goods calories in 2007. Data from NHANES What We Eat in America 2007/2008 indicate that calories from stores (primarily consumer packaged goods) comprise 68.1% of total calories consumed by those aged 2–18 years. Taken together, these results suggest that the 16 HWCF companies account for about 25% of total calories reported consumed by children and adolescents.

### Discussion

The HWCF pledge is one of the most visible and important pledges made by food and beverage companies and was designed to directly improve the food supply for American children and their families. The evaluation of the HWCF pledge and its relationship with U.S. child diet required the creation of a system that links sales and purchases of consumer packaged goods foods and beverages to individual dietary intake. This effort presents unique opportunities and challenges for documenting the public health effects of concerted industry-led changes in the food supply.

The authors have made substantial progress in developing a scientifically sound evaluation design and establishing the personnel and database infrastructure to complete a methodologically rigorous evaluation of the HWCF calorie-reduction targets and their association with the diets of U.S. children and adolescents.<sup>11,29–34</sup> This paper provides the baseline benchmarks on which to evaluate the HWCF marketplace efforts. The following sections describe additional analyses and analytic issues relevant to the evaluations of HWCF efforts on sales, purchases and diet between 2007 and the target years.

### Ability to Detect Caloric Changes

Power calculations were conducted to assess the detectable level of caloric change given the sample sizes in Homescan and NHANES What We Eat in America (Appendix K, available online at [www.ajpmonline.org](http://www.ajpmonline.org)). Power calculations using Homescan 2005–2007 show capacity to detect a difference of 56 calories purchased per day per **household** (or 14 calories per day per **capita**) between the baseline/pre-pledge period and the post-pledge period (Appendix L, available online at [www.ajpmonline.org](http://www.ajpmonline.org)). Power calculations using NHANES What We Eat in America 2007/2008 data show capacity to detect a difference of 113 calories per day per capita and 83 calories per day per child between the baseline/pre-

pledge period and the post-pledge period (Appendix M, available online at [www.ajpmonline.org](http://www.ajpmonline.org)).

### Additional Analyses to Be Included in 2012 and 2015 Evaluations

**Study 1: Adjusting for changes in volume of market shares over time**—Because the recent global food crisis and economic decline have affected food purchase patterns, observed increases or decreases in sales could be unrelated to HWCF behavior. To account for these factors, HWCF caloric shares will be standardized within food and beverage categories (using the 2007 volume sales as the base) to evaluate how HWCF changes are associated with total calories sold in 2007, 2012 and 2015.

**Study 2: Longitudinal pre–post design**—Even if the HWCF companies meet their marketplace pledge, substitutions to calories purchased from non-HWCF and private label products may result in no or little change in overall calories purchased. Such factors as real income and price changes, shifts in regulations, taxation, and other exogenous influences affect food-purchasing patterns over time. During the HWCF evaluation period, these include global and domestic food price changes (early 2007–December 2008) as well as the Great Recession (December 2007–June 2009) and its aftermath, both of which affected food prices and income differentially.

It is important to take these into account when estimating the association between the HWCF pledge and purchases. For the 2012 evaluation, a model will be fit with 8 years (2000–2007) of pre-pledge and 5 years (2008–2012) of post-pledge food purchase data, controlling for market-level food prices, household characteristics, including income, employment, and other key changes that are associated with household food purchases (calories from each food group) as well as the total set of purchases. Aggregate changes in calories purchased from HWCF, non-HWCF, and private label brands will also be compared.

Some factors that may have occurred will not be accounted for such as shifts in marketing practices of food manufacturers and retailers, changes in food environments and accessibility, and changes in away-from-home eating options, except by assessing overall calorie changes in food sales or purchases and consumption. Similar analyses will be repeated for the 2015 evaluation using 8 years (2008–2015) of post-pledge food purchase data. Appendixes N and O (available online at [www.ajpmonline.org](http://www.ajpmonline.org)) describe the longitudinal analysis and variables to be used to test the association between the HWCF pledge and calorie purchases in aggregate and by select income–race–ethnicity subpopulations.

**Study 3: Adjusting for usual intake**—While shifts in population means have the potential to be small, the effects of the HWCF pledge may be larger among those children and adolescents who consume the most calories (the top 75th or 90th percentiles of the distribution). Using the National Cancer Institute method to estimate the usual intake distribution,<sup>35</sup> changes in calories consumed by those in the 75th or 90th percentiles of the distribution, at baseline (2007/2008), 2011/2012, and 2015/2016, will be compared.

**Study 3: Examination of total diet**—Concurrent changes by the away-from-home food sector (e.g., quick and full-serve restaurants), which represents 30.1% of calories reported by children and adolescents in NHANES What We Eat in America 2007/2008 might offset or enhance efforts by food manufacturers. Using NHANES What We Eat in America data changes in the away-from-home sector over the corresponding time periods and changes by HWCF companies in the context of the total diet will be examined.



## Limitations

Due to the complex nature of this evaluation effort and the availability of data, there are important limitations. Foremost are the quality of the Nutrition Facts Panel data and the timeliness of commercial Nutrition Facts Panel databases. The USDA is conducting a detailed, well-sampled full nutrient analysis of the top contributors to sodium in the U.S. and comparing this with the Nutrition Facts Panel on each product to allow assessment of the quality of the Nutrition Facts Panel data for selected consumer packaged goods. The authors are developing methods to evaluate the timeliness of the Gladson Nutrition Facts Panel data updates. The 20% labeling measurement allowance between what is on the Nutrition Facts Panel and what is found during enforcement analyses<sup>25</sup> and legal reporting rules reduce the precision of Nutrition Facts Panel data.

Data from the NHANES What We Eat in America survey captures intake of foods and beverages in the **as-consumed** form. In contrast, the commercial data track sales of **as-purchased** foods and beverages. To translate items from the as-purchased to the as-consumed form, USDA information on retention and yield factors is being incorporated.<sup>28,36</sup> However, as it is not possible to account for the various ways in which households may prepare foods, a precise conversion is challenging. Additionally if food waste trends vary over time, particularly linked with the great recession, biases in comparisons of food purchase and dietary intake results will exist.<sup>37</sup>

## Conclusion

The HWCF pledge is a visible, important instance of industry self-regulation to reduce obesity. It is designed to directly improve the food supply for American children and their families. The UNCFRP system established to monitor the nutritional impact of the consumer packaged goods companies represents a major step forward in understanding the U.S. food supply. The developing monitoring system and proposed analyses will improve understanding of how changes in the food supply affect the diets of U.S. children and adolescents.

## Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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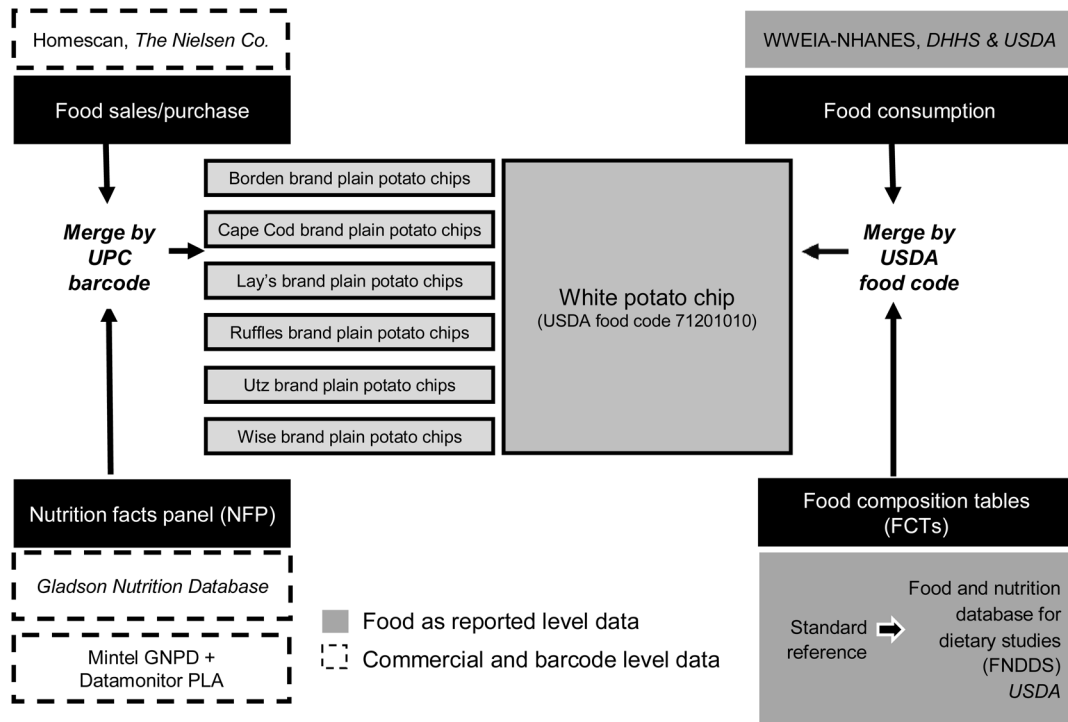
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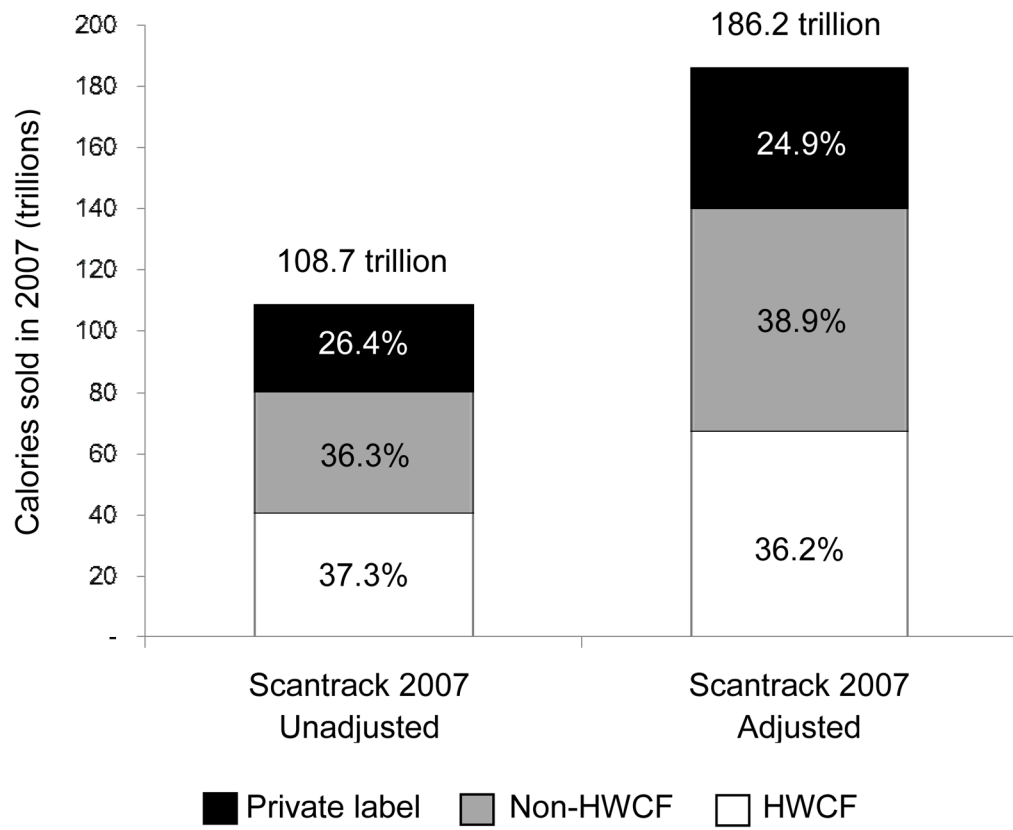
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**Figure 1.** Example of “crosswalk” between public and commercial data sources FNDDS, Food and Nutrition Database for Dietary Studies; GNPD, Global New Product Database; PLA, product launch analytics; UPC, universal product code; USDA, U.S. Department of Agriculture; WWEIA NHANES, What We Eat in America dietary intake survey portion of the National Health and Nutrition Examination Survey



**Figure 2.** Scantrack 2007 total annual calories sold (in trillions), unadjusted and adjusted HWCF, Healthy Weight Commitment Foundation

**Table 1**

Homescan 2007 average daily calories from consumer packaged goods among children aged 2–18 years

<b>Ages 2–18 years</b>	<b>1119 (1.9)</b>
<b>Brands</b>	
HWCF	432 (0.8)
Non-HWCF	347 (0.6)
Private-labels/store	341 (0.5)
<b>Age (years)</b>	
2–5	951 (1.9)
6–11	1032 (1.9)
12–18	1300 (1.9)
<b>Ethnicity</b>	
Hispanic	1150 (2.0)
Non-Hispanic African American	1148 (2.0)
Non-Hispanic white	1167 (2.1)
Other	1155 (2.1)
<b>Income level, % of poverty threshold</b>	
< 131	1112 (1.9)
131–185	1110 (1.9)
> 185	1103 (1.8)
Sample size	16,692 households with 29,983 children aged 2–18 years

*Note:* Values are in kcals/day.

Data (M [SE]) are grouped by subpopulations weighted to be nationally representative.

**Table 2**

NHANES What We Eat in America 2007/2008 average daily calories reported as consumed by children aged 2–18 years from stores and vending machines only

<b>Characteristics</b>	<b>M (SE)</b>
<b>Age (years)</b>	
2–18	1275 (17.8)
<b>Ethnicity</b>	
Hispanic	
Non-Hispanic African American	1200 (42.8)
Non-Hispanic white	1305 (29.8)
Other	1261 (60.1)
<b>Income, % of poverty threshold</b>	
< 131	
131–185	1288 (41.2)
> 185	1254 (23.6)
Sample size	2966
Nutrition database(s) used	FNDDS 4.1

*Note:* Values are in kcals/day.

FNDDS, Food and Nutrition Database for Dietary Studies; NHANES, National Health and Nutrition Examination Survey

Table 3

Average daily calories across data sources by subpopulations weighted to be nationally representative, M (SE)

Average daily calories (kcal/day)	Scantrack 2007 <sup>a</sup>	Scantrack 2007 adjusted using Homescan 2007 <sup>a</sup>	Homescan 2007 <sup>a</sup>	Homescan 2007 regression adjusted <sup>a</sup>	Homescan 2007/2008 regression adjusted <sup>a</sup>	WWEIA, NHANES 2007/2008 kcals from stores + vending machines only	WWEIA, NHANES 2007/2008 kcals from all sources
Unit of measurement	per capita	per capita	per capita	per individual	per individual	per individual	per individual
<b>All ages, all brands</b>	987	1691 <sup>b</sup>	1380 (5.1)		1401 (24.9)	2010 (21.5)	
HWCF brands	368	611	513 (2.2)				
Non-HWCF brands	358	659	597 (2.1)				
Private-labels/store brands	260	420	371 (2.1)				
Sample size					9,122	9,122	
<b>Aged 2–18 years</b>				1119 (1.9)	1098 (1.3)	1275 (17.8)	1873 (18.7)
HWCF brands				432 (0.8)	413 (0.6)		
Non-HWCF brands				347 (0.6)	342 (0.4)		
Private-labels/store brands				341 (0.5)	343 (0.3)		
<b>Age (years)</b>							
2–5				951 (1.9)	899 (1.3)	1194 (17.3)	1532 (18.8)
6–11				1032 (1.9)	1018 (1.3)	1283 (27.6)	1908 (24.0)
12–18				1300 (1.9)	1287 (1.3)	1313 (26.1)	2035 (30.7)
<b>Ethnicity</b>							
Hispanics				1150 (2.0)	1129 (1.4)	1321 (23.1)	1854 (21.6)
Non-Hispanic African American				1148 (2.0)	1127 (1.4)	1200 (42.8)	1791 (33.9)
Non-Hispanic white				1167 (2.1)	1146 (1.5)	1305 (29.8)	1929 (33.0)
Other				1155 (2.1)	1134 (1.4)	1261 (60.1)	1783 (90.0)
<b>Income (% of poverty threshold)</b>							
<131				1112 (1.9)	1091 (1.3)	1307 (28.4)	1874 (32.2)
131–185				1110 (1.9)	1090 (1.3)	1288 (41.2)	1903 (64.3)
>185				1103 (1.8)	1082 (1.3)	1254 (23.6)	1868 (35.0)



Average daily calories (kcal/day)	Scantrack 2007 <sup>a</sup>	Scantrack 2007 adjusted using Homescan 2007 <sup>a</sup>	Homescan 2007 <sup>a</sup>	Homescan 2007 regression adjusted <sup>a</sup>	Homescan 2007/2008 regression adjusted <sup>a</sup>	WWEIA, NHANES 2007/2008 kcals from stores + vending machines only	WWEIA, NHANES 2007/2008 kcals from all sources
Unit of measurement	per capita	per capita	per capita	per individual	per individual	per individual	per individual
Sample size				16,692 households with 29,983 children aged 2–18 years	31,868 households with 56,742 children aged 2–18 years	2,966	2,966
<b>Nutrition database(s) used</b>	Gladson Datamonitor PLA Mintel GNPD	Gladson Datamonitor PLA Mintel GNPD	Gladson Datamonitor PLA Mintel GNPD	Gladson Datamonitor PLA Mintel GNPD	Gladson Datamonitor PLA Mintel GNPD	Food and Nutrition Database for Dietary Studies 4.1	Food and Nutrition Database for Dietary Studies 4.1

<sup>a</sup>Commercial sales and purchase data (Nielsen Scantrack and Homescan) do not include sales or purchases from vending machines. Also, calories estimated from Nielsen Scantrack and Homescan are only from products that have barcodes (UPCs), and miss 'random-weight' products such as loose produce and fresh cuts of meat. Nielsen does not collect detailed information on each cut of animal source food or produce so it is impossible to create nutrient measures for the random-weight products. While the caloric contribution of these random-weight products is not known, it is known that in 2007, these accounted for 22% of store-based food expenditures.

<sup>b</sup>Given that calories consumed that are from stores and vending machines are 69.9% of total calories consumed based on WWEIA NHANES 2007/2008, the adjusted Scantrack estimate of 1691 calories/day/capita translates to 2419 calories/day/capita. As a comparison, the ERS loss-adjusted caloric estimate for 2007 is 2686 calories/day/capita.

ERS, U.S. Department of Agriculture's Economic Research Service; HWCF, Healthy Weight Commitment Foundation; GNPD, Global New Product Database; PLA, product launch analytics; UPC, universal product code; WWEIA NHANES, What We Eat in America dietary intake survey portion of the National Health and Nutrition Examination Survey