Title: Highly processed and ready-to-eat packaged food and beverage purchases differ by race/ethnicity among US households

Supplemental Material I. Classification of consumer packaged goods (CPG) foods and beverages by degree of processing and convenience

Previous work developed a classification system for categorizing foods and beverages by degree of food processing and separately by level of convenience; a detailed description of this system is available elsewhere (1) and is described in brief below.

Processing:
Each barcoded item was assigned to one of four mutually exclusive categories of food processing based upon the extent to which a food was altered from its natural state by industrial food processing and the purpose of these processing steps (Supplemental Table 1) (1). This classification focused on industrial processing, so additional processing by the consumer after purchase, such as cooking raw meat, were not considered when products were classified.

“Unprocessed or minimally processed” products are defined as single ingredient foods and beverages that have undergone no or slight modifications that do not change the properties of the food as found in its natural unprocessed form. Milk, fresh or frozen plain fruits and vegetables, eggs, whole-grain unsweetened hot cereal, and unseasoned meats are key examples.

“Basic processed” products have undergone physical or chemical processing but remain as single foods (1). This category includes basic processed ingredients, which are defined as single isolated food components obtained by extraction or purification using physical or chemical processes that change inherent properties of the food, and foods processed for basic preservation or pre-cooking. Examples include oil, granulated sugar, unsweetened fruit juice, vegetables canned with no added salt, plain yogurt, refined-grain flour or pasta, or instant rice.

“Moderately processed” products are single foods with the addition of flavor additives; these products remain directly recognizable as their original plant or animal source (1). Salted nuts, cheese, butter, fruit canned in syrup, vegetables canned with added salt, and pre-sweetened tea are examples. This category also includes moderately processed grain products, such as bread, breakfast cereal, or crackers made from whole grain without addition of sweeteners or fat.

“Highly processed” products are multi-ingredient industrially formulated mixtures that have been processed to an extent that they are no longer recognizable as their original plant or animal source (1). This category includes highly processed stand-alone products, such as refined breads, grain-based desserts, sugar-sweetened beverages (SSBs), processed salty snacks, candy, ice cream, highly processed meats, and pre-prepared mixed dishes, as well as highly processed ingredients such as mayonnaise, margarine, salad dressing, ketchup, and pasta sauce.

Convenience:
To separately classify foods and beverages by convenience, each product was assigned to one of three mutually exclusive categories based on the amount of food preparation required by the consumer before the product can be eaten (Supplemental Table 2) (1). Categorization was based on length of active preparation time and the amount of culinary skill, energy, and attention needed for a consumer to prepare a product for consumption (1).

Products requiring “cooking and/or preparation” (hereafter referred to as “requiring cooking”) are not typically consumed as purchased, but first require input of the consumer’s time, culinary skill, energy, or attention to cook or prepare before consumption (1). Examples include eggs, raw meat, fresh potatoes, dried beans, cooking oil, flour, dry pasta, or cake mixes.

Products “ready-to-heat or requiring minimal preparation” (hereafter referred to as RTH) are also not usually consumed as purchased, but their preparation requires only a small amount
of the consumer’s time or effort and no culinary skill or attention (1). Examples include frozen dinners, canned soup, instant oatmeal, canned or frozen vegetables, and powdered drink mixes.

“Ready-to-eat” (RTE) products can be consumed immediately with no preparation (1), and this category includes bread, salty snacks, pre-made cookies, candy, fruit, some raw vegetables such as pre-cut salad or baby carrots, and ready-to-drink beverages.
Supplemental Material II. Statistical analysis

To identify key processed or convenience foods that varied across racial/ethnic groups, multivariable-adjusted linear regression models were used to determine the adjusted mean food group purchases within each subpopulation in 2012. If >15% of households had zero purchases of a food group, a two-part regression model was used; the first part modeled the probability of purchasing any products within the food group using a probit model, and the second part modeled the distribution of the amount purchased among consumers using linear regression.
References: