Food Consumption Patterns: Concentration and Frequency

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How much variation exists in consumption of food items by individuals? How frequently are individual items consumed? Answers to these questions can offer valuable insight for food marketing, farm production, and nutrition research.

If researchers can determine what portion of the public accounts for most of the consumption of a given food item, marketing strategies can be targeted for these key customers, perhaps creating a greater demand for the farm commodities that are ingredients of that item. At the same time, nutrition researchers could better identify the scope of potential diet-related problems.

Such insight can be gained from analysis of only one of three USDA sources of data on how much of given food items Americans consume on an individual basis:

- "Per capita consumption" or disappearance is derived by adding food production, imports, and beginning stocks, and then subtracting exports, ending stocks, and nonfood use. The resulting annual food disappearance is divided by the population to yield an estimate of per capita food disappearance.
- The 1977-78 Nationwide Food Consumption Survey of Households listed foods brought into the home and used during a 2-week period by about 15,000 households.
- The Nationwide Food Consumption Survey of Individuals (NFCS) measured what 31,000 individuals actually ate or drank during a 3-day period, using interviews. Participants were selected to mirror the U.S. population composition.

The latter survey is the only measure of actual per capita consumption. It included foods eaten at home and away from home. The household survey covers only at-home consumption, while disappearance data offer little insight into consumption of specific food items. Only the intake data provides a means of estimating how often a food is eaten and by what proportion of the population.

Even so, the 3-day intake data have limited reliability because of the shortness of the test period. Although the 3-day samples were taken at different times to capture weekly and seasonal variations in food consumption, results may have been different had sessions been longer. Nevertheless, the data are useful indications of frequency and concentration of consumption.

Very sharp variations exist in the frequency with which different food items are consumed. The survey discloses which items were consumed on 1, 2, or all 3 days of the survey (table 1).

Some foods are eaten daily by many of the respondents. Nearly 6 out of 10 participants ate bread or dairy products daily. Another one in four ate bread 2 of the 3 days, while another one in six ate dairy

Table 1. Frequency of Consumption of Selected Foods

Food items	Portion of respondents consuming food		
	each day	2 of 3 days	1 of 3 days
	Percent		
Coffee	39	6	5
Tea	16	10	12
Soft drinks	15	15	20
Dietary soft drinks	2	2	4
Beer	2	2	4
Wine	1	1	3
Eggs	10	16	29
Butter	6	8	17
Margarine	11	13	19
Bread	58	25	11
Cake	2	6	17
Cookies	–	2	9
Donuts	1	2	9
Crackers	2	6	18
Candy	1	3	13
Pasta	–	1	10
Rice	2	4	13
Cold cereals	12	14	17
Peanut butter	2	3	11
Red meat, poultry & fish	61	27	9
Red meat	21	34	30
Beef	6	22	39
Pork	6	14	31
Poultry	1	9	33
Chicken	1	7	31
Turkey	–	1	5
Fish	–	4	21
Milk	55	16	12
Ice cream	2	6	16
White sugar	19	11	14
Hamburgers & cheeseburgers	–	1	9
Frankfurters	–	2	15
Bacon	3	6	17

– less than 0.5 percent
Source: Nationwide Food Consumption Survey, 1977-78

Table 2. Portion of Respondents Consuming Selected Foods at Least 1 Out of 3 Days

More than 75%		Between 50 and 75%		Between 25 and 50%		Less than 25%	
Bread	93	Coffee	51	Tea	38	Dietary soft drinks	8
Red meat	85	Soft drinks	51	Butter	31	Cookies	12
Milk	83	Eggs	54	Margarine	43	Donuts	10
Potatoes	75	Lettuce	51	Cake	26	Candy	13
				Crackers	26	Pasta	11
				Cereal	44	Rice	19
				Poultry	43	Peanut butter	15
				Fish	25	Ice cream	24
				Bacon	25	Hamburgers	10
				Salad dressing	44	Frankfurters	15
				Tomatoes	28	Cabbage	10
				Orange juice	36	Carrots	5
				Sugar	44	Celery	5
						Cucumbers	6
						Onions	8
						Broccoli	6
						Apples	16
						Bananas	17

Source: Nationwide Food Consumption Survey, 1977-78

products that often. People tended to drink coffee daily, or not at all. About 4 in 10 consumed coffee each day, but almost half did not drink it at all. Only about 1 in 20 drank it 1 or 2 days out of 3.

Only one in five of the respondents ate meat daily, but two in three consumed meat items 1 or 2 days. Virtually no one ate fish or poultry daily, but a third ate poultry 1 day. Most ate eggs, but only once in 3 days.

Most sweets and snacks were eaten only 1 of 3 days, as were hamburgers and cheeseburgers, and pasta dishes. Only one in six respondents drank tea and soft drinks every day.

Consumption Patterns

Several clear patterns emerge from survey results showing the percentages of participants eating a given item at least 1 of 3 days:

- The four items consumed by at least three of four surveyed Americans were bread, milk, meat, and potatoes. Bread was the most widely consumed item, as

93 percent of the participants ate it at least 1 of the 3 days (table 2).

- Half consumed coffee, soft drinks, eggs, and lettuce (the only vegetable with a high frequency of consumption).
- About 3 out of 7 ate sugar, poultry, cereals, and margarine.
- Items least frequently consumed included individual fruits and vegetables, snack foods, and grain products such as rice and pasta. Apples and bananas, with about one respondent in six consuming them, were the leading fruits. Most individual vegetables were eaten by less than 1 in 10 during the 3-day period.

With many food items, a high portion of consumption is accounted for by a very small percentage of the population. Take baby food as an example. According to the weekly survey, the participants' households purchased an average of 6 ounces of baby food per week. On a per-person basis, this is about 2 ounces weekly—less than 7 pounds annually. However, almost all of this item is consumed by infants, so baby food use would be highly concentrated among a few households.

A way of measuring concentration is to determine what portion of a food item is consumed by 1 percent of the most avid eaters, or those at the 99th percentile. Those in the 1st percentile would be the

Table 3. Consumption Concentration of Selected Foods

Food items	The highest 1 percent of consumers: Account for ___ out of every 10,000 Americans	Account for ___ % of U.S. consumption	Consumption concentration ratio
Dietary soft drinks	7	4.79	64
Candy	13	5.25	40
Hamburgers & cheeseburgers	10	3.77	38
Pasta	15	5.02	34
Peanut butter	11	3.99	36
Rice	19	4.93	26
Cheese	40	7.89	20
Frankfurters	18	3.54	20
Bacon	25	4.77	19
Cakes	25	4.65	19
Butter	31	5.86	19
Fish	25	4.49	18
Cookies	31	5.13	17
Sugars	43	5.23	12
Margarine	38	3.99	11
Tea	45	4.90	11
Salad dressing	24	2.44	10
Ice cream	43	4.33	10
Cereals	44	5.50	13
Soft drinks	51	4.53	9
Poultry	43	3.35	8
Chicken	39	3.31	8
Turkey	6	3.53	59
Coffee	51	3.99	7
Eggs	54	3.52	7
Milk	83	3.73	4
Red meat	87	3.73	4
Beef	67	3.77	6
Pork	50	4.57	9
Bread	94	3.13	3

Source: Nationwide Food Consumption Survey, 1977-78

least avid eaters. Since many Americans do not consume any given item at all, a percentile of users would be well less than 1 percent of the total population.

For example, 93 percent of NFCS survey participants consumed no dietary soft drinks. Each percentile of users, then, comprised only 0.07 percent of the U.S. population (1 percent of 7 percent) or 7 out of 10,000 Americans. A percentile of bread users, the most widely-consumed item with 94-percent use, equaled 0.94 percent or 94 of every 10,000 Americans.

For comparison purposes, researchers devised a "concentration ratio" based on the amount consumed by the top percentile of users. The more widely consumed an item is, the lower its concentration ratio.

Useful Findings

By determining consumption concentration (table 3), manufacturers can consider whether to tailor marketing approaches for a relatively small, unique clientele group, or for a broader cross section of the public. According to survey results, the top percentiles accounted for between 3 and 8 percent of consumption of food items. However, the concentration ratios varied widely, even if the percentage of consumption accounted for by the top percentile was identical.

For example, the top percentile of hamburger and cheeseburger eaters ate 3.77 percent of all hamburgers and cheeseburgers consumed—a relatively modest amount. However, since only 10 percent of participants ate these products, the consumption concentration ratio (number per 10,000 users) was a very high 38. At the other extreme, the top percentile of milk drinkers accounted for 3.73 percent of consumption—about the same as for hamburgers and cheeseburgers. However, since a much higher portion of the population drinks milk, the concentration ratio was only 4.

Three clear patterns emerge from an examination of selected foods in the survey:

- Foods with a concentration ratio of less than 10—those with more evenly distributed consumption—were the more basic staples such as bread, red meats, eggs, coffee, and poultry. Soft drinks constituted the only exception.
- The middle category (10-20 concentration ratio) included cereals and sugars, fish, tea, margarine, cookies, butter, and bacon. Almost all of these items had higher portions of nonconsumers than did low-concentration items.
- High concentration items were largely hamburgers and cheeseburgers, and snack foods such as candy and dietary drinks. □

References

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