



STATE^{OF} THE PLATE

America's Fruit & Vegetable Consumption Trends



ABOUT THE PRODUCE FOR BETTER HEALTH FOUNDATION

Produce for Better Health Foundation (PBH), a nonprofit 501(c)(3), is the only national organization dedicated to helping consumers live happier, healthy lives by eating more fruits and vegetables, including fresh, frozen, canned, dried and 100% juice, every single day.

PBH's award-winning Have A Plant® Movement reaches millions of consumers and influencers by tapping into the emotional connection felt during the fruit and vegetable eating experience and in turn, inspiring lasting behavior change. #haveaplant

PBH is also responsible for the Lead The Change Movement — a multi-sector, multi-year initiative designed to maximize the power of PBH's unique thought leadership position, widespread influencer network, credible scientific and market research as well as its innovative members and partners, to lead a call-to-action for addressing the global fruit and vegetable consumption crisis.



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INTRODUCTION

The importance of eating fruits and vegetables has long been recognized as core to any healthy eating strategy, and its role continues to be emphasized today even as science evolves. The 2015-2020 Dietary Guidelines for Americans (DGA) were the first of their kind to recommend that following a healthy dietary pattern (defined as the combination of foods and beverages that constitute an individual's complete dietary intake over time) be the focus to reach the destination of achieving short- and long-term health benefits.¹ Within healthy dietary patterns, the 2015-2020 DGA prominently featured fruits and vegetables.¹

As the Produce for Better Health Foundation (PBH) prepared to release insights from its **2020 State of the Plate: America's Fruit & Vegetable Consumption Trends** research, the 2020-2025 DGA were released. The new DGA drilled down to specify a series of beneficial outcomes associated with following a healthy dietary pattern, including reducing the risk of all-cause mortality, cardiovascular disease, overweight, obesity, type 2 diabetes, certain cancers, and promoting bone health.² As in the previous edition, the 2020-2025 DGA emphasized the important role fruits and vegetables play as components of healthy dietary patterns.² They also underscored their dramatic and chronic underconsumption among Americans across *all* ages and life stages.²

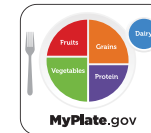
It is no exaggeration that we are in the midst of a fruit and vegetable consumption crisis in our country.

The vast majority of Americans do not meet recommended fruit and vegetable intake with 80% under-consuming fruit and nearly 90% under-consuming vegetables.² Further, this underconsumption is not only pervasive but also persistent. Government data shows average intakes of fruits and vegetables have remained unchanged between the 2003-2004 and 2015-2016 National Health and Nutrition Examination “What We Eat In America” Surveys.³ More concerning is what this national consumption data does not show — the changing behaviors behind fruit and vegetable intake.

The 2020 PBH State of the Plate research, conducted in partnership with The NPD Group, utilizing the National Eating Trends® (NET®) database, illuminates these behaviors — namely that **Americans have decreased their fruit and vegetable eating occasions by nearly 10% since 2004.** This is particularly concerning through the lens of behavioral science, which places a premium on habit and repetition as precursors to lasting behavior change. In fact, PBH’s own research shows that, with increased days of consumption, come greater intakes of fruits and vegetables.⁴

For all these reasons and more, a decline in fruit and vegetable eating occasions does not bode well for the future of fruit and vegetable intake. Government, public health professionals, and the produce industry, in addition to many others, have invested in, and worked toward, increasing consumption for decades. MyPlate, and its accompanying message to “make half your plate fruits and vegetables” visually punctuates the role of produce on the plate. Yet, to date, intake remains disappointing and subpar.

EVIDENCE OF A GROWING CONSUMPTION CRISIS



Make half your plate fruits and vegetables.



Approximately 9 in 10 Americans do not eat enough fruits and vegetables.⁵

The amount of fruits and vegetables consumed between 2003-2004 and 2015-2016 has not changed significantly.³

Average vegetable consumption was 1.5 cups/day in 2003-2004 and 1.4 cups/day in the 2015-2016 survey.

Average fruit consumption was 1.0 cups/day in 2003-2004 and 0.9 cups/day in the 2015-2016 survey.



The average adult consumes 1.6 cups³, of the recommended 2-4 cups/day², of vegetables.



The average adult consumes 0.9 cups³ of the recommended 1 ½ - 2 ½ cups/day of fruit.²

OVERVIEW

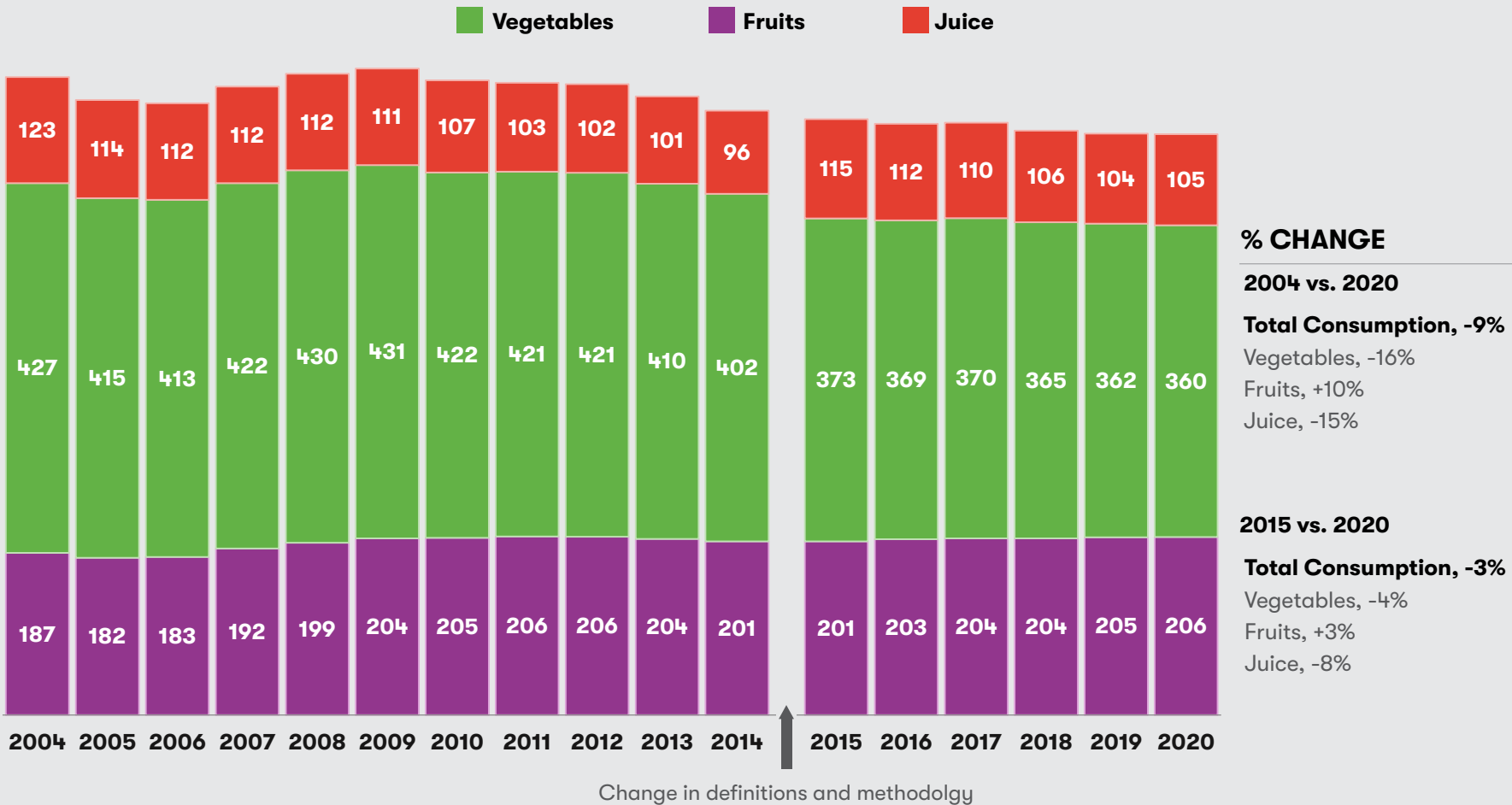
Every five years, PBH commissions The NPD Group to conduct an in-depth analysis of fruit and vegetable consumption patterns, based on the National Eating Trends® (NET®) database, which captures intake of all foods and beverages individuals consume in- and away-from-home. The *2020 PBH State of the Plate* research covered intake between 2015-2020 and was concluded prior to the COVID-19 pandemic. This year's research was particularly comprehensive, including annual fruit and vegetable consumption frequency; drivers of consumption patterns; specific changes in consumption behaviors; common food pairings; and in-depth segmentation of heavy, medium, and light fruit and vegetable eaters and non-eaters. Findings are covered in this report and demonstrate concerning trends, but also insights into opportunities to improve intake.

KEY FINDINGS

Fruit and vegetable eating occasions continue to decline. Over the past 16 years, the frequency in which Americans consume produce has decreased by nearly 10%. This amounts to a loss of at least one fruit/vegetable eating occasion per week. Between 2015-2020 alone, consumption declined by 3%, indicating that the trend is worsening every year. Within the fruit, vegetable, and juice categories, the most significant contributors have been decreased vegetable consumption frequency (down 16% since 2004 and 4% in the past five years) and a reduction in juice (down 15% since 2004 and 8% in the past five years). Fruit eating occasions (excluding juice) grew 10% between 2004-2020 and 3% between 2015-2020. Yet, even this growth in whole fruit intake over time has not been enough to overcome the net decline.

AMERICA’S FRUIT, VEGETABLE & JUICE CONSUMPTION

Annual Eatings Per Capita, 2004-2020





While most Americans consume produce, many only eat fruits and vegetables one time, or less, each day.

Vegetables are consumed, on average, 7.5 times per week.

Fruits are consumed, on average, 5.8 times per week.

Those who typically eat the most fruits and vegetables now appear to be eating them less often.



While 95% of individuals eat vegetables at least once during the week, vegetable eating occasions have declined in 5 out of 8 age groups between 2015-2020.

The greatest loss of 47.9 annual eating occasions is seen among adults ages 51-70 years — the second highest consumer of vegetables, behind those 71+ years.



Nearly one-fourth of individuals do not eat any fruit over the course of the week. Further, consumption trends in key age groups are moving in the wrong direction.

Young children ages 1-3 years typically eat fruit more often than any other age group. Yet, between 2015-2020, their fruit intake declined the most with a loss of 16.6 annual eating occasions.

Fruit and vegetable consumption patterns are different.

While we often talk about fruits and vegetables, collectively, there is wide variability between how individuals approach and consume them.



CONSUMPTION TRENDS BY TOPIC



Fruits

Approximately three-fourths of the population consume fruit at least once during the week. Children’s intake declined between 2015-2020. In addition to declining intake among children 1-3 years old, there is a slight decrease of 3.3 annual eating occasions among those 4-8 years old. Eating frequency, however, is growing, even slightly, among the majority of age segments.

Annual Eating Occasions Per Capita Change

9-13 years old, +20.1	31-50 years old, +0.9
14-18 years old, +16.1	51-70 years old, +0.5
19-30 years old, +9.9	71+ years old, +5.4



TOP FRUIT CONSUMED BY FREQUENCY

Annual eating occasions per capita

1. Bananas, 41.9
2. Apples, 28.2
3. Strawberries, 13.7
4. Oranges, 12.8
5. Grapes, 12.6
6. Blueberries, 11.7
7. Applesauce, 7.3
8. Watermelon, 5.8
9. Lemons, 5.7
10. Fruit salad, 4.9
11. Peaches, 4.7
12. Pineapple, 4.3

TOP FRUIT CONSUMED BY VOLUME

Average cups per occasion

1. Melons, 2
2. Apples, 1.3
3. Peaches, 1.2
4. Citrus, 0.9
5. Bananas, 0.9
6. Applesauce, 0.7
7. Berries, 0.7
8. Grapes, 0.6
9. Dried fruit, 0.5
10. Single/mixed nuts, 0.4

TOP GROWING FRUIT

Annual eating occasions per capita change, 2015-2020

1. Bananas, +2.3
2. Grapes, +1.9
3. Blueberries, +1.8
4. Strawberries, +0.9
5. Oranges, +0.7

TOP DECLINING FRUIT

Annual eating occasions per capita change, 2015-2020

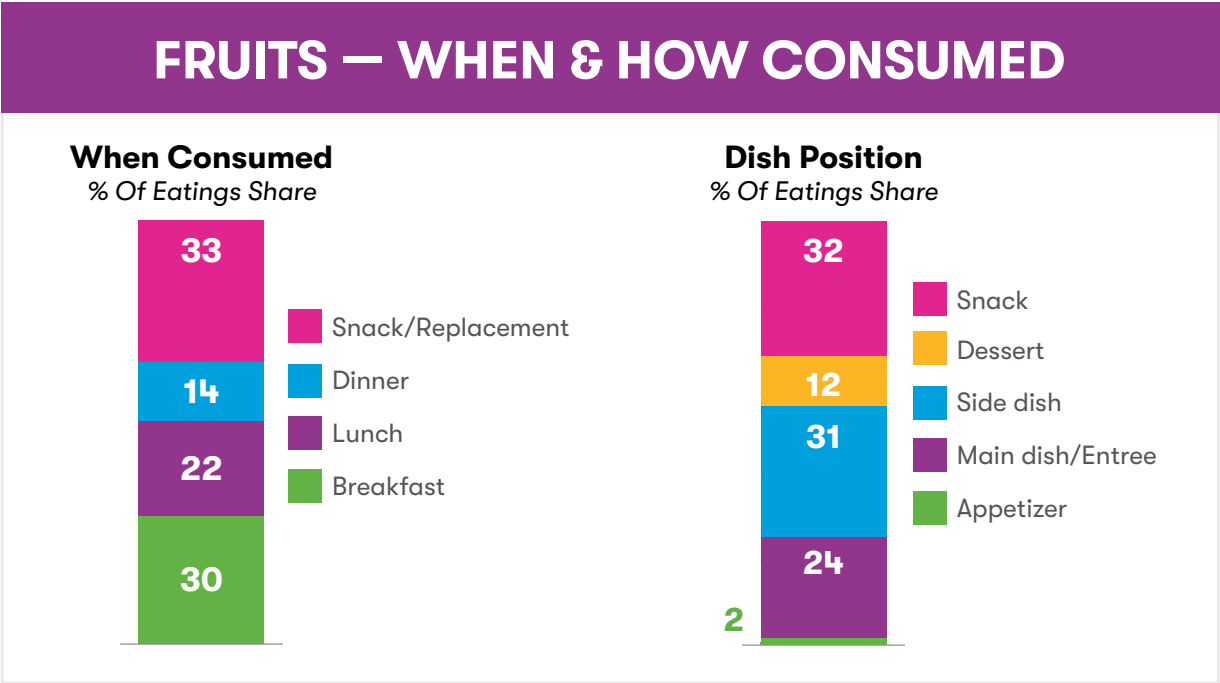
1. Raisins, -1.3
2. Mixed Fruit, -0.8
3. Peaches, -0.8
4. Cantaloupe, -0.6
5. Pineapple, -0.5
6. Apples, -0.2

Since 2015, fruit (excluding juice) has experienced slight increases (five annual eating occasions) in net consumption frequency. Nearly three-quarters (72%) of fruit is consumed at home and at-home consumption is growing in frequency. Away-from-home intake has remained flat. Across daypart and dish type, fruit shows versatility. Thirty-two percent of the time, fruit is consumed as a snack, followed by 31% as a side dish, 24% as a main dish or entrée, and 12% as dessert. Fruit is consumed throughout the day (30% at breakfast; 22% at lunch; 14% at dinner; 33% in snacks) and its use as a snack and side dish is growing. Fruit consumed as a dessert has remained flat.

Bananas are the top fruit consumed followed by berries, and both (bananas, blueberries/strawberries) have seen growth in recent years. Apples round out the top three but have seen declines in the previous five-year period.

Fruit is consumed “as is” (vs. as an ingredient) the majority (>80%) of the time. When consumed as is, the fruit eaten in the highest quantities at one time include melons (more than 2 cups), apples and peaches (more than 1 cup), and citrus and bananas (just less than 1 cup). When used as an ingredient or addition, the top foods paired with fruits are breakfast favorites like hot cereal, cold cereal, and yogurt.

According to the 2020-2025 DGA, adults, on average, are eating just less than 1 cup of fruit per day (0.9 cup).² This is consistent with the 2020 PBH State of the Plate data that show the average consumption of fruit at less than one eating occasion per day and average amount consumed per occasion at just under one cup. (For reference, the recommendation for the average adult is 1 ½-2 ½ cups of fruit/day.)²



Vegetables

Vegetable intake typically increases with age (307 annual eating occasions in children 1-3 years old compared with 474 annual eating occasions in adults 71+ years old). **However, the total number of vegetable eating occasions has been declining for at least the past 16 years.** Only three groups increased eating occasions — 14-18 year olds (+16.3 annual eating occasions), 19-30 year olds (+15.1), and 71+ year olds (+9.3). The following five age segments declined:

Annual Eating Occasions Per Capita Change

- 1-3 year olds, -5.8

31-50 year olds, -14.4
- 4-8 year olds, -6.6

51-70 year olds, -47.9
- 9-13 year olds, -33.2



TOP GROWING VEGETABLES

Annual eating occasions per capita change, 2015-2020

1. Potatoes (including fries), +5.3
2. Caesar Salad, +2.5
3. Avocados, +1.2
4. Tomato Sauce/Paste, +0.9
5. Tomato Salsa, +0.9

TOP DECLINING VEGETABLES

Annual eating occasions per capita change, 2015-2020

1. Onions, -7.2
2. Tomatoes, -6.3
3. Green Salads, -6.0
4. Lettuce, -5.4
5. Carrots, -3.9

TOP VEGETABLES CONSUMED BY FREQUENCY

Annual eating occasions per capita

1. Lettuce/vegetable salads, 61.2
2. French fries, 45.3
3. Onions, 31.6
4. Tomatoes, 27.1
5. Carrots, 20.8
6. Mashed potatoes, 19.0
7. Beans/legumes, 18.3
8. Corn, 15.7
9. Peppers, 14.7
10. Broccoli, 13.7
11. Green beans, 13.7
12. Baked potato, 11.2
13. Celery, 8.7

TOP VEGETABLES CONSUMED BY VOLUME

Average cups per occasion

1. Lettuce/salads, 2.9
2. French fries, 2.1
3. Green beans, 1.6
4. Broccoli, 1.5
5. Beans/legumes, 1.4
6. Corn, 1.2
7. Carrots, 0.9
8. Mashed potatoes, 0.9
- Peppers, 0.8
9. Tomatoes, 0.7

Between 2015-2020, vegetable intake declined by 13 eating occasions annually (4%). While away-from-home eating occasions grew (+10), in-home occasions declined (-24) at double the rate, resulting in a net decrease. Vegetables are eaten largely as part of dinner (58% dinner; 6% breakfast; 30% lunch; 6% snacks) and are consumed as a side dish in more than half (56%) of the eating occasions. About one-third of the time (38%) vegetables are consumed as a main dish or entrée.

Vegetables are eaten “as is” (vs. as an ingredient) about three-quarters of the time. Otherwise, vegetables pair well in a variety of

dishes including salads, sandwiches, and ethnic cuisine (e.g., Italian, Mexican, Asian dishes). When consumed as is, the vegetables eaten in the highest quantities at one time include lettuce/salads (close to 3 cups), French fries (about 2 cups), and green beans, broccoli, beans/legumes (about 1.5 cups).

Eating occasions that included avocados and tomato-based products (e.g., sauce, paste, salsa) grew between 2015-2020. Potatoes have long been a bright spot for the vegetable category. Still, salads, the most popular vegetable type, have seen the largest declines since 2015. Other favorites including onions,

tomatoes, and carrots have also declined. If staples such as salads, vegetable side dishes, and the vegetables that accompany burgers and sandwiches continue to decline, this could be very damaging for vegetable intake going forward.

According to the 2020-2025 DGA, the average daily vegetable consumption among adults is 1.6 cups.² This is consistent with the 2020 PBH State of the Plate data that shows the average consumption of vegetables at approximately one eating occasion per day and average amount consumed at a time as 1.4 cups. (For reference, the recommendation for the average adult is 2-4 cups/day.)²



Juice

Eating occasion losses are occurring across all age groups with the most notable being 1-3 year olds who are down 40.9 annual drinking occasions per capita.

Half of the population (52%) are drinking juice over the course of the week with the average individual drinking juice four times per week. In-home occasions are down (-12 annual eating occasions), while away-from-home intake is slightly up (+3 annual eating occasions) for a net loss of 10 annual eating occasions. This equates to an 8% decline between 2015-2020.

Orange juice continues to be the most popular juice consumed followed by apple and cranberry. However, these traditional favorites have seen recent declines while lemon juice is one juice seeing a bump in juice occasions. Nearly three-quarters (74%) of juices are consumed in-home and about 70% of that juice is sourced from grocery retail. Close to half of juice consumption (46%) occurs at breakfast.

Juice consumption declined by 8% between 2015-2020.



TOP GROWING JUICE

Annual drinking occasions per capita change, 2015-2020

- 1. Lemon Juice, +1.2
- 2. Fruit Smoothies, +0.2
- 3. Lime Juice, +0.2

TOP DECLINING JUICE

Annual drinking occasions per capita change, 2015-2020

- 1. Fruit/Veg Blend, -3.1
- 2. Orange Juice, -2.9
- 3. Grape Juice, -1.4
- 4. Cranberry Juice, -1.1
- 5. Apple Juice, -0.9

TOP JUICE CONSUMED BY FREQUENCY

Annual drinking occasions per capita

- 1. Orange juice, 41.9
- 2. Apple juice/cider, 24.5
- 3. Cranberry juice, 7.3
- 4. Lemon juice, 6.3
- 5. Grape juice, 5.1
- 6. Fruit/vegetable juice blend, 2.8
- 7. Coconut water, 2.5
- 8. Smoothie, fruit based, 2.2
- 9. Vegetable juice, 1.8
- 10. Grapefruit juice, 1.4
- 11. Lime juice, 1.2
- 12. Tomato juice, 0.7

TOP JUICE CONSUMED BY VOLUME

Average ounces per occasion

- 1. Grapefruit juice, 10.3
- 2. Orange juice, 9.4
- 3. Pomegranate juice, 9.1
- 4. Vegetable juice, 8.9
- 5. Tomato juice, 8.7
- 6. Grape juice, 8.5
- 7. Fruit/vegetable juice blend, 8.4
- 8. Cranberry juice, 7.9

Motivators & Habits



Just over one half of adults say they are making an effort to eat more fruit (53%) and vegetables (56%) and the desire to eat more increases with age. Overall motivation to eat more fruits and vegetables remained unchanged between 2015-2020.



Motivators for choosing fruits and vegetables are similar yet ranked differently. Americans report their top motivators for eating fruit are: health and nutrition (34.1% of eating occasions), ease (33%), and “it’s a favorite” (27.9%). The reasons to eat vegetables mirror fruit, but in a different order — “it’s a favorite” is first (29.2%), followed by ease (24.8%), and finally, healthfulness (22.2%). [see chart]

TOP FRUIT & VEGETABLE MOTIVATORS

Which of the following describes why the [fruit item] was chosen?

Rank	Motivators	% Of Occasions
1	It was healthy/nutritious	34.1
2	It was quick/easy to make/get	33.0
3	It’s a favorite	27.9
4	I regularly serve or have	23.0
5	It was made with items on hand	18.5

Which of the following describes why the [vegetable item] was chosen?

Rank	Motivators	% Of Occasions
1	It’s a favorite	29.2
2	It was quick/easy to make/get	24.8
3	It was healthy/nutritious	22.2
4	It was made with items on hand	19.2
5	Satisfied craving/specific taste	15.5



Compared to other foods, consumers say that fruit is healthy to eat, part of their routine, and on hand. Similarly, they say that they eat vegetables because they have them on hand and because they are healthy. Building fruit behaviors into daily life and having vegetables on hand are examples of two behavioral tenets — routine and ease — that can be reinforced and result in lasting fruit and vegetable consumption habits.



Consumers express the same top barriers in relation to eating fruits and vegetables, and in almost the exact percentages. Top barriers include finding new menu ideas (31% for both fruits and vegetables); staying within budget (30% for both fruits and vegetables); planning healthy meals (29% for vegetables and 30% for fruit); and finding meals quickly (26% for both fruits and vegetables).



From a health and nutrition perspective, consumers say they are trying to get more protein (61%), vitamin C (56%), whole grains (52%), and fiber (52%). Vitamin C and fiber are firmly in the sweet spot when trying to effect increases in produce consumption. Interest in perceived health- and nutrient-related benefits (e.g., organic, probiotics, antioxidants, fiber) increases with consumption of fruits and vegetables, potentially related to the emotional and motivational power of health.



Those consuming higher amounts of fruits and vegetables tend to have greater desire and ability to plan. This is consistent with the 2017 PBH Novel Approaches to Measuring and Promoting Fruit and Vegetable Consumption research⁴, which showed that those who consume more fruits and vegetables encounter the same barriers as those who consume less — yet they make consumption happen in spite of the barriers.⁴

Consumption Frequency Segmentation

In this iteration of the *PBH State of the Plate*, the differences among attitudes and eating behaviors based on the frequency in which fruits and vegetables are consumed was studied. Fruit, vegetable, and juice “eaters” were divided into three categories — light, medium, and heavy. These classifications were made for each category based on natural cut-points in the data.

The majority of fruit (50%) and vegetable (55%) consumers are light eaters, with one or less eating occasions of each per day. For juice consumers, the greatest proportion (48%) are non-drinkers.

When fruits, vegetables and juice are combined, 2% of individuals are non-eaters. Just over half (58%) are light eaters with less than 2 eating occasions of fruits, vegetables, or juice per week. The remaining population can be described as medium eaters (25%) consuming a total of 14-21 items per week or heavy (15%) consuming a total of 22+ items per week.

Heavy vegetable eaters (12+ occasions/week) account for one-third of all the vegetables consumed and only comprise 15% of the population. Similarly, heavy fruit eaters (12+ occasions/week) also account for about one-third of fruit consumption, yet only make up about 9% of the population.

Fruit Eaters Eatings Per Week

LIGHT: 1-6

MEDIUM: 7-11

HEAVY: 12+



Vegetable Eaters Eatings Per Week

LIGHT: 1-7

MEDIUM: 8-11

HEAVY: 12+



Juice Drinkers Drinking Occasions Per Week

LIGHT: 1-4

MEDIUM: 5-7

HEAVY: 8+



Fruit Eaters

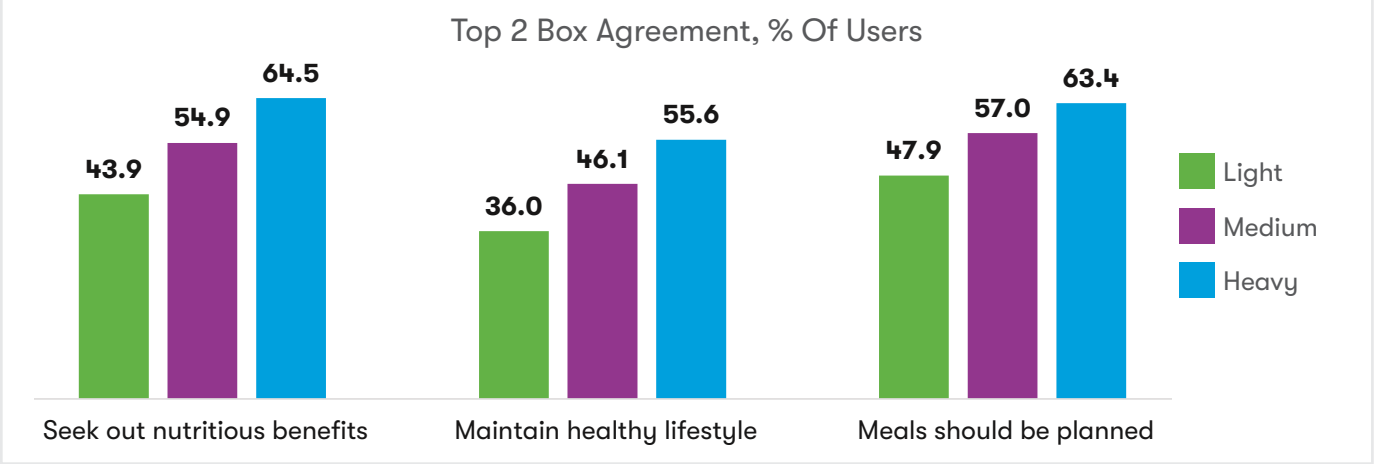


Heavier fruit eaters tend to prioritize health and nutrition and plan their meals to ensure the meals are nutritious more than light eaters do. Light fruit eaters know the importance of nutrition, but they do not place as much emphasis on health and wellness as medium and heavy eaters. Health and wellness is more of a way of life for heavy eaters to not only be healthier, but to look their best. Medium fruit eaters are often driven by taste, nutrition, and physical activity. This group will look for healthier items, and be willing to pay a higher price, but struggle to achieve exercise goals.



While light, medium, and heavy fruit eaters share many similarities around meal planning, there are some notable differences. Medium and heavy eaters place a bit more emphasis on new recipe ideas and healthy meals along with taste and time. Heavy eaters are not as likely to have their meals be influenced by kids. Heavy eaters, in particular, are more likely to spend time planning meals and seeking out nutrition information.

CHARACTERISTICS OF LIGHT, MEDIUM & HEAVY FRUIT EATERS



Heavier fruit eaters tend to prioritize health and nutrition and plan their meals to ensure they are nutritious compared with light eaters.

Vegetable Eaters



Heavy vegetable eaters are more likely to eat them as is, compared to light vegetable eaters. Light and medium vegetable eaters rely primarily on lunch and dinner occasions.

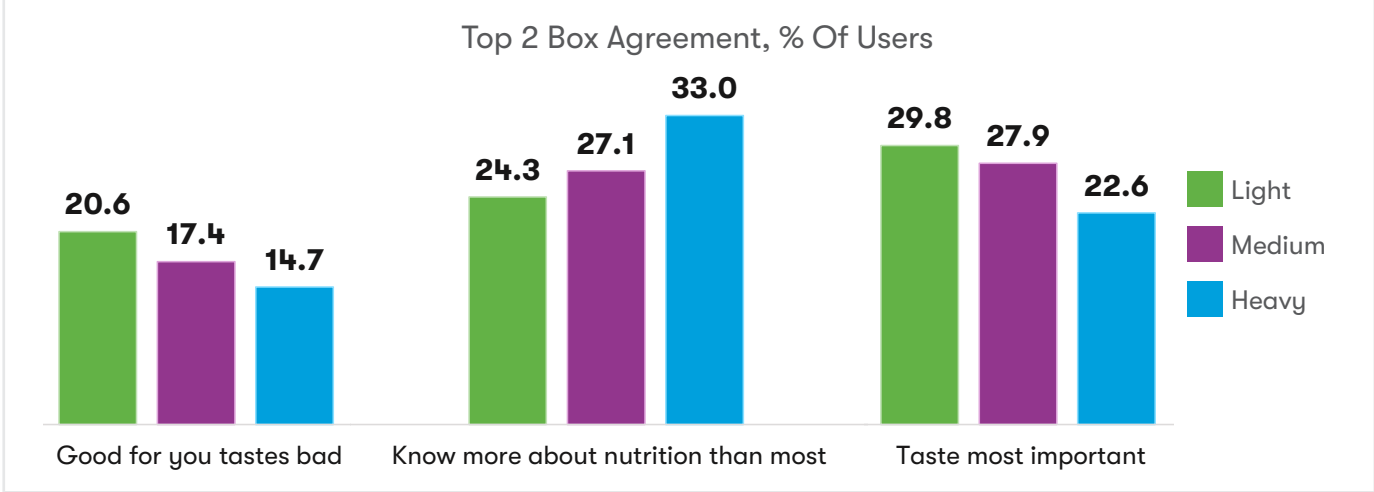


Similar to fruit, heavy vegetable eaters are also more likely to be open to new recipe ideas, as well as be less likely to have their meals be influenced by kids when compared to light and medium vegetable eaters.



With vegetable eaters, taste plays a larger role. While light eaters are less likely to report they know a lot about nutrition, they place a greater emphasis on taste and convenience and are more likely to say “healthier” items don’t taste very good. Medium eaters are often driven by serving simple, convenient meals. They will defer to well-known brands that can be prepared conveniently and quickly. Heavier eaters feel they are very nutrition savvy and don’t place as much importance on taste as light and medium eaters. As with heavy fruit eaters, they are driven by health and more likely to do meal planning.

CHARACTERISTICS OF LIGHT, MEDIUM & HEAVY VEGETABLE EATERS



Among vegetable eaters, there is an inverse relationship between how much they know about nutrition, and how good they think healthy food tastes.

Generations & Life Stages

Fruit and vegetable consumption tends to increase with age, culminating in the stronger intake patterns typically seen in those over the age of 50 years. Fruit intake starts out strong in young children and then wanes until it begins growing again in older adulthood. Vegetable intake frequency grows more consistently throughout the years. Unfortunately, as the data trends show, the enduring wisdom to eat more fruits and vegetables does not appear to be effectively passed down from older to younger generations.



The Silent Generation (born before 1946) is the top consumer of vegetables and second highest consumer of fruit. Fortunately, this generation has increased its consumption frequency of both fruits and vegetables over the past five years with an additional 38 eating occasions, annually, of fruit and 16.7 more annual eating occasions of vegetables.



Similarly, boomers (1946-1964) are among the highest consumers of fruits and vegetables. While older and young boomers demonstrated increases in fruit eating occasions annually (27.6 and 16, respectively) since 2015, their vegetable intake has declined with young boomers losing 30.2 vegetable eating occasions and older boomers losing 19.1 occasions annually.



Gen Xers' (1965-1980) frequency of eating occasions for both fruits and vegetables fall at the low end of average when compared to the consumption of other segments. This group is less likely than other generations to be heavy eaters of fruit, yet has gained a small amount of fruit eating occasions, annually, (+5) since 2015. Conversely, their vegetable eating occasions have declined slightly (-7.4).



Millennials (1981-1996) are more likely than other generations to not eat any fruits and vegetables at all. Consumption of fruits and vegetables is lowest among older millennials. The only group with lower intake than young millennials are older Gen Z. Older millennials are less likely than other generations to be medium or high fruit eaters and are also less likely to be heavy consumers of vegetables. From 2015-2020, millennials increased eating occasions of fruit by 12.2 annually. Over the same time period, older millennials demonstrated a slight decrease of 5.2 vegetable eating occasions, while young millennials increased annual vegetable eating occasions more than any other generation group (+37.6).

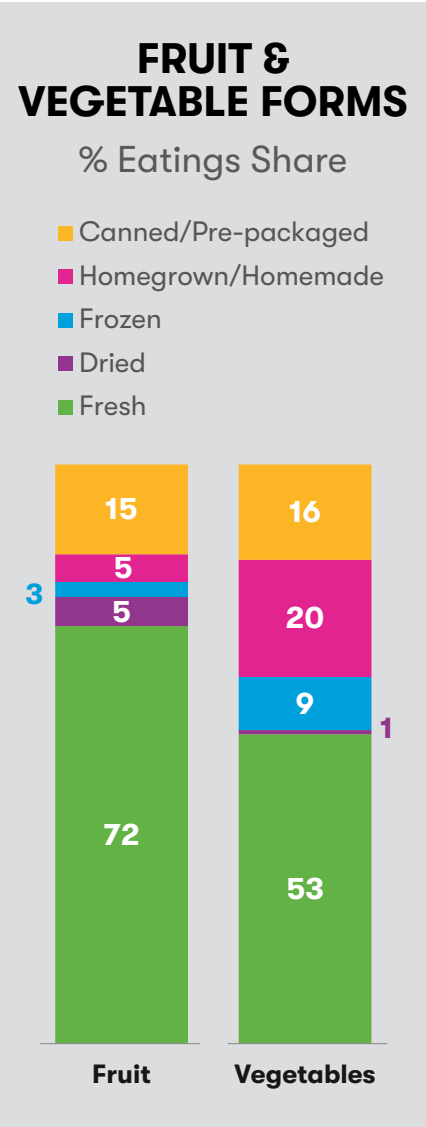


Gen Z (1997-2019) is the only segment with declining frequency of annual fruit eating occasions (-27.6 among young Gen Z and -16.9 among Older Gen Z). Older Gen Z are more likely to be non-fruit eaters. They also have declining vegetable eating occasions (-12.4 annually). Young Gen Z have a higher likelihood of not eating any vegetables, but have a slight increase in annual vegetable eating occasions (+5). Young Gen Z are also more likely than other generations to be medium consumers of fruit.

As millennials and older Gen Z are the generational groups most likely to be parents of young children, lack of fruit and vegetable intake is a serious concern. In fact, this trend may be rubbing off on young children, whose fruit and vegetable eating occasions declined in the past five years.



Fruit & Vegetable Forms



More than half the fruits and vegetables consumed are fresh, currently 53% and 72%, respectively. Market share of fresh produce increases with each PBH State of the Plate report, while other forms (frozen, canned, dried, and 100% juice) decline or remain stable. Among those who eat fruits and vegetables, vegetables are more likely than fruit to be consumed in other forms such as frozen (34.7% vs. 4.3%) and shelf stable (51.4% vs. 29.2%).



About one-third of the population consumes frozen vegetables, while a much smaller percentage (<5%) consume frozen fruit. Intake of frozen vegetables has decreased slightly from 2015-2020. Medium and heavy fruit and vegetable eaters are most likely to choose frozen forms compared with light eaters.



Consumption of canned and dried produce is flat between 2015-2020. Shelf-stable intake is greatest among light fruit, vegetable, and juice consumers and then decreases as individuals consume more often.

The PBH State of the Plate data was collected pre-pandemic. Other data collected throughout the pandemic indicate growth of additional fruit and vegetable forms beyond fresh.

Pairings & Settings



Fruit is most often paired with cereal, both hot and cold; salads are the top vehicle for vegetables. Other breakfast and snack options (e.g., yogurt, smoothies, and salads) are also common pairings for fruit. Additionally, sandwiches, ethnic mixed dishes (e.g., Italian, Asian, Mexican), and burgers rise to the top of vegetable pairings, and could be utilized more as a vehicle for increasing vegetable eating occasions. Other pairing ideas include animal- and plant-based protein foods as well as seafood.



Light fruit and vegetable eaters consume produce away-from-home more often than other segments, perhaps because it is easy. About one-quarter of vegetable purchases are sourced from foodservice including cafeterias and restaurants (quick- and full-service). Fruit consumed in quick- and full-service restaurants largely remained stable between 2015-2020, while vegetables consumed through quick-service establishments grew by 40% for eating occasions that included French fries and 48% for those not including French fries.

THE PATH FORWARD

Perspectives From PBH President & CEO

Wendy Reinhardt Kapsak, MS, RDN



At PBH, we believe it's not enough to talk about this chronic consumption crisis — we must act and we must do so together, to effectively create sustained and impactful behavior change. A multi-sector approach, reaching all points across the produce supply chain, in concert with the broader food system, will be critical to create “surround sound” action emphasizing behavior-based solutions.

Our Opportunity



International dietary guidance is clear: Eating more fruits and vegetables, in all forms, is the single most important thing ALL people can do — at every age and stage of life — to improve overall health and well-being. Based on the 2020 PBH State of the Plate research findings, and consistent with the 2020-2025 DGA, it will be of the utmost importance for Gen Z and millennials to start early to establish good fruit and vegetable habits and enjoyment in their children, within their families, and for themselves. It will also be critical to act immediately and decisively to preserve fruit and vegetable intake in older adults and guard against further attrition.



Ultimately, we need to start with understanding consumer behavior — including our own. The entire food system must reinforce fruit and vegetable consumption norms to collectively help create a next generation of fruit and vegetable super eaters. Public health as well as food and nutrition communicators must connect with consumers in meaningful ways — encouraging ease and enjoyment while also capitalizing on the interest in health and nutrition benefits among medium and heavy produce consumers and inspiring them to share the feel-good, motivating successes among their social circles.

Industry stakeholders must also unite to help enact multi-sector, food systems-based change. Consumer behavior trends reinforce the need for all sectors to collaborate and facilitate new fruit and vegetable consumption trends by enabling more enjoyable and more accessible experiences wherever and whenever people make food and beverage decisions, so eating fruits and vegetables becomes a crave-worthy and easy habit.

America's widespread underconsumption of fruits and vegetables is a vulnerability that the COVID-19 pandemic further illuminated.

Eating foods that preserve one's physical and mental health, as well as bolster immunity, has never been more top-of-mind. Further, factors such as mobility to access healthful foods and/or grocery shop, as well as illness and/or reduction in or loss of income, secondary to the virus, all play a role in rising food and nutrition insecurity levels. These reasons, among others, indicate that consumer shopping, preparation, and eating behaviors have shifted since this research was fielded. In fact, in the weeks following stay-at-home orders, large percentages of consumers reported having can, cup, pouch, frozen and juice forms of fruits and vegetables on hand. Additionally, purchase of juicing equipment increased by double-digits during the pandemic among other household cooking appliances. Clearly, the next *State of the Plate* research will be a telling analysis, to help us understand how the pandemic affected fruit and vegetable behaviors well-beyond this tumultuous time.

COVID has shone a light on a reality that the fruit and vegetable industry and other food system thought leaders have long known — that facilitating consumption of produce in all forms (fresh, frozen, canned, dried, and 100% juice) will be key in resolving the pervasive and worsening consumption crisis. The pandemic has disrupted all aspects of our lives, including all points of the food system supply chain, leaving many in search of what behavioral scientists call a “fresh start” moment. **If a global pandemic does not change fruit and vegetable consumption behaviors, what will?**



PBH KNOW-FEEL-DO™ Behavioral Framework

PBH remains committed to working with multi-sector stakeholders to identify, innovate and implement behavior science-based solutions to reverse the continued erosion of fruit and vegetable intake. To focus on shifting Americans' consumption behaviors, PBH has engaged behavioral science experts to develop a framework for supporting Americans in eating and enjoying more fruits and vegetables. This framework identifies three drivers of eating behavior: 1) what we KNOW; 2) what we FEEL; and 3) what we DO.

Most Americans already KNOW fruits and vegetables support better health and well-being — yet knowledge alone does not yield new fruit and vegetable consumption behaviors. Experts agree that effective consumer education and engagement must lean into how people FEEL about eating fruits and vegetables and then inspire environments that make DOing easy and habitual.

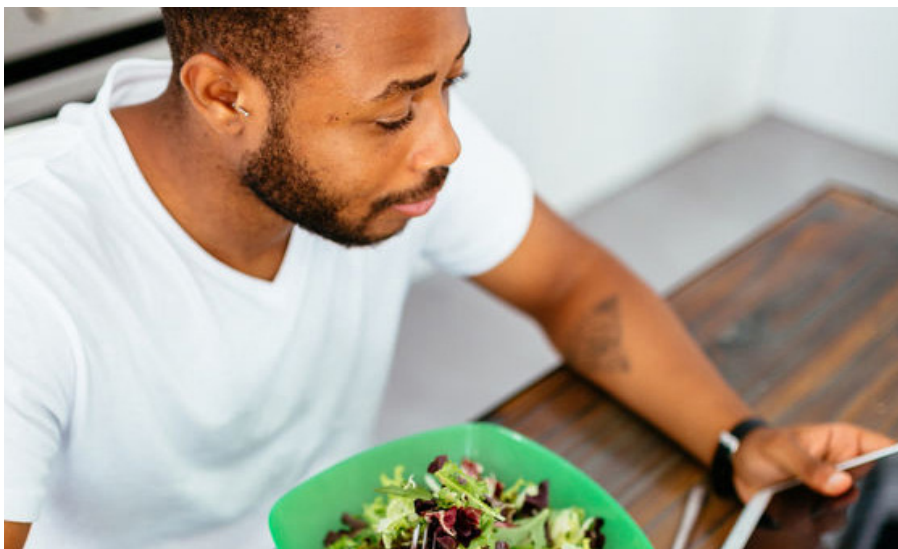


Knowing the importance of eating fruits and vegetables is not enough. We must also focus on creating emotional pulls (feel) and making it easy for people to act on this knowledge and emotion (doing).

Repeated exposure to fruits and vegetables is likely to lead to longer-term habits (easier doing), and also to increased enjoyment of these foods (more feelings).



We must make it easy for consumers at all stages of the fruit and vegetable consumption journey — from finding and buying, to storing and prepping, and ultimately, to eating and enjoying. If it is not easy and somewhat enjoyable, people are not likely to add more fruits and vegetables to their routines, and consumption will continue to decline.



As we work together to make fruit and vegetable behaviors easy, the focus should be on creating sustainable habits rather than achieving recommended goals.

That is, instead of telling people HOW MANY fruits and vegetables they should eat each day, let's inspire them with realistic, everyday habit-forming ideas — such as aiming to eat fruits or vegetables first at a mealtime, such as breakfast, lunch or dinner, on most days. Or better yet — simply Have A Plant®! Habit formation requires a consistent context, repetition and reward. In order to become a habit, the behavior has to become automatic, or EASY.



New fruit and vegetable habits are more likely to be attained when built upon current consumption behaviors and when paired with other foods.

Fruit is fairly versatile, primarily consumed at breakfast, lunch, and as snacks — with snacking and side dish occasions driving growth for this category. Vegetables, on the other hand, are generally consumed at dinner as a side dish. There's an opportunity to help consumers with new habits built upon when and how they typically enjoy fruits and vegetables.

In addition, fruits and vegetables are less frequently consumed as an ingredient — indicating room for growth. We know people are adding fruits to hot and cold cereals, as well as yogurt; and that they're trying vegetables in a variety of dishes including salads, sandwiches, and ethnic cuisine (e.g., Italian, Mexican, and Asian dishes). Let's inspire them with new ingredient ideas and delicious flavor combinations born out of these insights and celebrate how consumers can easily enjoy adding fruits and vegetables to favorite meals and snacks.

LEAD THE CHANGE MOVEMENT

We owe it to Americans to help them easily eat and enjoy (and maybe even love) more fruits and vegetables for improved health and happiness.

With fruit and vegetable intake consistently declining in the past 16 years, industry and food systems thought leaders must act differently, and quickly, to reverse the trend by enabling and empowering new, sustainable fruit and vegetable behaviors that bring the KNOW-FEEL-DO™ Behavioral Framework to life.

Determined to shift consumption trends for the future, PBH and its members have declared the next five years “A New Era of Conscious Consumption,” with an emphasis on helping all Americans easily enjoy more fruits and vegetables every day.

While many Americans know “conscious consumption” benefits their health and wellbeing — as well as their families, communities and environment — this mindset may sound daunting and unattainable. PBH’s insights stress fruit and vegetable behaviors must be easily transitioned into new habits; this new era of conscious consumption will flip the philosophy on its head to consciously make new fruit and vegetable eating habits unconscious, automatic, and enjoyable behaviors.

To facilitate this new era of conscious consumption, PBH has initiated the Lead The Change Movement, which includes three actions to unify consumption efforts:

1. Conducting consumer behavioral research to identify trends and increase new, more sustainable fruit and vegetable eating habits;
2. Assembling a multi-sector coalition focused on collaborating and celebrating innovations to support consumers in their new fruit and vegetable behaviors; and
3. Convening the first-ever National Fruit & Vegetable Consumption Summit in 2022, to further emphasize behavior-based opportunities for elevating fruit and vegetable consumption as a national priority.

We invite the entire food system — from farms and academic centers to suppliers, retailers, manufacturers, culinary leaders to food and lifestyle influencers and public health experts — to join this effort and collectively reverse America’s chronic consumption crisis.

APPENDIX



Research Methodology

Every five years, PBH conducts the *State of the Plate* research in partnership with The NPD Group utilizing their National Eating Trends® (NET®) database.

The NPD Group’s NET provides a complete picture what consumers eat and drink to help critical stakeholders understand critical trends in behavior, attitudes, and usage. NET also provides a complete view of consumption habits by capturing the *who, what, where, when, why, and how* for all foods and beverages and all situations — both in and away from home.

Sample Design	Data Collection	Scope	Reporting Period	Annual Yield
<ul style="list-style-type: none">Individual sample; infants, children, adults (all ages)Weighted to U.S. Census targets for age, gender, and other key demos	<ul style="list-style-type: none">Two instruments:<ul style="list-style-type: none">1) Web-based Journal2) Post Journal survey (attitudes, personal characteristics, shopping habits)	<ul style="list-style-type: none">All foods, beveragesAll usesAll situations (in-home and away)	<ul style="list-style-type: none">Up to 7 daysContinuous daily reporting; every day a new wave begins their reporting periodData collected March 2013 -February 2020	<ul style="list-style-type: none">~15,000 individuals400,000+ occasions900,000+ food & beverage transactions

Key Definitions

ANNUAL EATINGS PER CAPITA

The number of times the average person (across users and non-users) consumes annually

“AS IS” OR “AS THE DISH ITSELF”

Fruits and vegetables that are not eaten as an ingredient or addition to another dish (for example a side of corn or an apple)

EATINGS

The number of times a food or beverage item is consumed; measures frequency, not volume

FRESH

Foods reported to be fresh produce or refrigerated — excluding meat/fish/poultry

FROZEN

Foods reported to be frozen

FRUIT

All forms including dried and pouched
Seeds and nuts
Fruit chips
Fruit-based pies (excludes snack pies)

HOMEMADE

Foods reported to be completely homemade/ from scratch or partially homemade/assembled, including homegrown items

INTAKE LEVELS

“Light” vegetable eaters were defined as consuming vegetables 1-7 times/week; “Light”

fruit eaters were defined as consuming fruit 1-6 times/week; “Medium” vegetable eaters were defined as consuming vegetables 8-11 times/week; “Medium” fruit eaters were defined as consuming fruits 7-11 times/week; and “Heavy” eaters were defined as consuming vegetables or fruits 12+ times/week

INGREDIENT

The item is used as an ingredient within a base dish (for example corn used in a succotash)

INGREDIENT/ADDITION VS. DISH AS ITSELF

Panelists also determine how each food and beverage was used. They can report that the item was consumed as the “dish itself” or as an ingredient or addition to another dish. Example: With milk, if it is drank as a glass of milk it is considered the “dish itself” but if used in baking a cake it would be considered an “ingredient”

INDEX

Relative measure indicating if a group is well developed or underdeveloped compared to the rest of the population of interest
Index < 80 is below average
Index > 120 is above average

JUICE

All fruit and vegetable juices and ciders (excludes fruit and vegetable “drinks”). In this research, juice includes lemon and lime juices, homemade juices, fruit-based smoothies, fruit and vegetable juice blends.

MAIN DISH

Main dishes are the item perceived to be the “center of the plate” dish at the meal

OCCASIONS

The number of unique situations when a food and/or beverage is consumed

READY-TO-EAT FROM FOODSERVICE

Foods reported to be ready to eat from a foodservice establishment

SHELF STABLE

Foods reported to be shelf stable

SIDE DISH

Side dishes are items that accompany the main dish. Example: If a panelist reported having steak with mashed potatoes and carrots they may say the steak was their main dish while the mashed potatoes and carrots were the sides.

VEGETABLES

All forms vegetables
All forms legumes
Vegetable chips

VOLUME INTAKE

Measured in the NET database only on fruits and vegetables consumed “as the dish itself.” Panelists determine how each food and beverage was used.

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PBH Agents Of Change

PBH’s multi-sector consumption initiative, Lead The Change, unifies produce industry stakeholders and food system thought leaders to close the consumption gap and develop innovative, behavior-based solutions that help people eat and enjoy more fruits and vegetables for happier, healthier lives.

The 2020 PBH State of the Plate: America’s Fruit & Vegetable Consumption Trends research was made possible by the following industry leaders who have demonstrated their commitment to fruit and vegetable consumption, as well as America’s health and happiness by contributing to this pivotal initiative.

American Frozen Food Institute	Del Monte Foods, Inc.	Juice Products Association	Stemilt Growers, LLC
American Beverage Association	Del Monte Fresh Produce N.A., Inc.	Kellogg Company	Sunkist Growers, Inc.
Bayer	Dole Food Company, Inc.	Naturipe Farms, LLC	Sun-Maid Growers of California
California Avocado Commission	Dole Packaged Foods, LLC	Potatoes USA	The Wonderful Company
California Walnut Board and Commission	Duda Farm Fresh Foods, Inc.	Produce Marketing Association	United Fresh Produce Association
Chelan Fresh	Florida Fruit and Vegetable Association	Red Sun Farms	Ventura Foods/Marie’s
	HZPC Americas Corp.	Robinson Fresh	Western Growers
		Seneca Foods Corporation	



STATE OF THE PLATE

America's Fruit & Vegetable Consumption Trends

Find resources and inspiration to help create change at:

fruitsandveggies.org/stateoftheplatetoolkit

Join the Have A Plant® Movement on social media!



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