

# THE POWER OF PULL:

Driving Fruit and Vegetable Consumption  
at the Intersection of Access,  
Appeal, and Attitudes



INTERNATIONAL  
**FRESH  
PRODUCE**  
ASSOCIATION

AND

**THE  
FOUNDATION**  
FOR FRESH PRODUCE

# BACKGROUND

“The consumption of [fruits and vegetables (F&Vs)] is a key part of healthy diets. However, F&V consumption is very complex and shaped by interwoven factors such as desire, taste, culture, prices, competing foods, advertising and convenience. For this reason, effective interventions require a holistic view and an understanding of all influencing factors.”

- Food and Agriculture Organization of the United Nations, “[Promoting Fruit and Vegetable Consumption](#)” report, as part of the 2021 International Year of Fruits and Vegetables

The International Fresh Produce Association and The Foundation for Fresh Produce made an industry commitment at the 2022 White House Conference on Hunger, Nutrition, and Health to track the top drivers of produce consumption globally, across a 25-year time horizon, through an open-access resource hub, tentatively titled the “Produce in the Public Interest (PIPI) insights engine.” The first step of the commitment was to identify the drivers of fruit and vegetable consumption that encompassed multiple vantage points and disciplines.

As a helpful starting point, [2021 UN Food Systems Summit Brief](#) on increasing fruit and vegetable consumption defines three

categories of food system-wide actions for stakeholders to consider: “push” meaning “production and supply,” “policy” meaning “legislation and governance,” and “pull” meaning “demand and activism.” Examples of “push” actions include production subsidies, infrastructure development, support to fresh food outlets, shortening food supply chains, packaging, and home and community gardens. “ Examples of “policy” actions include regulation around food safety, zoning, and marketing, as well as investment in R&D, land rights, and foraging rights. Examples of “pull” actions include price subsidies, produce-rich institutional meals, social marketing, nutrition education, and promotion of fruits and vegetables in retail and foodservice outlets.

While there is inherently overlap between the push, policy, and pull actions, the scope of this white paper and the forthcoming Produce in the Public Interest insights engine is focused on the pull actions.

IFPA and The Foundation have developed an original framework of the top 18 drivers of fruit and vegetable consumption, drawing from relevant scientific publications and industry frameworks. See FIGURE 1. These 18 drivers shine a light on the solutions, lures, and most

effective ways to increase selection and consumption of fruits and vegetables.

We've also conducted a landscape analysis of existing tools, and completed advisor interviews and a needs assessment with our target audiences to pressure-test the framework and shape the user experience. We now envision an innovative new data visualization platform, with place-based insights, interactive elements, and personal impact stories.

**FIGURE 1: 18 Drivers Across 6 Dimensions**

		SPHERES OF INFLUENCE		
		Individual (Personal)	Social (Institutional & Cultural)	Physical (Tangible)
MACRO DRIVERS	Access	<ul style="list-style-type: none"> <li>Affordability</li> <li>Convenience</li> </ul>	<ul style="list-style-type: none"> <li>Medical/health incentives</li> <li>Economic incentives</li> </ul>	<ul style="list-style-type: none"> <li>Availability at home</li> <li>Availability away from home</li> </ul>
	Appeal	<ul style="list-style-type: none"> <li>Knowledge</li> <li>Cultural relevance</li> </ul>	<ul style="list-style-type: none"> <li>Social norms</li> <li>Dietary Guidelines</li> </ul>	<ul style="list-style-type: none"> <li>Taste</li> <li>Quality</li> </ul>
	Attitudes	<ul style="list-style-type: none"> <li>Health perception</li> <li>Purchase intent</li> </ul>	<ul style="list-style-type: none"> <li>Institutional procurement</li> <li>Political Will</li> </ul>	<ul style="list-style-type: none"> <li>Sentiment among retailers</li> <li>Sentiment among foodservice operators</li> </ul>

# 6 DIMENSIONS DEFINED

## 3 MACRO DRIVERS

### Access

Having “enough food for an active, healthy life” (“food security”), obtained consistently in order to “promote well-being, prevent disease, and if needed, treat disease” (“nutrition security”), including enough fruits and vegetables.<sup>1</sup>

### Appeal

The extent to which fruits and vegetables are “...an acceptable or desirable food choice.”<sup>2</sup>

### Attitudes

The “overall evaluations” by relevant stakeholders of increasing produce consumption as positive or negative. “In particular, [attitudes] are a function of the likelihood of the outcome occurring as a result of performing the behavior (e.g., ‘How likely is this outcome?’) and the evaluation of that outcome (e.g., ‘How good or bad will this outcome be for me?’).<sup>3</sup>

## 3 SPHERES OF INFLUENCE

### Individual (Personal)

“Household” or “micro” level,<sup>2</sup> which includes “income, employment, education level, food knowledge, lifestyle, time.”<sup>2</sup>

### Social (Institutional and Cultural)

“Meso” or “city and community” levels,<sup>2</sup> which includes “social determinants such as culture, family, peers, and meal patterns.”<sup>4</sup>

### Physical (Tangible)

“The food environment (e.g., proximity to stores, food prices, available food options) influences a person’s food choices and diet quality.”<sup>5</sup>



# 18 DRIVERS DEFINED

## Access Drivers

### ACCESS

Having “enough food for an active, healthy life” (“food security”), obtained consistently in order to “promote well-being, prevent disease, and if needed, treat disease” (“nutrition security”), including enough fruits and vegetables.

### Affordability

“... the capacity to pay a market price for food compared to the proportion of a household’s income and other expenses.”<sup>6</sup>

- “... fruits and vegetables, along with animal-source foods, are the most expensive element of a healthy diet by many metrics, comprising around 40% of the cost of a healthy diet.”<sup>2</sup>
- “F&V prices tend to make them unaffordable for poor households globally, particularly in LMICs. Individuals in the lowest wealth quintile in LMICs consumed 13.3 percent less F&Vs compared to those in the wealthiest quintiles, reflecting the direct relationship between income elasticities and F&V consumption (FAO et al., 2020)”<sup>7</sup>
- “Price reductions of healthier food choices can contribute to increased purchasing of those choices.”<sup>8</sup>

### Convenience

How easy or quick it is perceived to obtain produce.<sup>9,10</sup>

- “Because convenience is such an important factor to Americans, the most popular fresh fruit are often the most convenient to eat.”<sup>11</sup>

### Medical/Health Incentives

Motivation to consume produce to enhance overall health, live longer, or prevent, manage, or treat disease

- through either external motivation, i.e., “‘Food is medicine’ interventions — including medically tailored meals and groceries as well as produce prescriptions (fruit and vegetable prescriptions or vouchers provided by medical professionals for people with diet-related diseases or food insecurity”<sup>5</sup>
- or intrinsic motivation (i.e., purchasing more fruits and vegetables during older age due to reported health benefits).<sup>11</sup>



## Economic Incentives

“Fiscal interventions” — including price subsidies, discounts, cash vouchers, tax removal, and incentives in federal nutrition assistance programs — “aim at narrowing the gap between F&V prices and those of their competitors (highly processed foods).” <sup>2, 5, 7, 10</sup>

- “... fiscal policies that combine more than one strategy (i.e., taxes and subsidies) have the largest effect on increasing household F&V purchases.” <sup>7</sup>
- “... there is evidence that price incentives to make fruits and vegetables more directly affordable have worked to increase consumption.” <sup>2</sup>



## Availability at Home

Presence within a food environment of grocery stores and other retail outlets that offer fruits and vegetables in significant number, variety, and visibility. <sup>2, 5, 8</sup>

- “Physical access is a key driver of purchase (and by extension, consumption), with lack of fresh food outlets making consumption of fresh produce harder, and conversely living close to vegetable vendors making vegetable purchase more likely, suggesting that local access options are important in shaping diets.” <sup>4</sup>
- “Strategic placement of fruit and vegetables in retail outlets is found to have a moderately significant effect on increasing fruit or vegetable servings.” <sup>4</sup>
- “Modifying the food environment to increase the availability of healthy foods can improve people’s eating patterns.” <sup>5</sup>

## Availability Away from Home

Presence within a food environment of restaurants, cafes, institutions (i.e., “schools, workplaces, hospitals” <sup>4</sup>), and other foodservice outlets that offer fruits and vegetables in significant number, variety, and visibility. <sup>4</sup>

- “F&V-rich institutional meals” <sup>4</sup>
- “... early exposure to fruits and vegetables through schools may shape future preferences for healthier diets” <sup>4</sup>

# Appeal Drivers

## APPEAL

The extent to which fruits and vegetables are “...an acceptable or desirable food choice.”

### Knowledge

Familiarity with fruits and vegetables, awareness of their health benefits (“nutrition literacy”),<sup>4</sup> and understanding of how to select, consume, prepare, and even grow them.<sup>4,12</sup>

- There is clear evidence that focusing on education at all levels is a key component for modifying behavioural changes in general; and nutrition literacy...and self-efficacy are key components of health-related behaviour change.”<sup>4</sup>

### Cultural Relevance

Also called “cultural appropriateness”,<sup>4</sup> “cultural acceptability”,<sup>4</sup> the extent to which fruits and vegetables are familiar, relatable, and representative of one’s culture.<sup>4,5</sup>

### Social Norms

A key component of food culture, the societal mores that influence produce preferences: the “rules (software) that govern how we think, feel, and value”<sup>13</sup> fruits and vegetables.<sup>4,14</sup>

## Dietary Guidelines

Recommendations from the government at national, state/territory, and local levels about what to eat, including fruits and vegetables, with a focus on national dietary guidelines, which are “key tools for changing food systems”: “NDGs are public, government-endorsed documents that are intended to provide generalizable recommendations and advice on healthy diets and lifestyles. They are a key component of public health policy and an essential first step to promoting healthy eating habits in a country, often through educational programs or public awareness campaigns.”<sup>7,15,16</sup>

- “Broadly speaking, NDGs encourage higher consumption of fruits and vegetables”<sup>14</sup>

### Taste

A “biological determinant” of food choice along with hunger and appetite<sup>12</sup>, the extent to which the flavors of fruits and vegetables are satisfying and perceived as enjoyable.<sup>12</sup>

- “Ranks as the top driver of food and beverage decisions.”<sup>14</sup>

### Quality

Assurance of safety paired with sensory aspects of fruits and vegetables, such as “color”,<sup>17</sup> “firmness”,<sup>17</sup> “freshness”,<sup>19</sup> and overall “appearance”.<sup>11,17,18,19</sup>

- Extent to which produce products “meet the needs of consumers.”<sup>17</sup>



# Attitudinal Drivers

## ATTITUDES

The “overall evaluations” by relevant stakeholders of increasing produce consumption as positive or negative. “In particular, [attitudes] are a function of the likelihood of the outcome occurring as a result of performing the behavior (e.g., ‘How likely is this outcome?’) and the evaluation of that outcome (e.g., ‘How good or bad will this outcome be for me?’).

## Health Perception

Belief that fruits and vegetables have high nutritional value that can support one’s physical, emotional, and mental well-being, in the short term and/or long term. <sup>14, 12, 17</sup>

- “Only 28% of Americans define ‘healthy food’ as ‘Contains fruits or vegetables (or includes these ingredients).’” Compared to 40% who define it as “fresh”, and 37% who define it as “low in sugar.” <sup>14</sup>

## Purchase Intent

Also called “purchase intention,” a consumer’s “subjective tendency to pay for” fruits and vegetables; a “conscious effort” to buy them when there is trust in the product and “when the impression or attitude given to consumers meets their expectations.” <sup>20, 21</sup>

## Institutional Procurement

Degree of enthusiasm for produce among institutional foodservice decision-makers (non-commercial, community-based settings such as schools, workplaces, hospitals); shared sense among those gate-keepers that offering fruits and vegetables will positively affect them in some way (i.e., economically through sales and take rates, brand equity through positive stakeholder response or press coverage). <sup>7, 22</sup>

## Political Will

Degree of “social and political support” <sup>23</sup> and “the extent of committed support among key decision-makers” <sup>24</sup> for programs and actions to improve public health through greater produce consumption.

## Sentiment Among Retailers

Degree of support for and perceived value of promoting produce as a core business strategy among decision-makers in regional, national, and multi-national CPG companies, grocery stores, distributors, and other retail stakeholders (commercial settings for at-home consumption). <sup>25, 26, 27</sup>

## Sentiment Among Foodservice Operators

Degree of enthusiasm for produce among decision-makers in regional, national, and multi-national restaurant chains, ingredient manufacturers, distributors, and other volume foodservice stakeholders (commercial settings for away-from-home consumption). <sup>28, 26</sup>



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**For additional insight on relevant research behind these drivers, please see the [Appendix](#).**

We are looking for real-world examples that illustrate the impact of the 18 drivers of fruit and vegetable consumption in the lives of a diverse range of people across the world. If you have a story to share from your work, your research, or your community, we would love to hear about it.

**Please either click [here](#) to share a written story  
or click [here](#) to share a video story.**

### **About The International Fresh Produce Association (IFPA)**

The International Fresh Produce Association (IFPA) is the largest and most diverse international association serving the entire fresh produce and floral supply chain and the only to seamlessly integrate world-facing advocacy and industry-facing support. We exist to bring the industry together to create a vibrant future for all. We grow our member's prosperity by conducting advocacy; connecting people and ideas; and offering guidance that allows us all to take action with purpose and confidence.

### **About The Foundation for Fresh Produce**

The Foundation for Fresh Produce is growing a healthier world by changing the trajectory of human health. We believe fruits and vegetables are the answer and we must remove barriers that prevent people from eating them. The Foundation boosts the appeal of fruits and vegetables as an integral part of people's diets, improves access, nurtures passionate fruit and vegetable professionals, and scales partner programs that strengthen our collective global impact. To join in changing the trajectory of human health, visit [freshproduce.com/foundation](https://freshproduce.com/foundation) to learn more and donate. For consumer inspiration and professional nutrition education, go to [fruitsandveggies.org](https://fruitsandveggies.org).