

# BrightSide Produce: Tackling Limited Healthy Food Access Through Produce Distribution

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**Abstract.** This case study focuses on inventory management and the application of the newsvendor inventory model to provide recommendations for BrightSide Produce, a produce distributor that delivers fresh fruits and vegetables to its network of partner stores located in underserved areas of San Diego County, CA. It highlights the challenges and community impacts of limited access to affordable healthy food in these areas and describes the approach BrightSide Produce used to address them. Students are presented with questions that require them to exercise newsvendor model calculations, test their intuition, and compare financially optimal inventory policies with BrightSide Produce’s current policies. The case study concludes with open questions about addressing limited healthy food access in underserved communities. An extensive teaching note provides materials for teaching the newsvendor model, including detailed explanations of all calculations that students are asked to perform, along with an approach to structuring the classroom discussion. A companion spreadsheet for instructors contains all formulas and solutions.

**Keywords:** inventory management, newsvendor model, food insecurity, nonprofit management.

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1. The case is prepared as the basis for class discussion rather than to illustrate either effective or ineffective management. The case is not intended to serve as an endorsement or a source of primary data. The authors gratefully acknowledge the assistance of Rafael Castro, co-founder and Operations Director of BrightSide Produce.

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## 1. Introduction

Dr. Iana Castro, a professor of Marketing at San Diego State University (SDSU) and co-founder and Executive Director of BrightSide Produce, developed a produce distribution service that addressed the challenges that prevent liquor, corner, and convenience stores, and small markets, from offering fresh fruits and vegetables to customers. BrightSide Produce (BrightSide) offered weekly deliveries of affordable, fresh fruits and vegetables to partner stores, along with a suite of services so storeowners could successfully and profitably carry produce. Further, BrightSide reduced the financial risk for storeowners by selling produce to them at a low cost and buying back unsold produce. While the buyback program addressed a key barrier to storeowners carrying fresh produce, it had a negative impact on the financial sustainability of the program. Stores needed to stock enough produce items to reduce stockouts, as they may be the only source of produce for customers, while also reducing the amount of produce that spoiled before it was purchased. Would optimizing BrightSide's inventories help resolve this tradeoff and address its financial sustainability?

## 2. Food Insecurity in Underserved Communities

Food insecurity is the absence of consistent access to nutritious, safe, culturally-appropriate food for a healthy, active life.<sup>2</sup> It can result from limited access to or availability of healthy food, or from lack of affordability. In 2022, in the United States, approximately 34 million individuals were experiencing food insecurity, including nine million children.<sup>3</sup> Food insecurity is associated with negative outcomes for the mental and physical health and well-being of children and adults.<sup>4</sup>

In San Diego County in 2022, approximately 323,000 adults and 163,000 children were experiencing food insecurity, with many more considered to be at-risk.<sup>5</sup> The local food environment, particularly a lack of access to healthy

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2. <https://www.ers.usda.gov/topics/food-nutrition-assistance/food-security-in-the-u-s/definitions-of-food-security/>

3. <https://www.feedingamerica.org/hunger-in-america>

4. See Gundersen C, Kreider B. Bounding the effects of food insecurity on children's health outcomes. *J Health Econ.* 2009;28:971-83; Gundersen C, Lohman B, Garasky S, Stewart S, Eisenmann J. Food security, maternal stressors, and overweight among low-income US children: results from the National Health and Nutrition Examination Survey (1999–2002). *Pediatrics.* 2008;122:e529-40; and Dinour L, Bergen D, Yeh M. The food insecurity-obesity paradox: a review of the literature and the role food stamps may play. *J Am Diet Assoc.* 2007;107:1952-61.

5. Current Research on Hunger in San Diego County. San Diego Hunger Coalition. 2021. Retrieved May 2, 2022 from <https://www.sandiegohungercoalition.org/research>

food, in low-income communities can contribute to unhealthy eating and household food insecurity. Many residents in underserved communities had limited healthy food access, with some areas classified as food deserts, or places where residents have limited or no access to supermarkets. Other areas are classified as food swamps, or areas with an abundance of retailers carrying unhealthy, rather than healthy, foods.<sup>6</sup> Living in these communities is associated with a poorer diet, reduced intake of fresh fruits and vegetables, and higher risk for obesity.<sup>7</sup>

With limited access to supermarkets, residents in racially and ethnically diverse and low-income communities may rely on small markets and liquor, corner, and convenience stores to meet their food needs. Unfortunately, these smaller stores are limited in their ability to carry healthy products, including fresh produce, often because they cannot meet minimum order requirements required by distributors to deliver products to the stores (e.g., a store may be required to purchase at least \$250 in produce for a distributor to service the store). Additionally, many stores are owner-operated, limiting the storeowner's ability to carry products that are not delivered to the store.

### **3. Tackling Limited Food Access Through BrightSide Produce Distribution**

In 2017, BrightSide co-founders Dr. Iana A. Castro and Rafael Castro launched a produce distribution service that delivered produce to partner stores that included small markets, and liquor, corner, and convenience stores that were located in underserved communities. These partner stores accepted payments from the Supplemental Nutrition Assistance Program (SNAP), which provided eligible low-income individuals and households with monthly benefits that could be used at authorized retailers. The co-founders developed a model that directly addressed the challenges that prevented partner stores from successfully carrying fresh produce (e.g., small volumes, owner-operated, and insufficient distribution networks).<sup>8</sup> BrightSide distributed fresh fruits and vegetables to stores weekly, offered low costs without minimum order requirements, and provided additional services so stores could successfully and profitably offer produce to customers at affordable prices.

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6. United States Department of Agriculture, Atlas (n.d.). Retrieved May 2, 2022 from <https://www.ers.usda.gov/data-products/food-access-research-atlas/go-to-the-atlas/>. See also Rose D, Bodor N, Swalm C, Rice J, Farley T, Hutchinson P. Deserts in New Orleans? Illustrations of Urban Food access and Implications for Policy. University of Michigan National Poverty Center; USDA Economic Research Service Research; Ann Arbor, MI, USA: 2009.

7. Block JP, Scribner RA, DeSalvo K.B. Fast food, race/ethnicity, and income: A geographic analysis. *Am. J. Prev. Med.* 2004;27:211–217.

Importantly, BrightSide offered a buyback program for unsold produce, reducing the financial risk of stocking produce for storeowners and diverting rescued produce away from landfills to donations or compost. BrightSide thus provided a service that increased the accessibility, availability, and affordability of fresh fruits and vegetables by serving as a produce distributor that reached customers in underserved communities.

## **a. Weekly Process**

### **i. Receiving and Preparing Merchandise Process**

BrightSide was operated by students at San Diego State University who were selected through a competitive application process for internship positions. Students represented multiple majors and diverse expertise and were directly responsible for different components of the operation. With produce deliveries to stores occurring on Wednesdays and Thursdays, the weekly process began on Fridays, with the buying team putting together the order for the following week and determining what items would be sourced from each supplier. (See Figure 1 for a diagram of BrightSide's supply chain.) BrightSide carried between 30 and 40 produce items weekly based on seasonality, availability, and cost. It sourced fresh fruits and vegetables from wholesalers and local farmers. Priority was given to local farmers for items they had available, with orders to local farmers placed on Fridays and wholesale orders placed on Mondays. On Tuesdays, all orders were received at the BrightSide warehouse by the warehouse team. The warehouse was approximately 200 square feet and included both refrigerated and unrefrigerated storage, shelves, and supplies. (See Figure 2 for a photo of the warehouse.)

As supplier deliveries were received, the warehouse team counted and separated the merchandise by delivery day (i.e., Wednesday or Thursday) based on sales projections per day, and labeled and stored the merchandise so that the store delivery team could efficiently load the delivery van each day. (See Figure 3 for the delivery van.)

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8. See Gittelsohn, J, Laska, MN, Karpym, A, Kringler, K & Ayala, GX. (2014). Lessons learned from small store programs to increase healthy food access. *American Journal of Health Behavior*, 38(2), 307-315; and Powell, L, Singleton, CR, Li, Y, Anderson Steeves, B, Castro, IA, Grigsby-Toussaint, D, Haynes-Maslow, L, Houghtaling, B, Laska, MN, Leone, LA, Seguin, R, & Uslan, D. (2019). Changes to SNAP-authorized retailer stocking requirements and the supply of foods and beverages in low-income communities in seven U.S. states. *Translational Behavioral Medicine*, 9, 857-864.