



Delivery Platform to Solve Malnutrition in America

Mingyi Yuan¹(✉), Shenneng Gu²(✉), and Zhihao Xu³

¹ Liberal Studies, New York University, New York 10012, USA
my2636@nyu.edu

² Soochow Foreign Language School, Suzhou 215000, China

³ Economics, Queen's University, Kingston, ON K7L3N6, Canada

Abstract. Every country in the world is negatively affected by one or more forms of malnutrition. Combating malnutrition has become one of the greatest global health challenges. Women, infants, children, and adolescents are at particular risk of malnutrition. Much previous literature on this topic have been read and a survey of malnutrition in the United States via Internet news is conducted. According to our research, there are three main malnutrition problems. The first problem is lack of awareness. Many Americans do not realize how serious the problem of malnutrition is, so they resort to unhealthy foods. The second problem is lack of access. Many Americans live in food deserts and therefore do not have access to these healthy foods. The third problem is the affordability of nutritious food. Because fresh foods are so expensive in the United States, many Americans are forced to choose less nutritious foods. With the rapid development and wide application of new digital technologies such as big Data and artificial Intelligence, Platform economy is emerging as the new more viable and efficient to approach malnutrition to reduce the above-mentioned problems. Building and operating a third-party service platform that connects customers with sellers closely, this work aims to solve the malnutrition in America by using different delivery methods, purchasing methods and advertisement campaigns.

Keywords: Malnutrition · Platform Economy · Sharing Economy

1 Introduction

The WHO asserts that the global food price crisis threatens public health and jeopardizes the health of the most disadvantaged groups such as women, children, the elderly and low-income families. Economic factors play a crucial role and could affect personal nutrition status and health. Economic decision factors such as food price and income do influence people's food choices. Moreover, food costs are a barrier for low income-families to healthier food choices. Several studies indicate that diet costs are associated with dietary quality and also food safety.

M. Yuan, S. Gu and Z. Xu—These authors contributed equally to this work and should be considered co-first authors.

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Malnutrition in the United States is a common issue with real impacts that need to be shed light upon. The consequences of malnutrition on the individual and society as a whole are numerous. To the individual, “malnutrition affects the function and recovery of every organ system”, causing health problems all over the body [1]. To society, malnutrition also imposes an economic burden that amounts to as much as \$15.5 billion each year from medical costs and loss of productivity [2].

There are many factors contributing to the extensiveness of malnutrition in America. The first factor is a lack of awareness. Many Americans do not realize the severity of the health risks associated malnutrition. As a result, they substitute junk food, which is great in taste but innutritious, over fresh fruits and vegetables. The second factor is food deserts, or places without any fresh food grocery stores nearby, which disproportionately impacts Black and Brown Americans. Large grocery stores choose not to open in poorer districts that consist of predominantly Black and Hispanic Americans because it is not as profitable due to insufficient demand. Hence, even if people in these food deserts desire to eat healthy, they are unable to because of distance. The third factor is the affordability of nutritious food. While cereals such as corn and wheat are heavily subsidized by the government, fruits and vegetables that contain vital micronutrients are not. Thus, many Americans cannot afford to eat a well-rounded, healthy diet that is not only sufficient in calories but also in micronutrients.

To deal with these malnutrition problems, a digital platform can be created to make nutritious food more affordable and accessible to consumers of lower income levels. Simultaneously, it will also make selling fresh groceries more profitable for producers. In addition, Advertisement campaigns can also be created to increase social awareness for malnutrition while redirecting those in need to the platform.

2 Literature Review

2.1 The Problem of Malnutrition in America

In America, malnutrition, an umbrella term that encapsulates undernutrition, obesity, and micronutrient deficiency, is a still a prevalent problem affecting many. Undernutrition, more commonly known as hunger, is an issue that affects over 41 million Americans; to put that into perspective, that is 1 in 8 people. To make matters even worse of the 41 million hungry Americans, 13 million are children, the most susceptible group to undernutrition [3].

Obesity is another prevalent health problem in America. According to the National Health and Nutrition Examination Survey (NHANES), nearly 1 in 3 adults are overweight, more than 2 in 5 adults have obesity, and about 1 in 11 adults have severe obesity [4]. Among children, obesity is also a prevalent issue, affecting almost 20% of children in America.

Micronutrient deficiency is the most common type of malnutrition. According to the CDC, 9 out of 10 Americans are deficient in potassium, 7 out of 10 are deficient in calcium, and 8 out of 10 are deficient in vitamin E; 50% of Americans also have insufficient levels of vitamin A, C, D, and magnesium [5].

2.2 Effects of Malnutrition on Individuals and the Society

There are many effects of malnutrition on the individual and on society. The first impact, according to BAPEN, is that malnourished children have weaker immune systems and are therefore more susceptible to infection and disease [6]. As a result, children are stunted by chronic nutrient deficiencies and frequent infections, which has irreversible effects on their motor and cognitive abilities. Even worse, this state of malnutrition continues into the next generation [7]. It is estimated that half of all developmental delays in children occur in the womb. Thus, undernourished women and girls of childbearing age are more likely to give birth to small babies in weight and height.

In addition, several studies have shown that underdevelopment of children due to malnutrition can affect brain development. According to an article on stunted children, about two-thirds (64.3%) of children under the age of five achieved optimal cognition. Stunted children had a 7% reduction in optimal cognitive development compared to non-stunted children [8]. According to UNICEF, children with reduction in optimal cognitive development will lose 0.7 years of schooling, defer enrollment of schools for 7 months, and reduce 22 to 45 percent in income of whole life.

Finally, malnutrition has economic consequences. According to the Global Panel on Agriculture and Food Systems for Nutrition, the estimated impact on the global economy could be as much as \$3.5 trillion per year, or \$500 per person [9]. This is because for every one percent reduction in potential height, an adult's income decreases by 2.4 percent. In addition, learning disabilities, poor academic performance, low adult labor productivity, and increased health care costs all impose additional costs at the same time.

2.3 Reviews of Causes and Existing Efforts for Malnutrition

2.3.1 Lack of Awareness

While some Americans are malnourished because of poverty and inaccessibility to fresh groceries, others are malnourished because of their lack of awareness.

Many Americans opt for processed junk foods instead of fresh, nutritious fruits and vegetables. This is because processed food is highly affordable due to huge government subsidies on carbohydrates and long shelf life, chemically engineered to taste good, and also more convenient than a homecooked meal since it comes ready to be eat [10]. The problem with this kind of junk food heavy diet, though, is that it can lead to micronutrient deficiency, which in turn can lead to severe health implications. It is important, therefore, to make more Americans aware of the severity and prevalence of micronutrient deficiency as a result of a poor diet.

Obesity is another issue that lacks attention. In the late 20th century, new technology was able to make processed foods cheaper using corn syrup and palm oil, which are calorically dense. Fast-food restaurants during that time also started marketing techniques such as “value meals (e.g., packaging high-profit drinks and French fries with low-profit burgers) and supersizing (e.g., tripling the serving size of McDonald's French fries from 200 kcal in 1960 to 610 kcal today)” [11]. These techniques further lowered the prices of junk food and encouraged Americans to get into the habit of eating more than they should. To stop obesity, the public should be more aware of the prevalence and severity of health risks associated with obesity.

Companies can raise awareness online for societal issues such as malnutrition using the attention economy. For instance, Ecosia is a nonprofit search engine that uses its advertisement revenue on planting trees to fight climate change. Ecosia is able to make anyone who uses their search engine more knowledgeable of climate change and at the same time contribute to the cause by just searching like they normally would with Bing and seeing the occasional advertisement.

2.3.2 Lack of Access – Food Deserts

Another big issue about malnutrition are food deserts, which means that people in those places do to have access to the food they want. In China, this problem is common as well. There are many areas that do not have access to high quality vegetables at low prices. Due to COVID -19, traffic in markets in many cities has been affected by the government’s epidemic prevention and control measures. In April 2022, the epidemic prevention and control situation in Shanghai was very serious. Under several rounds of lockdown measures, most Shanghai residents adhered to the principle of going out only in case of emergency. They did not leave their residential areas, did not go down the stairs, and did not leave their houses. In the severe emergency situation of the epidemic, the measures taken by the government to prevent and control the epidemic had an impact on market circulation, and the distribution channels of materials such as express delivery and takeaway food were suspended to varying degrees [12]. In this case, Shanghai residents find themselves in a food desert. Instead of getting the food they need, they must rely on instant noodles to survive.

In response to the epidemic in Shanghai, residents organized group buying. In group buying, people join together in a community to order a product so that they can get the product they want with less travel. In group buying, there is a “leader” who makes the connection, determines the suppliers, and initiates the group buying. After the suppliers deliver the goods to the community, the “leader” inspects, sorts, and distributes the goods to the buyers [13].

In addition to community group buying, China also has a software called “Ding Dong Maicai” “Ding Dong Maicai” focuses on the online shopping experience and sells only through APP, without setting up offline stores. By calculating Big Data, a front-loading warehouse is set up within one kilometer of the community, and the distribution route is optimized to ensure that users can enjoy dishes with similar prices and high quality as those in physical food markets within a limited period of time without leaving their homes [14]. As for distribution, Ding Dong Maicai has set up a logistics team to ensure the speed of distribution. As for quality control, Dingdong Maicai has strictly controlled the quality of products since its establishment, and each step from origin to reception by the customer has been strictly carried out according to the specifications of the quality control personnel. Distribution staff will also remind customers to check the quality of food, if not satisfied, customers can choose unconditional return.

2.3.3 Affordability of Nutritious Food

Food is wasted because of poor storage and care during long distances. More than 8.5 percent of single-use packaged products arriving at distribution centers were damaged.

In stores, nearly 12 percent of single-use packaged fruits and vegetables were damaged. How long fruits and vegetables can be eaten after harvest depends on how quickly they lose water and use up their stored nutrient reserves. External conditions, including temperature and relative humidity, as well as handling, may cause product damage and accelerate the decay process [15]. An overemphasis on “attractive” food at the retail level has resulted in only high-end and expensive food being sold in stores. However, ordinary food has no place to sell, and is discarded as it expires and rots. Overall, Americans waste an average of 80 billion pounds of food each year [16].

It is beneficial to make foods near their expiration dates, such as cheap bread and bad-looking vegetables, that are not bought by high-consumption consumers. Hire truck drivers along the way to send them to poor states, where most people are low-consumption and sometimes can’t even afford full-price food. Sending expired food there quickly sells out because low-income people can buy a lot of nutritious food at a low price. They can buy fresher vegetables and milk. So much so that nutrient-deficient children in poor states can get plenty of it. It is recommended to add directory tab of cheap food markers to Google Maps, so consumers in poor states can simply search for “food stores” and see options for “cheap food stores” [17]. There, low-income consumers can also buy nutritious food at very low prices. This way, they don’t have to eat unhealthy fast food and get more nutrition.

3 Platform to Solve Malnutrition

3.1 Antecedents for Malnutrition in America

3.1.1 Lack of Affordability

Even in wealthy America, nearly 40 million people (11%) still live in poverty [18]. Many American households are struggling to make ends meet as the price of everyday goods in the United States continues to rise. In 2021, U.S. consumer prices continued to rise in November as inflation hit a 39-year high. The consumer price index (CPI-U) for all urban consumers rose 6.8% compared to a year ago, while the core index, which excludes volatile food and energy prices, surged 4.9% from November 2020. [19]. Based on an Internet survey of more than 9,000 adults between March 25 and April 10, 31% of respondents said their households have cut back on food spending and 69% have incomes below the poverty line of people cannot afford healthy food [20]. Wages for American workers have been shrinking. Pennsylvania workers explained to WSWS that second-line workers at their plants had been promised a retroactive pay raise for a month and a half after their previous contracts expired, but they still haven’t received anything. Worst of all, most workers have been unable to afford chicken breasts for months [21]. One method is to provide poor people with healthy food at low prices, such as vegetables and fruits that are about to expire. These foods are sold to low-income people at very low prices and still fresh. This method is like a Food Bank, collecting food and delivering it to the community for distribution to residents [3].

3.1.2 Lack of Access

Food Desert represents an urban area where it is difficult to buy affordable or good quality fresh food. Mentioned in the literature review on food deserts in China, the food desert problem is equally serious in the United States. The U.S. Department of Agriculture estimates that 54.4 million Americans live in low-income areas with poor access to healthy food [22].

There are many factors contributing to food deserts in America. The first factor is food insecurity. The U.S. Department of Health and Human Services (DHHS) estimates that 17.4 million American households were food insecure in 2014 [23]. An insecure supply of healthy food in a given community can lead to a decrease in demand for healthy food. As people develop poor eating habits in such an environment, there is less demand for healthy foods, which in turn means that there are fewer incentives for healthy food providers to come into the community. In this way, it becomes a vicious cycle. The second contributing factor is racial segregation. 76% of neighborhoods with a high proportion of blacks were among the most impoverished [24]. These poor communities cannot afford expensive fresh vegetables, so suppliers are not willing to come to these communities. As a result, they are more likely to be affected by food deserts. The third contributing factor is transportation and proximity to supermarkets. In food deserts, the distance to supermarkets is farther than in more affluent areas [24]. In addition, communities in food deserts have fewer supermarkets and local food markets, which often offer affordable and nutritious products. These three factors lead to food deserts.

The health problems resulting from food deserts are enormous. Diet and nutrition play an important role in chronic diseases, including heart disease, diabetes, and cancer, which are the leading cause of death and disability in the United States [25]. In food deserts, people do not have access to affordable healthy food. Instead, they rely on convenience stores and corner stores that often sell food with little nutritional value. As a result, it is almost impossible for them to eat healthy and get enough nutrients.

One method is bus stop farmers markets. Unlike traditional farmers markets, bus stop farmers markets are small pop-up stores usually located at bus stops, train stations, and other public transportation hubs. This gives people the opportunity to buy fresh food from the farm on their way home.

Another method is to improve public transportation. Many people who live in food deserts do not have access to healthy food because of the lack of transportation in the area. One way to solve this problem is to use ride-sharing services. Lyft has partnered with food providers and nonprofits to launch a food access program that helps food desert residents get discounted rides to participating local grocery stores and farmers markets.

The third method is to create a platform with low prices and delivery services. To the degree that distribution patterns can be managed by platform algorithms, people in food deserts will have the opportunity to get healthy food at acceptable prices.

3.1.3 Lack of Awareness

As previously mentioned in the literature review, lack of awareness is one of the major causes of malnutrition in America and is made worse by the affordability and accessibility

of junk food. Carbonated soft drinks, for example, are usually cheaper than bottled water and can be found anywhere where bottled water is also sold. It is no surprise, then, that Americans drink the most soda than anybody else— 170 L per person on average [26]. Other popular junk foods, such as pre-packaged snack foods, hotdogs, and pizza, are also affordable and can be found in convenience stores ready-to-eat. While to many Americans, fresh food might be just as affordable and accessible, junk food, in many cases, is just more appealing because it is more convenient and sometimes also more satiating than a homecooked meal. It is, therefore, important to educate the public on health benefits of eating homecooked meals and the significant health issues that can arise from eating innutritious and calorically dense junk foods that can lead to micronutrient deficiency and obesity.

Federal subsidies on “the big five” further lowers the cost of junk food, making it a more affordable alternative to fresh food for national consumers. In the United States, “the big five”, namely corn, soybeans, wheat, cotton, and rice are heavily subsidized [10]. The state has spent over \$116 billion dollars in the past funding corn and nearly \$50 billion dollars on wheat [27]. In comparison, fruits, vegetables, and tree nuts that are nutritious and low in calories receive no subsidy from the government whatsoever [10]. Since the main component of junk food, carbohydrate, usually comes from “the big five”, producers of junk food are able to indirectly benefit from the government subsidies and make junk food at a cost that is as affordable, if more affordable than fresh, nutritious food. Obviously, a method for the state would just be to reduce subsidies on “the big five” and increase subsidies on fruits and vegetables. However, this strategy might be catastrophic in the event of a major famine, where calories become everything.

A more feasible way to make consumers choose fresh, nutritious food over junk food is to raise awareness of the benefits of eating healthy and the severe consequences of not doing so. This can be done by the government, by community organizations such as NGO’s and schools, and even by businesses in the market sector. In the past, the U.S. health department created videos raising awareness on the health effects of vaping and, through advertisements on platforms such as YouTube, broadcasted these videos to adolescent teens who are the most susceptible to vaping. A similar thing can be done by the state to raise awareness for malnutrition. Locally, individual schools can also raise awareness in the classroom or even conduct surveys on the prevalence of malnutrition in their student body, triggering attention from the local government. Businesses can also raise awareness for social issues by advertising their company as one that helps lessen the issue. LifeStraw (a company that makes hand-sized water filters that can be used to purify 4,000 L of water from ponds, lakes, and other freshwater bodies with a single LifeStraw), for instance, advertises with the business model buy-one-get-one-free (BOGO); for every LifeStraw that someone buys, another LifeStraw will be bought for a child in Africa who does not have access to clean water. While not every company has to adopt BOGO, LifeStraw shows that a company certainly can raise awareness for a social issue, solve it, and make a profit all at the same time.

3.2 New Platform Solution to Address Malnutrition

3.2.1 Platform Economy in the Context of Malnutrition

The platform economy is an economic and social activity facilitated by platforms. Such platforms are typically online sales or technology frameworks. By far the most common type is “transaction platforms”, also known as “digital matchmakers” [28]. Examples of well-known transaction platforms include Amazon, Airbnb, Uber and Taobao. As a third-party service platform that connects customers and sellers closely, it will be committed to addressing malnutrition problems such as lack of awareness, lack of access and affordability of nutritious food.

3.2.2 The Expanding of Market Reach of Sellers to the Bottom of the Pyramid

On many farms, farmers grow some high-quality food. But they are very expensive, so farmers can only store them. Over time, these foods spoil. In Wisconsin and Ohio, farmers are dumping thousands of gallons of fresh milk into lagoons and cesspools. A farmer in Idaho dug a huge trench to bury 1 million pounds of onions. In South Florida, which supplies much of the eastern half of the U.S., tractors crisscross fields of beans and cabbage, ploughing fully ripened vegetables back into the soil. Many of America’s largest farms have been forced to destroy tens of millions of pounds of fresh food that they can no longer sell. The Dairy Farmers Association of America, the largest dairy cooperative in the United States, estimates that farmers dump as much as 3.7 million gallons of milk every day. A chicken processor crushes 750,000 unhatched eggs a week. Farmers can sell surplus food to grocery stores at a low price, as it can go mouldy if left in storage. Selling to food stores at low prices can generate income for farmers and provide cheap food in the market. Grocery stores, having acquired food at low prices, can sell it to low-income people, even with a little extra profit.

3.2.3 Provide Wider Selections at Low Costs for Buyers

Malnutrition, in every form, presents significant threats to human health. Today the world faces a double burden of malnutrition that includes both undernutrition and overweight, especially in low- and middle-income countries. The developmental, economic, social, and medical impacts of the global burden of malnutrition are serious and lasting for individuals and their families, for communities and for countries.

Poverty amplifies the risks from malnutrition. People who are poor are more likely to be affected by different forms of malnutrition. Also, malnutrition increases health care costs, reduces productivity, and slows economic growth, which can perpetuate a cycle of poverty and ill-health.

A much more obvious effect is on the children. Most recent estimates show that globally, 149.2 million children under the age of 5 years of age are stunted (too short for their age) and 45.4 million are wasted (underweight for their height). The number of children with stunting is declining in all regions except Africa. Over three-quarters of all children suffering from severe wasting live in Asia. Around 45% of deaths among children under 5 years of age are linked to undernutrition. The data from WHO shows that optimizing nutrition early in life—including the 1000 days from conception to a child’s second birthday—ensures the best possible start in life, with long-term benefits.

For above-mentioned reasons, women, infants, children, and adolescents are at particular risk of malnutrition and their family will be targeted customer groups.

3.2.4 Purchase Method and Delivery

The reason many Americans do not choose healthy vegetables and fruits is because they do not have access to them. Therefore, a platform with two purchase methods and two delivery methods can be created.

It is recommended that there can be two purchasing methods. The first purchasing method is the Single Purchase. This means that when a customer places an order on the platform, the delivery service will be immediately arranged, and a delivery person will bring the product specifically from the seller to the customer. This purchasing method is borrowed from Ding Dong Maicai. When a user places an order on Ding Dong Maicai, the system sends the order to the delivery person of Ding Dong Maicai. The delivery person goes to the front warehouse to pick up the food and then delivers it to the user within 30 min. However, unlike Ding Dong Maicai, the platform to solve malnutrition should be a third-party platform that will connect buyers and sellers. It will not set up front warehouses to store food. Therefore, the delivery route of this platform will be to pick up the product from the seller and deliver it to our customer. The second method of purchase is Group Purchase. This purchasing method is modeled after the group buying in Shanghai during the epidemic. At that time, some communities adopted group buying to reduce human contact. In group buying, residents of a community or building joined together to buy products. If the total number of orders to the same seller is more than 30, a group is automatically formed, if there are not enough plots, there is an immediate refund [29]. Then the “leader” of each building or community bought the products and delivered them to each family. It is suggested that the platform to solve malnutrition should also offer this purchasing method. Unlike single purchase, when a user places an order on the platform, the system will not immediately pass the order to the delivery person but wait until the number of orders from that community to the same seller reaches 10. Then, when the delivery person arrives in the community after the group purchase is formed, the delivery person will deliver the ten orders door-to-door. If the ten orders are not collected within an hour, the platform will contact the customer and offer them three options: first, to continue waiting until the ten orders are collected; second, to switch to single purchasing; third, to cancel the orders. Both purchase methods have advantages and disadvantages. The advantage of single purchasing will be speed, because the system will contact the delivery person immediately after the order is placed, but this will lead to high delivery costs. On the other hand, the advantage of group purchasing will be the price. Since the delivery cost will be divided by ten orders and the price of each product will a certain discount, the price of each order will be much lower than single purchasing. However, the disadvantage is also obvious, namely that the speed of delivery of products will be greatly affected, because the requirement for group buying is that a community has ten orders with a seller. It will take a very long time to meet these conditions. In the meantime, the delivery time will be longer because the delivery personnel will deliver from house to house after arriving in the community. Generally, single purchase means high price and high speed, while group purchase means low price and slow speed. With

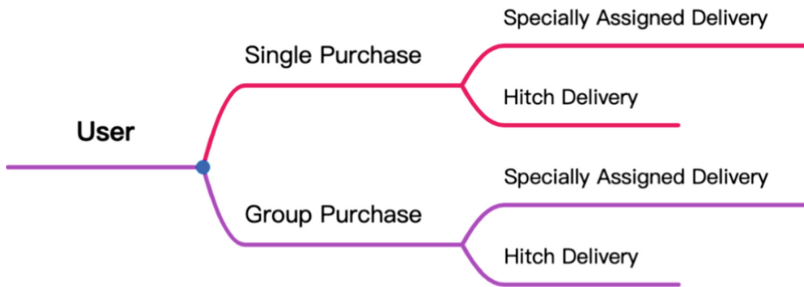


Fig. 1. Four Options of Platform [Owner-draw]

these two purchasing methods, people of different consumption levels will have access to the food they want.

In addition to the two purchasing methods, the platform should also include two delivery methods. The first delivery method is the Specially Assigned Delivery. This delivery method is widely used in today's society. Ele. me, Meituan, Uber eats, etc. all use this delivery method. It is recommended the platform to solve malnutrition should contract some delivery people to do the task of delivery. When users who choose the specially assigned delivery place an order on the platform, the delivery person will take the order, go to the seller to get the products, and then deliver the products to our users. However, considering the price factor, some users cannot afford the long-distance specially assigned delivery. Therefore, the platform should offer an alternative delivery method: Hitch Delivery. The delivery method is actually borrowed from the Chinese company Didi Hitch. When a user wants to take a cab from Didi, there is an option called Hitch, which means that if a driver is going to drive from one point to another, and then just pass the user's starting and ending points, they can take the user. This kind of cab is much cheaper than a traditional cab. The hitch delivery on proposed platform works in a similar way. If a person is going to pass by the location of our buyer and seller, he or she can take the product on the way from the seller to the buyer. This type of delivery is much cheaper than traditional specially assigned delivery. However, the disadvantage of this type of delivery is also obvious. To increase the efficiency of hitch delivery, anyone can apply to be a hitch delivery person on our platform. Nevertheless, there is no guarantee of a timely match with a hitch. This means that it may take a very long time for a user to find a hitch to complete the delivery. But in any case, the presence of such an option increases the likelihood that people will be able to spend less money.

When users place orders on the suggested platform, they can combine the purchase method with the delivery method as they wish. So there are four options (see Fig. 1). Option one: Single Purchase and Specially Assigned Delivery; Option 2: Single Purchase and Hitch Delivery; Option 3: Group Purchase and Specially Assigned Delivery; Option 4: Group Purchase and Hitch Delivery. In this way, users can choose the right plan according to the price and delivery time. So more and more people have the opportunity to get the food they want.

3.2.5 Advertisement and Sponsorships

The target users of the proposed platform are Americans who are malnourished because of inaccessibility, unaffordability, and a lack of awareness. The platform can solve the issue of inaccessibility and unaffordability, but in order to address lack of awareness, an advertisement campaign must be created for the platform. The advertisement campaign will raise awareness of the issue and convince people who are malnourished by choice to change their poor eating habits and buy more healthy alternatives to junk food. At the same time, it will also raise awareness of the platform and bring in more malnourished Americans in general.

In proposed advertisement campaign, personalized advertisements will be shown to geodemographic groups that are most susceptible to malnutrition through online platforms such as Google, YouTube, TikTok, and Instagram. For example, as previously mentioned, Black and Brown Americans are disproportionately affected by malnutrition due to systemic racism. By using big data, the platform can target specific ethnicities. By using big data, the platform can also locate food deserts as places without grocery stores in a certain radius and concentrate advertising in these areas. The platform can also locate zip codes with low median income and focus advertising in these areas. Advertisements can also vary depending on the customer segment. For example, for people in food deserts, greater emphasis will be placed on low delivery costs and speedy delivery to show accessibility. However, for people in impoverished areas, more emphasis might instead be placed on affordability. If obese people, who are malnourished by choice, are targeted, advertisements that raise awareness of the severe health consequences of obesity very much like what the U.S. Health Department did with its anti-vaping advertisements recommended to teens on YouTube can also be made. Advertising online allows the platform to use big data to pinpoint target customers and send personalized advertisements to them.

A unique way to fund the advertisement campaign aside from collecting transaction fees in the platform is to build sponsorships with like-minded businesses and non-profit organizations that are socially conscious and long to contribute to the local community. Sponsors can be attracted by renting out the surface area of delivery trucks as ad space, similar to what many MotoGP teams do with motorcycles to fund their racing expenditures. Sponsors benefit from collaborating with the platform because it advertises, and therefore sell to specific geodemographically groups that the sponsors might also want to target. For example, poor districts might suffer with both high rates of malnutrition and also contaminated drinking water with lead. In this case, LifeStraw can partner with the platform and have their advertisement displayed on trucks when trucks go to these poor districts; anyone in need would be able to, first of all, be aware of lead contamination if they weren't already, and second of all, not be lead poisoned by buying a LifeStraw or requesting for a free one if they find it unaffordable [30]. By displaying sponsors on delivery trucks, the platform will be able to fund its advertisement campaign and give opportunities for businesses and organizations to raise awareness of their brands, and perhaps even other social issues, to specific customer segments.

4 Conclusion

Malnutrition in America is caused by the unaffordability and inaccessibility of fresh food as well as a general lack of awareness. It is important, though, that this problem be ignored no longer. Consisting of undernutrition, micronutrient deficiency, and obesity, malnutrition as it is a very prevalent social issue affecting the health of the people and the economy.

Addressing malnutrition has conventionally been the responsibility and task of government agencies and non-profit organizations. However, this doesn't have to be the case; market sector entities can address malnutrition and do it in a more sustainable fashion than governments and charities. Usually, a one-way transfer of fresh groceries, for example, is funded with large amounts of taxpayers' money or donations which temporarily solves the issue. But once the funding stops, the same issue often emerges again as the root of the problem remains unsolved. In contrast, a business can better address malnutrition because it encourages a meaningful exchange of affordable necessities for consumers and monetary gains for producers that will last as long as there is a demand for nutritious food and a supply to match it.

The proposed platform can be implemented into a sustainable digital business to address malnutrition in the long run. With the delivery of affordable groceries to food deserts as its core function and an advertisement campaign to raise awareness for malnutrition and for the platform, this business can tap into the market of the malnourished and solve a huge need of many Americans. Though there are certainly limitations to what this platform can do, such as convince those who eat unhealthy diets to change and keep costs low during fuel or food shortages, it is nevertheless a great way to address malnutrition in America in an era of digital transformation.

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