



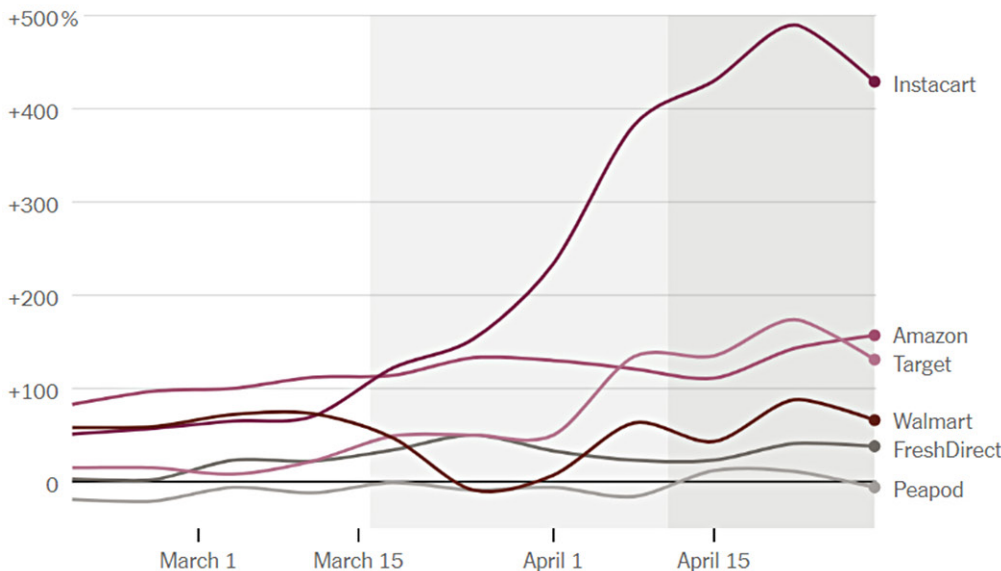
Farmers Post Produce Delivery

An Analysis of Utilizing the USPS to Feed America while Supporting Farmers

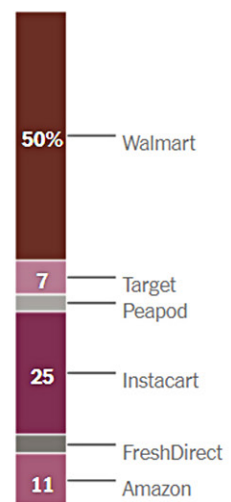
COVID-19 has illuminated many of the problems within US food systems and will continue to have ripple effects on businesses and consumers for years to come. Hunger and lack of access to nutritious food, however, are not new issues. Prior to the pandemic, nearly 40 million people in the US lived in food insecure households, and that number is on the rise.¹ Meanwhile, only 1 in 10 adults gets enough fruit or vegetables, according to dietary guidelines.² After initial panic buying and pantry stocking in 2020, the ways in which consumers are shopping for groceries have changed considerably. Prior to COVID-19, grocery e-commerce and delivery had around 3-4% market penetration.³ In March of 2020, more than a third of all Americans ordered groceries online for the first

time.⁴ Instacart's year-on-year demand saw an increase of 300%.⁵ While it is unlikely that this level of engagement will remain as high in a post-COVID world, many consumers are now seeing the benefits of greater convenience and safety, which will shape future shopping habits. In addition to grocery delivery platforms, other services such as meal kits, community supported agriculture subscriptions (CSAs), and ugly/surplus produce recovery services (such as Hungry Harvest or Imperfect Produce) have seen significant spikes in demand as a result of the pandemic. Each of these services reaches a niche, but many consumers, including those that are food insecure, are still left behind by these newer services and traditional grocery delivery due to cost and lack of accessibility.

Change in online sales for grocery delivery companies



Relative share of online sales - 1/20



Note: Year-over-year change in sales through April 29 · Source: Earnest Research

¹<https://www.nytimes.com/2020/07/28/us/politics/coronavirus-hunger-poverty.html>

²<https://www.cdc.gov/media/releases/2017/p1116-fruit-vegetable-consumption.html>

³<https://www.mckinsey.com/industries/retail/our-insights/digital-disruption-at-the-grocery-store#>

⁴<https://www.nytimes.com/interactive/2020/05/13/technology/online-shopping-buying-sales-coronavirus.html>

⁵<https://news.instacart.com/introducing-fast-flexible-order-ahead-to-speed-up-service-unlock-more-delivery-windows-f859b081a1a1>

At the same time, markets for specialty produce have been transformed by shuttered restaurants, schools running limited service, and interrupted supply chains. Although some specialty crop farmers are faring well due to increased interest in local food and consumer desire to diversify their food sources, many farmers lost significant portions of their business or were unable to plant their full acreage. This resulted in considerable loss of crops in fields where processing, logistics, and other factors proved too inflexible for farmers to quickly shift to retail, alternative processed products, or direct-to-consumer marketing. Prior to the pandemic, on-farm loss rates were already substantial, ranging from 2% for processing vegetables to 50% for fresh leafy greens, according to on-farm research in World Wildlife Fund’s “No Food Left Behind” series.⁶

Food e-commerce is being transformed because of COVID-19. Based on a study by Google and Bain of over 8,000 consumers, planning, browsing, and price comparisons are the leading reasons consumers prefer shopping at the grocery store rather than using a delivery service.⁷ While the future of grocery delivery demands greater innovation to raise the bar on services for consumers, COVID-19 has accelerated adoption of produce and grocery delivery service despite these preferences. Nevertheless, accessibility and affordability will continue to foreclose many of these options to a large segment of consumers.

A surprising player could emerge to fill the gap: The United States Postal Service (USPS). The USPS delivers mail and packages six days a week to most houses across the country and has the potential to diversify and expand produce delivery

2-3% MARKET PENETRATION
COULD RESULT IN
\$1.5B ANNUAL USPS
REVENUES

10% MARKET PENETRATION
COULD RESULT IN
\$6B ANNUAL USPS
REVENUES

options — bridging the gap between farmers with excess produce seeking additional markets and consumers for whom other delivery services may be out of reach. While many small businesses currently use the USPS to deliver their packages, the proposed initiative, which we will henceforth call Farmers Post, would be unique by enabling a standardized offering (produce boxes) from farmers, who would likely work through a third-party service that would manage a consumer interface and develop business processes. The USPS would provide supplemental promotion, and its name and service recognition would allow for widespread awareness and uptake.

The USPS has the potential to reach consumers through its vast logistical network without adding significant environmental impact relative to other services, while facilitating a highly cost-competitive offering. Indeed, depending on the offering design, environmental impact could be lower than alternatives, such as going to the grocery store or other produce delivery services. Greenhouse gas emissions (GHGs) from trips to the store for grocery purchasing are typically assessed via vehicle miles traveled (VMT). By taking advantage of pre-established



⁶https://c402277.ssl.cf1.rackcdn.com/publications/1246/files/original/NFLB_Part_II_V4_Final_Low_res.pdf?1562159669

⁷<https://retailwire.com/discussion/is-e-grocery-less-convenient-than-shopping-in-stores/>

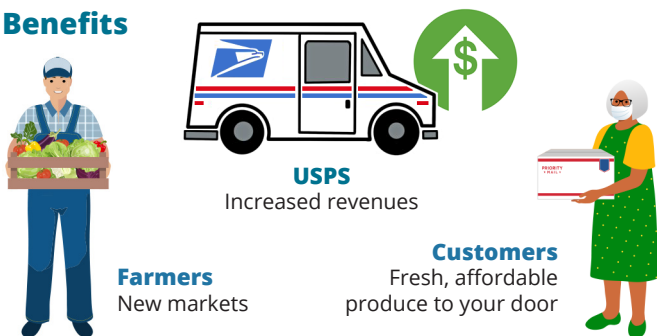


routes and thereby reducing transportation costs with fewer trips to the grocery store, as well as reduced distribution costs for farmers, Farmers Post could reduce VMTs. Environmental impacts are potentially further improved through reduced on-farm crop loss by enabling a new outlet for farmers to sell product that may have been destined for restaurants or food service. Further study is required to fully understand environmental impacts, but the opportunity is promising. The service also has the potential to add a critical revenue stream while the USPS is dealing with severe funding challenges. This analysis will explore the possibility of using the USPS for produce delivery from local farms (within two postal zones based on USPS delivery protocols) with excess produce or those that are seeking new markets on existing postal service routes.

Why the Postal Service?

By design, the USPS reaches Americans and businesses across the country at affordable rates. Although it cannot serve as a replacement for some components of grocery delivery due to lack of cold storage or access to wide range of processed goods, it can fill a need for affordable, accessible fresh produce delivery. It also creates additional markets for specialty produce farmers by enabling them to access the direct-to-consumer market more easily than if they were to attempt to do so individually. If this service had a modest market penetration of around 2-3% of the US population, it could reach \$1.5B in annual revenues (for USPS alone; farmer revenues would be considered separately).⁸ With a 10% market

Benefits



penetration, annual revenues could jump to nearly \$6B. While the USPS funding shortfall could not be filled by Farmers Post alone, the service could be a valuable diversification strategy, and potentially lead to more innovative approaches to meet the gap.

How Would it Work?

The USPS already has a regional rate system with several standard flat rate box sizes with low costs for relatively local deliveries. An existing size, or sizes, could be used, or new one(s) created. Farmers can provide an offering like a CSA box, which typically includes a seasonal mix of greens, other vegetables, and fruit. Produce boxes from a given farm or group of farms could be offered within existing delivery zones, which would allow for the Postal Service to pick up produce boxes from farms, likely either on their regular route or during routine box pick-up times, and then deliver them to customers within the closest two zones the next day.

With this design, additional emissions are likely to be minimal as the postal route or box pick-up and delivery would already be serviced through regular postal delivery processes. Emissions could potentially be less than other delivery services or CSAs depending on the model, though further research would be needed to compare. If this model scales significantly, larger trucks, additional routes, or consideration for cold chain delivery may be required, but not in the order of magnitude of an entirely new service.

The USPS is viewed favorably by 91% of the public according to research done by Pew Research Center.⁹ Recent changes to USPS service levels have resulted in consumer dissatisfaction and led to protests defending the USPS, demonstrating strong customer loyalty. Farmers Post has the potential to expand revenue streams for the USPS, increase customer satisfaction through new service provision, and even open further opportunities for the USPS to work in conjunction with other government agencies, such as the Department of Agriculture, to facilitate connecting farmers with consumers desirous of local fruits and vegetables.

Affordability

Cost is a barrier for many consumers to be able to take advantage of purchasing produce through existing delivery services, whether regular grocery delivery, CSA boxes, or others. The USPS presents an intriguing opportunity to reach consumers because its customer base spans across income level, location (urban/suburban/rural), and other demographics. Due to its ability to reach a diverse range of consumers through an existing service model, affordability is one component critical to the success of the service.

⁸Based on high level estimates assuming 4% urban penetration, 2% suburban, and 2% rural, with a small box costing \$22 (including \$7 for shipping) and a large box costing \$35 (\$10 for shipping) for the consumer, assuming 20 deliveries a year based on seasonality. Proportion of box sizes modeled to vary based on urban/suburban/rural markets. Revenue figure based only on shipping cost, as revenue is mentioned in reference to USPS. Numbers are illustrative only to demonstrate potential scale and would be refined based on actual service offering and further research.

⁹<https://www.pewresearch.org/politics/2020/04/09/public-holds-broadly-favorable-views-of-many-federal-agencies-including-cdc-and-hhs/>



Grocery delivery services typically have high service and delivery fees, or subscription fees, either charged directly or reflected indirectly in the price of goods, and tips are often expected for the shopper (who is usually also the driver). Meal kits have high cost per serving due to their value-added service. CSA boxes can often be cost prohibitive by requiring a seasonal subscription payment up front which, while understandably necessary or beneficial for the farmer, is not possible for many consumers. Most CSA boxes also do not offer delivery and often have limited pick-up windows and locations. These costs and inconveniences quickly add up for the customer, placing produce delivery services out of reach.

The below table illustrates that high delivery fees as a percentage of an average monthly grocery budget can be cost prohibitive, and tips, markups, and service fees are conservatively estimated, indicating that actual costs can be significantly higher. Because of different fee structures where some services markup products, have different pricing for subscription members, and/or add service fees, direct comparison of product and delivery cost is difficult. Since the Farmers Post model would take advantage of established delivery and pick-up routes, the delivery cost would be minimal relative to other services and would not include such markups. The model could also explore the feasibility of bulk

orders at drop-off points, such as schools or places of worship, for customers who may be unable or prefer not to receive delivery at home.

Farmers Post would enable farmers to competitively price their produce, which would not incur typical supply chain markups to get product to retailers or processors, or the costs of participating in farmers markets. The USPS already provides standard boxes for free to businesses, so the only added shipping cost farmers may need to incorporate on top of delivery is likely to be padding or other packaging based on the fragility of the produce. Depending on how the service is designed, the cost of shipping could be paid by the end consumer, or by the farmer and reflected in the pricing of the produce.

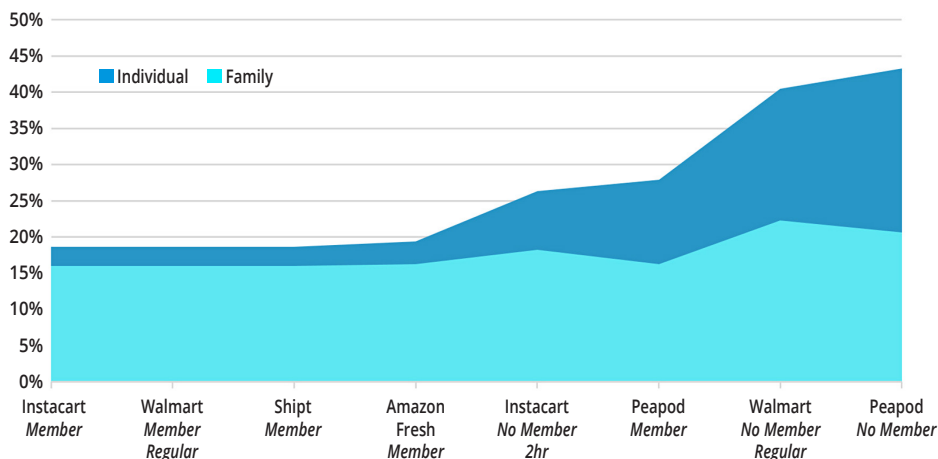
Accessibility

Farmers Post also offers vast potential for accessibility. Current grocery delivery services have limited delivery windows, which have been further tested by increased demand during the pandemic, and do not service all areas. Meanwhile, traditional CSAs are often only available in larger urban and peri-urban centers and typically require pickup, which necessitates car ownership or access. Ugly/surplus produce services, while growing, are currently offered in limited locations, mostly in

and around major cities. Though not specifically an access issue, they are also largely only known to environmentally conscious consumers, thereby lacking broader consumer awareness. The pandemic has demonstrated that there is room in the market for all of these services, as well as other innovative options such as regional food hubs¹⁰, but the reality remains that many of them are not easily accessed by large portions of the population.

Due to its mission, the Postal Service has the potential to reach any consumer in the US that may be interested in Farmers Post. The USPS

Monthly Delivery, Service and Tipping Costs as % of Grocery Budget



**See Appendix for detail on table assumptions.*

¹⁰https://www.bloomberg.com/news/features/2020-06-17/startup-milkrun-pays-farmers-to-deliver-their-own-goods-locally?mc_cid=e71cd89083&mc_eid=b365c6d08



plays an important role in rural locations as, in many cases, other delivery services may be unavailable or cost prohibitive. The below map illustrates the number of vegetable farms per county across the United States. While there are some counties, mostly ones with low population density, without vegetable farms, this demonstrates that in most of the country, local farms could service customers via Farmers Post, especially since two postal zones cover an area much bigger than a single county. Additionally, while the Farmers Post offering would be new, familiarity with the Postal Service will likely enable faster market acceptance, because consumers already know and trust the USPS. Of course, there will by necessity be regional differences and it may be impractical to offer this service in some areas. Seasonal produce variety will be more robust in certain regions, and the winter months will see a more limited selection, although this can be mitigated in locations serviced by controlled environment agriculture.¹¹ Nevertheless, COVID-19 has demonstrated disruptions in the food supply chain, as well as public safety concerns, and this model represents another way for a greater number of consumers to receive nutritious produce without leaving their home. For senior citizens, people with disabilities, and others who may be homebound or have mobility challenges, Farmers Post could be a game changer by facilitating home delivery of nutritious produce.

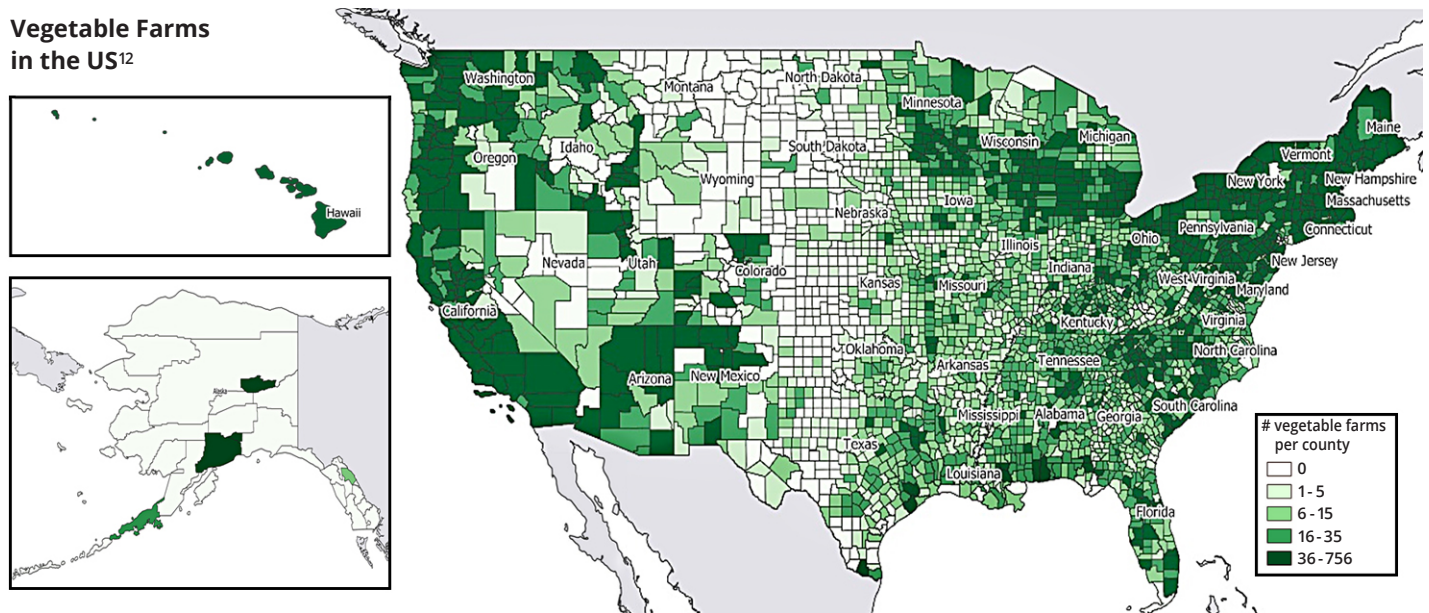
In areas affected by food apartheid and lacking ready access to grocery stores, the model could provide a reasonably priced,

accessible means to get fresh produce to more people.¹³ To ensure the service can reach food insecure consumers, Farmers Post could also seek government approval to accept SNAP benefits, and/or provide produce via future iterations of the Farmers to Families Food Box program, which would ensure affordable produce reaches vulnerable populations. SNAP benefits are now eligible to be used for grocery delivery in 40 states, but delivery fees are not eligible, and Amazon and Walmart are the only grocery delivery services able to accept SNAP benefits in most states. Farmers Post could potentially prove to be a more cost-effective model to reach benefits recipients.

Farmer Benefits

At time of writing, there is still much uncertainty surrounding if or when restaurants, schools, and other food businesses will reopen on more sure footing, and what they will look like when they do; farmers are concerned about losses related to 2020's harvest while also struggling to plan for 2021 and beyond. While it would certainly not serve as a full replacement for restaurant or other business, Farmers Post would diversify income streams for participating farmers while reducing loss of product. WWF's No Food Left Behind series has shown on-farm loss of 2-50% of various specialty crops, prior to the pandemic, demonstrating that, though on-farm loss is exacerbated by COVID-19, farmers would continue to benefit when markets are in a more normal operating position.¹⁴

Vegetable Farms in the US¹²



¹¹WWF's report on [Indoor Soilless Farming](#) explores the industry and impacts of controlled environment agriculture.

¹²Source: 2017 USDA Census of Agriculture

¹³While many are familiar with the term "food desert," food apartheid builds on this concept by acknowledging that lack of access to healthy, fresh, and affordable food is a result of structural inequities within the food system. <https://www.centerforhealthjournalism.org/resources/lessons/covering-food-deserts>

¹⁴<https://www.worldwildlife.org/pages/no-food-left-behind>

If the offering is designed in full or in part as a subscription service while still maintaining affordability for the customer, it would allow for farmers to better plan what they need to plant for the season, as they will have better insight into demand for a given year.



DIVERSIFY FARMER INCOME STREAMS

Farmers Post represents the potential for a convenient, easy way for farmers to sell their produce direct to consumer. They can receive standard boxes regularly from the USPS and fill them on-farm, allowing them to retain more of the profits from their offering by avoiding more costly shipping or packing. Additionally, within the last several years there has been increased consumer interest in local produce and, by virtue of design, Farmers Post produce will be local. The logistics of customer acquisition has been a key challenge for farms to increase CSA awareness and participation. The Farmers Post model can play an important role in raising consumer awareness of local farms with minimal effort on behalf of the farms themselves. Farms could also choose to include information about the farm in the boxes when they are packing them to enhance consumer interest and loyalty.

Offering Design

There are several ways the service offering could be developed for Farmers Post. A typical CSA may have 1-3 sizes of offerings depending on how much produce is desired by their customers. Farmers Post could offer similar sizing of small, medium, and large boxes, or begin with just one or two and add sizes in the future based on customer feedback. Freight Farms is a company that provides modular container farming technology to customers across 44 states, allowing new and existing farmers to grow anything from lettuce to root crops without soil in any environment or location.¹⁵ They and one of their growers conducted a few trial shipments using standard boxes to determine the feasibility of this type of offering in terms of quality and temperature control, as well as validating that shipments would arrive within 24 hours. Based on the success of trial shipments, Freight Farms is exploring the possibility of conducting a small pilot of Farmers Post with 5-10 of their farms across several different states. While the Farmers Post offering is envisioned to include a broader array of traditional specialty produce offered to a greater range of customers, the pilot has the potential to provide valuable insight into the possibilities of this model.

Without investment, the USPS would be unable to offer this service with cold storage, which necessitates produce boxes that can withstand temperature changes overnight between picking up from the farms and delivery to customers. In addition to assessing impacts on produce quality from temperature and transport, the pilot could offer insight into potential for uptake, unforeseen logistical challenges, and other areas where the service could be refined. The pilot could also help to inform whether the Postal Service's standard box sizes would be adequate, or if alternate sizes would need to be developed. Freight Farms customers operate a vertical farm model growing predominantly leafy greens and herbs, and the pilot would not cover all of the challenges a more traditional farm may face, however, the logistical learnings could be applied to design a broader, more robust national offering.

There is also much to be gleaned in designing an optimal Farmers Post offering from other existing models. Traditional CSA models involve purchasing an annual subscription, which is usually paid up-front, and receiving produce throughout the season based on what is ready to be harvested at a given time. Customers do not typically get to choose what produce they will receive, but rather subscribe to the season, though some CSAs allow for flexibility in the form of substitutions or add-ons. Paying for a whole year at a time would be cost prohibitive for many, which would limit potential for affordability. Additionally, not all consumers would be willing to receive a produce box without getting to select what is in it, although others may enjoy the opportunity to learn about different fruits and vegetables and to support local farms. Another model, Hungry Harvest — an ugly/surplus produce subscription service — allows customers to sign up for a subscription online and skip weeks when they do not wish to receive boxes. It does not charge an annual fee and customers are only charged for the boxes they receive. It offers a produce box based on what recovered produce is available, with options for substitutions and add-ons.

Consumer research, as well as collaboration with farmers, is needed to optimally design Farmers Post to promote uptake while providing sufficient economic benefit for the USPS and

CONSUMERS ALREADY
KNOW AND TRUST THE
USPS



the farmer. A subscription service that allows for flexibility in terms of when customers are charged, as well as the option to pause or cancel the subscription, could be a promising option. The offering of a standard produce box versus allowing for substitutions and/or add-ons is more complicated. CSAs are

¹⁵<https://www.freightfarms.com/>

offered through individual farms, and ugly/surplus produce services are offered only in select markets. The ability of Farmers Post to offer services beyond a standard box would be dependent on the way in which farms are aggregated to promote the offering. As the USPS's specialty is shipping and its focus is neither on produce nor on aggregation, a third party would likely need to create the appropriate customer interface and handle the e-commerce aggregation, transactions, and customer service. The USPS could help to promote the service through its communication channels to encourage broad uptake.

Research for subscription services has shown that customers are most likely to continue using services when ease of use has been proven. Subscriptions that auto-renew, for example, allow consumers to "set and forget," thereby enabling simplicity in decision making, which leads to customer loyalty and satisfaction.¹⁶ If Farmers Post were designed to allow customers to set up an account and have recurring charges with flexibility for cancellation, this may prove an effective retention strategy.

It was previously mentioned that the USPS could promote Farmers Post with direct marketing, or lend institutional weight via co-branding, to enable it to reach wide market penetration. This does not mean, however, that marketing would be reliant solely upon USPS, but rather that USPS is one channel through which promotion could be effective. Individual farms, a third-party aggregator, or other institutions supporting farmers, such as the USDA or farmers associations, could be involved in promotional efforts. Further development is needed to better determine the most effective strategies for encouraging service uptake.

Challenges

Recent changes made by the Postmaster General to USPS services and processing abilities have introduced uncertainty around mail service reliability. These service changes were implemented in July 2020 for the stated reason of cost saving measures, although they have reportedly been paused

until after the 2020 election. Such changes pose a risk for implementation of Farmers Post due to the perishability of produce. If customers cannot reliably expect their produce to be delivered within a reasonable timeframe, and that it may spoil or deteriorate in quality due to challenges within the USPS's delivery protocols, the service would not be successful. It is unclear whether these changes will be fully reinstated following the turmoil of the 2020 election and holiday season, or if further uncertainty surrounding USPS operations may arise. The 2020 holiday season saw extreme delays in USPS deliveries, which could be a result of COVID-19 and staffing, changes made by the Postmaster General, or a combination of these and other factors.

Due to seasonality and regionality, consumers may not be able to choose which produce they receive, although the seasonality issue is mitigated in areas where indoor soilless farming products are available. While enjoying seasonally appropriate local produce regardless of choice is appealing to some, many consumers will prefer to have control over which produce they receive. Farmers Post may eventually be able to allow for customization of produce boxes, but an initial offering is unlikely to accommodate this flexibility. As a result, the service may not appeal to all consumers. Nevertheless, CSA demand has skyrocketed during the pandemic¹⁷, and 'ugly' produce delivery for Hungry Harvest, and likely for similar services, has doubled¹⁸, demonstrating strong demand for alternative means of purchasing fresh produce other than traditional grocery stores.

For the Farmers Post model to scale, the offering design requires further exploration, including via which system(s), who hosts those systems, and how customers are reached. If the service is offered through individual farms and merely delivered by the USPS, farms can retain more control over what and how the service is offered, but it would have lower market penetration since farms' ability to market the product may be limited. If a third-party aggregator offers the service, the reach due to the USPS's marketing potential becomes immediately wider. Given its business, the USPS can easily use direct mail



¹⁶<https://hbr.org/2012/05/to-keep-your-customers-keep-it-simple>

¹⁷<https://thecounter.org/csa-sales-struggling-before-coronavirus-covid-19/>

¹⁸<https://www.thepacker.com/article/hungry-harvest-maintains-new-sustainable-practices-during-pandemic>

when services are offered in a new zone, as well as advertise in post offices, and provide for easy signup when consumers change addresses. However, the systems required to aggregate farms, determine pricing and policy, and facilitate customer service for this kind of product require further consideration to meet needs while not adding undue cost. Additionally, further consideration is required on how to handle theft or quality issues, which could be difficult when coordinating a service across multiple stakeholders. The challenge of aggregation is somewhat mitigated because technologies and systems exist today that could be adapted to this service, so it is unlikely it would need to be built from scratch.

Conclusion

The ubiquity of the Postal Service, as well as the ability to add Farmers Post to already-established delivery and/or pick-up routes at little added environmental impact, would enable this service to reach large segments of consumers at an affordable price point in a niche where other delivery services are not

Appendix

Grocery Delivery Companies' Markups, Service Fees and Tips

Grocery budget assumptions from USDA Food Plans, assuming 6.4 trips per month.¹⁹

Grocery delivery services across the United States have varying markup prices and service fees depending on zip code and other factors. It is difficult to calculate an exact percentage for the fees as they vary based on location, item, and store. The graph shows markups and service fees at 5% each, which is at the lower end of possible costs. Actual costs can be considerably higher depending on a variety of factors which can be difficult to parse out. Tipping in the graph is 5% for each service, which is low in order to be conservative. Additionally, Walmart offers an "express" service and Instacart offers 1-hour delivery. These have been excluded from the graph for purposes of simplicity, but also involve more costly fees.

Instacart

1. **Markups** – between 5-40% depending on location, item, and store.
2. **Service fee** – begins at 5% and can be higher based on market as well as location, item, and store.
3. **Heavy fee** – there is a heavy item fee depending on weight of order. For orders that weigh 50lbs or more, the heavy fee is higher.

currently operating. Furthermore, given the Postal Service's funding challenges, this model represents an opportunity to diversify funding streams and add potentially \$1.5B in annual revenue with a relatively modest market uptake (2-3% with high level estimates), or \$6B with a 10% uptake. The Postal Service could even consider novel marketing campaigns, such as "Feeding Americans with Farmers Post," to demonstrate value to consumers and government officials who have recently cast doubt on the USPS's value.

At the farm level, Farmers Post represents a potentially game-changing revenue diversification opportunity for farmers, while at the same time connecting consumers to local produce options. While Farmers Post will not serve every need for produce delivery, it has the potential to reach a broad range of consumers with affordable, accessible, and nutritious produce while reducing environmental impacts through efficient logistics and food loss reduction. If thoughtfully designed and implemented, Farmers Post could serve as an impactful tool to benefit consumers, farmers, the USPS, and the environment.

Shipt

1. **Markups** – approximately 5-15% depending on location, item, and store. According to Shipt's online pricing FAQ, customers can expect to pay "\$5 more using Shipt than they would on a \$35 order purchased in the store themselves."
2. **Service fee** – varies based on location, starting at 5%.

Peapod

1. **Markups** – according to Peapod's website, online and in store prices differ and does not specify a number. When comparing 10 items, the prices differed within about \$1 from one another.
2. **Fuel surcharge** – recalculated weekly and based on retail price of gasoline. Peapod's website displays the fuel surcharge for a given week.

Amazon Fresh

1. Requires a subscription to Amazon Prime and prices may be higher than other grocery stores.

Walmart

1. **Service fee** – additional \$10 for express orders, higher depending on delivery windows preferred.



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¹⁹<https://fns-prod.azureedge.net/sites/default/files/media/file/CostofFoodJun2019.pdf>; <https://www.statista.com/statistics/251728/weekly-number-of-us-grocery-shopping-trips-per-household/#:~:text=The%20primary%20grocery%20shopper%20in,restock%20their%20shelves%20and%20fridges>