



Food Access and Waste Reduction: Proposal for a Vendors' Market in Baltimore City

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July 2015



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Executive Summary

We propose the development of a vendors' market to provide opportunities for small business entrepreneurs to sell unsold produce from wholesale food distributors, which would otherwise be sent to a landfill, to consumers at a deeply discounted price. Such a market addresses two interrelated issues: food insecurity and excess food waste.

We review the literature and interview stakeholders to provide empirical evidence on the two interconnected issues of food access and food waste. The literature on food access shows that while living close to sources of inexpensive fruits and vegetables has the potential to improve diets, there is active debate among researchers about this relationship and its underlying mechanisms. The literature on food waste takes a strong stance: between 31% and 40% of the nation's food supply is wasted, with 10% of the food supply wasted at the wholesale and retail level. We also provide a case study of Haymarket, a vendors' market that has been active in Boston since 1830. Haymarket is regulated and protected by city ordinances, and Boston's investment has contributed to a thriving market that reduces food waste, provides jobs, and makes fruits and vegetables accessible at a low price.

In the context of Baltimore City, the need for a vendors' market is clear. Twenty percent of Baltimore City residents live in areas with low access to healthy foods. Meanwhile, a substantial amount of food sent to the landfill from the area's largest wholesale facility, the Maryland Food Center Authority (MFCA), can still be sold and consumed. We calculate that in a year, between 110,000 and 1.3 million pounds of edible food from

the MFCA could be sent to a vendors' market instead of a landfill. This range of estimates, which is based on stakeholder interviews with the MFCA and selected wholesale tenants, is intentionally conservative and reflects the current lack of systematic tracking of food waste at the wholesale level.

Baltimore City's landscape of public and private sector organizations is well suited to host a vendors' market. We assess a selection of potential implementing partners – the Baltimore Food Hub, the Baltimore Public Markets Corporation (considered in conjunction with the Lexington Market Corporation), the Baltimore Development Corporation, the 32nd Street Farmers' Market, and the Baltimore Office of Promotion & the Arts – on their suitability to operationalize a vendors' market.

We propose three policy recommendations for Baltimore City's Offices of Economic and Neighborhood Development:

1. Support the vendors' market.

Demonstrate a commitment to a vendors' market in Baltimore City by developing and facilitating a partnership between the Maryland Food Center Authority and an implementing partner.

2. **Make it easy to become a vendor.** Work with an implementing partner to identify potential regulatory and zoning barriers that might affect a vendors' market, and develop easily accessible, streamlined materials to help vendors navigate the process.

3. **Make it easy to compost.** Work with an implementing partner to identify potential regulatory and zoning barriers that might interfere with composting the unsold food from the vendors' market, in order to further minimize waste.

“Our goal is to create a business opportunity that will minimize the amount of food that ends up in a landfill while also providing access to healthy food in urban areas.”

These policy recommendations align with a broader vision of sustainable food systems, and they are operationally, economically, and politically feasible. We are asking for Baltimore City’s investment in the improved coordination of the food supply chain as part of an innovative effort to divert food from the landfill and make fresh produce more accessible to City residents.

I. Defining the Problems

Introduction

In a city where one of every three neighborhoods is classified as a food desert, one of Baltimore City’s most pressing issues is low access to food for vulnerable populations.¹ A “food desert” is a low-income area that lacks access to fresh food from supermarkets.² (Definitions for commonly used terms can be found in Appendix A.) However, this issue does not exist in isolation. Baltimore’s lack of fresh, healthy, affordable food is related to food waste at the wholesale level and a need for more entrepreneurial opportunities for small businesses. In this paper, we propose the development of a vendors’ market to provide opportunities for small business entrepreneurs to sell surplus produce from wholesale food distributors at a deeply discounted price. Such a market addresses two interrelated issues: food insecurity and excess food waste.

In this paper, a “vendors’ market” refers to a market in which members of the general public can purchase No. 2 and No. 3 graded produce that would otherwise have been disposed of by wholesalers. At this point it is useful to introduce a few terms related to fruit and

vegetable commodities. The United States Department of Agriculture (USDA) Agricultural Marketing Service has established official grade standards to classify foods according to their quality, based on characteristics such as maturity, firmness, shape, texture, and color.³ Fruits and vegetables receive grades of US No. 1, US No. 2, or US No. 3, with additional specifications (such as “Fancy”) depending on the type of fruit or vegetable. It is optional to have food officially graded by the USDA, but many buyers and sellers choose to pay a fee for this service because grading allows for a common understanding of quality when determining whether to reject a shipment or how to negotiate a price. Major food retailers such as supermarkets and restaurants typically purchase only US No. 1 graded produce from wholesalers. The fate of the US No. 2 and US No. 3 graded produce, also referred to as “seconds and thirds,” “distressed produce,” “out-graded produce,” “off-graded produce,” or “surplus produce,” is our primary concern in this paper. Because one of the characteristics of Grade No. 1 produce is that it is not overripe, produce that has ripened while in storage can deteriorate to a lower grade. No. 2 and No. 3 produce from wholesalers in Baltimore are typically either purchased for sale by independent vendors including the city’s historic Arabbers, donated to charitable organizations, or disposed of through landfill or compost. Our goal is to create a business opportunity that will minimize the amount of food that ends up in a landfill while also providing access to healthy food in urban areas.

Methods

In the first part of this paper we use results from a review of the literature and interviews with stakeholders to provide empirical evidence on the scope of two interconnected issues – food waste and food access – in the context of Baltimore City. One component of the evidence is a case study of Haymarket, a vendors’ market in Boston. The second part of this paper proposes policy and programmatic recommendations, assesses potential implementing partners that could create and manage a vendors’ market, discusses the feasibility of developing a vendors’ market in Baltimore City, and assesses the potential challenges, unintended consequences, and benefits associated with our policy recommendations.

Much of the evidence in this paper comes from searches in databases of academic and “grey literature.” Interviews were conducted in order to supplement this literature, as well as to gain insights into the feasibility of our proposed policy solutions from stakeholders who might be tasked with implementing them. Phone interviews were conducted with seven stakeholders including a representative from the managerial staff of the area’s largest wholesaler, the Maryland Food Center Authority (MFCA) in Jessup, Maryland; managers from three wholesalers at the MFCA; representatives from two community organizations in Baltimore City, including the Baltimore Food Hub; and the president of the Haymarket Pushcart Association in Boston, Massachusetts. These stakeholders were recruited through snowball sampling; that is, each interviewee was asked if they wished to provide additional contacts. A list of interview questions is provided in Appendix B.

Evidence Review Part A: Low Food Access in Baltimore

This section reviews the literature on food access, both broadly and as it relates to Baltimore City. Embedded in the notion of

“access” to food is one of affordability, and so we also review literature on how food prices are associated with patterns of food purchasing and consumption. The evidence reviewed here is strong, with literature drawn from research in public health, nutrition, geography, and economics.

Defining food access as a problem

Before describing the literature, it is useful to distinguish between two commonly used terms: food security and food access. Food security was defined by the World Food Summit in 1996 as a state in which “all people at all times have access to sufficient, safe, nutritious food to maintain a healthy and active life”.⁴ The USDA and other organizations have developed tools for measuring food security at the individual, household, and community levels.^{5,6} The USDA estimates that in 2013, 14.3% of households in the United States were food insecure for at least some duration during the year.⁷

A related, but not interchangeable, concept is food access. Access is embedded in the definition of food security – people must “at all times have access” – and food access is conceptualized in terms of geography, not in terms of individuals and households. The idea of a “food desert,” which has gained much traction in the popular press, is based on access to food. The USDA’s operational definition of a food desert is a census tract characterized by both low income^a and low access to food^b, with approximately 10% of the census tracts in the United States meeting these criteria.^{8,9}

A question that is hotly debated in the literature is whether living in a food desert is associated with diet and health outcomes. A systematic review conducted by the Harvard School of Public Health in 2010 found that research on food deserts in the United States has focused largely on characterizations of racial and ethnic disparities, socioeconomic

^aThe USDA defines a “low income community” as one with either a poverty rate of 20% or greater, or a median family income below 80% of the area median family income.

^bThe USDA defines a “low income community” as one with either a poverty rate of 20% or greater, or a median family income below 80% of the area median family income.

According to the Department of Planning's 2012 food desert map, 1 of every 3 neighborhoods in Baltimore contains a food desert, and 1 of every 5 people live in a food desert.¹

status, and the cost and availability of food in supermarkets, but has yet to establish a definitive link between food deserts and health.¹⁰ In the United Kingdom, there are findings both supporting¹¹ and refuting¹² the notion that living in a food desert is associated with lower intakes of fruits and vegetables. A systematic review conducted in New Zealand also found little evidence for a link between food deserts and fruit and vegetable consumption, but suggested that this may not be due to the lack of a real relationship but rather imprecise methods.¹³ In this vein, some researchers have looked at not just the existence of a supermarket in close proximity, but the availability of fresh produce within those supermarkets, with some preliminary studies showing a link between produce availability within stores and higher intake of fruits and vegetables.¹⁴

The scope of the problem in Baltimore City

In Baltimore City, the Department of Planning and the Johns Hopkins Center for a Livable Future have collaborated to map the city's food stores and the availability of healthy food within those stores, culminating in the creation of a Food Desert Map.¹ This map was designed specifically for Baltimore City, with food deserts defined in greater detail than the USDA's general definition. In Baltimore, a food desert is defined as:

"An area where the distance to a supermarket is more than ¼ mile, the median household income is at or below 185% of the Federal Poverty Level, over 40% of households have no vehicle available, and the average Healthy Food Availability Index score for supermarkets, convenience and corner stores is low (measured using the Nutrition Environment Measurement Survey)."¹⁵

According to the Department of Planning's 2012 food desert map, 1 of every 3 neighborhoods in Baltimore contains a food desert, and 1 of every 5 people live in a food desert.¹ This is felt disproportionately by the young (with 1 of every 4 children living in a food desert) and African Americans (with 26% of Baltimore's African American population living in a food desert, compared to only 7% of Baltimore's white population). In neighborhoods classified as food deserts, households are more likely to have a lower household income and to receive benefits from the Supplemental Nutrition Assistance Program (SNAP, known colloquially as food stamps). In addition to lacking sources of fresh foods, many areas in Baltimore are known as "food swamps"¹⁶ because they have an abundance of prepared foods sources, such as corner stores and carryouts, which are known to have a lower availability of healthy items such as whole wheat bread and healthy sides.¹⁷

Studies specific to Baltimore have found that the city's carryouts and other prepared food sources are lacking in their offering of healthy foods¹⁷ and that relying on corner stores may be associated with unhealthy eating habits.¹⁸ It is also known that rates of diet-related disease such as obesity are higher in Baltimore than state and national averages; in adolescents, for example, the prevalence of overweight and obesity among Baltimore City high school students is 19.9%, compared to an average of 15.2% across Maryland and 15.8% nationwide.¹⁹

Economists have since raised the question: if we change food prices, will that affect purchasing behavior and, more importantly, diet and health?

Affordability as an essential component of access: food prices and diets

In addition to the physical distance to a food store with fresh fruits and vegetables, one of the barriers to consuming fruits and vegetables is price. In order to truly have “access” to fresh produce, that produce must be affordable. There is a growing literature on the economics of healthy eating. In 2007, one study showed that a diet conforming to the Dietary Guidelines for Americans costs more than the typical American diet.²⁰ Economists have since raised the question: if we change food prices, will that affect purchasing behavior and, more importantly, diet and health?

The effect of fruit and vegetable prices on purchasing behavior has been of special interest in the field of public health nutrition. A 2009 report by the USDA Economic Research Service (ERS) found that a 10% decrease in price would cause a 2.1 - 4.9% increase in demand for vegetables and a 2.1 - 5.2% increase in demand for fruits.²¹ A 2010 systematic review of the price elasticities of demand^c for major food categories across 160 studies found that all major food categories were inelastic, meaning that percentage changes in demand for food products did not surpass percentage changes in food prices.²² Reviewers found that a 10% decrease in the price would result in a mean 5.8% increase in demand for vegetables and a mean 7.0% increase in demand for fruits. In comparison to other food groups, fruits and vegetables were less inelastic (i.e., more responsive to

changes in price) than categories such as eggs, sugar, and oil, but more inelastic (i.e., less responsive to changes in price) than categories such as beef, soft drinks, juice, and foods eaten away from home.

A 2012 systematic review of 41 studies examined not only the price elasticities of fruits and vegetables, but also the association between lower fruit and vegetable prices and body mass index (BMI).²³ Reviewers found that vegetables and fruits were price inelastic; the mean price elasticity of demand was 0.48 for vegetables and 0.49 for fruits, indicating that a 10% decrease in price for either of these foods would only result in a 5% increase in demand. Reviewers also concluded that while findings were mixed, lower fruit and vegetable prices were more consistently associated with lower BMI among low-income populations and participants who started with higher BMI.

Overall, these reviews indicate that while fruits and vegetables are price inelastic, a decreasing price still has the potential to increase the purchase (and consumption) of healthier foods. Additionally, it is worth noting that the surplus produce sold at Haymarket in Boston, the case study site we describe later, is often discounted up to 90% from standard retail prices; if the price discounts given to No. 2 and No. 3 graded produce at a vendors’ market in Baltimore were on par with Haymarket prices, the resultant increase in demand for fruits and vegetables could be substantial.

Currently, the only formal mechanisms of subsidizing the price of fruits and vegetables

^c Price elasticity of demand refers to the responsiveness of a change in demand to a change in price. For example, demand for a product that is elastic is very responsive to a change in price; if the price for an elastic product (elasticity > 1.0) increases by 10%, sales will decrease by more than 10%. Demand for a product that is inelastic is not very responsive to a change in price; if the price for an inelastic product (elasticity < 1.0) increases by 10%, sales will decrease by less than 10%.

occur through nutrition assistance programs. For example, participants in the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) are eligible for cash vouchers for fruits and vegetables ranging from \$6 - \$10, and some individual farmers' markets have "double your dollars" programs that subsidize the cost of fruits and vegetables for recipients of SNAP benefits. One researcher notes that while these programs benefit the recipients of nutrition assistance programs, in order to reduce chronic disease at the population level we need to promote the increased consumption of fruits and vegetables at this level.²⁴ A vendors' market is a way of decreasing the cost of fruits and vegetables for a wider audience.

Evidence Review Part B: Wholesale Food Waste in Baltimore

This section reviews the literature on food waste, both at the national level and in Baltimore City.^d The literature on food waste is well developed in the fields of environmental science and waste management and, increasingly, public health. Each stage of the food supply chain poses unique challenges to measuring food loss. In the United States, the most reliable data on food loss at the population level come from the USDA ERS data on Loss-Adjusted Food Availability^e, which includes food crop production data, supplier shipment data, and supermarket point-of-sale data. Accurately calculating losses from wholesalers, retailers, and the foodservice industry depends on the record keeping of these facilities, and measuring losses at the household level is challenging and requires rigorous triangulation of methods. Nonetheless, this is a thriving and actively researched body of literature.

Wholesale food waste at the national level

It is estimated that between 31% and 40% of the edible food supply in the United States is never consumed, which is the equivalent of 1,249 to 1,400 calories per person per day.^{24,25} This magnitude of food waste is thought to pose

serious consequences to both the economy and the environment: this never-consumed food was valued at \$165 billion in 2010, and it is thought to account for one fourth of all freshwater consumption in the United States, approximately 300 million barrels of oil per year, and unnecessary greenhouse gas emissions.^{26,27} While some food loss is unavoidable (e.g., damage from flood or insects), much is due to preventable factors such as inefficiencies in the food supply chain, miscalculation of consumer demand, and "out-grading" or "off-grading" of edible, safe food for aesthetic reasons.

Looking more specifically to the wholesale level, according to estimates based on USDA data, food losses at the retail level (which encompasses wholesale, retail and foodservice) comprise 10% of the edible food supply.²⁸ According to estimates based on a survey commissioned by the Food Waste Reduction Alliance and administered to 13 wholesalers and retailers representing 31.8% of nationwide sales, this selection of wholesalers and retailers reported that they generated 1.4 billion pounds of food waste in 2014, of which 50% was sent to landfills.²⁹ The sampled companies reported that they diverted some of their waste to donations or composting, with reports of food waste diversion ranging from 10% to 80%. In addition to the diversion of food waste to donations and composting, one research group calls for the explicit promotion of "alternative outlets and secondary markets for off-grade foods... because a significant volume of product does not make it into this stream."³⁰ A vendors' market could be characterized as one such secondary market. The next section describes some of the inefficiencies in the food supply chain that can be minimized at the wholesale level in Baltimore.

Wholesale food waste in Baltimore

The MFCA was established in 1967 and

^dIn the literature on food waste, "food loss" refers to all edible food that is not consumed, whereas "food waste" refers to edible foods that are not consumed specifically as a result of human behavior such as discarding food after its "best by" date.

^eThe "loss" that is adjusted for refers to the inedible portion of food (e.g., bones) and losses from cooking.

serves as an independently run, self-funded agency of the state of Maryland.³¹ The MFCA is considered a “public instrumentality of the state.”^{f,40} It was created by the State of Maryland to serve as a central entity through which on-site USDA inspectors can efficiently grade produce and seafood prior to their distribution across the state of Maryland. The MFCA is the largest food distribution center in the Baltimore area. It operates and leases space to the Wholesale Produce Market and the Wholesale Seafood Market, which host dozens of individual wholesalers that occupy 442,000 square feet of warehouse space. The MFCA website states, “nearly all of the fresh fruits and vegetables sold throughout a five-state Mid-Atlantic area and the District of Columbia are distributed through the Market.”⁴⁰ Because the MFCA is a centralized location that has a wide reach, reducing food waste at the wholesale level of the MFCA is more efficient than attempting to reduce food waste at downstream suppliers such as individual food stores.

According to the MFCA’s 2014 annual budget report^g and phone interviews with representatives from the MFCA, in 2015 the MFCA is projected to generate approximately 5,500 tons of waste that will be sent to the landfill.³² The MFCA composted some of its waste prior to 2011, but no longer participates in composting due to regulatory issues.^h Data on the composition of the total 5,500 tons of annual waste (i.e., the percentages of waste that consist of food product versus other materials such as packaging) were not available in the report, although it was reported that in previous years 26% of all waste was composted, indicating that approximately 26% of all waste in previous years may have consisted of food. A representative from the MFCA’s managerial

staff provided a different figure, estimating that approximately 60 - 70% of all waste sent to the landfill may consist of food. These figures were used to construct the minimum and maximum estimates of the percentage of total MFCA landfill waste that may consist of food. We used these estimates in Table 1, which projects possible volumes of edible food generated by the MFCA that could be sold in a vendors’ market. As seen in the left-hand column of Table 1, estimate range from 20% to 80%. An estimate of 20% is even more conservative than what is suggested by the document review and interviews; while the maximum estimate of 80% may not be likely, a moderate estimate of 50% would not be unreasonable.

In addition to estimating the percentage of total MFCA landfill waste that may consist of food, it is also necessary to estimate the percentage of food that could still be consumed. That is, if 50% of total waste is food, how much of that food could still be fit for sale at a vendors’ market? The MFCA representative estimated that 5 - 10% of food destined for the landfill might still be fit for consumption. To corroborate this figure, we were referred to three individual wholesalers who provided estimates for their own businesses. All three wholesalers stated that even after No. 2 and No. 3 graded produce are purchased by street vendors and picked up by charitable organizations, there is always some food left over that eventually gets sent to the landfill. When asked to estimate this amount of edible food that is wasted, responses included “To be frank, very little,” “I have no clue, but we’re still tossing a lot of it,” and “Probably 50%.” Overall, estimates of the percentage of food that could still be consumed ranged from 5 - 10% by the MFCA managerial staff to 50% by a wholesaler.

^f A public instrumentality of the state performs functions of the state government but does not possess the same powers of the state government.

^g The MFCA submits an annual analysis of its operating budget to the Maryland Executive Budget for informational purposes. The Maryland Executive Budget is operated by the Maryland Department of Budget and Management.

^h According to the MFCA’s 2014 annual budget report, “... the composting program was put on hold in calendar 2011 as a result of the Maryland Department of the Environment (MDE) determining that composting food waste was not an approved practice in Maryland. In particular, MDE was concerned that no regulatory program was in place related to the practice. MDE has since drafted regulations. MFCA indicates that the composting program resumed June 28, 2013.”⁴² In an interview with a representative of the MFCA conducted in February 2015, it was noted that composting had not yet resumed. Although we have not found any evidence to indicate that composting is not an approved practice in Maryland at this time, the previous quote from the budget report suggests that composting regulations in Maryland could be improved to facilitate large-scale composting.

Table 1: Estimated pounds of food currently sent to landfill that could be diverted to a vendors' market¹

Percentage of landfill waste that is food	Percentage of food in pounds that could be consumed		
	5%	10%	15%
20%	110,000	220,000	330,000
30%	165,000	330,000	495,000
40%	220,000	440,000	660,000
50%	275,000	550,000	825,000
60%	330,000	660,000	990,000
70%	385,000	770,000	1,155,000
80%	440,000	880,000	1,320,000

In constructing the minimum and maximum estimates seen in the top row of Table 1, we chose more conservative estimates of 5%, 10%, and 15%.

Table 1 presents projections of possible volumes of edible food generated by the MFCA that could be diverted for sale in a vendors' market instead of being sent to a landfill, in pounds of food per year. These estimates range from 110,000 pounds per year to 1.3 million pounds per year. They are based on the MFCA's report that approximately 5,500 tons of general waste will be sent to the landfill in 2015, the range of estimates of the percentage of landfill waste that consists of food, and the range of estimates of the percentage of food that could still be consumed.

All three wholesalers reported that street vendors, corner store owners, and members of the lay public already purchase some of their No. 2 and No. 3 graded produce, but that these purchases are not very well coordinated. As one wholesaler described,

"Some of the guys we depend on now... you never know when they'll decide they're not going to do it anymore. And it's a communication thing. Some of the guys we deal with, they just show up, and sometimes we have to physically go look for them, so we would like more organization to get a hold of people more easily."

All three vendors also reported that some of their unsold food is distributed to charitable organizations such as food banks; but, as with the street vendors, this occurs with varying levels of coordination. All vendors emphasized that "we try to throw away as little as we can," and the MFCA managerial representative was in full agreement:

"[The wholesalers] will hold onto [food product] until the last possible time that they could do something with it. They don't want to throw it away. They lose money when they throw it away. They would like to recoup as much as they can. No business wants to just discard product. So I know they are very conscientious of making sure that the product just is not edible that goes in the trash. Trust me, they want to make every penny they can."

The evidence from a document review and interviews with MFCA representatives suggests that while wholesalers at the MFCA make a genuine effort to minimize food waste, better coordination of efforts to recoup even the small percentage of discarded food that could still be sold and consumed represents a fairly significant volume of food, ranging in our calculations from 110,000 to 1.3 million pounds per year. Additionally, because the fees paid by the MFCA for landfill services are based at least

¹This table projects possible volumes of edible food generated by the MFCA that could be diverted for sale in a vendors' market instead of being sent to a landfill, in pounds of food per year. For example, for the cell that reads "550,000" pounds of food, this figure was calculated based on the assumption that of the 5,500 tons (11,000,000 pounds; 1 ton = 2,000 pounds) of total waste that the MFCA projects it will send to the landfill in 2015, 50% of that total waste consists of food, and 10% of that food could still be consumed and diverted for sale in a vendors' market (11,000,000 pounds x 0.50 x 0.10 = 550,000).

Haggling is encouraged, even though prices are already low: for \$1 you can buy either 10 limes, 5 apples, 3 pounds of bananas, one cantaloupe, or a bag of onions.

in part on the volume of waste, diverting even a small percentage of this waste to a vendors' market has the potential to result in both cost savings for the MFCA (which is a public instrumentality of the state of Maryland) and an economic opportunity for new vendors.

Evidence Review Part C: Case Study of Haymarket

Each Friday and Saturday at Haymarket Square in Boston, vendors from the Haymarket Pushcart Association (HPA) can be found selling produce at unbeatable prices. Shoppers come from all corners of the city – longtime Bostonians, students on a budget, immigrants, and tourists – to visit the 92 licensed stalls that pop up, seemingly out of nowhere, on 750 feet of curbside on three connecting streets every Friday and Saturday. Haggling is encouraged, even though prices are already low: for \$1 you can buy either 10 limes, 5 apples, 3 pounds of bananas, one cantaloupe, or a bag of onions. Over the phone, a longtime vendor shared a story of visiting a supermarket in Boston and seeing a sign for oranges: “10 for 10.” When he got to the check-out, he was shocked as each orange rang up at \$1 each. He had misinterpreted the sign. He asked the checker, “weren’t those oranges 10 for \$1?” The checker was baffled. “No, of course not. That would be 10 cents an orange.” The vendor replied, “Well, that’s how much they cost where I work!”

This section draws from grey literature and an interview with the president of the HPA to portray Haymarket as a case study of a

vendors' market in action. The purpose of this case study is to illustrate the logistics, challenges, and opportunities related to the operation of a vendors' market. Evidence on vendors' markets is limited to graduate theses in urban planning and consultant reports. Though these sources may be lacking in academic rigor, they provide rich contextual information that is unavailable anywhere else.

A graduate thesis in urban planning lays out the nuts and bolts of Haymarket: it is a year-round outdoor market consisting of custom-made stalls that are set up for 48 hours each week in a downtown location served by two metro lines and 16 bus routes.³³ In the earlier half of the 20th century, the HPA operated on Haymarket Square, and vendors purchased produce from nearby Quincy Market. Due to the construction of the Central Artery Highway, the HPA now operates on state-owned Parcel 9, adjacent to Haymarket Square. Quincy Market wholesalers have since moved four miles away to Chelsea and operate as the New England Produce Center. The move to Parcel 9 occurred in 1952 when the Massachusetts General Assembly designated Haymarket's current location as a site to be used by “hawkers and peddlers” on Fridays and Saturdays from 8:00am until midnight.^j The purpose of this set of city ordinances was to designate Boston's Department of Public Works (DPW) and Inspectional Services Department (home of the city's Division of Health) as the regulating entities for vendors, establish protocols for licensing of vendors by the Division of Health, and set the location and

^jThis appears in Lempel (2012), as cited in the Acts of 1952, Chapter 504.

the hours when goods could be sold. Haymarket is affected by these ordinances, as well as the city's 1991 zoning plan, which established Parcel 9 as a "Central Artery Special District" with a set of zoning regulations relevant to neighborhood character.

In addition to the DPW and the Inspectional Services Department, Haymarket's stakeholders include the Massachusetts Department of Transportation, which owns many parcels downtown; the Department of Agricultural Resources; the Boston Redevelopment Authority; the Boston Public Market Association; and the North End Waterfront Residents Association.³⁴

The HPA is governed by an executive board. Currently, 52 vendors own licenses to operate a total of 92 stalls.^{k,33} Vendors design their stalls to their own specifications, with all stalls propped up on pallets to avoid rodents. Stalls are set up each Thursday. At the conclusion of sales on Saturday, stalls are broken down and stored on site, and all trash is removed. In addition to the annual license fee of \$155, vendors pay an additional \$1,000 per license to the DPW for the use and maintenance of a trash compacting facility that was installed on Parcel 9 at a cost of \$245,000 in 2009.³³ The \$1,000 annual fee compensates all of the city's costs except overtime wages earned by DPW employees. The HPA pays \$100 each week to a local hotel that allows vendors to use its outdoor electrical plugs, and all vendors are required to purchase insurance.³³

As for the economics of the market, a market survey conducted by Projects for Public Spaces in 2009 counted almost 15,000 sales transactions in two days, with customers spending \$10 to \$30 each, with average weekend sales of around \$300,000.³⁴ This two-day total is comparable to an average supermarket's earnings in seven days and is equivalent to \$5,800 in gross revenue per vendor.³⁴ One researcher's interviews with vendors found that profit margins can be small and depend on each vendor's business acumen.³⁴ Nonetheless, a phone interview with the HPA's president revealed that vending at Haymarket

constitutes a full time job for many of its members. While negotiations with wholesalers span the first half of the week and market days are long, vendors take pride in their ability to make a profit by providing products that their clients need at a competitive price. The fact that all stalls are leased by vendors and that many vendors are able to hire part-time employees indicates that vending at Haymarket is a viable occupation.

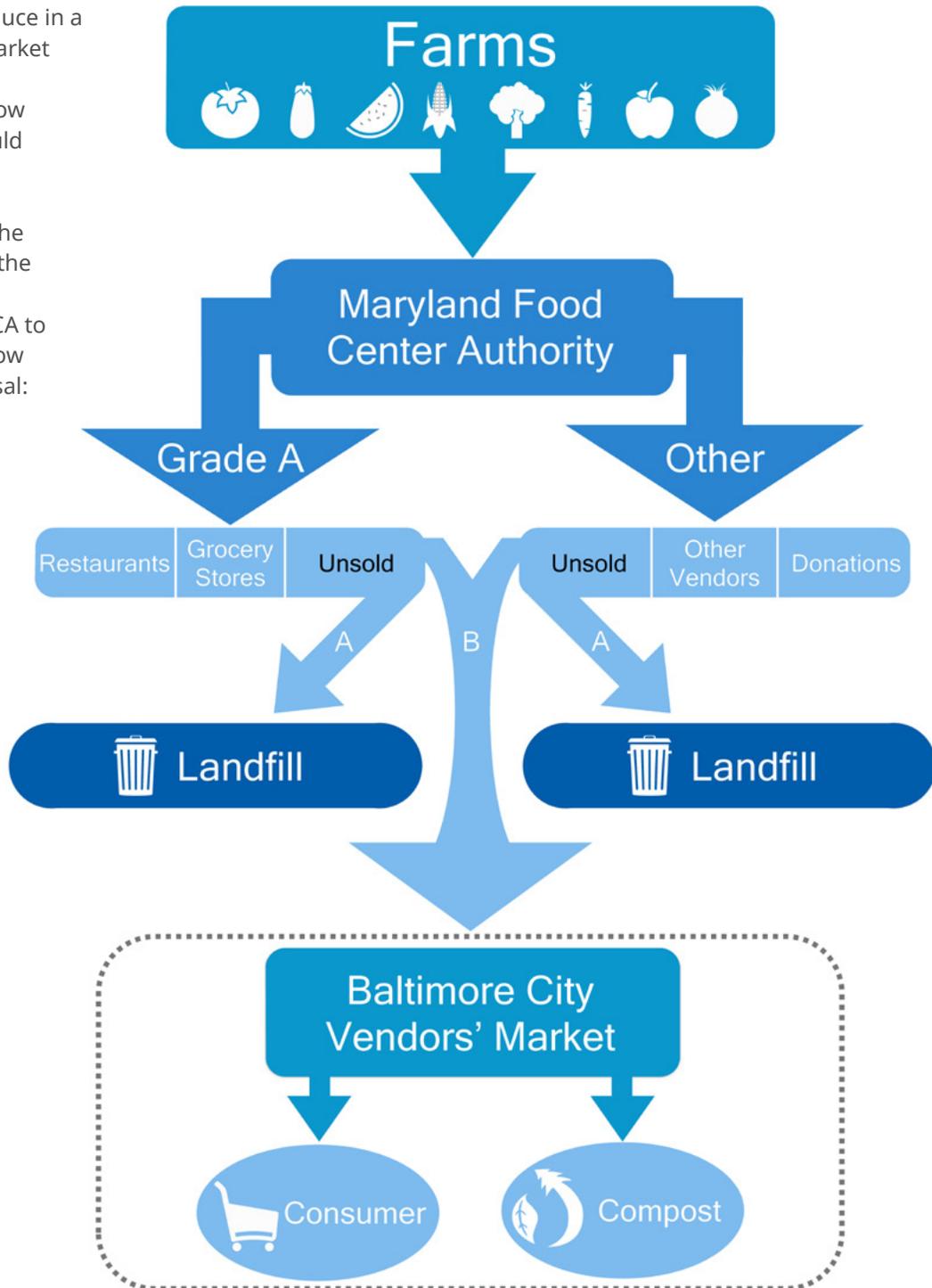
In terms of the impact of the market, Projects for Public Spaces found that Haymarket attracts a diverse ethnic and income profile from a wide catchment area, and that many shoppers view Haymarket as their primary source of fresh fruits and vegetables.³⁵ Consultants also conducted a price comparison of 10 produce items with a farmer's market and chain supermarket in Boston, finding Haymarket to be far more affordable for all 10 items.³⁵

The president of HPA, who has been a Haymarket vendor for almost 30 years, shared some advice for the market's longstanding success. He emphasized that his vendors pride themselves on catering to the food preference of ethnically diverse clients including Italian, Hispanic, and Asian. He shared that while vendors used to exclusively purchase No. 2 and No. 3 graded produce, they buy all grades of produce if the items are of good quality and a good fit for their clients, especially since No. 1 graded produce such as apples and oranges (which he calls "hardware") can be stored from one week to the next. Although Haymarket may not have been created with the explicit intention of reducing food waste and increasing food access, it serves these purposes today. Although assessing the impact of Haymarket on these two objectives would require a rigorous evaluation, this case study illustrates the ways that municipal support for a market can promote a longstanding economic and cultural center. The HPA president summed up the mutually beneficial relationship between the vendors'

^kBecause some stalls are large, they occupy multiple licenses; there are a total of 192 licenses available at Haymarket.

Figure 1: Flow of produce in a Baltimore vendors' market

A visual overview of how a vendors' market could direct food to a novel distribution channel instead of a landfill. The "A" arrows represent the current flow of unsold produce from the MFCA to a landfill. The "B" arrow represents our proposal: to redirect the flow of unsold produce to a vendor's market.



market and the New England Produce Center: “It works both ways: we serve a purpose for them, and they serve a purpose for us.”

II. Policy Recommendations and Considerations for Implementation

A. Recommendations

Based on a review of the evidence surrounding food access and food waste in Baltimore, a case study of an existing vendors’ market, and the generation of new evidence through interviews with relevant stakeholders, we propose the creation of a vendors’ market to increase food access, minimize food waste, and provide additional job opportunities in Baltimore. Figure 1 provides a visual overview of how a vendors’ market could direct food to a novel distribution channel instead of a landfill. “Farms” indicates produce that wholesalers at the MFCA purchase from farms (both regional and global) and, in turn, sell to retailers. Produce available at the MFCA includes Grade No. 1, Grade No. 2, and Grade No. 3 produce. Restaurants and grocery stores typically only purchase Grade No. 1 produce, as it is the highest quality. Grade No. 2 and Grade No. 3 produce, which are less desirable to restaurants and grocery stores, are generally sold to other vendors (such as street vendors and corner stores) or are donated to charitable organizations. Grade No. 1 produce that has not been sold may ripen during storage and can deteriorate to Grade No. 2 and No. 3 produce. Across all grades of produce, there is typically a portion that remains unsold and is sent to the landfill, as shown by the “A” arrows. The “A” arrows represent the current flow of unsold produce from the MFCA to the landfill, while the “B” arrow represents the proposed redirection of edible, unsold produce (across all grades) to a vendors’ market, where it can be sold to consumers. Ideally, any produce that remains unsold at the vendors’ market would be composted, thereby reducing the amount of food sent to the landfill.

Specifically, we make the following policy recommendations to Baltimore City’s Offices of Economic and Neighborhood Development:

1. Support the vendors’ market.

Demonstrate a commitment to a vendors’ market in Baltimore City by developing and facilitating a partnership between the Maryland Food Center Authority and an implementing partner.

Baltimore City’s landscape of public and private sector organizations is well suited to host a vendors’ market. In Section B, we assess a selection of potential implementing partners –the Baltimore Food Hub, the Baltimore Public Markets Corporation (considered in conjunction with the Lexington Market Corporation), the Baltimore Development Corporation, the 32nd Street Farmers’ Market, and the Baltimore Office of Promotion & the Arts – on their suitability to operationalize a vendors’ market. Facilitating a partnership between the MFCA and an implementing partner would strengthen the city’s initiatives to improve food access and the efficiency of the food supply chain.

2. Make it easy to become a vendor. Work with an implementing partner to identify potential regulatory and zoning barriers that might affect a vendors’ market, and develop easily accessible, streamlined materials to help vendors navigate the process.

Potential regulatory and zoning barriers include those relevant to the zoned uses of outdoor sites that could host a vendors’ market and the permits and inspections required to sell food in public spaces. Although it may not be feasible in the short-term to change regulations and zoning codes, providing easily accessible information and a streamlined application process would be a low-cost and effective measure to promote the development of a vendors’ market. We recommend the creation of a new application and fee structure specifically for vendors’ market permits that mirrors the current application and fee structure for farmers’ markets. Currently, a prospective farmers’ market vendor must submit a Farmers Market Vendor Application

with a \$185 application fee to the Baltimore City Health Department's Director of Finance.³⁶ We propose the creation of a Vendors' Market Vendor Application that is more streamlined than the current Farmers Market Vendor Application in that it will not contain language regarding Baltimore City Health Permits because all goods sold at the vendors' market will be raw agricultural products. We propose that the Vendors' Market Vendor Application can be submitted to the Baltimore City Health Department, with a \$185 permit fee to match that of the farmers' markets. Finally, we propose that all information regarding the vendors' market application process be made available to the public in plain language in order to facilitate the inclusion of new vendors.

3. Make it easy to compost. Work with an implementing partner to identify potential regulatory and zoning barriers that might interfere with composting the unsold food from the vendors' market.

Because the development and operation of composting facilities is regulated by the State of Maryland,³⁷ we recommend that the City work with an implementing partner to identify and resolve potential zoning and permitting barriers. As described earlier, the MFCA suspended its composting program in 2011 due to regulatory issues, which demonstrates the need for the City to play a more active role in helping local businesses navigate statewide composting regulations.

Rationale for these recommendations

The case study of Haymarket illustrates how the vendors' market is regulated and protected by Boston's city ordinances. Under this model of a partnership between a municipality and a market, Baltimore City can actively work to minimize regulatory barriers that may involve zoning, permitting, and composting.

B. Evaluating Potential Implementing Partners

Figure 2 assesses the suitability of possible

implementing partners for operating and managing a vendors' market in Baltimore City. Here we refer to "implementing partner" as any organization, whether it is part of the public or private sector, that could fulfill the operational needs of a vendors' market. These needs would include space for hosting a market and personnel to act as a liaison between Baltimore City, the MFCA, vendors, and consumers.

Each potential implementing partner is assessed according to four criteria: the capacity to host a vendors' market (i.e., enough space), the capacity to support a vendors' market administratively (i.e., personnel), the alignment of the vendors' market with the implementing partner's current target audience, and the alignment of the vendors' market with the implementing partner's goals. The selection and scoring of implementing partners was based on stakeholder interviews and web searches of relevant agencies in Baltimore City. Points were awarded in the following manner: a very favorable rating (+ +) represents 2 points; a favorable rating of (+) represents 1 point; a neutral rating (0) represents 0 points; an unfavorable rating (-) represents -1 point; and a very unfavorable rating (- -) represents -2 points. The last column shows point totals for each possible implementing partner, with a higher point total indicating greater suitability.

The figure shows that the highest-ranking implementing partner is the Baltimore Food Hub. The Baltimore Food Hub is a nonprofit, 3.5 acre "food production campus" in the Broadway East neighborhood operated by the American Communities Trust. The Baltimore Food Hub is still being planned and developed, and it is slated to include facilities for growing, processing, preparing, distributing, and teaching about food.⁵⁰ It will also be a site for workforce training and capacity building.

According to the Director of Strategic Partnerships at the Baltimore Food Hub, the site contains space adjoining a well-traveled street that would be suitable for an open-air market.

Figure 2: Assessment of possible implementing partners for a vendors' market

Potential Implementing Partners	Capacity: space	Capacity: personnel	Alignment of vendors' market with target audience of the implementing partner	Alignment of vendors' market with goals of the implementing partner	Total Points
32nd Street Farmers Market: <i>runs the year-round Waverly Farmers Market</i>	– Market and storage space are limited; the market space is a parking lot when the market is not in operation.	– Limited personnel to oversee new activities.	0 A vendors' market might compete with a farmers' market for their clientele.	0 The 32 nd Street Farmers Market seeks to support local and regional agriculture; a vendors' market would include more global food sources	-2
Baltimore Development Corporation: <i>seeks to provide economic development in Baltimore City</i>	0 BDC has the potential to find space for a market if needed.	++ BDC has a large and well-organized staff, including one staffer dedicated to working with grocery access.	0 BDC does not directly provide food to consumers; there would be no competition for clientele.	0 While BDC is active in some food access initiatives, their main focus is economic development.	+2
Baltimore Food Hub: <i>provides infrastructure to allow local and regional food producers to scale-up their operations.</i>	++ Has the space to host a vendors' market, including outdoor market space, storage space, and potential for an on-site composting facility.	0 Currently has one full-time employee; their future staffing is unknown.	++ Seeking opportunities to be able to provide food to the surrounding community. Additionally, the site is located in a food desert.	++ Seeks to work with entrepreneurs to grow Baltimore's food economy.	+6
Baltimore Office of Promotion & the Arts: <i>runs the Baltimore Farmers' Market & Bazaar</i>	– Market and storage space are limited; the market space is used for other purposes when the market is not in operation.	– Limited personnel to oversee new activities.	0 A vendors' market might compete with a farmers' market for their clientele.	0 The 32 nd Street Farmers Market seeks to support local and regional agriculture; a vendors' market would include more global food sources	-2
Baltimore Public Markets Corporation and Lexington Market Corporation: <i>manage a total of 6 public markets</i>	++ Between the 6 public markets, there are many parking lots and indoor spaces that could host a market.	0 The BPMC has a fairly small operational team that oversees 6 markets.	+ A vendors' market could expand the customer base for the public markets.	++ The BPMC is currently seeking redevelopment opportunities for the Cross Street Market.	+5

A vendors' market would be a very low cost opportunity for the City of Baltimore. According to our calculations, between 110,000 and 1.3 million pounds of food from the MFCA could be diverted to a vendors' market instead of being sent to a landfill.

There is also the potential to design a part of the site to accommodate on-site composting of any food that remains unsold from the vendors' market, which would minimize the fees and transportation needed for composting unsold food. A discussion of the negative externalities of composting, as well as ways to mitigate these externalities, will be discussed later. Spaces are being designed for classes and workshops at the Baltimore Food Hub, which would facilitate any educational activities that might be added to the vendors' market in the future. The site is located in one of the city's food deserts, and the sale of fresh fruits and vegetables to the surrounding neighborhood at a low price has the potential to increase access to healthy food and improve the relationship between the Baltimore Food Hub and its community.

The next highest ranking implementing partner is the Baltimore Public Markets Corporation (BPMC), which was considered in conjunction with the Lexington Markets Corporation. The addition of a vendors' market within BPMC's market network would allow BPMC to expand their market mix and clientele. Although BPMC does not have the infrastructure to facilitate on-site composting, it may be possible to coordinate the composting of unsold vendors' market produce at another composting facility in Baltimore City.

C. Feasibility

Based on interviews with community agencies in Baltimore, this section assesses the

operational, economic, and political feasibility of the creation of a vendors' market in Baltimore City.

Operational feasibility

Operational feasibility refers to the ability of a project to be carried out within the existing infrastructure and business environment. The operational feasibility of a vendors' market in Baltimore City is enhanced by the existence of multiple implementing partners that could host a vendors' market, as detailed in Section B. The advantage of using an implementing partner, as opposed to having a city agency manage the vendors' market, is that the implementing partner can take on the operational aspects of the market. These duties would include coordinating vendors, facilitating the business relationship with the MFCA, coordinating the set-up and take-down of the market each week, and promoting the market to the wider Baltimore community.

Economic feasibility

A vendors' market would be a very low cost opportunity for the City of Baltimore. According to our calculations, between 110,000 and 1.3 million pounds of food from the MFCA could be diverted to a vendors' market instead of being sent to a landfill. This volume of food represents both a cost savings for the MFCA (through a decreased volume of landfill waste that needs to be paid for) and a job opportunity for new vendors.

In Boston, Haymarket receives substantial revenue from vendor licenses (\$155 per license) and trash compacting fees (\$1,000 per license) paid by members of the HPA, totaling \$226,380 in annual gross revenue. However, Boston also spends a considerable amount of money on Haymarket; unsold food is not composted, and in 2009 the city spent \$245,000 on a trash compacting facility to dispose of unsold food. Composting unsold food from the vendors' market in Baltimore City would eliminate the need for a trash compacting facility. While composting the unsold food would involve some cost, it may not be more costly than a trash compacting facility and recurrent landfill fees. The compost generated also represents a new economic opportunity: there is profit to be gained from selling compost and from selling food that is grown with compost.

Political feasibility

In terms of political feasibility, Baltimore City's public sector is uniquely equipped to support the creation of a vendors' market. Food access is a key objective of many of the city's agencies including the Baltimore Food Policy Initiative (BFPI, which is part of the Office of Sustainability within the Department of Planning), the Baltimore City Health Department, and the Baltimore Development Corporation (which contracts with Baltimore City). The presence of a Food Policy Director within BFPI and a Food Policy Advisory Committee makes Baltimore a leader in prioritizing cross-sectoral initiatives in support of food access.

Additionally, a vendors' market in Baltimore City should generate widespread political support. Through phone conversations, a managerial representative of the MFCA expressed a desire to actively work to minimize wholesale food waste. Three wholesalers, when asked how the creation of a vendors' market would affect their businesses, replied that any additional coordination of selling No. 2 and No. 3 graded produce would be beneficial to them. The Director of Strategic Partnerships at the Baltimore

Food Hub also expressed strong support of the concept, stating that a vendors' market is in line with their operational capabilities and their mission. Additionally, the provisioning of fresh produce to the Broadway East and surrounding communities at a low price has the potential to garner community support. Finally, demonstrating a commitment to improving the efficiency of the food supply chain, reducing food waste, promoting economic opportunities, and improving food access would strengthen the City of Baltimore as a leader in sustainable food systems.

D. Unintended Consequences, Challenges, and Benefits

This section analyzes the policy recommendations in terms of their potential unintended consequences, challenges, and benefits.

Unintended consequences

One of the potential unintended consequences of creating a vendors' market would be reducing the amount of food that is currently distributed to local meal programs or sold by existing street or roadside vendors. However, our research indicates that even after the purchase or reception of No. 2 and No. 3 graded produce by these parties, a substantial volume of food is still wasted.

Another potential unintended consequence of a vendors' market is competition with the city's existing farmers' markets. Boston again serves as a useful case study. A consultant report examining the feasibility of developing an upscale, indoor public market to promote local and regional food in close proximity to Haymarket noted that the two markets filled different consumer niches and could work together in a complementary way. As demonstrated in the quote below, because Haymarket provided low-cost produce and the proposed public market would provide upscale and specialty products, the consultant report suggested that the two markets would reach a wide, non-competing client base.

“The Public Market’s close proximity to Haymarket is a benefit to both operators. The Haymarket assortment increases the supply of bargain and non-seasonal produce on Fridays and Saturdays while the public market will bring fresh seafood, meat, and other specialty products that are not currently available or permissible to sell at Haymarket. The close proximity of the markets broadens the food shopping opportunities to Haymarket’s notably cost conscious and underserved population; but the public market pricing is unlikely to compete with than of an average Haymarket vendor. Given the complementary – rather than competitive – assort of food offerings and price points, the expectation is that the markets together will create a ‘fresh food’ center in downtown Boston.”⁴⁴⁵

Similar to Haymarket, we would expect that a vendors’ market in Baltimore would appeal to a consumer base that complements, rather than competes with, the City’s existing farmers’ markets. Specifically, while a vendors’ market would be available to all residents of the metropolitan area, locating it in or near a food desert would allow it to not only target a different client base, but also to expand access to fresh produce to residents who may not currently patronize farmers’ markets.

Challenges

One of the primary challenges of implementing our policy recommendations will be identifying an implementing partner who can champion the process of coordinating facilities, people, and permitting processes. However, as demonstrated in this paper, a number of existing organizations are well positioned to take on these duties. Another set of challenges arises in promoting the market to the wider community and promoting the utilization of the fruits and vegetables. To address these concerns, the

vendors’ market can be marketed through neighborhood-based organizations.

Another potential challenge is the logistics of composting unsold food. There are potential negative externalities associated with on-site composting, such as odor. Strategies to prevent odor include limiting compost to fruits and vegetables (i.e., excluding products such as meat and dairy), mixing incoming wet compost with bulking agents to ensure porosity and airflow, and planning the size of compost piles to allow for passive aeration of microorganisms.⁴³ Strategies to treat odor include the use of biofiltration systems to remove waste gases and the aeration of compost through the forced addition of oxygen or the use of oxidizing chemicals.^{43,44} If it proves difficult to adequately mitigate these negative externalities on-site, it may be possible to coordinate an off-site composting arrangement. The benefits of composting may outweigh these possible challenges. The benefits include minimizing the amount of waste sent to the landfill and generating organic inputs that can be sold to local farmers.

Benefits

The benefits of developing a vendors’ market in Baltimore City include a reduction in food waste at the wholesale level, a potential cost savings in landfill fees for the MFCA, job opportunities for new vendors, the direct provisioning of fruits and vegetables at a low price to a community located in a food desert, redirecting food waste from the landfill to compost, and the use of compost for additional sales or for the sustainable production of more food.

E. Conclusions

At the same time that 20% of Baltimore City residents live in a food desert, we calculate that between 110,000 and 1.3 million pounds of fresh food per year are wasted at the

wholesale level. While a single set of policy changes cannot wholly resolve the problems of food waste and low food access, policies that are aligned with a broader vision of sustainable urban food systems can lay the groundwork for such changes. Our specific policy recommendations lay this groundwork by fostering business collaborations among members of the food supply chain – wholesalers, vendors, and composting facilities – that otherwise might not work with each other. We are asking for Baltimore City’s investment in the improved coordination of the food supply chain as part of an innovative effort to divert food from the landfill and make fresh produce more accessible to City residents.

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About the Abell Award in Urban Policy

The Abell Award in Urban Policy is an annual competition for the best student paper that provides a cogent analysis of a critical issue facing the City of Baltimore and proposes well-reasoned, feasible solutions. It is open to matriculated students at all Baltimore area colleges and universities. The submissions are blind-reviewed by a panel of distinguished judges. The winning paper receives a \$5,000 award and is distributed to key policymakers and opinion leaders and posted on the Abell Foundation's website.

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Authors' Acknowledgements

We cannot express enough gratitude to the Abell Foundation and the Abell Award Selection Committee. We are especially grateful to Dr. Sandra Newman and Chunxiao Song for their help during the revision process. We offer our sincere appreciation to individuals at the Maryland Food Center Authority, the Haymarket Pushcart Association, and nonprofit organizations in Baltimore for their essential insights during the research process. We also thank Roni Neff, Anne Palmer, Dave Love, and Sara Bleich at the Johns Hopkins Bloomberg School of Public Health for their guidance.

We extend thanks to the many people that have invested in our education and sparked our interest and passion in food systems. In particular, we give thanks to Quality Food Centers in the Pacific Northwest, the Johns Hopkins University Department of Psychological & Brain Sciences, the Center for a Livable Future, the Baltimore Food Policy Initiative, and the Human Nutrition program at the Johns Hopkins Bloomberg School of Public Health.

Appendix A: Definitions

Composting: Decomposing organic matter (such as food) for future use in fertilizing and amending soils.

Farmers' market: A market where raw agricultural goods and prepared foods are sold from farmers directly to consumers. Farmers' markets typically have a goal of building local and regional food economies. A farmers' market can be located inside or outside, and can operate seasonally or year-round.

Food security: A state in which "all people at all times have access to sufficient, safe, nutritious food to maintain a healthy and active life."⁴

Food desert: The USDA characterizes a food desert as a low-income community in which residents lack access to a supermarket (>1 mile away in an urban setting, or >10 miles away in a rural setting).⁸ In Baltimore City, a food desert is characterized as a low-income area in which residents lack access to a supermarket (>0.25 miles away), over 40% of residents lack vehicle access, and the availability of healthy foods in food stores is low.¹⁵

Food waste: Edible foods that are not consumed. In the literature on food waste, "food loss" refers to all edible food that is not consumed, whereas "food waste" refers to edible foods that are not consumed specifically as a result of human behavior such as discarding food after its "best by" date.

Food waste diversion: Finding a use for unsold, edible food – such as selling it at a secondary market (such as a vendors' market), donating it to charitable organizations, or composting it – that prevents it from being sent to a landfill.

Implementing partner: An organization, whether it is part of the public or private sector, that could fulfill the operational needs of a vendors' market such as managing vendors, facilitating a business relationship with the Maryland Food Center Authority, coordinating the set-up and take-down of the market, promoting the market to the wider community.

No. 1 graded produce: The highest grade of produce, according to a USDA grading system that classifies foods according to characteristics such as maturity, firmness, shape, texture, and color. Additional specifications (such as "Fancy") are given depending on the specific type of produce. If No. 1 graded produce become overripe during storage, it may deteriorate to a lower grade as No. 2 or No. 3. Restaurants and large grocery stores typically only purchase No. 1 graded produce from wholesalers.

No. 2 or No. 3 graded produce: Produce that is graded lower than No. 1 according to a USDA grading system that classifies foods according to characteristics such as maturity, firmness, shape, texture, and color. Additional specifications (such as "Fancy") are given depending on the specific type of produce. Other names for No. 2 and No. 3 graded produce include "seconds and thirds," "distressed produce," "out-graded produce," "off-graded produce," or "surplus produce."

Price elasticity of demand: The responsiveness of a change in demand to a change in price. For example, demand for a product that is elastic is very responsive to a change in price; if the price for an elastic product (elasticity > 1.0) increases by 10%, sales will decrease by more than 10%. Demand for a product that is inelastic is not very responsive to a change in price; if the price for an inelastic product (elasticity < 1.0) increases by 10%, sales will decrease by less than 10%.

Public instrumentality of the state: A public instrumentality of the state performs functions of the state government but does not possess the same powers of the state government.

Vendors' market: A market where vendors sell raw agricultural goods that have been purchased from a wholesaler. The goods can span all grades of produce but may predominantly be No. 2 and No. 3 graded produce. A vendors' market can be located inside or outside, and can operate seasonally or year-round.

Wholesaler: A wholesaler purchases large quantities of goods from a distributor; a distributor makes goods available from manufacturers (in the case of food systems, these would be farmers) to wholesalers. Goods from wholesalers can be sold to retailers (which include restaurants and grocery stores) or consumers.

Appendix B: Interview Guides

These interview guides were used to direct our phone conversations with various stakeholders. Because we used a snowball sampling technique to locate interviewees, the phone conversations were iterative and built off of previous conversations.

Phone Interview Guide for Representative From the Maryland Food Center Authority

- [Description of the general project and our interest in the MFCA]
- What is your general impression of the idea of a vendors' market for seconds and thirds from the MFCA?
 - Does this kind of market sound like it might be possible?
 - Would a vendors' market be beneficial for the MFCA? Would it help save money?
 - In what ways would such a vendors' market be challenging for the MFCA?
- Can you walk us through the process for seconds and thirds? When food comes in, how long does it take before it's sold?
- What is the fate of food that doesn't get sold to retailers or restaurants?
- What is the current strategy/timeline for surplus produce/distressed produce/seconds?
- Estimates of food waste:
 - In any given week, how much of the food doesn't get sold at all before it's too ripe to be sold or eaten?
 - The Maryland Executive Budget is released online annually and it contains some information about MFCA, including the volume of waste that goes to the landfill. Do you know how much of this waste is food waste?
 - Of this food waste, is any of it food that could still be sold?
 - Does the MFCA compost any of the food waste?
- Do you think that a vendors' market for seconds/thirds would reduce food waste?
- In Boston, at Haymarket the surplus produce is sold quite a bit cheaper than it would be at the supermarket. Do you see this as something that might be feasible in Baltimore?
- Who can currently purchase food from the MFCA? Do customers need a business license?
- Is there anyone else you recommend that we talk to?

Phone Interview Guide for Wholesalers at the Maryland Food Center Authority

- [Description of the general project and our interest in talking to this agency]
- Of all of the food from your business that goes to the trash or landfill, what percentage do you estimate could still be sold or eaten?
- Do some of your seconds/thirds get sold to street vendors? How much?
- Do some of your seconds/thirds get donated to charitable organizations? How much?
- If a vendors' market existed where people were selling seconds/thirds, how would that affect your business?
- On average, how long does produce stay in your warehouse?

Phone Interview Guide for Representative From Community Development Agency

- [Description of the general project and our interest in talking to this agency]
- Do you think this project might be good for Baltimore?
- Given your knowledge of community revitalization and business organizations in Baltimore, do you have any ideas for ways that this project could be operationalized? What kinds of organizations do you think would be well suited to host this project?
 - Baltimore City?
 - Development corporations?
 - Nonprofit organizations?
 - Other organizations or projects?
- Are there geographic areas of the city that you think would be well suited to host a project like this?
- Is there anyone else you recommend that we talk to?

Phone Interview Guide for Representative From the Baltimore Food Hub

- [Description of the general project and our interest in talking to this agency]
- Do you think this project would be a good fit for Baltimore?
- How does this project fit in with current plans for the Baltimore Food Hub?
- How feasible is this project?
- How would this project fit in alongside other markets such as farmers' markets?
- Can you think of any potential unintended consequences of a vendors' market?
- Is there anyone else you recommend that we talk to?

Phone Interview Guide for the Haymarket Pushcart Vendors' Association

- [Description of the general project and our interest in talking to this agency]
- Could you walk us through the steps of setting up the market each week?

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- Does Haymarket receive any funding or administrative support from the city? Who runs it?
 - Do the vendors need any permissions or licenses to purchase food from the New England Produce Center?
 - Are their vendors in charge of transporting their produce from the New England Produce Center for the market?
 - Do they bring their own tables or tents, or are they supplied by Haymarket?
 - What happens to the food that isn't sold at the end of the day on Saturday? (compost, landfill)
 - What steps does a new vendor take to become a Haymarket vendor?
 - Who are the Haymarket vendors? Is this their full-time job?
 - Are there any policies or regulations that allow Haymarket to operate more easily – that is, were there any policies on zoning or the sale of “seconds produce” that needed to be changed to allow for Haymarket to happen?
 - Do you think that Haymarket reduces food waste from the New England Produce Center?
 - Is there anyone else you recommend that we talk to?

Disclosure of Related Ongoing Research

This submission consists of original research that has been solely authored by co-authors. This work is entirely independent of any of the authors' dissertation research.