

# Food on the Move & Access to Discounted Produce in Rhode Island

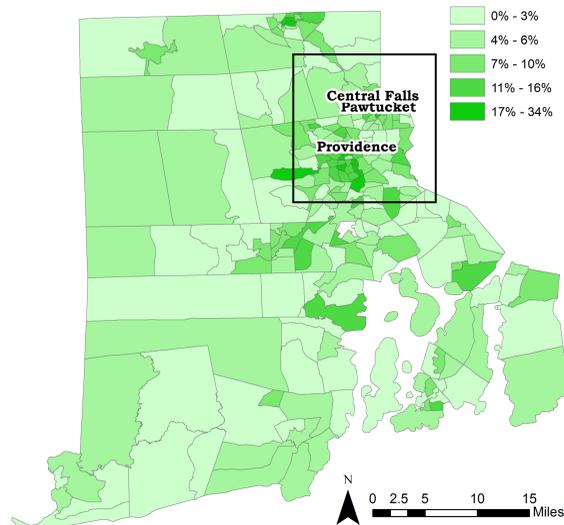
## Exploring geographic characteristics of past and present mobile market sites

### Introduction

Previous research has identified cost, transportation, and physical access as some of the most common barriers to fruit and vegetable consumption among low-income individuals (Haynes-Maslow et al., 2013; Bastian et al., 2016). As such, many of these customers rely on discount grocery stores and/or public transportation for their food shopping. Traveling mobile produce markets are one strategy to address these barriers in areas where there is limited access to affordable produce (Hsiao et al., 2019). Since 2014, the Rhode Island Public Health Institute (RIPHI) has operated and managed a large-scale mobile produce market called Food on the Move (FOTM), which offers a 50% discount on all purchases made with benefits from the Supplemental Nutrition Assistance Program (SNAP). FOTM currently operates year round at different community sites in the Providence area, which are mostly senior public housing facilities. The majority of FOTM customers are low-income seniors who currently receive SNAP benefits.

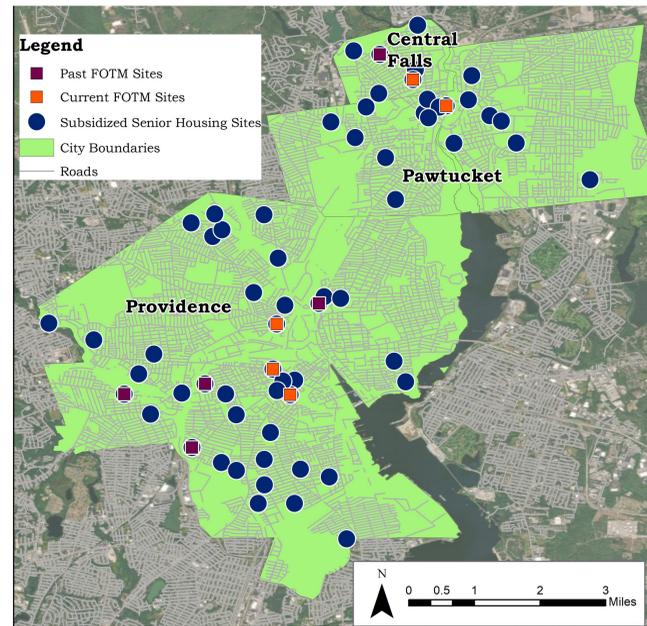


FOTM market locations have shifted over time to favor senior public housing sites with higher and more consistent sales, although geographic factors associated with the unsuccessful and successful sites are not well understood. The purpose of this analysis is to explore geographic characteristics of past and current FOTM sites, which can help RIPHI staff identify housing sites that are good candidates for future FOTM markets. This project also contributes to general knowledge on food accessibility among low-income seniors.



Map 1. Percent of Households Receiving SNAP by Presence of People Aged 60 and Over

Map 2. FOTM Sites and All Subsidized Senior Housing Sites in Providence, Pawtucket, and Central Falls



### Methodology

**Data sources:** Rhode Island (RI) census tracts and roads were downloaded from the U.S. Census Bureau as a TIGER/Line shapefile (2017). SNAP data by census tracts were downloaded from the American Fact Finder using American Community Survey (ACS) 2013-2017 five year estimates. State/city boundaries and RIPTA bus routes were downloaded from RIGIS. Locations of senior housing sites, markets, and discount grocery stores were obtained from the RI Housing Authority (2018), RIPHI (2019), and Reference USA (2018), respectively.

**Geocoding:** The locations of all mobile market sites and senior housing sites, were geocoded by creating an address locator for the TIGER/Line shapefile. The coordinate system used was GCS\_WGS\_1984.

**Analysis:** SNAP data were joined to the TIGER file to create a choropleth map for the state, divided into quintiles (Map 1). Walking time from housing sites was calculated by performing a service area analysis using the network analyst tool. The breaks for the service area were 200, 400, and 800 meters, which correlate to 2.5, 5, and 10 minute average walking times, respectively. Lowest estimated commuting times to the nearest store via bus were determined using Google Maps.

Table 1. Average Commuting Time from Past FOTM Sites to Nearest Discount Store via Bus and Walking

Origin	Destination	Routes Used	Est. Total Travel Time (minutes)	Cumulative Walking Time (minutes)
Wilfrid Manor	Price Rite	72	9	7
Charlesgate	Walmart	72	9	6
Hartford Park	Save-A-Lot	28	3	1
Kilmartin Plaza	ALDI	31, 56	31	7
Parenti Villa	Save-A-Lot	28	13	5

Map 3. Past FOTM Sites and Estimated Routes to Discount Grocery Stores

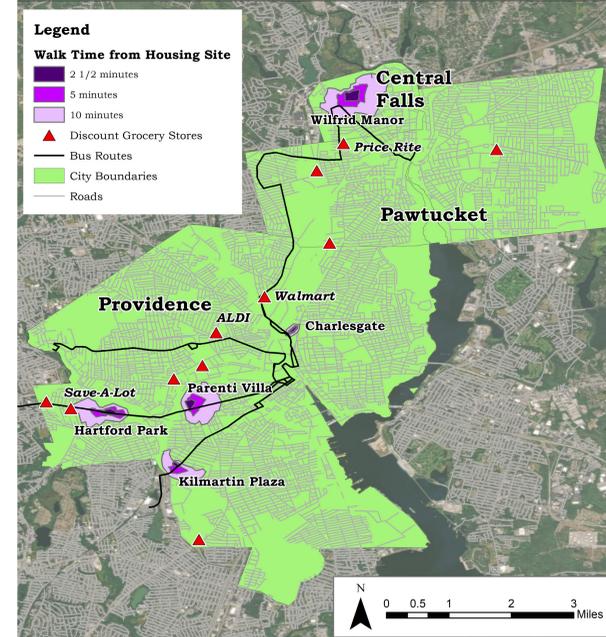
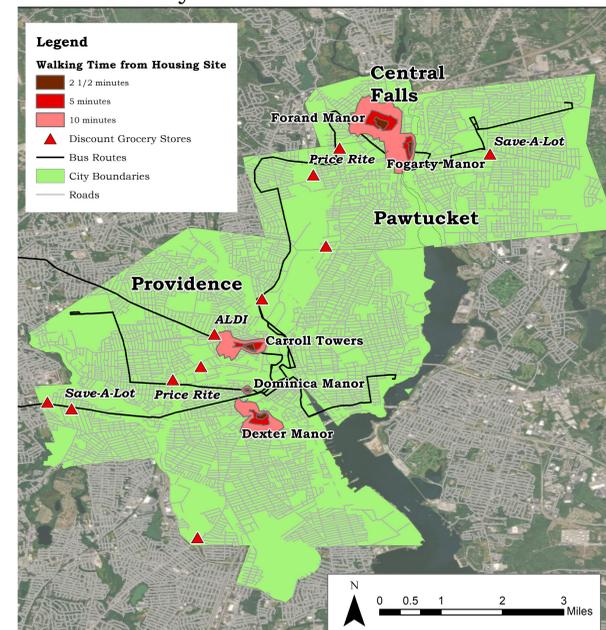


Table 2. Average Commuting Time from Current FOTM Sites to Nearest Discount Store via Bus and Walking

Origin	Destination	Route Used	Est. Total Travel Time (minutes)	Cumulative Walking Time (minutes)
Carroll Towers	ALDI	57	4	2
Fogarty Manor	Save-A-Lot	76	25	6
Dominica Manor	Price Rite	92	12	6
Dexter Manor	Save-A-Lot	28	22	10
Forand Manor	Price Rite	72	14	9

Map 4. Current FOTM Sites and Estimated Routes to Discount Grocery Stores



Haynes-Maslow et al., (2013). A Qualitative Study of Perceived Barriers to Fruit and Vegetable Consumption Among Low-Income Populations, North Carolina, 2011. *Prev. Chronic Dis.*, 10.  
 Hsiao et al., (2019). A systematic review of mobile produce markets: Facilitators and barriers to use, and associations with reported fruit and vegetable intake. *J Acad. of Nutr. and Dietetics*, 119(1), 76-97.  
 Bastian et al., (2016). Suburban food security: Walkability and nutritional access in metropolitan Detroit. *The Professional Geographer*, 68(3), 462-474.

### Results

Map 1 illustrates that the Providence area has a higher percentage of SNAP households with at least one person over the age of 60 compared to many other areas in Rhode Island. Map 2 demonstrates that FOTM has operated markets in senior housing sites throughout Providence, Pawtucket and Central Falls, and that there are many similar sites in the area that have not hosted FOTM. Past sites appear to be located closer to city boundary edges than current sites. From data in Table 1, the average commuting time from past FOTM sites to the nearest discount grocery store is 13 minutes, including an average walking time of 5.2 minutes, which is reflected in Map 3. From data in Table 2, the average commuting time from current FOTM sites to discount stores is 15.5 minutes, including an average walking time of 6.6 minutes, reflected in Map 4. There is some, although not complete, overlap in nearest discount grocery store to past and current FOTM sites.

### Discussion

On average, past FOTM operating sites were located closer to discount grocery stores than current operating sites, in terms of total commuting time via bus and walking time. This exploration of geographic characteristics of market sites adds to the limited body of knowledge regarding correlates of unsuccessful vs. successful market sites.

There are important limitations in the data used for this analysis. First, the selection of discount grocery stores was subjective. Discount stores offer products at prices below their typical market value, either through limited selection or prioritizing efficiency. Though the discount stores chosen for this analysis met this criteria, there may be others outside of city boundaries that were not included. This analysis also assumed that residents of subsidized housing sites would only choose to shop for fruits and vegetables at discount stores, and would not have reliable access to a car for transport.

Despite limitations, this analysis uses recent data from respected sources to provide a preliminary investigation into geographic correlates of FOTM sites. Determining proximity from a housing site to a discount grocery store that may compete for business can be helpful to RIPHI staff when identifying potential new FOTM sites. Future analyses should build on this work by identifying other geographic characteristics of sites.



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