

# Food Insecurity Vulnerability in Philadelphia and Farmers Markets Accepting SNAP

Casey Mitchell

Temple University Department of Geography and Urban Studies

## Abstract

Food insecurity can be defined as “the lack of access at all times to enough food for an active and healthy life,” primarily as a result of insufficient financial resources to purchase food. Definitions of food insecurity has evolved over time to encompass the issues of quantity of accessible food as well as quality of accessible food. It is now understood that food insecure individuals may be facing an insufficient quantity of food, poor quality or nutritionally inadequate food options, limited diversity in food options, compromised food safety, inadequate spatial food access, or any combination of these issues. Food insecurity is a pervasive issue in Philadelphia that has been worsening in recent years. The purpose of this study was to create a holistic food insecurity vulnerability index that would present the spatial distribution of food insecurity across the city of Philadelphia. Furthermore, in an effort to make quality fruits and vegetables more accessible to Philadelphia’s low-income residents, many farmers markets within the city accept SNAP benefits as payment. The secondary purpose of this study was to examine the geographic distribution of these farmers markets in relation to the distribution of food insecure populations. I also sought to find the average food insecurity vulnerability score of the areas directly surrounding these farmers markets in order to hypothesize on whether or not they are reaching food insecure populations.

## Introduction and Significance

Although food insecurity decreased in much of the country over the last six years due to economic recovery following the 2008 recession, Philadelphia remains an outlier:

- ❖ The number of people who couldn’t afford food increased in both the city and the metropolitan area of Philadelphia during the six year period of 2011-2016 (HFA, 2017)
- ❖ In 2014-2016, 301,781 residents of Philadelphia, or 19.3% of the population, lived in households that were identified by the federal government as food insecure (HFA, 2017)
- ❖ This is a notable uptick from the 2011-2013 time period, during which 238,447 Philadelphians were classified as food insecure, or 15.4% of the population (HFA, 2017)
- ❖ In Philadelphia specifically, individuals residing in low-income neighborhoods are half as likely to have access to a quality grocery store when compared to those from high-income neighborhoods (PDPH, 2013)
- ❖ In the Philadelphia area, about one in three residents participate in SNAP, with 470,189 total participants (CAH, 2013)
- ❖ Not only has food insecurity been worsening in recent years in Philadelphia, but Philadelphia consistently maintains higher food insecurity rates than the rest of the country on average (HFA, 2017)

## Methodology

- ❖ All shapefiles were projected in the Pennsylvania State Plane Coordinate System
- ❖ Using select by attribute, farmers markets were narrowed down to present only those accepting SNAP benefits as payment
- ❖ The attribute table containing information on food accessibility and other socioeconomic characteristics, provided by the Food Access Research Atlas, was joined to the Philadelphia census tracts
- ❖ I created my own composite food insecurity vulnerability index using the aforementioned census tract characteristics
- ❖ The following variables were factored into the index:
  - ❖ Share of tract population living below the poverty line, weighted 0.5
  - ❖ Share of tract population that is located beyond ½ mile from a supermarket, weighted 0.25
  - ❖ Share of tract population that does not have access to a vehicle, weighted 0.25
- ❖ Each of the variables was split into four census tract groups according to severity of the issue and labelled as 1, 2, 3 or 4 using quantile classification
- ❖ The composite food insecurity vulnerability score was found for each census tract by adding the weighted scores from each category, resulting in a final food insecurity classification of 1-4
- ❖ Half-mile service areas were created around each farmers market utilizing the Philadelphia streets network to visualize which nearby populations were most directly served by them (Figure 3)
- ❖ The service area polygons were then intersected with the census tracts and their assigned food insecurity rankings
- ❖ The food insecurity rankings of the census tracts within each polygon were then summarized to find the average food insecurity ranking of each farmers market service area

Figure 1.

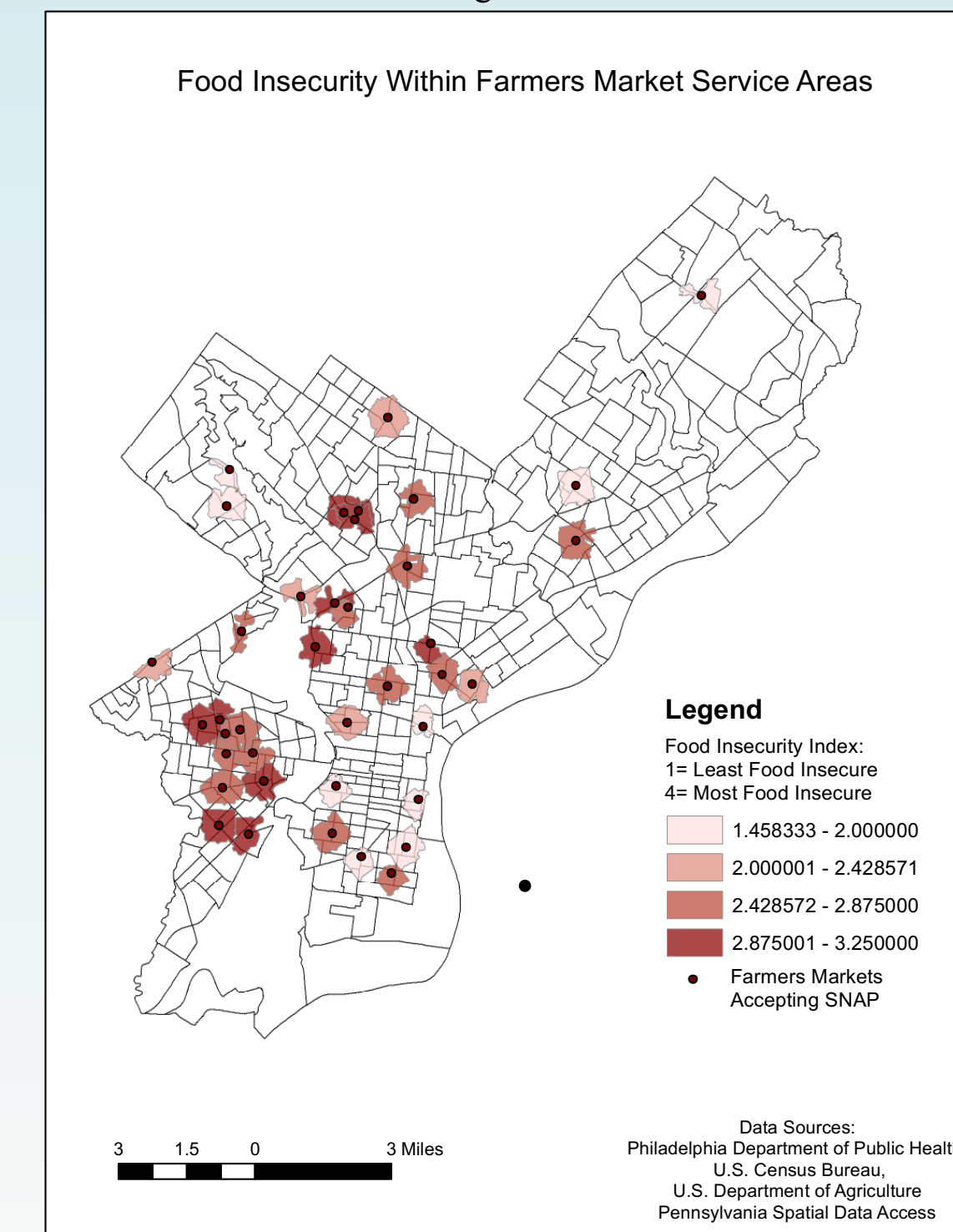


Figure 2.

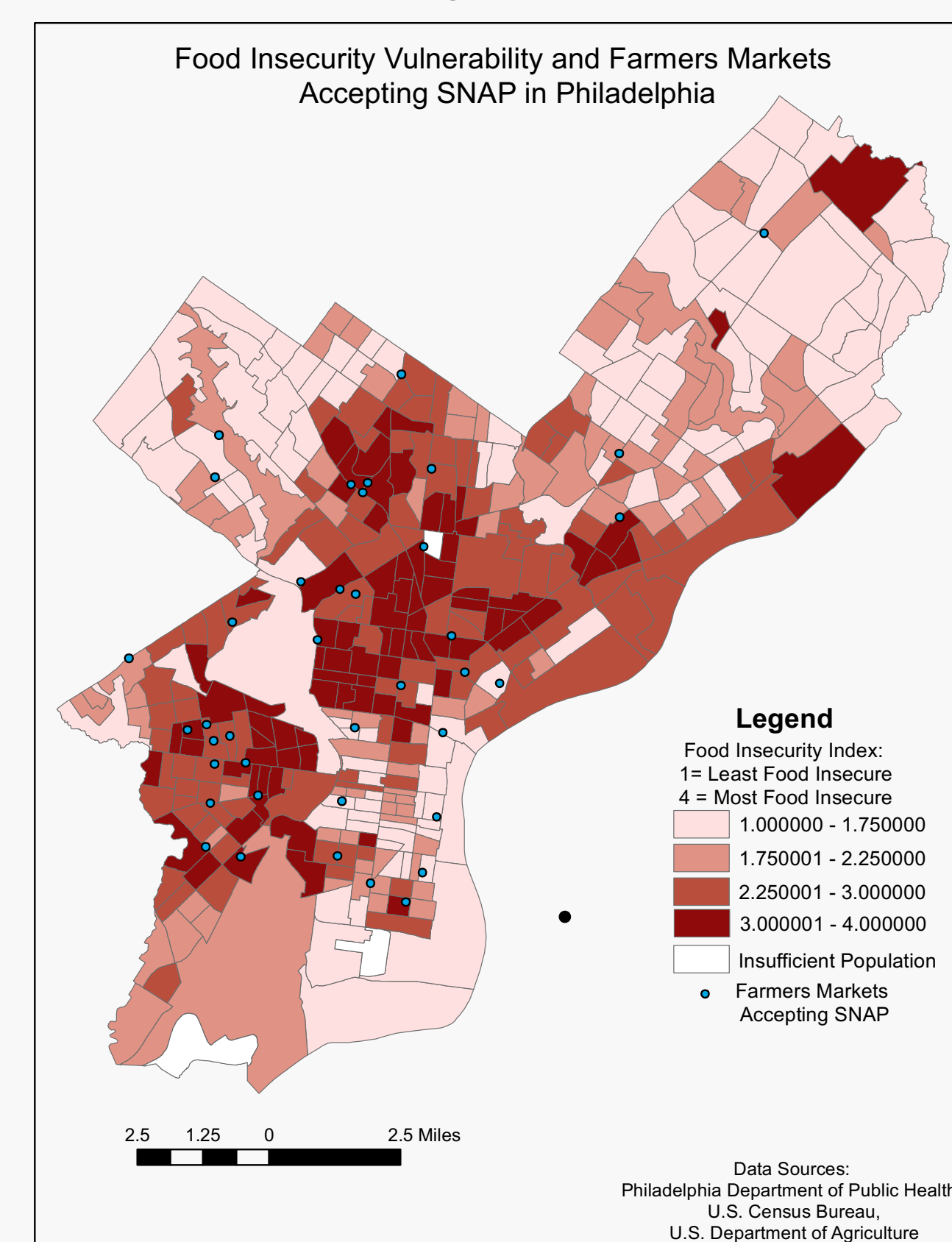
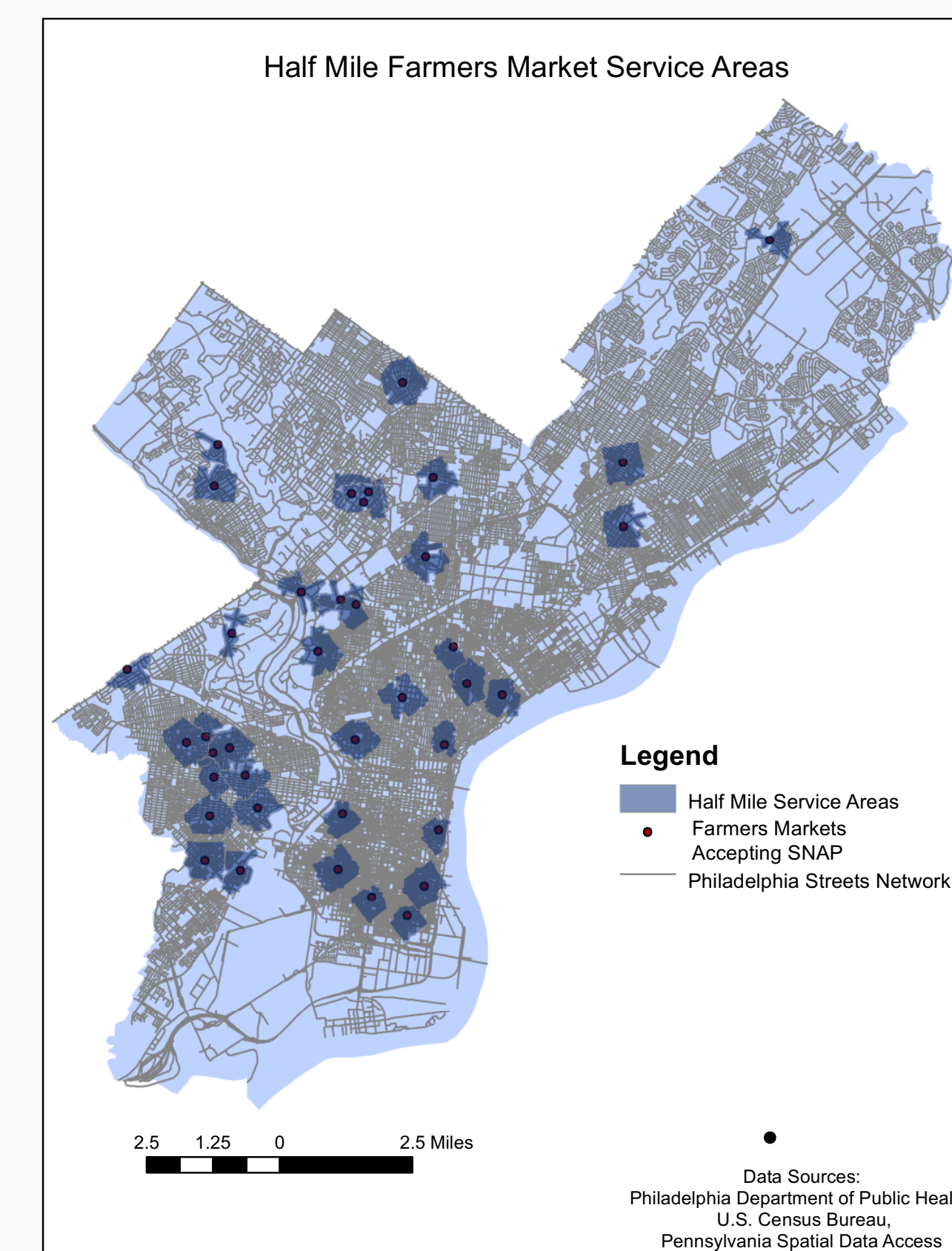


Figure 3.



## Results and Key Findings

- ❖ There are 39 farmers markets in Philadelphia that accept SNAP benefits as payment out of 49 total farmers markets that were used in the study
- ❖ The average food insecurity ranking for the service area polygons was 2.56, while the average food insecurity ranking for all census tracts in Philadelphia was 2.43
- ❖ Regions with the highest levels of food insecurity were clustered in the North Philadelphia, West Philadelphia, and Kensington regions of the city (Figure 2)
- ❖ The three farmers markets with the lowest food insecurity vulnerability rankings within their half mile service area included (Figure 1):
  - ❖ Headhouse (Score: 1.46)
  - ❖ Liberty Lands Park (Score: 1.75)
  - ❖ Gorgas Park (Score: 1.75)
- ❖ The three farmers markets with the highest food insecurity vulnerability rankings within their half mile service area included (Figure 1):
  - ❖ Germantown Kitchen Garden (Score: 3.25)
  - ❖ Grumblethorpe House (Score: 3.125)
  - ❖ 4<sup>th</sup> and Lehigh (Score: 3.107)
- ❖ Limitations of the study:
  - ❖ Small portions of census tracts that fell within the service area polygons are weighted the same as larger census tract portions because of the nature of the tool; this may distort the food insecurity ranking of the area
  - ❖ People may use farmers markets that are not directly within their geographic area
  - ❖ We cannot actually know if the farmers markets are being used by SNAP participants, only if they are nearby

## Conclusion

The fact that the average food insecurity ranking for populations within the service areas of the farmers markets was higher than the average food insecurity score for all of Philadelphia’s census tracts may suggest that Philadelphia’s farmers markets that accept SNAP are successfully serving those living in food insecure regions. However, a more precise study would look at whether these farmers markets are actually being utilized by food insecure populations or whether other financial, cultural, temporal, or social barriers are preventing them from doing so.

## References and Further Reading

- Coalition Against Hunger (CAH). (2013). “Hunger Profile: Philadelphia County”. State of Hunger: Pennsylvania 2013.
- Hunger Free America (HFA). (2017) “A Gap in Brotherly Love: Philadelphia’s Hunger Crisis.” Greater Philadelphia Hunger Report.
- Mayer, V. L., Hillier, A., Bachhuber, M. A., & Long, J. A. (2014). Food Insecurity, Neighborhood Food Access, and Food Assistance in Philadelphia. *Journal of Urban Health*, 91(6), 1087-1097.
- Philadelphia Department of Public Health (PDPH). (2013). “Walkable Access to Healthy Food In Philadelphia, 2010-2012.”
- Sonnino, R. (2014). The New Geography of Food Security: Exploring the Potential of Urban Food Strategies. *The Geographical Journal*, 182(2), 190-200.