



# Perceived Barriers to Purchasing Healthy Foods vs. Access in Underserved

# Areas across the Northeast



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#### Introduction

- In the U.S., many households are unable to meet their dietary needs for leading an active and healthy lifestyle (USDA, 2010).
- Research assessing community-level constraints concerning access to healthy and nutritious food for low-income and disadvantaged populations is plentiful.
- Disparities in healthy eating and access to food (or food stores) has become a largely investigated topic:
- Caspi et al. (2012): Perceived supermarket access is related to fruits and vegetables consumption in low-income individuals more than distance to supermarkets (that is, actual access).
- ✓ Hatzenbuehler *et al.* (2012): Residents in low-income and rural areas have disincentives to purchase healthy food because of the spatial organization of their local food market.
- ✓ Hilmers, Hilmers and Dave (2012): Limited access to supermarkets and grocery stores in low-income neighborhoods may represent a significant barrier to the consumption of healthy foods.
- Little research has been done to assesses directly differences between actual access to food (or food stores) and consumers' perception of barriers to healthy eating.
  - ✓ Time and taste factors, as well as financial considerations, are the most frequently cited barriers to healthy eating (Eikenberry and Smith, 2004; Kearney and McElhone, 1999).
  - ✓ Improving a community's retail food infrastructure may not lead to changes in food purchasing and consumption patterns; instead, intervention significantly improved residents' perceptions of food access (Cummins, Flint and Matthews, 2014).

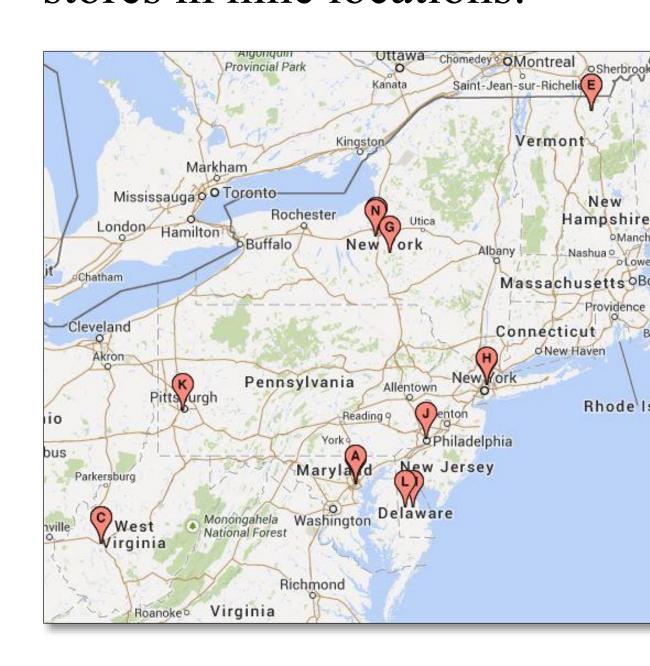
#### Research Goals and Objectives

- This research seeks to understand how low-income individuals' perceived barriers in acquiring healthy foods are impacted by
- Overall perception of the food available to them,
- Their shopping habits,
- Their individual characteristics, and
- Their surrounding food environment



#### Data Collection: The Intercept Survey

Ten-minute survey administered to shoppers upon exiting 15 stores in nine locations:

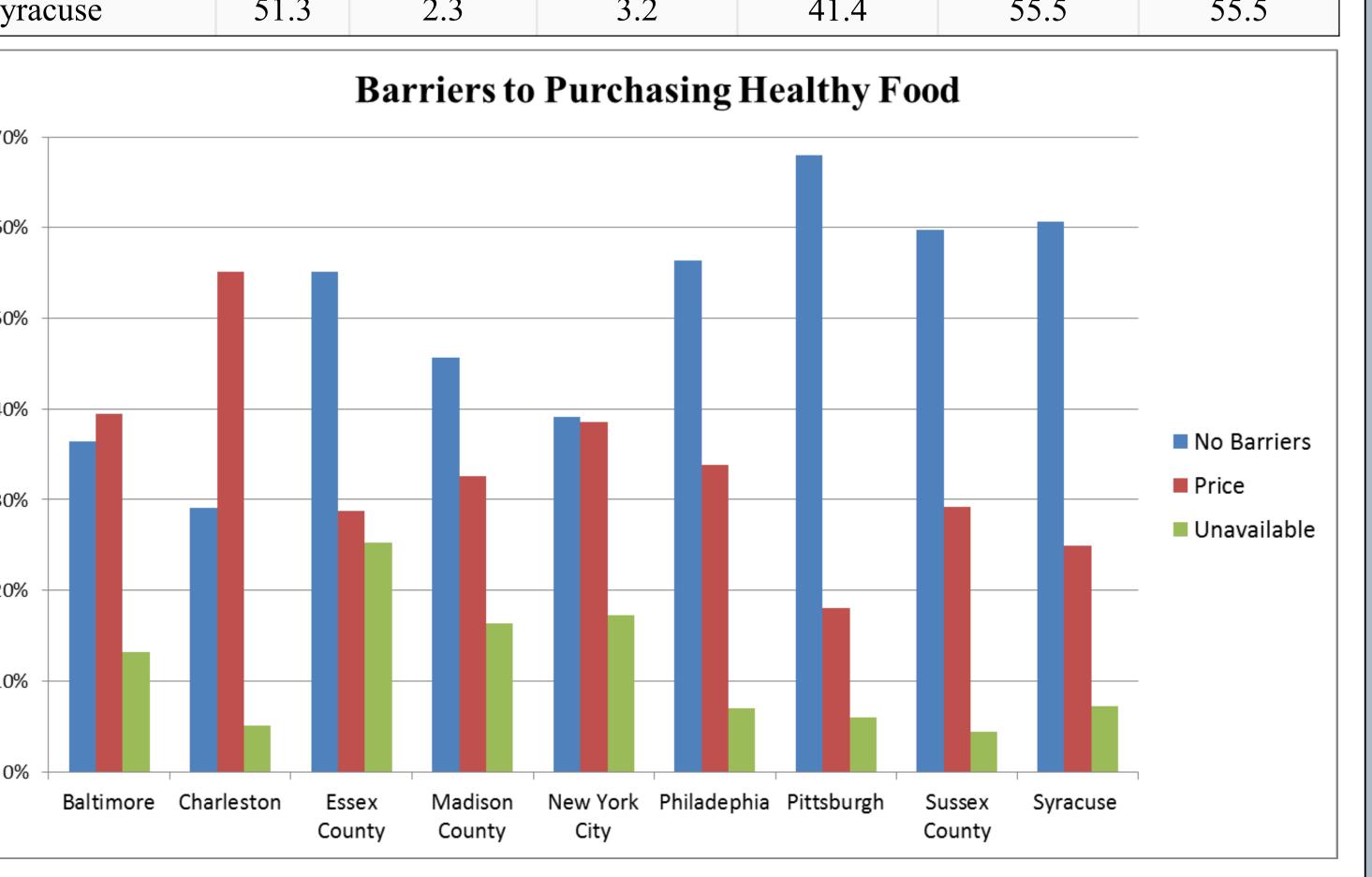


Baltimore	(MD)
Charleston	(WV)
Essex County	(VT)
Madison County	(NY)
New York City	(NY)
Pittsburgh	(PA)
Philadelphia	(PA)
Sussex County	(DE)
Syracuse	(NY)

- Conducted in two waves:
- ✓ November 2012 April 2013 (N=902)
- ✓ November 2013 March 2014 (N=925)
- Information collected:
  - Satisfaction of food in neighborhood: quality, variety, price
  - Frequency and average expenditures per shopping trip
  - Barriers to purchasing healthy food
  - Purchasing habits of different market basket items: milk, ground beef, bread, fruits, and vegetables
  - Demographics: age, gender, household size, education level (second wave only), participation in food assistance programs, respondents ever shopped at farmers markets

## **Survey Results**

	Average Age	Shopping Frequency (trips/week)	No. People Being Shopped For	% HHs with Children (under 5)	% Program Participants	% Who Shopped at Farmers Markets
Baltimore	49.7	2.5	3.5	37.2	60.5	54.4
Charleston	50.0	2.1	3.3	37.4	47.4	43.4
Essex County	53.3	2.7	2.4	11.5	31.4	64.4
Madison County	53.6	2.1	3.2	28.3	18.9	73.3
New York City	50.8	2.2	2.5	24.7	26.1	59.4
Philadelphia	42.8	3.1	3.5	40.8	61.4	44.6
Pittsburgh	44.6	1.8	2.8	34.0	38.0	56.0
Sussex County	61.0	2.3	3.3	29.5	35.8	56.8
Syracuse	51.3	2.3	3.2	41.4	55.5	55.5



#### Food Environment Data and Econometric Model

- Data on the food environments comes from zip code-level
   County Business Patterns of the U.S. Bureau of Labor Statistics
   NAICS 445110: Grocery Stores
  - NAICS 445120: Convenience Stores
  - NAICS 452910: Supercenters and Mass Merchandisers
- \* Re-classification of grocery stores:

Medium/Large Grocery Stores NAICS 445120 >20 employees
Small Grocery Store NAICS 445120 <20 employees

**Econometric Model (Multivariate Probit estimator):** 

$$\Pr(B_{ij}^{1} = 1, ..., B_{ij}^{K} = 1 | X_{ij}, SFA_{ij}, SH_{ij}, FE_{j}, D_{ij}; \theta_{K})$$
$$= \Phi_{K}(Z'\theta_{K}; \Sigma)$$

 $B_{ij}^k$  indicator variable capturing respondent i, in zip code j declared to experience the k-th perceived barrier to purchasing healthy foods

 $X_{ii}$  respondent i's characteristics (gender, age, age squared, etc.)

 $SFA_{ii}$  satisfaction with food quality in neighborhood

 $SH_{ij}$  shopping habits

 $FE_i$  measures of the food environment in zip code j

- $D_{ij}$  other control variables
- $\theta_K$  K vectors of coefficients
- $\Phi_K$ (.) *K*-variate normal CDF

### **Econometric Results**

			Barrier	
Variable Group	Variables	Price	Unavailable	None
Perceptions	<b>T.</b> 7. 1. 1.	0.001	0 0 1 T shall shall	0.040
	Variety	-0.001	0.217***	0.049
		(0.064)	(0.079)	(0.063)
	Quality	0.109*	0.313***	-0.284***
		(0.068)	(0.085)	(0.066)
	Price	0.170***	0.053	-0.125***
<b>T</b>		(0.044)	(0.056)	(0.043)
Demographics	C 1	0.000		0.0454
	Gender	0.028	-0.055**	0.047**
		(0.021)	(0.025)	(0.021)
	Age	-0.001**	-0.001	0.000
		(0.000)	(0.001)	(0.000)
	Household Size	0.076**	0.036	-0.080**
		(0.032)	(0.038)	(0.037)
	Household Size^2	-0.004*	-0.002	0.007*
		(0.002)	(0.002)	(0.003)
	Child	-0.071**	-0.054	0.034
		(0.036)	(0.043)	(0.036)
	Rural	-0.351***	0.218*	0.296***
		(0.099)	(0.134)	(0.095)
Shopping Habit	S			
	SNAP-eligible day	-0.115	-0.025	0.084
		(0.074)	(0.099)	(0.073)
	Farmers market shopper	-0.044*	0.070	0.025
		(0.024)	(0.053)	(0.023)
	Expenditure (monthly)	-0.023*	-0.005	0.012
		(0.013)	(0.017)	(0.011)
	Weekend shopper	-0.322***	0.220	0.097
		(0.110)	(0.149)	(0.108)
Food Environm	ent			
	Small grocery	-0.007**	0.010***	0.001
		(0.003)	(0.004)	(0.003)
	Large grocery	0.102***	-0.021	-0.085***
		(0.021)	(0.029)	(0.020)
	Convenience store	-0.041**	0.007	0.025**
		(0.013)	(0.017)	(0.013)
	Mass Merchandiser	-0.041	-0.262	0.002
		(0.134)	(0.191)	(0.124)
	Error Correlation	ho(Price, Unavailable)	ho(Unavailable, No Barrier)	$\rho$ (Price, No barrier)
	- Coefficients	0.206***	-0.505***	-0.929***
		(0.041)	(0.035)	(0.010)

#### **Key Findings - Discussion**

The food environment plays an important role in the perception of barriers to purchasing healthy food:

- Small grocery stores associated with higher (lower) probability of declaring price (availability) as a barrier
  - ⇒ Issue of higher prices versus ease of access?
- Large grocery stores associated with price as a barrier; Supercenters indicate no effect
  - → Does presence of larger stores reduce barriers?
- Respondents unsatisfied with food quality (variety) and prices more likely to indicate price (availability) as a barrier
  - → Are healthy food barriers part of bigger problems?
- Respondents who shopped at a farmers market, with higher food expenditure or shopping on weekends, less likely to indicate price as a barrier
  - ⇒ Income effect?
- Respondents from rural communities more likely to indicate no barriers
  - ⇒ Does mobility matter?

#### References

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#### **Enhancing Food Security in the Northeast**

Enhancing Food Security in the Northeast through regional food systems is a five-year, multidisciplinary, multi-institution project funded by USDA NIFA Award Number 2011-68004-30057. The project's primary goal is to start determining whether more reliance on regional sources can provide healthy and affordable foods to low income consumers in the Northeast.

One of the projects multiple objectives is to assess current and potential community level constraints and opportunities for improving access to regionally-produced food for people in urban and rural disadvantaged communities. The goal for the portion of the project reported here is to understand what types of barriers and obstacles some households face when purchasing healthy food.



The EFSNE team at our 2013 annual meeting in Saratoga, NY. For more information visit <a href="http://agsci.psu.edu/research/food-security">http://agsci.psu.edu/research/food-security</a>.