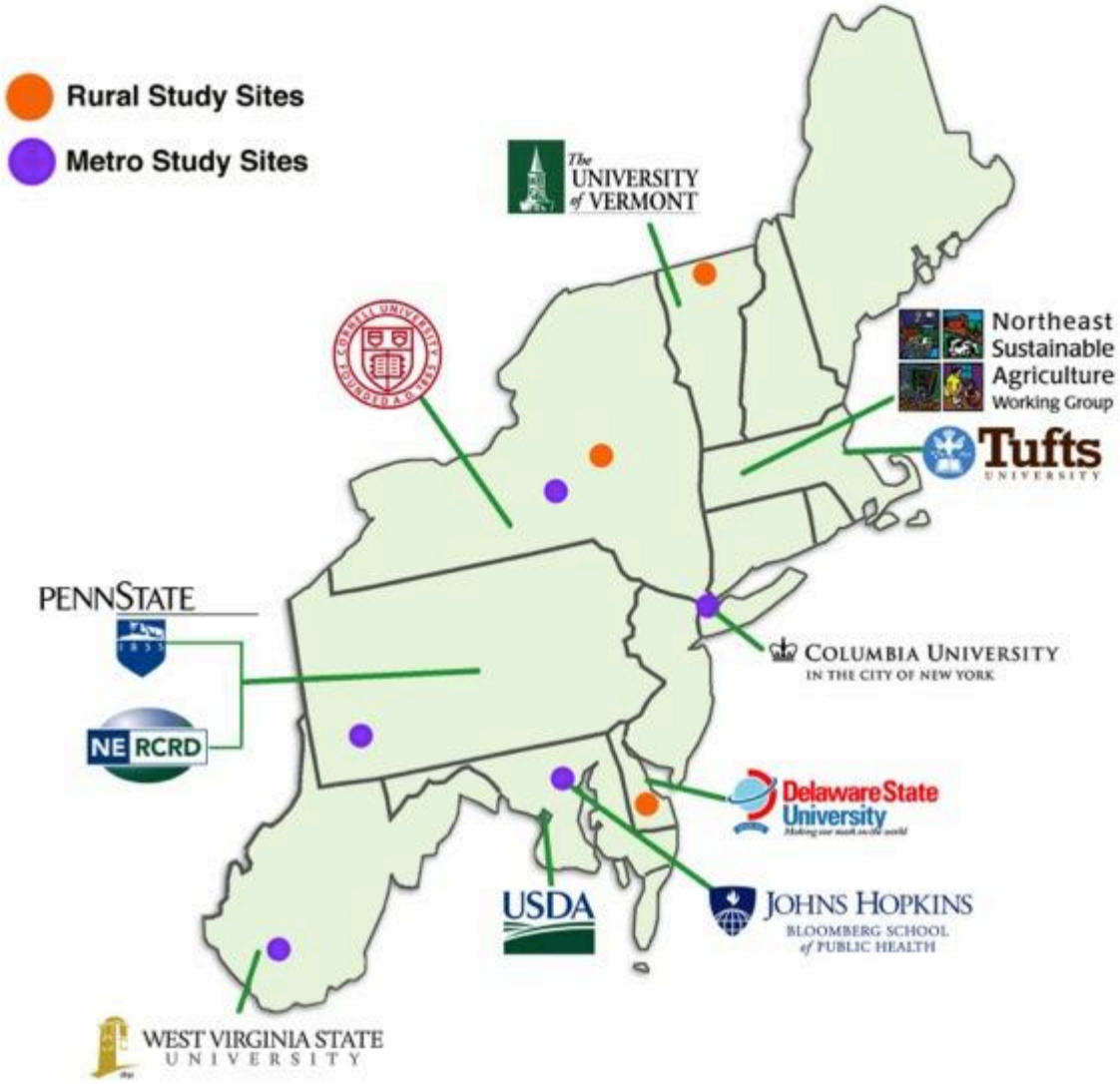

Consumption

Enhancing Food Security in the Northeast through Regional Food Systems

USDA Grant # 2011-68004-30057

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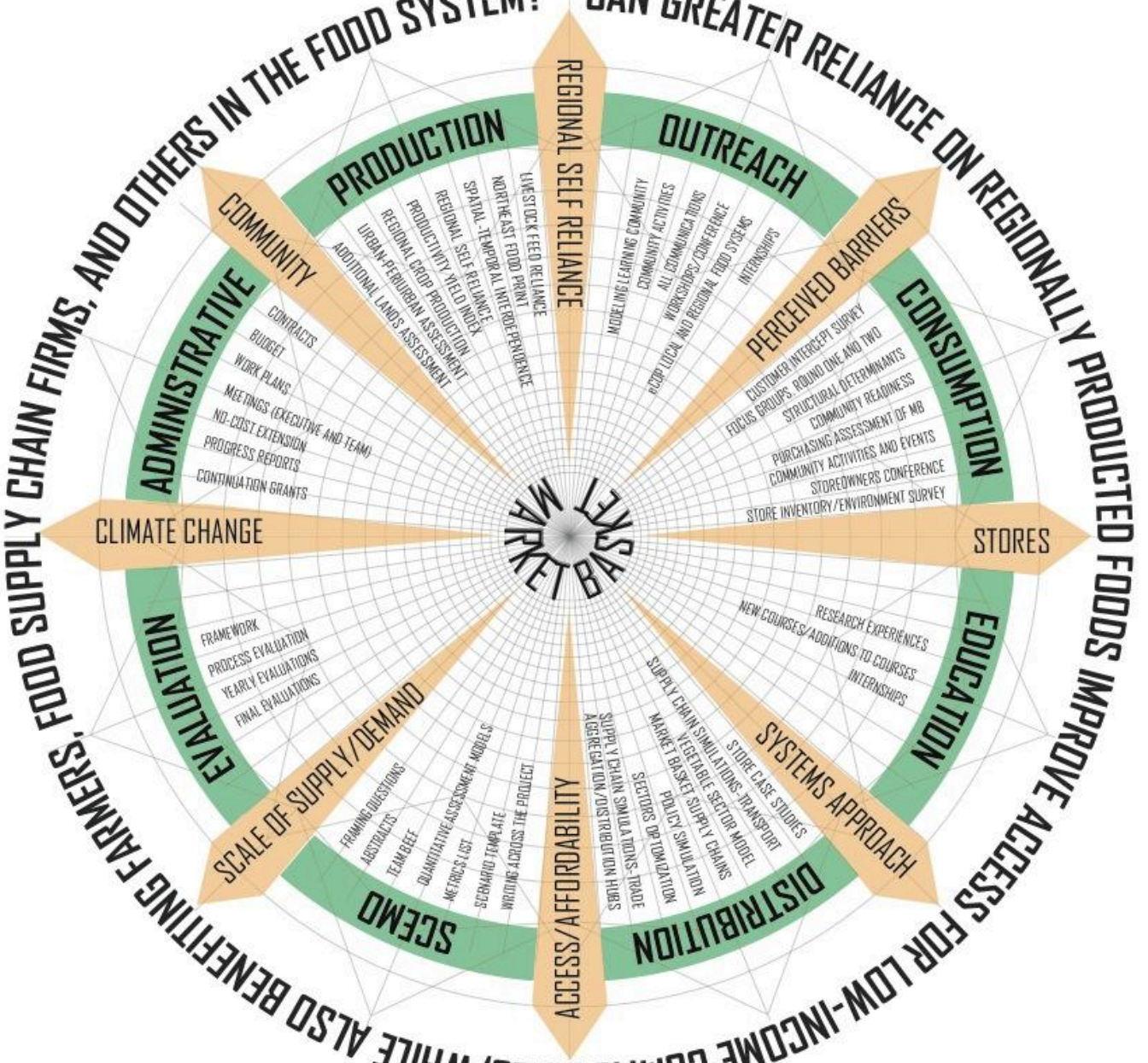

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Consumption Components

First Level Slide

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Today's Discussion

- Focus groups on regional
- Community readiness
- Community events at locations
- Secondary purchase data
- Structural determinants of stores' locations (Access)
- Customer intercept survey data
- Focus groups

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Focus Group Discussions

- Food availability
- Food buying practices
- Where to purchase healthy food
- Relative importance of healthy food access & regional food

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Focus Group Discussions

- Importance of regional food
- Ideas to improve access
- Community problem solving
- Concerns about future food supply

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Focus Group Discussions: Regional

- What makes a region a region?
- Associations w/ region
- Rationale for supporting regional/local producers
- Drawbacks of regional/local food
- Emerging themes on food safety, distrust of food sources, limited ability to influence, complicated identity.

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Community Readiness Study

- Interview key stakeholders/community leaders on their thoughts, experiences and perceptions of community's attitudes and efforts related to enhancing food access.
- Help community identify how it might make progress in a logical manner.
- Identify community's stage of readiness to facilitate strategy development and shape direction of intervention.

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Community Activities

How to share what we've learned with the greater community working on food and agriculture in our study locations?

Consumption Data Analysis

Goals

- Study purchase patterns for certain foods in the Northeast
- Assess the structural features of food access for low-income individuals
- Using primary and secondary data to study access to food in the Northeast

Tools / Data / Analyses

- Secondary Purchase Data
- Structural Determinants' of Stores Locations (Access)
- Customer Intercept Survey Data

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Consumption Data Analysis

Secondary Purchase Data

Structural Determinants' of Stores Locations (Access)

Customer Intercept Survey Data

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Secondary Purchase Data: Source

- IRI Consumer Network Panel™ accessed via TPA with USDA Economic Research Service

- The views expressed in this presentation are those of the authors and may not be attributed to USDA, the Economic Research Service, or Information Resources, Inc.

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Purchase Data: Description

- Comprised of purchase records from a digital scanner that selected households (~ 100k/year) use to scan the UPC code of ALL their purchases, includes:
- Household purchase occasions from 2008 – 2012
- Weights designed to make this selected group nationally and regionally representative
- Product attributes such as price, quantity, size, package claims, type of brand, promotional deal
- Household demographics such as income, size, county of residence, race, number of children

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Purchase Data: Preliminary Analysis

- Household types: low-income, non low-income, urban, non urban
- All market basket items: **only** food-at-home, focus on milk
- Preliminary findings suggest significant differences between:
  - low-income and non low-income
  - urban and non urban households

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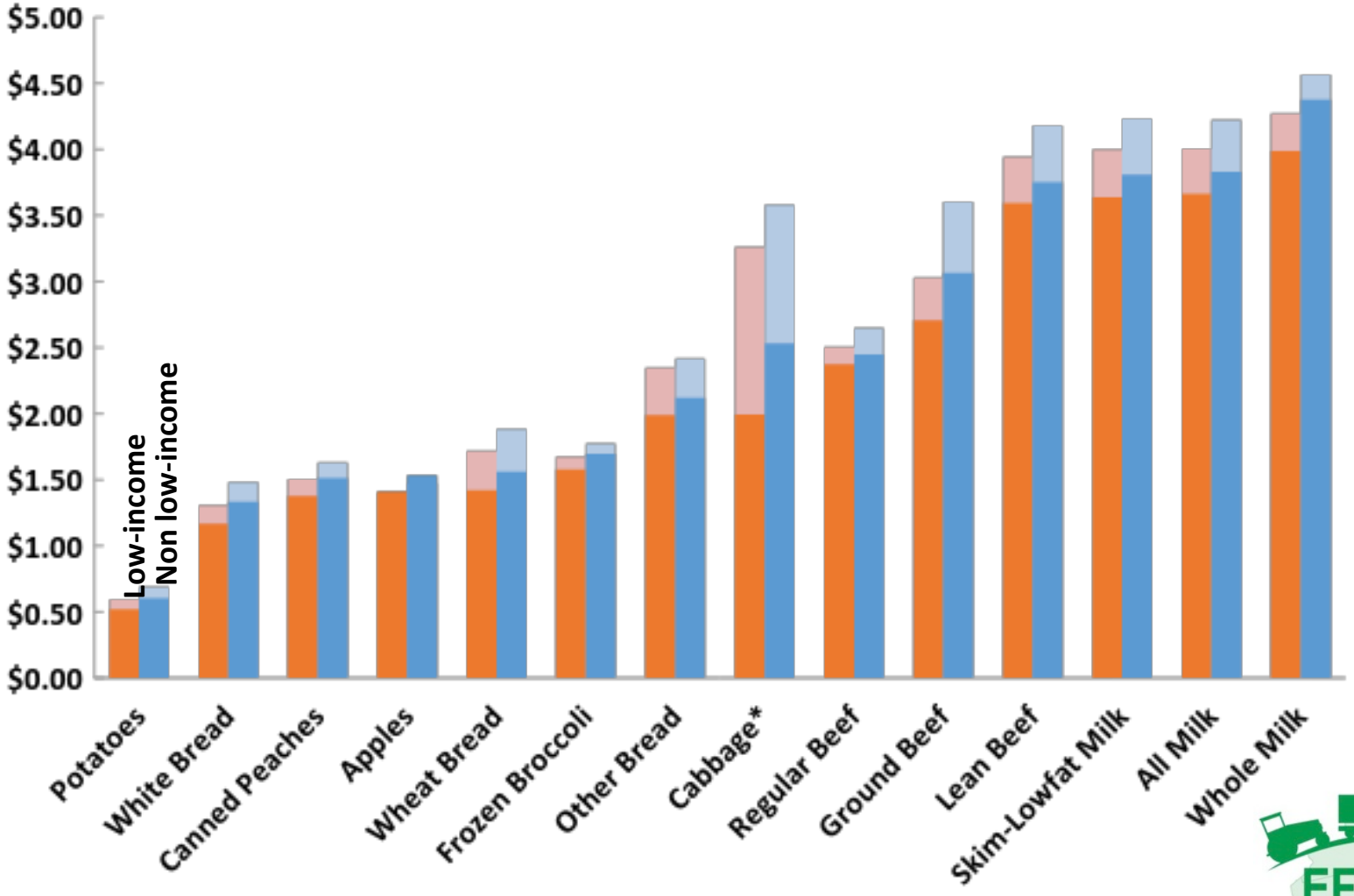
Low-income Households Pay Lower Prices Per Unit



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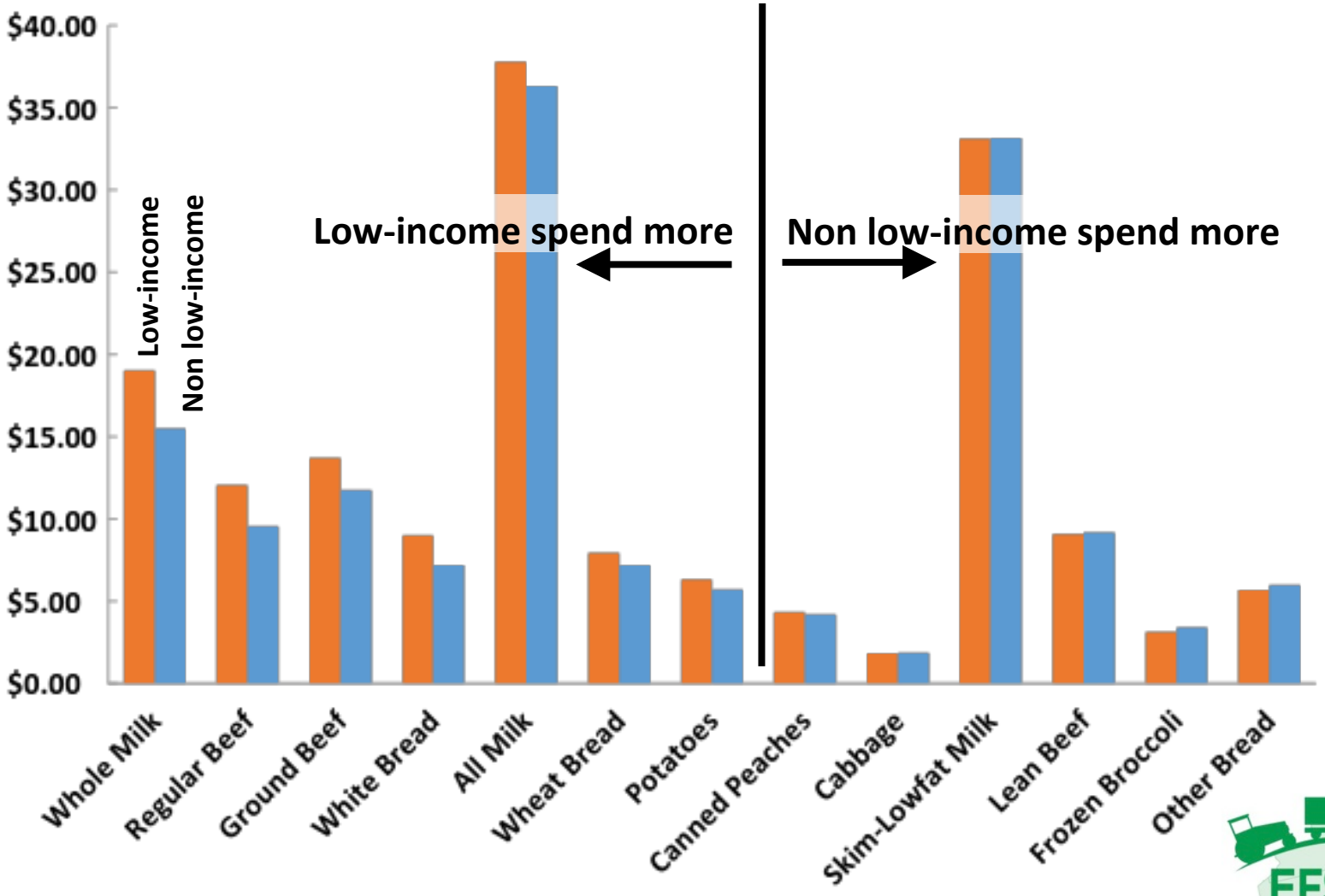
Average Annual Expenditure Per Household Member



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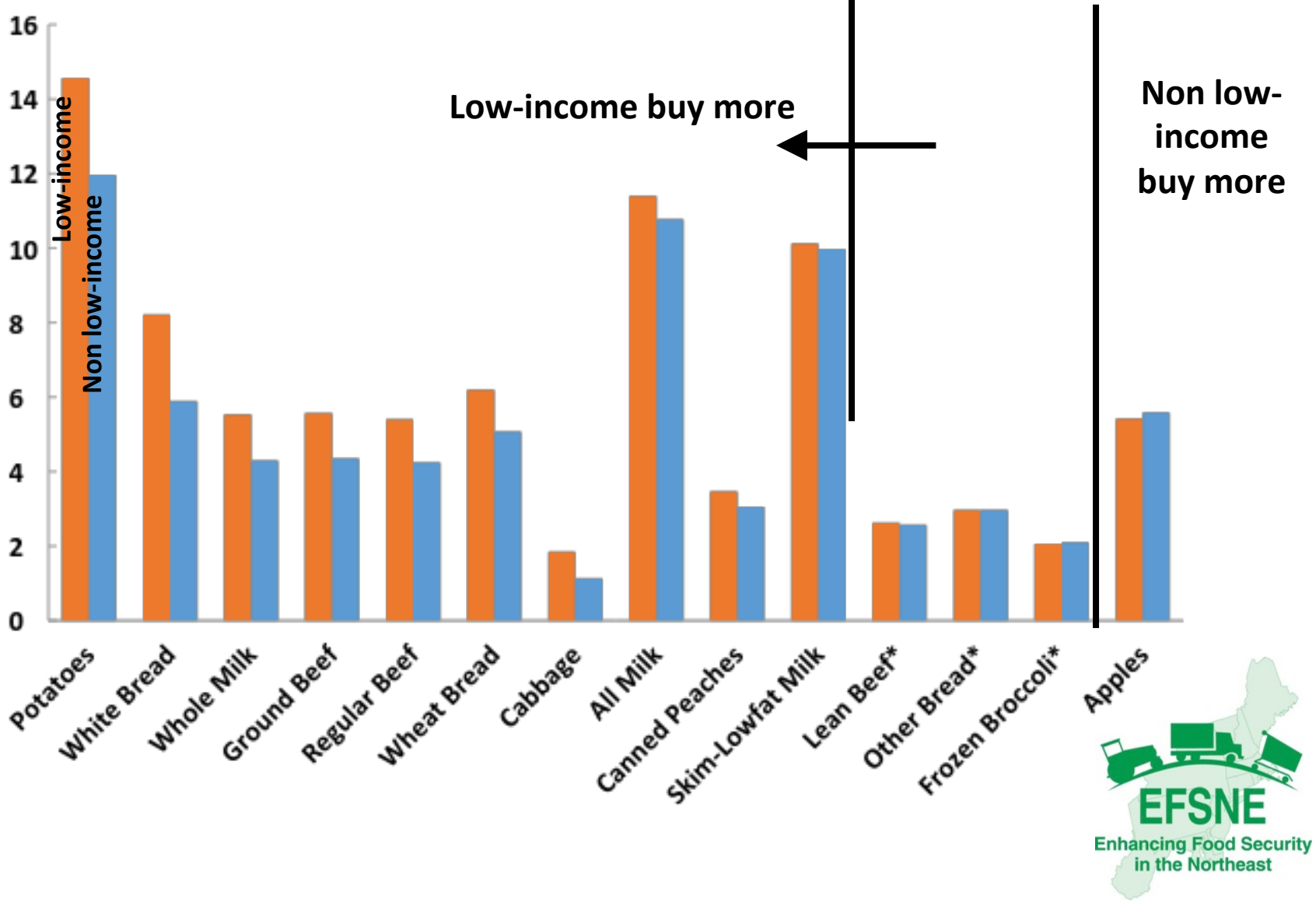
Average Annual Quantity Purchased Per Household Member



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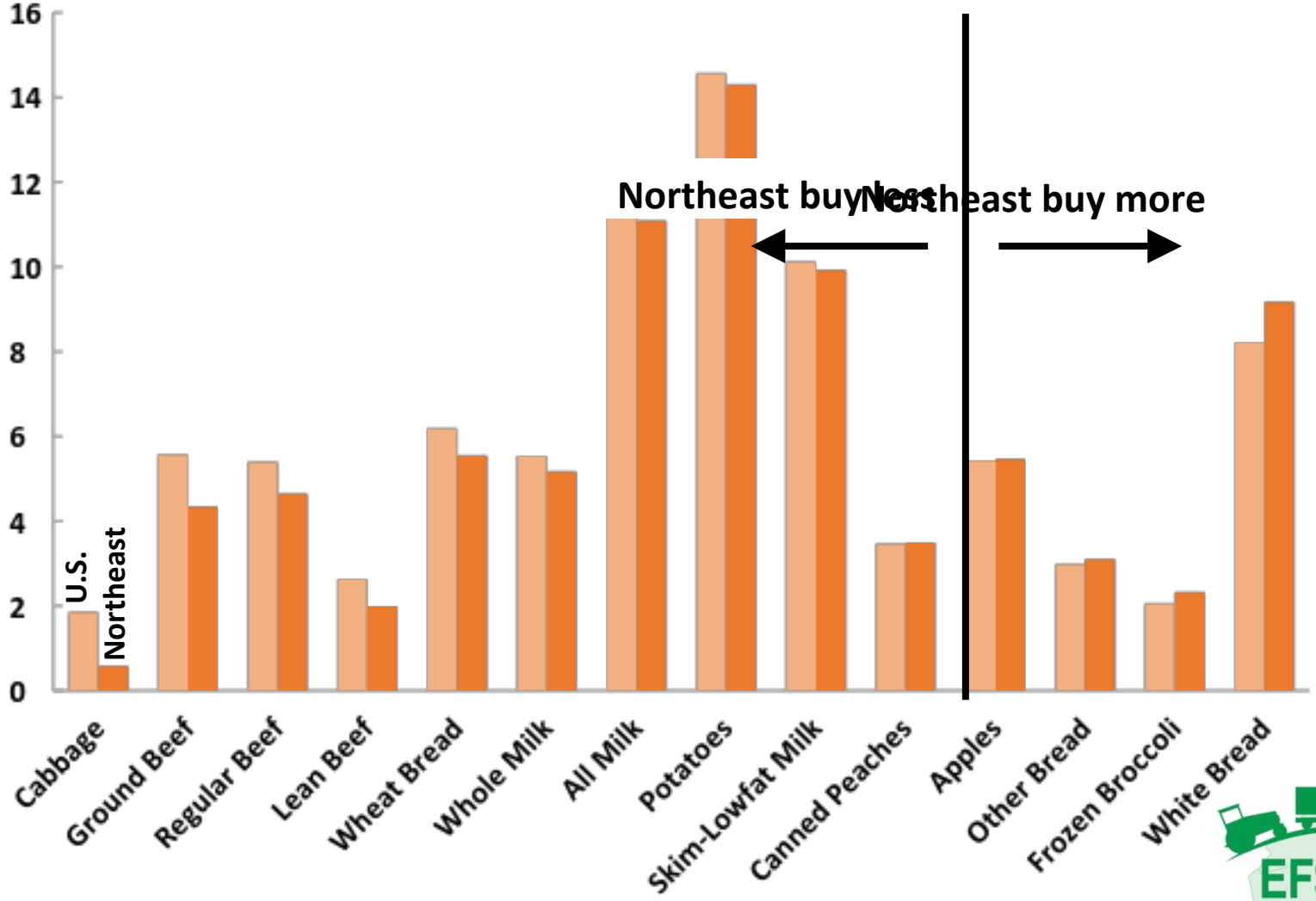
Average Annual Quantity Purchased Per Low-Income Household Member



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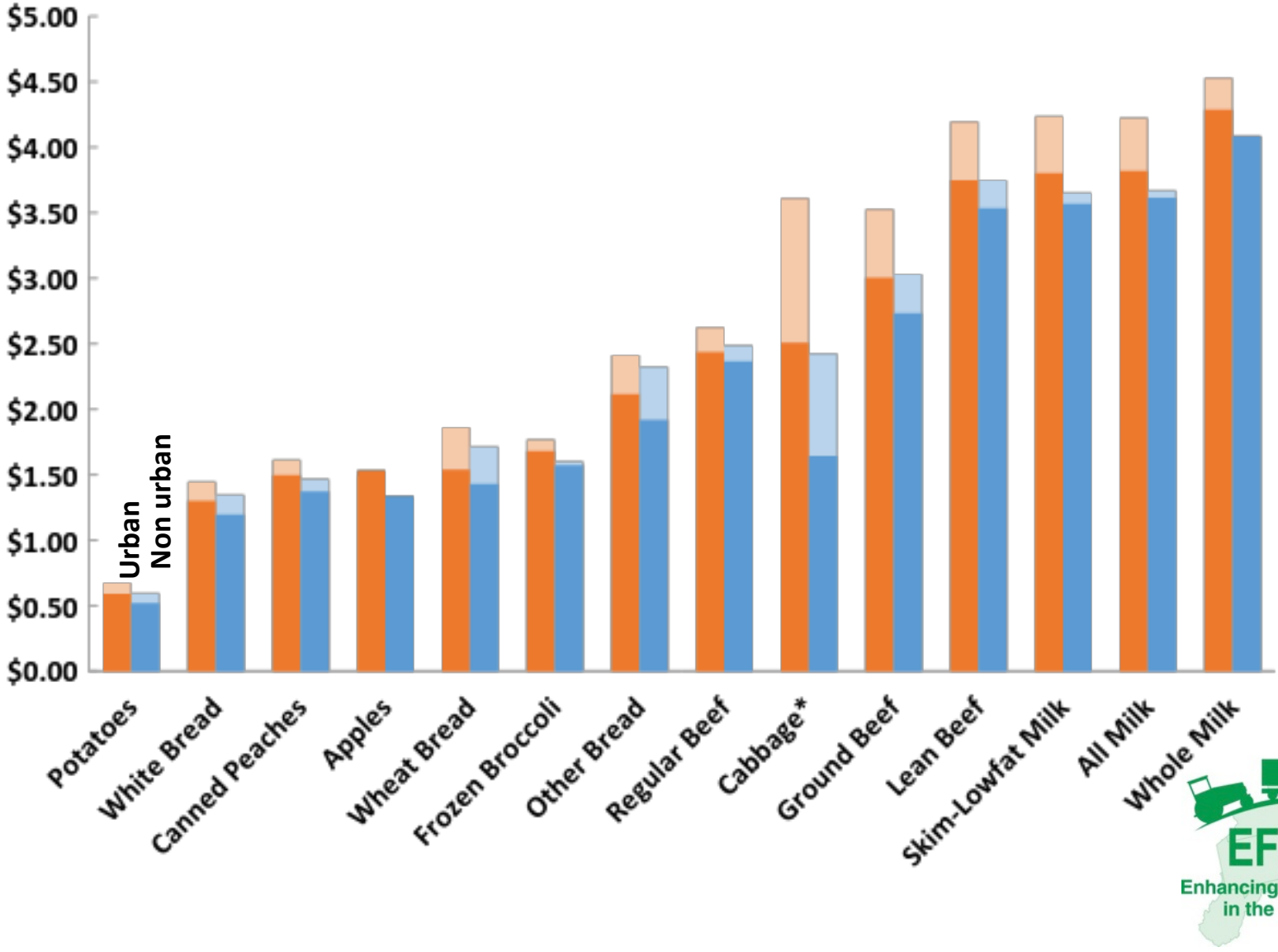
Urban Households Pay Higher Prices Per Unit



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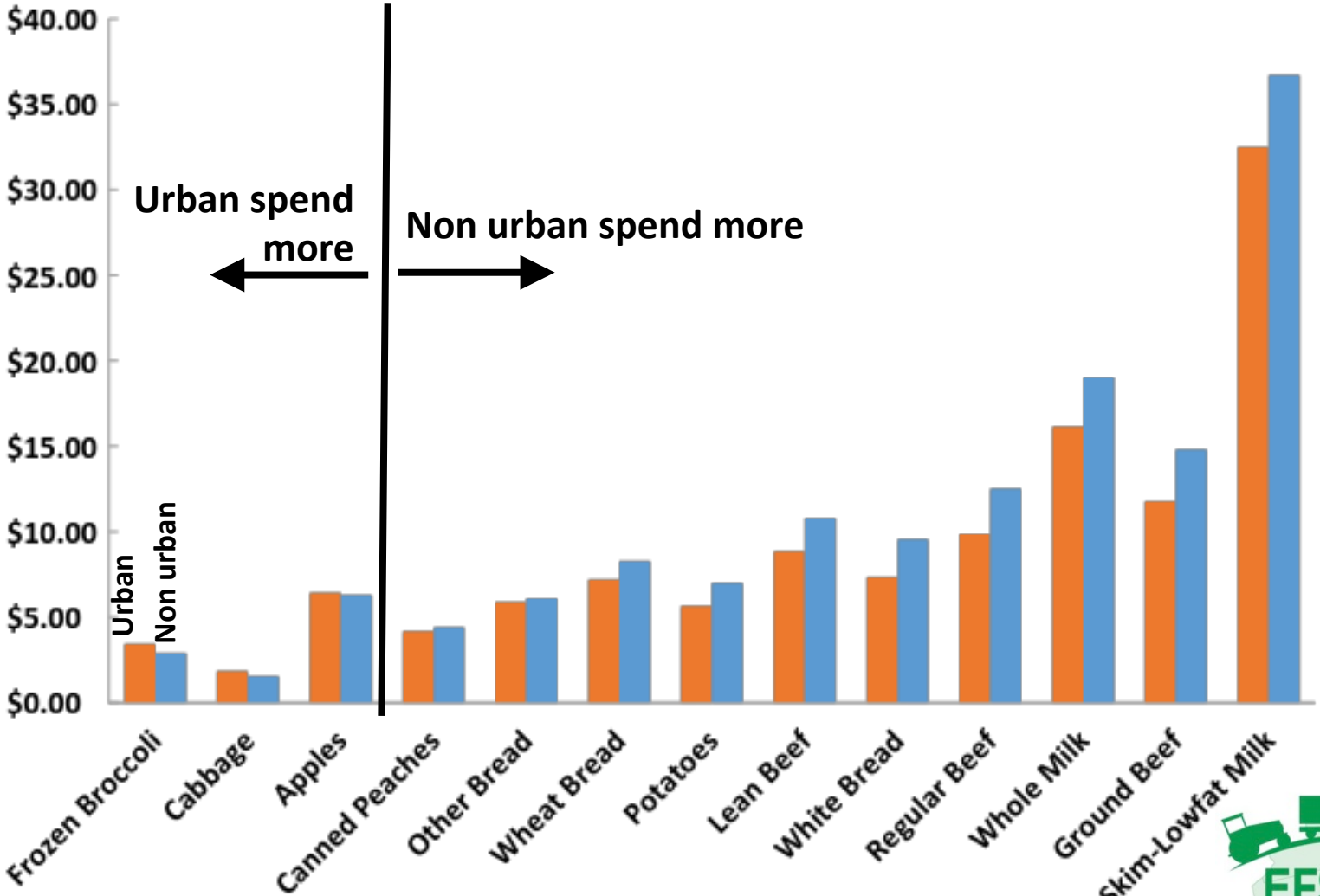
Average Annual Expenditure Per Household Member



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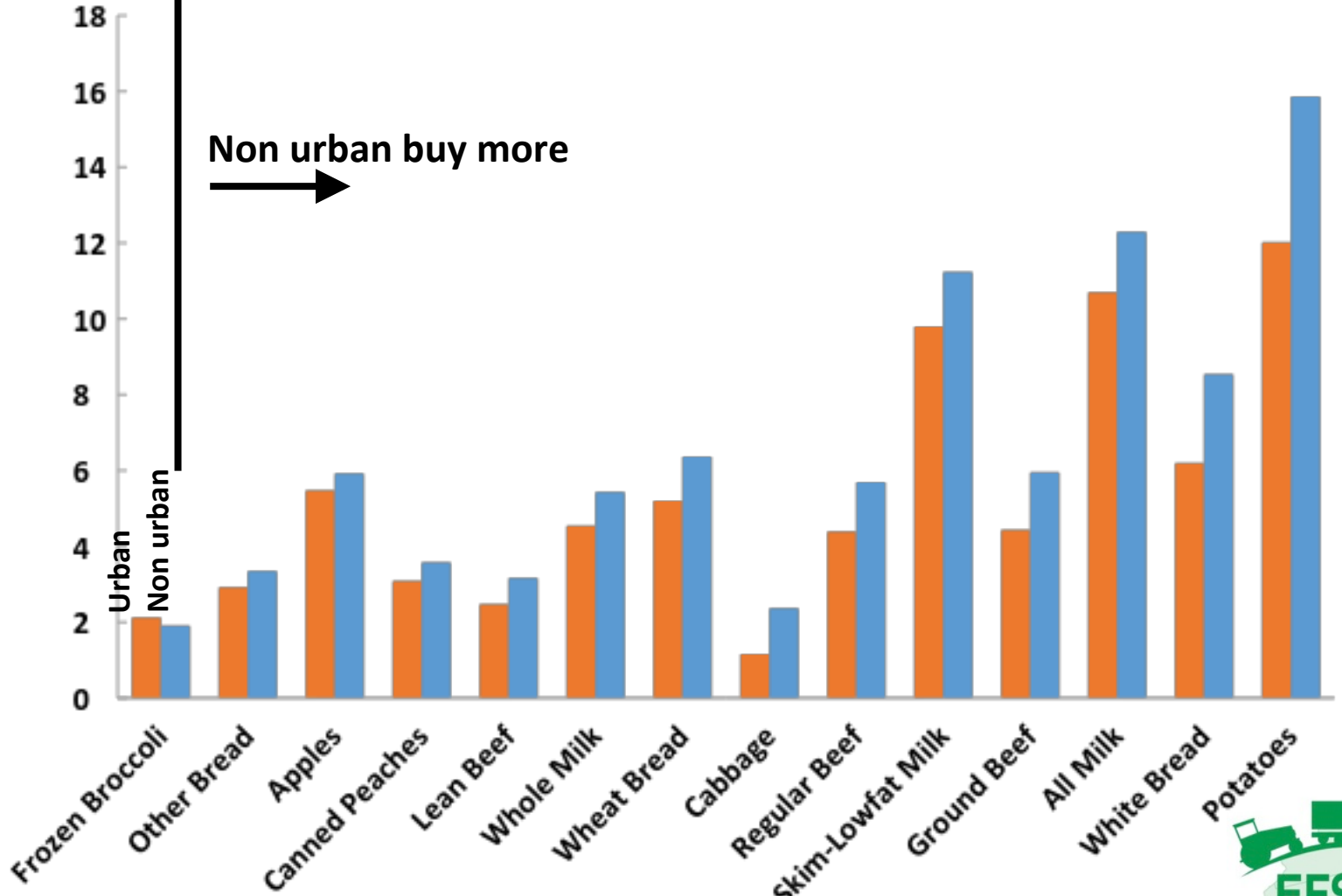
Average Annual Quantity Purchased Per Household Member



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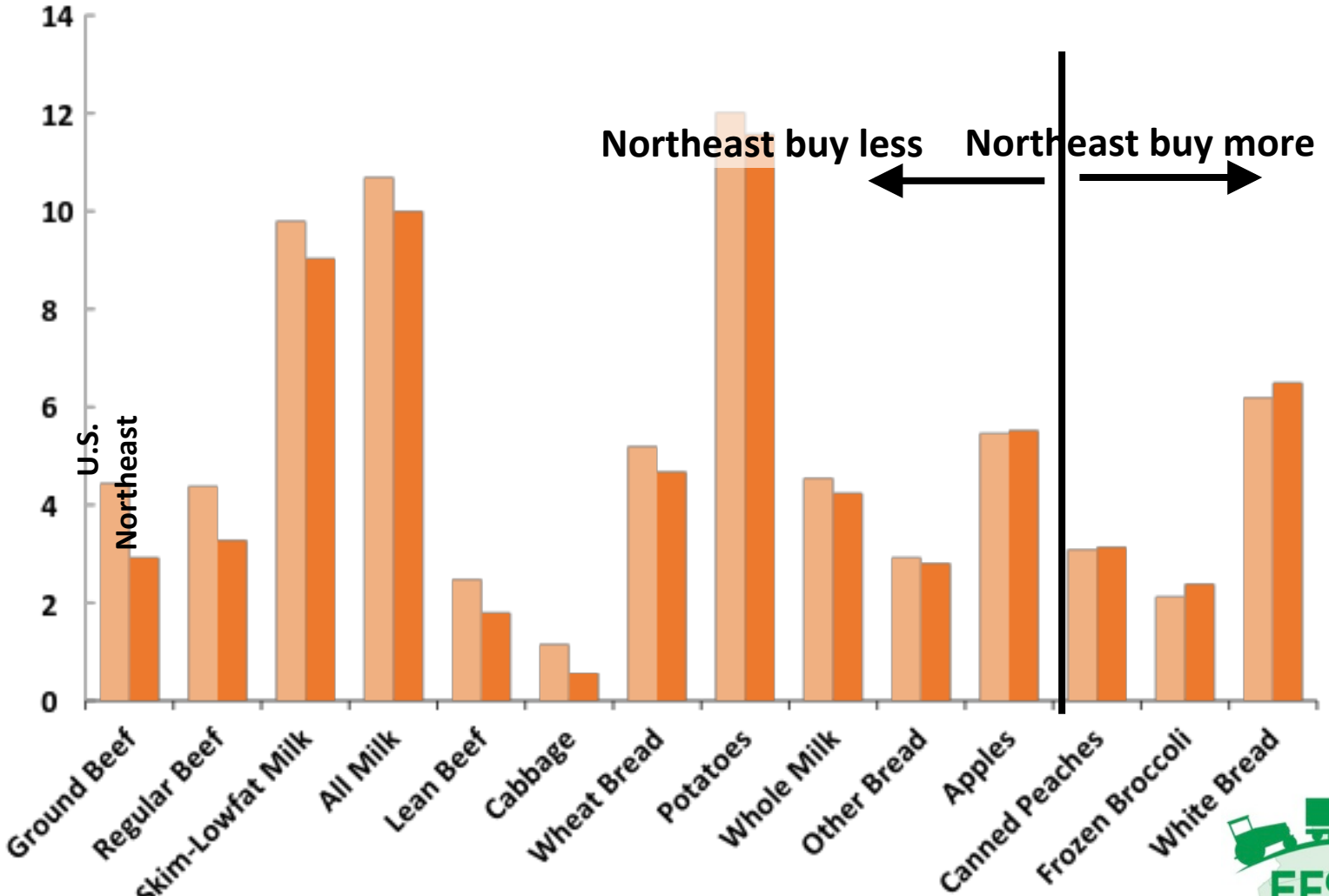
Average Annual Quantity Purchased Per Urban Household Member



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Purchase Data: Preliminary Analysis

- We estimated the demand for all market basket items to determine how responsiveness to price changes varies among low-income, non low-income, urban, and non-urban populations
- We controlled for various demographics in this demand analysis including:
  - Race, employment, age and presence of children, income, household size

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Price Decreases Affect Low-Income Households' Purchases More

- Low-income households are affected more by price decreases for:
  - Cabbage, Regular Ground Beef, Whole Milk, White Bread, Wheat Bread, Canned Peaches, Potatoes, Apples
- No difference detected for:
  - Frozen Broccoli, Lean Ground Beef, Other Bread
- Low-income households are affected less by price decreases for:
  - Skim/Low-fat Milk

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Analysis: Consumer Responsiveness to a Price Decrease

- **Goal**: To determine how much more low-income and non low-income consumers will purchase if the price of whole and skim/low-fat milk decrease
  - There is no discernable difference between urban and non-
- **Two Effects**:
  - Non-purchasers at CURRENT price: this includes consumers that are willing to purchase milk, but are not able to at the given price (it also includes people that will never buy milk)
  - Purchasers: these are consumers that are currently purchasing milk, but may choose to buy more if the price were lower

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An In-depth Look At Milk Purchases: Responsiveness of Non-Purchasers

- How do consumers that are not buying milk **at the current price** respond to a price decrease?
  - If the price of Skim/Low-fat Milk decreases by 10%, the likelihood of purchasing milk increases by 2.7% for low-income and 3% for non low-income.
  - If the price of Whole Milk decreases 10%, the likelihood of purchasing milk increases by 5% for low-income and 4% for non low-income.
  - Low-income non-purchasers of Skim/Low-fat Milk are **less affected by price changes** than low-income non-purchasers of Whole Milk

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An In-depth Look At Milk Purchases: Responsiveness of Purchasers

- How do consumers that are buying milk at the current price respond to a price decrease?
  - If the price of Skim/Low-fat Milk decreases 10%, low-income consumers will purchase 2.4% more and non low-income consumers will purchase 2.8% more
  - If the price of Whole Milk decreases 10%, low-income consumers will purchase 2.1% more and non low-income consumers will purchase 1.6% more
  - Low-income purchasers of Skim/Low-fat are **more affected by price changes** than low-income purchasers of Whole Milk

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An In-depth Look At Milk Purchases: Demographic Influences

- Low-income consumers are less likely to buy Skim/ Lowfat Milk and more likely to buy Whole Milk
- Black and Asian consumers are less likely to buy Skim/ Lowfat Milk and more likely to buy Whole Milk than white consumers
- Employed consumers are more likely to buy Skim/ Lowfat Milk and less likely to buy Whole Milk than unemployed consumers
- More educated consumers are more likely to buy Skim/Lowfat Milk and less likely to buy Whole Milk than less educated consumers

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Preliminary Findings From Secondary Data: Review

- For some market basket items, low-income and non low-income consumers purchase differently
- Low-income consumers pay lower prices per unit for all market basket items
- For the majority of market basket items, low-income consumers spend more on an annual basis for food at home
- Urban consumers pay higher prices per unit for all market basket items

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Structural Determinants of Access to Food

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Structural Determinants of Access to Food

(CBP; PEP; SAIPE – 2013)

Type of store	*County – level average*	NE *N=300*	Rest of US *N=2812*	*(diff stat sig)*
Specialty Food Stores	Number of stores	28.02	6.31	***
	N stores / 1000 people	0.101	0.058	***
	% counties served	86.7%	62.9%	***
Grocery Stores	Number of stores	61.98	14.93	***
	N stores / 1000 people	0.234	0.245	
	% counties served	100.0%	97.9%	**
Convenience Stores	Number of stores	29.07	6.98	***
	N stores / 1000 people	0.115	0.068	***
	% counties served	93.3%	63.1%	***
Warehouse Clubs and Supercenters	Number of stores	2.18	1.76	
	N stores / 1000 people	0.014	0.019	***
	% Counties served	74.0%	54.6%	***

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Food Environment in the NE (300 counties)

Type of store	*County – level average*	Rural *126*	Urban *174*		Low Pov *230*	High Pov *70*
Specialty Food Stores	Number of stores	4.13	45.32	***	26.32	33.59
	N stores / 1000 people	0.090	0.110	**	0.112	0.066 ***
	% counties served	76.2%	94.3%	***	94.3%	61.4%***
Grocery Stores	Number of stores	10.82	99.03	***	51.35	96.93 *
	N stores / 1000 people	0.256	0.218	***	0.226	0.263 **
	% counties served	100%	100%		100%	100%
Convenience Stores	Number of stores	4.31	46.99	***	28.84	29.80
	N stores / 1000 people	0.103	0.124	**	0.116	0.113
	% counties served	87.3%	97.7%	***	95.2%	87.1% **
Warehouse Clubs and Supercenters	Number of stores	0.77	3.21	***	2.39	1.49 ***
	N stores / 1000 people	0.016	0.013	*	0.013	0.016 *
	% Counties served	58.7%	85.1%	***	77.0%	64.3%***

Urban Counties: 1,2,3 of USDA rural continuum code; Rural: All other counties
Low poverty county: below national average from data (16.57%)

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Determinants of Access to Large Food Stores

- We use publicly available data to investigate why some areas have limited access to large food stores.
- Two approaches to tackle limited access:
  - Supply side: Assume there is enough demand to support a store and provide a subsidy to overcome barriers to entry
  - Demand side: Assume there is not enough demand to support a store and investigate policies to stimulate demand (e.g., SNAP benefits)

- Use county-level data and econometric methods to examine these approaches

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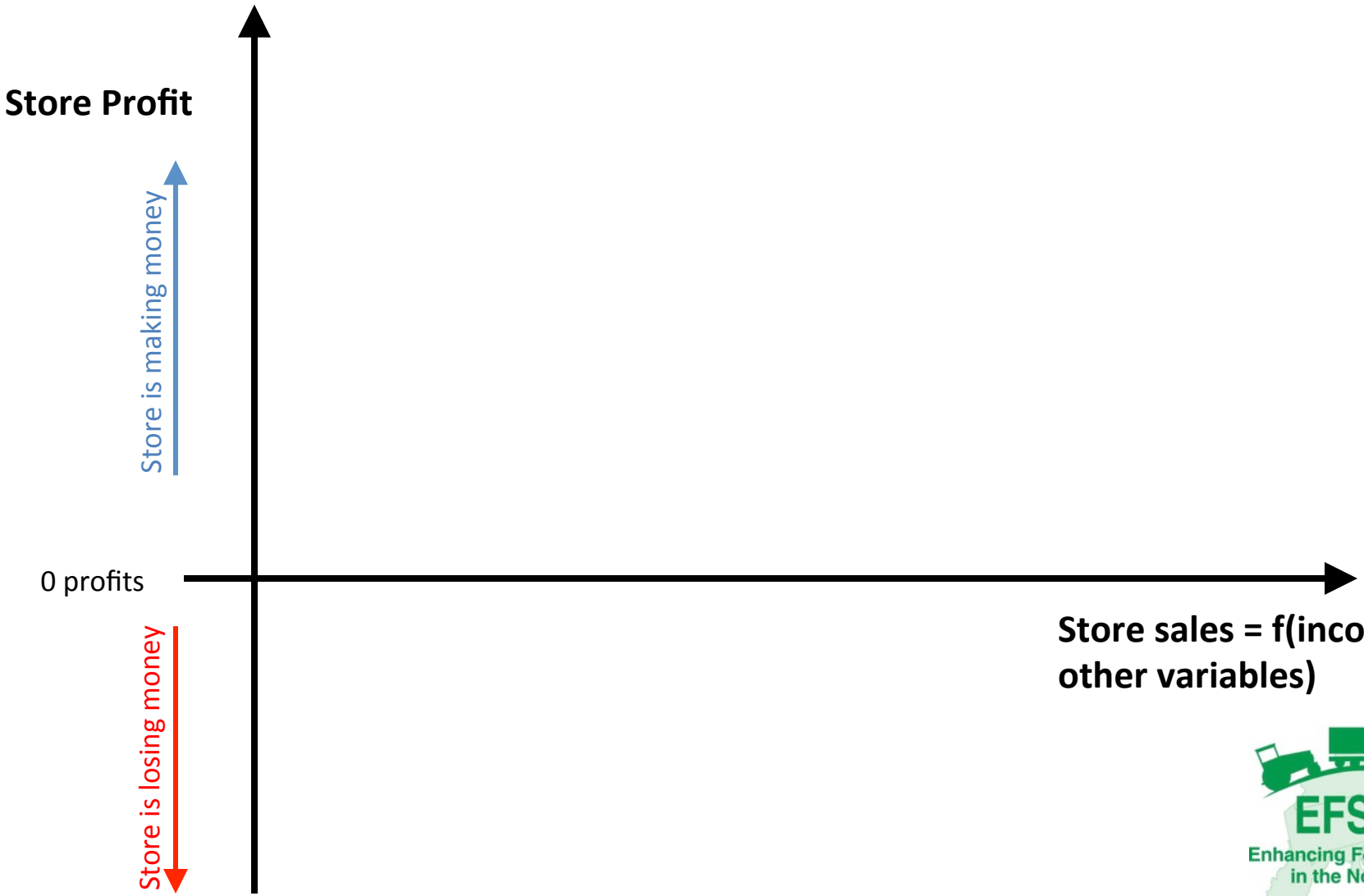
What Drives Stores' Location?



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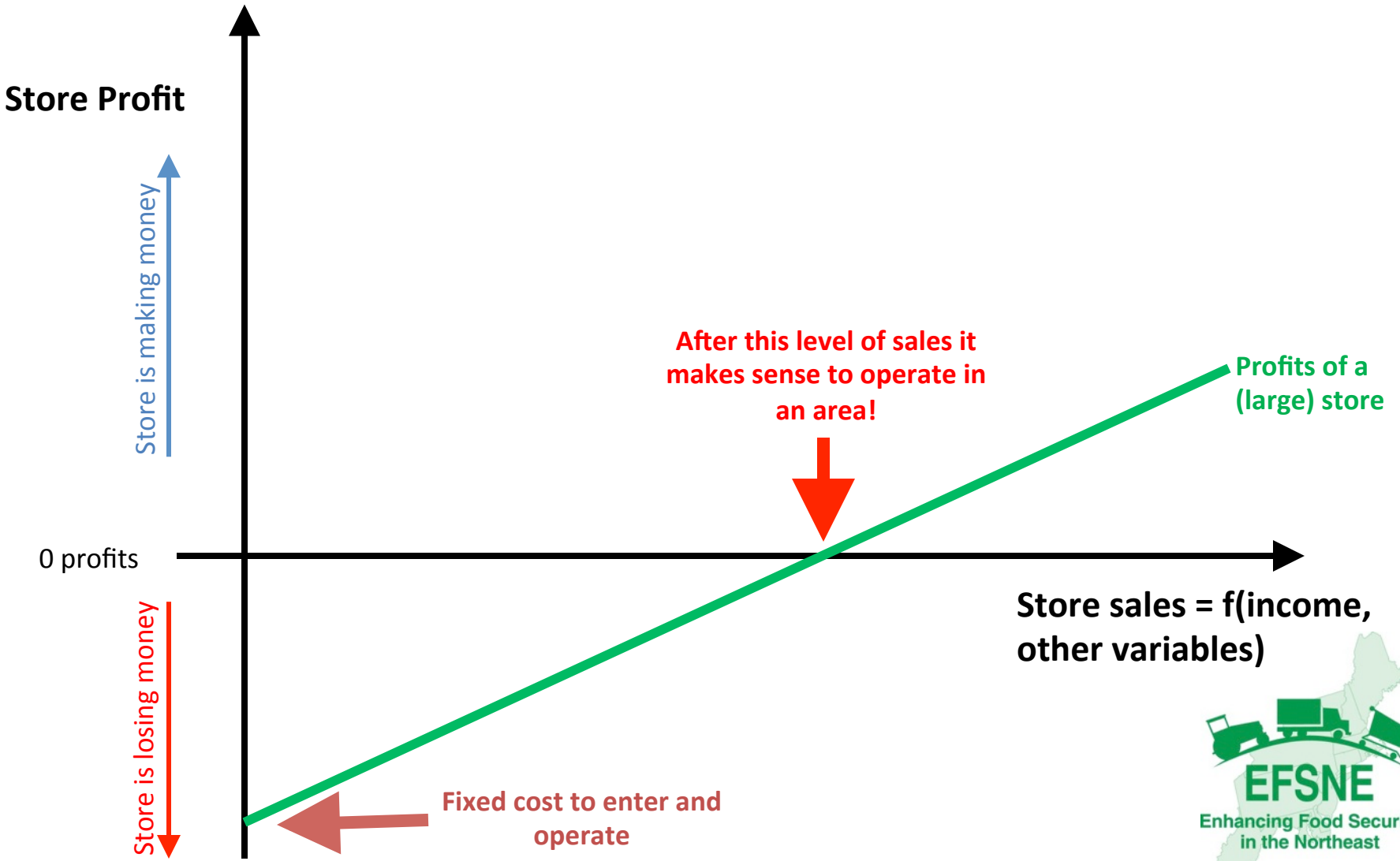

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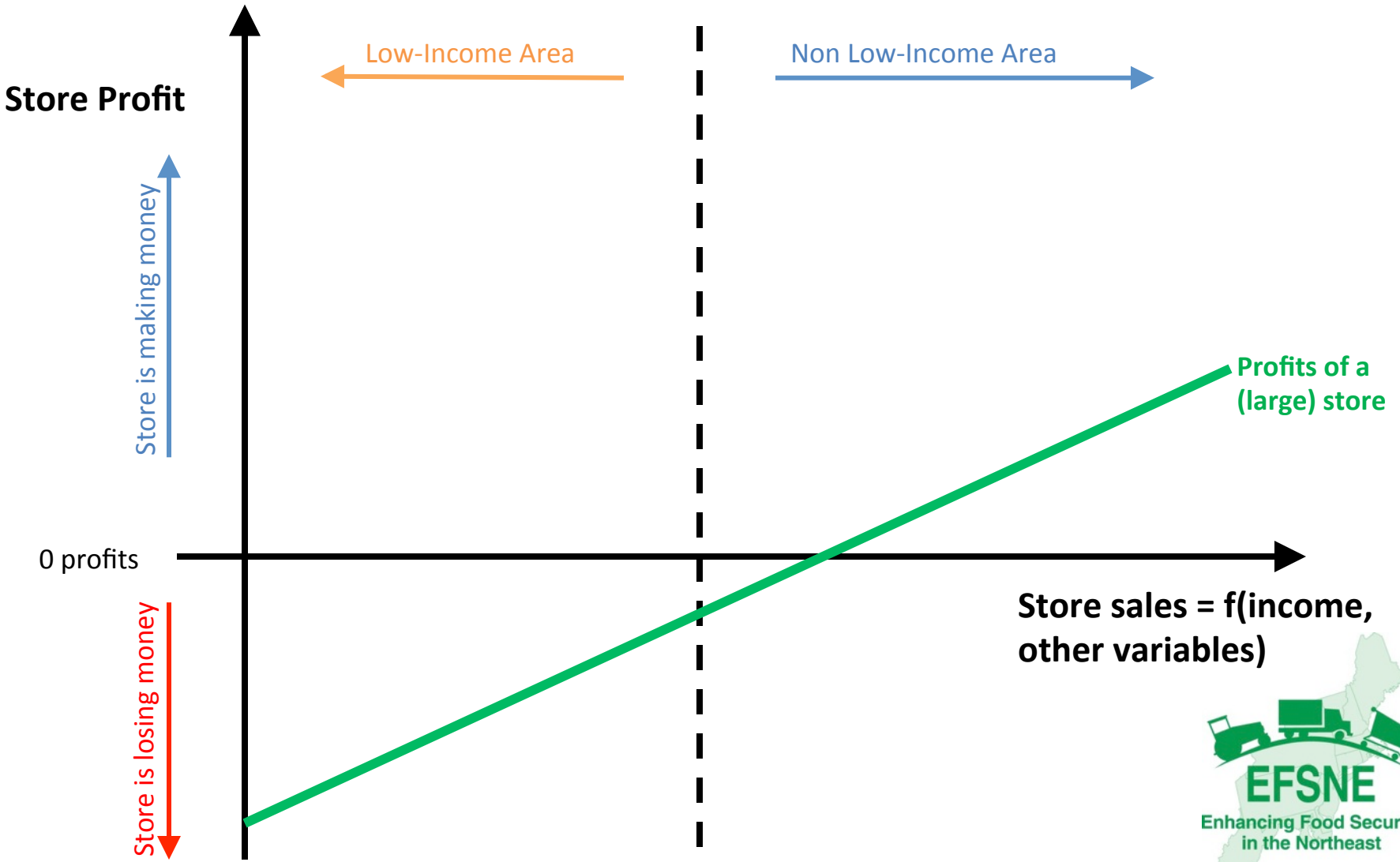

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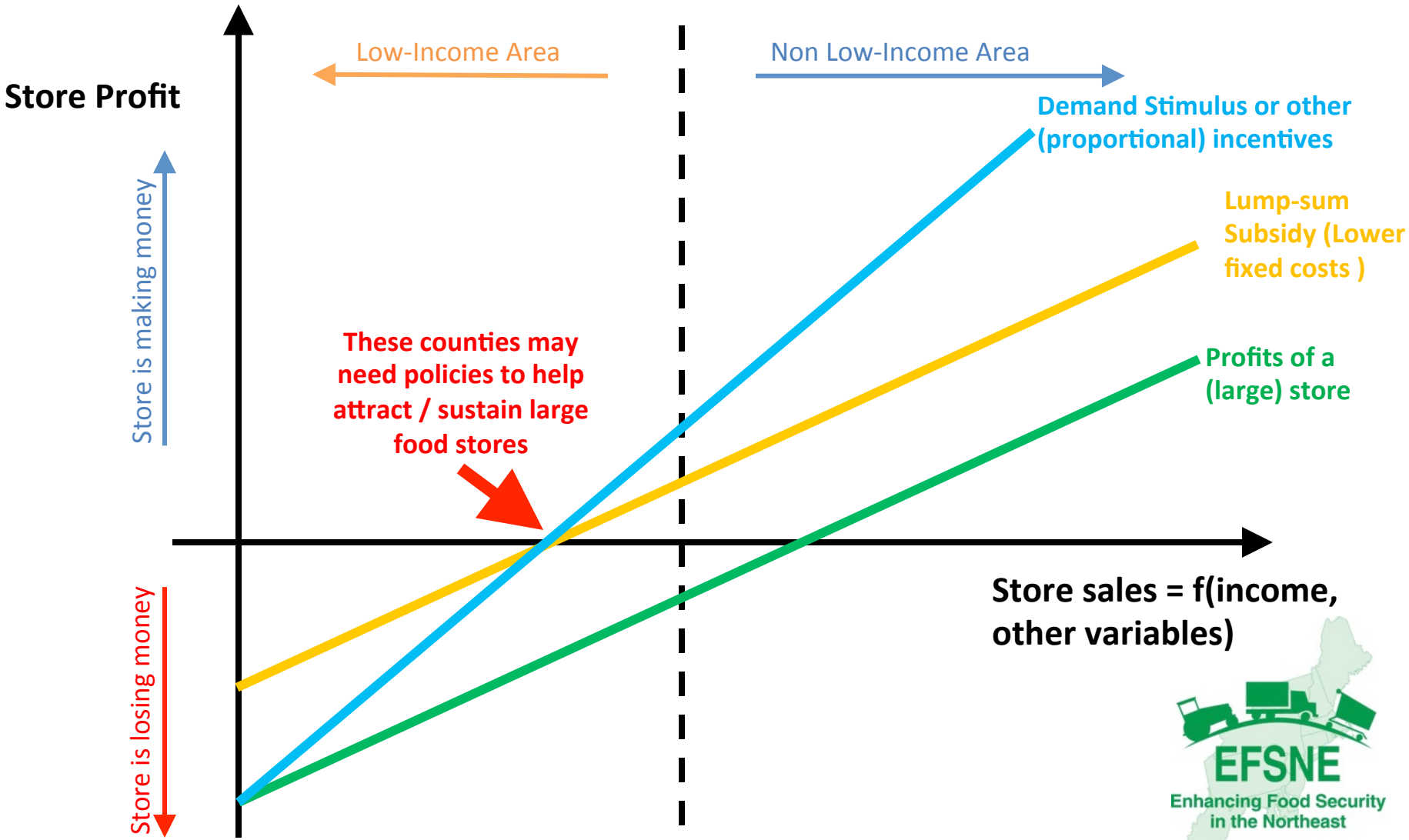
What Drives Stores' Location?



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Econometric analysis

Nine years of county-level data for the contiguous U.S.

Access to large stores defined as number of stores (> 50 employees) divided by number of potential markets

- 10 miles radius for rural areas
- 1 mile radius for urban areas

Drivers of demand: population, per capita income, SNAP/poverty, age and ethnicity groups

Fixed and variable cost: share of building cost, land availability, home price index; electricity, diesel price

Infrastructure / logistics: milk manufacturing, dairy, fruit and vegetable wholesalers, grocery wholesalers, highways

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Preliminary results

What do we find?

- Demand drivers have a considerable effect on profitability (and location) of large stores

- Fixed and variable costs variables reduce stores' profitability (evidence stronger on the latter)

- Logistics / infrastructure presence matters

- Different levers can be used to attract large stores:

6 % increase ratio SNAP/poverty ≈

$ 1,000 per capita median annual income ≈

8% reduction structural cost share ≈

66% increase per capita grocery wholesaling

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Structural Determinants: Preliminary findings' summary

- NE greater store availability (ON AVERAGE) than rest of the US, except for warehouse clubs /supercenters.
- County-level store availability in the NE varies across poverty level and rural – urban status
- Demand-side factors influence profitability of large food stores more than supply-side ones
- Different levers may be effective to attract large food stores' presence in underserved areas

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Primary Data

Intercept Surveys

Intercept Surveys

Three waves (rounds) of data collection completed

- November 2012 – August 2013
- October 2013 – May 2014
- September 2014 – April 2015

  ~ 2,700 "usable" data points collected

Information collected:

- Satisfaction of food in neighborhood: quality, variety, price
- Barriers to purchasing healthy foods: price, availability, time, knowledge, preferences
- Interest in sourcing (3rd round only)
- Shopping frequency, average expenditures per trip, shopping at farmers markets
- Demographics: age, gender, household size, education level (2nd and 3rd round) participation in food assistance programs, respondents
- Purchasing habits of different market basket items: milk, ground beef, bread, apples, potatoes, cabbage, frozen broccoli and canned peaches

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Summary stats of Demographics and shopping habits

Variable	Mean	Min	Max
Female	0.66	0	1
Age	49.03	18	91
Children Under 5	0.34	0	10
Years of Education*	13.22	0	24.5
Household Size*	3.02	0	12
Number Purchasing For	2.98	0	70
Program Participation	0.42	0	1
Rural	0.23	0	1
Shop at Farmers' Markets	0.57	0	1
Monthly Shopping Frequency (or Equivalent)	4.56	0.5	8
Monthly Shopping Expenditures	239.17	0	4333.3

* Only 2nd and 3rd round

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Sample Averages: Demographics and shopping habits by program participation and rural status

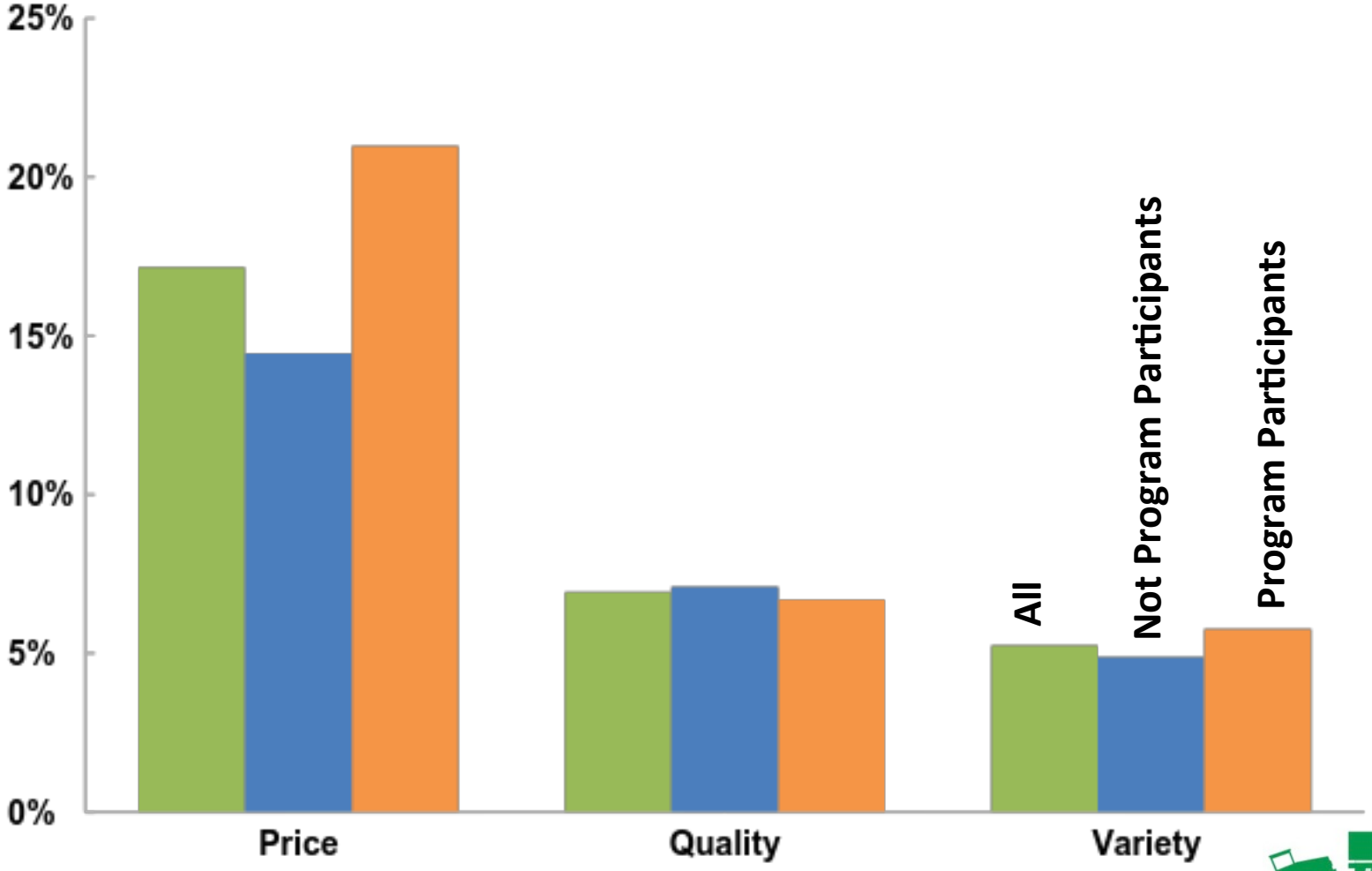
Variable	Not Participating in a Program	Program Participants	Rural	Urban
Female	0.62	0.71	0.64	0.72
Age	50.98	46.19	47.75	53.23
Children Under 5	0.21	0.54	0.36	0.28
Years of Education*‡	14.11	12.09	13.25	13.08
Household Size*‡	2.65	3.50	3.00	3.08
Number Purchasing For	2.66	3.44	2.94	3.13
Program Participation			0.45	0.32
Rural	0.27	0.17		
Shop at Farmers' Markets	0.61	0.53	0.55	0.65
Monthly Shopping Frequency (or equivalent)	4.76	4.28	4.51	4.72
Monthly Shopping Expenditures†	233.25	247.26	237.82	243.61

* Only 2nd and 3rd round

† Mean of Monthly Shopping Expenditures not statistically different across subsamples.

‡ Mean of education and household size not statistically different across urban and rural subsamples

Satisfaction of food in neighborhood: price, quality, and variety



Price – mean statistically different among groups

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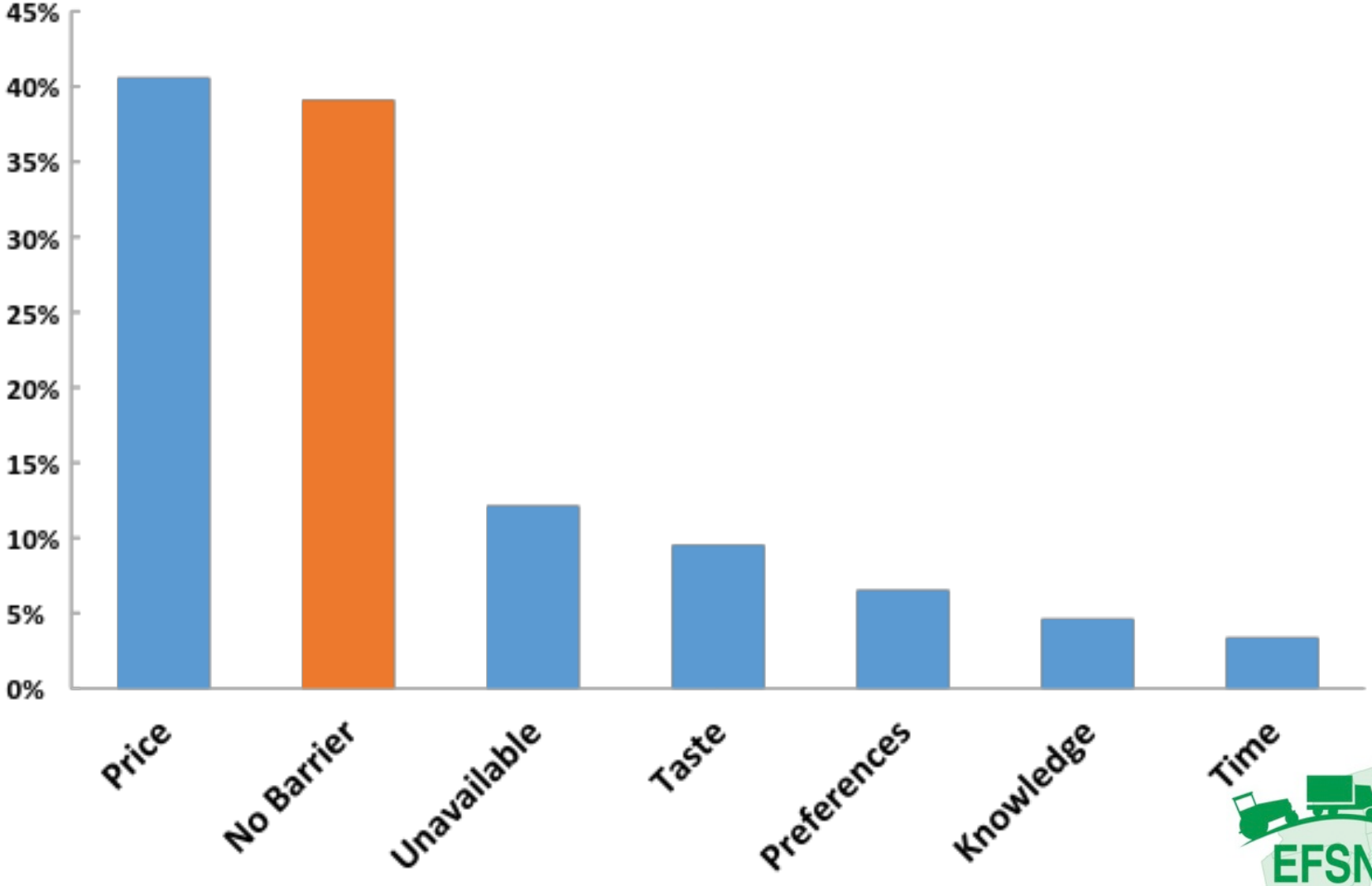
Percentage of Respondents Perceiving Barriers to Purchasing Healthy Foods



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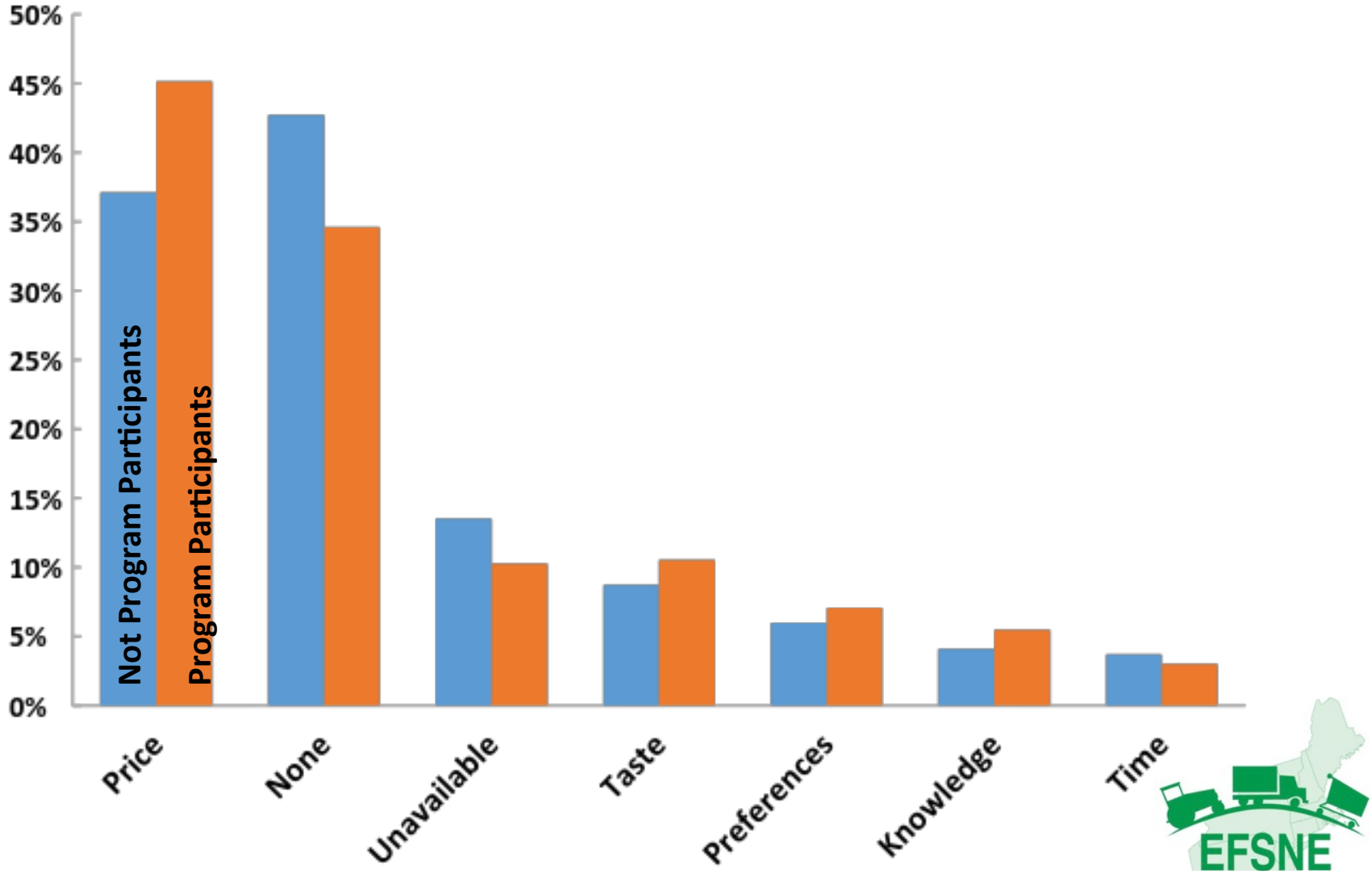
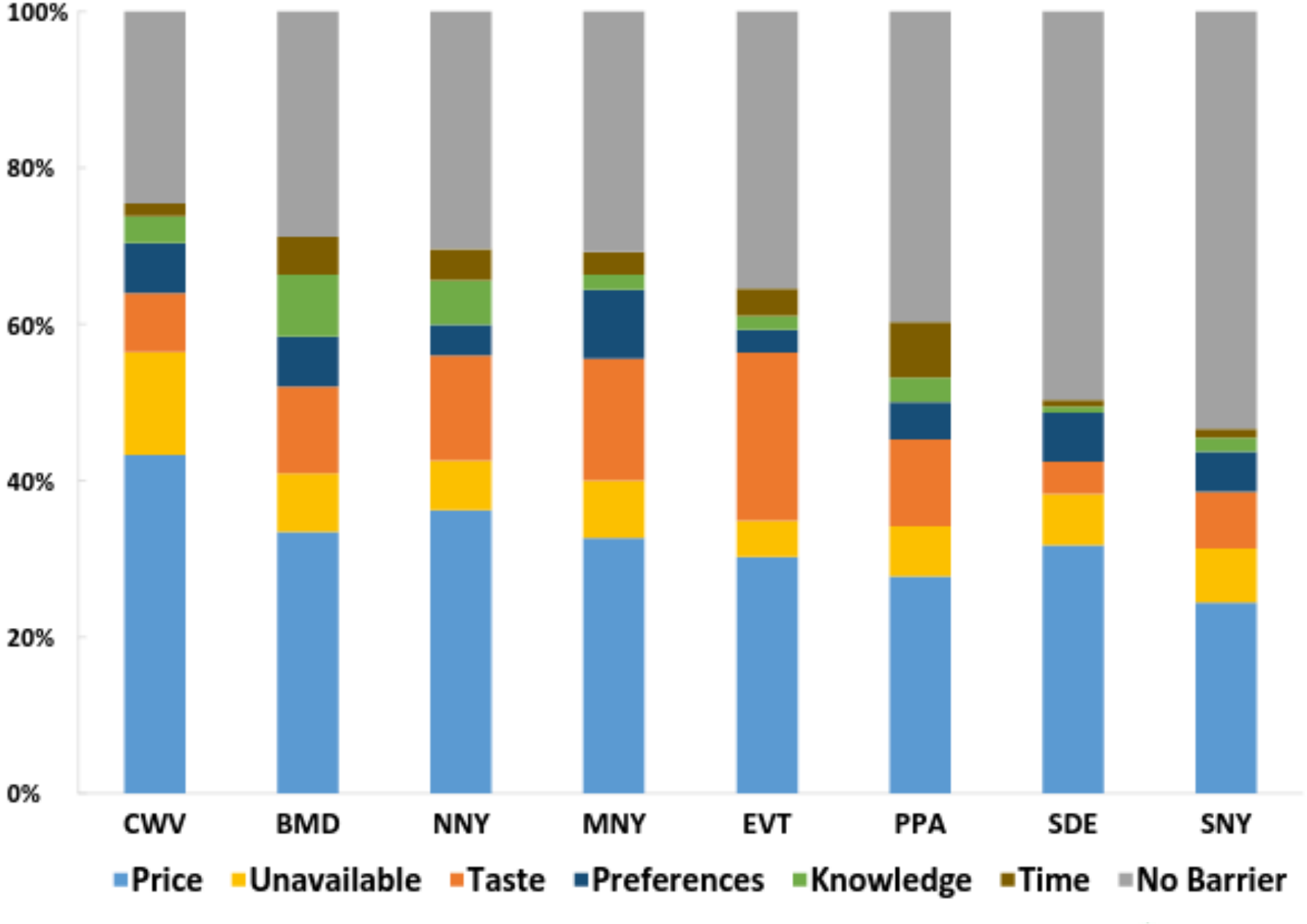
Percentage of Respondents Perceiving Barriers to Purchasing Healthy Foods by Program Participation

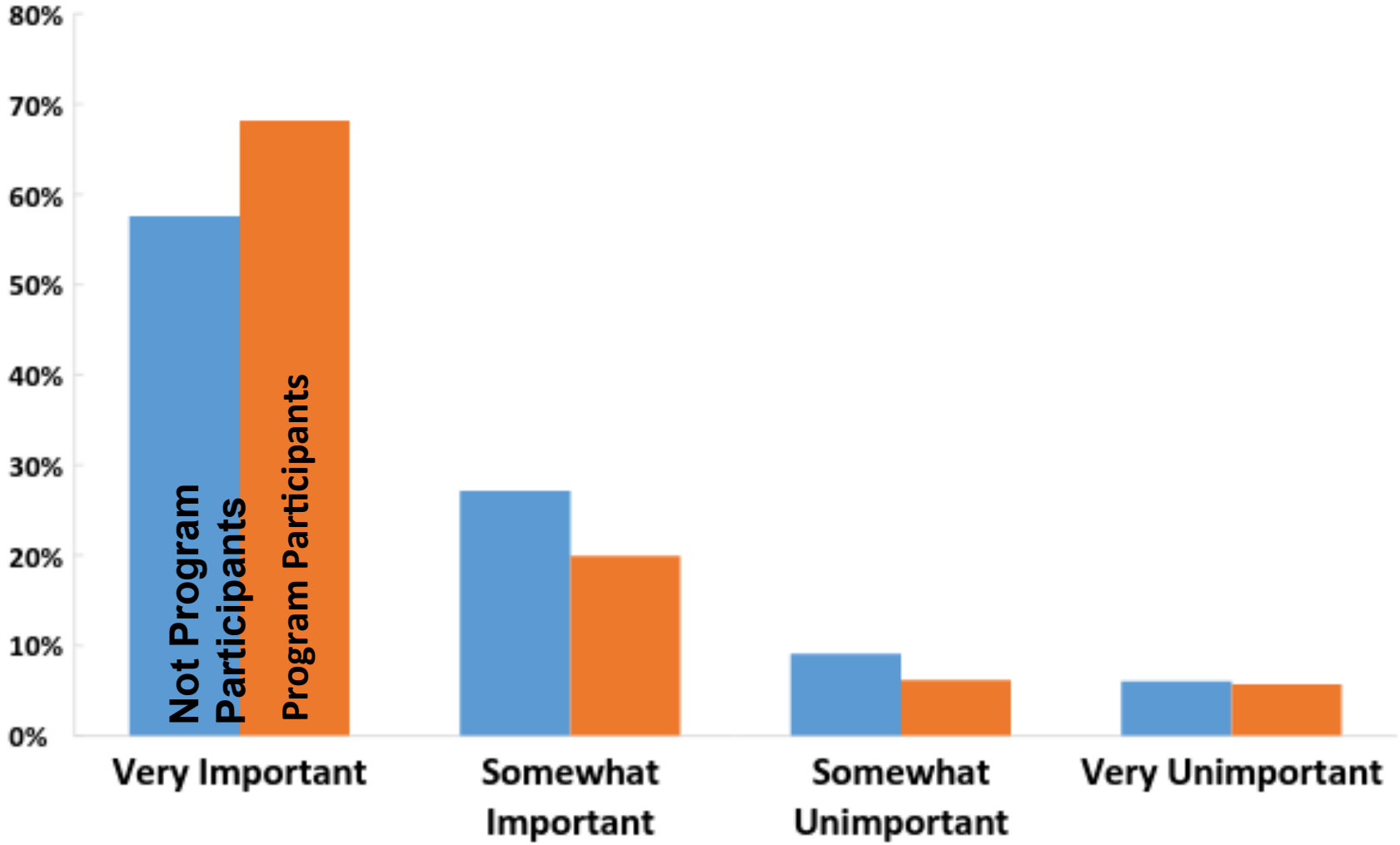


Price, No Barrier, Unavailable and Knowledge statistically different in mean

Perceived Barriers to Purchasing Healthy Foods by Site



How Important is where your food comes from?



Very Important, Somewhat Important statistically different in mean

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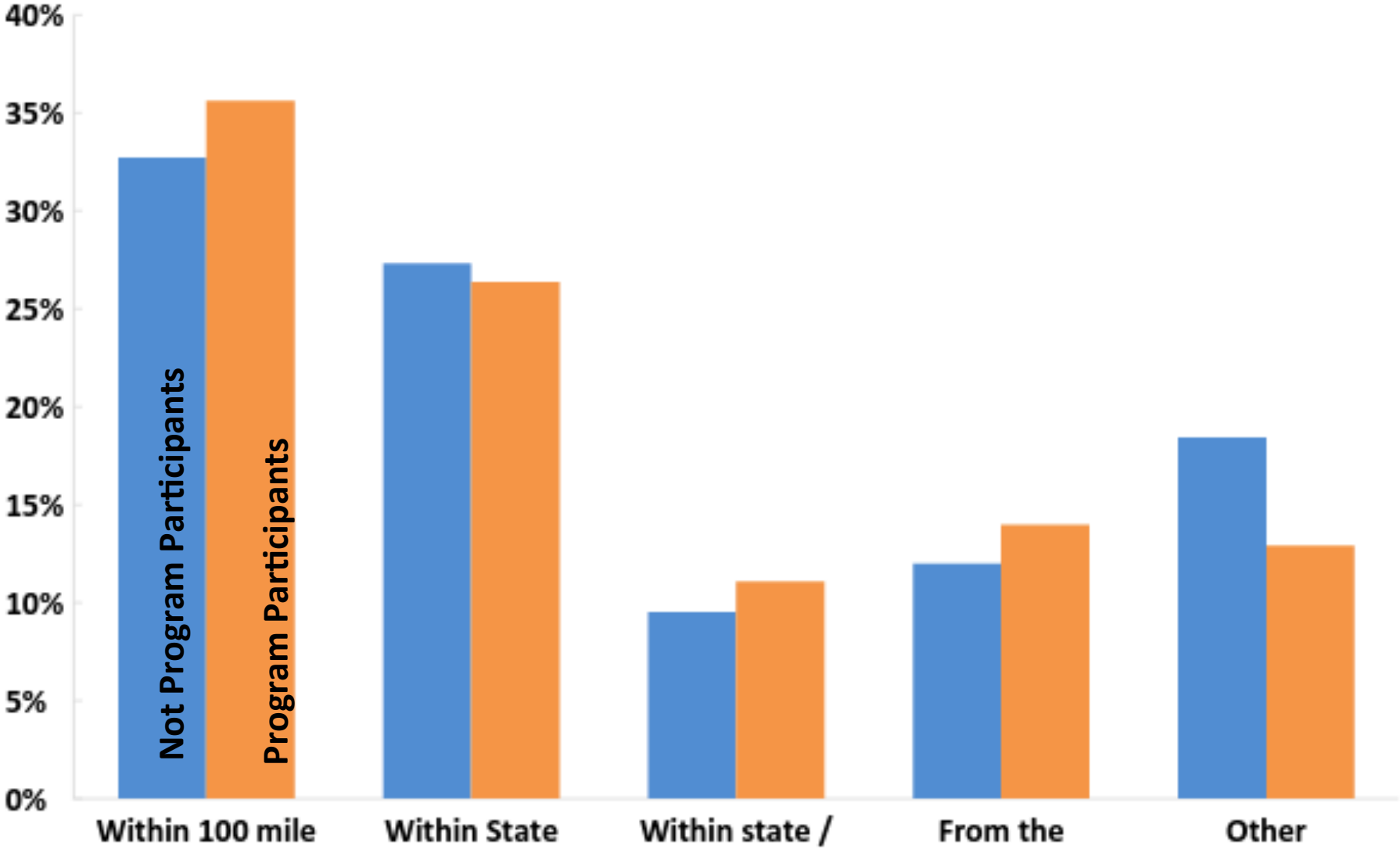
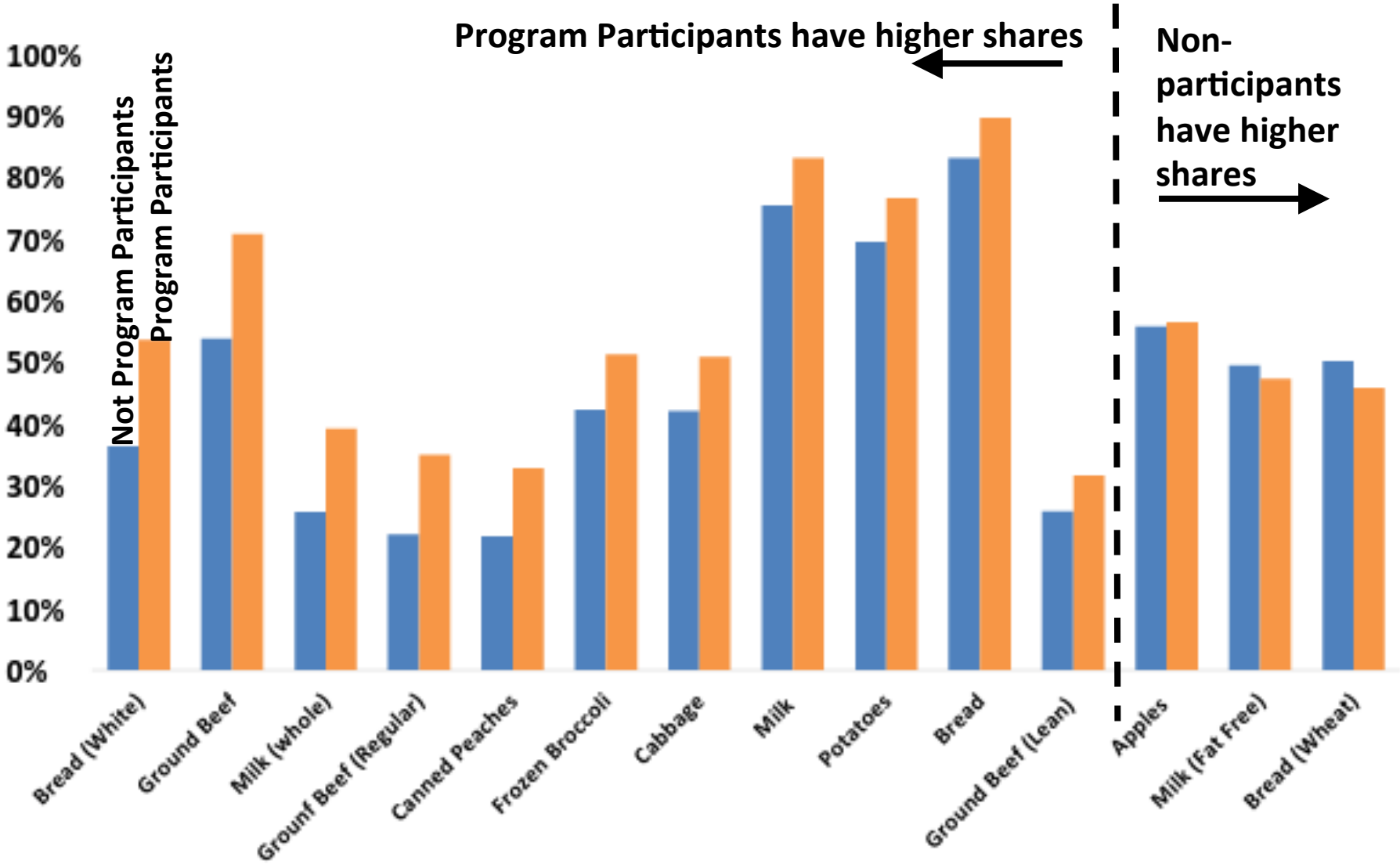
If Source is Important, Where Would You Prefer Your Food to come from?

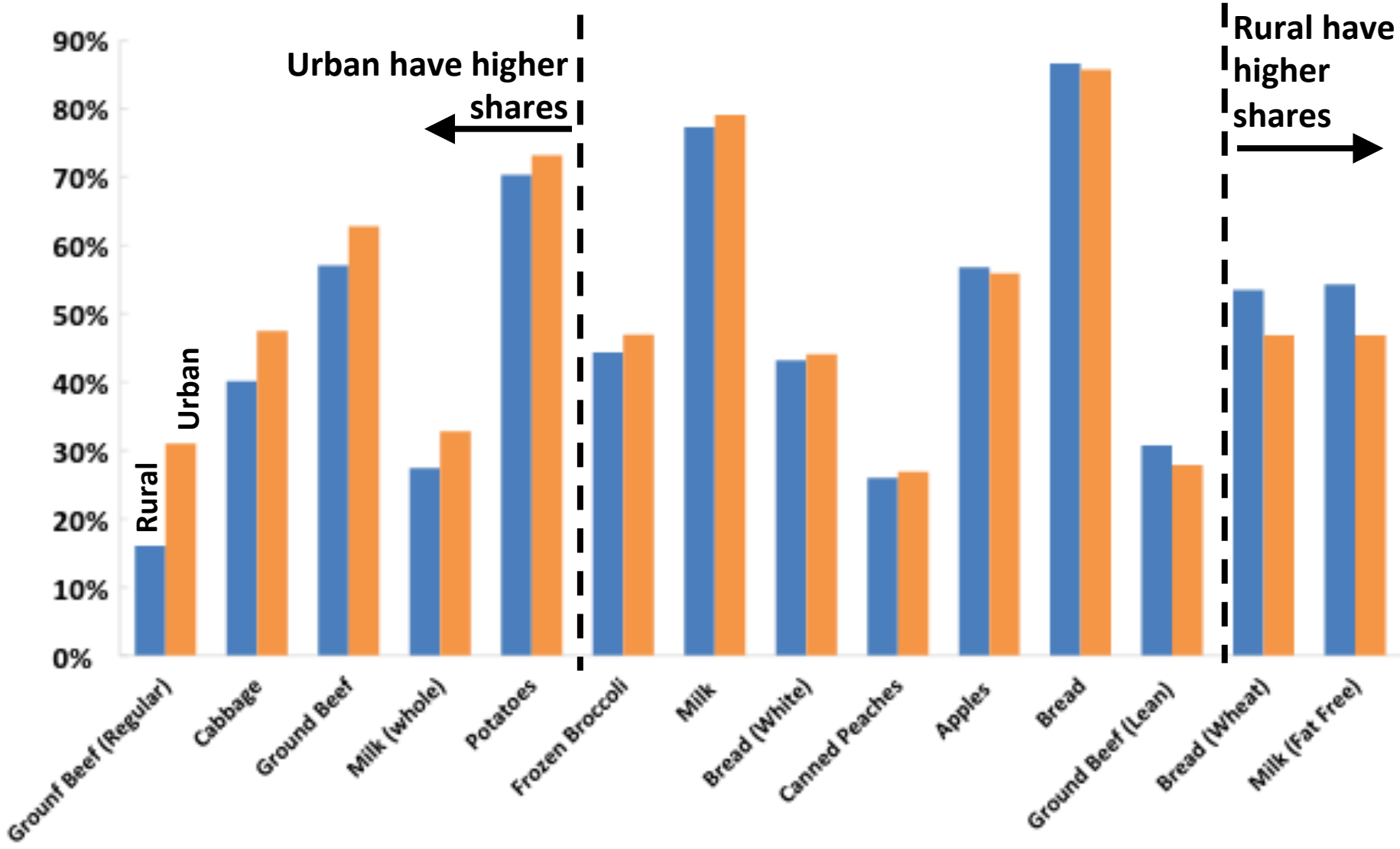


"Others" statistically different in mean

Market Basket – share of respondents' declared purchases in last month



Market Basket – share of respondents' declared purchases in last month



Determinants of Perceived Access Barriers

Understand how perceived barriers in acquiring healthy foods are affected by

- Overall perception of the food available to them
- Shopping habits
- Demographic characteristics
- Surrounding food environment
  - Medium / Large Grocery Stores (>20 employees)
  - Small Grocery Stores (<20 employees)
  - Convenience Stores
  - Warehouse Clubs and Supercenters

  (from Zip-Code Levels County Business Patterns, BLS)

  Multi-variable probit analysis

Perceives Access Barriers Results

	Price	Unavailable	Taste	Preferences
Unsatisfied with Variety		+		
Unsatisfied with price	+	+		
Unsatisfied with quality		+		+
Female	+		–	
Age	–	–	–	
N of Children in HH	–	+		
HH size		–		+
Years of Education		+		
Program participation	+			
SNAP period				–
Shopping at FM		+		
Weekend	+			
End of the month	–			+
Monthly Shop Frequency		+		
Monthly Expenditure				
Small Grocery			–	
Large Grocery	+			
Conv Stores	–			
Warehouse and SC	–	–	–	+
Rural		+		

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Adoption of Healthier MB Items

Question: What drivers affect the adoption of healthier market baskets among individuals in low-income areas in the Northeast U.S.?

- What correlations exist between purchasing healthier market basket items and demographic characteristics?

- How does availability of food stores impact healthy food purchasing?

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Definition of a Healthy Market Basket Index

Our Market Basket

"Conventional" Market Basket	"Healthy" Market Basket
Whole Milk	Skim or 1% Milk
White Bread	Whole Wheat Bread
Regular Beef	Lean Beef
Apples	Apples
Frozen Broccoli	Frozen Broccoli
Cabbage	Cabbage
Canned Peaches	Canned Peaches
Potatoes	Potatoes

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Definition of a Healthy Market Basket Index

Market Basket
for statistical analysis

"Conventional" Market Basket	"Healthy" Market Basket
Whole Milk	Skim or 1% Milk
White Bread	Whole Wheat Bread
Regular Beef	Lean Beef

Healthy Market Basket Index (HMBI)

$$HMBI = \sum_{g_i} Healthy\ Basket\ Items_i \Big/ \sum_{G_i} All\ Basket\ Items_i$$

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Preliminary Findings by subsample

	All	Program	Not in Program	Rural	Urban
Price is a barrier				+	+
Taste is a barrier				–	
Availability is a barrier					
Preference is a barrier	–				–
Knowledge is a barrier					
Time is a barrier					+
Unsatisfied with Variety					
Unsatisfied with price					
Unsatisfied with quality	+		+	+	
Female	+	+		+	
Age	+	+	+		+
N of Children in HH	+				+
HH size					
Years of Education	+		+		+
Participate in Program		x	x	–	
Rural	+		+	x	x
SNAP period	+	+			+
Shopping at FM					
Weekend	–	–			–
End of the month				+	
Monthly Shop Frequency				+	
Monthly Expenditure	+		+		+
Small Grocery					
Large Grocery	+				+
Conv Stores	–	–		+	–
Warehouse and SC					

Preliminary Findings

- Higher HMBIs attributed to women; older, more educated respondents, presence of children.

- Frequenting farmers market related to higher HMBIs; program participation seems to have an effect only on rural sites

- The food environment plays an important role:
  - Presence of large grocery stores (convenience stores) has a positive (negative) effect on HMBI scores

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Intercept Survey – Primary Data Analysis Preliminary finding summary

- Price most relevant barrier to purchasing healthy foods, particularly for program participant.
- Most respondents satisfied with food quality, variety and prices in the site; 20% program participants not satisfied with price
- Sourcing important; most prefer within a 100 miles or their State.
- More program participants purchased MB items last month
- Food environment related to price as perceived barrier; lack of availability related food satisfaction in sites & demographics
- Relationship between HMBI and other variable (including food environment) stronger in urban respondents

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Turning Now to Focus Group Component

Round 1 (2012-2013):

- 9 locations
- 17 groups
- 168 participants

Round 2 (2014):

- 8 locations
- 16 groups
- 134 participants

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Snapshot of Focus Group Participants

All Participants	Round 1 (2012-2013) N = 168	Round 2 (2014) N = 134
Female (%)	72	83
Average age (mean)	53	56
Household size (mean)	2.7	2.7
Kids 17 or younger (mean)	0.8	0.9
Years resident (mean)	20 (“in study community”)	13.9 (“current zip code”)
Public assistance (%)	47	67
Diet-related disease in household (%)	30	46

RD 1: Shopping Practice Involves Knowledge of Store Operations

- About food deliveries
- About managers and staff
- About store brands
- About sell-by dates

"Well, I know the best time usually to shop that I hear is Wednesdays because that's when mainly all of the fresh produce and everything is delivered and shipped in and ready to start for the… Yeah. I've kind of learned to shop on a Wednesday."

(Pittsburgh)

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Round 1: Shopping Practice Mobilizes Skills and Strategies

- Keeping rules and calendars straight
- Looking for healthy deals
- Finding sales with "great prices on things that aren't good for you"
- Following up with management on sales that "run out"

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Round 1: Store "Infrastructures" Can Be Impediment or Lure

"You get a cashier with a bad attitude and then you get a customer with a really bad attitude and then they end up having a fight in front of you and you're just like yo, what's up? I'm just trying to get my milk for my baby." (New York-Harlem)

"One thing he did over there has nothing to do with food, but I love him for it. He put in a new floor and it feels good on my feet."

(Pittsburgh)

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Round 1: Meat as a Pivotal Product

"Shopping is about where it's the cheapest and the quality of the meats. Some stores get better meat than others."

(Rural New York)

"And then that one, they usually have a butcher right in sight and a lot of the meat when they get it is not being frozen. He'll cut it, and put it right in the cooler right there, instead of hitting the freezer with it."

(Syracuse)

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Round 1: What a Neighborhood Grocery Means in "Underserved" Areas

- Seen as convenient, though rarely as sufficient
- "You've got to use caution" (Baltimore)
- Neighborhood being "written off" by food retailers (NYC- Harlem)
- They're trying to "accommodate" us (Pittsburgh)
- They're family-owned, not like Food Lion or Walmart (rural Delaware)

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Round 2: Understandings of "Healthy" Food

- Immediate emphasis on "fresh" in both rural and urban focus groups

- Healthy food definitions shaped not only by individual experience (age and stage), but by others in household

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Round 2: "Healthy" Contested and Challenged

Other priorities matter: Price of food!!!

Taste and preferences in the mix…..

- "Well, I know my taste buds, and I know prices, so I can recognize a good price. Monday morning, you got a good deal in there on some meats, because they marked it down from Sunday. That goes home with me, you know what I mean? That goes home with me." (Man, Baltimore)
- "I ain't trying to eat all that healthy… So sometimes I do buy something processed because I feel like I'm starving the children." (Woman, Rural Delaware)

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Round 1: Unhealthy Pleasures Can Offer Small Dignities…..

Woman 1: "My grandchildren love their cotton candy there, that cotton candy. It's almost like the circus cotton candy and only $2 a bag, that's really reasonable, very cheap. So Wayne was talking about taking it off the shelves and Gino is like, that's one of our top sellers. He's like, I won't let you take it out. And I thanked Gino for that. I'm like, because you're saving me from taking my kids, my grandkids, taking them down to the circus, just so they can get some cotton candy. "

Woman 2: "You can't always afford to go to the circus, but you usually can afford two bucks for cotton candy."

(Exchange in Pittsburgh focus group)

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Round 2: Challenges in Accessing Healthy Food

External Barriers, Internal Struggles

- Navigating the food swamp

"And I still find healthy food is a journey for me. I can get a little bit here. I can get a little bit there. And then on the way there I might pass some fried chicken and it's hard sometimes. I'll stop and I won't get the healthy food. I'll end up with the fried chicken. It's like if we go into 110th Street there's the little chicken place right there by the grocery store." (Woman, NYC)

- Costs and compromises

"They charge you like $20 for one little thing that's really healthy and $2 for junk. It's like which do I go with?"

(Woman, Rural Vermont)

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Round 2: Challenges in Accessing Healthy Food

Urban participants emphasized:

- Fast food outlets prevail over stores with fresh foods
- Transportation barriers: lack of car, inconvenient public transportation

Rural participants emphasized:

- Overall lack of any food retail options, especially “real” grocery stores
- Transportation barriers: little or no access to public transportation, unreliable vehicles, poor roads, cost of gas

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Finally: Some Questions for You

- Which of our activities and findings resonate with what you are doing?
- Do these preliminary findings complement your own findings or raise new questions?
- What should we address (and how) in the next project?

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