Disparities in the Food Store Environment

Evidence from the Assessing the Nutrition Environment in Wisconsin Communities (ANEWC) study

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Presenter Disclosures

Jennifer Valdivia Espino

(1) The following personal financial relationships with commercial interests relevant to this presentation existed during the past 12 months:

No relationships to disclose.

Study Aims

- To explore differences in the Wisconsin food environment by household characteristics:
  - Demographics
  - Socioeconomic factors
 - Urbanicity

Background

- Access to healthy food related to weight status (Larson et al 2009, Giskes et al 2011, Bodor et al 2008, Rose & Richards 2004)

- Disparities in access to food stores by neighborhood racial and income composition have been explored, but mostly compare neighborhoods within city or county limits (Walker et al 2010, Holsten 2009)

Research Gaps

- Reliance on secondary data sources

- Few studies about within-store nutrition environment

- Frequently use large administrative geographic areas

- Use aggregate data that may not reflect what individuals experience

ANEWC: Assessing the Nutrition Environment in Wisconsin Communities

- Survey of Health of Wisconsin, 2010-2011

- Evaluated the food environment
  - w/n food outlets
  - w/n household street network "buffers"

ANEWC: Assessing the Nutrition Environment in Wisconsin Communities

- Buffer defined by driving distance
  - Urban - 2 mi.
  - Rural - 5 mi.

- Enumeration and assessment of stores w/n buffer
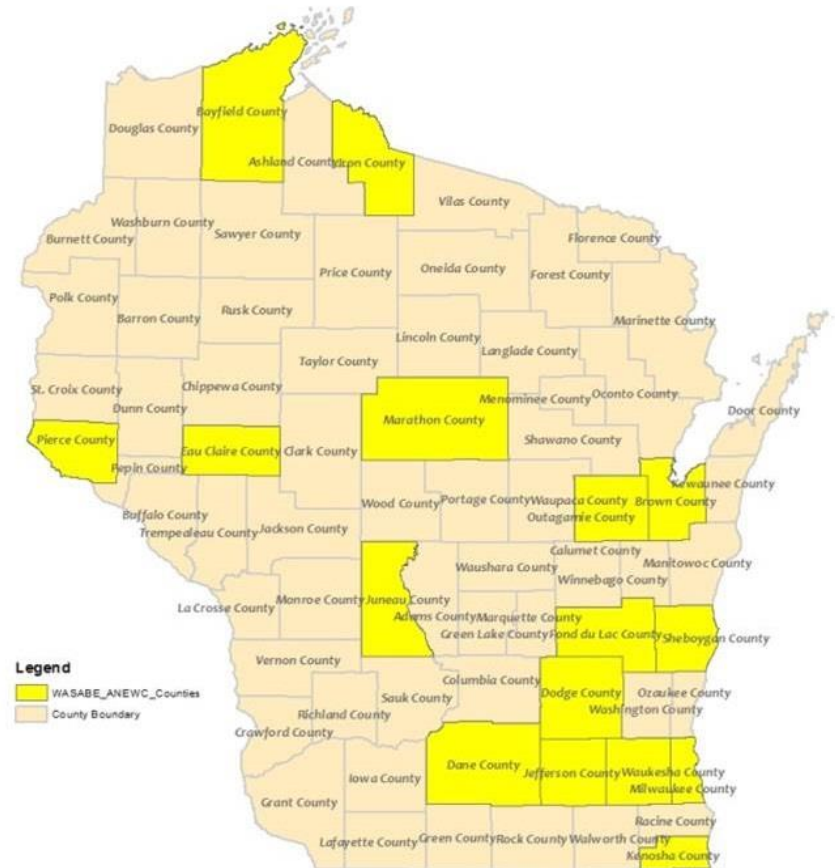
Measures: Outcomes

- Number of food stores and type

- Nutrition Environment Measurement Survey for Stores (NEMS-S) scores
 - Availability
  - Quality
  - Price
  - Total

NEMS-S Foods	
Fruit	Baked Goods
Vegetables	Chips
Milk	Frozen Dinners
Ground Beef	Soda & Juice
Hot Dogs	Bread

Measures: Predictors

Age	Young 21-30	Middle 31-60	Old ≥61
Gender	All Male	All Female	Mix
Education	All College	No College	Mix
Race	All White	All Non-White	Mix
Income	Below FPL	100-399%	≥400%
Location	Urban	Rural	Mix

Description of Households

- 260 households in 17 counties

- 833 stores in 37 counties

Supermarket 5%

Grocery 13%

Gas station 36%

Convenience 22%

Drug store 10%

Ethnic 7%

Other 7%
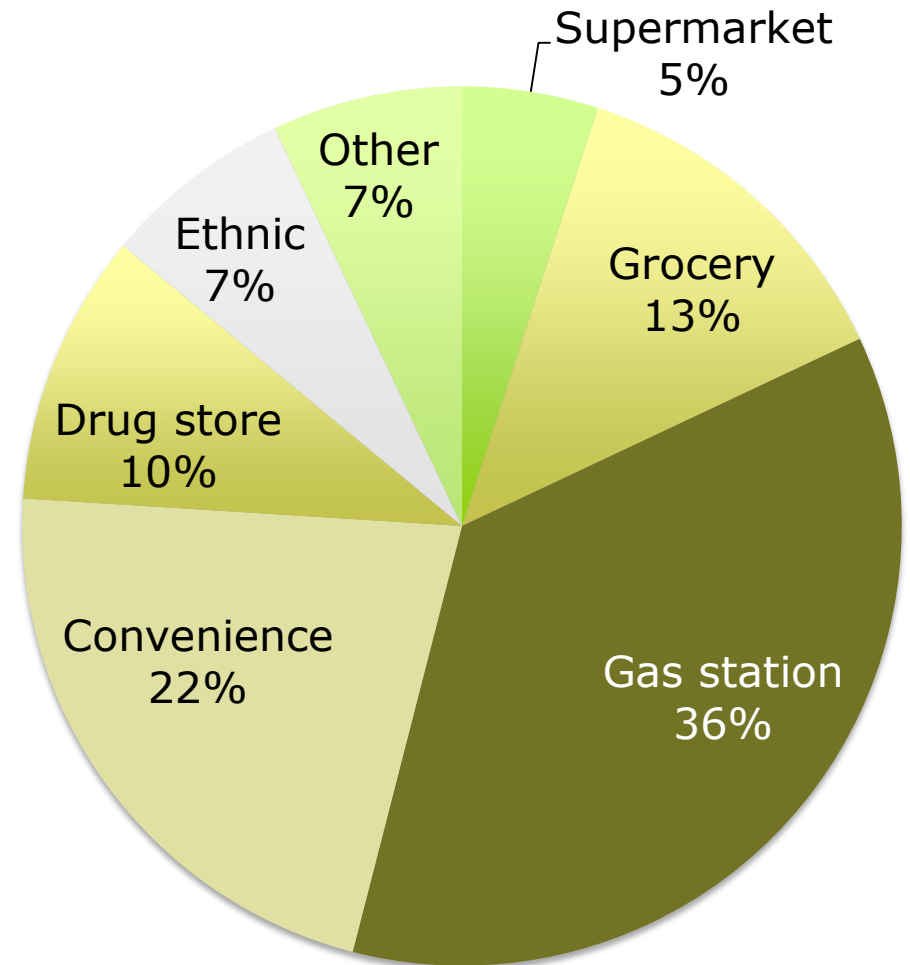
Household Characteristics		%
Age	Young	16.2
	Middle	59.8
	Old	23.9
Gender	All male	15.8
	All female	40.2
	Mix	44.0
Children < 21	Yes	40.2

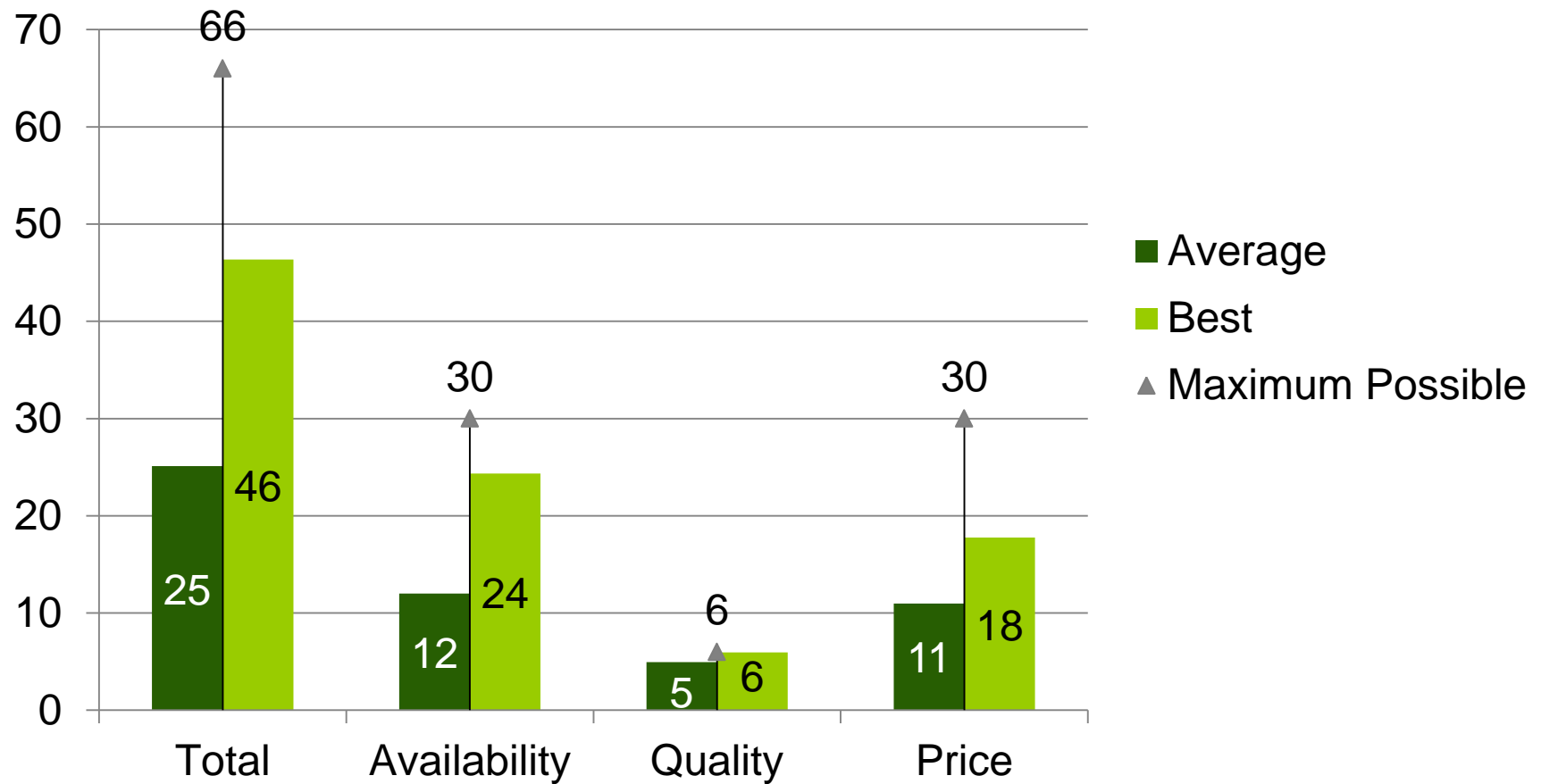| Household Characteristics		%
Edu	All College	48.3
	No College	40.9
	Mix	10.8
Race	All White	86.9
	All Non-White	13.1
	Mix	0
Income	Below FPL	16.2
	100-399% FPL	48.5
	≥400% FPL	35.3
Location	Urban	61.0
	Rural	18.5
	Mix	20.5

Average # of Food Stores w/n Buffer
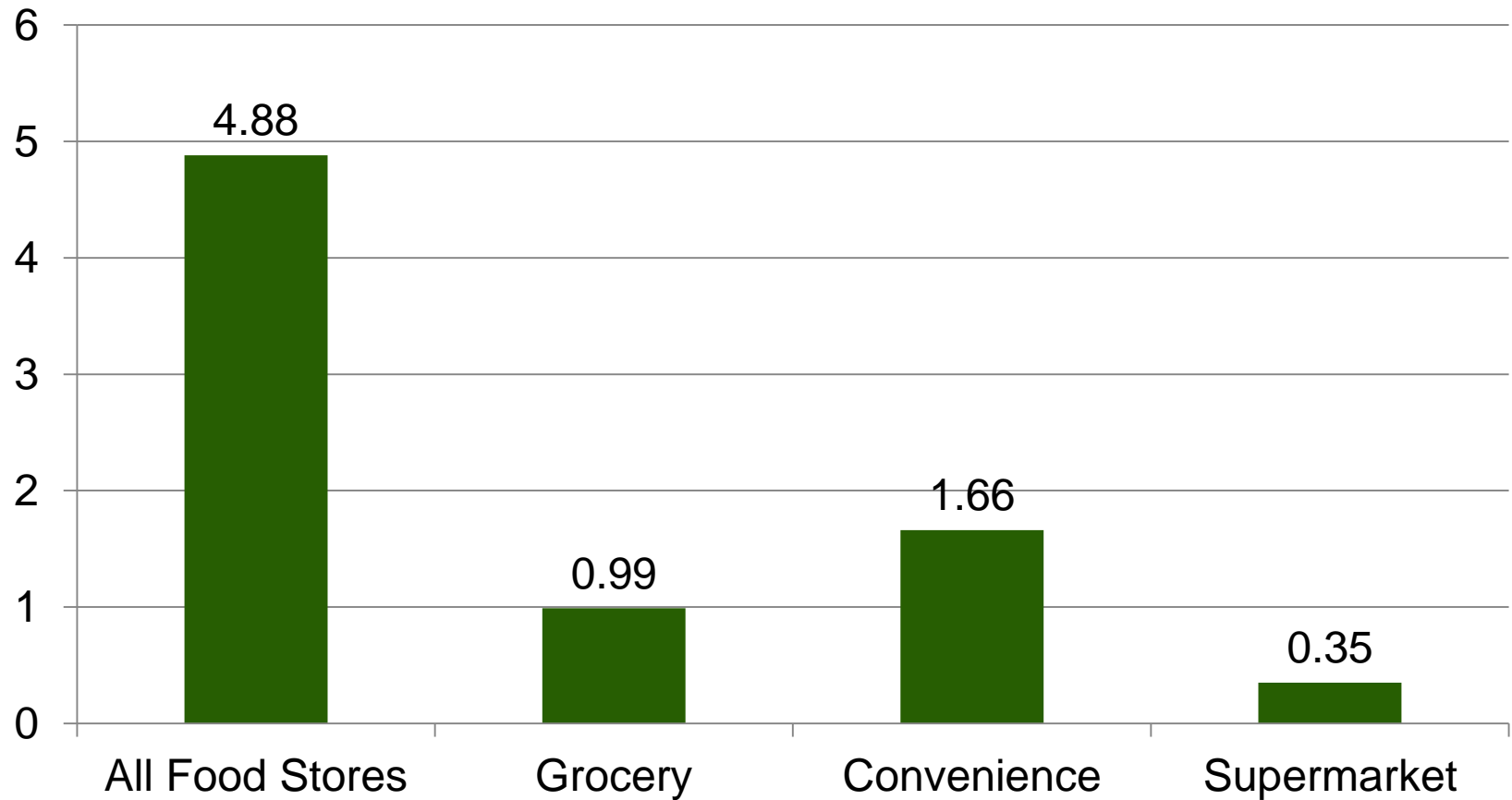
% NEMS-S Score by Type of Store
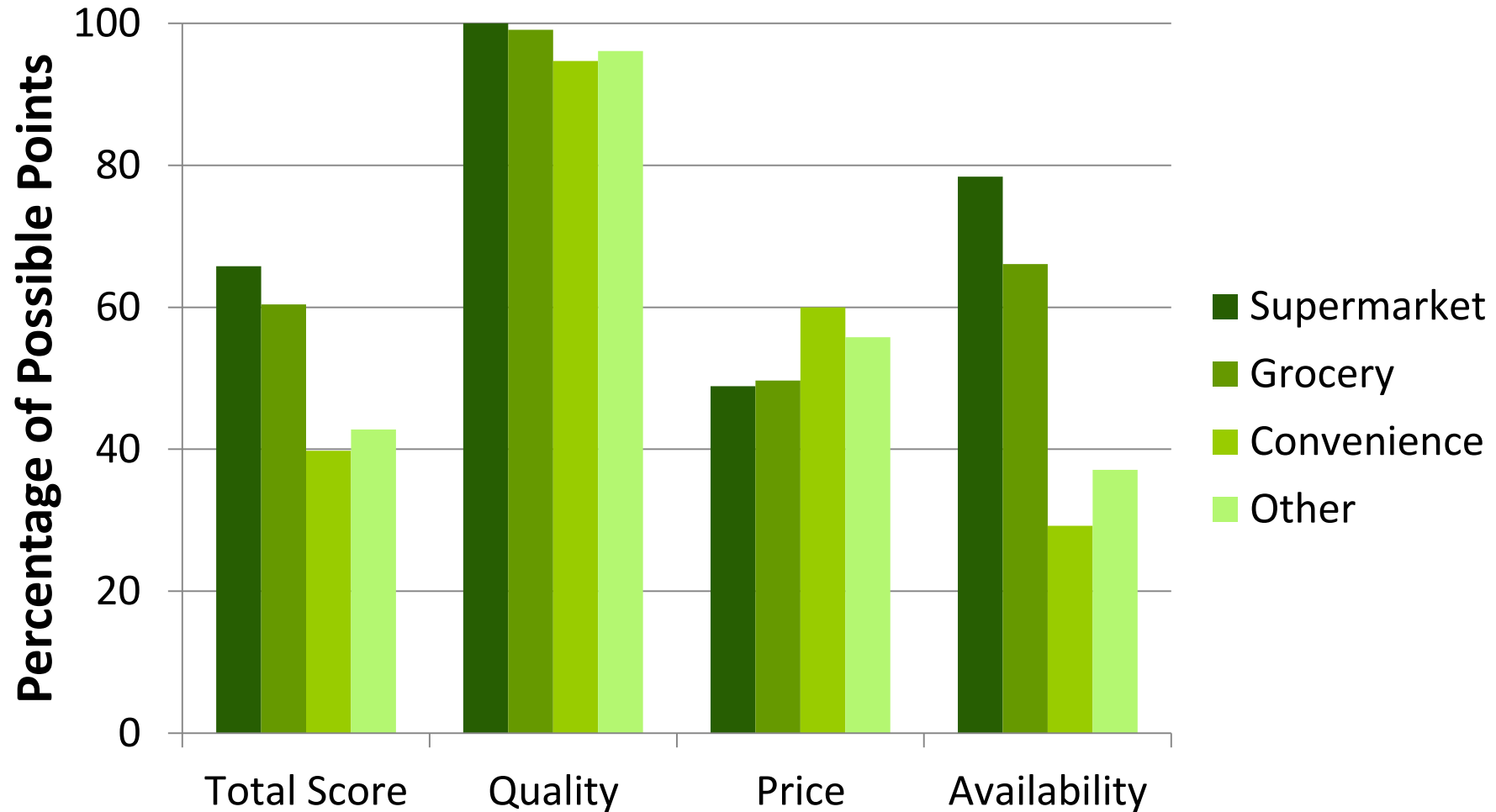
Average and Highest NEMS-S Scores

Univariate Analyses

- Differences in the food environment
  - **Age**: favoring households with young residents
  - **Education**: favoring all college-educated households
  - **Location:**
    - Urban buffers had greater number of stores (esp. grocery, convenience)
    - Rural buffers had lower maximum NEMS-S scores

Models of Number of Stores

B	All	Grocery	Convenience	Super
Young	**3.88**	**1.27**	**1.71**	
Gender				
Mix Edu				-0.30
White				
Income				
Urban	**5.00**	**0.71**	**1.89**	

Bold: statistically significant
Normal: marginally significant
No text: no significant findings

Models of Best NEMS-S Scores

B	Availability	Quality	Price	Total
Young			1.48	
Gender				
Mix Edu	**-4.56**		-2.10	**-6.85**
White			**3.31**	
Income				
Mix Loc	**5.59**	0.21		**7.36**
Urban	**6.51**			

Summary: Descriptive

- The majority of households were urban or mixed urban/rural with white, middle aged residents

- Half of the households had males and females, only college-educated adults, or had income 100-399% FPL

Summary: Disparities

- Urban and young residents tend to live around more food stores

- Urban residents tend to live in areas with better food environments

- Households with fewer college-educated are located in poorer food environments

- White residents tend to live in areas with better pricing of healthy options

Limitations

- Difficult to define access

- Findings generalizable only to WI

- Limited sample of households with racial/ethnic minority residents or with combined income less than 100% FPL

- Did not adjust for county- or census tract-level contextual factors

Take-Home Messages

- Drivers of disparate food store environments in WI are age and education of residents, and urban location

- Useful information for obesity prevention efforts

Acknowledgements

Questions?

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