GROCERY LOCATION IN AN URBAN, MULTI-ETHNIC COMMUNITY: FOOD ACCESS, OBESITY IN AN UNDERSERVED COMMUNITY

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Presenter Disclosures

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

No relationships to disclose

Learning Objectives

- Describe relationship between an indicator of healthy food access (grocery store distribution) and health measures in Indianapolis, Indiana.
- Describe relationship between grocery store proximity and obesity status of residents.
- Describe the relationships between fruit and vegetable access and consumption and individual and contextual factors.
- Discuss policy options to increase healthy food availability in urban underserved areas.

Introduction

- Food access as indicators of healthy environments
- Measuring food access: Ecological and individual levels
- Neighborhood environment's influence on dietary patterns
- Grocery store effects on communities' obesity; diet patterns– especially disadvantaged areas

- This study asks:
  - Is full-service grocery proximity associated with urban residents' perceived access to, and reported consumption of, fresh fruit and vegetables?

Literature background

- Established associations between lower income neighborhoods and:
  - Lower access to full service groceries[1] [presence/absence; distance to…], especially in predominantly Black, high-poverty and rural settings
  - Higher food prices; poorer quality & less healthy choices[2].
  - Ecological association between population obesity, diabetes and full service groceries (negative) and fast-food outlets (positive) [3].
  - *Individual-level* association between national-chain grocery proximity and lower BMI; healthier eating patterns[4]
  - Greater healthy food consumption in Low-SES and minority communities with additional full service groceries[5]

Indianapolis, Marion County IN

- Ranked in top 25 food-hardship MSA's (2008-09):
  - Food hardship reported by:
    - 19.9% of households
    - 25.1% of households w/ children
    - 28.7% in 7th Congressional district (urban Indianapolis)[1]
- Poverty rate (< 100%FPL 2009): 15.6%
- SNAP (Food Stamps): 13.5%

Photograph used with permission from Earl G. www.flickr.com/photos/earlg/2572298511/

Indianapolis, Marion County IN

- County Health Rankings:
  14% of county Zip codes had no groceries[2]:
  ~ 50,000 persons, 6% of 854,432 population

- 2009 BRFSS:
  - **75.5%** Do not meet 5 Fruit & Vegetable servings/day
  - **33.3%** **Overweight**
  - **31.5%** **Obese**

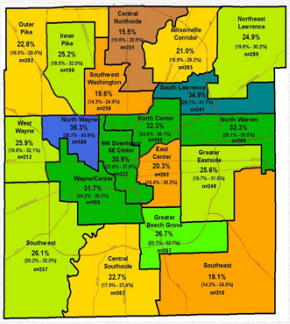
Marion County: Local data

2005 Marion County Adult Obesity Survey (AOS): (n=4,787)

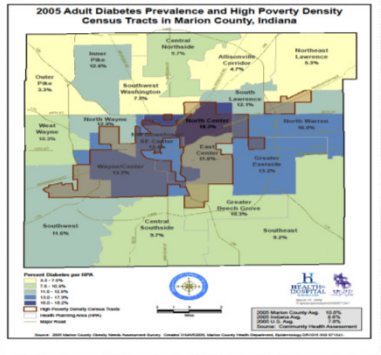
- Demographics
  - 30.2% minority; 23.4% Black
  - 20.2% < 200% FPL
- Methods
  - Phone survey in Spanish/English, Complex sample
    - BRFSS items on F&V consumption; BMI
    - Respondents geo-located
  - Geocoded full service MCHD licensed groceries
    - Distance calculated to each AOS respondent

2005 AOS findings: Obesity prevalence

- 60.7% - BMI over 25
- 15%-39% obesity in health planning areas:
- < 200% FPL: 32%
- 300+% FPL: 23%



2005 AOS: Diabetes prevalence and poverty



AOS Data: Obesity and proximity to groceries

- Spatial modeling found respondent's access to national chain grocery w/in .5 mile was associated with lower BMI, controlling for individual and neighborhood characteristics.

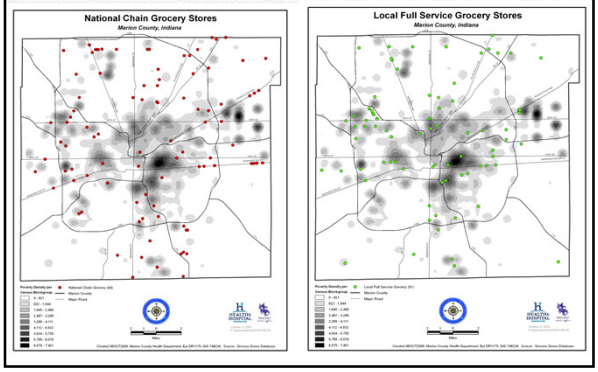
1) **In poor areas only**: (where 20%+ pop'l < 200% FPL): Grocery w/in .5 mile negatively associated with BMI (Chen, Florax & Snyder 2009)

2) Simulations in areas with 40%+ pop'l < 200%FPL: Adding a grocery reduced mean BMI by .43 ($p<.05$), controlling for individual and neighborhood characteristics. (Chen & Florax 2010)

Adding to the BMI-grocery AOS findings

- What proportion of the survey population lives w/in .5 mile of a full-service grocery [national or local[1]]?
  - Is Chen/Florax grocery proximity-obesity association in low SES areas reflected in lower access to fresh produce?
- Does close physical proximity influence perceived *accessibility* to a grocery?
- Is a proximate grocery associated with greater fruit and vegetable consumption, especially in low income respondents?

National and Local Full Service Groceries

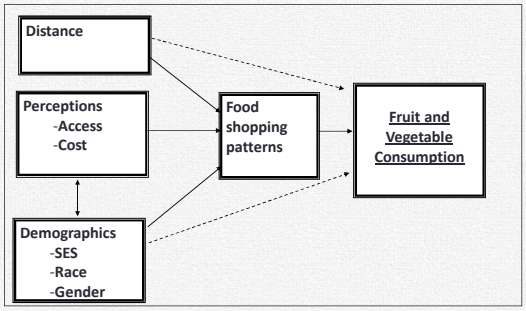


AOS 2005 Findings

- 60% of respondents not located within 0.5 miles of a full service grocery.
- 13% overall reported no access to affordable F&V
  - 31% of those < 100%FPL
- 32% had < 2 Fruits/day
- 73% had < 3 Vegs/day

Conceptual Model (adapted from Laraia, 2005)

Conceptual Model



Methods

- Weighted logistic regression (SPSS) models of:
  - Perceived access to convenient store for fresh produce.
  - Meet HP 2010 fruit consumption? (2 /day)
  - Meet HP 2010 vegetable consumption? (3 /day)
- Controlling for:
  - Gender
  - Age
  - Income
  - Ethnicity
  - Employment status
- Test effect of:
  - Having full-service grocery w/in .5 mile.

Results: Descriptive Analyses

- Households < 200%FPL
  - 14% less likely to have grocery nearby
- Blacks
  - 50% less likely than Whites to have grocery nearby
- NO relationship between nearby grocery and…
  - Obesity/Overweight status
  - Diabetes Dx
  - Perceived "accessible" store

Results: Meeting HP2010 Fruit Consumption

Model:	Odds Ratio	p value
Gender	…	NS
Poverty (<200% FPL)	…	NS
Race (Black)	.80 .009	(0.68-0.95)
Employed	1.24 .003	(1.1-1.4)
Proximate Store	**…**	

Results: Meets HP2010 Vegetable Consumption

Model:	Odds Ratio (CI)	p value
• Gender (M)	0.67 (0.59-0.78)	0.001
• Poverty (<200%)	0.70 (0.59-0.83)	0.001
• Race (Black)	1.20 (1.0-1.4)	0.030
• Employed	1.22 (1.1-1.4)	0.006
• **Proximate Store**	**…**	**NS**

Interpretation:

- Race (Black)
  - Independent factor in consumption, controlling for SES: Increases vegetable but decreases fruit consumption.
- Employment and Income
  - Both independently increase vegetable consumption; Only employment was relevant for fruit consumption.
- Gender (Female)
  - Relevant in vegetable but not fruit consumption
- Store proximity within .5 Mile
  - Not relevant when controlling for demographics

Study Limitations

- Models assume all F&V store-purchased
  - No way to account for F&V consumption away from home
- Produce purchases are assumed to be made at most proximate outlet
- Lack of transportation to stores
- Purchasing behaviors -- unknown?

Policy questions

- How to target interventions to improve dietary intake?
  - Gender or cultural specific models?
  - Differential models for fruits and vegetables
- Grocery proximity doesn't appear to reflect purchasing or consumption behaviors
- Produce locations may need to include grocery and other fresh produce outlets as an indicator of healthier environments

"Best Practice": Local Options

- Encouraging Food Policy Council (NACCHO)—

Mayor's Sustainability Office; Hunger-free Alliance

- Existing store incentives in underserved areas (NACCHO, CDC)

Neighborhood development associations

- Increase healthy options: farmer's markets, CSA, community/home gardens (IOM, CDC)

Urban and School garden initiatives

THANK YOU!

QUESTIONS?

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