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# **Patterns of Fresh Fruit and Vegetable Availability and Cost in SNAP-Participating Retail Stores in Mississippi**

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# Background

- Access to healthy food as a method of reducing food insecurity
- SNAP-Ed, historic and current approaches (PSE)

# Background

Food availability and store type vary by:

- SNAP participation,
- SES characteristics/demographic shifts, and
- Rurality/urbanicity.



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# Background

- High rates of chronic diseases and high persistent poverty rates in MS
- Understanding neighborhood food environments → relevant policy, systems, and environmental change efforts



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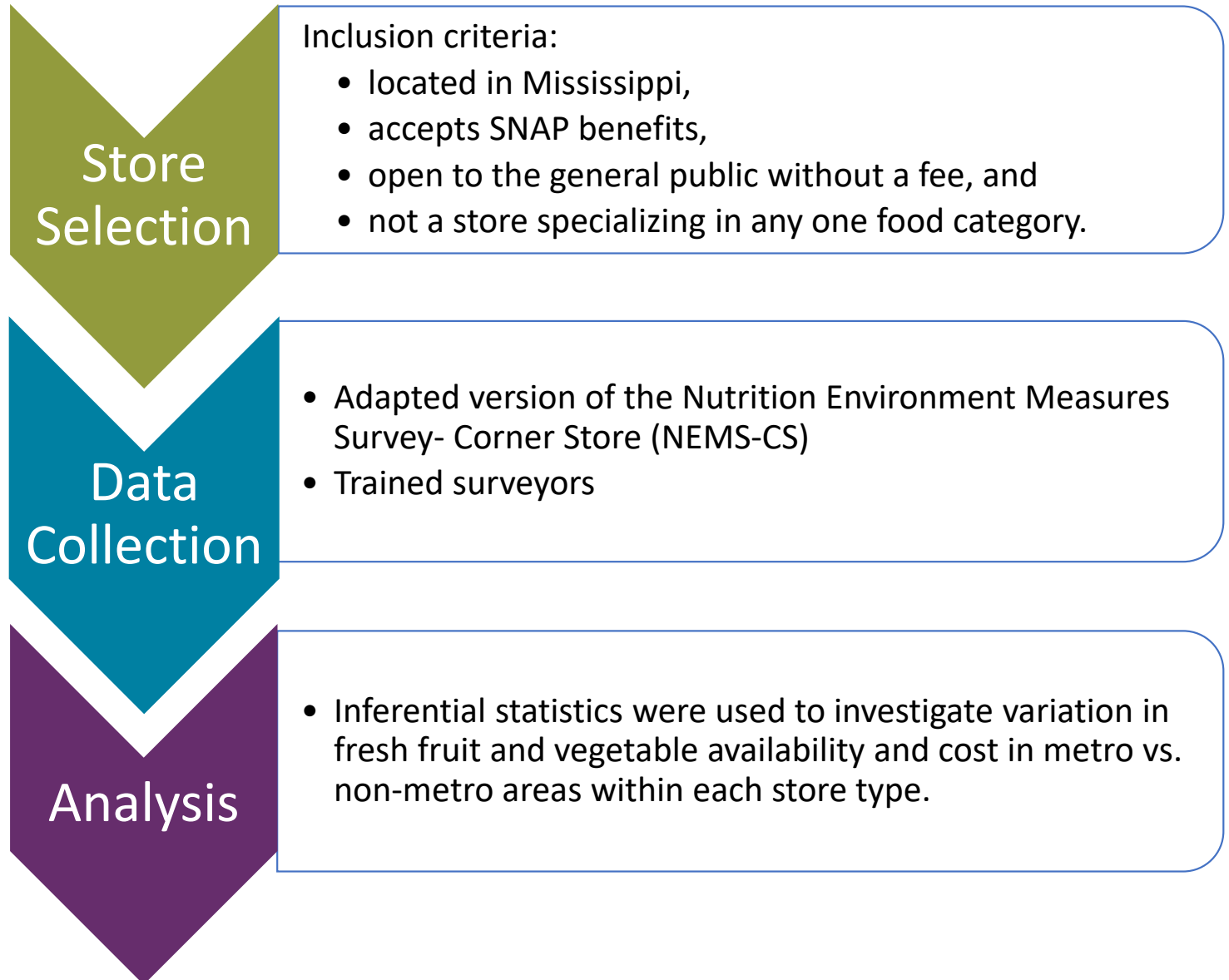
# Objective

The purpose of this sub-study was to investigate differences in variety and cost of fresh fruits and vegetables across the state of Mississippi by store type (convenience store, grocery store, or supercenter) and rurality.



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# Methods



# Varieties of Fruits and Vegetables by Rural Urban Continuum Codes (RUCC)<sup>a</sup> in Convenience Stores, Grocery Stores, and Supermarkets in Mississippi

Food	Convenience Stores (n = 242)			Grocery Stores (n = 158)			Supermarkets (n = 44)		
	In metro areas <sup>a</sup> (n = 105)	In non-metro areas <sup>b</sup> (n = 135)	<i>p</i>	In metro areas <sup>a</sup> (n = 64)	In non-metro areas <sup>b</sup> (n = 99)	<i>p</i>	In metro areas <sup>a</sup> (n = 11)	In non-metro areas <sup>b</sup> (n = 35)	<i>p</i>
Fresh fruit varieties <sup>c</sup> (M ± SD)	0.42 ± 1.23	.96 ± 1.89	.008 <sup>d</sup>	2.86 ± 3.72	4.71 ± 4.05	.003 <sup>d</sup>	7.09 ± 3.65	8.26 ± 2.38	.39 <sup>e</sup>
Fresh vegetable varieties <sup>c</sup> (M ± SD)	0.30 ± 1.50	.87 ± 2.27	.02 <sup>d</sup>	3.08 ± 4.22	5.32 ± 4.50	.002 <sup>d</sup>	7.23 ± 3.88	8.74 ± 2.47	.54 <sup>e</sup>

<sup>a</sup>Metro areas are RUCCs 1-3; <sup>b</sup>Non-metro areas are RUCCs 4-9.

<sup>c</sup>Total number of fresh varieties out of ten specifically surveyed varieties.

<sup>d</sup>*p* values for independent samples t-test results.

<sup>e</sup>*p* values for Mann-Whitney U test results.



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# Cost (mean in dollars $\pm$ SD) of Most Commonly Available Fruits and Vegetables by Rural Urban Continuum Codes (RUCC) in Convenience Stores, Grocery Stores, and Supermarkets in Mississippi

Food	Convenience Stores			Grocery Stores			Supermarkets		
	Cost per lb in metro areas <sup>a</sup>	Cost per lb in non-metro areas <sup>b</sup>	<i>p</i> <sup>c</sup>	Cost per lb in metro areas <sup>a</sup>	Cost per lb in non-metro areas <sup>b</sup>	<i>p</i> <sup>c</sup>	Cost per lb in metro areas <sup>a</sup>	Cost per lb in non-metro areas <sup>b</sup>	<i>p</i> <sup>c</sup>
Banana	2.14 $\pm$ 1.43 (12) <sup>d</sup>	1.59 $\pm$ 1.13 (38)	.27	0.92 $\pm$ .81 (27)	0.70 $\pm$ .42 (60)	.58	.65 $\pm$ .19 (9)	.62 $\pm$ .28 (31)	.80
Apple	1.75 $\pm$ .46 (9)	1.56 $\pm$ .47 (28)	.29	1.62 $\pm$ .58 (24)	1.24 $\pm$ .44 (56)	.001	1.55 $\pm$ .19 (9)	1.38 $\pm$ .58 (30)	.05
Orange	2.55 $\pm$ .95 (11)	1.97 $\pm$ .99 (28)	.17	1.62 $\pm$ .95 (23)	1.80 $\pm$ 1.02 (56)	.69	1.65 $\pm$ 1.21 (8)	1.22 $\pm$ .79 (28)	.56
Tomato	2.05 $\pm$ .63 (4)	1.89 $\pm$ .78 (21)	.41	1.63 $\pm$ .77 (23)	1.54 $\pm$ .87 (58)	.72	1.67 $\pm$ .58 (98)	1.91 $\pm$ .76 (27)	.77
Green pepper	3.04 $\pm$ .31 (3)	2.53 $\pm$ .99 (17)	.69	2.41 $\pm$ .90 (23)	2.27 $\pm$ 1.18 (57)	.22	1.91 $\pm$ .96 (7)	2.64 $\pm$ .87 (31)	.06
Lettuce	2.12 $\pm$ .53 (2)	1.92 $\pm$ .65 (18)	.76	2.05 $\pm$ .61 (23)	1.90 $\pm$ .73 (58)	.15	2.16 $\pm$ 1.03 (9)	1.79 $\pm$ .51 (30)	.57

<sup>a</sup>Metro areas are RUCCs 1-3; <sup>b</sup>Non-metro areas are RUCCs 4-9.

<sup>c</sup>*p* values for Mann-Whitney U test results.

<sup>d</sup>Since cost data varied across foods and store types, *n* is given for each data point.





# Findings in Light of Literature

- Rural areas
- Stocking patterns related with purchasing patterns



# Conclusions

## 1. Planning outreach



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# Conclusions

## 2. Involving agents and educators



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# Conclusions

## 3. Smaller stores as partners

- **Supporting and/or incentivizing** purchase of healthy foods.
- Serving as **locations for SNAP-Ed indirect education** delivery (food demonstrations, taste testing of healthy recipes).
- **Posting SNAP-Ed social marketing messages** encouraging healthy shopping or food selection behaviors, such as in the newsletter or social media post below.



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# Future Research

- Pilot incentive programs beyond fresh fruits and vegetables
- Assess impacts of online grocery delivery
- Involve audience in developing strategies

