Disparities in Access to Fruits & Vegetables: Results from the Louisiana Neighborhood Environment and Consumption Survey

Diego Rose, Nick Bodor, Chris Swalm, Tom Farley, Janet Rice, and Deborah Cohen*

Tulane University, New Orleans, LA

***Rand Corporation, Santa Monica, CA**

Previous studies on disparities in access

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Gallagher, 06	Chicago	African-Am tracts	**Greater distance to chain, small grocers**
Moore, 06	NC, MD, NY	Low income tracts, African-Am tracts	**Fewer number of supermarkets**
Powell, 06	United States	Low income zip codes, African-Am zip codes	**Fewer number of chain supermarkets**

Gaps in literature

- Studies situated in urban South
- Potential impact of small stores
  - in providing access to healthy foods
- Focus on what's inside food stores

Research Questions

- Are there disparities in the access to food stores by race-ethnicity in urban areas of Southeastern Louisiana?

- Are there disparities in the access to *fresh fruits and vegetables* in urban areas of Southeastern Louisiana?

Methods

Louisiana Neighborhood Environment and Consumption Survey (LANECS)

Sample and Store Enumeration

- Survey conducted Oct 2004 – Aug 2005
- Urban Southeast Louisiana
  - Includes New Orleans, Baton Rouge, Lafayette

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- Urban Southeast Louisiana
  - Includes New Orleans, Baton Rouge, Lafayette
- Stratified random sample of 103 urban census tracts
- Mapping of all stores in these tracts
  - Retailer list from the state health department
  - Supplemented with on-the-ground observations
    - tract-by-tract, street-by-street

Louisiana Neighborhood Environment and Consumption Survey (LANECS)

In-Store Survey

- Fresh fruit and vegetable availability measured in all stores
- Linear shelf space measured by trained enumerators

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Louisiana Neighborhood Environment and Consumption Survey (LANECS)

In-Store Survey

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  - self-service shelf space
  - measure of walk-up access

Louisiana Neighborhood Environment and Consumption Survey (LANECS)

In-Store Survey

- Fresh fruit and vegetable availability measured in all stores
- Linear shelf space measured by trained enumerators
  - self-service shelf space
  - measure of walk-up access
- Strong inter-rater reliability ($r > 0.95$)
- Shelf space aggregated at tract level
  - total tract shelf space of fruits, vegetables

2000 US Census Data

- Tract level information merged to LANECS tract observations
- Tracts divided into two groups:
  - AA tracts – predominantly African-American (i.e. > 80%)
  - Non-AA tracts – all other tracts
- Covariates include:
  - total population, population density
  - median income level, % of households below poverty

Results

Characteristics of sampled tracts

	A-A tract	non A-A tract
N	25	78
% African-American	90.9	28.7

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Land area (sq mi)	.54	.85
Population density (#/sq mi)	7,262	5,985

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Population density (#/sq mi)	7,262	5,985
Median income ($/yr)	21,341	40,444
% below poverty	34.7	15.9

Mean number of food stores by tract type

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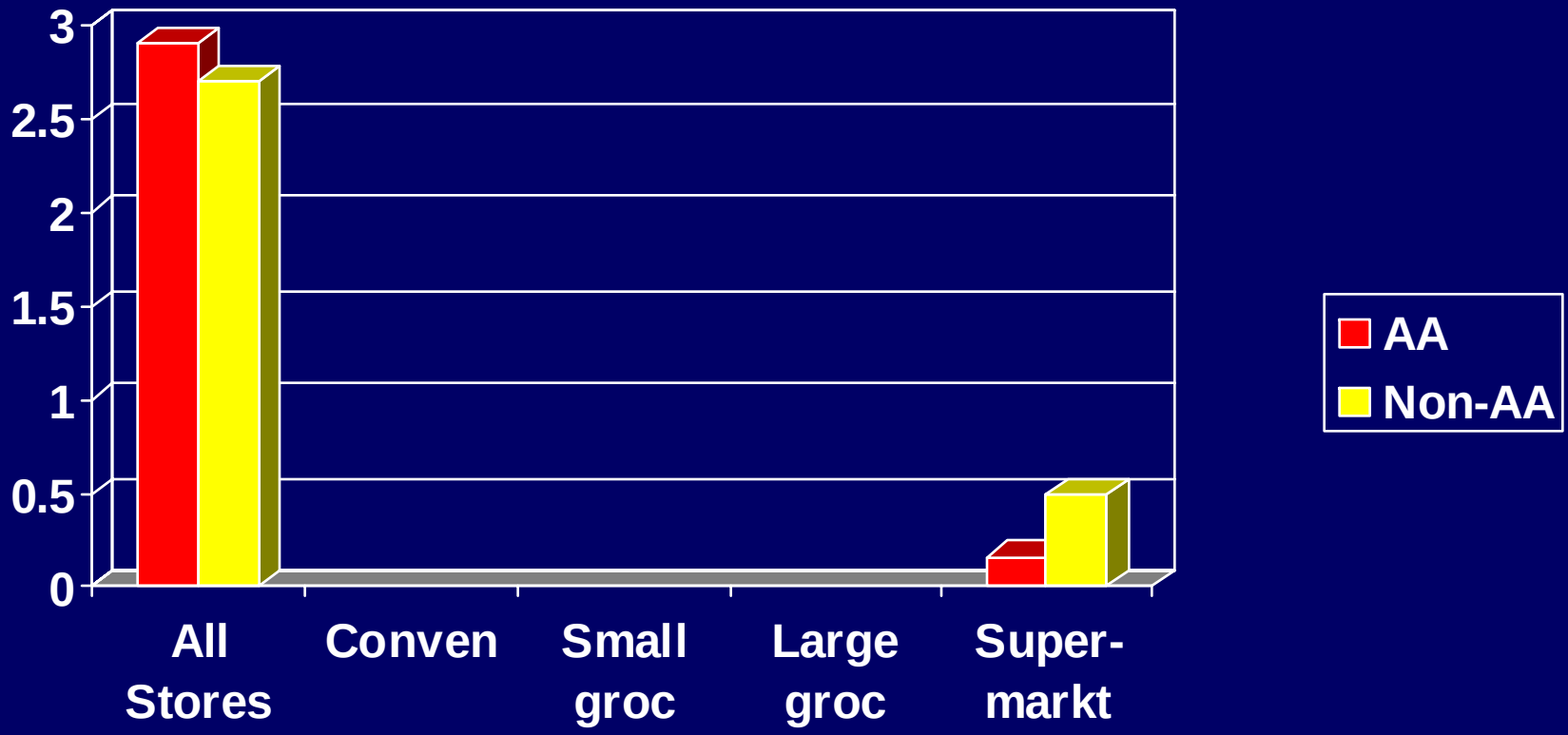

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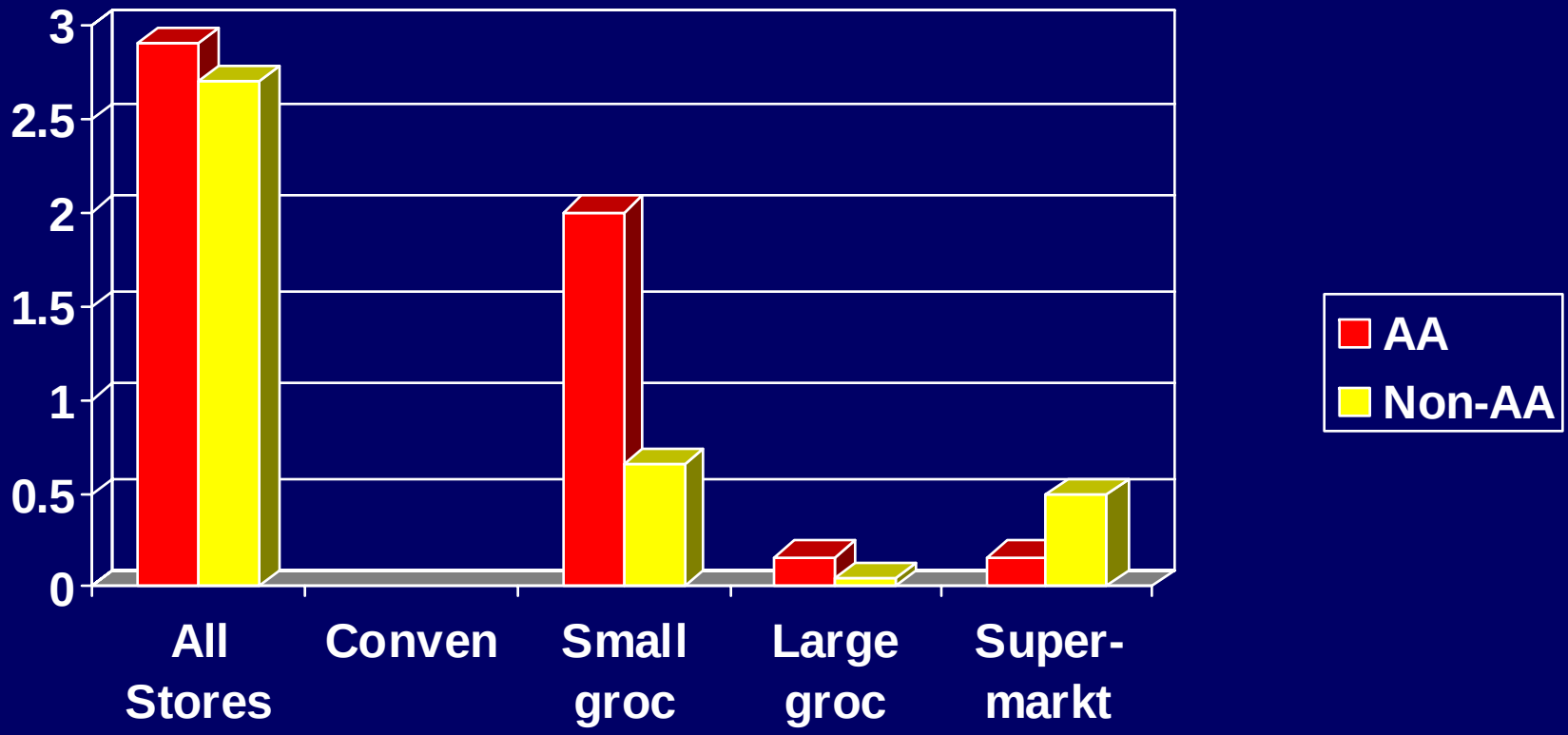

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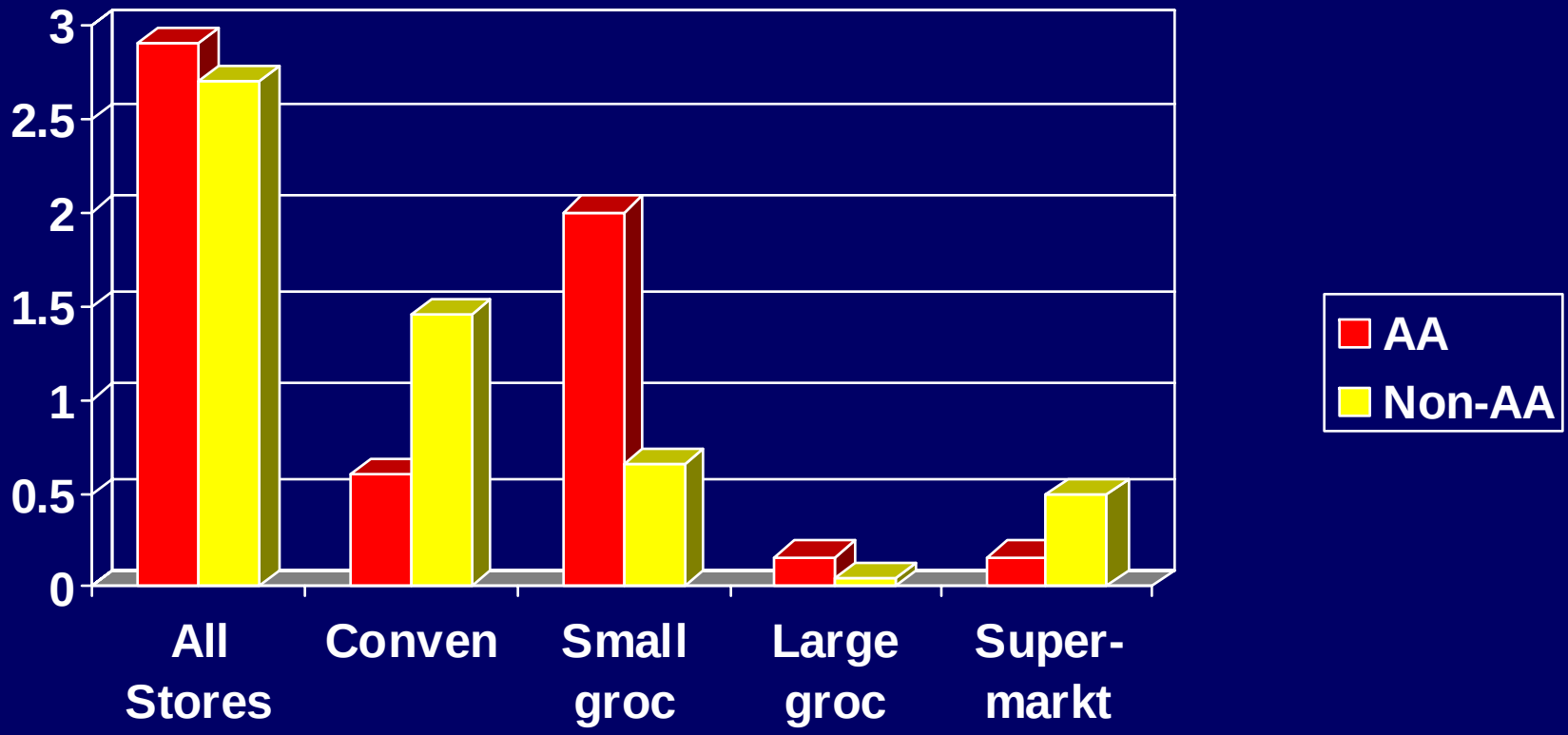
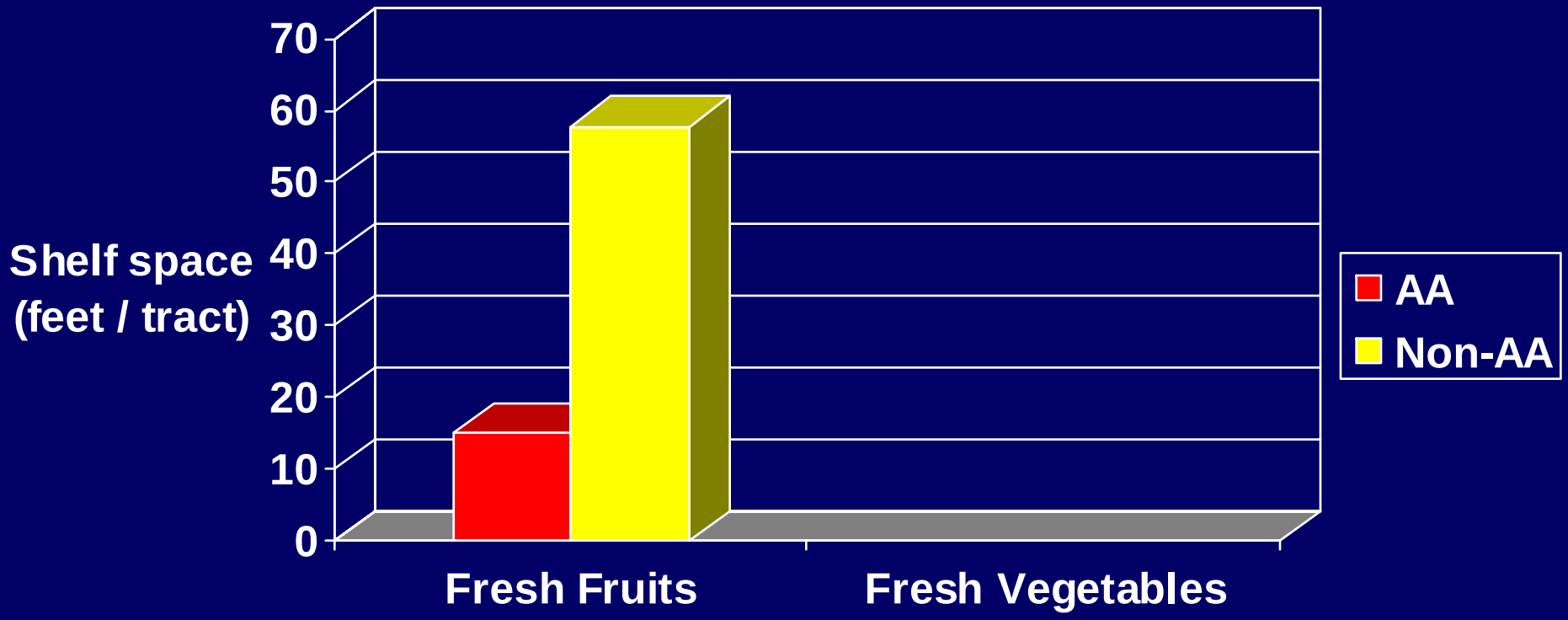


Mean fruit & vegetable shelf space by tract type



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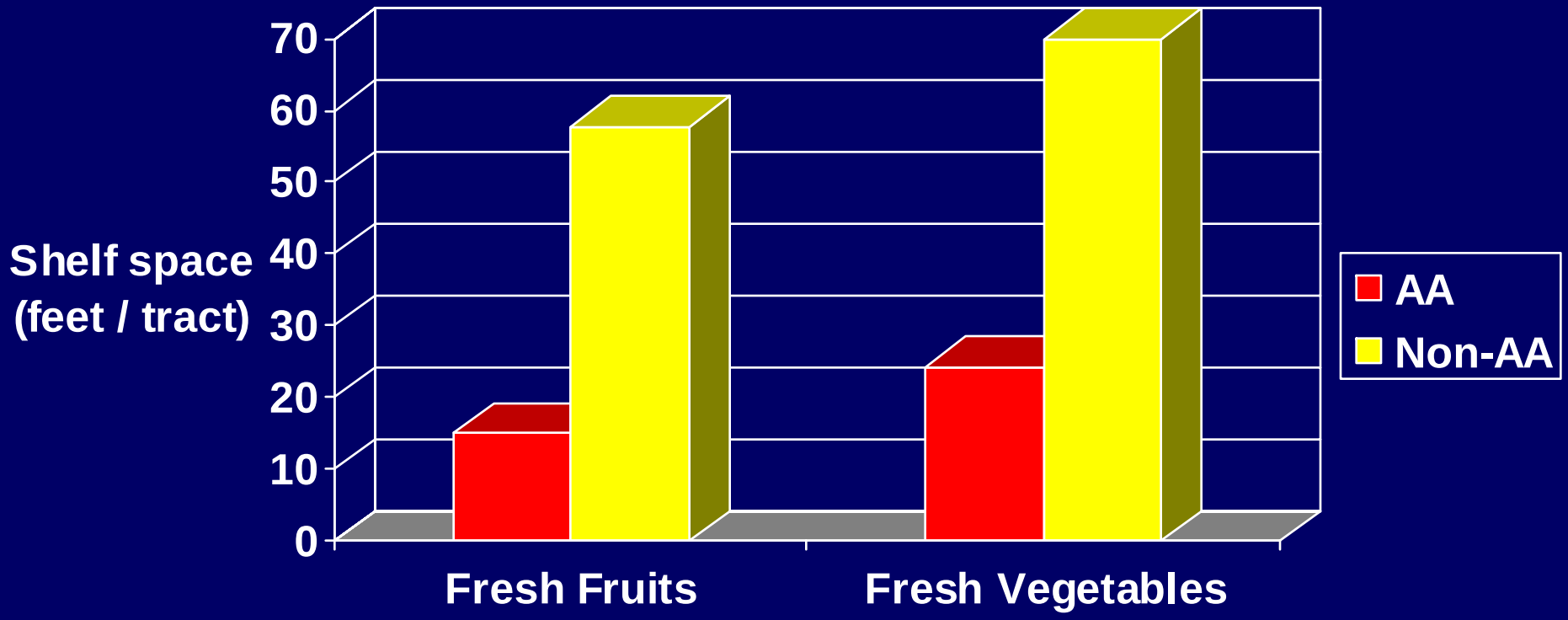

Determinants of Tract-Level Fruit Shelf Space

Logistic Regression Results

Model I

Dependent Variable:

> 30 ft / tract

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Dependent Variable:
> 30 ft / tract

Variable	Coef	P	Odds ratio
AA tract	**- 1.498**	**.049**	**0.22**
Pop density	.000	.004	1.00
Median income	.000	.373	1.00

Determinants of Tract-Level Fruit Shelf Space

Logistic Regression Results

	Model I			Model II
	Dependent Variable: > 30 ft / tract			Dependent variable: > 0 ft / tract
Variable	**Coef**	**P**	**Odds ratio**	
AA tract	**- 1.498**	**.049**	**0.22**	
Pop density	.000	.004	1.00	
Median income	.000	.373	1.00	

Determinants of Tract-Level Fruit Shelf Space

Logistic Regression Results

	Model I			Model II		
	Dependent Variable: > 30 ft / tract			Dependent variable: > 0 ft / tract		
Variable	**Coef**	**P**	**Odds ratio**	**Coef**	**P**	**Odds ratio**
AA tract	**- 1.498**	**.049**	**0.22**	**0.575**	**.413**	**1.78**
Pop density	.000	.004	1.00	.000	.015	1.00
Median income	.000	.373	1.00	.000	.003	1.00

Determinants of Vegetable Shelf Space

Logistic Regression Results

Model I

Dependent Variable:
> 30 ft / tract

Variable	Coef	P	Odds ratio
AA tract	**- 1.119**	**.090**	**0.33**
Pop density	.000	.005	1.00
Median income	.000	.179	1.00

Determinants of Vegetable Shelf Space

Logistic Regression Results

	Model I			Model II		
	Dependent Variable: > 30 ft / tract			Dependent variable: > 0 ft / tract		
Variable	**Coef**	**P**	**Odds ratio**	**Coef**	**P**	**Odds ratio**
AA tract	**- 1.119**	**.090**	**0.33**	**2.066**	**.066**	**7.89**
Pop density	.000	.005	1.00	.000	.012	1.00
Median income	.000	.179	1.00	.000	.001	1.00

Summary

- Predominantly African-American tracts have fewer supermarkets
- A-A tracts have more small food stores
- A-A tracts have lower mean availability of fresh fruits and vegetables
  - about 1/4 the level of fruit shelf space
  - about 1/3 the level of vegetable shelf space
- Availability is skewed
  - A-A tracts less likely to have > 30 ft/tract
  - A-A tracts slightly more likely to have > 0 ft/tract

Implications

- For policy
- For future research