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Alcohol Availability and neighborhood characteristics in Los Angeles and Louisiana

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Objective

- To consider alternative measures of alcohol availability
- To examine whether different measures of alcohol availability are associated with community characteristics

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Background (1)

- **Alcohol availability – measured typically as alcohol outlet density (including restaurants, bars, and retail stores) - has been associated with drinking patterns and frequencies**
- **Alcohol availability has also been associated with intentional and unintentional injury**
- **Alcohol availability is not randomly distributed by community. Minority and lower income communities have been found to have more alcohol outlets.**

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Background (2)

- **Alcohol outlet density does not consider differences in types of alcohol outlets**
- **We know that retail alcohol outlets can vary significantly in size, types of alcoholic beverages provided, availability of foods, and promotion of alcoholic beverages**
- **Few studies have examined how systematic differences in alcohol outlets and promotions might be related to community characteristics**

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Methods – Alcohol density and study census tracts

- **Alcohol availability per roadway mile and per capita**
- **Systematic coding of off-sale alcohol outlets in 217 census tracts in Los Angles County and Southern Louisiana**
  - **Data collection in Louisiana was ended before completion due to Hurricane Katrina (101 of 114 tracts were included)**

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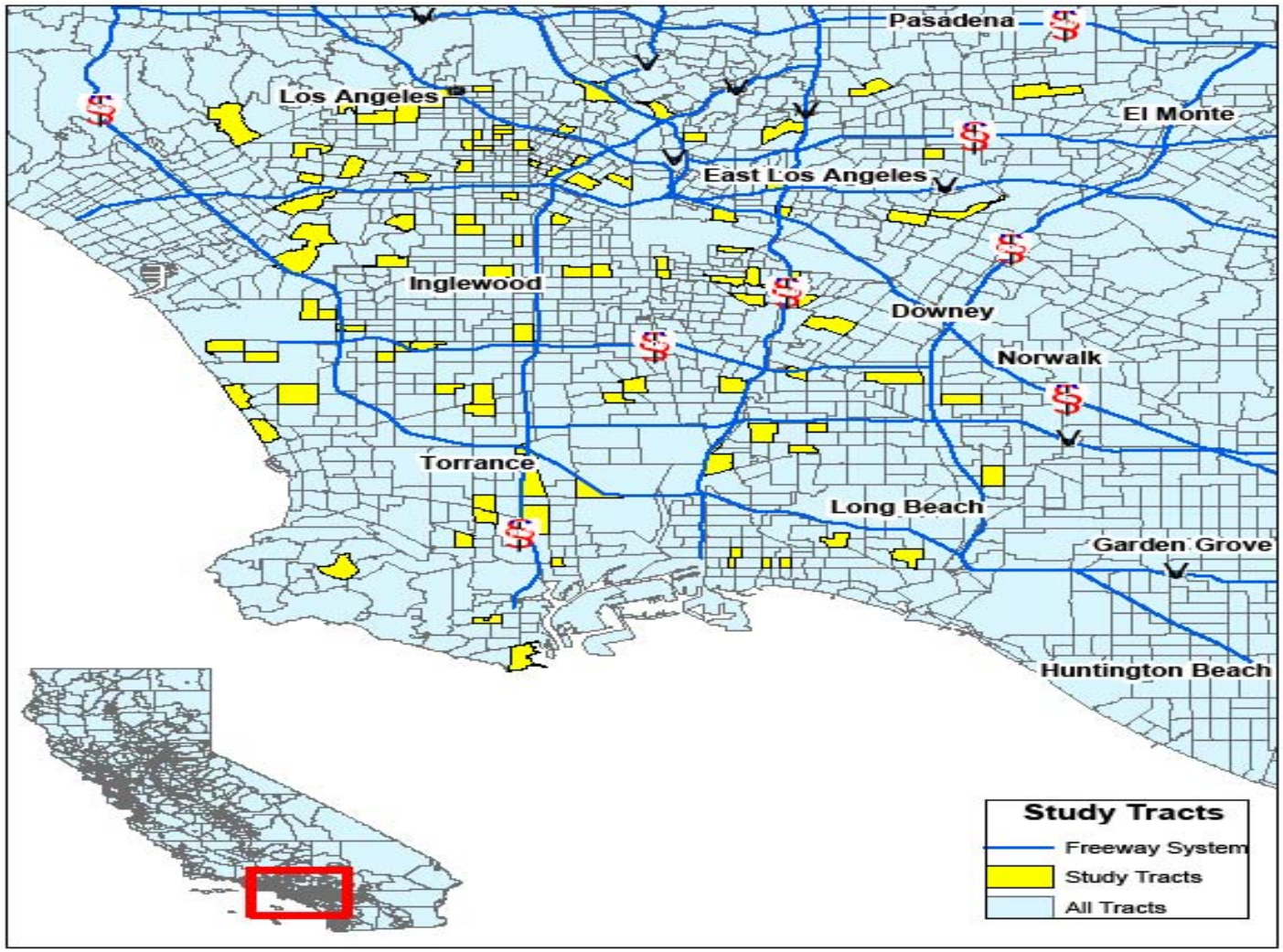
California Study Tracts



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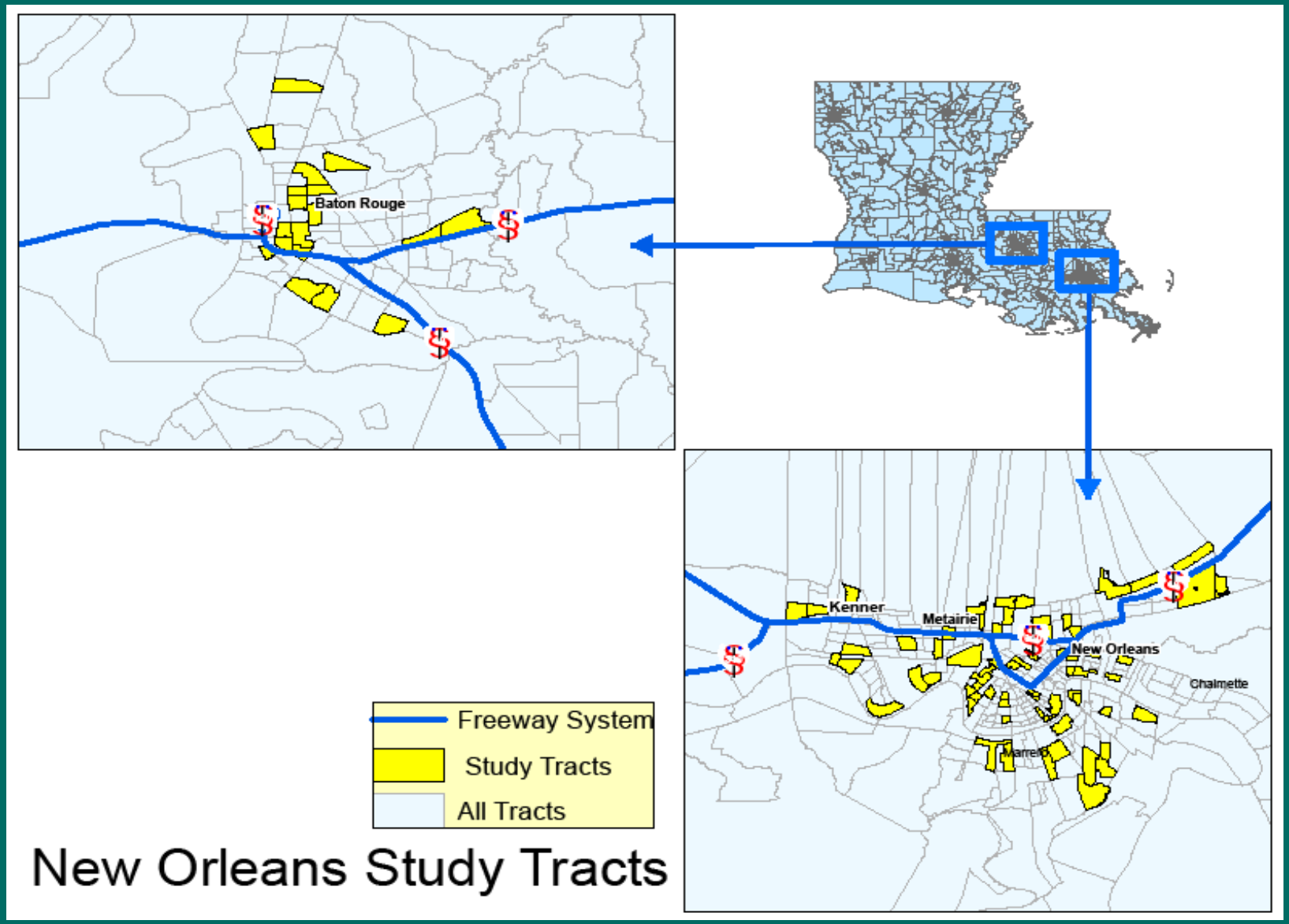

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Methods – Systematic coding of off-sale outlets

- Two person teams of observers in Los Angeles and Louisiana examined all off-sale premise outlets in selected census tracts using a 4 page form that captured
  - Least price for beer, malt liquor, distilled spirits and wine
  - Placement of beer and malt liquor
  - Total shelf space (linear feet) by beverage type (Regular Beer, Malt Liquor, Distilled Spirits)
  - Alcohol advertising within the store and on exterior store front
  - Total floor space
  - Intercoder reliability ranged from Kappa = 0.98 for total shelf space measures to Kappa = 0.76 for least price for malt liquor

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Methods – U.S. census tract data

- **Tract level demographic and socioeconomic characteristics as provided by the 2000 U.S. census, included**
  - **Percent African American**
  - **Percent Hispanic**
  - **Percent White**
  - **Male unemployment rate**
  - **Family poverty rate**
  - **Percent of households receiving public assistance**
  - **Median household income**

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Methods – Statistical Analysis

- Missing data on alcohol outlets was multiple imputed using predictive mean matching
- 187 of 217 tracts were used
  - 29 were excluded because they had no off-sale alcohol outlets
  - 1 tract was excluded due to unusually large shelf space measurement
- Linear regression was used to examine the correlations amongst alcohol availability measures and community characteristics

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Demographic and socioeconomic characteristics of selected census tracts

Characteristics	Sample Mean (Std Dev)*	New Orleans MSA~ Mean	Los Angeles County Mean
Percent African American	29% (32%)	38%	10%
Percent Hispanic	28% (31%)	4%	45%
Percent White	33% (32%)	55%	31%
Male unemployment rate	6% (4%)	7%	9%
Family poverty rate	21% (13%)	14%	14%
Households receiving public assistance	7% (6%)	4%	6%
Median household income	$35,632 ($17,019)	$35,317	$42,189

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Shelf space measures by census tract

Characteristics	Mean	Standard Dev	Min	Max
SHELF SPACE AVAILABILITY Total shelf space in feet	69.91	60.94	5.30	397.32
Beer shelf space	31.66	25.33	0	154.30
Malt liquor shelf space	3.52	2.19	0	14.36
Distilled spirits shelf space	16.87	16.43	0	83.35
Per Capita Shelf Space Availability Total shelf space in feet	20.44	23.57	1.82	155.89
- Beer shelf space	9.31	9.96	0	79.01
- Malt liquor shelf space	1.11	1.46	0	16.51
- Distilled spirits shelf space	4.96	6.08	0	32.91

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Outlet availability and least price by census tract

Characteristics	Mean	Standard Dev	Min	Max
OUTLET AVAILABILITY Outlets per roadway mile	0.49	0.63	0	6.31
Per capita Outlets per capita	1.02	1.06	0	10.34
Total number of outlets	3.46	2.75	0	17
PRICE PER OUNCE AVAILABILITY				
Beer	0.072	0.040	0.041	0.449
Malt liquor	0.065	0.040	0.035	0.343
Wine	0.145	0.068	0.075	0.787
Distilled spirits	0.385	0.247	0.088	2.071

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Correlations between shelf space measures and community characteristics

	% Families in poverty	Male UR	% HHs on public assist	Median HH Income	% African American	%White	% Hispanic
Total shelf space in feet	**-0.261* P<0.001**	**-0.215* P=0.004**	**-0.228* P=0.005**	**0.262* P<0.001**	-0.130 P=0.09	**0.238* P=0.003**	-0.119 P=0.144
Beer shelf space	**-0.230* P=0.003**	**-0.212* P=0.006**	**-0.249* P=0.002**	**0.181* P=0.016**	-0.035 P=0.653	**0.261* P=0.001**	**-0.188* P=0.02**
Malt liquor shelf pace	**0.398* P<0.001**	**0.234* P=0.015**	**0.310* P=0.001**	**-0.352* P<0.001**	**0.302* P<0.001**	**-0.452* P<0.001**	0.108 P=0.162
Hard liquor shelf space	-0.152 P=0.041	-0.116 P=0.120	-0.113 P=0.128	0.122 P=0.119	**-0.187* P=0.011**	0.060 P=0.417	0.062 P=0.411

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Correlations between alcohol density, least price and community characteristics

	% Families in Poverty	Male UR	% HHs on public	Median HH Income	% African American	% White	% Hispanic
Roadway miles Outlets per roadway mile	**0.371* P<0.001**	**0.191* P=0.004**	**0.347* P<0.001**	**-0.311* P<0.001**	-0.101 P=0.128	**-0.342* P<0.001**	**0.420* P<0.001**
Per capita Outlets per capita	**0.326* P<0.001**	0.142 P=0.032	0.038 P=0.571	**-0.289* P<0.001**	**0.346* P<0.001**	-0.105 P=0.112	**-0.188* P=0.004**
Price Per Ounce Beer Price (n=167)	-0.085 P=0.276	-0.052 P=0.509	-0.012 P=0.876	0.068 P=0.387	**-0.182* P=0.019**	0.151 P=0.052	0.050 P=0.522
Malt Liquor Price (n=152)	-0.172 P=0.035	-0.125 P=0.127	-0.159 P=0.052	0.127 P=0.121	**-0.190* P=0.020**	**0.276* P=0.001**	-0.076 P=0.357
Wine Price (n=124)	0.030 P=0.743	0.184 P=0.042	0.114 P=0.208	-0.010 P=0.913	**-0.253* P=0.005**	-0.072 P=0.427	**0.265* P=0.003**
Distilled Spirits Price (n=137)	0.035 P=0.685	-0.015 P=0.861	0.107 P=0.217	0.056 P=0.519	-0.164 P=0.056	-0.063 P=0.468	0.142 P=0.098

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Linear Regression with multiple imputation of community characteristics by alcohol availability types *(controlling for state and per capita population)*

	Total shelf space	Beer shelf space	Malt shelf space	Distilled spirit shelf space	Outlets per roadway mile	Beer price	Malt price	Distilled spirit price	Wine price
% Fam Pov	-0.38	-0.64	0.68	0.17	**1.06 P<0.001**	0.16	-0.07	0.65	0.20
% Male UR	**-3.41 P=0.03**	-1.19	0.28	**-4.02 P=0.05**	0.21	0.83	0.83	1.05	1.42
%African American	0.00	-0.30	-0.09	-0.20	**-0.35 P=0.03**	0.00	-0.53	-0.34	0.14
% White	0.39	-0.00	**-0.89 P=0.02**	-0.17	-0.23	0.38	0.10	0.10	0.30
% Hispanic	-0.45	-0.05	-0.54	-0.78	0.01	0.28	-0.22	-0.53	0.00
R^2	0.14	0.17	0.33	0.06	0.37	0.10	0.10	0.06	0.38

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Summary of results

- **Outlets per roadway mile increased significantly as family poverty increased, but decreased as percent of African American increased.**
- **Total shelf space and distilled spirits shelf space were inversely associated with male unemployment rate**
- **Malt liquor shelf space was inversely associate with percent white**
- **No community characteristics were associated with least price**

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Limitations

- **Missing data on store coding and especially least price, was substantial**
- **Cross-sectional study; causality can not be inferred**
- **Census data was from 2000 while observations occurred between 2003 and 2005; this could be a problem in areas experiencing rapid and significant demographic changes**

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Discussion (1)

- **Socioeconomic community characteristics were associated with both shelf space and outlets per roadway mile**
- **Less malt shelf space in areas with more White population suggest that targeting by beverage type does occur**
- **Less outlets per roadway mile as African American percent of population increases is unusual and may be due to rapid demographic changes in traditionally African American neighborhoods in Los Angeles.**

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Discussion (2)

- **Efforts to reduce the negative consequences of alcohol may benefit by increasing restrictions on outlet density particularly in areas of high poverty**

- **More exploration of beverage specific availability is warranted; restrictions on higher alcohol content beverages such as malt liquors may also serve to reduce alcohol-related harms**

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