

**Street vendors' variable contribution to urban food environments**  
differences by weather, season, and neighborhood

**Sean C. Lucan, MD, MPH, MS**  
slucan@yahoo.com



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**Disclosures**

None

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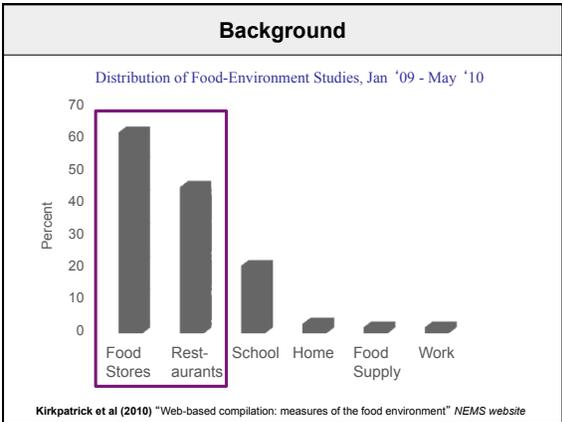
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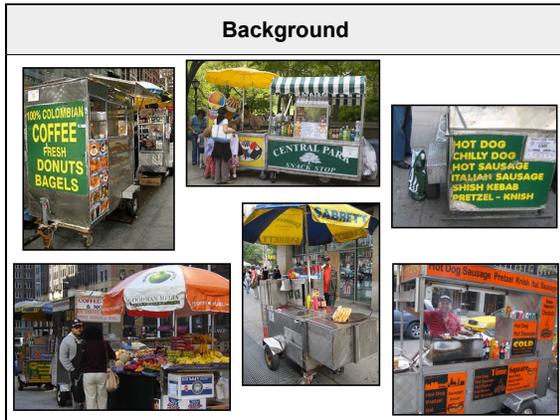
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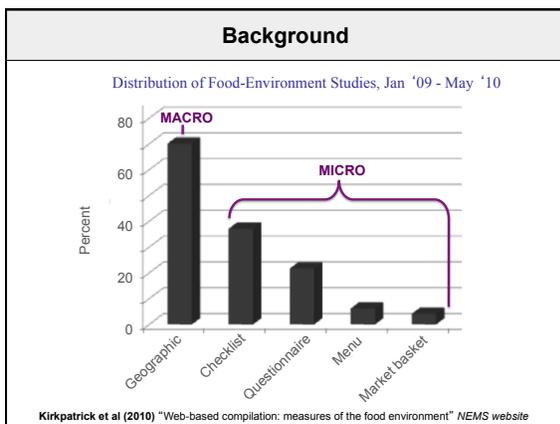
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### Methods

**To figure out where vendors are AND what vendors sell**

- Scanned all 42mi<sup>2</sup> of the Bronx (~1,000 linear miles, including highway ramps)
- Recorded unique ID (permit #, license plate, distinctive features) and location
- **Asked** vendors times and locations for selling (and if weather is a factor)
- **Observed** offered foods & drinks from displays, signs, and menus

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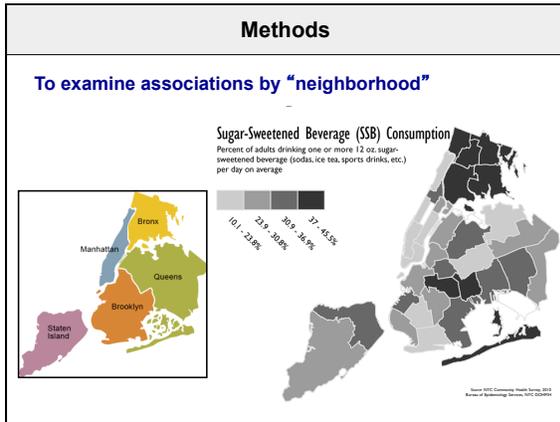
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**Methods**

**What FOODS do street vendors sell?**

- **Produce:** varieties of fruits and vegetables
- **Whole grain option?** any whole grain option (yes/no)
- **Processed foods:** varieties of mass-manufactured, pre-packaged items
- **Prepared foods:** varieties of foods made or prepared by vendor

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**Methods**

**What DRINKS do street vendors sell?**

- **Sugary drinks:** sodas, juices, sports/energy drinks, flavored milks
- **Milk?** unsweetened whole, 2%, 1%, or skim (yes/no)
- **Calorie-free drinks:** water, seltzer, unsweetened coffee, tea

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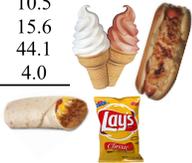
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Results			
			
	<b>Vendor category</b>	<b>N</b>	<b>%<sup>a</sup></b>
	Fresh produce	84	22.6
	Water	12	3.2
	Ethnic prepared	39	10.5
	Other prepared	58	15.6
	Frozen novelty	164	44.1
	Other	15	4.0
<b>372 vendors total</b>			
(including 72 "in transit")			





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Results		
<b>Item</b>	<b>% Selling</b>	
<b>Foods</b>		
Fruits or vegetables	30.7 <sup>c</sup>	• 5% 'non-produce' vendors offered any fruits or vegetables
Whole grains	0.3	• 18% produce vendors had some prep/processed foods (cookies, chips, pies)
Prepared foods	28.5 <sup>d</sup>	
Processed foods	59.1 <sup>d</sup>	• 25% of vendors offering caloric drinks offered no calorie-free alternative
<b>Beverages</b>		
Caloric drinks	43.6 <sup>e</sup>	• 3 vendors sold milk (2 sold beer)
Unsweetened milk	1.0	• 1 vendor sold whole grain
Calorie-free drinks	36.4 <sup>e</sup>	




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Methods
<b>Categorizing vending by the foods sold</b>
<ul style="list-style-type: none"> <li>• <b>"Healthier"</b> - whole foods: fresh produce, unprocessed grains, unsweetened nuts</li> <li>• <b>"Less-healthy"</b> - processed/prepared foods: bagged chips, preserved meats, sweets</li> <li>• <b>"Mixed"</b> - offering both some "healthier" and some "less-healthy" food items</li> </ul>

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Results					
Correlations: "less-healthy" vending per capita & mean neighborhood characteristics					
Characteristics <sup>b</sup>	Mean Neighborhood		p value		
		p value		p value	
<b>Diet</b>					
Fruit and vegetable intake (servings of fruits/vegetables eaten yesterday)	-0.80	0.104	-0.50	0.391	(F&V)
Sugar sweetened-beverage intake (sweetened drinks consumed per day)	1.00	<0.001	0.60	0.285	(SSB)
<b>Diet-related health</b>					
Body mass index [BMI] (reported weight [kg]/reported height [m] <sup>2</sup> )	0.90	0.037	0.30	0.634	(BMI)
Prevalence of known diabetes (ever been told you have diabetes)	0.40	0.505	0.20	0.747	(DM)
Prevalence of known hypercholesterolemia (ever been told you have high cholesterol)	0.90	0.037	0.80	0.104	(Lipids)
Prevalence of known hypertension (ever been told you have high blood pressure)	0.90	0.037	0.70	0.188	(HTN)
<b>Demographics</b>					
Non-white proportion (being any race/ethnicity other than "White")	0.80	0.104	0.50	0.391	(Minority)
Hispanic proportion (reporting "Hispanic" as race/ethnicity)	0.80	0.104	0.90	0.037	(Hispanic)
Proportion not graduating high school (reporting less than full high-school education)	0.80	0.104	0.50	0.391	(<HS grad)
Proportion below 100% Federal Poverty Level (calculated from household annual income)	0.80	0.104	0.90	0.037	(<100% FPL)

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Strengths / Limitations	
<b>Strengths</b>	
<ul style="list-style-type: none"> <li>• First county-wide study in developed world</li> <li>• Multidimensional approach ("macro" + "micro")</li> <li>• A modest advance over usual "healthy" vs. "unhealthy" dichotomy</li> </ul>	
<b>Limitations</b>	
<ul style="list-style-type: none"> <li>• Cross-sectional: static picture of moving target</li> <li>• Mobile vendors in isolation (irrespective of stores and restaurants)</li> <li>• Generalizability to other communities outside of the Bronx</li> </ul>	

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Conclusion	
<ul style="list-style-type: none"> <li>• Mobile vendors vary in items they offer and consistency of their presence</li> <li>• Vendors offer "less-healthy" items over "healthier" items overall</li> <li>• Wet days / winter months reduce all vendors; "less-healthy" vending most</li> <li>• Some neighborhood correlations less substantial in winter</li> <li>• Vendors may worsen demographic, diet, diet-related health disparities</li> </ul>	
<b>But ...</b>	
Mobile food vendors have the potential to do a lot of good	

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**Acknowledgements / More Information**



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**Lucan SC**, et al. "Assessing mobile food vendors ... methods, challenges, and lessons learned for future food-environment research" **Public Health**. Jul 2013

**Lucan SC** et al. Green Carts ... in the Bronx—optimally positioned to meet neighborhood fruit-and-vegetable needs? **J Urban Health**. Oct 2011

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Sean C. Lucan: [slucan@yahoo.com](mailto:slucan@yahoo.com) (happy to talk)

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