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Research Informing Policies & Practices
for Healthy Youth

Results from Reliability Studies in Food Stores and Fast Food Restaurants

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Leah Rimkus, MPH, RD, lriskus@uic.edu
University of Illinois at Chicago

Presentation Objectives

- Describe two observational data collection instruments used for assessing the community food environment
- Describe protocol for two reliability studies
- Summarize results from two reliability studies
- Describe changes made to data collection instruments/protocols based on study findings and current/future research plans

Food Store Reliability Study

January 2010

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Data Collection Instrument

- 12-page instrument developed and tested, building off pre-existing instruments and on input from an expert panel
- Types of measures included
 - Store type
 - Number of cash registers
 - Presence of store services/amenities
 - Availability of various food, beverage, and tobacco products
 - Price of various food, beverage, and tobacco products
 - Number of food, beverage, and tobacco advertisements on store exterior
 - Quality of select fresh fruits and vegetables
 - Number of varieties of fresh, frozen, and canned fruits and vegetables
 - Presence of any tobacco-related promotions
 - Presence of incivilities outside the store

BTG-COMP FOOD STORE OBSERVATION FORM – Jan 2010

SITE ID:

BUSINESS NAME:

ADDRESS:

STAFF ID:

START TIME: : am/pm

END TIME: : am/pm

DATE: / / 2010

FINAL STATUS CODE	LABEL CORRECTIONS/NOTES
COMPLETE	01
INCOMPLETE – Not found	02
INCOMPLETE – Not safe to go in	03
INCOMPLETE – Asked to leave	04
INCOMPLETE – Outside of business hours	05
INCOMPLETE – Ran out of time	06
NOT ELIGIBLE – Permanently closed /does not exist	96
Other, Explain:	07

A. GENERAL AND CHECK-OUT

A1. TYPE OF STORE	A2. Does the store have a...?	NO	YES
Supermarket (Jewel-Osco, Kroger, Safeway)	a. Bank	0	1
Grocery (Aldi, Trader Joe's, "mom & pop")	b. Pharmacy	0	1
Convenience (7-11, White Hen)	c. Butcher or fresh meat counter	0	1
Discount Dept Store (Kmart, Target, Wal-Mart)	d. Deli counter	0	1
Other (Specify):	e. Bakery	0	1

A3. Are these available at CHECK-OUT?	NO	YES	A5. Is there signage for...?	NO	YES
a. Candy	0	1	a. Food stamps (EBT or SNAP)	0	1
b. Refrigerated beverages	0	1	1. Specify sign location:		
c. Bottled water	0	1	b. WIC coupons	0	1
d. Sweetened beverages (soda, etc.)	0	1	1. Specify sign location:		
e. At least one candy-free register	0	1	A6. Number of cash registers		
A4. Is there a plexiglass or other divider at the register?	0	1	IF MORE THAN 10, RECORD 10		<input type="text"/>

F. BEVERAGES (JUICE, SODA, WATER, etc.)- FAMILY SIZE

IF F1= NO, LEAVE F2-F6 BLANK	F1. AVAILABLE		F2. BRAND		F3. QTY	F4. PACKAGE SIZE		F5. CURRENT PRICE	F6. PRICE TYPE		
	NO	YES	IF None, SKIP F3-F6			IF None, SKIP F5-F6			REG	SALE	MEMBER
a. Orange Juice, 100%	0	1	Min Maid	1		½ Gallon	1	\$ <input type="text"/> . <input type="text"/> <input type="text"/>	1	2	3
			Tropicana	2		Gallon	2				
			None of above	8		None of above	8				
b. Juice Drink, 10-50% juice	0	1	Min Maid	1		½ Gallon	1	\$ <input type="text"/> . <input type="text"/> <input type="text"/>	1	2	3
			Tropicana	2		Gallon	2				
			None of above	8		None of above	8				
c. Juice box/pouch ≤ 10% juice	0	1	Hi-C	1		Box of 10	1	\$ <input type="text"/> . <input type="text"/> <input type="text"/>	1	2	3
			Capri Sun	2		Case of 40	2				
			None of above	8		None of above	8				
d. Powdered Drink mix	0	1	Kool-Aid	1		19-20 oz	1	\$ <input type="text"/> . <input type="text"/> <input type="text"/>	1	2	3
			None of above	8		6.6 oz	2				
			None of above	8		None of above	8				
e. Soda, regular	0	1	Coca-Cola	1		2 Liter	1	\$ <input type="text"/> . <input type="text"/> <input type="text"/>	1	2	3
			Pepsi	2		24 can case	2				
			None of above	8		None of above	8				
f. Soda, diet	0	1	Coca-Cola	1		2 Liter	1	\$ <input type="text"/> . <input type="text"/> <input type="text"/>	1	2	3
			Pepsi	2		24 can case	2				
			None of above	8		None of above	8				
g. Soda, least expensive	0	1	Specify brand:			2 Liter	1	\$ <input type="text"/> . <input type="text"/> <input type="text"/>	1	2	3
			None of above	8		24 can case	2				
			None of above	8		None of above	8				

G. SNACKS

IF G1= NO, LEAVE G2-G6 BLANK	G1. AVAILABLE		G2. BRAND		G3. QTY	G4. PACKAGE SIZE		G5. CURRENT PRICE	G6. PRICE TYPE		
	NO	YES	IF None, SKIP G3-G6			IF None, SKIP G5-G6			REG	SALE	MEMBER
a. Potato Chips, regular, salted	0	1	Lay's	1		14 oz	1	\$ <input type="text"/> . <input type="text"/> <input type="text"/>	1	2	3
			Ruffles	2		10-11 oz	2				
			None of above	8		None of above	8				
b. Flaming Hot Cheetos (or equiv)	0	1	Frito Lay	1		8-9 oz	1	\$ <input type="text"/> . <input type="text"/> <input type="text"/>	1	2	3
			None of above	8		3-4 oz	2				
			None of above	8		None of above	8				
c. Any baked or low-fat potato chips	0	1	Hostess	1		13-14.5oz	1	\$ <input type="text"/> . <input type="text"/> <input type="text"/>	1	2	3
			Little Debbie	2		10 oz	2				
			None of above	8		None of above	8				
d. Snack Cakes (Ho Hos, Cupcakes or Swiss Rolls)	0	1	Oreos	1		18 oz	1	\$ <input type="text"/> . <input type="text"/> <input type="text"/>	1	2	3
			Chips Ahoy	2		14-16 oz	2				
			None of above	8		None of above	8				
e. Cookies	0	1	M&Ms, plain	1		1.69 oz	1	\$ <input type="text"/> . <input type="text"/> <input type="text"/>	1	2	3
			Snickers	2		2.07 oz	2				
			None of above	8		None of above	8				
f. Candy	0	1	None of above	8		None of above	8	\$ <input type="text"/> . <input type="text"/> <input type="text"/>	1	2	3

Study Sample

- Businesses pulled from Dun & Bradstreet for specific SIC codes
 - Supermarket
 - Grocery store
 - Convenience store
 - Gas station
- Web searches conducted to identify department stores
- Included businesses in City of Chicago plus a 50-mile buffer
- Pulled convenience sample based on relative location and based on the following distribution:
 - 1/3 in low, 1/3 in middle, and 1/3 in high income areas
 - 50% in predominantly white and 50% in non-white areas
 - 50% in city limits and 50% outside city limits (All classified as “urban”)

Data Collection Protocol

- Trained six data collectors
- Data collection during a two-week period in January 2010
- Each team member independently observed/coded each store
- Data collection completed in 120 stores
- Average time to complete observation:
 - 97 minutes in supermarkets (n = 20)
 - 96 minutes for department stores (n = 6)
 - 68 minutes in grocery stores (n = 23)
 - 44 minutes for gas/convenience stores (n = 66)
 - 38 minutes for other stores (n = 4)

Average reliability for measures of availability

Measure (# items)	Kappa	% Agreement	Range
All products (53)	0.88	95%	0.17 - 1.00
Fresh fruits (4)	0.97	99%	0.91 - 1.00
Fresh vegetables (6)	0.97	98%	0.94 - 1.00
Meat and dairy* (9)	0.91	96%	0.80 - 1.00
Bread and cereal (5)	0.87	95%	0.81 - 0.93
Canned products (6)	0.90	95%	0.80 - 0.96
Beverages* (8)	0.66	89%	0.17 - 0.82
Snack products* (3)	0.86	96%	0.82 - 0.91
Frozen vegetables (4)	0.94	97%	0.91 - 0.98
Tobacco products* (8)	0.92	96%	0.84 - 1.00

* PABAK measure utilized for some products in this category

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Average reliability for measures of product price

Measure	ICC	Range
Fresh fruits (4)	0.87	0.58 - 0.98
Fresh vegetables (4)	0.95	0.87 - 1.00
Meat and dairy (9)	0.92	0.84 - 1.00
Bread and cereal (4)	0.91	0.82 - 1.00
Canned products (3)	0.95	0.90 - 1.00
Beverages* (16)	0.85	0.15 - 1.00
Snack products (5)	0.84	0.51 - 0.99
Frozen vegetables *(1)	0.99	--
Tobacco products* (5)	0.93	0.87 - 1.00

*Excludes some measures for which ICC could not be calculated due to small sample size

Average reliability for counts

Measure (# items)	ICC	Range
# of fruit options available (3)	0.95	0.92 - 0.97
# of vegetable options available (3)	0.93	0.92 - 0.95
# of ads on building exterior (4)	0.91	0.78 - 0.98
# of ads on store property (4)	0.86	0.68 - 0.97

Revisions to Instrument and Protocol

- Dropped several measures from instrument
 - Availability for some beverage products
 - Price for some food/beverage products
 - Availability of green/orange vegetables
 - Price for some tobacco products
 - Exterior advertising for some tobacco products
- Retrained on protocol for recording current price
- Revised priority brands and package sizes for several products
- Added a maximum count for exterior advertisements

Fast Food Reliability Study

December 2009

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Data Collection Instrument

- 4-page instrument developed and tested, building off pre-existing instruments and input from an expert panel
- Types of measures included
 - Restaurant type, Layout
 - Availability of various food and beverage menu items
 - Availability of healthy options on dollar menu, kids' menu
 - Presence of any health claims on menu board and/or in advertisements
 - Availability of nutrition information
 - Price of various food and beverage menu items
 - Number of food, beverage, and other advertisements on exterior
 - Presence of child-targeted marketing
 - Presence of incivilities outside the restaurant

BUSINESS NAME: _____

ADDRESS: _____

STAFF ID: _____

START TIME : am/pm

END TIME : am/pm

MO/DAY /

IF SHARED BUILDING, OTHER BUSINESS NAME: _____ SETTING ID

FINAL STATUS CODE	
COMPLETE	01
INCOMPLETE – Not Found	02
INCOMPLETE – Not safe	03
INCOMPLETE – Asked to leave	04
INCOMPLETE – Not accessible, Not open today	05
INCOMPLETE – Ran out of time	06
NOT ELIGIBLE – Permanently closed/Does not exist	96
Other, Explain:	07

NOTES:

SECTION A. EXTERIOR CHARACTERISTICS

A1. Restaurant type		
Traditional Burger and Fries		1
Mexican		2
Fried Chicken / Fried Fish		3
Sandwich or Sub Shop		4
Pizzeria		5
Chinese / Pan-Asian		6
Coffee Shop		7
Other, Specify:		8
A2. Is the restaurant...		
	NO	YES
a. In a shared space with a grocery or general merchandise store? <i>IF YES, RECORD NAME ABOVE</i>	0	1
b. In a shared space with a gas station or convenience store? <i>IF YES, RECORD NAME ABOVE</i>	0	1
c. In a shared space with another restaurant? <i>IF YES, RECORD NAME ABOVE</i>	0	1
d. Within a food court or mall? <i>IF YES, SKIP TO SECTION D</i>	0	1

A3. Does the restaurant have...		
a. A sidewalk present on street? <i>IF NO, SKIP TO A3b</i>	0	1
1. Sidewalk lighting?		
	0	1
b. Parking on-site? <i>IF NO, SKIP TO A3c</i>	0	1
1. Parking lot lighting?		
	0	1
c. Bicycle parking?	0	1
d. Bars on windows?	0	1

A4. Is there graffiti on building and/or exterior signs?	
Virtually none	1
In a few areas	2
In some areas	3
In most areas	4

A5. Number of exterior walls visible from parking lot or street. IF 4+, WRITE 4

Business Name: _____

Setting ID: _____

Staff ID: _____

SECTION G. FOOD ITEMS	G1. Is item available?			G2. Record Price					
	NO	YES	N/A						
a. French Fries (<i>select smallest available and specify below</i>) <input type="checkbox"/> Small <input type="checkbox"/> Other:	0	1	8	\$ <input type="text"/> . <input type="text"/>					
b. French Fries (<i>select largest available and specify below</i>) <input type="checkbox"/> Large <input type="checkbox"/> Other:	0	1	8	\$ <input type="text"/> . <input type="text"/>					
c. Hamburger, ¼ lb with cheese	0	1	8	\$ <input type="text"/> . <input type="text"/>					
d. Chicken sandwich, with roasted/grilled chicken	0	1	8	\$ <input type="text"/> . <input type="text"/>					
e. Entrée salad, with roasted/grilled chicken	0	1	8	\$ <input type="text"/> . <input type="text"/>					
f. Fried Chicken, 1 leg/drumstick and 1 thigh	0	1	8	\$ <input type="text"/> . <input type="text"/>					
g. Cheese Pizza, thin crust, 10-12"	0	1	8	\$ <input type="text"/> . <input type="text"/>					
h. Taco, crunchy/crispy with ground beef	0	1	8	\$ <input type="text"/> . <input type="text"/>					
i. Sub Sandwich, 6-inch with turkey and cheese	0	1	8	\$ <input type="text"/> . <input type="text"/>					
SECTION H. KIDS MENU REVIEW				NO	YES				
H1. Kids' menu or kids' meal available <i>IF NO, SKIP TO SECTION J</i>				0	1				
H2. Kids' meal offers a healthy beverage option (i.e., low-fat milk or 100% juice) <i>IF NO, SKIP TO H3</i>				0	1				
a. Healthy option is the default beverage				0	1				
H3. Kids' meal offers a healthy side dish option (i.e., fruit, vegetable or yogurt) <i>IF NO, SKIP TO H4</i>				0	1				
a. Healthy option is the default side dish				0	1				
H4. Toys or other child-oriented giveaways included with kids' meal				0	1				
SECTION J. NUTRITION INFORMATION									
J1. Is item available at the POINT OF PURCHASE?	IF NO, SKIP TO NEXT ITEM		J2. Provides calorie info for menu items?			J3. Has statement on suggested daily calories?		J4. Has "nutrition info on request" statement?	
	NO	YES	NO ITEMS	SOME ITEMS	ALL ITEMS	NO	YES	NO	YES
a. Menu board	0	1	0	1	2	0	1	0	1
b. Food display tags	0	1	0	1	2	0	1		
c. Posted material	0	1	0	1	2	0	1		
d. Printed material	0	1	0	1	2	0	1	0	1
e. Printed menu*	0	1	0	1	2	0	1	0	1
J5. Asked employee for nutrition information?	NO	YES	b. Code final response: (Circle all that apply)			c. Available at POP?			
<i>IF PARTNER ASKED, CHECK <input type="checkbox"/></i>	0	1	No nutrition information available			01	NO	YES	
a. Record final response from employee(s):	Referred to posted material			02	0	1			
	Referred to printed material			03	0	1			
	Gave printed material from behind the counter			04					
	Ran out of printed material			05					
	Referred to website			06					
	Does not know			07					
Other, explain:			08						

Study Sample

- Web searches conducted to identify top 36 fast food restaurant chains in Chicago and selected suburbs within the Chicago MSA
- Convenience sample based on relative location
- Restaurants distributed by income and location:
 - 1/3 in low, 1/3 in middle, and 1/3 in high income areas
 - 50% located in predominantly white tracts, 50% in non-white tracts
 - 50% located in Chicago, 50% located in suburbs

Note: all locations “urban” according to Census definition

Data Collection Protocol

- Trained six data collectors
- Data collection during a two-week period in December 2009
- Each team member independently observed/coded each restaurant
- Completed data collection in 130 restaurants
- Average time to complete fast food observation:
 - Mean = 26 minutes (SD = 8.3 minutes, Range = 6 - 48 minutes)

Average reliability for interior characteristics

Measure (# items)	Kappa	% Agreement	Range
General menu review (7)	0.79	91%	0.53 - 0.96
Kids' menu review (6)	0.84	94%	0.50 - 1.00
Health claims on menu (7)	0.88	95%	0.64 - 1.00
Other characteristics (6)	0.92	97%	0.86 - 1.00

Reliability for availability of nutrition information

Measure	Kappa	% Agreement
Presence at point of purchase		
Menu board	1.00	100%
Food display tags	0.91	96%
Posted material	0.59	86%
Printed material	0.78	90%
Printed menu* (PABAK)	0.97	98%

Measure	ICC	% Agreement	Range
Provision of calorie info (4)	0.88	93%	0.77 - 1.00

Average reliability for exterior advertisements

Measure	ICC/Kappa	% Agreement	Range
# of ads on building exterior (3)	0.77	81%	0.65 - 0.86
# of ads on property (3)	0.82	87%	0.67 - 0.91
# of ads with price promotion (4)	0.78	76%	0.60 - 0.89
Other ad characteristics (4)	0.66	90%	0.35 - 0.95

Excludes some measures for which ICC could not be calculated due to small sample size

Revisions Made to Instruments and Protocol

- Changed approach to “healthy” sides/beverages
- Changed approach to coding food/beverage advertisements
- Changed approach to child-targeted marketing
- Dropped quality claims from exterior advertising section
- Retrained on nutrition information at the point of purchase
- Tightened definitions and training on measures of incivilities

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Irimkus@uic.edu

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