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ADDRESSING FOOD ACCESS BARRIERS: THE PROMISE AND POTENTIAL OF SMALL FOOD RETAILERS

USDA Agricultural Outlook Forum 2016

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Topics

- Working with small stores to improve access to healthy choices in low income and low access communities
- Baltimore Healthy Stores
- Baltimore Healthy Carryouts
- B'More Healthy! Retail Rewards
- Future Directions



Educational versus Environmental interventions

- Educational interventions assist people in making choices among available options.
- Environmental interventions change the options.
- Educational and environmental interventions work well in combination (supply-demand).



Components of Access

- Availability
- Price
- Ease of obtaining
 - (transportation to get to store, finding food once you get to store)

Why work in food stores?

- Can reach the main food preparers/shoppers within a household
- Can increase the availability of affordable, culturally-acceptable healthy foods
- Often one of few community “centers” in some settings
- Food stores exist in most communities

Early Food Store Intervention Trials: Limitations

- Mostly in supermarkets, few in small stores
- Little work in small prepared food sources
- Limited formative research
- Little emphasis on participatory approaches
- Limited use of behavior change theory
- Few intervention strategies, with limited reinforcement/integration of activities
- Some addressed access, but few pricing
- Limited evaluation (e.g. lack of dietary assessments)
- Little process evaluation

(References: *Seymour et al 2004, Glanz et al 1995, Wechsler et al 2000, French and Stables 2005*)

What Is A Corner Store?

- A working definition for Baltimore:
 - <1000 square feet
 - 3 aisles or less
 - One cash register
- Limited selection of foods
 - A lot of “junk food”
- Customers mainly from immediate area
- Accessed on foot
- Diverse product mix



Adapted from a presentation by Karen Shore, The Food Trust

Why Corner Stores?

- They are already there
- Proximity to underserved residents
- Part of community
- Part of daily behavior patterns
- *Opportunity for health impact*
- *Opportunity for economic impact*



Adapted from a presentation by Karen Shore, The Food Trust

Opportunity for Health Impact

Corner Store Purchases:

- 356.6 kcal per purchase
- Students spent \$1.07 on 2 items per purchase
- Baltimore children report spending >\$3/day at corner stores when they use them
- 53% shop once a day
- 42% shop 2+ times a day
- Energy dense, low-nutritive foods and beverages

Opportunity for Economic Impact

- Grow local businesses
- Increase sales & profits
- Provide local jobs
- Encourage new skills
- Create new markets (e.g., suppliers)
- Promote neighborhood revitalization

Romano's Grocery

From Typical Corner Store to Neighborhood Anchor



Adapted from a presentation by Karen Shore, The Food Trust



Baltimore-based small food source studies

- Baltimore Healthy Stores
- Baltimore Healthy Carryouts
- B'More Healthy! Retail Rewards

Baltimore City Food Environment

- 960 convenience food stores¹¹
 - 652 'corner' stores
- 52 supermarkets¹¹
- Small stores are common food sources for urban residents¹²



Key Issues from Interviews

- From Store Customers: *“I would love to buy/eat healthy foods but they are...”*
 - Too expensive
 - Not available in the stores I shop in
 - Are of poor quality in the stores I shop in
- From Store Owners/Managers: *“I would love to stock healthy foods but ...”*
 - No one buys them
 - The last time I stocked (xxxxx) it just sat on the shelves

Top 10 sources of energy, fat and sugar of inner city adult Baltimore respondents (Sharma et al, 2009)

Food Item	Energy (%)	Food Item	Fat (%)	Food Item	Sugar (%)
Sodas	9.5	Chicken	12.1	Sodas	34.1
Chicken	8.2	Hot dogs, sausages	8.1	Sugary drinks (iced tea, punch)	15.2
Breads	6.0	Chips	6.3	Juices	9.0
Cake, donut and other pastry	4.2	Meat dishes	5.2	Sugar and syrup	8.3
Sandwiches and burgers	4.0	Margarine and butter	5.2	Cake, pastry and donut	4.2
Sugary drinks	3.8	Cake, donut and other pastry	5.1	Candies	4.1
Chips	3.7	Mayo, salad dressing, dips	4.9	Ice cream	3.2
Pasta dishes	3.3	Sandwiches and burgers	4.5	Cookies	2.5
Meat dishes	3.1	Cheese	4.3	Fruits	2.1
Candies	2.9	Eggs	4.0	Cereals	1.6
Total	48.7	Total	59.8	Total	84.3

Part 1. Working in Small Stores

Baltimore Healthy Stores

- East Baltimore: intervention area
- West Baltimore: comparison area
- Store sample
 - 2 supermarkets/area
 - 6-7 small stores/area
- Consumer sample
 - ~87 respondents/area



Community workshops





Increasing supply: Corner stores stock healthier foods

- 1-3 new foods per store per phase
- Start with "low-hanging fruit"
- Incentives
 - Stocking guidelines
 - Promotional materials to create demand
 - Incentive card to wholesaler
 - Provide small supply



Increasing Demand: Visual Materials

Have a **SNACK ATTACK** without the **FAT!**

The illustration features a woman with a wide, happy smile, her hand near her face. The background is a vibrant pink and yellow pattern with various food icons: pretzels, nuts, and slices of citrus fruit.

Baltimore Healthy Stores

Quench Your Thirst with Water

Baltimore Healthy Stores O & N

SAVE MONEY, DRINK WATER!

COLA 33-44 cents per quart

DIET SODA 20 cents per quart

DID YOU KNOW?
The Baltimore City Department of Social Services can help you get food stamps, temporary cash assistance and medical care. To find out if you qualify go to your local social services center. To find your local center, call 410-361-4600.

Water has zero calories and costs less than soda. Why not go for the water when you're thirsty?

ADVANTAGES OF WATER

1. Really quenches your thirst
2. Keeps up your body fluids so you perform better
3. Far cheaper and better for your health than soda

SAVE MONEY & CALORIES BY CHOOSING WATER!

How much sugar is in your soft drink*?

*Amount of sugar in a 12 ounce soda
1 sugar cube = 1 teaspoon or 4 grams

Orange or cream soda:	11 sugar cubes
Mountain Dew:	10 sugar cubes
Cola, Root Beer, or Sprite:	9 sugar cubes
7-Up:	8 sugar cubes
Diet sodas or water:	ZERO Sugar, ZERO Calories!

NOTE: If you are drinking more than 12 ounces of soda, you are consuming more sugar than pictured here. For every 4 grams of sugar there, you are consuming a teaspoon of sugar.

HOW MANY CALORIES ARE YOU DRINKING?

No Sugar → No calories

9 taps of sugar → 150 calories

1 teaspoon of sugar = 16 calories

The infographic uses visual aids to show the sugar content of different drinks. It shows a glass of water (no sugar), a can of soda (9 teaspoons of sugar), and a can of diet soda (no sugar). A woman and a child are shown looking at the information.

Interactive Sessions in large and small food stores

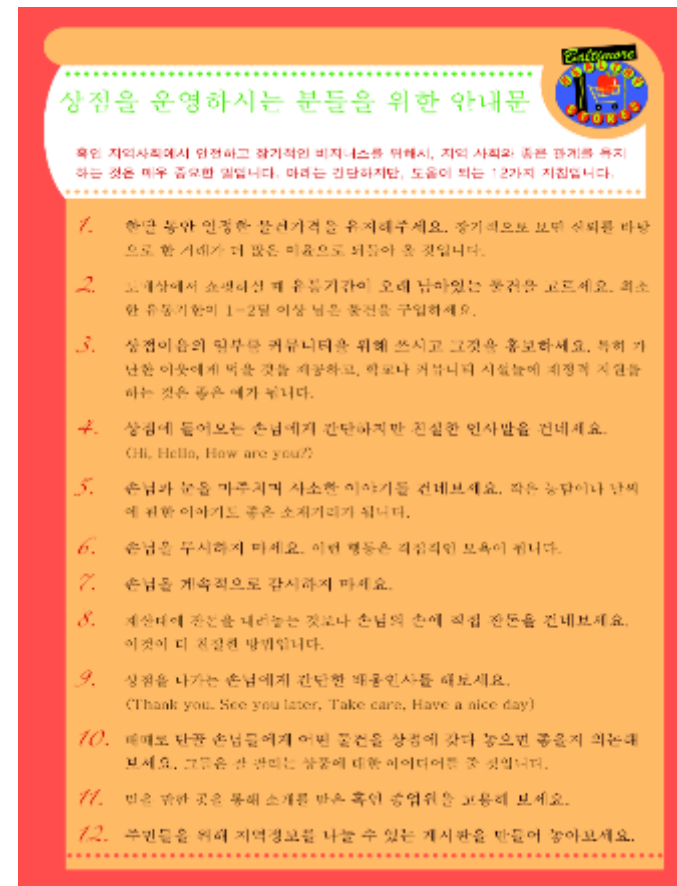


Materials and training for Korean American store owners

- Nutrition Education Booklet (Korean)



- Cultural Guidelines (Korean)



Impact on Stocking and Sales

	Stocking Score (range 0–10)			Sales Score (range 0–10)		
	Intervention	Comparison	Significance	Intervention	Comparison	Significance
Baseline	5.9 ± 2.0	6.8 ± 1.6	NS	4.4 ± 1.8	5 ± 1.5	NS
Post-phase	8.3 ± 1.0	6 ± 1.8	0.004	7.1 ± 2.0	5.8 ± 1.8	0.05
Post-intervention	7 ± 2.0	5.5 ± 1.5	0.009	6.4 ± 1.8	4.7 ± 1.5	0.003

Song et al, Public Health Nutrition, 2009

Consumer Results

- N=85 respondents measured pre and post
- After adjustment for baseline value, age, sex and SES:
 - Significant impact on food preparation methods and frequency of purchase of promoted foods
 - Positive trend for healthy food intentions



Lessons Learned

- We can get small stores to increase stocking of healthier foods, and show impact on consumer food choices
- Sustainability of small store interventions possible in Baltimore
- BUT: people in Baltimore's low income food environments get food from many places

Part 2. Changing the prepared food source environment:

Baltimore Healthy Carryouts



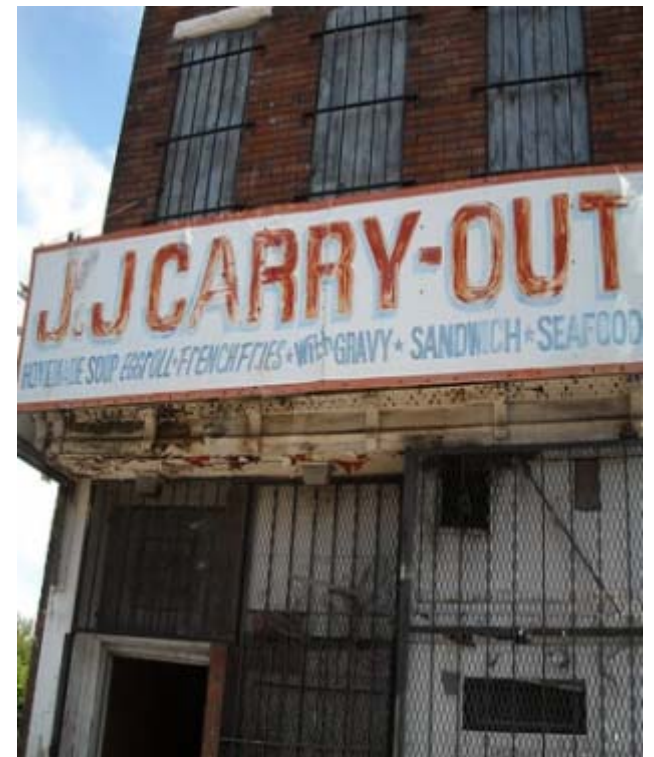
Baltimore Healthy Carryout Aims



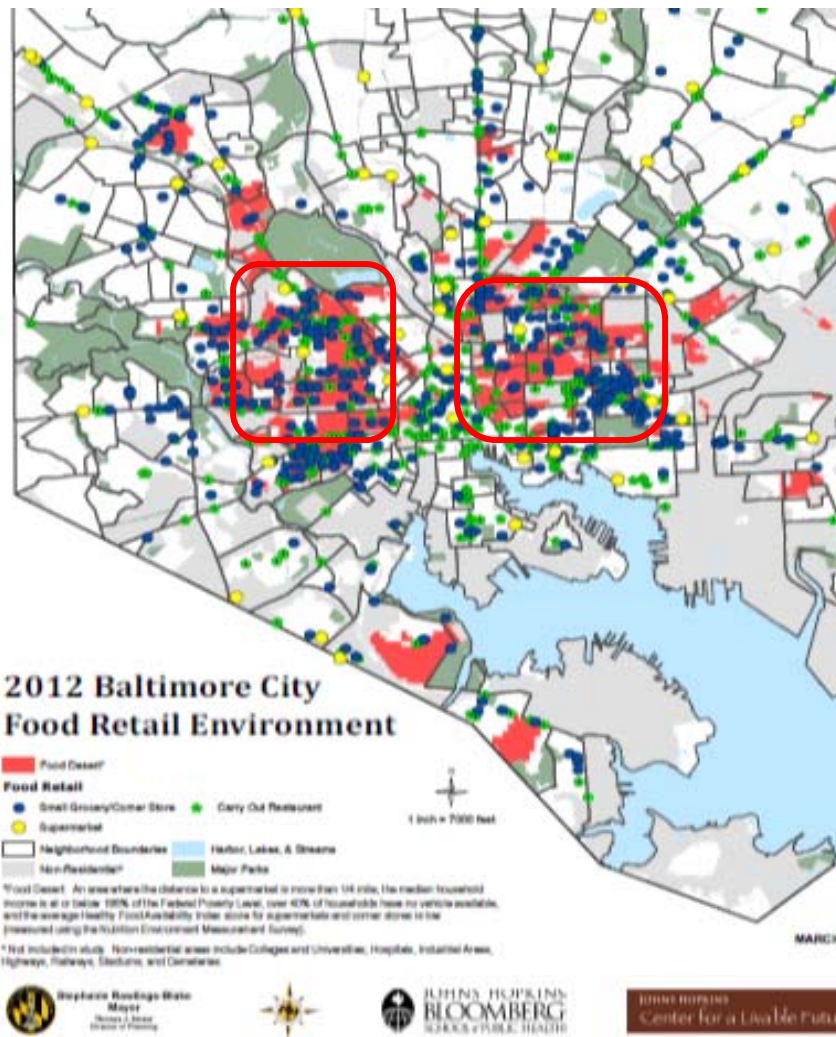
- To develop, implement and evaluate a culturally appropriate multi-component carryout intervention to reduce risk factors for diet-related chronic diseases in a low income urban setting
 - Conduct formative research on the availability, pricing and consumption of carryout foods
 - Develop culturally-appropriate intervention materials and implement the intervention in 4 stores
 - To evaluate a pilot trial of a carry-out intervention in eight local carry-outs (food sales, energy and fat intake, psychosocial factors)

Environmental Assessment

- A total of 144 Prepared Food Sources (PFSs) were observed (ground-truthing method) in low-income neighborhoods of Baltimore (Lee et al. 2010)
 - 72% carryouts (n=104)
 - 15% corner stores with deli/take-out
 - 10% Fast food restaurants
 - 5% Sit-down restaurants



Study Design: The BHC Pilot Trial



**Intervention
group**
N= 4

1st generation
Korean
American owned
carryouts (N=2)

African
American owned
carryouts (N=2)

**Comparison
group**
N= 4

1st generation
Korean
American owned
carryouts (N=2)

African
American owned
carryouts (N=2)

- **Matching variables : ethnicity, location, physical environment of the carry-out**



Intervention Phases

- Phase 1: Modified Menu Boards & Menu Labeling
- Phase 2: Healthy Sides & Beverages
- Phase 3: Affordable Healthy Combo Meals

Phase 1: Modified Menu Boards & Menu Labeling



Carry-Out Menu

Hot Sandwiches		Sub	Sand (Bun)
Cheese Steak		\$	\$
Chicken Cheese Steak	🌿	\$	\$
Mushroom Cheese Steak	🌿	\$	\$
Shrimp Cheese Steak		\$	\$
Sukiyaki		\$	\$
BLT		\$	\$
Grilled Cheese	🌿	\$	\$
Cheese Burger		\$	\$
Double Cheese Burger		\$	\$
Bacon Cheese Burger		\$	\$
Cheese Fish		\$	\$
Grilled Chicken	🌿	\$	\$
Lake Trout and Cheese		\$	\$
Grilled Turkey and Bacon		\$	\$

Chicken Wings				
3 Wings	\$	\$	\$	
4 Wings	\$	\$	\$	
5 Wings	\$	\$	\$	
6 Wings	\$	\$	\$	

Sides		Small	Large
French Fries	\$	\$	\$
Western Fries	\$	\$	\$
Onion Rings	\$	\$	\$
Mozarella Sticks (5pc.)	\$		
Mini Crab Sticks (each)	\$		

Salads		
Garden Salad	🌿	\$
Grilled Chicken Salad	🌿	\$
Chef Salad	🌿	\$

Fish		
Lake Trout		
Small	\$	
Large	\$	

Look for the leaf for a fresh and delicious choice!

Cold Cut Sandwich	Grilled Chicken Sandwich	Garden Salad
Try these fresh options!		

Cold Sandwiches		Sub	Sand (Bun)
Cold Cut	🌿	\$	\$
Italian Cold Cut		\$	\$
Turkey and Cheese		\$	\$
Turkey Bacon		\$	\$
Ham and Cheese		\$	\$
Chicken Salad	🌿	\$	\$
Chicken Bacon Salad		\$	\$
Tuna Salad	🌿	\$	\$
Turkey Club	🌿	\$	\$
Ham Club		\$	\$

Healthier options were highlighted with a leaf logo

Healthier menu options were also promoted with photos

Phase 2: Healthy Sides & Healthy Beverages

- Promoted currently available healthy sides & beverages
 - Collard greens, corn, salads, soups, water, diet soda, 100% fruit juice
- Introduced new healthy sides
 - Yogurt, fresh fruits, fruit cups, baked chips
- Provided initial stocks of healthy sides



Phase 3. Affordable Healthy Combo Meals

- Improving food preparation methods

- Provide an indoor grill to implement grilled chicken



- Healthy combo meal promotion with price reduction

- Owners agreed to reduce up to \$2.50 per healthy combo meal without compensation
- Combo meal with free baked chips



Point-of-Purchase Posters & Visual Materials

Shareef's Grill
 1234 West Franklin Street
 Baltimore, MD 21223
 (443) 822-9939
 All Halal Products

Platters w/ Rice & Veggies
 Small and medium platters, extra
 sauce & toppings, choice of bread roll

Beef, Chicken, Chicken	
Pepperoni, Grilled Turkey	\$12.99
Beef	\$12.99
Jackie Longshore Beers	\$13.99
Hot Wings	\$8.99

Fried Platters

Fish and Chips	\$8.99
Chicken Tenders and Fries	\$8.99
Wings and Fries	\$8.99

Wraps
 Prices are quoted based on extra
 sauce & toppings, choice of bread roll

Beef, Chicken, Chicken, Turkey	
Pepperoni, Grilled Turkey	\$8.99
Chicken Salad or Caesar Salad	\$8.99
Beef	\$11.99
Jackie Longshore Beers	\$13.99
Hot Wings	\$8.99

Hot Dogs

Ketchup Beef	\$1.99
Hot Dog	\$1.99
Hot Turkey	\$1.99

Soup of the Day

Small \$1.99	Large \$2.99
Chicken Noodle, Hearty Crab, Lamb, Beef and Lent, Cream of Broccoli	

Sides

French Fries	\$1.99
Grilled Potato	\$4 \$1.99
Rice	\$4 \$1.99

Desserts

Small Potato Chips Fries	\$1.99
Homemade Cookies	\$1.99
Candy Cane	\$1.99

Sandwiches

Grilled Burger - Turkey or Beef	\$8.99
Salad - Turkey or Chicken	\$11.99
Beef	\$8.99
Chicken	\$8.99
Grilled Chicken	\$8.99
Turkey Club	\$8.99
Turkey Shrimp Club	\$8.99
BLT	\$4.99
Hot Wings	\$8.99

Look for the leaf for a fresh and delicious choice!

Hours of Operation
 Monday - Saturday 10:00am - 10:00pm
 Sunday 11:00am - 10:00pm

Participating in **Baltimore Healthy Carryouts**

Participating in

Baltimore *Healthy* Carryouts

Providing Fresh and Delicious Menu Choices!



Fill up while BOOSTING your ENERGY levels.
 TRY A **Fresh Combo Meal!**



DO THE RIGHT THING.



Fresh Combo Meals
 Good for your body and mind.

Do the right thing!




Proud to be a



Look for the Leaf for foods that are lower in fat or sugar!

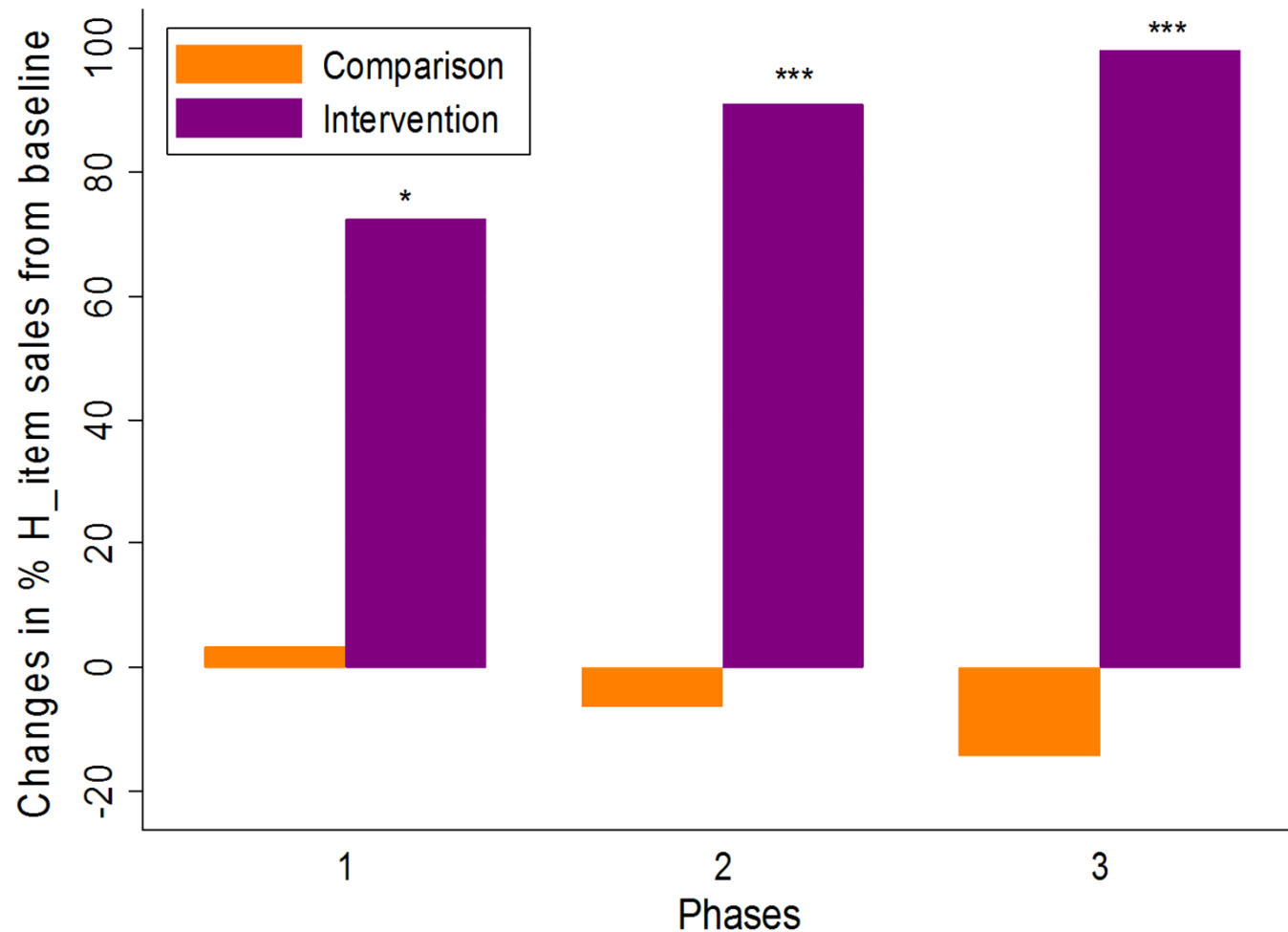


Evaluation Method: Sales

- Weekly sales receipt collection (February – September 2011, 32 weeks)
 - Trained data collectors visited carryouts every week
 - A total of 186,654 sales receipts were collected

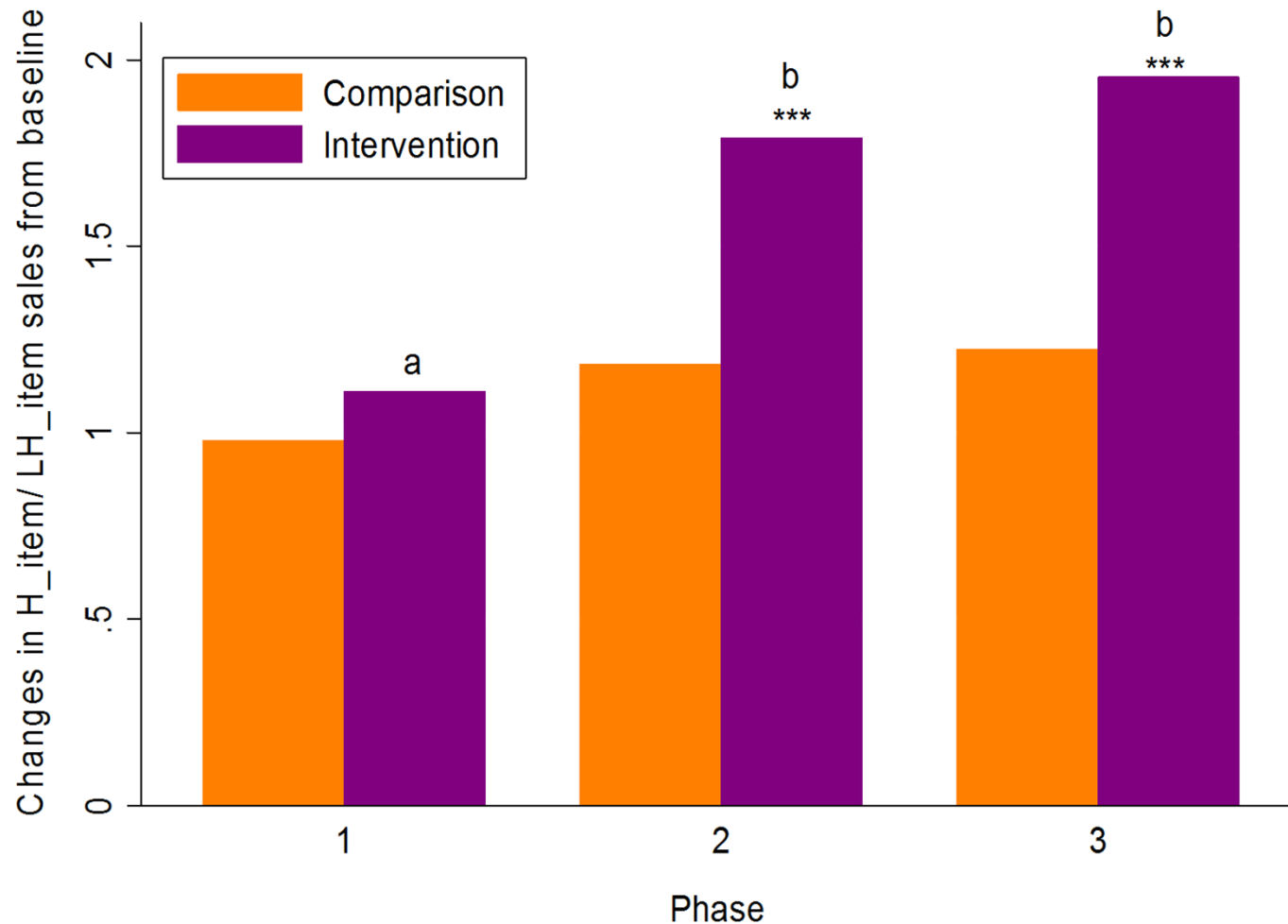


Changes in percentage of healthy food sales from baseline by intervention phases



$p < 0.05$, *** < 0.001 , Independent t-test comparing Intervention vs. Comparison
H_item: Healthy item sales

Changes in the ratio of healthy to less-healthy items sales from baseline

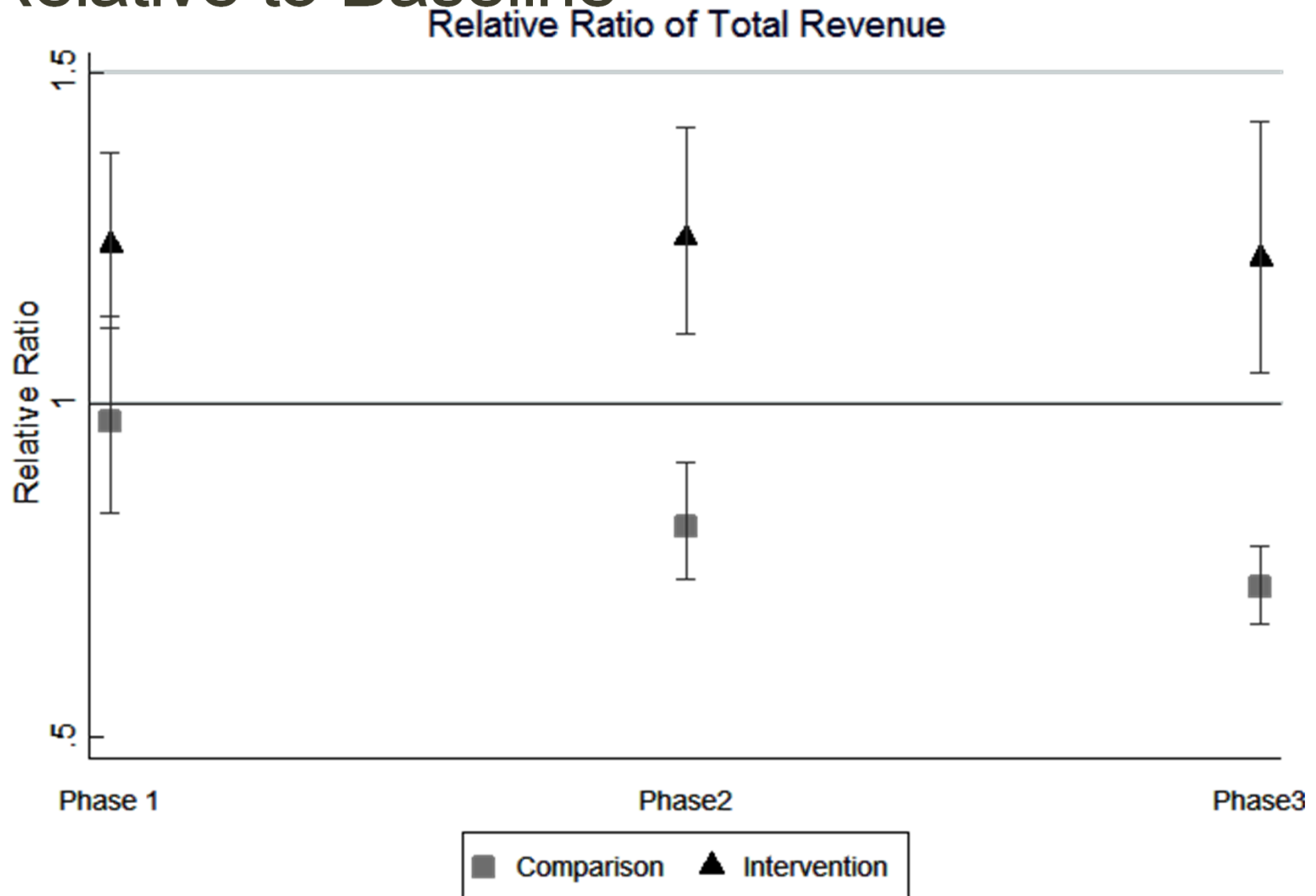


* $p < 0.05$, *** $p < 0.001$ comparing intervention to comparison, independent t-test

^{abc}Different lettered superscripts indicate significant differences ($p < 0.05$) across intervention phases

H_item: Healthy item sales, *LH_item*: Less-healthy item sales

Ratio of Gross Revenue at Each Phase Relative to Baseline



Baltimore's Famous Healthy Choice



Caribbean Chicken



Chicken Leg w/ Salad & Rice



Rotisserie Chicken



Collard Greens



Look for the leaf
for a fresh choice



Dinner Plates

Choice of 2 side orders

1. 1/2 Chicken _____
2. Breast _____
3. Leg _____
4. Wing _____
5. Teriyaki Chicken _____
6. Meat Loaf _____
7. Roast Beef _____
8. Spare Rib _____
9. Pork Chop _____
1 piece dinner _____
2 pieces dinner _____
10. Turkey Wing _____
11. Caribbean Chicken _____
12. Roast Ham _____
13. Chicken Steak _____

Fresh Choice!

Rotisserie Chicken

- Whole Chicken _____
- 1/2 Chicken _____
- Breast _____
- Quarter Leg _____
- 4 Wings _____
- 4 Turkey Wings _____

Side Orders

- | | S | M | L |
|-------------------|-------|-------|-------|
| Collard Greens | _____ | _____ | _____ |
| Mashed Potatoes | _____ | _____ | _____ |
| Rice | _____ | _____ | _____ |
| Macaroni & Cheese | _____ | _____ | _____ |
| Sweet Potato | _____ | _____ | _____ |
| Corn | _____ | _____ | _____ |
| Rice Pudding | _____ | _____ | _____ |
| Bread Pudding | _____ | _____ | _____ |
| Cabbage | _____ | _____ | _____ |
| Salads | _____ | _____ | _____ |

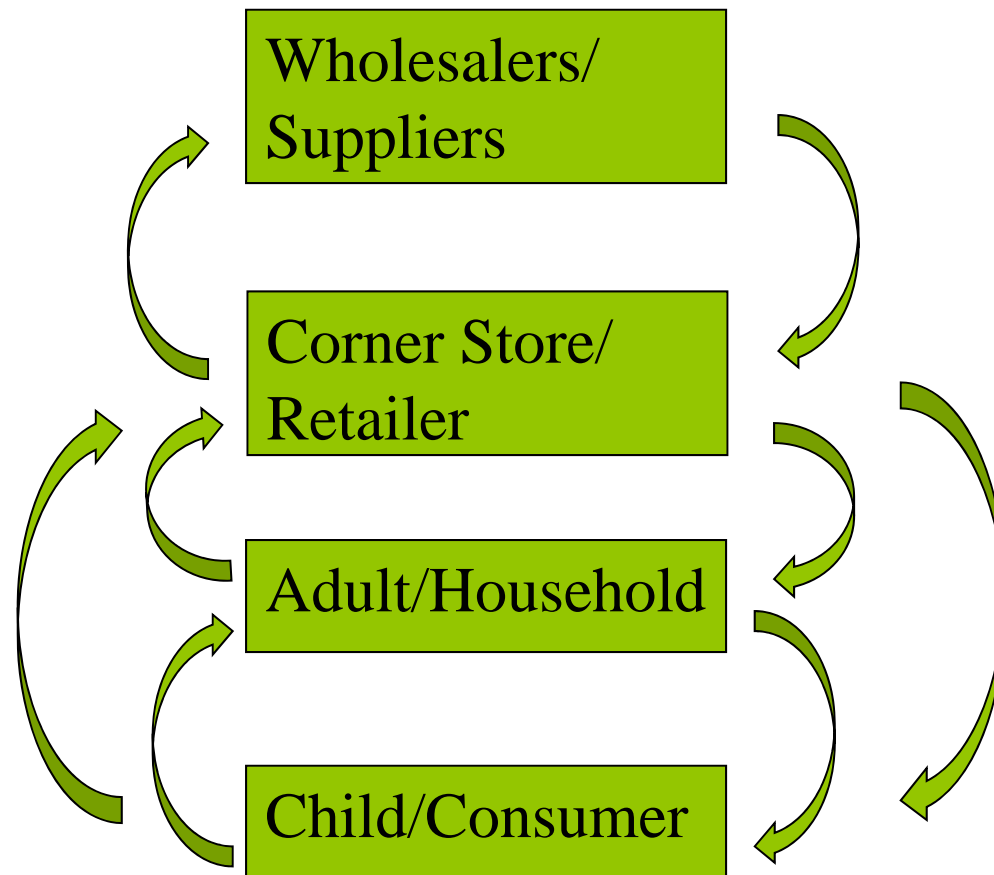




Lessons Learned

- We can get small carryouts to change, and show impact on sales and consumer food choices
- Sustainability of carryout interventions possible in Baltimore

Food Environment of Corner Stores: Supply-Demand Relationship



BUT: Can we intervene at wholesaler level? Can we influence price?

Part 3. B'More Healthy Retail Rewards



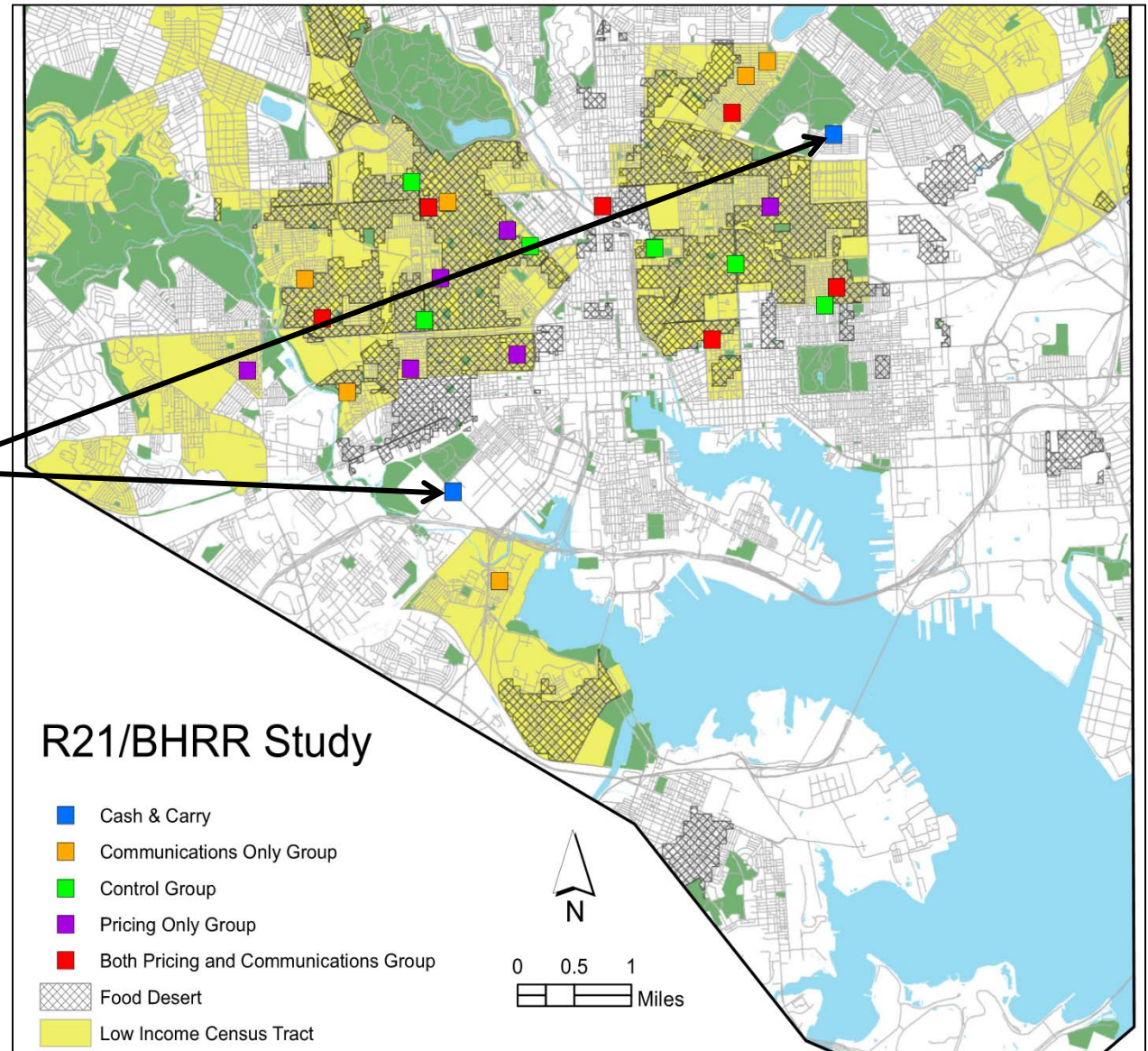
What is BHRR?

Study Design:

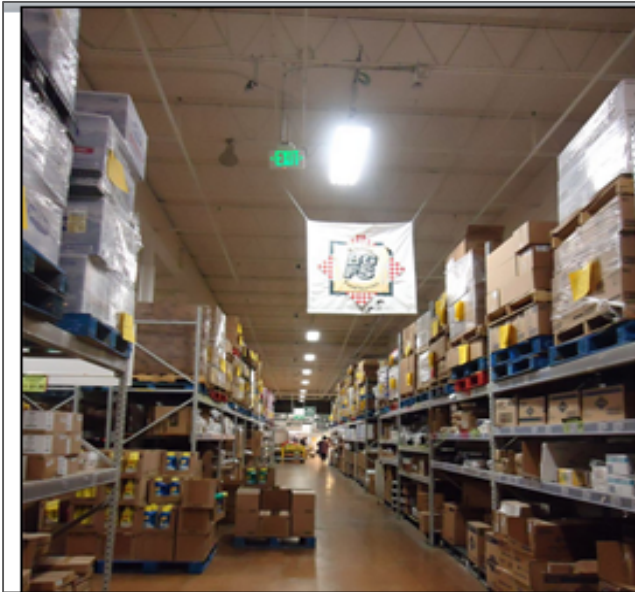
- 2 wholesale stores (1 company)
- 24 small corner stores:
 - 6 stores received a pricing incentive only
 - 6 stores received in-store communications only
 - 6 stores received both pricing & communications
 - 6 stores served as a control group (no intervention)
- 15 adult consumers per store (n=360)
- Healthier food and drinks were promoted in intervention stores and wholesalers for 6 months (Feb-Aug 2013).



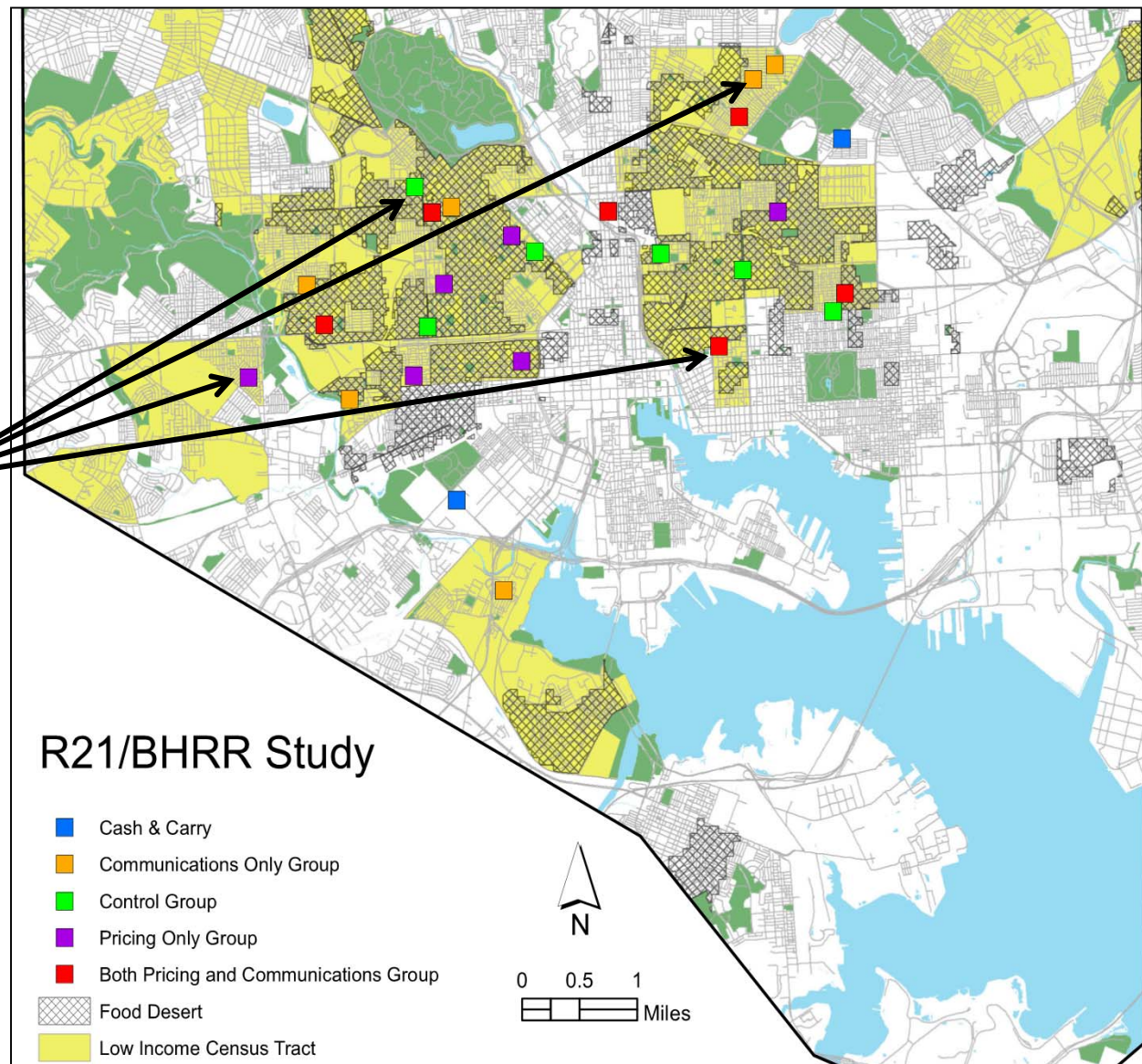
Wholesaler recruitment



Wholesaler recruitment



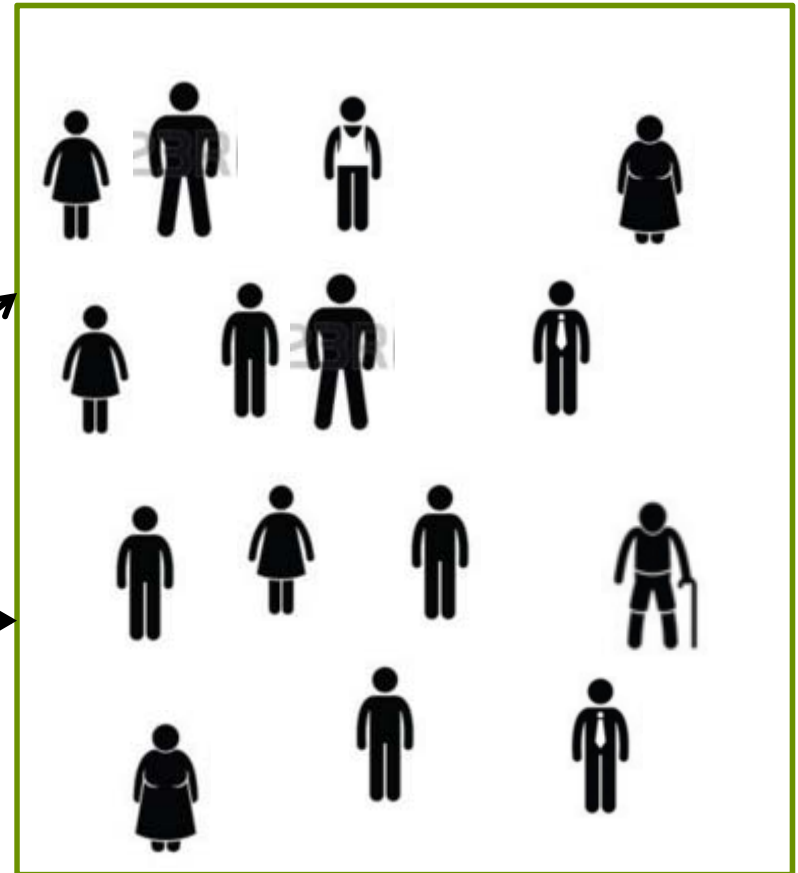
Store recruitment



Store recruitment



Customer recruitment



Source: <http://www.colinwhite.ca/confectionaries/>

Formative Research

Jan 2012 – Feb 2013	
Wholesaler	Customer
Direct in-store & participant observations (n=13)	In-depth interviews (n=9)
Intervention planning meetings (n=10)	Focus groups (n=2)
Store	
Direct in-store observations (n=17)	
In-depth interviews (n=17)	

Intervention - Promoted foods

Phase 1: Better Beverages



Phase 2: Healthier Essentials



Phase 3: Healthier Snacks



Intervention - Pricing Component

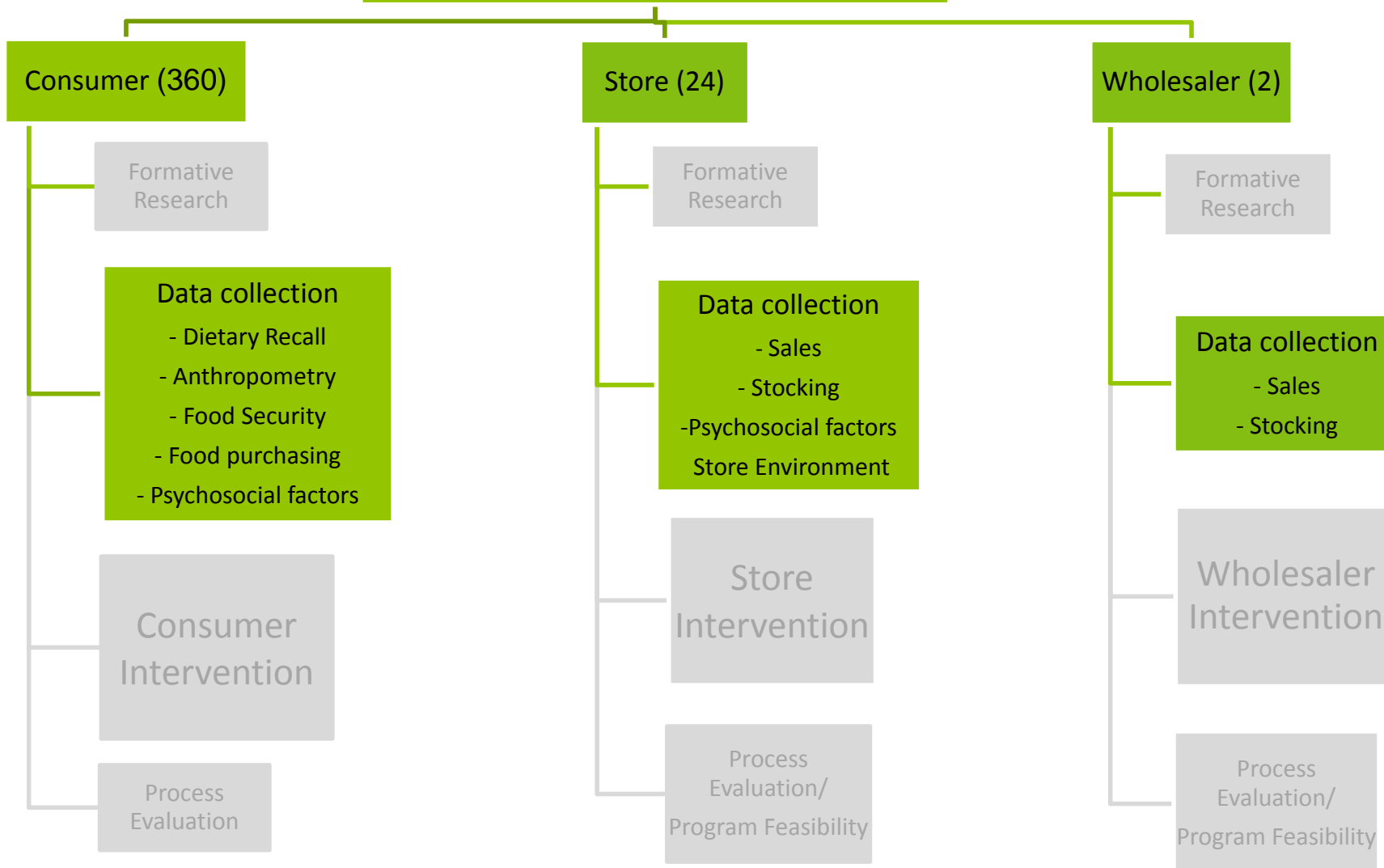
- BHRR grant funding used to cover reduced wholesale costs of promoted foods to the 12 pricing stores
- The amount of discount determined by wholesale & research staff and was based on:
 - Storeowner & consumer formative research
 - Price at competing wholesalers
 - Cost of unhealthier 'substitutes'
 - Discounts applied in prior pricing studies
- Stores received 10-30% discounts on promoted foods at checkout.
- In exchange for the discounts, pricing intervention stores agreed to:
 - Purchase promoted foods from B.Green and stock them in their stores
 - Pass the partial or full discount to their customers ("retail pass-through")

Intervention - Communications Component

- Storeowner Manual
- Door Signs
- Posters
- Handouts & Recipe Cards
- Giveaways
- Shelf Talkers & Labels
- Refrigerator or Freezer
- 'Interactive Sessions' (e.g., Educational Displays)

Data Collection

B'More Healthy Retail Rewards



Intervention Implementation

6 months, Feb-Aug 2013

Phase	Promoted Food/Beverage
Phase 1: Better Beverages Feb-Mar	1% Milk
	Deer Park Water
	Pepsi Next*
	Coke Zero
Phase 2: Healthy Essentials Apr-May	100% Whole Wheat Bread
	Chunk Lite Tuna in water (Bumblebee, Starkist)
	Albacore Tuna in Water (smaller size*)
	Bird's Eye Frozen Vegetables *
	Hanover Frozen Vegetables*
	Essential Everyday Frozen Vegetables
Phase 3: Low Fat Snack Attack! June-July	Bananas, Apples, Oranges
	Quaker Oats low fat granola bars*
	Utz Plain or BBQ Baked Potato Chips*
*New item	

Beverage Shelf Talkers & Posters



Replace one glass of fruit punch with water each day



to lose 12 1/2 pounds per year

Reward yourself, improve your health!



Phase 3 Shelf Talkers, Posters, & Refrigerators



What's in your SNACK?

Instead of these:

 1 Honey Bun Fat: 12 grams Carbs: 26 g Calories: 230	 2 Krimpet cakes Fat: 7 grams Carbs: 40 g Calories: 240	 1 bag of chips Fat: 9 grams Carbs: 14 g Calories: 150
---	--	---

Snack smart and try these:

 1 piece of fruit Fat: 0 grams Carbs: 11-25 g Calories: 45-95	 1 granola bar Fat: 3 g Carbs: 17 g Calories: 90	 1 bag of baked chips Fat: 1.5 grams Carbs: 23 g Calories: 110
--	---	---

Did You Know...?

- Eating fruits instead of high-fat, high-calorie snacks can help you lose weight.
- 100 extra calories a day can increase your weight by 30 pounds a year.
- If you ate a honeybun, a krimpet, and a bag of chips in one day, you would take in an extra 620 calories, which would take about 4 hours of walking to burn off for a 150 pound person.

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Intervention Implementation

'Interactive sessions'



Hypothesis 1

- **H1:** Intervention stores(owners) (n=18) would demonstrate significantly greater change (increase) in promoted food stocking, sales, and psychosocial factor scores compared to control stores from baseline to post-intervention.

Combined, P, C > Control

Hypothesis 2

- **H2:** Combined intervention stores(owners) (n=6) would see the greatest change (increase) compared to single intervention stores and control from baseline to post-intervention.

Combined > P, C, Control

Research Question

- Did pricing intervention storeowners (n=12) comply with the agreements of the performance-based allowance (stocking the item and retail pass-through)?

Store Impact Questionnaire (SIQ)

- Baseline data collection: Dec 2012-Jan 2013
- Post-intervention data collection: Nov 2013-Jan 2014
- SIQ is a pre-tested, standardized instrument used in prior Baltimore store-trials

Store Impact Questionnaire (118 questions)

Store and storeowner characteristics (9 questions)

Customer & employee attributes (7 questions)

Food acquisition & promotions (15 questions)

Food Stocking & Sales (27 questions)

Storeowner psychosocial factors (60 questions)

Background

Study Overview

Aim 1

Aim 2

Aim 3

Conclusions

Limitations & Strengths

Intervention impact on promoted food stocking

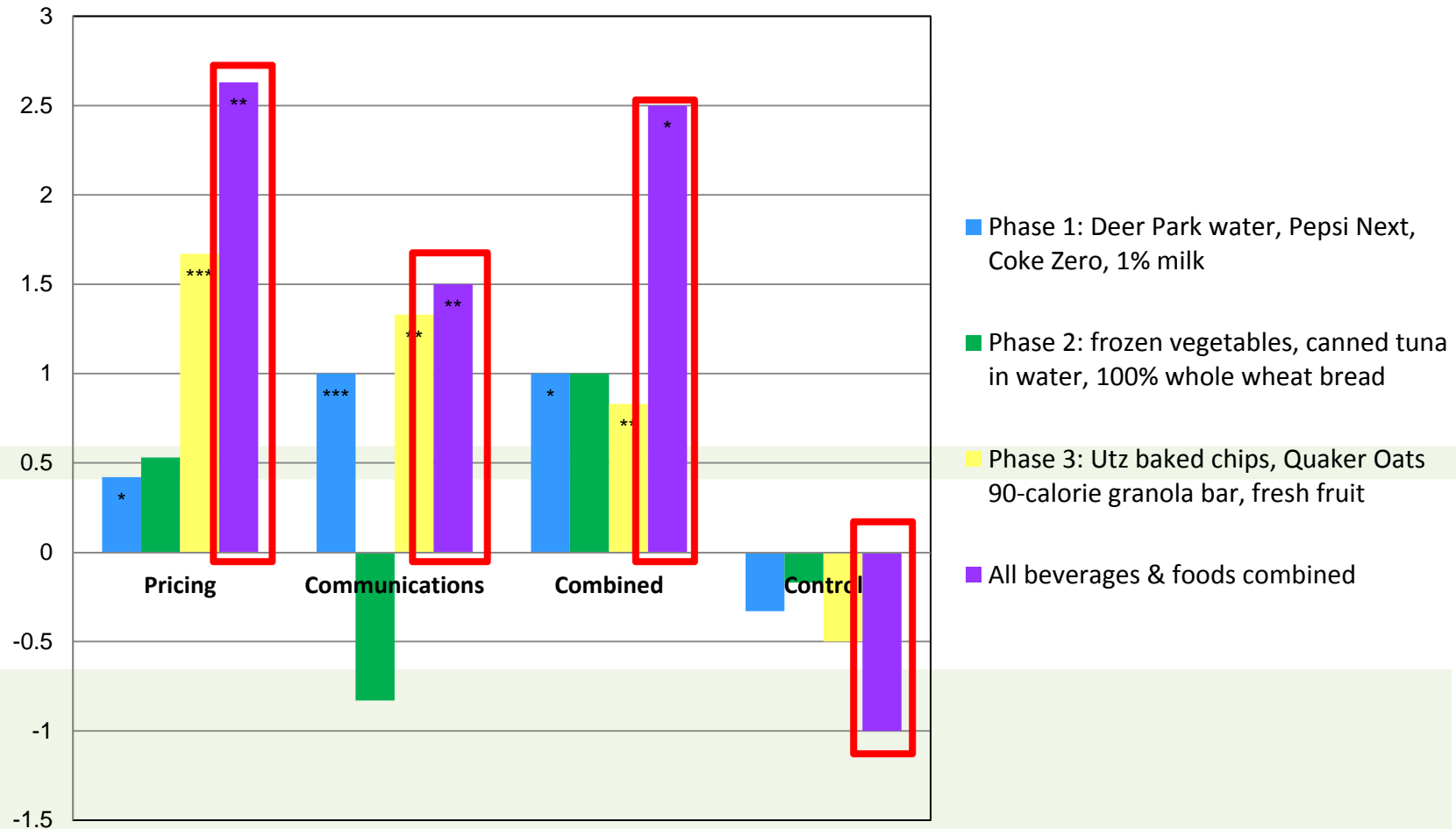
Measures	Pricing only			Communications only			Combined Pricing and Communications			Control	
	Baseline scores	Change from baseline	Diff. in Diff. ^a	Baseline scores	Change from baseline	Diff. in Diff. ^a	Baseline scores	Change from baseline	Diff. in Diff. ^a	Baseline scores	Change from baseline
Stocking score											
Phase 1 foods	1.2±0.4	0.4	0.8*	1.2±0.8	1.0	1.3***	1.7±0.8	1.0	1.3*	1.5±0.5	-0.3
Phase 2 foods	1.7±1.0	0.5	0.7	1.5±1.0	-0.8	-0.7	1.8±1.2	1.0	0.8	1.5±0.5	-0.2
Phase 3 foods	1.3±1.5	1.7	2.2***	1.0±1.1	1.3	1.8**	2.2±1.5	0.8	1.3**	1.2±0.8	-0.5
All foods combined	4.2±2.3	2.6	3.6**	3.7±1.6	1.5	2.5**	5.7±2.3	2.5	3.5*	4.2±1.6	-1.0

^a Treatment effect estimates were derived from difference-in-difference analyses using linear generalized estimating equations with independent correlation structure and robust standard errors (change in intervention scores from baseline – change in control scores from baseline)

*p≤0.05 **p≤0.01 ***p≤0.001

Intervention Impact on Promoted Food Stocking

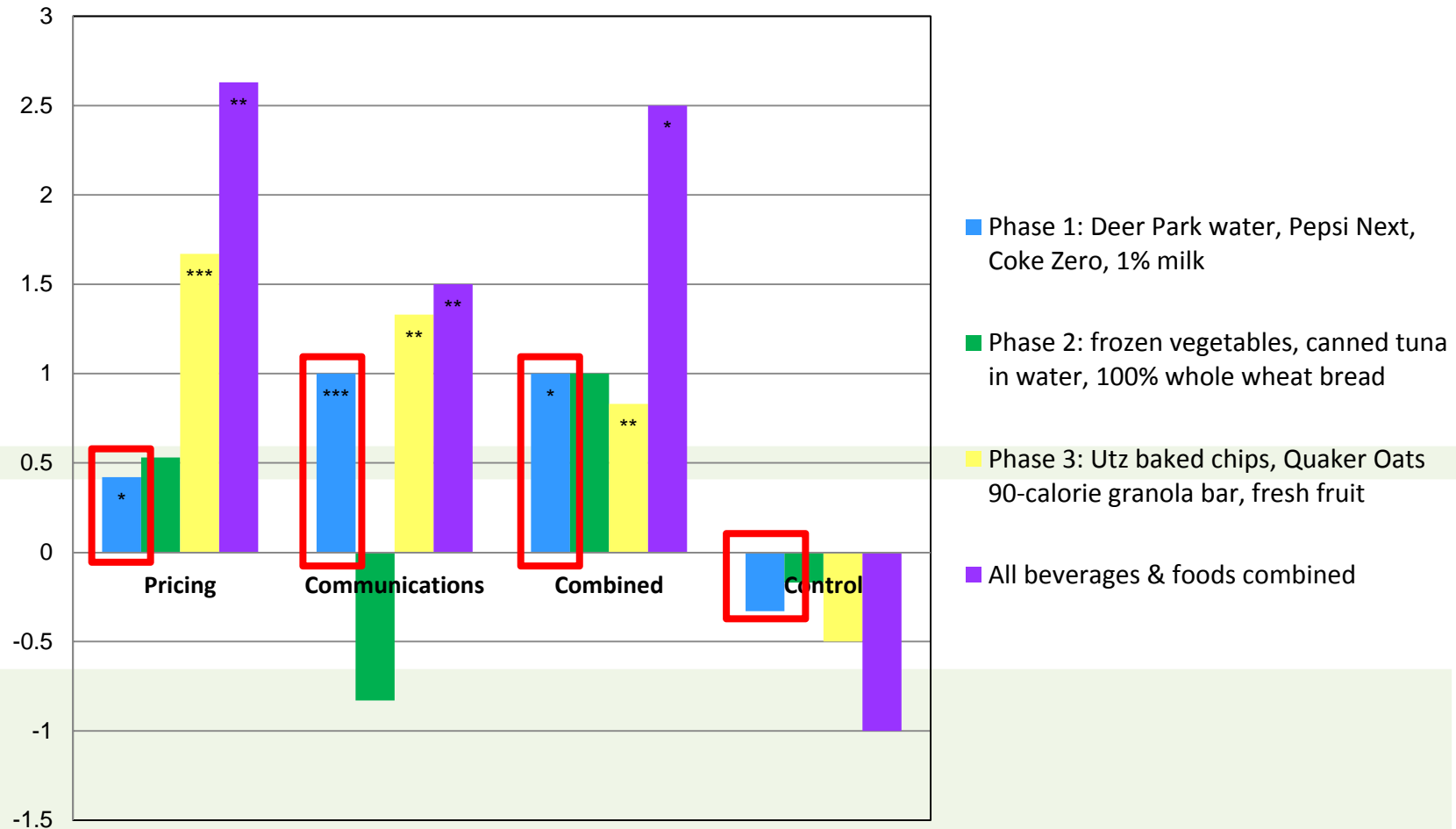
Change in promoted food stocking (score) from baseline



^a Treatment effect estimates were derived from difference-in-difference analyses using linear generalized estimating equations with independent correlation structure and robust standard errors (change in intervention scores from baseline – change in control scores from baseline) * $p \leq 0.05$ ** $p \leq 0.01$ *** $p \leq 0.001$

Intervention Impact on Promoted Food Stocking

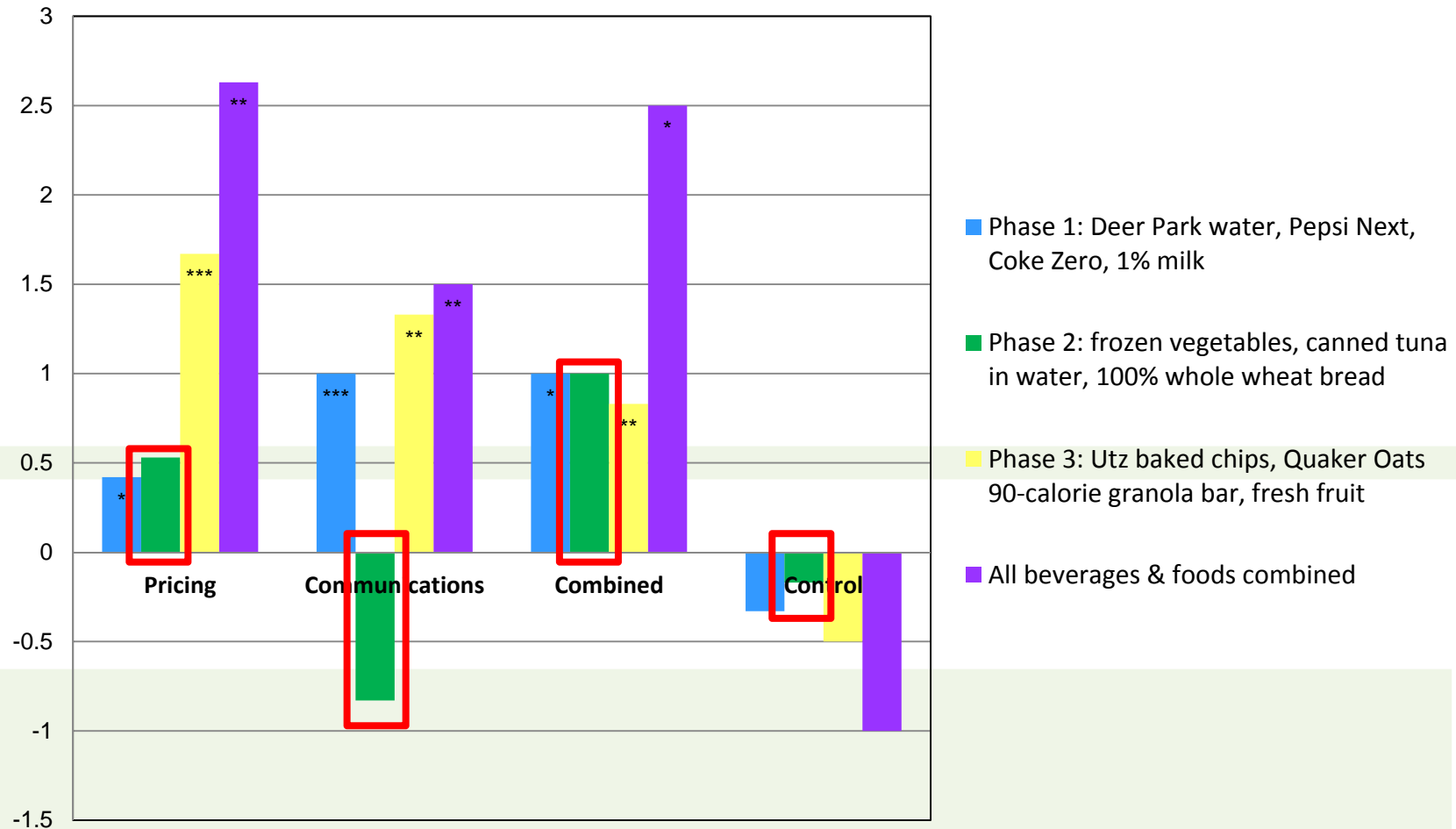
Change in promoted food stocking (score) from baseline



^a Treatment effect estimates were derived from difference-in-difference analyses using linear generalized estimating equations with independent correlation structure and robust standard errors (change in intervention scores from baseline – change in control scores from baseline) * $p \leq 0.05$
** $p \leq 0.01$ *** $p \leq 0.001$

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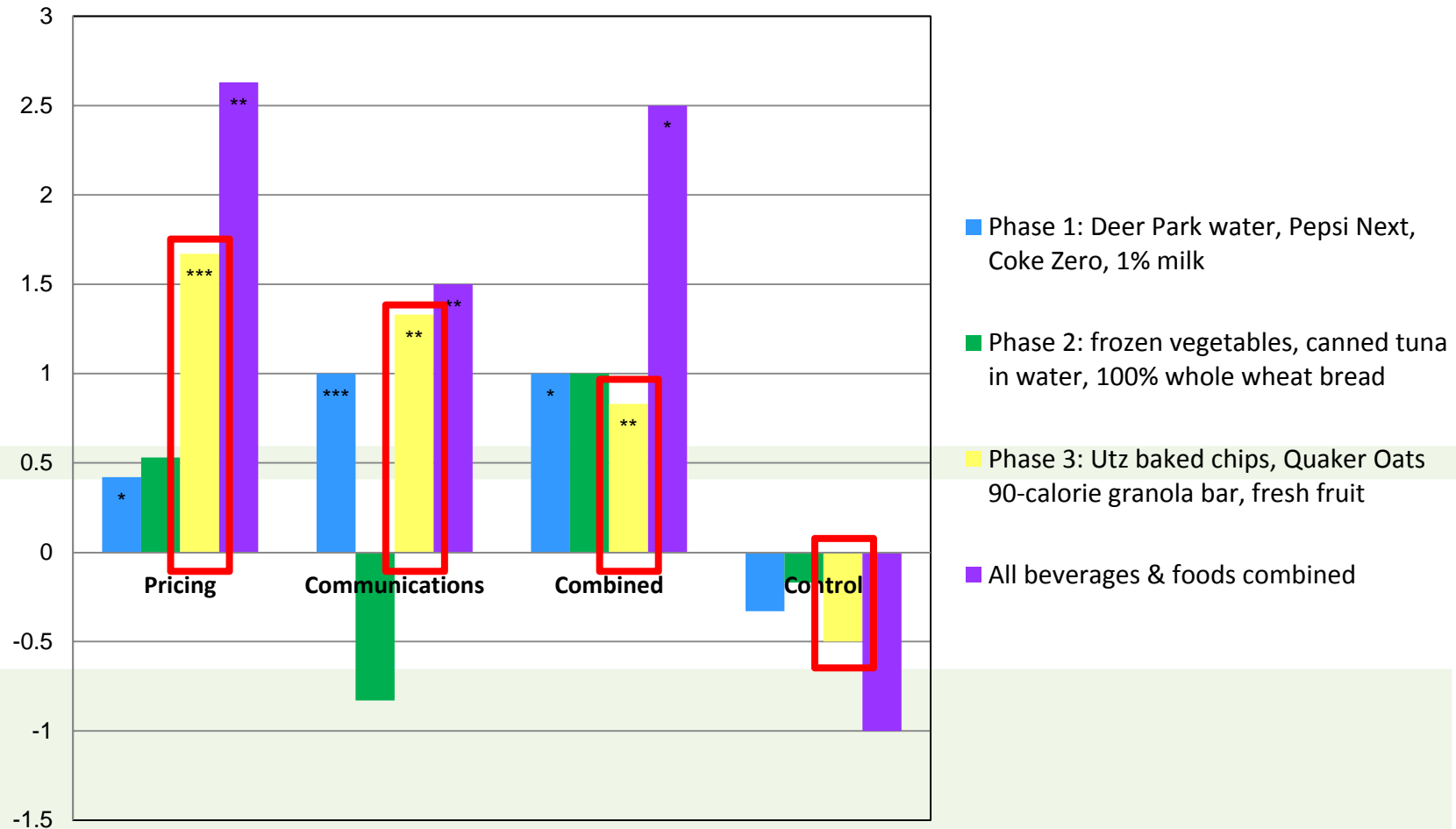
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Intervention Impact on Promoted Food Stocking

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Intervention impact on promoted food sales

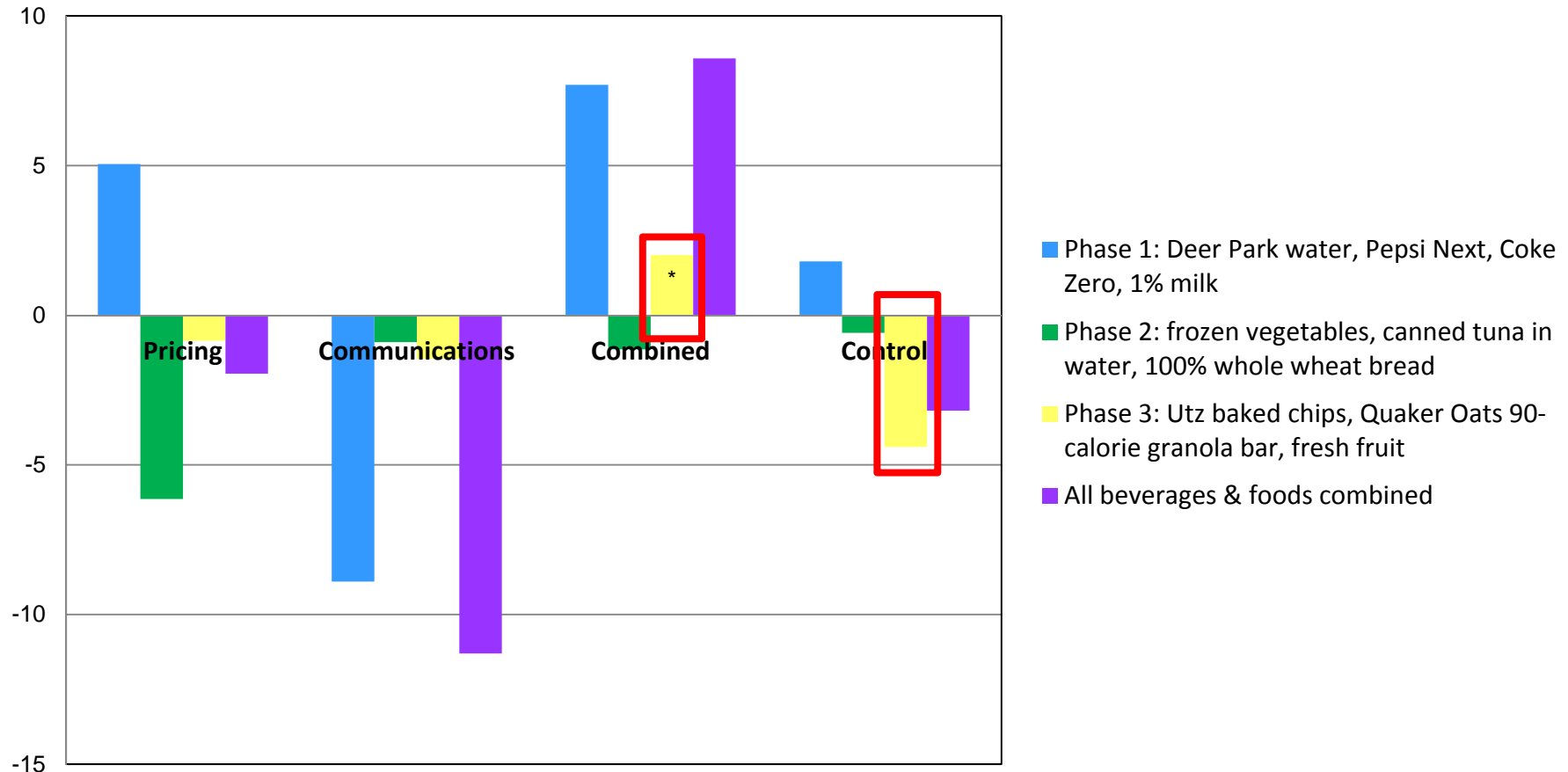
Measures	Pricing only			Communications only			Combined Pricing and Communications			Control	
	Baseline scores	Change from baseline	Diff. in Diff. ^a	Baseline scores	Change from baseline	Diff. in Diff. ^a	Baseline scores	Change from baseline	Diff. in Diff. ^a	Baseline scores	Change from baseline
Sales (units)											
Phase 1 foods	15.7±12.9	5.1	3.3	22.7±29.3	-8.9	-10.7	10.0±5.0	7.7	5.9	14.6±10.3	1.8
Phase 2 foods	8.3±12.1	-6.1	-5.6	1.4±2.1	-0.9	-0.3	4.3±4.2	-1.1	-0.6	2.5±2.9	-0.6
Phase 3 foods	10.6±18.8	-0.9	3.6	5.7±8.0	-1.5	2.9	12.9±13.9	2.0	6.4*	9.6±8.7	-4.4
All foods combined	34.5±31.8	-2.0	1.2	29.8±29.2	-11.3	-8.1	27.2±18.3	8.6	11.8	26.6±13.1	-3.2

^a Treatment effect estimates were derived from difference-in-difference analyses using linear generalized estimating equations with independent correlation structure and robust standard errors (change in intervention scores from baseline – change in control scores from baseline)

*p≤0.05 **p≤0.01 ***p≤0.001

Intervention Impact on Promoted Food Sales

Change in promoted food sales (units) from baseline



^a Treatment effect estimates were derived from difference-in-difference analyses using linear generalized estimating equations with independent correlation structure and robust standard errors (change in intervention scores from baseline – change in control scores from baseline)

* $p \leq 0.05$

Evidence of 'retail pass-through'

- **Research question:** Did pricing intervention storeowners (n=12) comply with the agreements of the performance-based allowance?

Two requirements:

1. stocking the item
2. retail pass-through

Evidence of 'retail pass-through'

- **Research question (secondary):** Did pricing intervention storeowners (n=12) comply with the agreements of the performance-based allowance?

Two requirements:

1. stocking the item **YES – stocking increased in all price stores**

Evidence of 'retail pass-through'

- **Research question (secondary):** Did pricing intervention storeowners (n=12) comply with the agreements of the performance-based allowance?

Two requirements:

1. stocking the item **YES – stocking increased in all price stores**
2. retail pass-through?

Evidence of retail pass-through

Measures	Pricing only			Communications only			Combined Pricing and Communications			Control	
	Baseline scores	Change from baseline	Diff. in Diff. ^a	Baseline scores	Change from baseline	Diff. in Diff. ^a	Baseline scores	Change from baseline	Diff. in Diff. ^a	Baseline scores	Change from baseline
Promoted food price (\$)											
Phase 1 foods	7.14±2.22	0.00	0.00	7.76±5.38	-0.55	-0.55	8.30±5.41	0.16	0.16	4.18±3.54	0.00
Phase 2 foods	7.64±3.33	0.16	0.09	4.27±2.53	0.02	-0.04	7.77±5.48	-0.40	-0.47*	4.56±3.06	0.07
Phase 3 foods	1.76±0.82	0.15	0.14	1.23±1.16	0.17	0.16	2.46±1.61	0.02	0.01	1.63±2.21	0.01
All foods combined	16.55±2.12	0.31	0.24	13.26±8.57	-0.35	-0.43	18.52±11.72	-0.22	-0.30	10.38±6.50	0.08

^a Treatment effect estimates were derived from difference-in-difference analyses using linear generalized estimating equations with independent correlation structure and robust standard errors (change in intervention scores from baseline – change in control scores from baseline)

[†]Baseline scores indicate the pooled prices of foods per phase of those foods that were stocked. If a food was not stocked at either time point, the price was given a value of 0 for both pre- and post- measurements so total change (Δ) was 0 for these foods. *p≤0.05

Evidence of 'retail pass-through'

- **Research question (secondary):** Did pricing intervention storeowners (n=12) comply with the agreements of the performance-based allowance?

Two requirements:

1. stocking the item YES – stocking increased in all price stores
2. retail pass-through?
 - **YES - For staple foods in the combined intervention group versus control**
 - **NO – For the other foods and intervention groups**

BHRR Summary

- All intervention groups saw significant increases in stocking of promoted foods compared to control.
- Statistically significant increases were found for healthier snack food sales in the combined intervention group compared to control.
- The increase in total snack sales was seen despite a lack of evidence of retail pass-through to customers in the combined group compared to control.

BHRR Conclusions

- While all intervention strategies motivated storeowners to stock, results suggest that combined approaches are more effective than either communications or pricing alone to increase sales.
- A combined strategy mimics the mechanism of an actual trade promotion, as food suppliers generally include structural and marketing materials to support the sales of their promoted products.²⁰
- Marketing research has found that trade promotions, even when pass-through does not occur, leads to an increase in sales.¹⁶

Summary

- Working with small food sources to increase access to healthier foods and beverages is feasible
- Can lead to increased stocking and sales of these foods by small food sources
- Can lead to increased purchasing and consumption of these foods by consumers
- Important to combine environmental (supply) and educational (demand) strategies
- Feasible and important to work with wholesalers and distributors



Questions?

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Thank you!

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Analysis

G1 = pricing only group (0,1)

G2 = communications only group (0,1)

G3 = combined group (0,1)

t = time (0,1)

GEE model

$$E[\text{stocking score}] = \beta_0 + \beta_1(t) + \beta_2(G1) + \beta_3(G2) + \beta_4(G3) + \beta_5(G1*t) + \beta_6(G2*t) + \beta_7(G3*t) + \epsilon$$

Main outcome: Intervention effects

β_5 = Difference in the Δ between pricing only and control stocking score from baseline to post-intervention (diff-in-diff)

β_6 = Difference in the Δ between communications only and control stocking score from baseline to post-intervention (diff-in-diff)

β_7 = Difference in the Δ between combined and control stocking score from baseline to post-intervention (diff-in-diff)