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

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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

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

Data Source: Kelley E. Borradaile, Sandy Sherman, Stephanie S. Vander Veur, Tara McCoy, Brianna Sandoval, Joan Nachmani, Allison Karpy, and Gary D. Foster

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 stores\textsuperscript{11}
  - 652 ‘corner’ stores
- 52 supermarkets\textsuperscript{11}
- Small stores are common food sources for urban residents\textsuperscript{12}
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)

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

![Image: Increasing Demand: Visual Materials]

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

**Quench Your Thirst with Water**

- **Save Money, Drink Water!**
  - 33-44 cents per quart
  - 20 cents per quart

**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

**DID YOU KNOW?**
- The Baltimore City Department of Social Services can help you get food stamps, temporary cash assistance, and medical care if you need it. Contact your local social services center. To find your local center, call 211.

![Image: How Many Calories Are You Drinking?]

- No Sugar → No Calories
- 9 lumps of sugar → 150 calories

**Baltimore Healthy Stores Q & A**
1. Aren't diet sodas only for people with diabetes or other health conditions?
2. Diet sodas are for anyone who wants to consume zero sugar or calories. This includes diabetics, but can include any health-conscious person.

**How much sugar is in your soft drink?**
- Water has zero calories and costs less than sodas.
- Why not go for the water when you're thirsty?

**Save Money & Calories by Choosing Water!**

**How Many Calories Are You Drinking?**
- No Sugar → No Calories
- 9 lumps of sugar → 150 calories
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

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Comparison</th>
<th>Significance</th>
<th>Intervention</th>
<th>Comparison</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline</td>
<td>5.9 ± 2.0</td>
<td>6.8 ± 1.6</td>
<td>NS</td>
<td>4.4 ± 1.8</td>
<td>5 ± 1.5</td>
</tr>
<tr>
<td>Post-phase</td>
<td>8.3 ± 1.0</td>
<td>6 ± 1.8</td>
<td>0.004</td>
<td>7.1 ± 2.0</td>
<td>5.8 ± 1.8</td>
</tr>
<tr>
<td>Post-Intervention</td>
<td>7 ± 2.0</td>
<td>5.5 ± 1.5</td>
<td>0.009</td>
<td>6.4 ± 1.8</td>
<td>4.7 ± 1.5</td>
</tr>
</tbody>
</table>

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

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

**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)
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

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

Participating in Baltimore Healthy Carryouts
Providing Fresh and Delicious Menu Choices!

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

Fresh Combo Meals
Good for your body and mind.
Do the right thing!
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

$\text{Comparison}$ $\text{Intervention}$

Changes in % $H_{\text{item}}$ sales from baseline

-20 0 20 40 60 80 100

1 2 3 Phases

p<0.05, **p<0.01, Independent t-test comparing Intervention vs. Comparison

$H_{\text{item}}$: 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

Relative Ratio of Total Revenue

- Phase 1
- Phase 2
- Phase 3

Comparison □  Intervention ▲
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

R21/BHRR Study

- Cash & Carry
- Communications Only Group
- Control Group
- Pricing Only Group
- Both Pricing and Communications Group

Food Desert
Low Income Census Tract
Store recruitment
Customer recruitment

Source: http://www.colinwhite.ca/confectionaries/
# Formative Research

**Jan 2012 – Feb 2013**

<table>
<thead>
<tr>
<th>Wholesaler</th>
<th>Customer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct in-store &amp; participant observations (n=13)</td>
<td>In-depth interviews (n=9)</td>
</tr>
<tr>
<td>Intervention planning meetings (n=10)</td>
<td>Focus groups (n=2)</td>
</tr>
</tbody>
</table>

**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

- **Consumer (360)**
  - Formative Research
    - Data collection
      - Dietary Recall
      - Anthropometry
      - Food Security
      - Food purchasing
      - Psychosocial factors
    - Consumer Intervention
    - Process Evaluation

- **Store (24)**
  - Formative Research
    - Data collection
      - Sales
      - Stocking
      - Psychosocial factors
      - Store Environment
    - Store Intervention
    - Process Evaluation/Program Feasibility

- **Wholesaler (2)**
  - Formative Research
  - Data collection
    - Sales
    - Stocking
  - Wholesaler Intervention
  - Process Evaluation/Program Feasibility
# Intervention Implementation

## 6 months, Feb-Aug 2013

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

*New item*
Phase 3 Shelf Talkers, Posters, & Refrigerators

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

![Image of a snack advertisement]

**What's in your SNACK?**

Instead of these:
- 1 Honey Bun
  - Fat: 12 grams
  - Carbs: 26 g
  - Calories: 250
- 2 Krumpet cakes
  - Fat: 7 grams
  - Carbs: 69 g
  - Calories: 140
- 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: 13 g
  - Calories: 110

**Did You Know?**
- Eating fruits instead of high-calorie snacks can help you lose weight.
- Starches like a day and increase your weight by 300 pounds or more.
- If you add 1 honey bun, a Krumpet, and a hop into this day, you would lose it on 600 calories, which would be enough to make up for a 300 pound person.
Intervention Implementation

‘Interactive sessions’

Why swap soda for water?

Knew Healthy gives you 5 reasons to choose water over soda. Check it out!

1. Several studies showed that people who swapped out their daily soda for calorie-free drinks showed weight loss.
2. Water hydrates our body and also flushes toxins away.
3. Drinking water throughout the day, clears your skin, and have a good impact in your mood.
4. Regular water consumption can prevent constipation, as it prevents bowel disorders.
5. Soda packed in sugar and leaves you dizzy and bloated from drinking.

Treat soda as a treat and treat water as an essential.

Rethink your drink

Do you know how much sugar you consume in your everyday beverage? You had better rethink before you drink!

Limit your added sugar consumption to 50g in total for women and 90g in total for men.

Reward yourself, improve your health!
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.

  \[ \text{Combined} > P, C, \text{Control} \]
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

<table>
<thead>
<tr>
<th>Store Impact Questionnaire (118 questions)</th>
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</thead>
<tbody>
<tr>
<td>Store and storeowner characteristics (9 questions)</td>
</tr>
<tr>
<td>Customer &amp; employee attributes (7 questions)</td>
</tr>
<tr>
<td>Food acquisition &amp; promotions (15 questions)</td>
</tr>
<tr>
<td>Food Stocking &amp; Sales (27 questions)</td>
</tr>
<tr>
<td>Storeowner psychosocial factors (60 questions)</td>
</tr>
</tbody>
</table>

Background | Study Overview | Aim 1 | Aim 2 | Aim 3 | Conclusions | Limitations & Strengths
# Intervention impact on promoted food stocking

<table>
<thead>
<tr>
<th>Measures</th>
<th>Pricing only</th>
<th>Communications only</th>
<th>Combined Pricing and Communications</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Baseline scores</td>
<td>Change from baseline</td>
<td>Diff. in Diff.(^a)</td>
<td>Baseline scores</td>
</tr>
<tr>
<td>Stocking score</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phase 1 foods</td>
<td>1.2±0.4</td>
<td>0.4</td>
<td>0.8*</td>
<td>1.2±0.8</td>
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<tr>
<td>Phase 2 foods</td>
<td>1.7±1.0</td>
<td>0.5</td>
<td>0.7</td>
<td>1.5±1.0</td>
</tr>
<tr>
<td>Phase 3 foods</td>
<td>1.3±1.5</td>
<td>1.7</td>
<td>2.2***</td>
<td>1.0±1.1</td>
</tr>
<tr>
<td>All foods combined</td>
<td>4.2±2.3</td>
<td>2.6</td>
<td>3.6**</td>
<td>3.7±1.6</td>
</tr>
</tbody>
</table>

\(^a\) 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)

\(*p \leq 0.05 \quad **p \leq 0.01 \quad ***p \leq 0.001\)
Intervention Impact on Promoted Food Stocking

Change in promoted food stocking (score) from baseline

Phase 1: Deer Park water, Pepsi Next, Coke Zero, 1% milk
Phase 2: frozen vegetables, canned tuna in water, 100% whole wheat bread
Phase 3: Utz baked chips, Quaker Oats 90-calorie granola bar, fresh fruit
All beverages & foods combined

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
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- **Communications**
  - All beverages & foods combined

- **Combined**

- **Control**

---

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- **Combined**

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### Intervention impact on promoted food sales

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<tr>
<td></td>
<td>Baseline scores</td>
<td>Change from baseline</td>
<td>Diff. in Diff. a</td>
<td>Baseline scores</td>
</tr>
<tr>
<td>Sales (units)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phase 1 foods</td>
<td>15.7±12.9</td>
<td>5.1</td>
<td>3.3</td>
<td>22.7±29.3</td>
</tr>
<tr>
<td>Phase 2 foods</td>
<td>8.3±12.1</td>
<td>-6.1</td>
<td>-5.6</td>
<td>1.4±2.1</td>
</tr>
<tr>
<td>Phase 3 foods</td>
<td>10.6±18.8</td>
<td>-0.9</td>
<td>3.6</td>
<td>5.7±8.0</td>
</tr>
<tr>
<td>All foods combined</td>
<td>34.5±31.8</td>
<td>-2.0</td>
<td>1.2</td>
<td>29.8±29.2</td>
</tr>
</tbody>
</table>

*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

- 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

<table>
<thead>
<tr>
<th>Measures</th>
<th>Pricing only</th>
<th>Communications only</th>
<th>Combined Pricing and Communications</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Baseline scores</td>
<td>Change from baseline</td>
<td>Diff. in Diff.a</td>
<td>Baseline scores</td>
</tr>
<tr>
<td><strong>Promoted food price ($)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phase 1 foods</td>
<td>7.14±2.22</td>
<td>0.00</td>
<td>0.00</td>
<td>7.76±5.38</td>
</tr>
<tr>
<td>Phase 2 foods</td>
<td>7.64±3.33</td>
<td>0.16</td>
<td>0.09</td>
<td>4.27±2.53</td>
</tr>
<tr>
<td>Phase 3 foods</td>
<td>1.76±0.82</td>
<td>0.15</td>
<td>0.14</td>
<td>1.23±1.16</td>
</tr>
<tr>
<td>All foods combined</td>
<td>16.55±2.12</td>
<td>0.31</td>
<td>0.24</td>
<td>13.26±8.57</td>
</tr>
</tbody>
</table>

^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)

^iBaseline 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.\(^\text{20}\)

• Marketing research has found that trade promotions, even when pass-through does not occur, leads to an increase in sales.\(^\text{16}\)
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**

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

**Main outcome: Intervention effects**

- \( \beta_5 \) = Difference in the \( \Delta \) between pricing only and control stocking score from baseline to post-intervention (diff-in-diff)
- \( \beta_6 \) = Difference in the \( \Delta \) between communications only and control stocking score from baseline to post-intervention (diff-in-diff)
- \( \beta_7 \) = Difference in the \( \Delta \) between combined and control stocking score from baseline to post-intervention (diff-in-diff)