

Preventing Chronic Disease in Diverse Communities: Looking Back, Looking Forward

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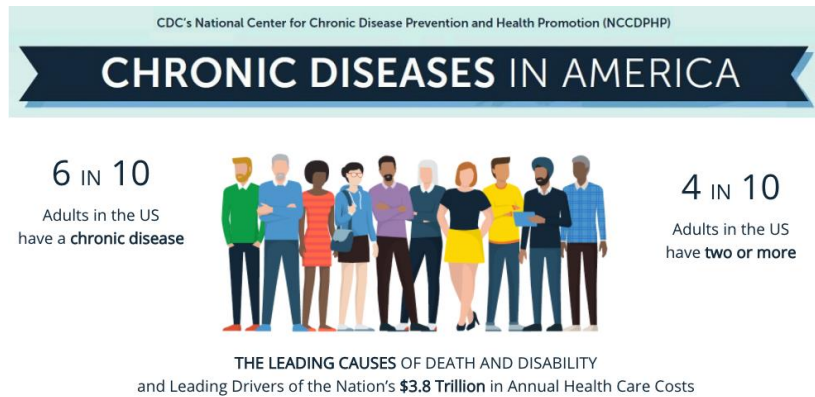
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Topics

- The Problem
- The Menu
- Looking back
 - Changing the Urban Food Environment
 - Changing the Rural Food Environment
- Looking forward

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The Problem



- Rates are higher in:
 - Disadvantaged communities
 - Rural populations (limited access to healthy food, physical activity opportunities, and health care)
 - Urban populations (similarly, low-income neighborhoods also have limited access)

Chronic Disease
Prevention
Interventions: The
Menu of Approaches

Educational, Environmental and Policy Approaches

- Educational interventions assist people in making choices among available options

Examples of (Primarily) Educational Approaches

- Diabetes Prevention Program
- Project Challenge
- Cooking Matters
- Mind, Exercise, Nutrition...Do it! (MEND) program
- SNAP-ED
- Many others...

What are some key things learned?

- Knowledge only education is ineffective – need to build skills, awareness, self-efficacy, etc.
- Importance of formative work and community engagement → what's salient and important, how to communicate, who should be communicators, etc.
- Reinforcement via multiple media
- Need to build in social support (peer mentoring)

Educational, Environmental and Policy Approaches

- Educational interventions assist people in making choices among available options
- Environmental interventions change the available options (access)

Approaches for Preventing Chronic Disease: Change the Food Environment by Improving Access

- Availability
- Price
- Ease of obtaining
 - Transportation: Getting to the venue (store)
 - Location: Finding food once you get to store
 - Signage/marketing: To help in finding food within the store

Change access to foods within neighborhoods and communities by creating new institutions



BUILDING NEW
SUPERMARKETS



DEVELOPING
FARMER'S MARKETS



IMPROVING
TRANSPORTATION



INTRODUCING
URBAN FARMS

Change access to foods within existing retail food stores and prepared food sources



Educational, Environmental and Policy Approaches

- Educational interventions assist people in making choices among available options
- Environmental interventions change the available options (access)
- Educational and environmental interventions work well in combination (supply-demand) and can be supported by policy

Approaches
for
preventing
chronic
disease:
Policies to
improve the
food
environment

Changes to the WIC package

Staple food ordinances

SSB taxes

Junk food taxes

Urban farm tax credits

Re-zoning

Menu labeling

Worksite wellness

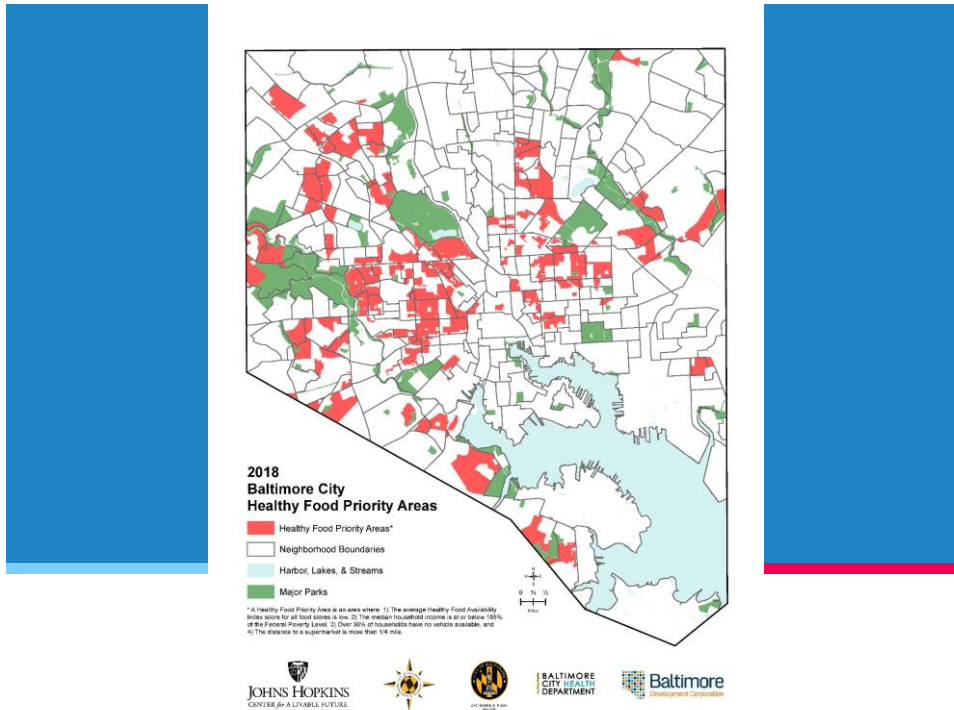
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My understanding so far...

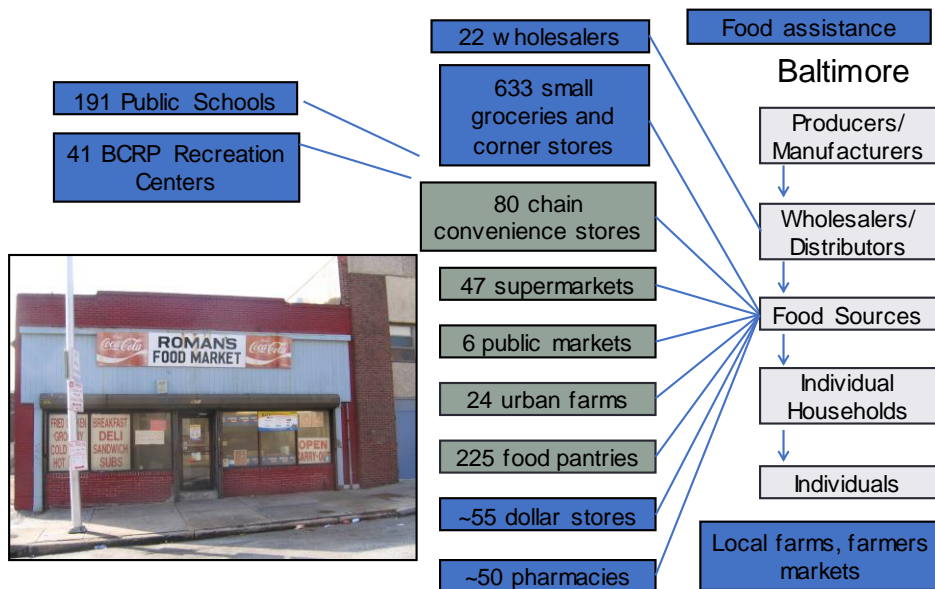
- There is no “silver bullet” – no single solution from the menu
- We need to be looking for the best combination of effective solutions
- Parsimonious, effective, multilevel (i.e., combining education, environmental change, policy)
- Best combination will likely differ from setting to setting

Our Work Combining Educational, Environmental and Policy Approaches

Urban Settings



Baltimore's Food System



Corner Stores



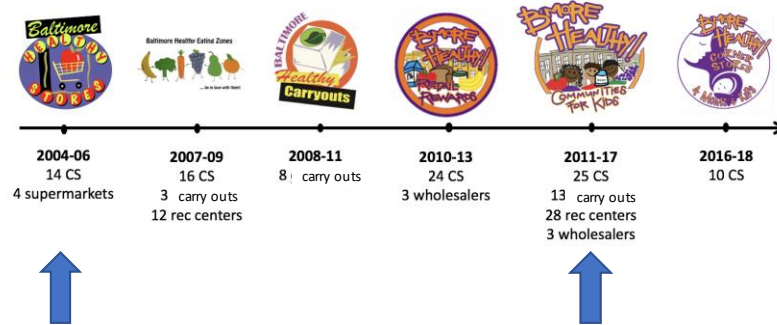
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What was our Initial Approach?

- Advantages of working in existing food sources:
 - Hundreds of small food sources exist
 - Already operating in the lowest income areas of the city
 - Open 5-7 days/week, 12+ hours/day
 - Visited “naturally” often daily by community members

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Our studies to improve the food environment in Baltimore:

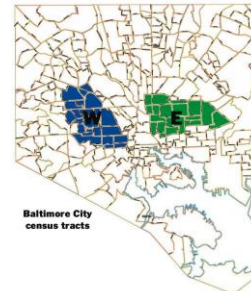


CS=corner stores

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Working in Small Stores Baltimore Healthy Stores

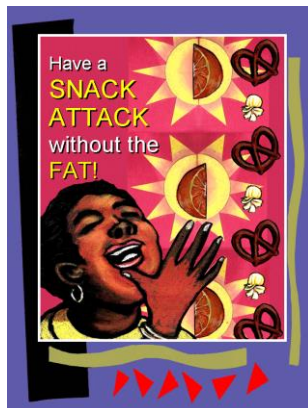
- East Baltimore: intervention area
- West Baltimore: comparison area
- Store sample
 - 2 supermarkets/area
 - 6-7 small stores/area
- Consumer sample
 - ~87 respondents/area



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

Impact on Stocking and Sales

	Stocking Score (range 0-10)			Sales Score (range 0-10)		
	Intervention	Comparison	Signif	Intervention	Comparison	Signif
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

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Consumer Results

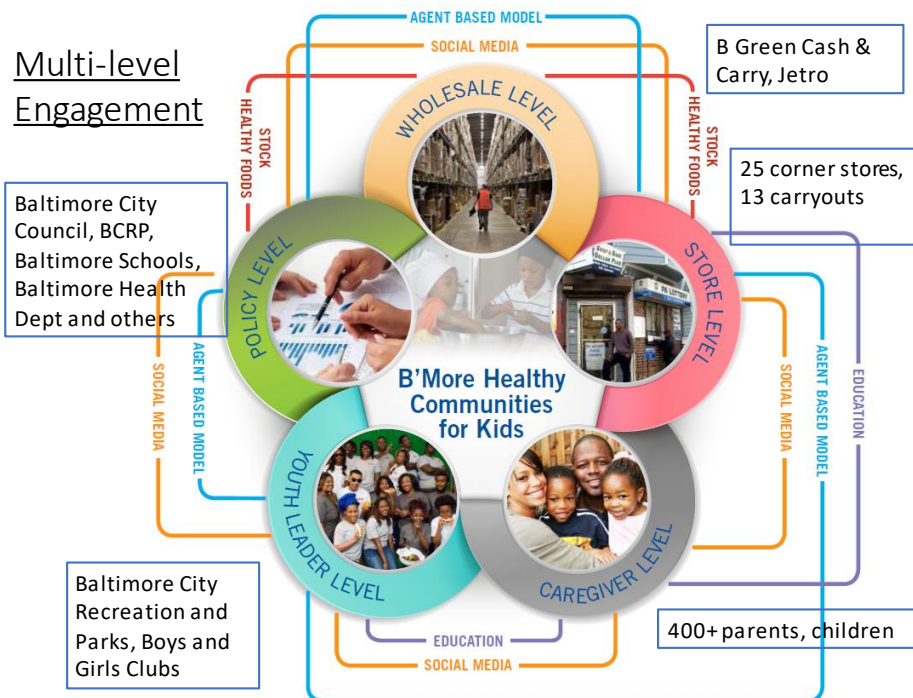
- N=85 respondents measured pre and post
- After adjustment for baseline value, age, sex and SES:
 - Significant impact on food preparation methods and frequency of purchase of promoted foods
 - Positive trend for healthy food intentions

Gittelsohn et al, Health Education and Behavior, 2009

B'More Healthy Communities for Kids



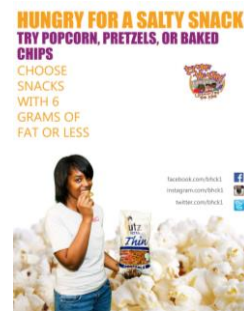
- To implement a multicomponent community-based obesity prevention program, operating at multiple levels of the Baltimore City food system
- To increase affordability, availability, purchase, and consumption of healthy foods in 14 low-income minority neighborhoods (with 14 comparison)
- To evaluate impact on multiple levels: healthy food pricing and availability; adult food purchasing, preparation and obesity; and child obesity, diet and psychosocial factors



Phase 1: Smart Drinks



Phase 2: Smart Snacks



Phase 3: Smart Cooking



Features

- Increased stocks of healthy foods
- In-store interactive sessions
- Shelf labels, posters and other visual materials
- Video trainings for store owners
- Incentives for store owners
 - Wholesaler gift cards
 - Tiered incentive program



Carryouts

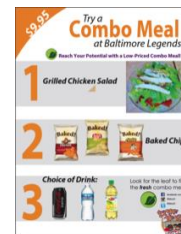
Phase 1: Menu Redesign



Phase 2: Healthy Drinks & Sides



Phase 3: Healthy Combo Meals



Wholesalers

- Developed stocking sheets with wholesalers' managers
- Advertise healthy products in monthly circulars with BHCK logo and modest discounts
- Regular meetings with wholesale managers
- Regular feedback on achievements



BHCK Youth-Leader Program

- 45-60 minute sessions with the youth (ages 10 and up) conducted by youth-leaders in recreation centers
- Nutrition sessions focus on 4 topics:
 1. Healthy drinks
 2. Smart snacks
 3. Breakfasts
 4. Healthy cooking
- Sessions occurred every other week for 6 months



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Social Media: Facebook & Instagram

Targeted community



Text-messaging to adult caregivers

Policy Working Group Meetings

- 30+ working group members, representing various sectors:
 - City Council, Health Department, Public Schools, Family League, Recreation and Parks, Wholesalers, Academia
- Partnered with decision-makers:
 - To develop and build the evidence base to support policies for a healthier food environment
 - To sustain BHCK activities
- Developed simulation models to aid stakeholder decision-making



Baltimore City Councilman Carl Stokes



Baltimore City Councilman Pete Welch



Baltimore City Food Policy Director Holly Freishtat



What strategies work?
(with time, patience, various inputs)

- Working with wholesalers/distributors
 - to stock a broader array of healthier products
- Small subsidies to small food source owners
 - to help them test selling healthier products
- Visual materials (shelf labels, posters) at the point-of-purchase (POP)
- Interactive sessions (taste tests) at the POP
- Training small store owners
 - Materials in the owner's language

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What Have Been the Impacts of this Work?

- In wholesalers:
 - Increase stocking and sales of healthier foods and beverages
- In corner stores and carryouts:
 - Increase stocking and sales of healthier foods and beverages
 - Increase stocking and sales of WIC foods
- In consumers:
 - Increase purchasing of these foods and their consumption
 - Positive health effects (reduced BMI)

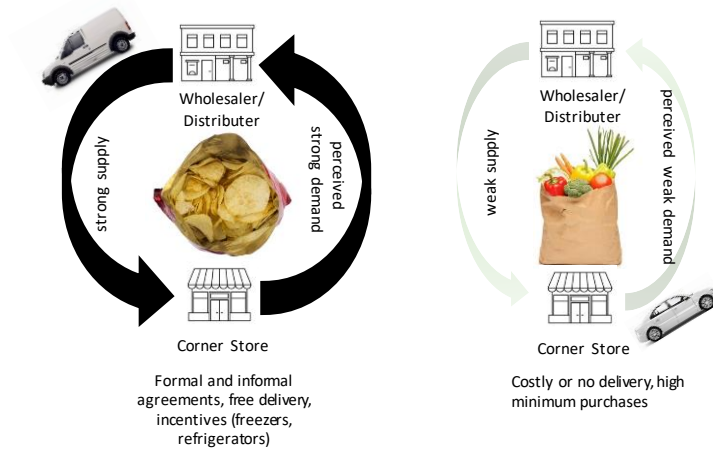
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Moving Forward in Urban Settings



**Improving
Healthy Food
Distribution**

Distribution to Corner Stores in Baltimore: The Type of Food Matters



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Baltimore Urban food Distribution (BUD): A Mobile Application to Improve Healthy Food Access in Baltimore City





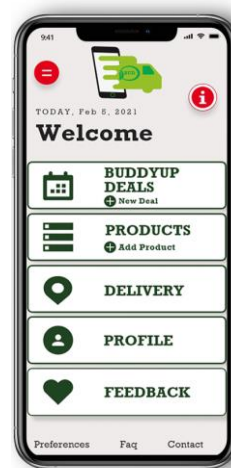
Goal of BUD

To develop an affordable solution for corner stores to access and have delivered healthier foods and beverages

Ultimately leading to:

- Improved access to locally sourced healthy foods (e.g., produce) for store owners and community members; and
- A more resilient food system

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Wholesaler/Producer: Set Up a BuddyUp! Deal



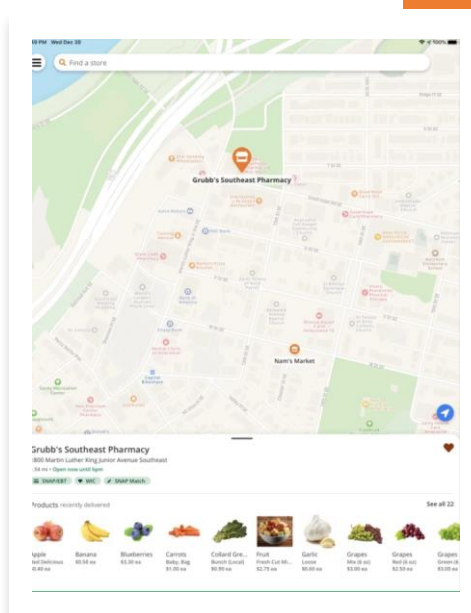
Corner Store Owners: Accept a BuddyUp! Deal

In Development: BUDConnect: A Consumer-Engagement Module of BUD

- Goal: To engage consumer sdirectly in deciding the stocking of foods in corner stores

BUDConnect: Proposed Features

- Interactive map to locate corner stores carrying healthy products
- Chat groups and polls to communicate demand for foods
- Games and activities to elicit rewards and continued use of the app
- Discounts and coupons distributed by store owners for consumers to cash-in to purchase promoted items



Moving Forward in Urban Settings



SAFPAS

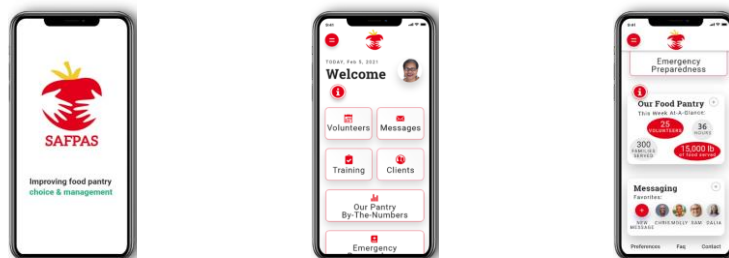
Support Application for Food Pantries

A Mobile Application to Support Food Pantry Staff and Volunteers in Baltimore City

Background

- High food insecurity in Baltimore City
 - 21.3% food insecurity rate as of 2017 (Feeding America)
- Food banks and food pantries help address this need
- Fresh Shelves, Healthy Pantries pilot trial and the COVID-19 pandemic revealed challenges related to:
 - Volunteer recruitment, training and scheduling
 - Communication with volunteers and clients
 - Emergency response

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Main Menu



SAFPAS: Manage Volunteers



SAFPAS: eChoice



SAFPAS: Emergency Preparedness Training, Communications (Situational Awareness)

Rural Settings

Common Characteristics of the Food Environment in Indigenous Communities

Rural and remote communities

Little or no public transportation

Low access to supermarkets on reservation → food deserts

High access to gas station stores, trading posts, fast food restaurants → food swamps

Emphasis and valuation of traditional foods

History of our Projects in Native Communities



Navajo Healthy Stores Goals

- To reduce risk for obesity and chronic disease by increasing availability, purchase, and consumption of healthy foods on the Navajo Nation
- To implement a self-sustained healthy food store program in collaboration with local Navajo stakeholders
- To evaluate the program's impact on obesity and other outcomes

Navajo Healthy Stores



- Implemented by the Navajo Special Diabetes Program
- Training, materials, evaluation provided by the JHSPH team



Working with Stores



ENCOURAGED TO STOCK 3-4
HEALTHY FOODS/ BEVERAGES
PER PHASE (PROVIDED LISTS)

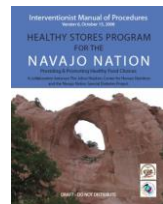


SHELF LABELING



INTERACTIVE SESSIONS IN
STORES

Navajo Healthy Stores Materials



Interventionist MOP



Posters



Educational display



Shelf labels

**Flyers, Radio
Announcements,
Promotional items**

Impact of Navajo Healthy Stores on diet-related psychosocial factors, behaviors and BMI



Outcome variables ^a	Food intention score	Healthy Cooking score	Healthy food getting score	Shelflabel-driven healthy food purchasing score	BMI
β of exposure score	0.59	0.41	10.22	2.51	-0.67
P-value of Exposure score	0.02	0.02	<.0001	<.0001	0.002
Adjusted R ²	0.27	0.13	0.26	0.63	0.68

a. Adjusted for baseline value (except for shelf label-driven healthy food purchasing score), sex, age, education level, household size, and material style of life.

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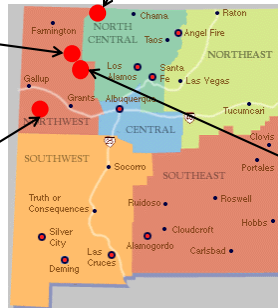


Ojo Encino
Navajo
Round 2

Pine Hill/ Ramah
Navajo
Round 1



Jicarilla Apache
Round 1



Torreón Star Lake
Navajo
Round 2



OPREVENT2 63

Lac Courte Oreilles Ojibwa
Round 2



St. Croix Chippewa
Round 1



OPREVENT2 64

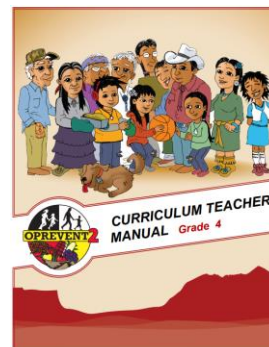
OPREVENT2 Intervention Components

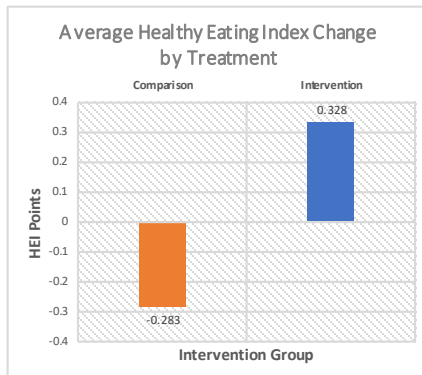
- Stores/ Food Access, Nutrition Education
- Schools/ Child as a Change Agent
- Community and Social Media / Reinforcement
- Worksites/ Physical Activity, Education
- Policy (Community Action Coalition) / Sustainability

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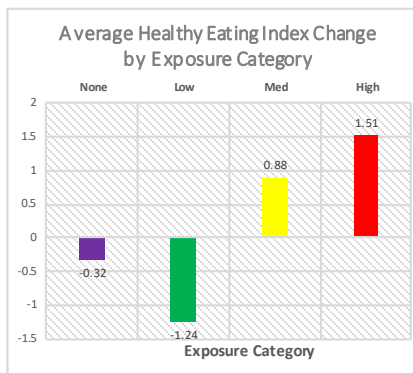
OPREVENT2 School Curriculum

- Designed for children in grades 2- 6
- Child as a Change Agent
 - Empowering children to be leaders in their families and communities and make healthy decisions.



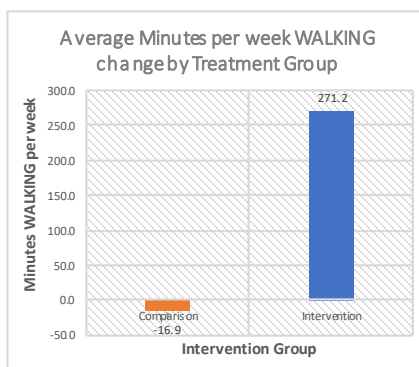


Difference by treatment group is statistically significant ($p=0.008$)

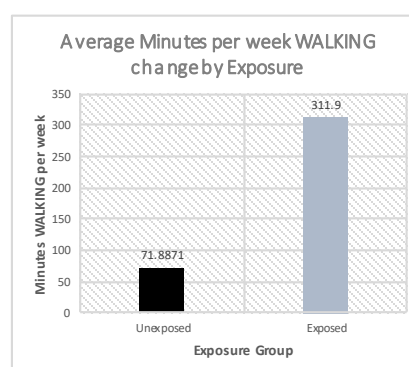


Differences by exposure category are statistically significant ($p=0.015$)

OPREVENT2 69



Difference by treatment group is statistically significant ($p=0.05$)



Unadjusted model shows significant difference by exposure to worksite intervention component ($p=0.04$), but adjusted model not significant ($p=0.07$)

OPREVENT2 70

Summary

- Multi-level, multi-component interventions can be effective addressing key risk behaviors for chronic disease in disadvantaged communities
- MLMC interventions have been successful in improving access and consumption of healthy foods, and reduced obesity (in some cases)
- Should combine educational, environmental (access) and policy approaches when possible
- Community engagement, at multiple levels has been key
- Sufficient intensity essential, and can be assured by setting standards for implementation, and regular monitoring and feedback

Moving Forward



OPREVENT3 (NIH)

→ Enhanced CBPR approaches



Dissemination

www.healthyfoodsystems.net



Thank you!



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www.healthysystems.net

@globalfoodman

@OPREVENT

@bmorehealthyfs

DELETED SLIDES

The Problem

- Latest figures on chronic disease rates by ethnicity, by rural vs urban
- (ADD FIGURE) SEE NEXT SLIDE

Cause of Death	Age-Adjusted Rate (95% CI)		Rural Disparity* (% Difference)
	Rural	Urban	
All-cause mortality			
AI/AN	970.0 (960.5, 979.5)	684.5 (677.9, 691.1)	+42
API	466.5 (458.1, 474.9)	394.3 (392.9, 395.7)	+18
Black	981.3 (976.7, 985.9)	867.3 (865.8, 868.8)	+13
Hispanic ^b	580.7 (576.1, 585.3)	522.7 (521.5, 523.9)	+11
White	837.7 (836.5, 838.8)	728.8 (728.3, 729.3)	+15
Cancer			
AI/AN	164.7 (160.9, 168.6)	123.4 (120.6, 126.2)	+33
API	107.7 (103.7, 111.7)	101.0 (100.3, 101.7)	+7
Black	203.1 (201.1, 205.2)	188.3 (187.7, 189.0)	+8
Hispanic ^b	112.0 (110.0, 114.0)	113.7 (113.2, 114.3)	-1
White	181.0 (180.5, 181.5)	164.6 (164.4, 164.9)	+10
Cardiovascular disease			
AI/AN	180.3 (176.1, 184.5)	135.1 (132.0, 138.1)	+33
API	105.6 (101.6, 109.6)	86.6 (85.9, 87.3)	+22
Black	240.0 (237.7, 242.3)	207.6 (206.9, 208.4)	+16
Hispanic ^b	126.6 (124.4, 128.9)	115.9 (115.3, 116.5)	+9
White	193.7 (193.2, 194.3)	164.7 (164.5, 165.0)	+18
Unintentional injury			
AI/AN	101.9 (99.0, 104.8)	63.6 (61.7, 65.4)	+60
API	22.7 (21.0, 24.5)	15.8 (15.5, 16.0)	+44
Black	47.1 (46.1, 48.1)	39.1 (38.8, 39.4)	+20
Hispanic ^b	40.7 (39.7, 41.8)	28.5 (28.3, 28.8)	+43
White	58.6 (58.3, 59.0)	47.9 (47.7, 48.0)	+22
Chronic lower respiratory disease			
AI/AN	44.9 (42.8, 47.0)	36.0 (34.5, 37.6)	+25
API	13.5 (12.0, 15.0)	12.3 (12.0, 12.5)	+10
Black	33.0 (32.2, 33.8)	29.4 (29.2, 29.7)	+12
Hispanic ^b	20.3 (19.4, 21.2)	17.4 (17.2, 17.6)	+17
White	56.8 (56.6, 57.1)	43.8 (43.6, 43.9)	+30
Stroke			
AI/AN	36.6 (34.7, 38.5)	29.1 (27.7, 30.5)	+26

BUDConnect: Innovation

- Allows for immediate and direct bidirectional communication between consumers and store owners
- Corner stores do not typically exist on other platforms where reviews or requests would normally be left by consumers (Yelp, Google Maps, etc.)
- Ability to address language barrier through the app
- Incentivization through games and rewards may lead to increased purchasing of healthy items by consumers, and subsequently, continued stocking of these items by store owners = positive supply-demand feedback loop