Multilevel Interventions for Improving Health Equity

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Social Ecological Model

CDC adaptation of the social ecological model (SEM) of health promotion.
http://www.cdc.gov/cancer/crccp/sem.htm &
http://www.cdc.gov/nccdphp/dnpao/state-local-programs/health-equity/framing-the-issue.html

Multilevel Interventions

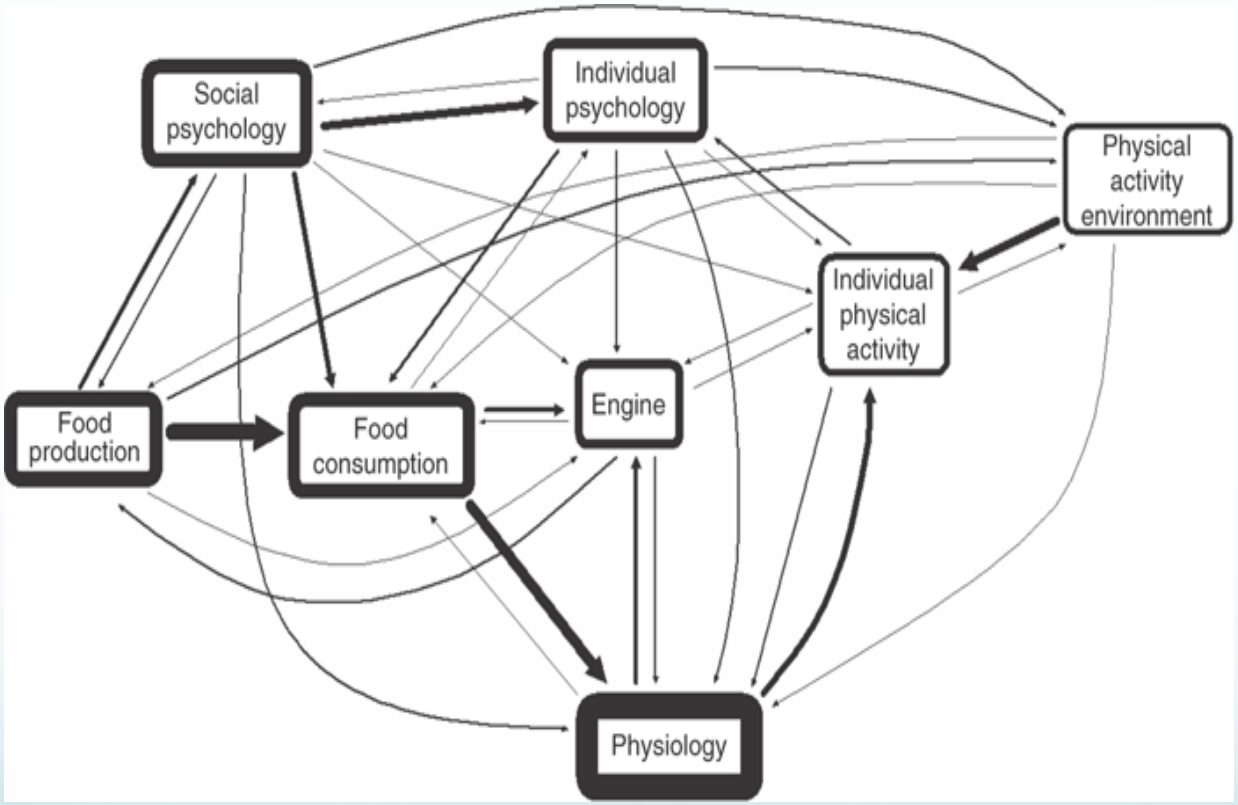
"Interventions with multiple components designed to affect factors in two or more levels of the local ecology which contribute to wellness and illness, with the goal of effecting changes *within and between levels*."

[Re. healthy equity], MLIs *must target the contextual or SDoH at multiple ecological levels that create and maintain inequities*

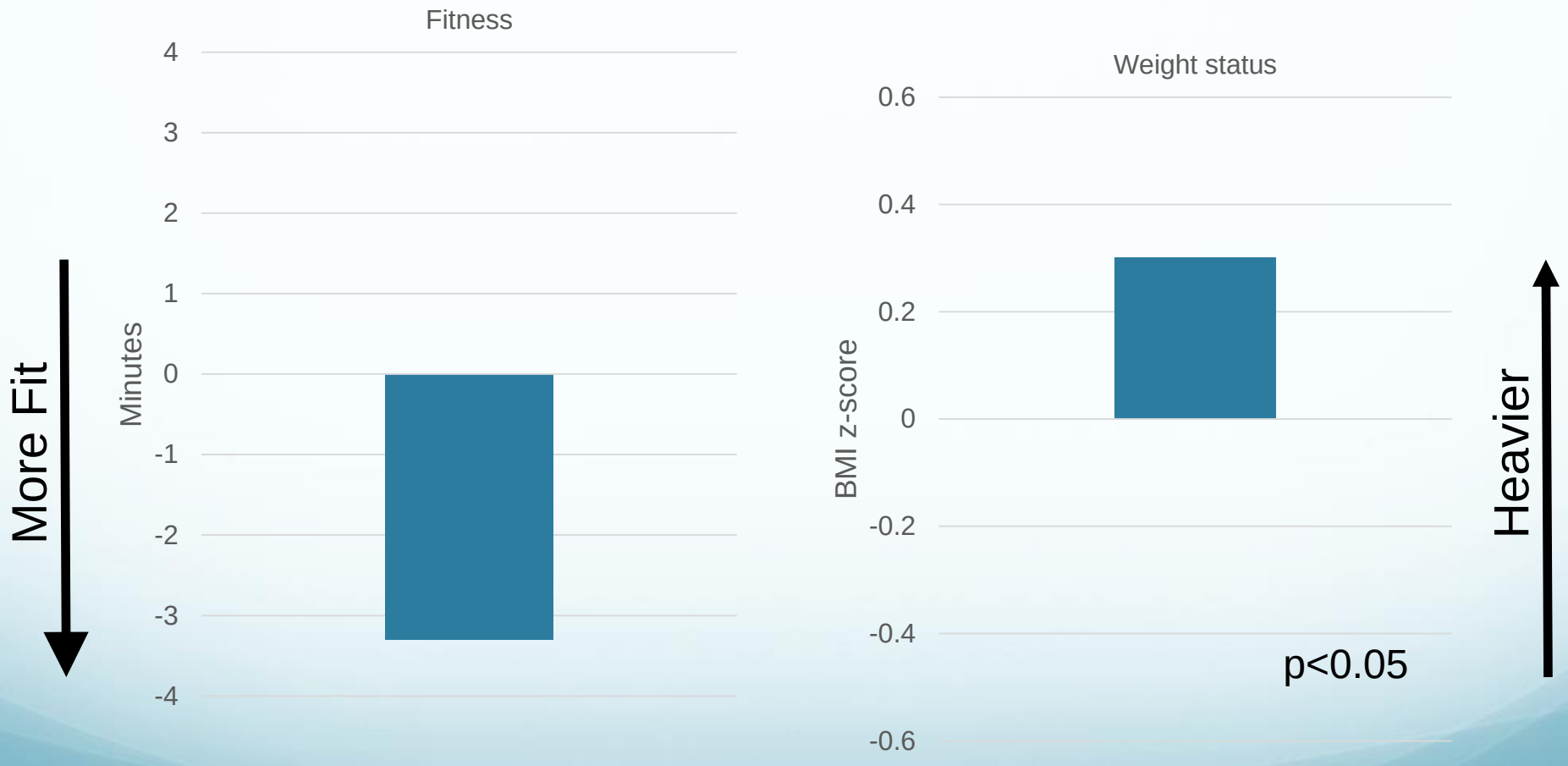
Trickett & Beehler, 2013

"Simplified" conceptual map of interdependent determinants of obesity

Finegood et al., 2010



Active commuters to school “were fitter, but fatter”

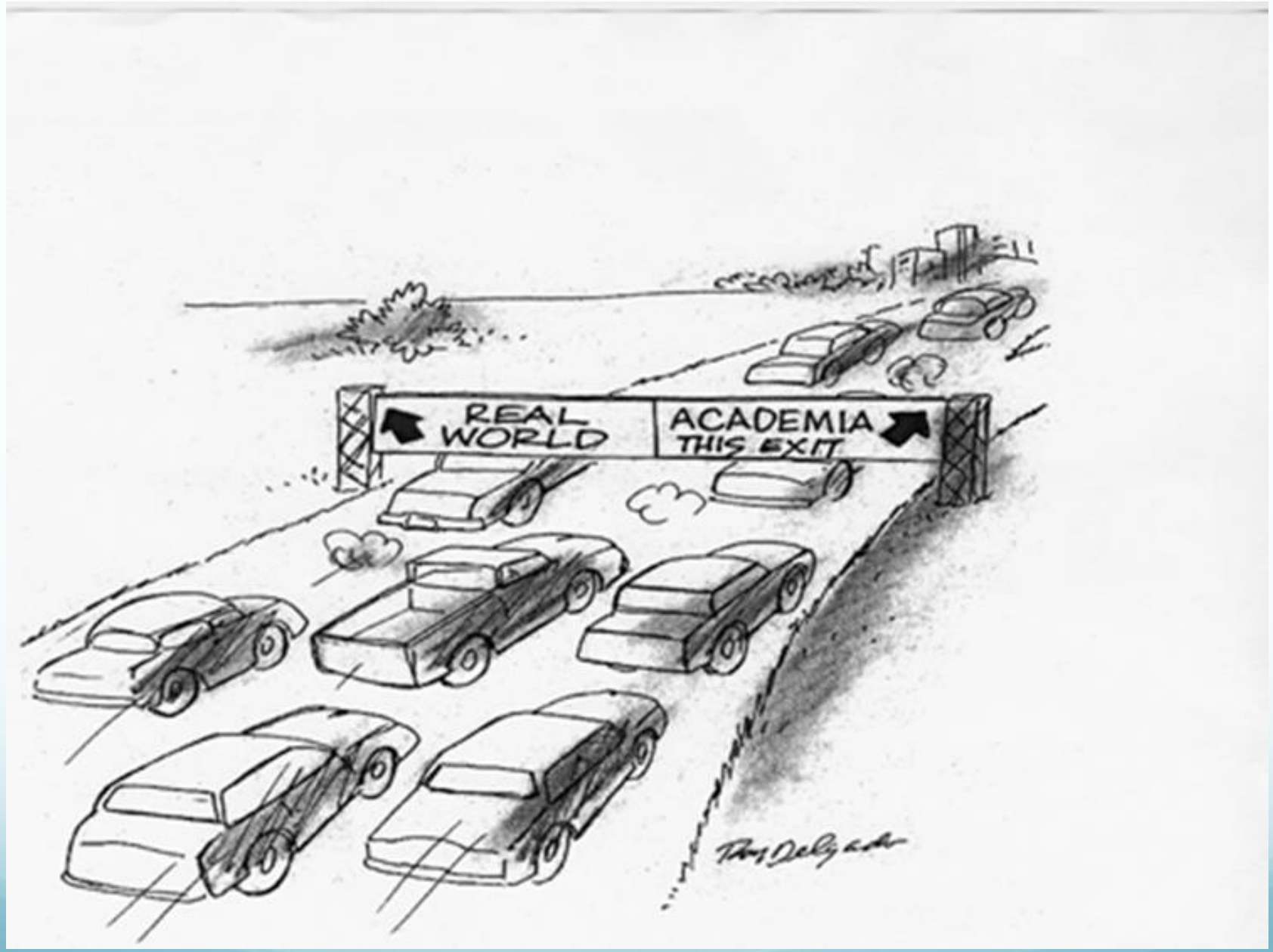


Madsen et al. *Arch Pediatr Adol Med*. 2009

Energy balance?

30 minutes = 360 Cals

5 minutes = 360 Cals


REAL WORLD
ACADEMIA
THIS EXIT

Community engagement in MLIs can improve:

Identification of problems and factors that matter

Participation rates

Validity & reliability of research instruments

Cultural, social acceptability of interventions

Interpretation of findings and policy, practice relevance

Sustainability of MLI over time

Chinese Immigrant workers health & safety study and MLI: Correcting researchers' assumptions; improving policy relevance and outcomes

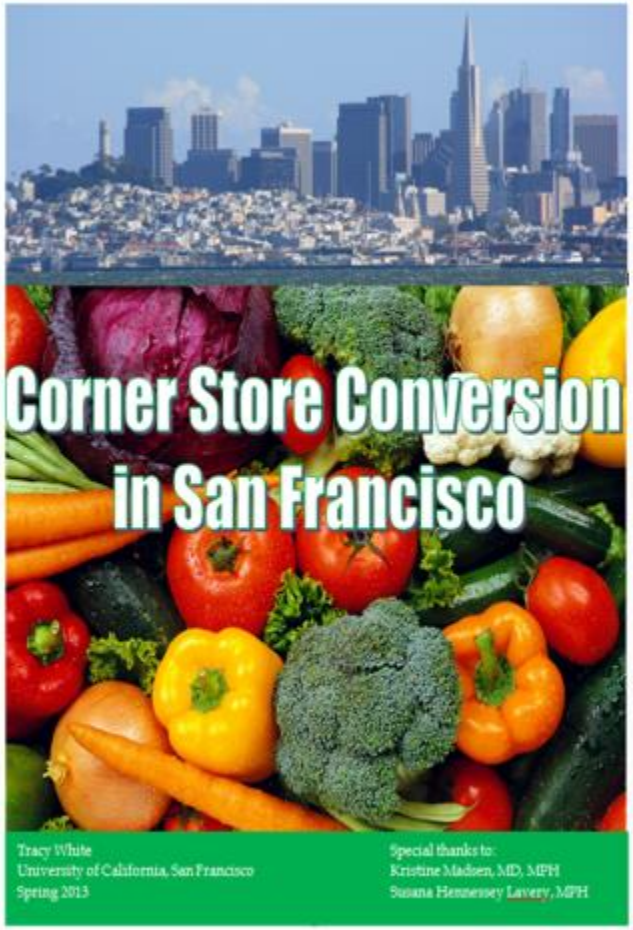
Chang et al., 2014: Minkler et al.,2011

Challenges in conducting & evaluating MLIs

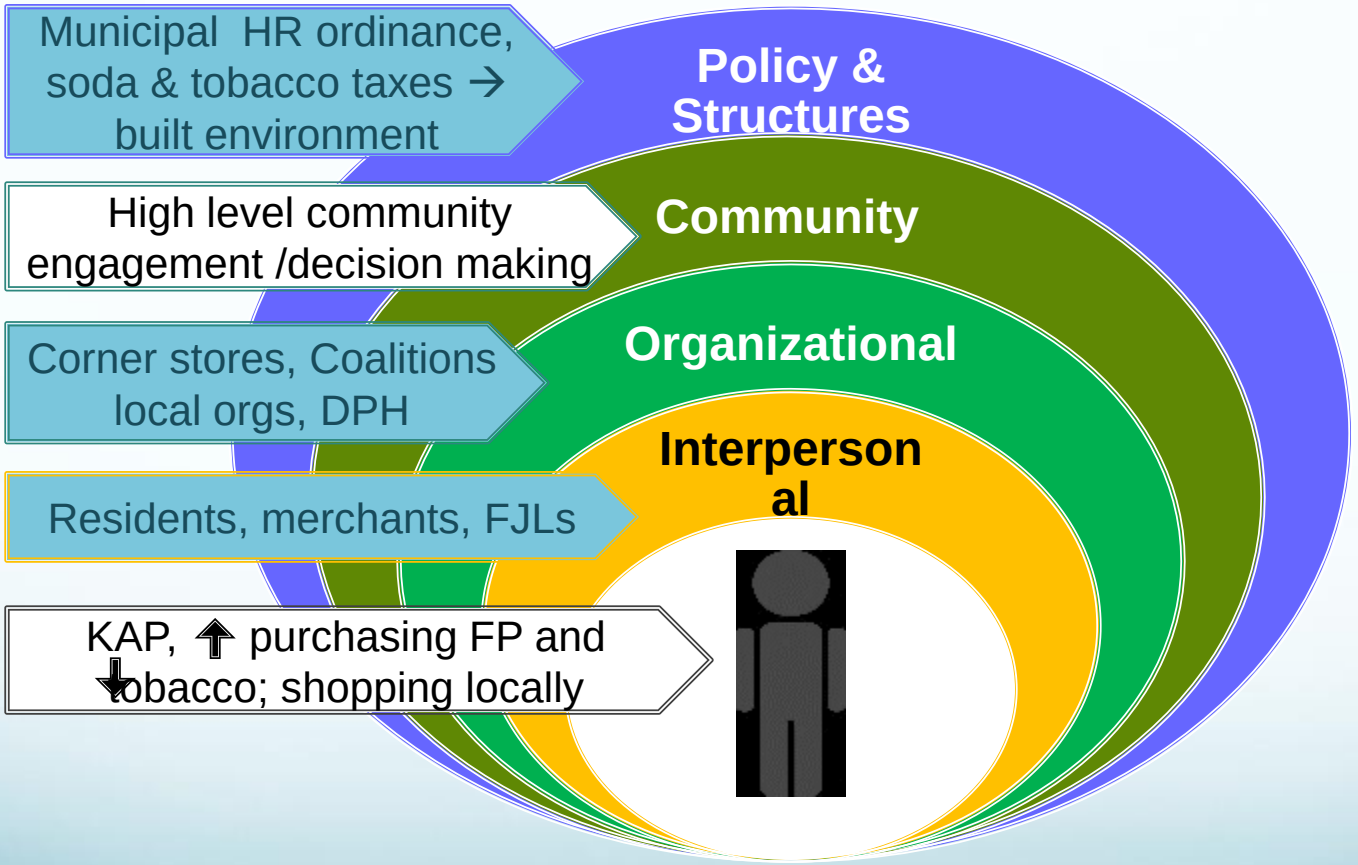
- **Most MLIs = Multi *target* interventions**
- **Insufficient focus on:**
  - Conceptual frameworks
  - Group, organization, or community levels
  - Measurement issues
    - -- reliability and validity
    - -- power and sample size
- Measurement issues specific to MLIs
  - -- lack of independence
  - -- complexity of analyzing cross-level interactions

Add refs

MLI promise and challenges: Transforming "food swamps" in SF



Healthy Retail MLI levels of engagement



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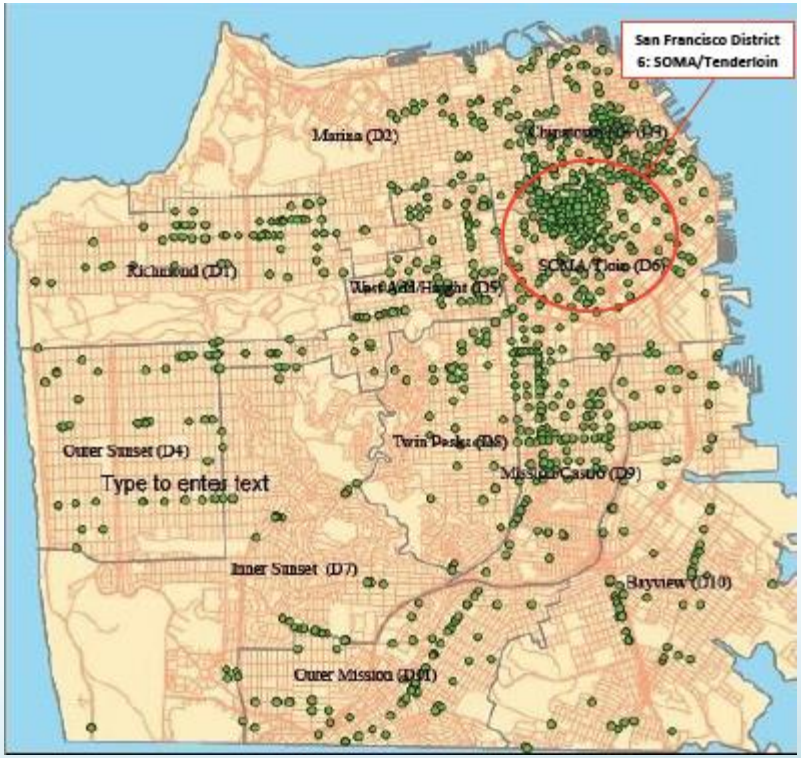
Community context: Tenderloin District



73 corner stores,
no full serve grocery

Highest tobacco outlet density

Organizational level local healthy retail coalitions*

- Engage local NGOs, DPH, merchants & residents
- Determine goals, strategies/ work collectively in research and action components
- Hire, train FJLs re. food systems, research methods, outreach & advocacy
- Build trust with merchants, leverage interpersonal networks, exercise community leadership and lived experience
- Resident and store level data collection (intercept, door to door surveys, store assessments)

*** with caveat!**

Coalition FJLs piloting new store observation tool outside their neighborhood

T.L.H.C.S.C

Tenderloin Healthy Corner Store Coalition

- 69-item “corner store retail standards for health and sustainability”
- ~ 66% participate (n= ~ 52/ year) 2013-2015

Tenderloin Healthy Corner Store Coalition

Tenderloin Neighborhood Healthy Shopping Guide
2013 Report

Within the past year, the Tenderloin Healthy Corner Store Coalition's (TLHCSC) resident Food Justice Leaders and the San Francisco Department of Public Health's (SFDPH) Feeling Good Project visited over 70 food stores in the Tenderloin. Stores were assessed using the TLHCSC *Healthy Retail Standards* and Communities of Excellence (CX3) tools, and then rated on the types and quality of food sold, product placement, cleanliness and safety, amount & type of advertisements, consumer education, and fair labor. The rating system below is based on a 4 star scale.

Since there is no full service grocery store in the neighborhood, the goal of this shopping guide is to **highlight local food stores that sell healthy everyday groceries WITHIN the Tenderloin**. You will be surprised to see how many great products our neighborhood has to offer! *Please shop and support your Tenderloin neighborhood food stores!*

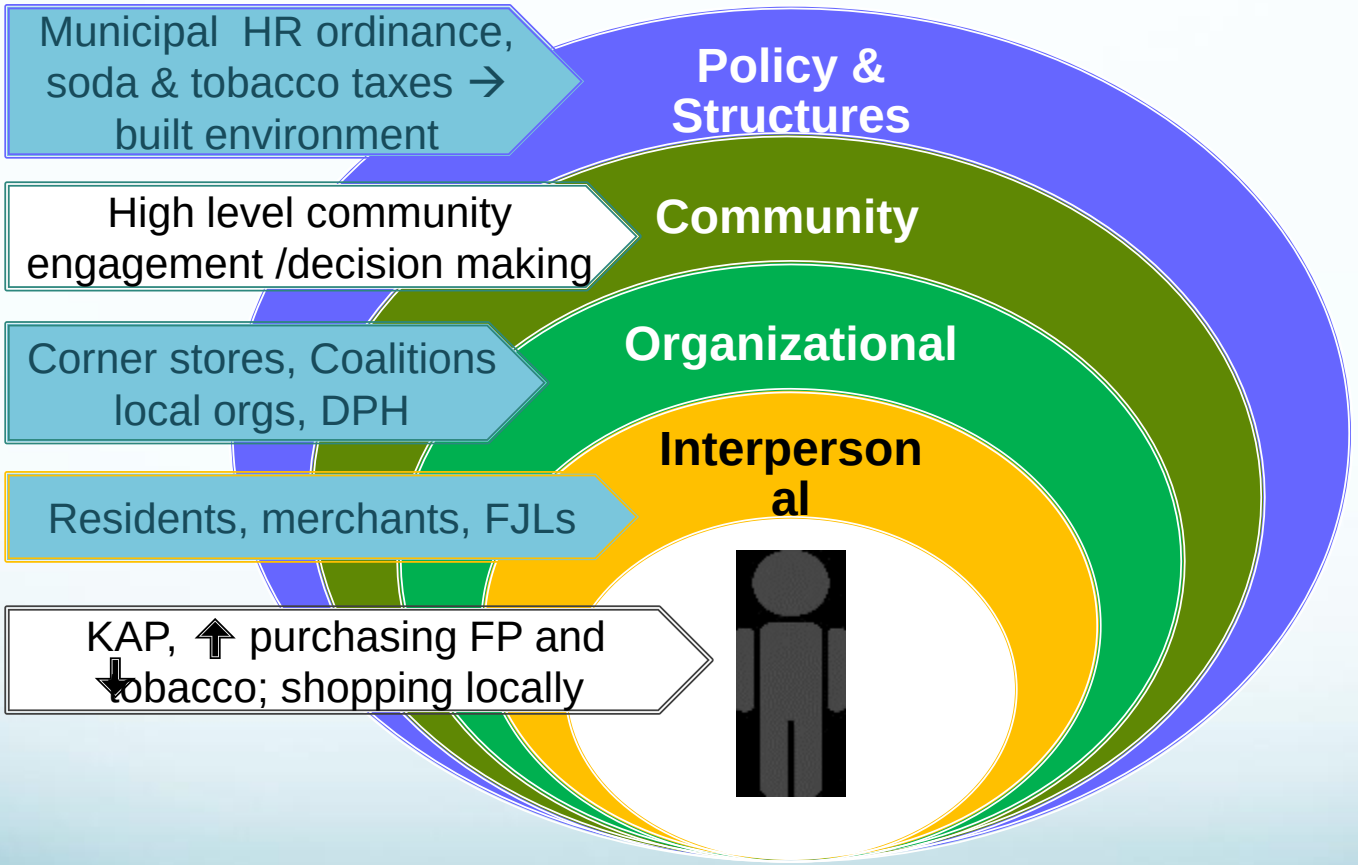
TLHCSC Store Standard Rating System:

80-100% = 4 stars
60-79.9% = 3 stars
40-59.9% = 2 stars
20-39.9% = 1 star
Less than 20% = no stars

WIC = Women, Infants, and Children Program

EBT = CalFresh (food stamps electronic cards)

Healthy Retail MLI levels of engagement



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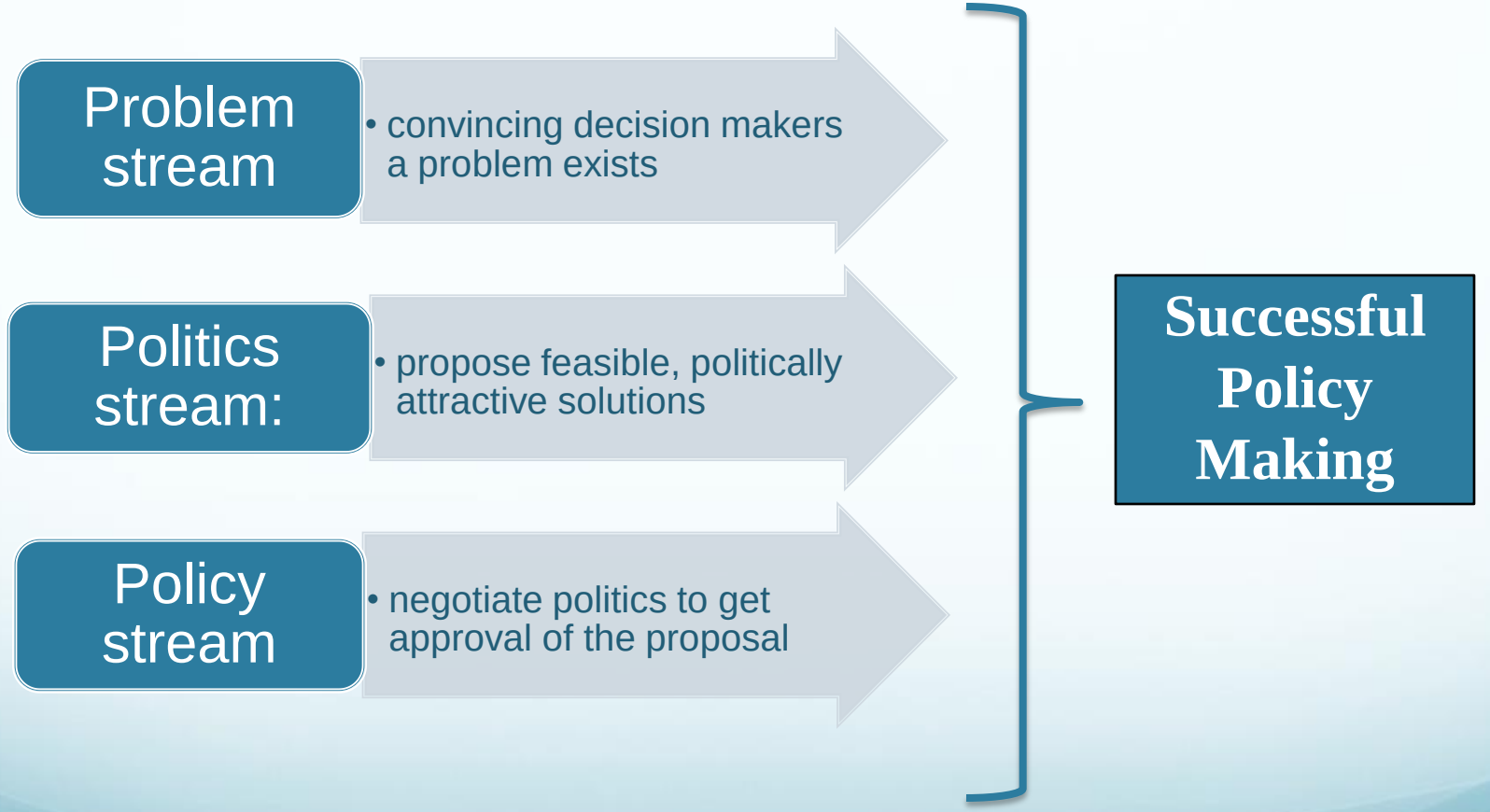
Policy level: Healthy Retail SF

"Laws are like sausages– it is better not to see them being made"

-Otto von Bismarck

Three Streams in Policy Making



Kingdon, 2003

convincing decision makers a problem exists

Problem stream

“Stories and statistics” re. food insecurity, revenue base

City supervisor’s tour of food swamp

Media advocacy

Proposing feasible, politically attractive solution

Politics Stream: Earlier pilot store shows sustained increase in sales, profits, at low cost 2003- 2007

Pilot store: 10% drop in tobacco
sales 4mo → 4 + years;
12% increase produce sales & profits; to 17% before Great Recession

TOBACCO FREE PROJECT

Hennessey-Lavery et al., 2005: Breckwich Vasquez et al., 2007

negotiate politics to get approval of the proposal

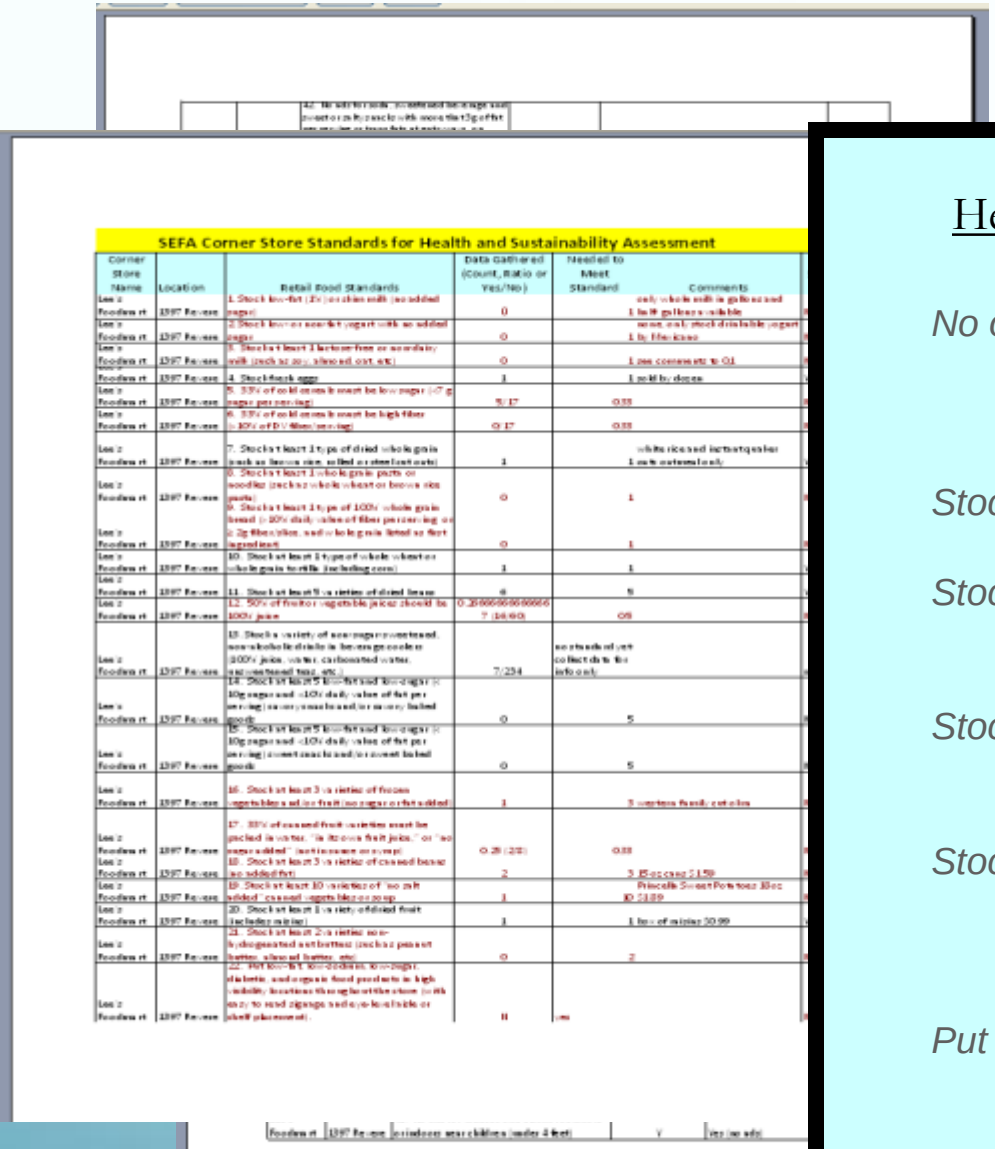
Politics stream

- Win over key opponent
- More media advocacy
- Testimony at hearings
- Demonstrate wide support
- Low cost to gov. <$60,000/yr.
- Strong accountability
- Public private partnerships

Land Use Committee hearing, 8, 2013

Flood et al., 2015

Politics stream: accountability



SEFA Corner Store Standards for Health and Sustainability Assessment

Corner Store Name	Location	Retail Food Standards	Data Gathered (Count, Ratio or Yes/No)	Needed to Meet Standard	Comments
Lee's Foodmart	1397 Revere	1. Stock low-fat (1% or skim milk (no added sugar)	0		only whole milk in gallons and 1 half gallons available
Lee's Foodmart	1397 Revere	2. Stock low- or non-fat yogurt with no added sugar	0		none, only stock drinkable yogurt 1 by Mexicano
Lee's Foodmart	1397 Revere	3. Stock at least 1 lactose-free or non-dairy milk (such as soy, almond, oat, etc)	0		1 see comments to Q1
Lee's Foodmart	1397 Revere	4. Stock fresh eggs	1		1 sold by dozen
Lee's Foodmart	1397 Revere	5. 33% of cold cereals must be low sugar (<7 g sugar per serving)	5/17	0.33	
Lee's Foodmart	1397 Revere	6. 33% of cold cereals must be high fiber (>10% of DV fiber/serving)	0/17	0.33	
Lee's Foodmart	1397 Revere	7. Stock at least 1 type of dried whole grain (such as brown rice, rolled or steel cut oats)	1		white rice and instant quaker 1 oats outmeal only
Lee's Foodmart	1397 Revere	8. Stock at least 1 whole grain pasta or noodles (such as whole wheat or brown rice pasta)	0	1	
Lee's Foodmart	1397 Revere	9. Stock at least 1 type of 100% whole grain bread (>10% daily value of fiber per serving or ≥ 2g fiber/slice, and whole grain listed as first ingredient)	0	1	
Lee's Foodmart	1397 Revere	10. Stock at least 1 type of whole wheat or whole grain tortilla (including corn)	1	1	
Lee's Foodmart	1397 Revere	11. Stock at least 5 varieties of dried beans	6	5	
Lee's Foodmart	1397 Revere	12. 50% of fruit or vegetable juices should be 100% juice	0.2666666666666 7 (16/60)	0.5	
Lee's Foodmart	1397 Revere	13. Stock a variety of non-sugar-sweetened, non-alcoholic drinks in beverage coolers (100% juice, water, carbonated water, unsweetened tea, etc.)	7/234		no standard yet collect data for info only
Lee's Foodmart	1397 Revere	14. Stock at least 5 low-fat and low-sugar (<10g sugar and <10% daily value of fat per serving) savory snacks and/or savory baked goods	0	5	
Lee's Foodmart	1397 Revere	15. Stock at least 5 low-fat and low-sugar (<10g sugar and <10% daily value of fat per serving) sweet snacks and/or sweet baked goods	0	5	
Lee's Foodmart	1397 Revere	16. Stock at least 3 varieties of frozen vegetables and/or fruit (no sugar or fat added)	1		3 western family cut okra
Lee's Foodmart	1397 Revere	17. 33% of canned fruit varieties must be packed in water, "in its own fruit juice," or "no sugar added" (not in sauce or syrup)	0.25 (2/2)	0.33	
Lee's Foodmart	1397 Revere	18. Stock at least 3 varieties of canned beans (no added fat)	2		3 15oz cans $1.59
Lee's Foodmart	1397 Revere	19. Stock at least 10 varieties of "no salt added" canned vegetables or soup	1		Princella Sweet Potatoes 15oz 10 $1.89
Lee's Foodmart	1397 Revere	20. Stock at least 1 variety of dried fruit (includes raisins)	1		1 box of raisins $0.99
Lee's Foodmart	1397 Revere	21. Stock at least 2 varieties non-hydrogenated nut butters (such as peanut butter, almond butter, etc)	0	2	
Lee's Foodmart	1397 Revere	22. Fat low-fat, low-sodium, low-sugar, diabetic, and organic food products in high visibility locations throughout the store (with easy to read signage and eye-level table or shelf placement).	0	yes	

Healthy Retail Agreement

No outdoor tobacco or alcohol advertising or indoor near children.

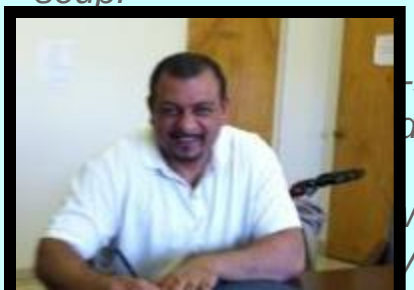
Stock low-fat or skim milk.

Stock 2-6 varieties of high-fi cereal

Stock at least 2 additional v frozen vegetables and

Stock 5-10 more varieties of added" canned vegeta soup.

Put -su duct



with easy ve-level

Agreements, checklists, work plans, *to clarify roles and expectations.*

Policy Level
Healthy Retail SF

City Ordinance

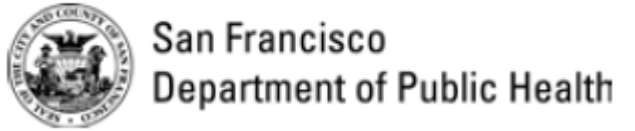
Incentive-based, voluntary program for corner stores

Healthy Food Retailer*

- **≥35% selling space to fresh produce, whole grains, lean proteins, and low-fat dairy**
- **≤20% selling space to tobacco and alcohol**
- ***Removes/reduces tobacco, alcohol advertising**
- **Pays minimum wage**

Passed Sept. 2013

Interdisciplinary partnership



Healthy Retail SF 3-legged stool

T.L.H.C.S.C

Tenderloin Healthy Corner Store Coalition

Healthy Retail SF

FRESH FOODS HERE

Community level

- **Community as *target:***

- large community meetings, edu, input & celebrations

- **Community as *level:***

- % shopping for groceries outside neighborhood

- ripple effect in % with heathy offerings

-- increased sense of community control (Israel et al., 2012)

-- increased community cohesion; ID

***-** increased gentrification and perceived contributions of intervention*

T.L.H.C.S.C

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Healthy Retail SF

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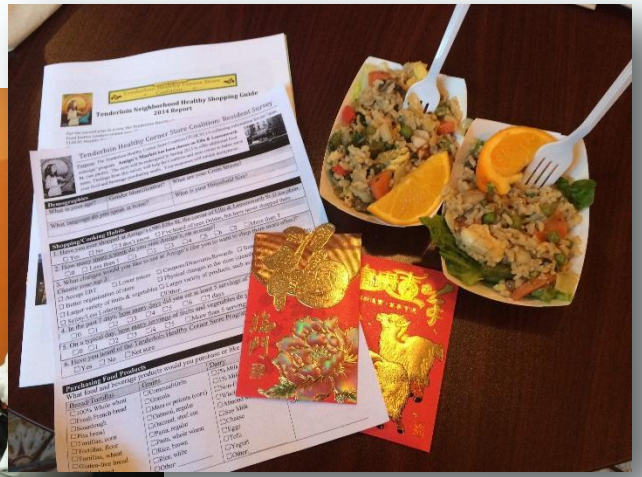
Cooking Demos, Taste Testings & Shopping
Healthy on a Budget

SHARE OUR STRENGTH'S
COOKING MATTERS®
NO KID HUNGRY



Healthy Retail
HealthyRetailSF.org
ERESH
EOODS
HERE

Before and after

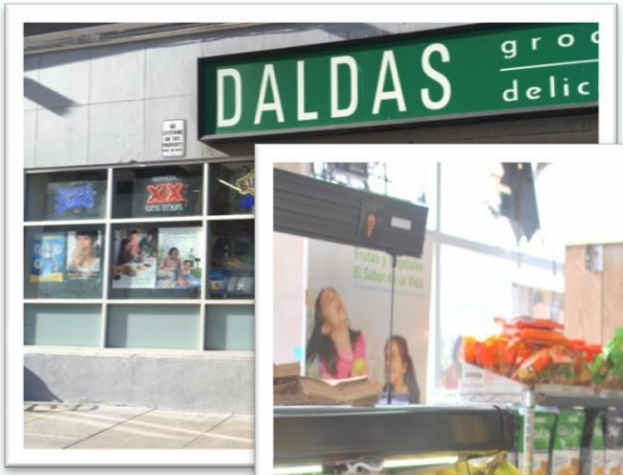
Radman's Produce Market

BEFORE

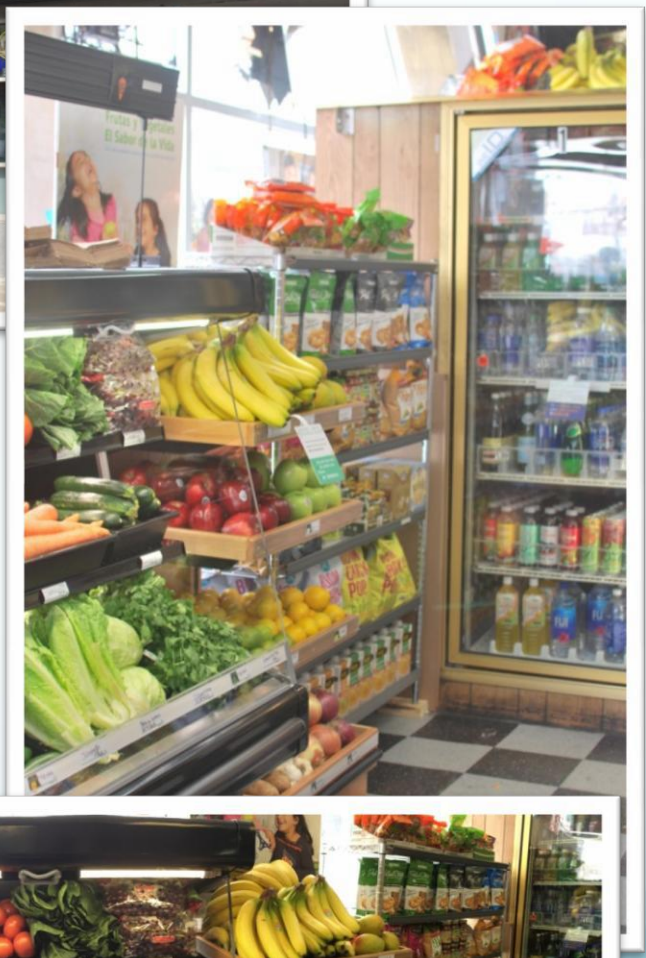
AFTER

E

Daldas Grocery

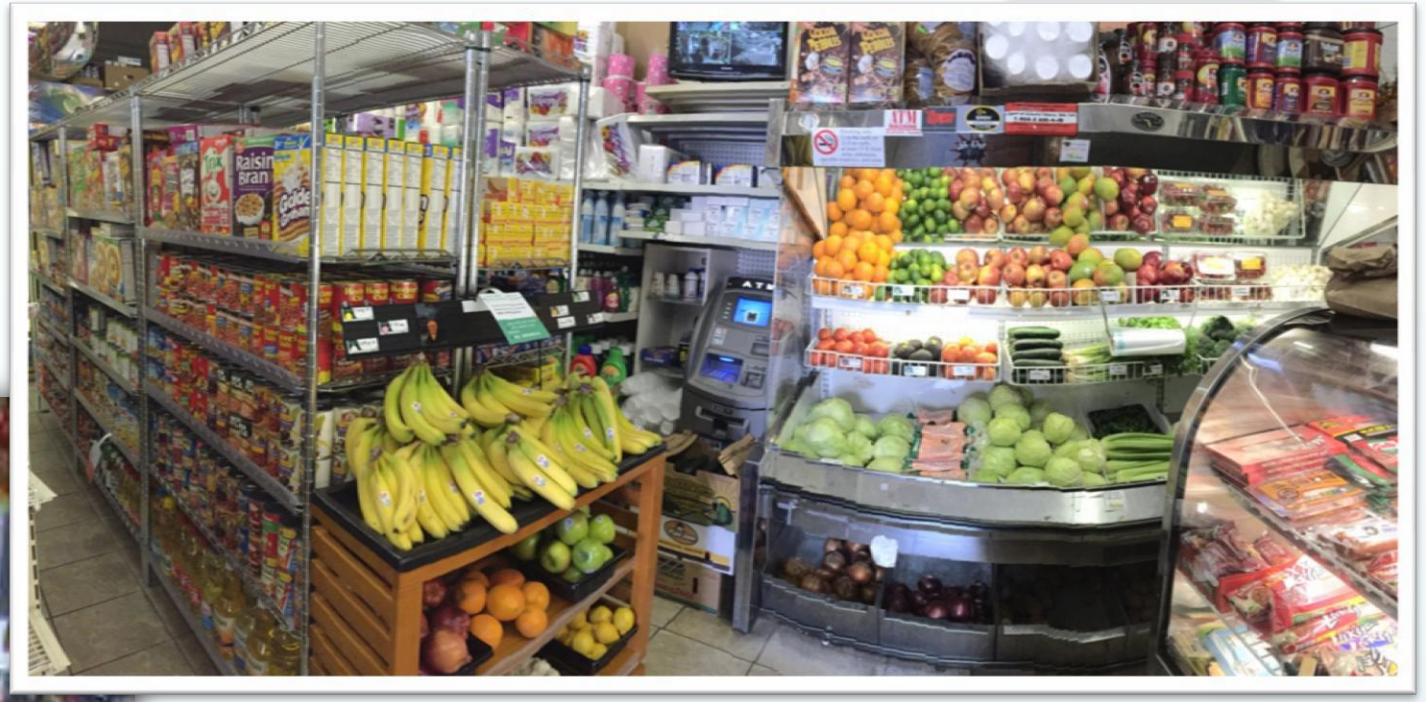


AFTER



Friendly ~~Liquor~~ Market

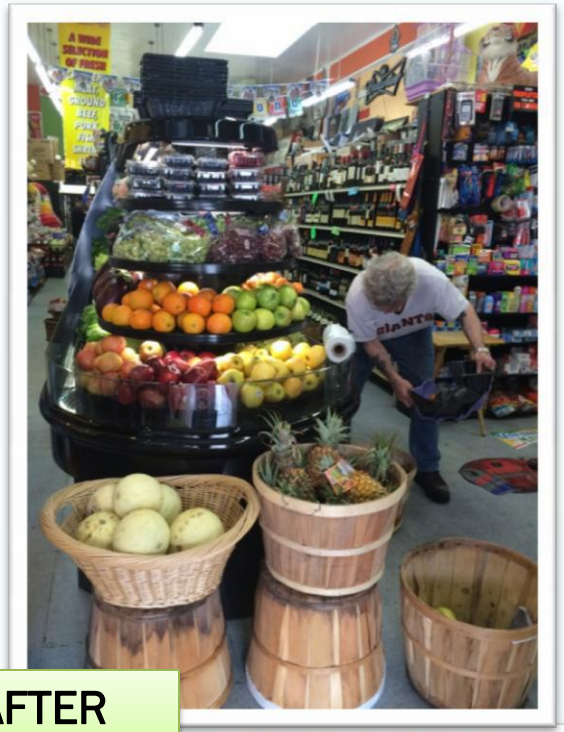
AFTER



BEFORE

Mid City Market

BEFORE



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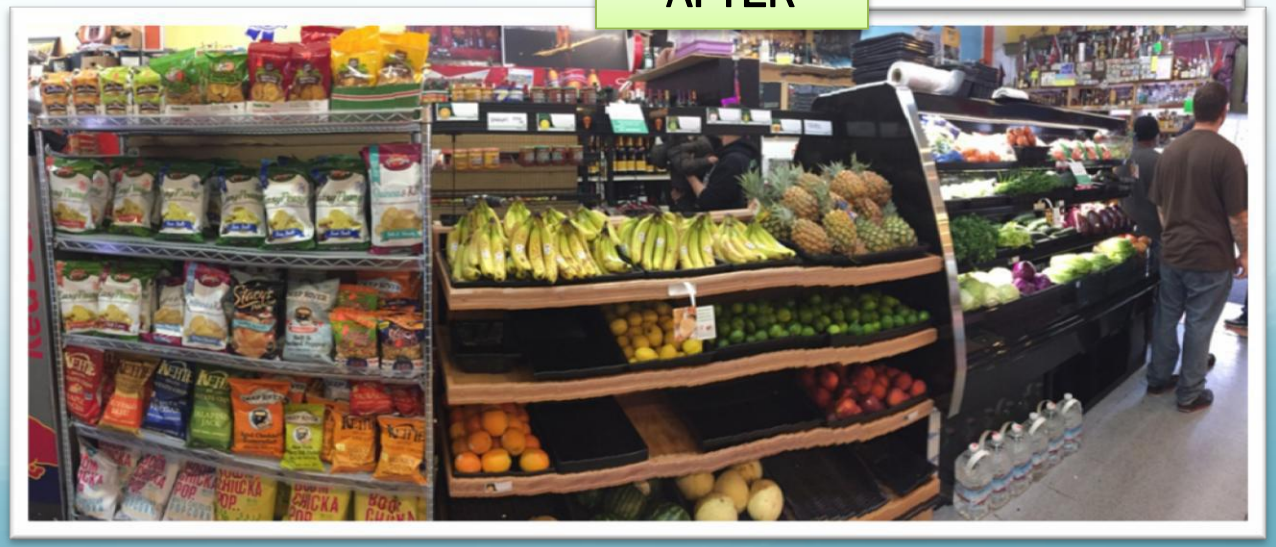


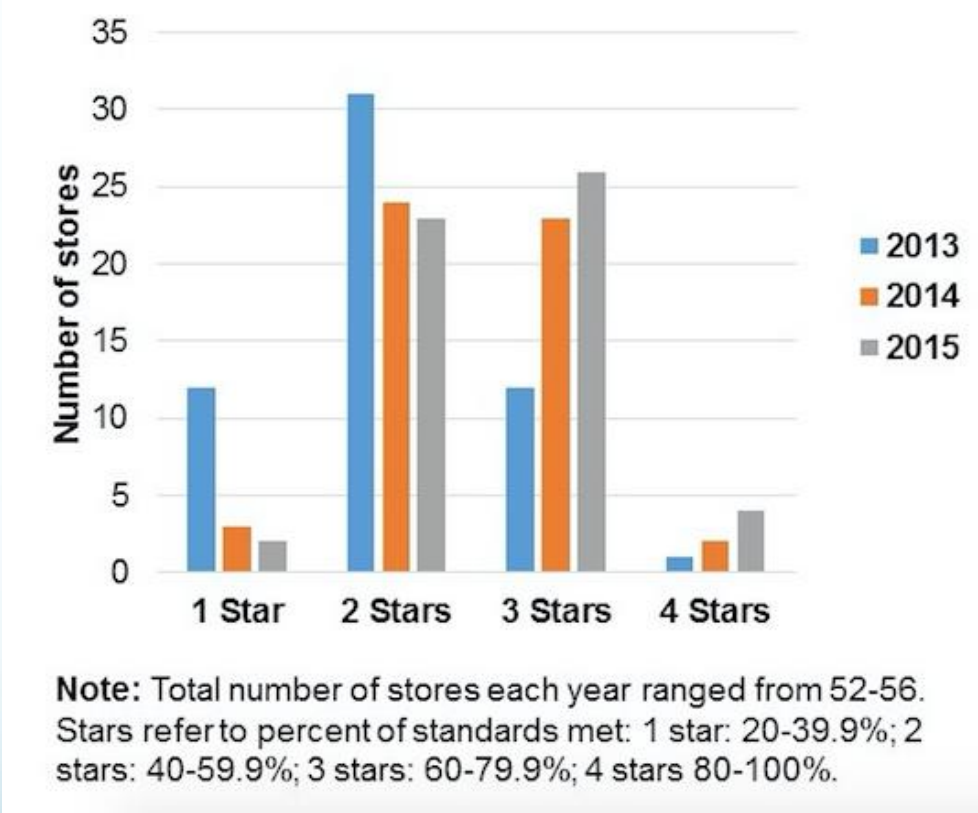
Add photo

Evaluating *impact of Healthy Retail SF* on store sales and availability of fresh produce & tobacco

- **Store assessments:** 2 group comparison design with pre/post tests using data from ~52 stores' assessments over 4 years
- **Sales data:** Monthly POS (point-of-sale) data from participating stores
- **Qualitative data:** Merchant interviews, focus groups

Flood et al., 2015

Changes in overall store ratings 2013-2015



Note: Total number of stores each year ranged from 52-56. Stars refer to percent of standards met: 1 star: 20-39.9%; 2 stars: 40-59.9%; 3 stars: 60-79.9%; 4 stars 80-100%.

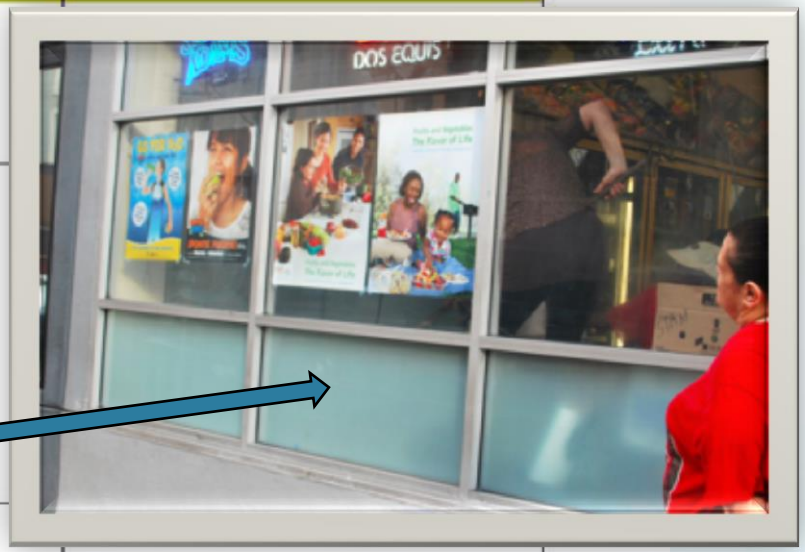
Falbe, 2016

Monthly "report card" store visits re. adherence to IDPs

Healthy Retail SF Store Report Card

Store: Daldas Grocery CFA: _____ Date _____

2. Alcohol & Tobacco	Score (scale of 1-5)	Comments
15. No resources from this project (including schematics, technical assistance, shelving or refrigeration) may be used to introduce or expand any alcohol or tobacco products or product displays in the store.		
16. No displays of any exterior alcohol or tobacco ads to covering over 30% of windows/storefront. **No alcohol/tobacco ads near kids (below 5 feet). Healthy promotional posters/ads and other materials (i.e. shelf talkers, wobblers, price tags, etc.) are still up to replace these alcohol and tobacco ads.** *Over time, agree to take down all tobacco and alcohol ads and replace with positive healthy promotion posters/materials.*		
17. No alcohol/tobacco on credit. Put clear signage stating this policy.		



Rating Key:	Does not meet standards		Partially meets standard		Meets standard
	1	2	3	4	5

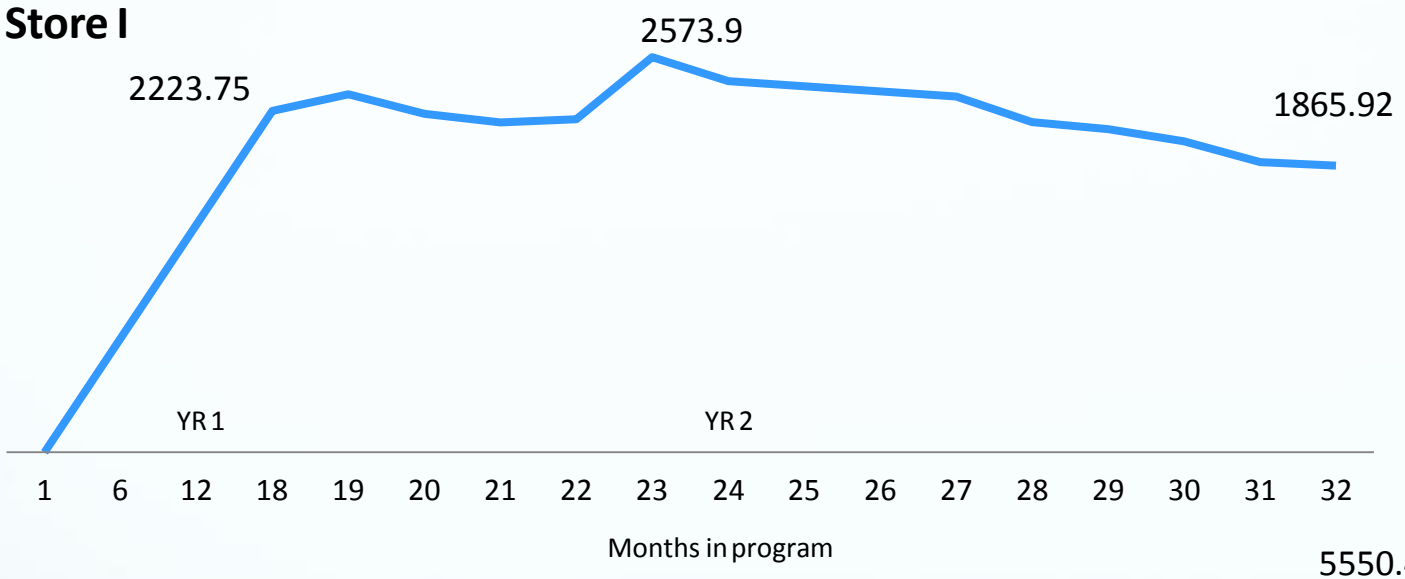
Point-of-Sale data collected in participating stores

Track sales in 6 depts./ categories

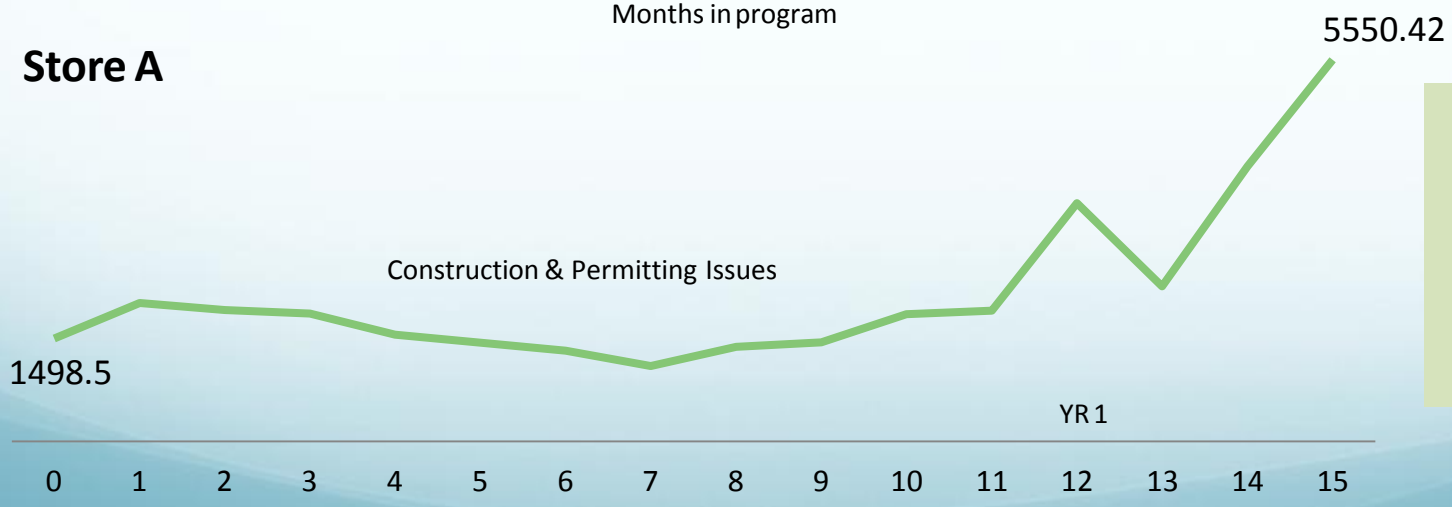
- Produce
- Water
- Alcohol
- Tobacco
- Sugary Drinks/Soda
- Healthy Snacks/Grab & Go ?

- For each category per mo:
  - # items, pieces, units sold
  - Total sales
  - % total sales for each category

Produce Sold - Pilot Stores

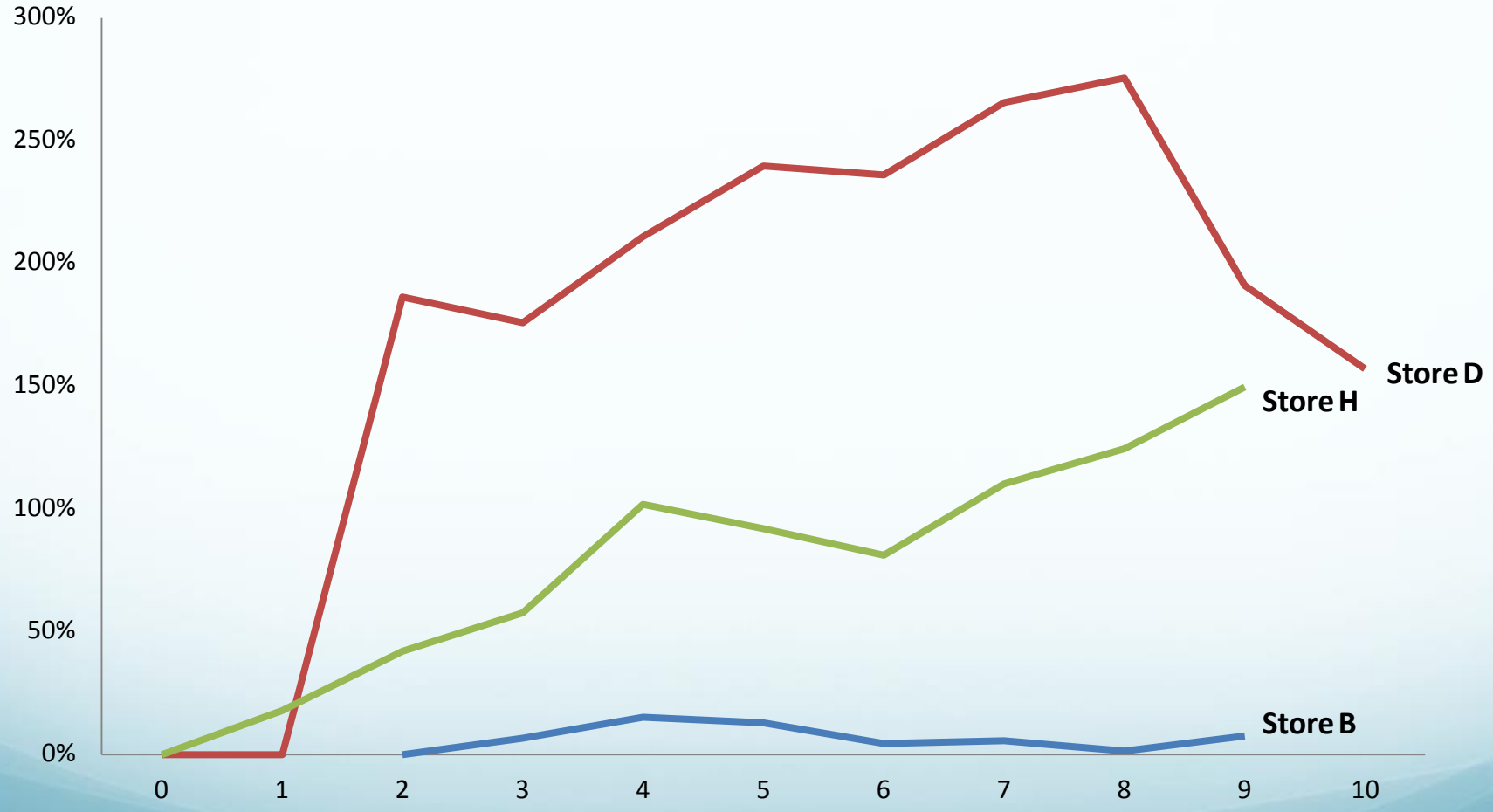


From zero to consistent **~2000** produce/mo



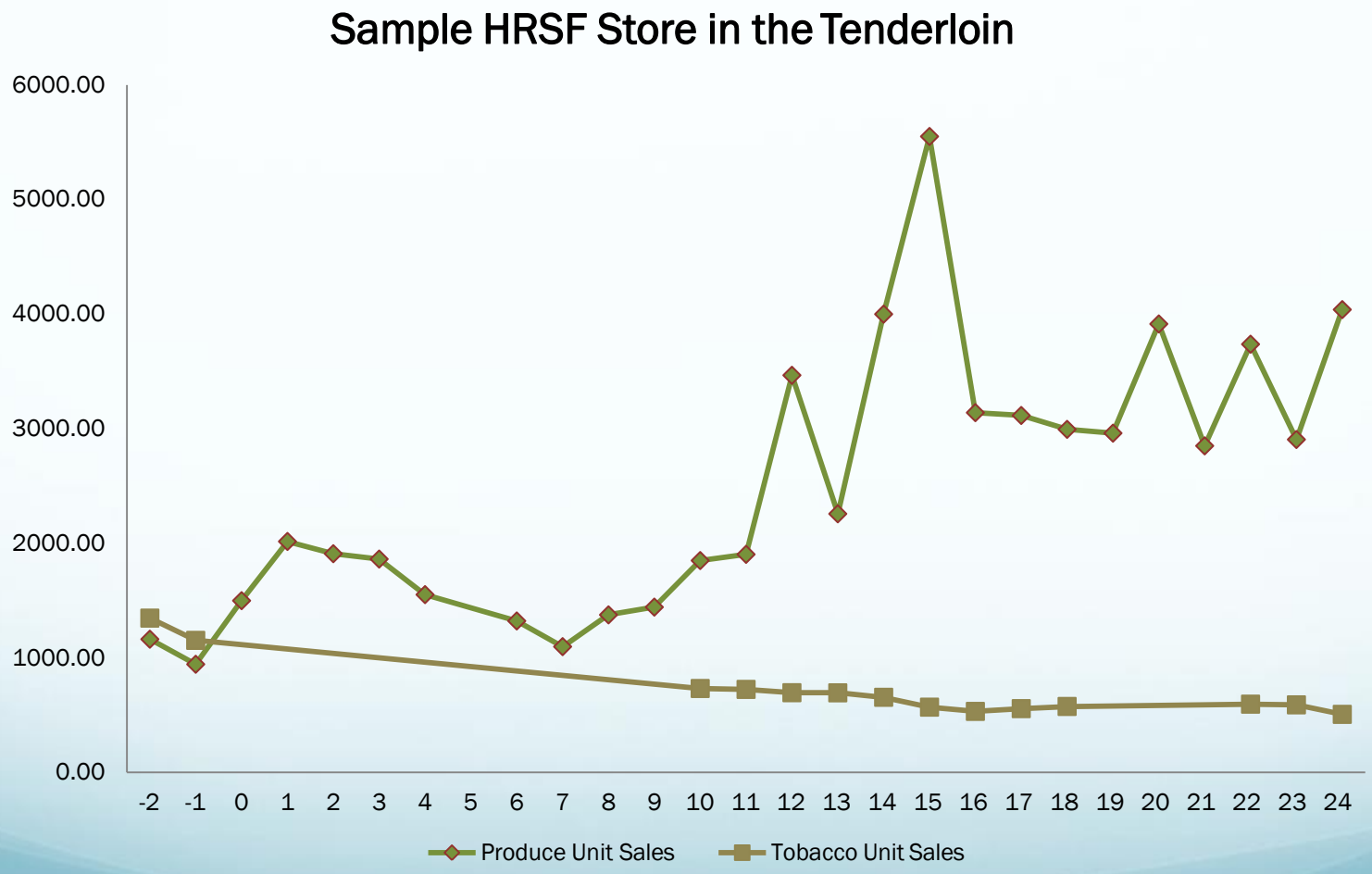
Increase produce sales from baseline of ~1500 produce

% change in produce sold/mo.



Store H & D are selling at least 2-3x more produce

Tobacco v, produce unit sales*



Before large increase in state tobacco tax (time series analyses etc.)

Org. level, Coalition: Participatory and conventional evaluation of functioning, contribution to outcomes

Methods:

Policymaker interviews

In-depth stakeholder interviews

Merchant focus groups

Archival review

Participant observation

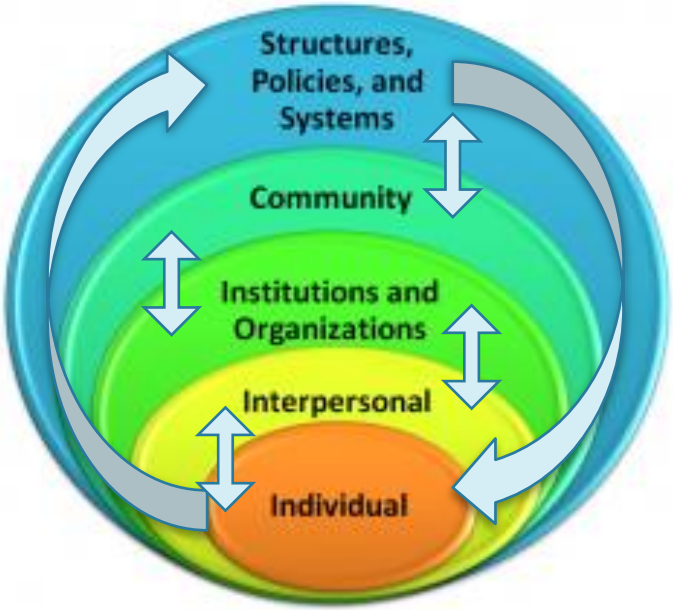
Flood et al., 2015

Measurement challenges

Random Forests– tool for identifying meaningful interactions across levels R packages developed to consider fixed hierarchical structures

Breiman, 20??

Other? HLM??



Policies & Systems:
- SF Healthy Retail Ordinance
- New Tobacco Legislation
- Soda tax

Community:
- Corner stores

Institutions & Organizations:
- TL Healthy Corner Store Coalition

Interpersonal: family, friendship networks
FJL-Merchant Relationships

Individual:
- Low-income Residents
- Food Justice Leaders (FJL)

Sallis et al., 2008

Community level

- **Community as *target:***

- large community meetings, edu, input & celebrations

- **Community as *level:***

- % shopping for groceries outside neighborhood

- ripple effect in % healthy retailers

-- increased sense of community control (Israel et al., 2012)

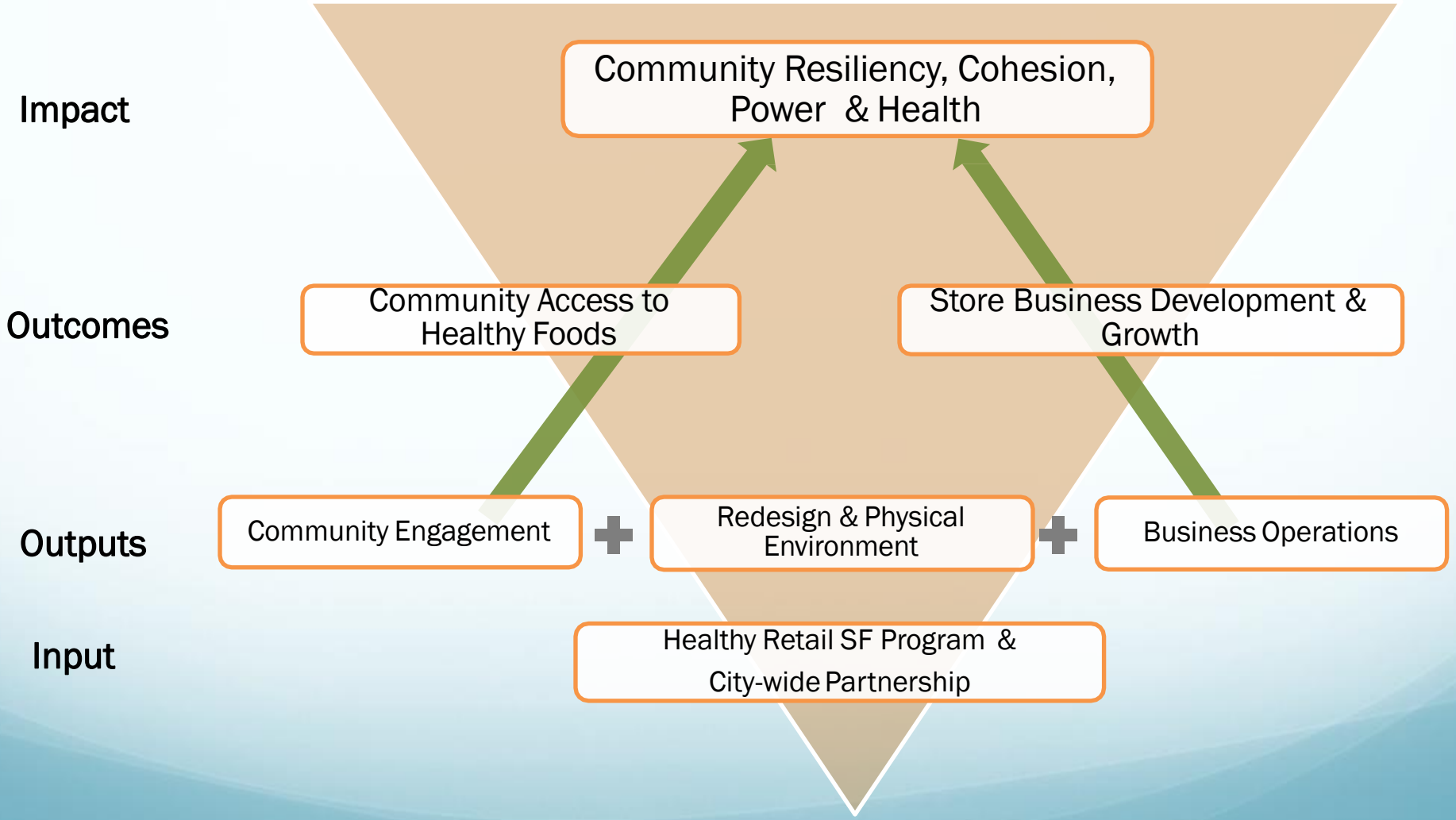
-- increased community cohesion; ID

***-** increased gentrification and perceived contributions of intervention*

Contributions to gentrification?

- Policymaker quote

HRSF Evaluation Framework

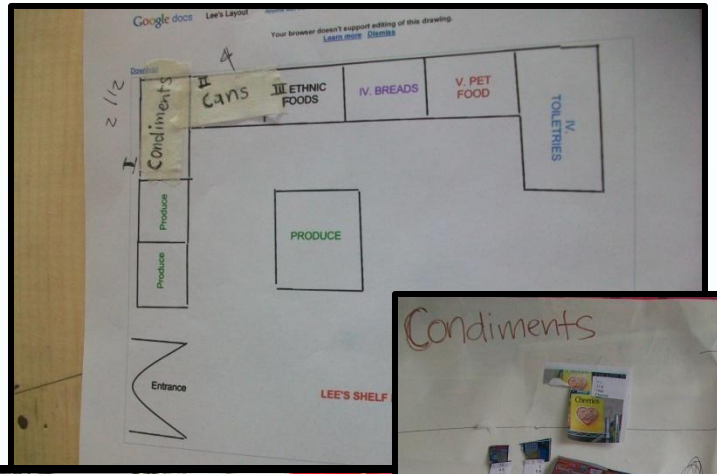


Radman's Produce Market

BEFORE

AFTER

Inventory, Merchandising & Resetting the store



Cooking Demos, Taste Testings & Shopping
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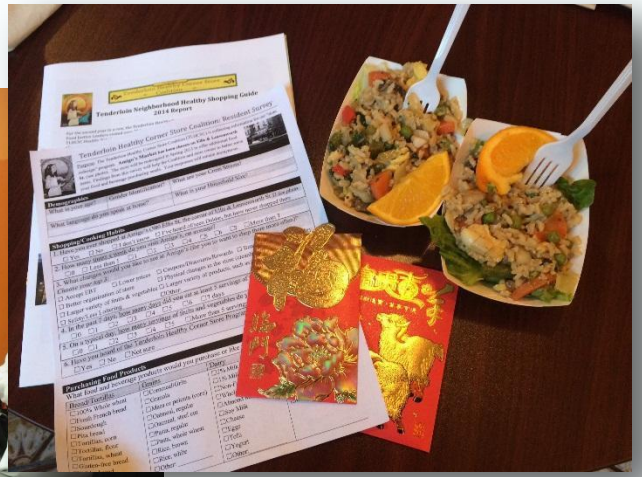

Healthy Retail
HealthyRetailSF.org
ERESH
EOODS
HERE

Outreach
Assessments
IDP
Implementation
Community Engagement
Evaluation

Vouchers for produce that are distributed in TL/Soma and redeemed at HRSF stores and others…

- 83% redemption rate at stores (of vouchers distributed)
- ~ 6k vouchers at $5 each.
- Or $28k of produce purchased by community

Store Launches, Marketing, Media ....

Outreach Assessments, IDP

Implementation

Community Engagement

Evaluation

The Examiner

News » Neighborhoods April 11, 2014

←PREVIOUS NEXT→

Corner store the first in Tenderloin to get a healthy makeover

By Jessica Kwong @JessicaGKwong

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MIKE KOOZMIN/THE S.F. EXAMINER

The Tenderloin Healthy Corner Store Coalition helped Fadhl Radman update his store and offer more produce. The City will soon give similar help to more shops.

On Wednesday afternoon, 60-year-old Augusto Reguindin walked across the street from his Tenderloin apartment with a shopping bag. He was heading to Radman's Produce Market for something that's hard to find in the neighborhood: fresh and healthy food.

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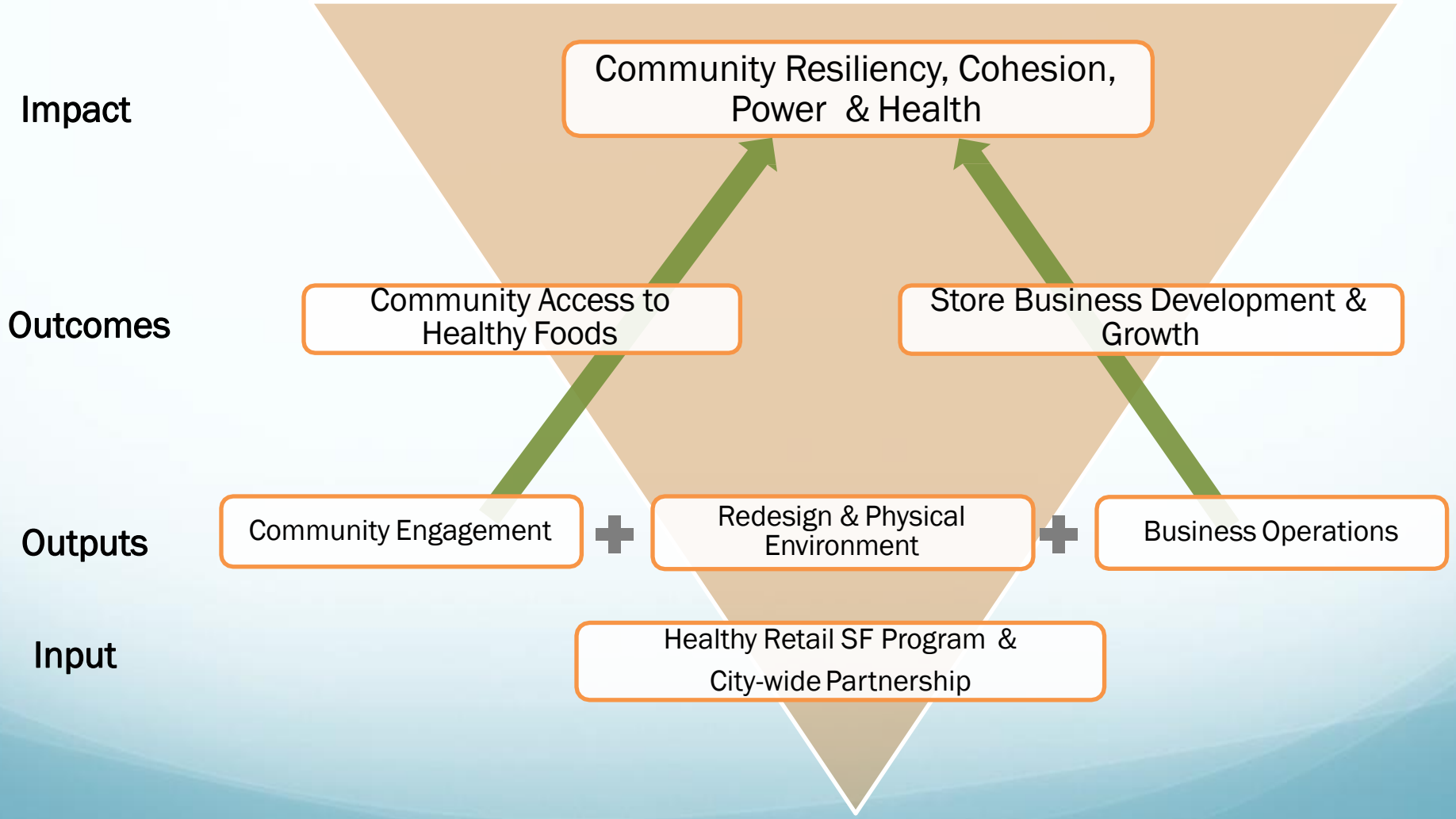
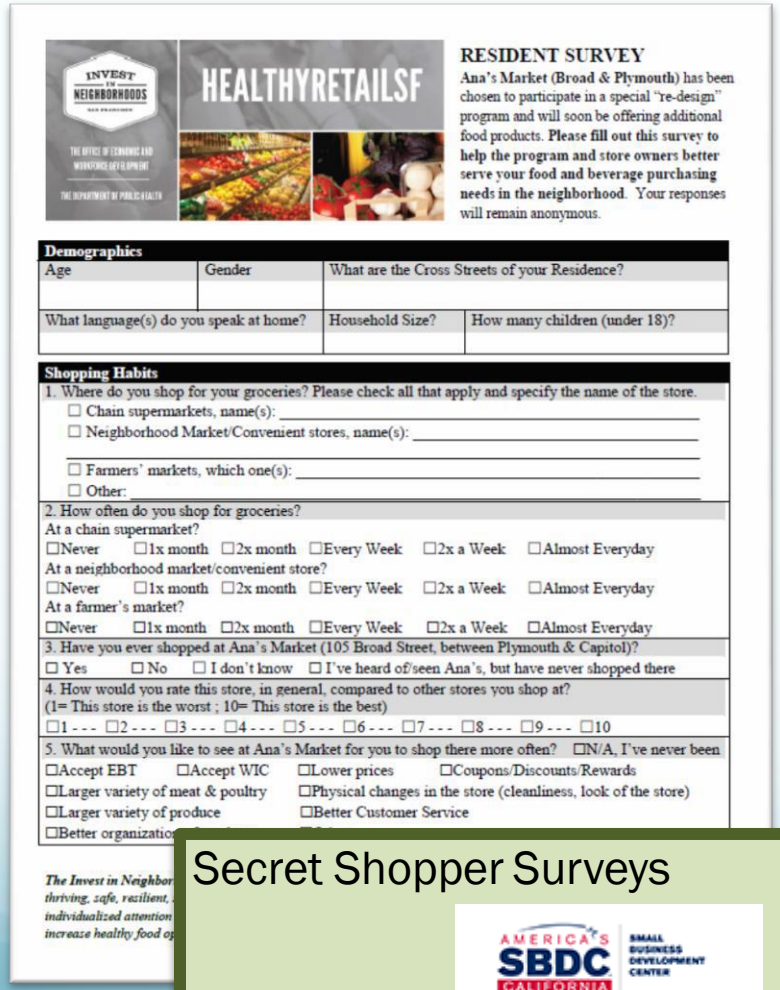
HRSF Evaluation Framework



Is HRSF meeting community needs?



INVEST IN NEIGHBORHOODS

HEALTHYRETAILSF

RESIDENT SURVEY

Ana's Market (Broad & Plymouth) has been chosen to participate in a special "re-design" program and will soon be offering additional food products. **Please fill out this survey to help the program and store owners better serve your food and beverage purchasing needs in the neighborhood.** Your responses will remain anonymous.

Demographics

Age	Gender	What are the Cross Streets of your Residence?	
What language(s) do you speak at home?		Household Size?	How many children (under 18)?

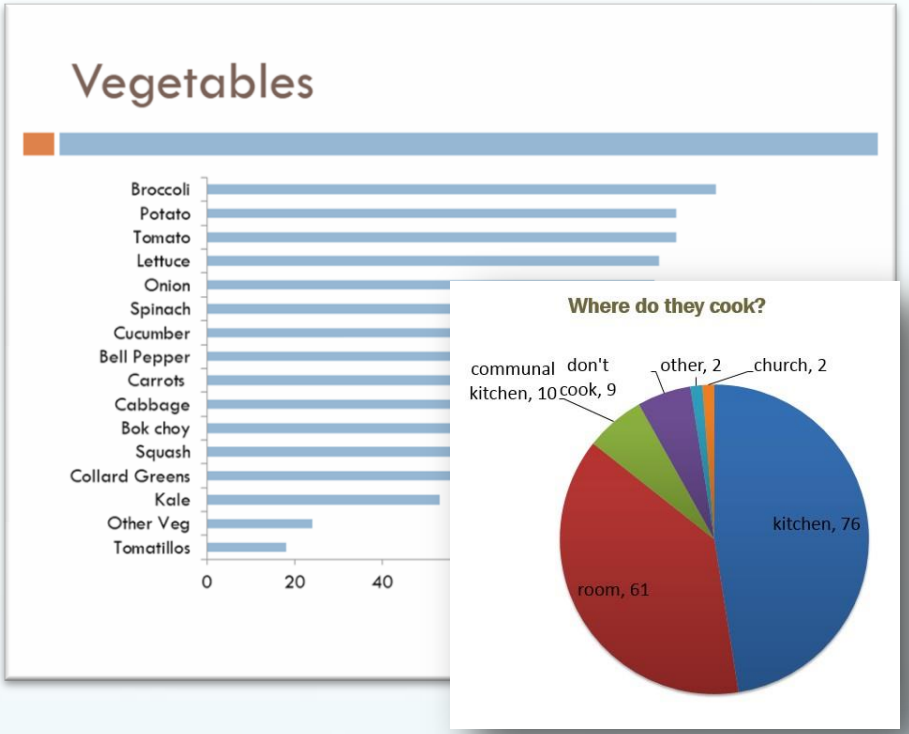
Shopping Habits

1. Where do you shop for your groceries? Please check all that apply and specify the name of the store.
   - ☐ Chain supermarkets, name(s): _____
   - ☐ Neighborhood Market/Convenient stores, name(s): _____
   - ☐ Farmers' markets, which one(s): _____
   - ☐ Other: _____
2. How often do you shop for groceries?
   At a chain supermarket?
   ☐Never ☐1x month ☐2x month ☐Every Week ☐2x a Week ☐Almost Everyday
   At a neighborhood market/convenient store?
   ☐Never ☐1x month ☐2x month ☐Every Week ☐2x a Week ☐Almost Everyday
   At a farmer's market?
   ☐Never ☐1x month ☐2x month ☐Every Week ☐2x a Week ☐Almost Everyday
3. Have you ever shopped at Ana's Market (105 Broad Street, between Plymouth & Capitol)?
   ☐ Yes ☐ No ☐ I don't know ☐ I've heard of/seen Ana's, but have never shopped there
4. How would you rate this store, in general, compared to other stores you shop at?
   (1= This store is the worst ; 10= This store is the best)
   ☐1 --- ☐2 --- ☐3 --- ☐4 --- ☐5 --- ☐6 --- ☐7 --- ☐8 --- ☐9 --- ☐10
5. What would you like to see at Ana's Market for you to shop there more often? ☐N/A, I've never been
   ☐Accept EBT ☐Accept WIC ☐Lower prices ☐Coupons/Discounts/Rewards
   ☐Larger variety of meat & poultry ☐Physical changes in the store (cleanliness, look of the store)
   ☐Larger variety of produce ☐Better Customer Service
   ☐Better organizatio

The Invest in Neighbor
thriving, safe, resilient,
individualized attention
increase healthy food op

Secret Shopper Surveys

America's SBDC California – Northern CA Network | Small Business Development Center – San Francisco



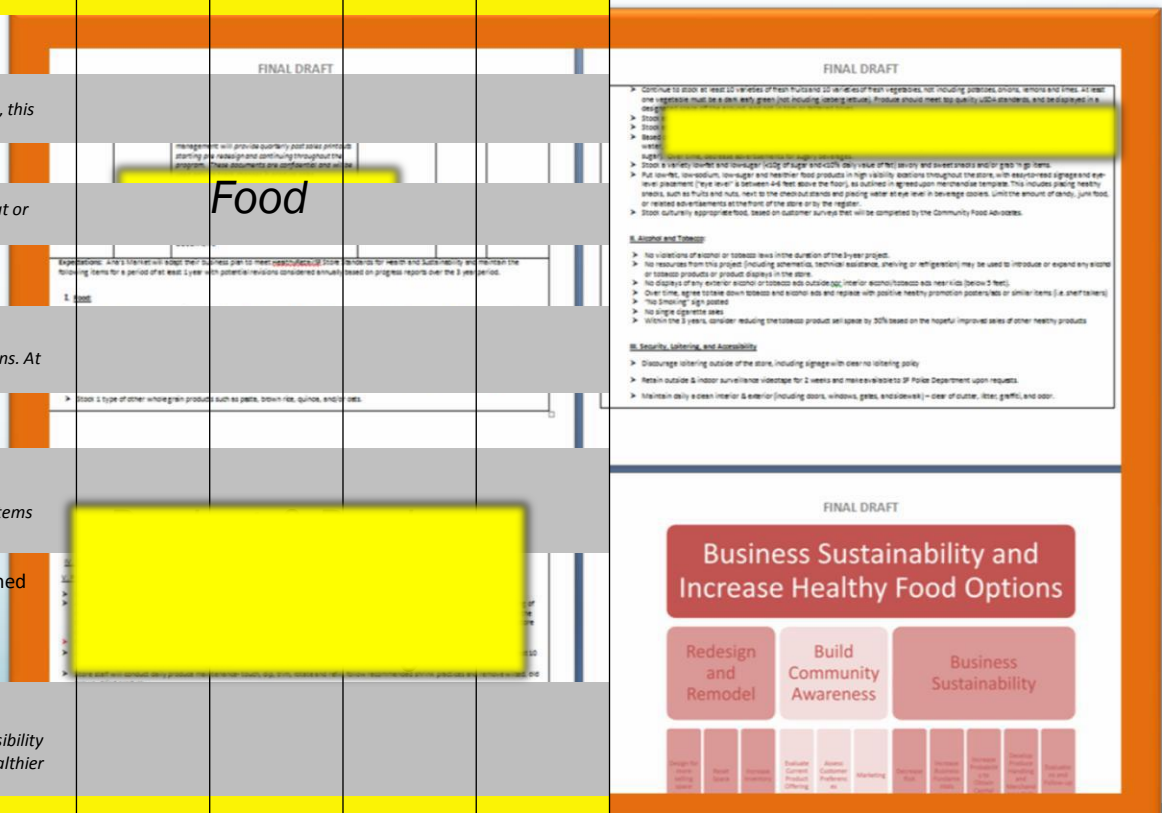
Resident input integrated into neighborhood store planning & store offerings

Are Stores Complying with Program Deliverables?

Monthly Store Report Cards

SEFA Corner Store MONTHLY Progress Report **Store name:_____** **FG Point:_____** **CFA Point:____**

Healthy Retail Goal Score each of the following from 1-5	**Mo 1**	**Mo 2**	**Mo 3**	**Mo 4**
Food				
1. Stock low fat or skim milk: *Include a lactose-free or non-dairy option if possible.*				
2. Has at least 2 varieties of high- fiber cereal: *Cereal with >10% DV of fiber/serving. Ideally, this cereal is also low-sugar (<7 g/serving).*				
3. Has 100% whole wheat bread				
4. Has at least 2 types of frozen vegetables/fruit: *Frozen veggies and fruit with no added fat or sugar*				
5. Has 5 options of fresh fruit available: *Top quality; not including lemons and limes*				
6. Has 5 options of fresh vegetables available: *Top quality, not including potatoes and onions. At least one vegetable must be a dark leafy green (not including iceberg lettuce).*				
7. Stocks at least one type of dried whole grain *such as brown rice, oatmeal, etc.*				
8. Reduced presence of candy at the checkout counter: *Goal is to remove 30% of candy items away from checkout counter, either by reducing stock or moving to a less visible location*				
9.Variety of non-sugar sweetened beverages available (water, 100% juice, unsweetened teas, etc.)				
10. Healthy food items above are well merchandised: *Healthier food products in high visibility locations throughout the store, with easy-to-read signage and eye-level placement, such as healthier snacks next to checkout stands and water at eye level in the beverage coolers.*				



Are merchants satisfied & benefiting?

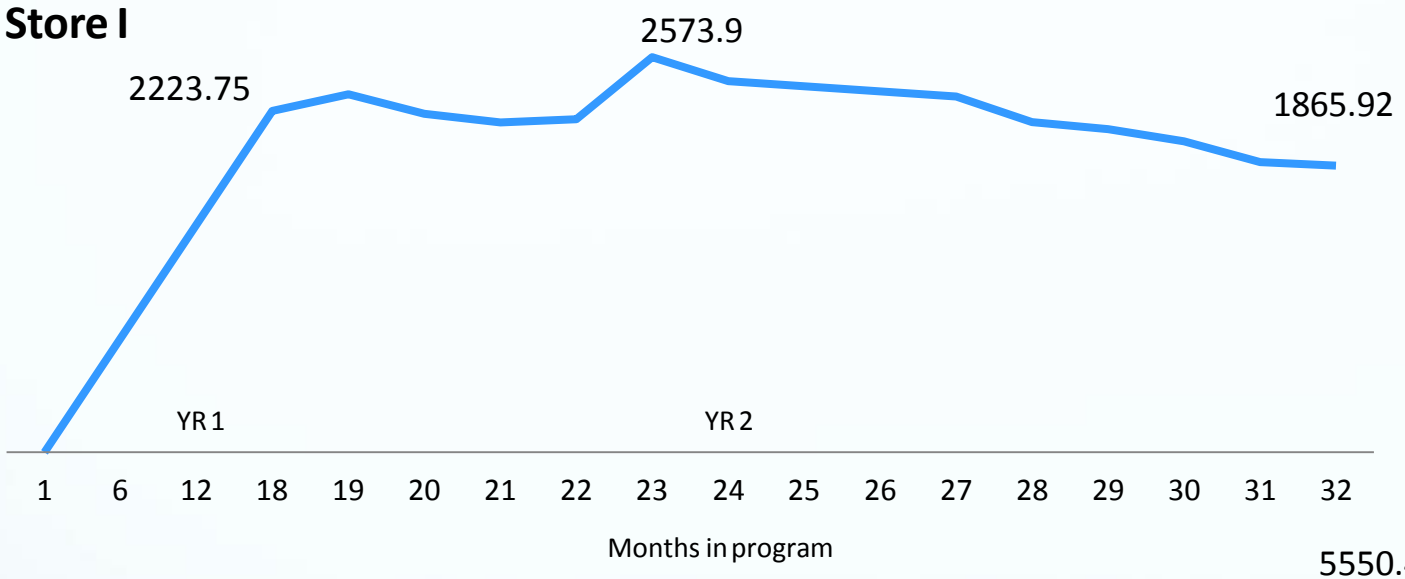
Point-of-Sale data collected in participating stores

<u>Track sales in 6 depts./ categories</u>

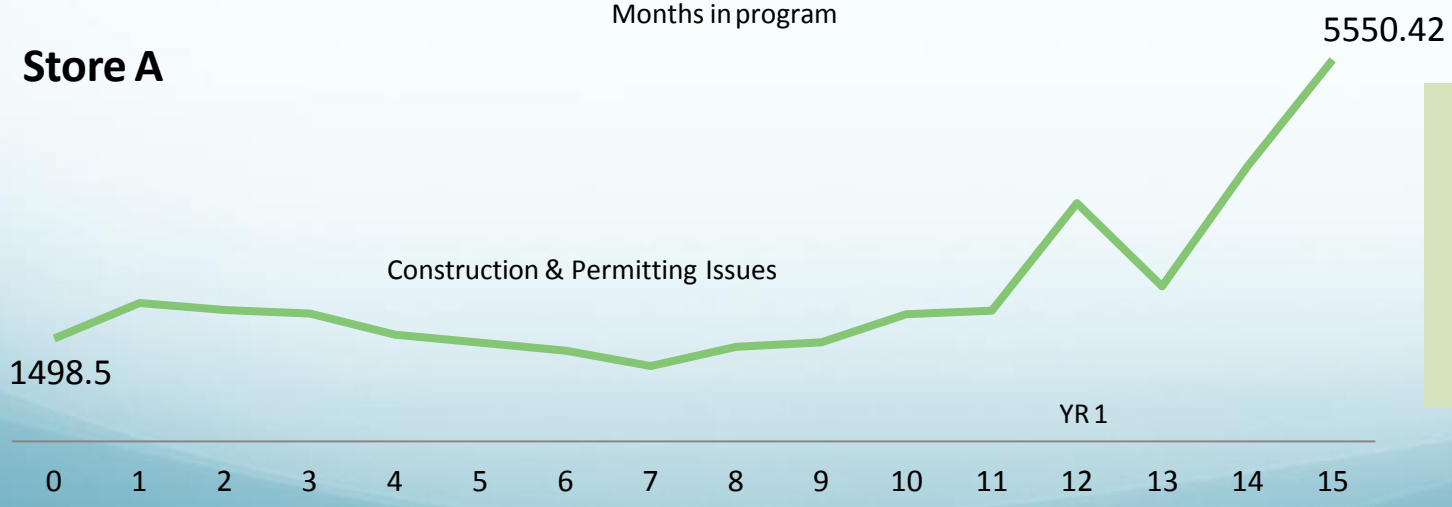
- Produce
- Water
- Alcohol
- Tobacco
- Sugary Drinks/Soda
- Healthy Snacks/Grab & Go ?

- For each category per mo:
  - # items, pieces, units sold
  - Total sales
  - % total sales for each category

Produce Sold - Pilot Stores

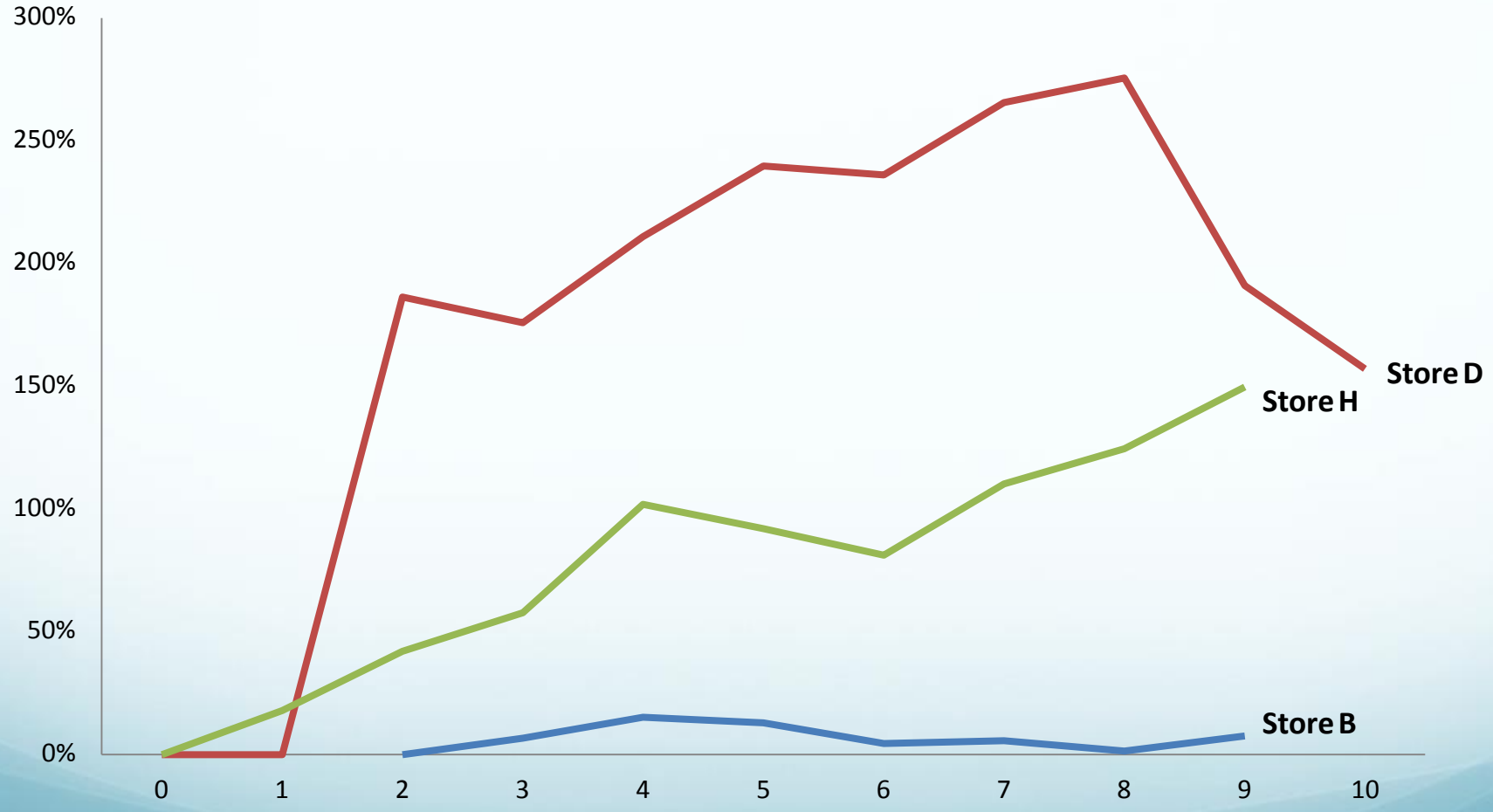


From zero to consistent **~2000** produce/mo



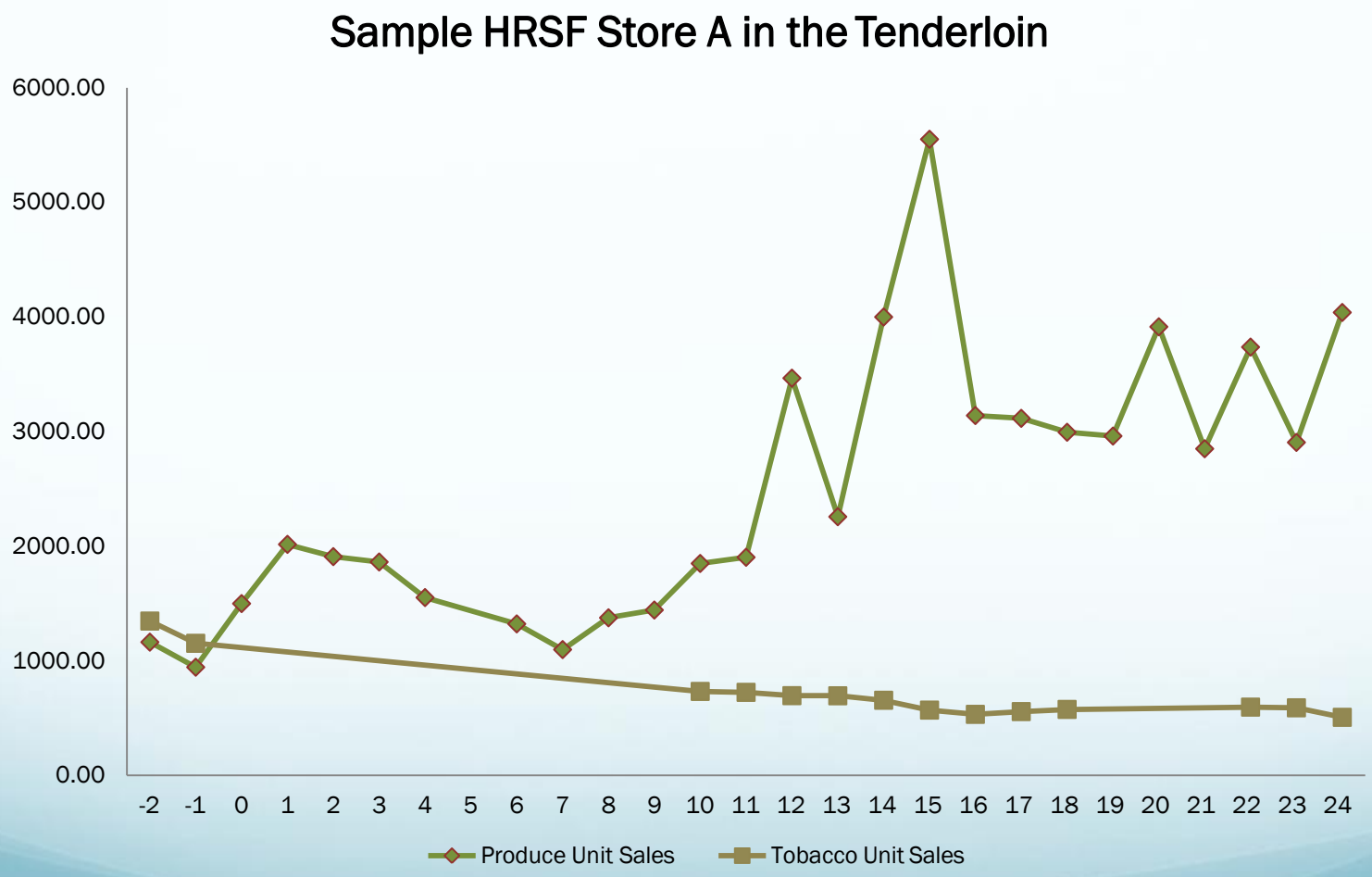
Increase produce sales from baseline of ~1500 produce

% change in produce sold/mo.

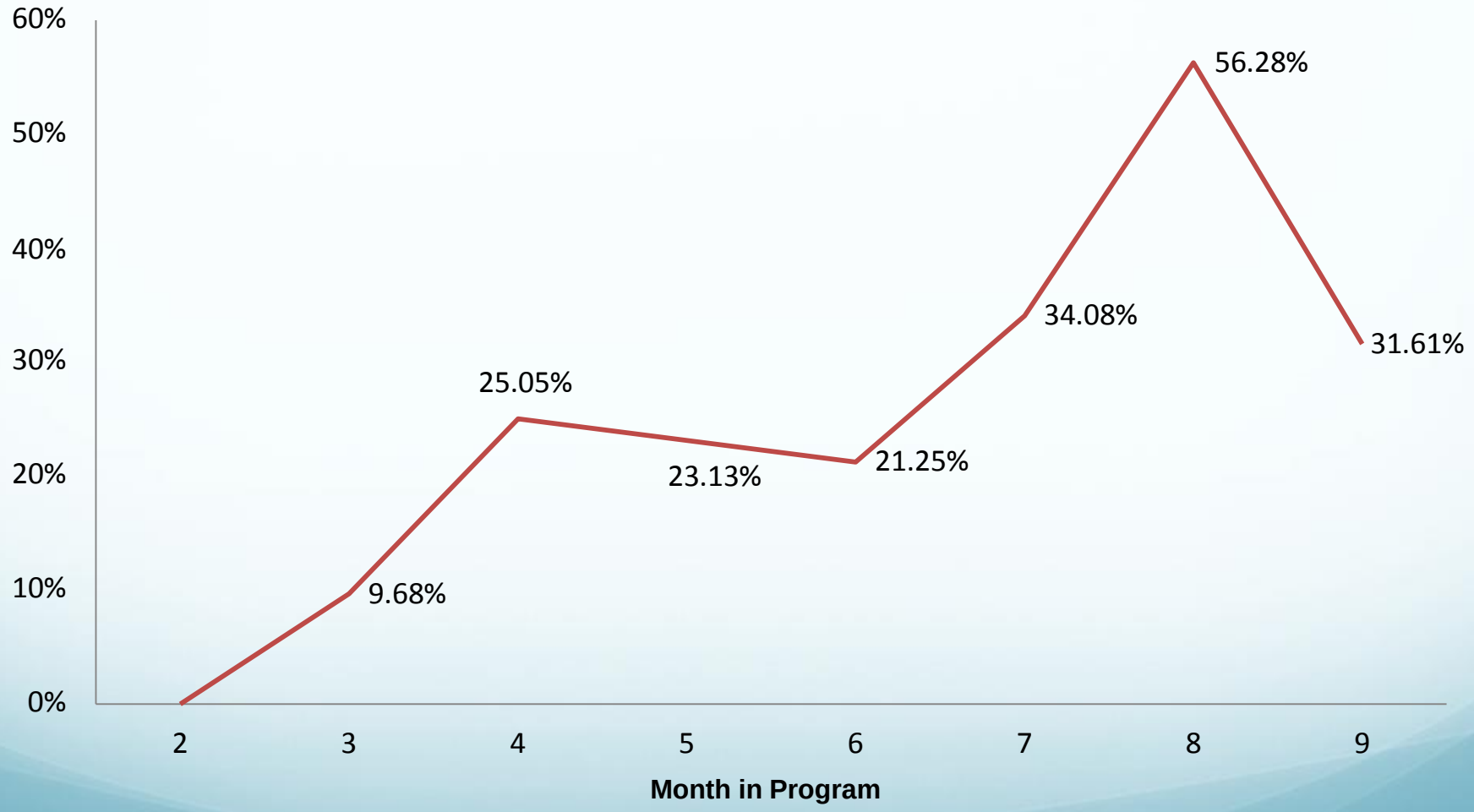


Store H & D are selling at least 2-3x more produce

Gradual decrease in tobacco unit sales are

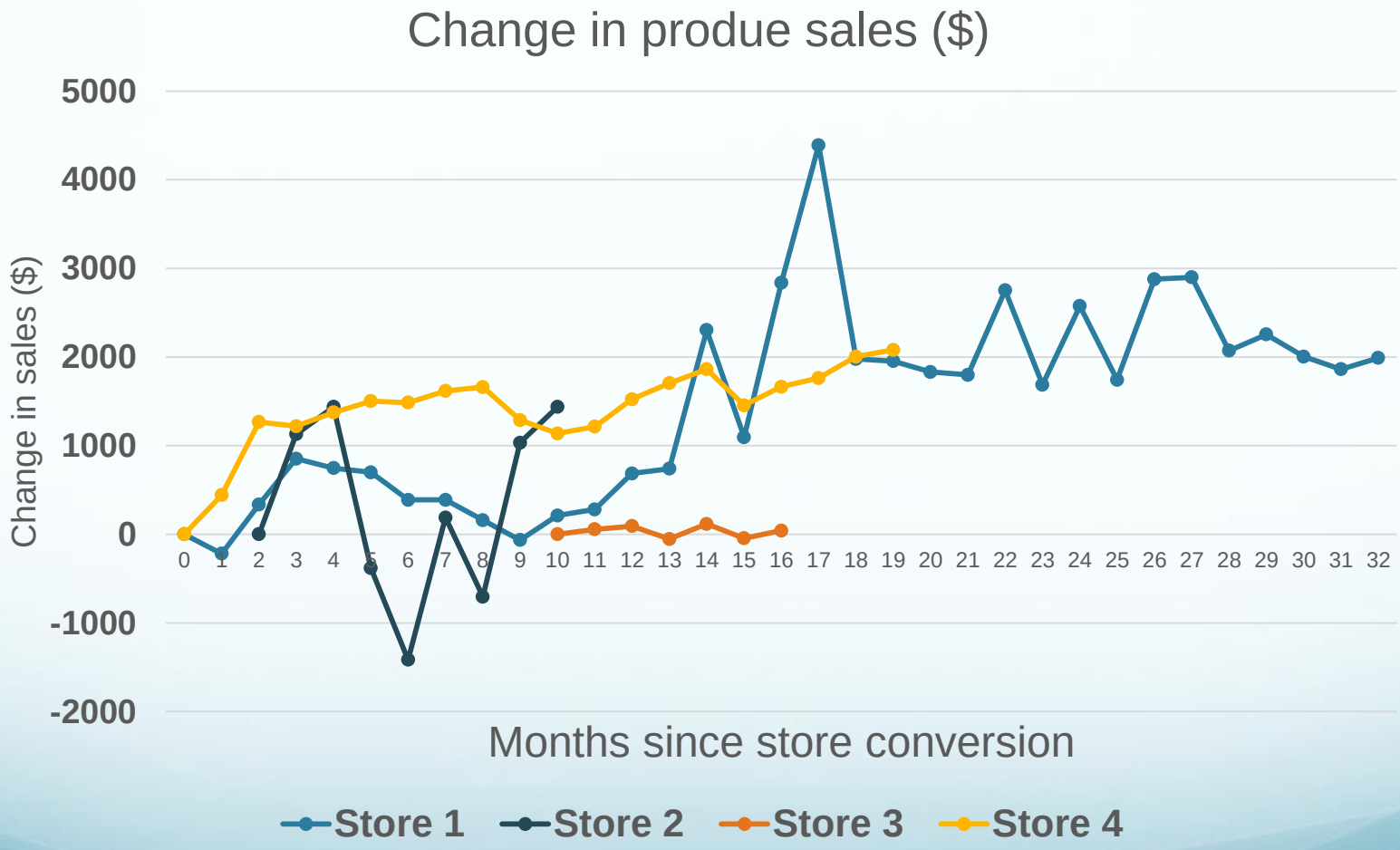


% change in total sales



Combined Total Sales continue to be greater than Baseline Sales

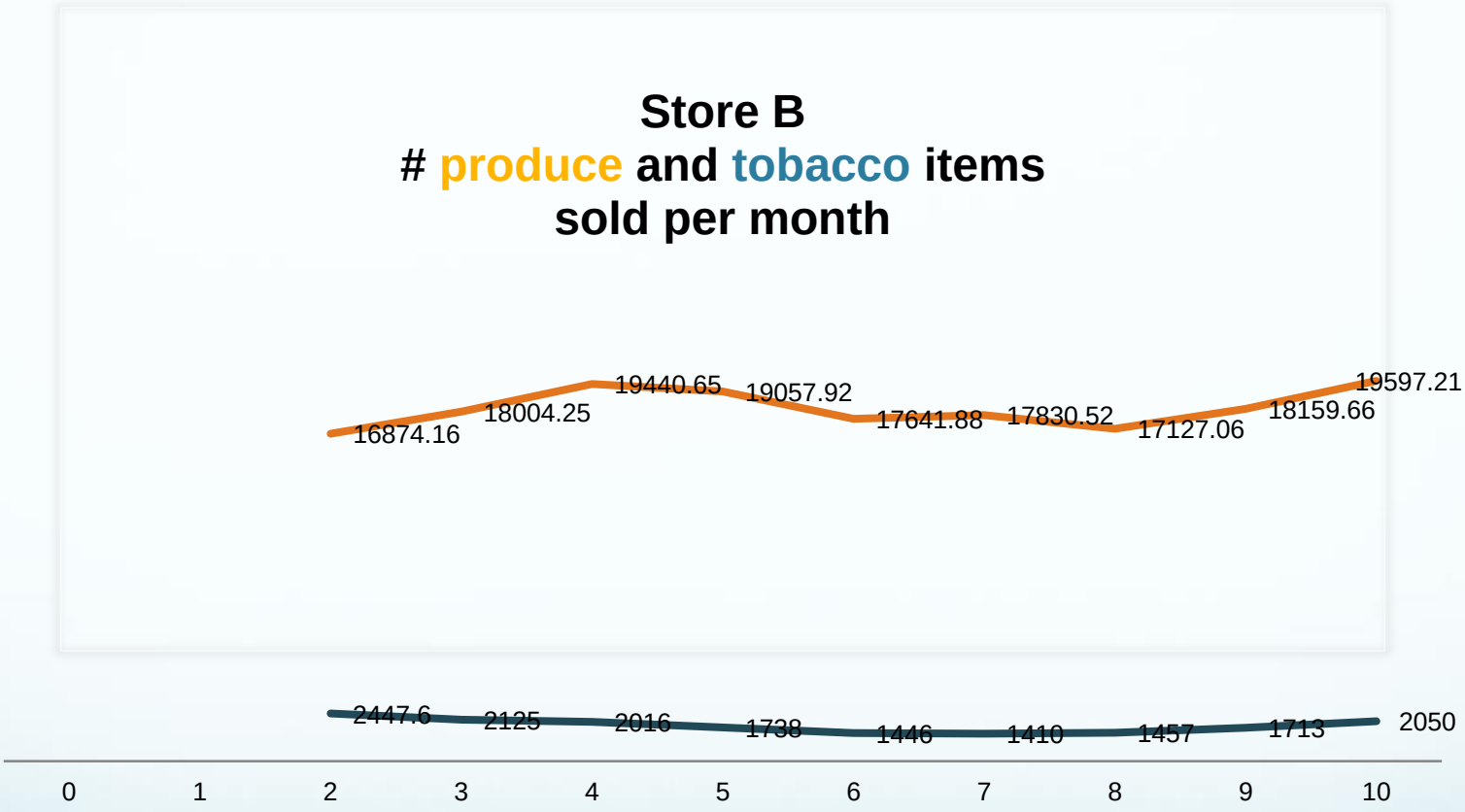
Results: Produce sales



Stay tuned!

www.healthyretailsf.org

www.healthyTL.org


Store B
produce and tobacco items
sold per month
16874.16
18004.25
19440.65
19057.92
17641.88
17830.52
17127.06
18159.66
19597.21
2447.6
2125
2016
1738
1446
1410
1457
1713
2050
0
1
2
3
4
5
6
7
8
9
10

Summary: Multilevel interventions

- May improve the “precision, efficacy & effectiveness” of interventions targeting different levels
- Demonstrated promise for reducing burden of cancer, other diseases, in communities of color

  Gorin et al., 2012 Holmes et al., 2008

- Still focus overwhelmingly on innermost levels of SEM

  Trickett, 2009

- Seldom use measures that truly capture intra- inter-level interactions (HLM, Random forests, v. measures of Individual level change

  add ref

- Community engagement in MLIs appears to increase effectiveness and sustainability

“I don’t think outside the box.
I think outside the warehouse.”

Frank Rose, late community leader & partner