

Lessons Learned from Evaluating the Implementation of a Healthier Checkout Initiative



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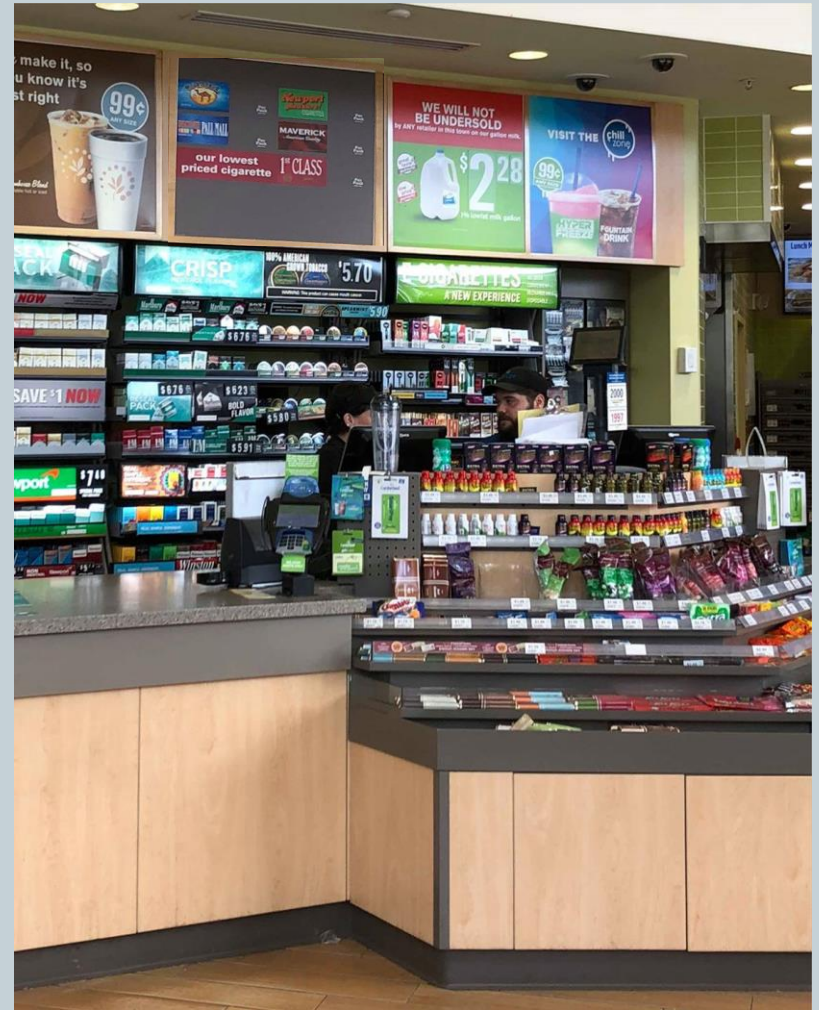
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- Students
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- Retail Partner



Study Objectives



- *To test the feasibility of implementing and evaluating a healthier checkout program in a large convenience retail chain.*
- *To evaluate the impact of the intervention on sales of healthier and less healthy items located in the checkout space.*
- *To evaluate and utility of the GRAC framework in working with retail and non-profit partners.*

Background: Healthy Food Retail Interventions



- The retail food environment can impact both obesity and dietary intake
- Convenience stores are a pervasive part of the retail food environment
 - 150,000+ c-stores in the US, with \$550 billion sales annually
 - ~1/2 of the US population shops at c-stores on a daily basis
- Convenience store-based interventions have shown positive results, but the impact of specific healthy retail strategies is unknown

Background: Grocery Retailer Academic Collaborative Guidelines (GRAC)



GROCERY RETAILER ACADEMIC COLLABORATIVE GUIDELINES



View the [GRAC Guidelines](https://nopren.org/wp-content/uploads/2017/05/GRAC-Guidelines.pdf) here

The Grocery Retailer Academic Collaborative known as “GRAC” will facilitate collaborations between retailers, academic researchers, and evaluation scientists who wish to engage in mutually beneficial relationships related to Healthy Food Retail Research.

These guidelines were developed by the Healthy Food Retail Working Group’s Retailer subgroup and supported by RWJF’s Healthy Eating Research and the CDC’s Nutrition and Obesity Policy Research and Evaluation. 2017.

GRAC Purpose



- Facilitate collaborations between grocery retailers & academic researchers/evaluation scientists
- Emphasis on WIC/SNAP populations in diverse settings



GRAC Aims



1. Serve as a resource to **understand shoppers & policy impacts on retailer business**
2. **Increase the quality and quantity of Healthy Food Retail Research projects** within grocery stores and emerging retail formats
3. Engage in **healthy food retail research projects to increase purchases that are economically sustainable for the retailer, budget neutral for shoppers, increase positive community relations for grocery stores** and provide for potential long-term sustainability.
4. **Organize conferences** to share and provide retailers and academics a forum to discuss challenges and opportunities

GRAC Guidance for Researchers



- **Scientific responsibilities of the researcher:**
 - Propose novel research idea, methods, research timeline, dissemination plan, & sustainability plan

- **Researcher commitments to the retailer:**
 - Multiple cost considerations (profit neutrality, shopper budget neutrality, no-costs to retailer during the research project)
 - Provide benefit to the retailer
 - Maintain compliance with corporate policy
 - Agree upon data sharing and use

GRAC Guidance for Retailers



- **Open communication on:**
 - Scope of research projects that the retailer feels comfortable accommodating
 - Areas in which the researcher could help retailer in business practices
 - Identifying a point-of-contact for the researcher

- **Retailer commitment to the researcher:**
 - Support for the research project; willingness to make agreed upon changes to the store(s) for the project duration
 - Agree upon data sharing and use, including WIC/SNAP data
 - Allowing researchers to collaborate with retailers' shoppers (e.g., survey data collection), managers(e.g., store managers), and corporate management(e.g., Chief Information Officer; Chief Produce Manager)
 - Openness to sustaining changes if beneficial to the retailers

The Partners



- **Retailer:**
 - A large (700+ stores) convenience store chain located primarily in New York, New England and Florida
- **Partnership for a Healthier America:**
 - A non-profit that works to leverage the power of the private sector to bring lasting systemic change to improve the food supply and increase physical activity
- **Research Team:**
 - A team of researchers from the Healthy Food Retail working group from 5 universities



Methods

- Study Design
 - 3-month, quasi experimental, pilot study
 - 20 stores in New Hampshire
 - n=10 “healthier checkout” stores
 - n=10 comparison stores
 - Group assignment
 - All stores had an identical store layout



Checkout space at a Comparison Store

Healthier Checkout Intervention



- As part of the PHA commitment, retailers pledge to select and incorporate healthier items in the check out space
- 8 new items were selected (e.g. KIND bars, fruit crisps, nut mixes)
- 5 of 8 items were previously in the store
 - The intervention added these items in the checkout space
 - 3 new products were added to the checkout space (intervention) & in the store (int. & comparison)
- The intervention was implemented by retailer management teams

Data Collection Methods



- **Intervention fidelity**
 - Fidelity assessments were conducted in intervention (n=9) and control stores (n=3)
- **Sales of healthier items**
 - Weekly sales data (total sales & 8 healthier items) collected 3-months prior to intervention & during 3 month intervention
- **Qualitative interviews**
 - 2 qualitative interviews were conducted with the retailer's Category Brand Manager, and NACS Vice President of Strategic Initiatives



Fidelity Data Collection Tool

Shelf 10:



Item	Product	Available?	Price	Portion	Depth of Stock	Notes
10.1	M&M's Peanut Share Size	☐ Yes, in correct position ☐ Yes, but not in correct position ☐ Yes, but a different flavor/version ☐ Not available		☐ 3.64oz ☐ Other: _____	☐ 1 ☐ 2 ☐ 3+	
10.2	M&M's Plain Share Size	☐ Yes, in correct position ☐ Yes, but not in correct position ☐ Yes, but a different flavor/version ☐ Not available		☐ 3.14oz ☐ Other: _____	☐ 1 ☐ 2 ☐ 3+	
10.3	Snickers King Size	☐ Yes, in correct position ☐ Yes, but not in correct position ☐ Yes, but a different flavor/version ☐ Not available		☐ 3.70oz ☐ Other: _____	☐ 1 ☐ 2 ☐ 3+	
10.4	Twix Caramel King Size	☐ Yes, in correct position ☐ Yes, but not in correct position ☐ Yes, but a different flavor/version ☐ Not available		☐ 3.35oz ☐ Other: _____	☐ 1 ☐ 2 ☐ 3+	
10.5	Kit Kat Bar King Size	☐ Yes, in correct position ☐ Yes, but not in correct position ☐ Yes, but a different flavor/version ☐ Not available		☐ 2.80oz ☐ Other: _____	☐ 1 ☐ 2 ☐ 3+	
10.6	Hershey Cookie Layer Crunch Caramel King Size	☐ Yes, in correct position ☐ Yes, but not in correct position ☐ Yes, but a different flavor/version		☐ 2.10oz ☐ Other: _____	☐ 1 ☐ 2 ☐ 3+	

Fidelity Data Collection Procedures



- Intervention fidelity was assessed in 9 of 10 intervention stores and 3 of 10 control stores.
- Data was collected by two trained research assistants over two consecutive days using smartphones and entered into Qualtrics (Qualtrics, Provo, UT).
- Control store fidelity assessments were completed by hand.
- Inter-rater reliability scores were calculated to determine reliability of the fidelity instruments
 - Intervention Stores:
 - Average % agreement: 95.26%
 - Cohen's Kappa: 0.87
 - Control Stores:
 - Average % agreement: 92.81%
 - Cohen's Kappa: 0.62

Fidelity Data Collection Results



- Full assessment (exact match of the plan-o-gram location):
 - 28.55% of items were present & in the correct location
 - 100% of control stores did not have healthier items at checkout
- Simple assessment (presence/absence of each item):
 - Highly varied among the intervention stores
 - Range=0-8 items; mean $\pm$ SD= 3.9 $\pm$ 3.1 items

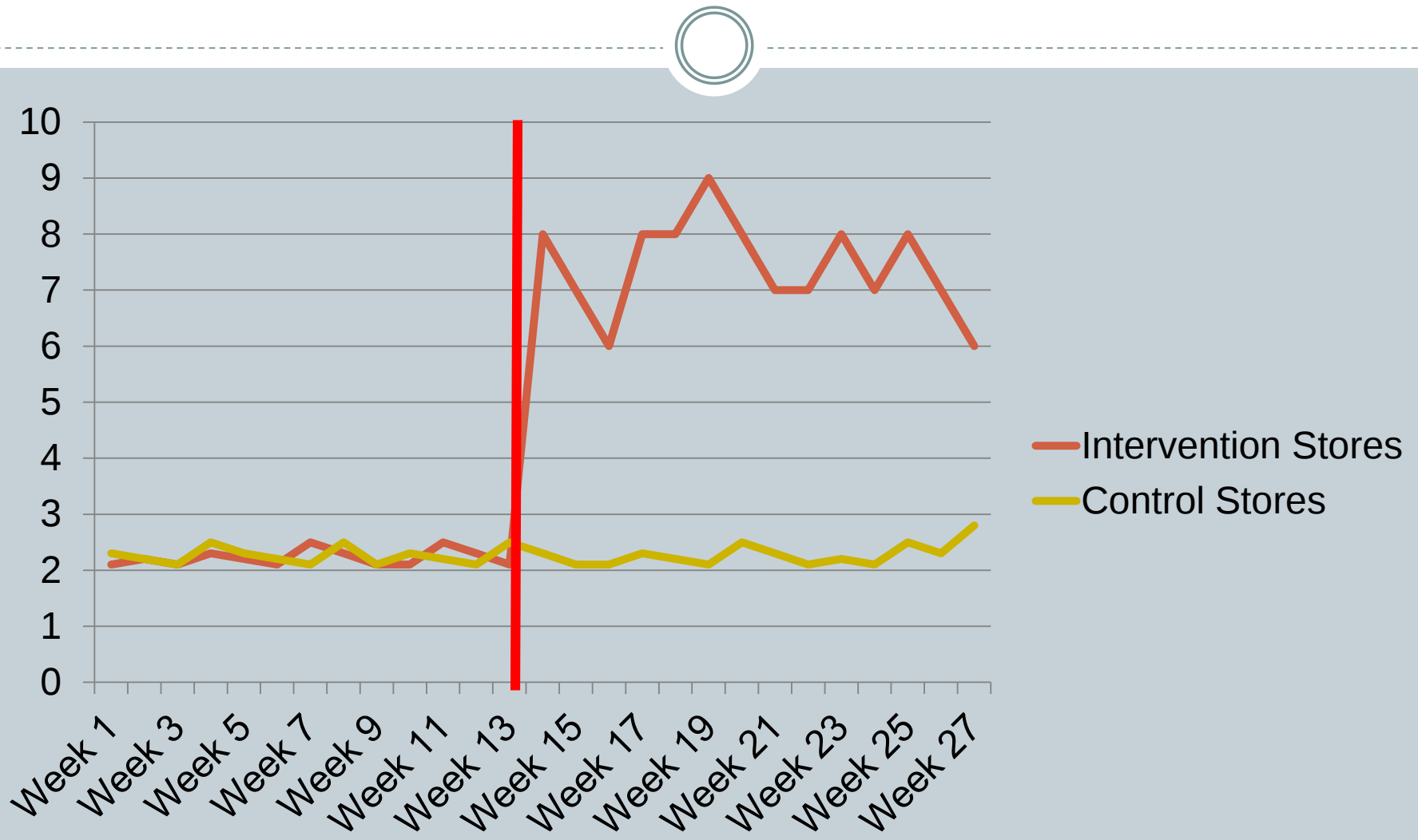
Sales Data Collection & Analysis



- Weekly sales data
 - Baseline (April- June 2018)
 - Intervention (July – October 2018)
- Analyses:
 - Time series graphs (data visualization)
 - T-tests assessed mean pre/post changes in sales of intervention vs. comparison stores
 - Sales data were adjusted for overall store sales, then multiplied by 100,000 for interpretability purposes
 - Analyses restricted to ONLY the stores that had the item present at checkout. The number of items that stores actually present at checkout was highly variable.

An Ideal Graph That We'd Love To See...

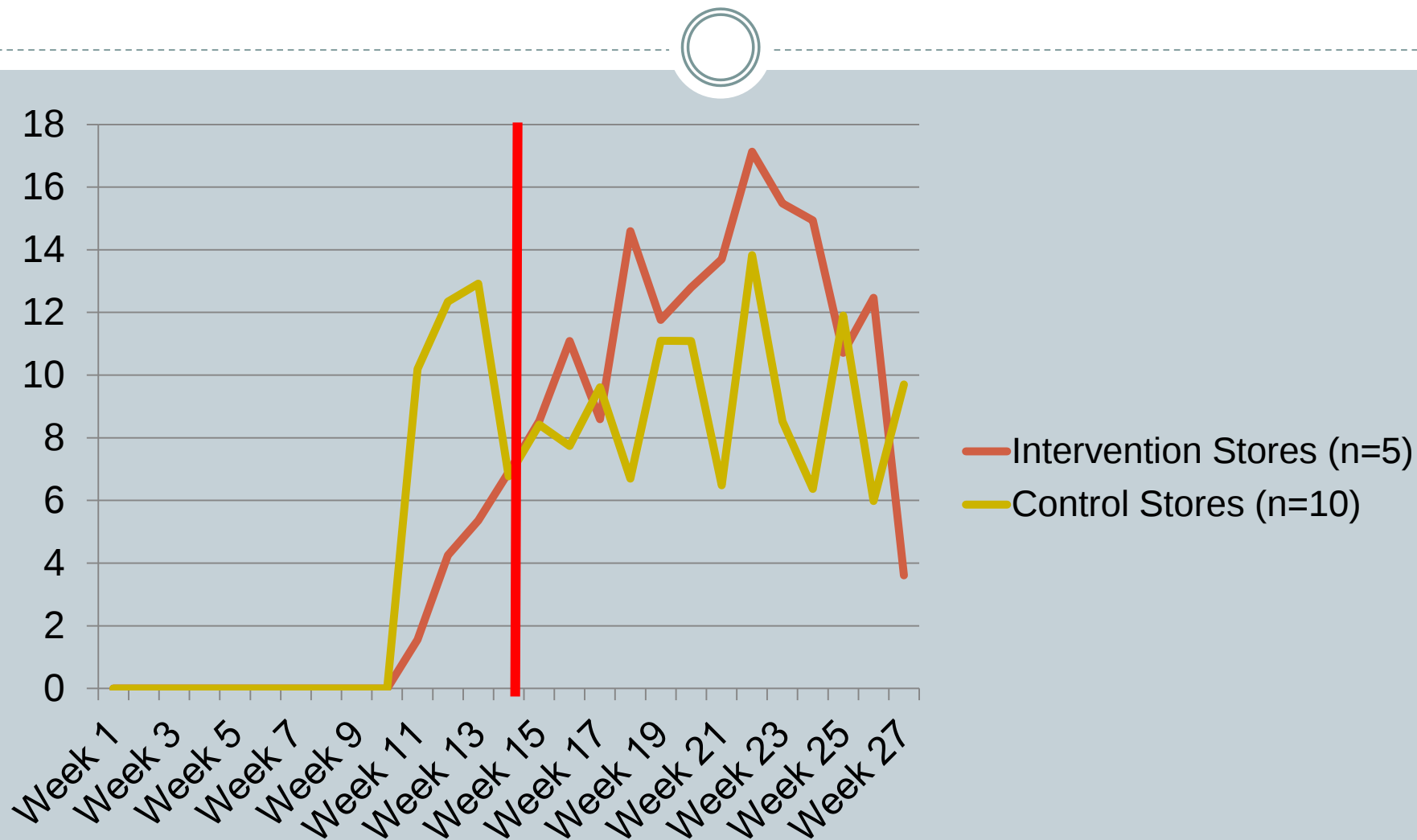
(Note: This is made up data.)





Item 1:
Store-brand Apple Fruit Crisps

Store-brand Apple Fruit Crisps



*Includes intervention stores 5403, 5447, 5404, 5425, 5529

T-test Results: Apple Fruit Crisps

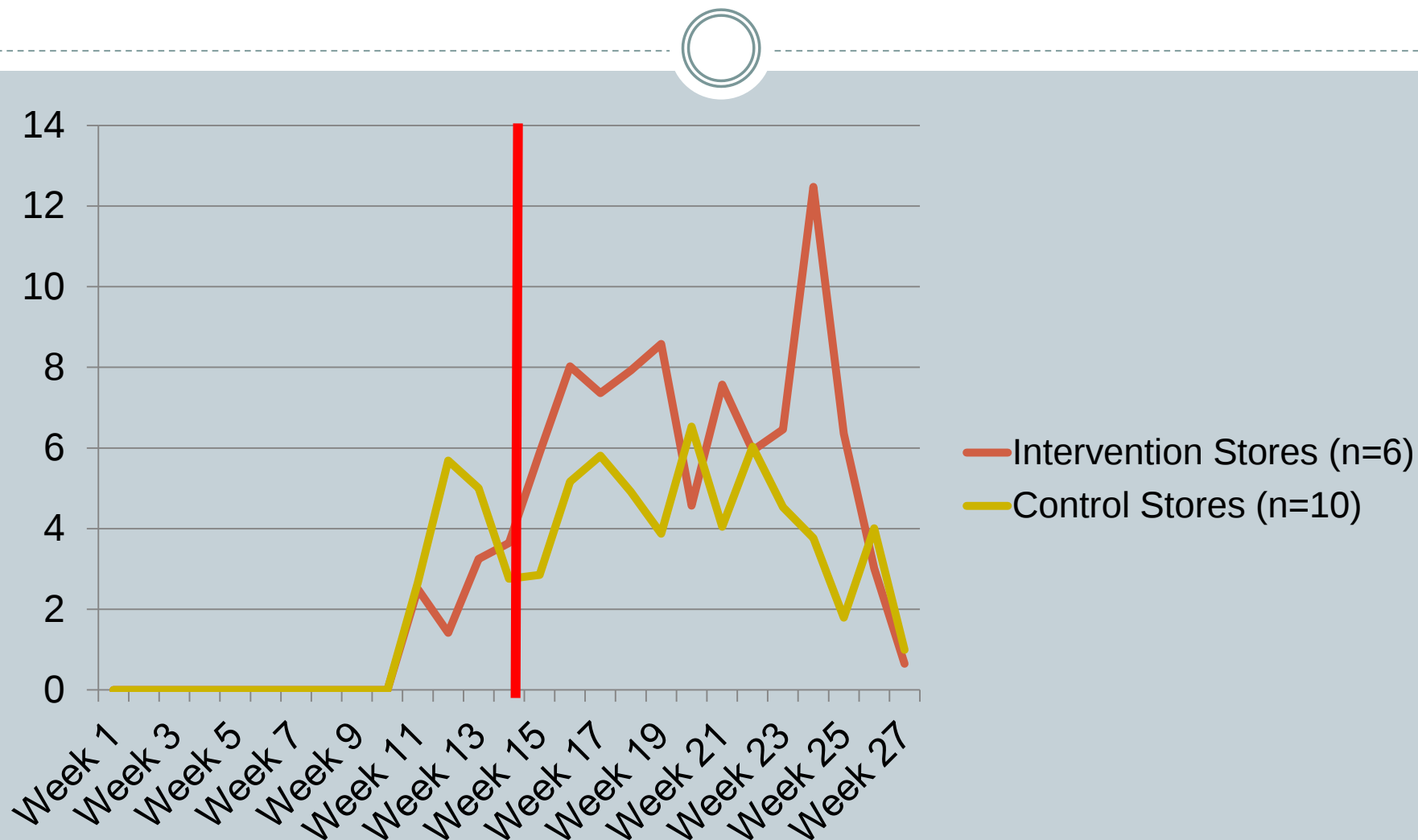


- **Intervention Stores:**
 - Average change in weekly sales between baseline and intervention period: 10.52
- **Control Stores:**
 - Average change in weekly sales between baseline and intervention period: 5.98
- But these changes are not significantly different from each other (*Pr($|T| > |t|$) = 0.17).



Item 2:
Store-brand Banana Fruit Crisps

Store-brand Banana Fruit Crisps



*Includes intervention stores 5403, 5447, 5404, 5439, 5425, 5529

T-test Results: Banana Fruit Crisps

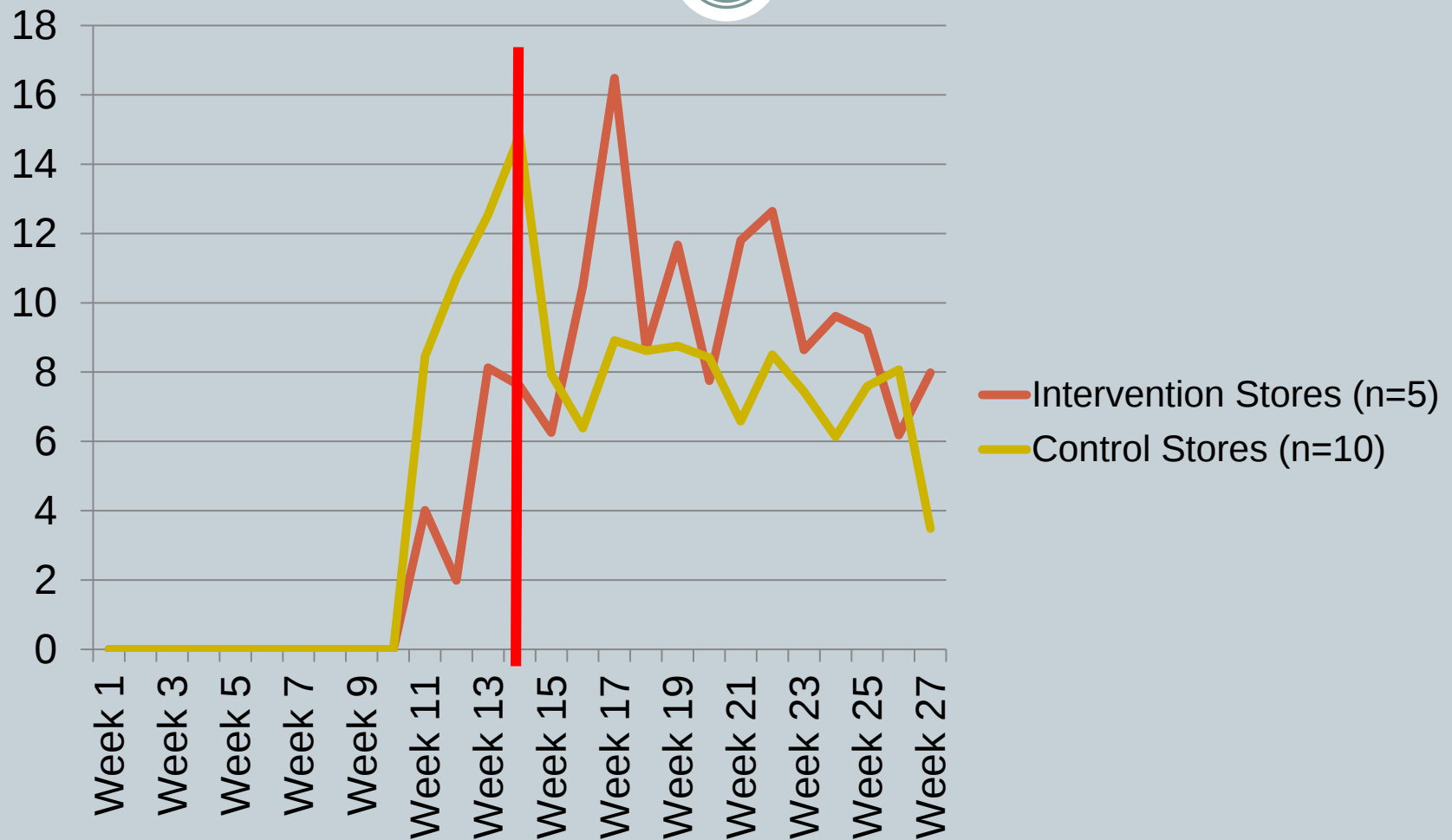


- **Intervention Stores:**
 - Average change in weekly sales between baseline and intervention period: 5.05
- **Control Stores:**
 - Average change in weekly sales between baseline and intervention period: 1.19
- These changes **ARE** significantly different from each other! (*Pr($|T| > |t|$) = 0.04).



Item 3:
Store-brand Strawberry Fruit Crisps

Store-brand Strawberry Fruit Crisps



*Includes intervention stores 5403, 5447, 5404, 5425, 5529

T-test Results: Strawberry Fruit Crisps

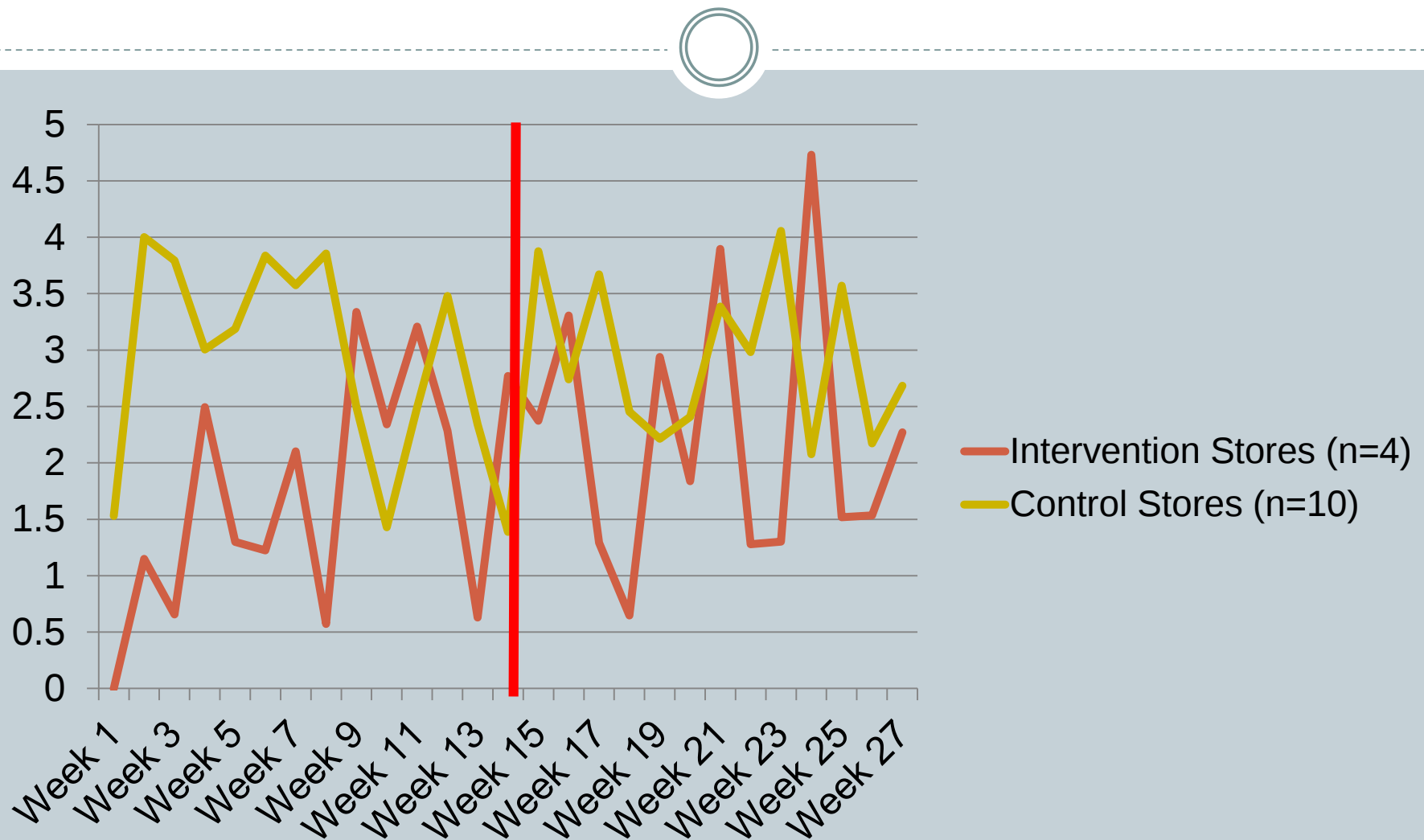


- **Intervention Stores:**
 - Average change in weekly sales between baseline and intervention period: 8.46
- **Control Stores:**
 - Average change in weekly sales between baseline and intervention period: 5.41
- But these changes are not significantly different from each other ($*Pr(|T| > |t|) = 0.24$).



Item 4:
Store-brand “Ballpark” Nut Mix
Peanuts & Sunflower Seeds

Store-brand “Ballpark” Nut Mix



*Includes intervention stores 5403, 5404, 5425, 5529

T-test Results: “Ballpark” Nut Mix

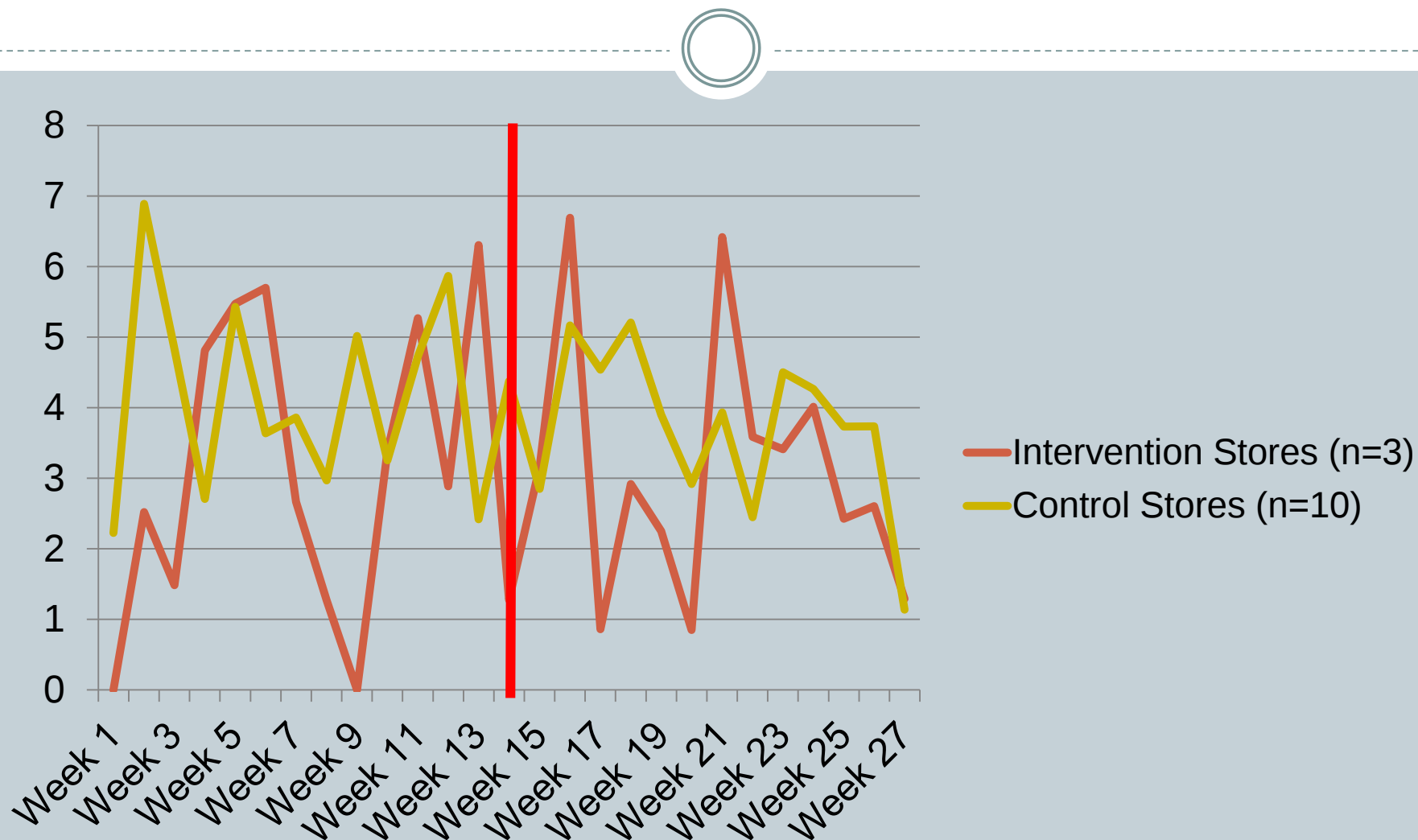


- **Intervention Stores:**
 - Average change in weekly sales between baseline and intervention period: 0.63
- **Control Stores:**
 - Average change in weekly sales between baseline and intervention period: -0.16
- But these changes are not significantly different from each other (*Pr(|T| > |t|) = 0.34).



Item 5:
Store-brand Toffee Peanut & Cashew Mix

Store-brand Toffee Nut Mix



*Includes intervention stores 5403, 5529, 5545

T-test Results: Toffee Nut Mix

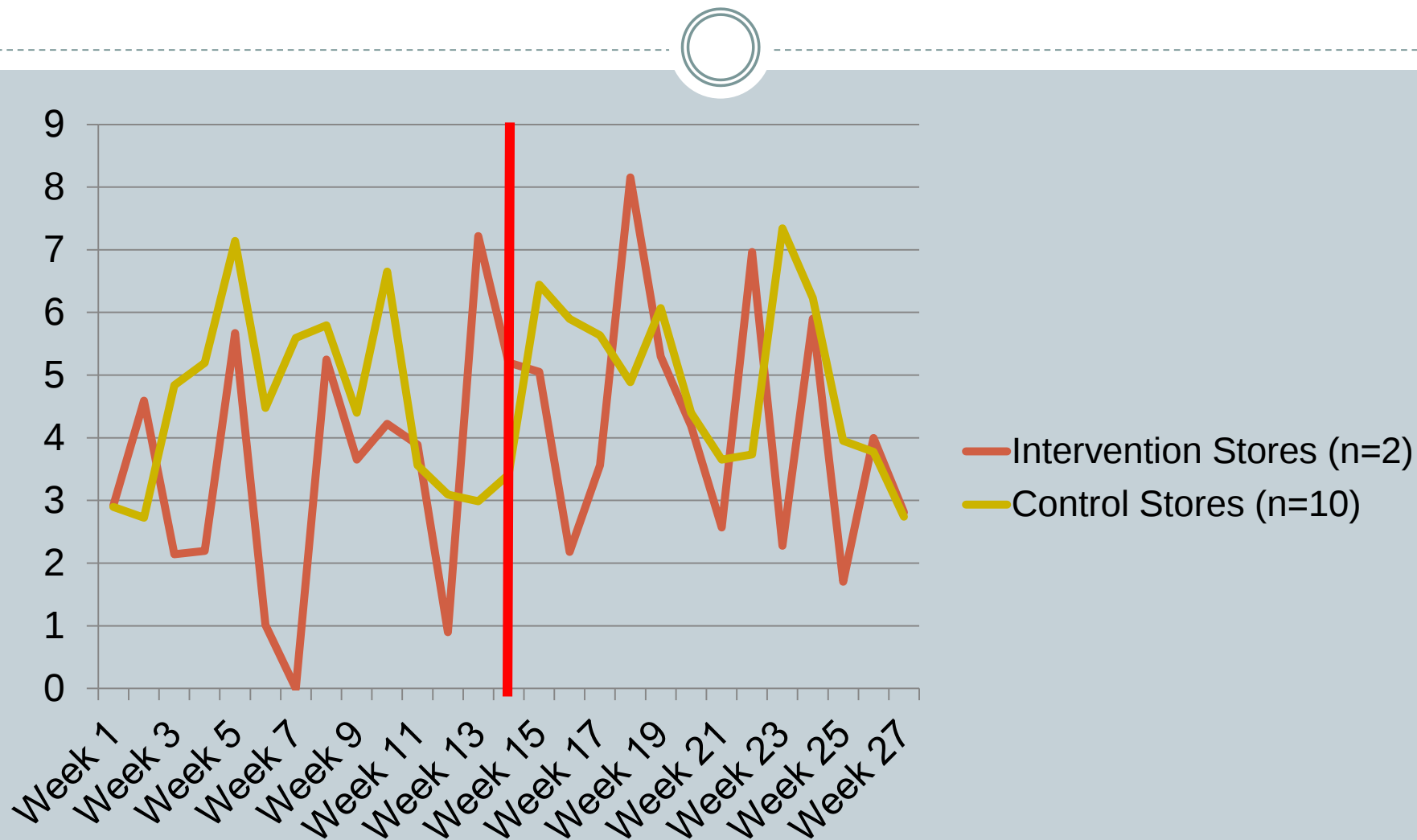


- **Intervention Stores:**
 - Average change in weekly sales between baseline and intervention period: -0.25
- **Control Stores:**
 - Average change in weekly sales between baseline and intervention period: -0.42
- These changes are not significantly different from each other (*Pr($|T| > |t|$) = 0.89).



Item 6:
Store-brand Honey Roasted Nut Mix

Store-brand Honey Roasted Nut Mix



*Includes intervention stores 5425 and 5529

T-test Results: Honey Roasted Nut Mix

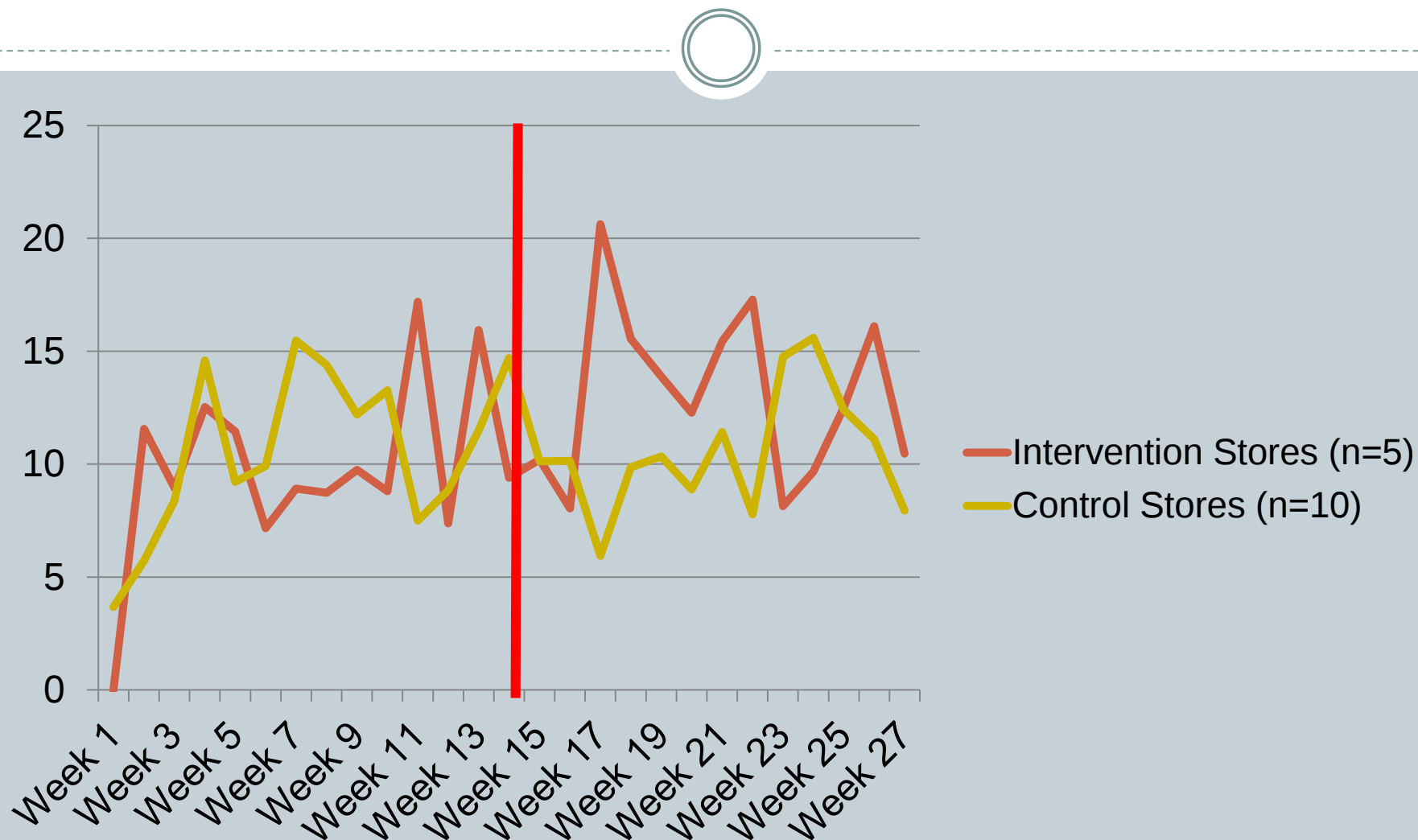


- **Intervention Stores:**
 - Average change in weekly sales between baseline and intervention period: 0.98
- **Control Stores:**
 - Average change in weekly sales between baseline and intervention period: 0.26
- But these changes are not significantly different from each other ($*Pr(|T| > |t|) = 0.72$).



Item 7:
Kind Sea Salt Caramel Bar

Kind Sea Salt Caramel Bar



*Includes intervention stores 5403, 5447, 5439, 5425, 5529

T-test Results: Kind Sea Salt Caramel Bar

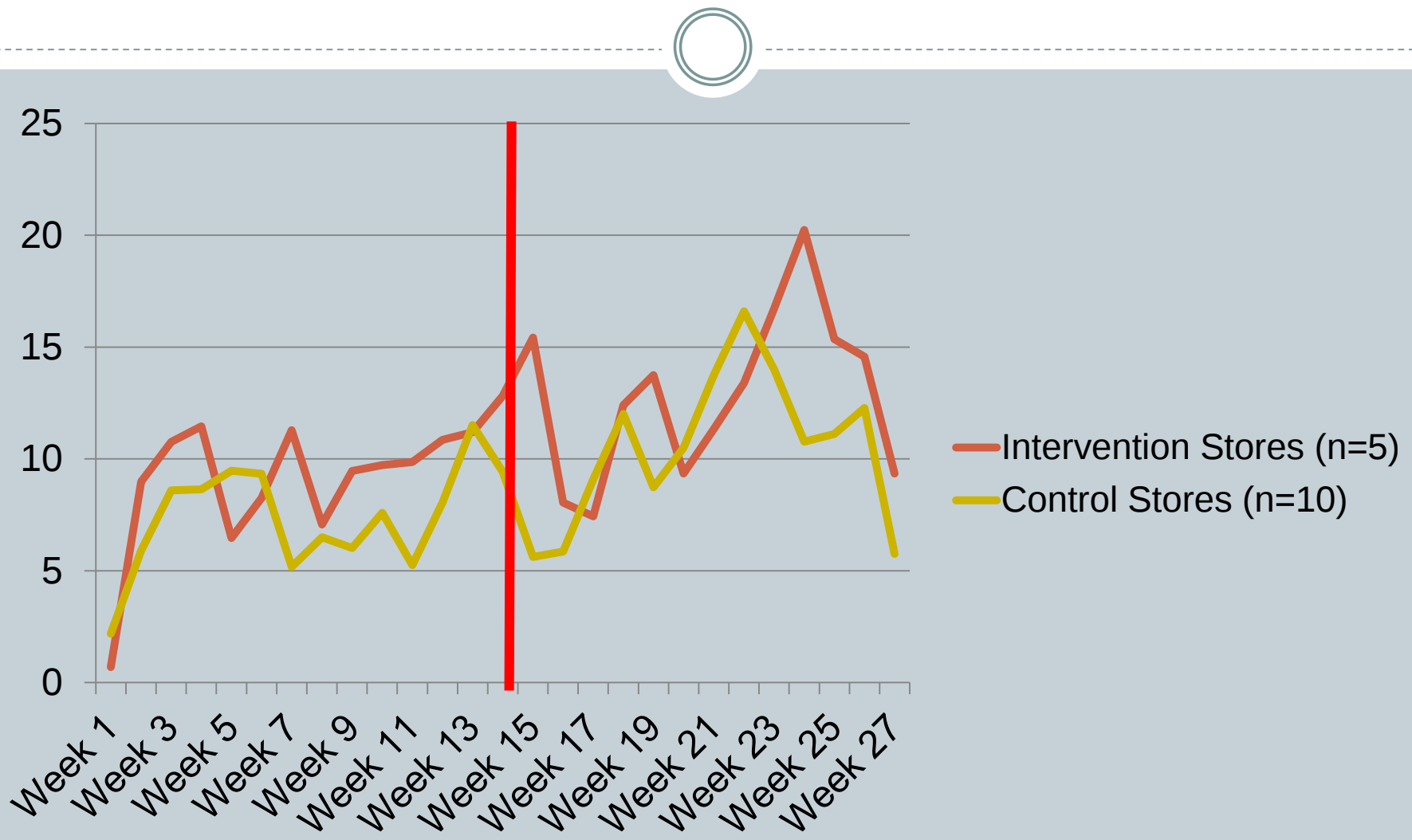


- **Intervention Stores:**
 - Average change in weekly sales between baseline and intervention period: 2.86
- **Control Stores:**
 - Average change in weekly sales between baseline and intervention period: 0.34
- These changes **are marginally** significantly different from each other (*Pr(|T| > |t|) = 0.07).



Item 8:
Kind Dark Chocolate Bar

Kind Dark Chocolate Bar



*Includes intervention stores 5403, 5447, 5439, 5425, 5529

T-test Results: Kind Dark Chocolate Bar

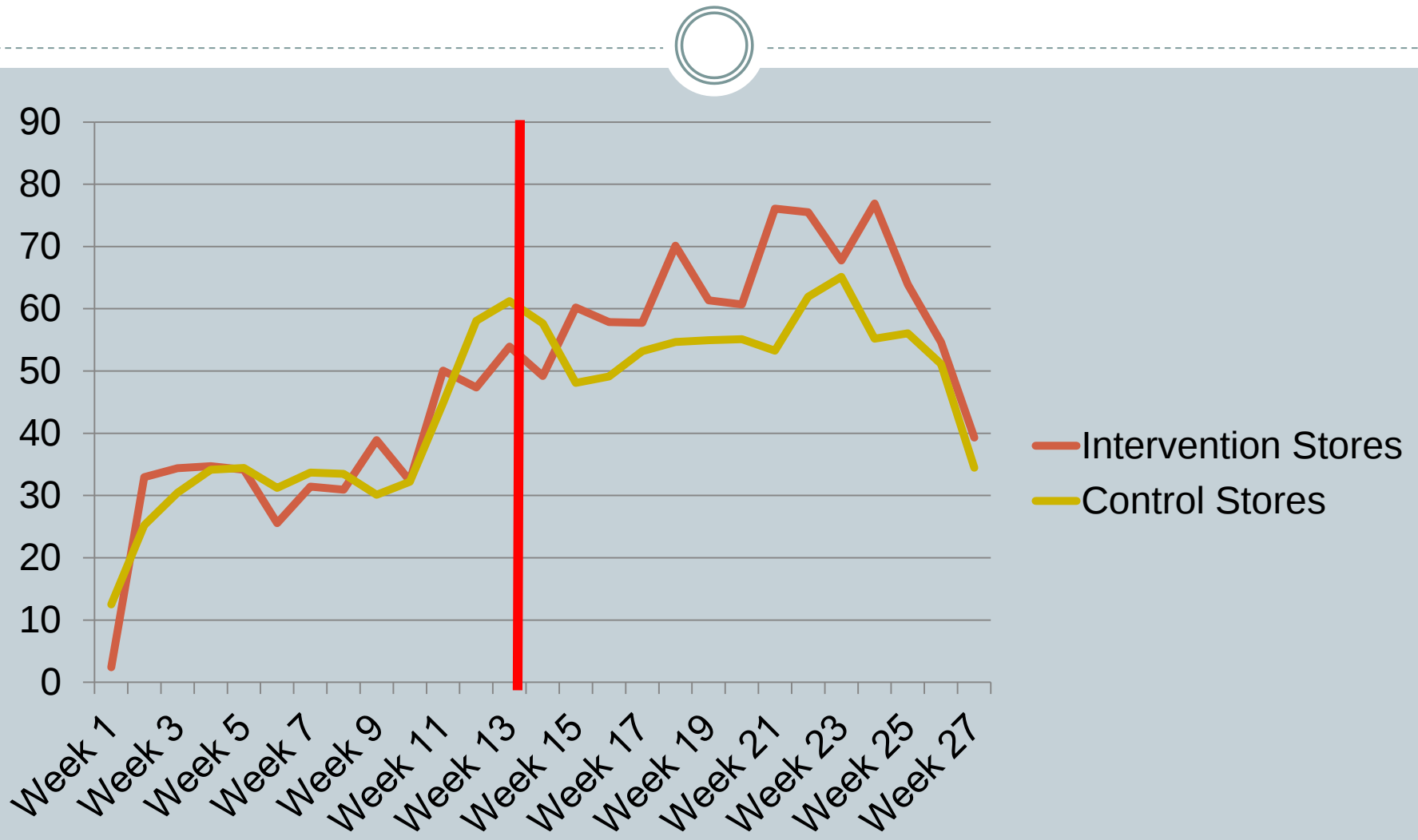


- **Intervention Stores:**
 - Average change in weekly sales between baseline and intervention period: 3.67
- **Control Stores:**
 - Average change in weekly sales between baseline and intervention period: 2.97
- But these changes are not significantly different from each other (*Pr($|T| > |t|$) = 0.59).



Collapsed Data:
All 8 Items

Collapsed Data Across the 8 Items



T-test Results (when we collapse the 8 items)



- **Intervention Stores:**
 - Average change in weekly sales between baseline and intervention period: +26.72
- **Control Stores:**
 - Average change in weekly sales between baseline and intervention period: +17.34
- But these changes are not significantly different from each other (*Pr($|T| > |t|$) = 0.1183).

Our Conclusions

- Introducing healthier items at checkout may increase sales
- Additional research with a larger sample is needed to confirm results
- Intervention fidelity may be an issue, and should be assessed if possible



Retailer Feedback



- Reported our results to retail partner via web conference
- Retailer shared their sales analysis & additional considerations
 - “Opportunity costs” of items removed from checkout space / substitutions
- Discussion of sustainability
 - Retailer suggested strategies that add healthier items, without displacement

Discussion



- Proof of concept = feasible to work with larger retail chains
- Have encouraging pilot data, but additional work is needed
- New and strengthened collaborations
- Consider type of outcomes for all members of the partnership
 - Important to understand factors, that retailers will use to evaluate “success”

Challenges & Lessons Learned



- Strong partnership with retailer, but gaps in communication remained
 - Implementation of promotions
 - Force randomization of stores
 - Outcomes of interest/ factors to evaluate
- Lack of control over intervention implementation
 - Fidelity issues
 - Delays in product procurement
 - Experiments in a “natural” setting have many external factors



GRAC Framework



Overall implemented well

Challenges to Implementing GRAC Framework:

- Inclusion of other stakeholders and partners (non-profits)
- Challenges of truly “cost neutral” strategies
- Communication strategies to learn to “speak the same language”

Next Steps



- Manuscript submission
- Results sharing with retail trade organization partners
 - Case study development
- Potential for co-creation of next project
 - Additional research questions
 - Exploration of “opportunity costs”



Thank You.



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