

How does a predictive model trained on social media trends perform on grocery store product sales?

Team: C

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Audience: Grocery store market researchers, supply chain managers, and executives.



Overview: The Problem

- Social Media:
 - Food and Drinks Category
43% of User Interests
- Our Research
 - New Predictive Model
 - Versus the Traditional
 - San Francisco's Bay Area
 - Grocery Store - Safeway





Existing Literature

- Proven social media impact on consumer purchasing behavior.
- Higher predictability rate using big data driven models for prediction grocery product sales.
- Benefits of continuously using and analyzing new data to enhance inventory management.



Anticipated Impact

- Increased profit
- Enhanced customer loyalty
- Optimized supply chain
- Fewer wasted resources - lowered environmental damage

Research Question

Main Research Question

Do stores that use a predictive inventory model trained on social media data have higher product sales relative to the stores that do not?



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Sub Questions

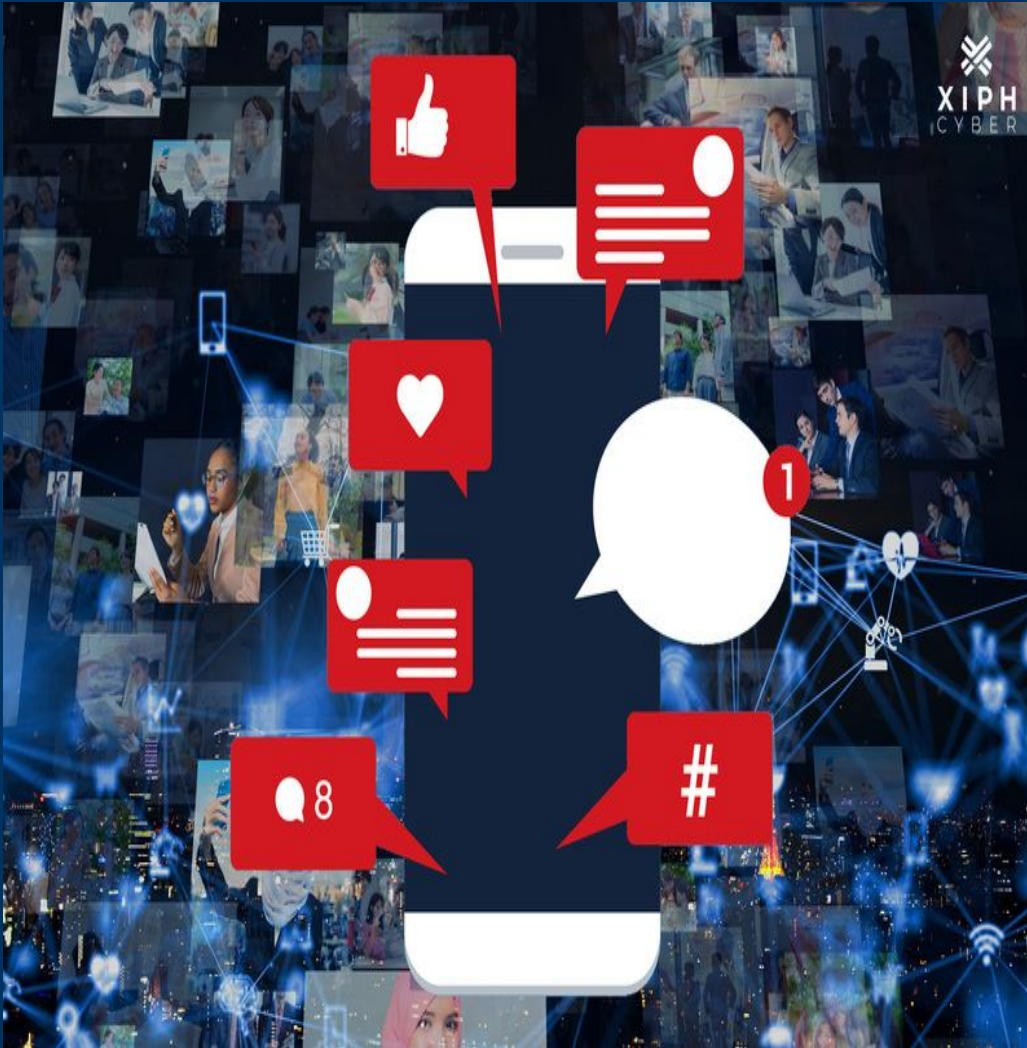
- Will stores using the new model see an increase in revenue compared to before?
- How does our model perform differently for stores located in different types of demographic areas?
- Which grocery product categories benefit the most from using a social media data model?

Definitions

- *Social media trends*
- *Product Sales*
- *Predictive Model*



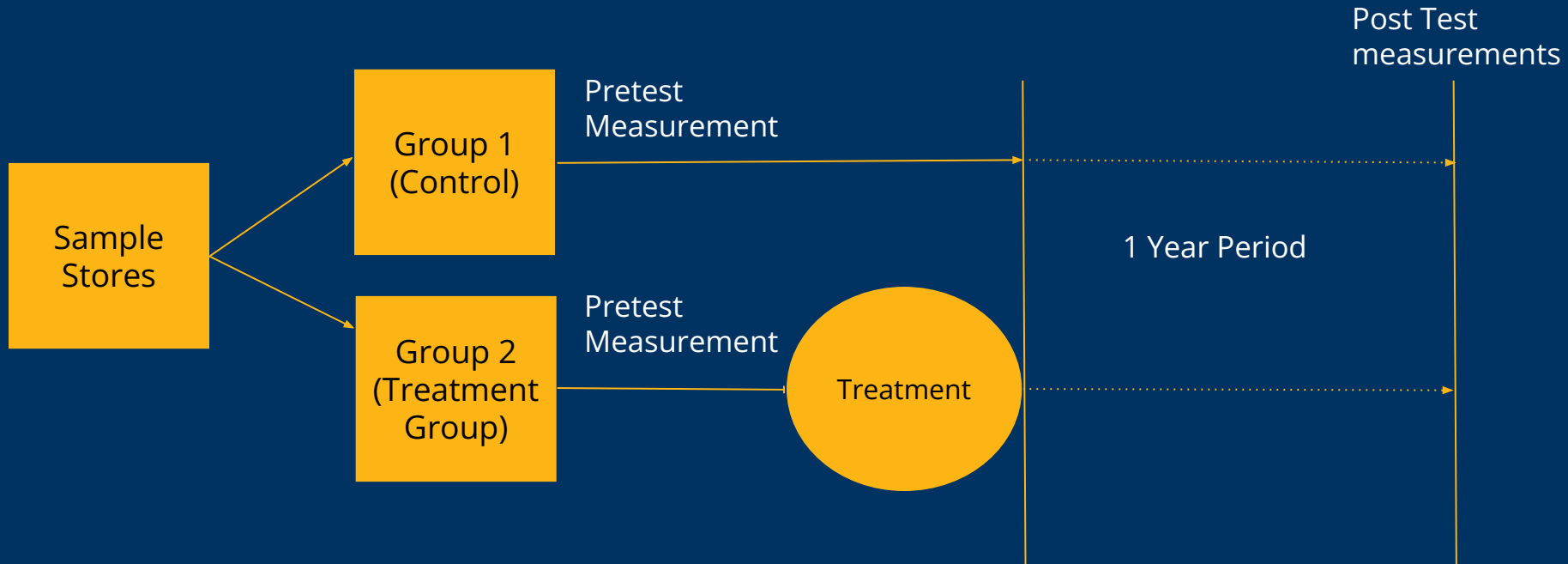
Study Design



Use our model trained on social media data to predict grocery store product sales.

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Study Design



Data

- Grocery Store Data
 - Quarterly
- Social Media Data
 - Weekly



Sample

- Going from our sample frame to sample.

Sample Frame: All Safeway Stores in San Francisco Bay Area



Sample: Select representative samples

Hypotheses

H0_p: The mean difference in product sales between stores that use a predictive inventory model trained on social media data and stores that do not is less than 5%.

H1_p: The mean difference in product sales between stores that use a predictive inventory model trained on social media data and stores that do not is 5% or greater.

Hypotheses are tested in the post test phase of our study after gathering all data.

Variables



Independent	Demographic	[Income level, Ethnicity, Education, Age]
	Geographic	[Population Density, Proximity]
	Store-Based	[Store Size, Items]
	Time	[Season, Time of Day, Day of week]
Intervention	Social Media Engagement	
Outcomes	Product Sales	

Statistical Methods

- Two Sample T-Test: Is there a large enough difference in product sales between the old prediction model vs the new model?



Old Model

Vs



New Model

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Potential Risks

1. Risk to non-interference
2. Risk to excludability
3. External validity risk factors
4. Risk to internal validity-History
5. Algorithmic Bias



Deliverables

- Year One
- Subsequent Year
- Final Deliverable



References:

- Literature

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- Pictures

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