Effects of Personalized Incentives of Groceries Purchased

Discussion Lead Assignment

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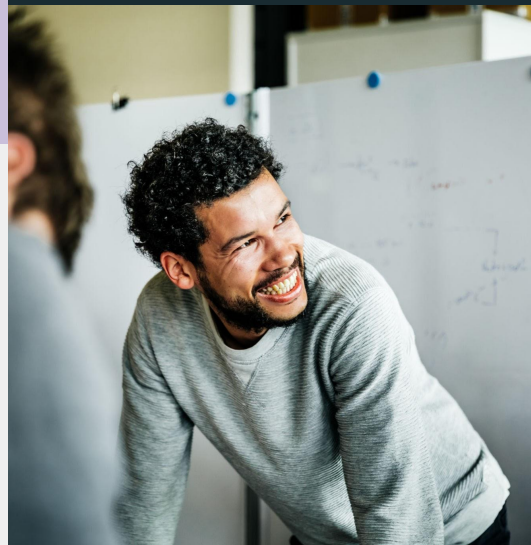


Agenda

01	Introduction
02	Overview and Explanation of Methods
03	Explanation of Analysis and Discussion
04	Critical Overview & Practical Application

Title

Effects of Personalized Incentives of Groceries Purchased

incentives are something that motivates or encourages someone to do something, in this study its what motivates or encourages someone to **BUY** something

Authors

The pool of researchers conducting this study have a combined knowledge in nutrition, epidemiology, marketing, and behavioral sciences. Making this team very qualified to be conducting this study.

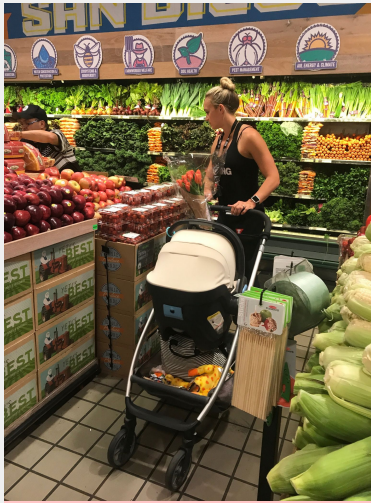
Problem Statement

Only 60% of recommended dietary guidelines are being followed by Americans due to various factors influencing food choice, such as taste, availability, marketing, and knowledge about nutrition. Additionally, system-level barriers like misinformation, an over variety of choices, and cost further hinder healthy eating habits.

Study Purpose/Importance

This study explores whether personalized incentives based on grocery purchases can improve diet quality and aims to develop a **scalable**, **data-driven** approach using machine learning algorithms to encourage healthy grocery shopping.

It is important to note that fruit and vegetable consumption among nutrition assistance recipients could reduce healthcare costs **by $1.2 BILLION BONES.**



What Type of Study is are we Dealing with here?

Qualitative or Quantitative?

- Qua**n**titative study as it measures and analyzes **n**umerical data

Applied or Basic?

- Applied research because the researchers want to solve a real-world problem

Analytic or Descriptive?

- Analytic because they analyze grocery purchase data as well as individual diet-related metrics to evaluate the effect of personal incentives on dietary quality

01

Does providing personalized incentives based on grocery purchase data enhance overall dietary quality?

02

How successful are personalized incentives as opposed to a one-size-fits-all strategy in promoting healthier grocery purchases?

03

After the intervention, do individualized incentives result in long-lasting improvements in eating habits?

04

Is it possible to improve nutritional treatments and promote better food choices using machine learning algorithms as a scalable approach?

Study Objective and Hypothesis

The objective is to assess the effect of personalized incentives on dietary quality. The hypothesis suggests personalized incentives can enhance grocery quality and spending on healthier foods, even after removing incentives.

1 2 3 4 5 6

Study Design	Interventions	Control Group	Exclusion	Inclusion	Baseline
The study was conducted as a randomized crossover trial (AB-BA design), meaning each of the 224 participants received all the interventions at different times.	weekly emails including brief nutrition education messages in addition to two personalized coupons with a total value of 10 dollars in percentage discounts	received weekly emails containing generic nutrition education messages and a single, unpersonalised 2-dollar coupon per month.	-pregnant women -individuals who did not meet the grocery purchase threshold -those unwilling to use the store's loyalty card -those unwilling to receive weekly emails.	-18 years or older -English speaking, -primary household grocery shopper -purchased at least 50% of groceries from a participating supermarket -Were willing to use the store's loyalty card -agreed to receive weekly emails related to the study.	Food frequency questionnaire (FFQ) Socio Demographic and health behavior questionnaire

Food Frequency Questionnaire (FFQ) – VioCare

assess participants' dietary intake throughout the 3 months of the study

Sociodemographic and Health Behavior Questionnaire – RedCap

collected data on education, income, food preferences, and other health-related behaviors

Loyalty Card Data Tracking

- Collect purchasing data linked to participants.
- The study team receives daily sales data, which include the loyalty card ID, UPCs, food descriptions, unit price, quantity purchased, transaction date, coupon usage, and total spent.

Personalized Coupon Algorithm

- Algorithm to promote healthy grocery buying decisions
- Explores if customized coupons based on supermarket purchases enhance diet quality.

Guiding Stars Search Tool

- Publicly available tool for evaluating the healthfulness of individual foods
- Identifying possible healthier substitutes within a food group

Adaptive Relational Database

- The research team developed the adaptive relational database
- organize and categorize information and detect trigger foods.

Data analysis:

Better Diet Quality:

- Grocery diet scores improved by **1.5 to 4.7 points** with personalized incentives.

Buying More Healthy Foods:

- Fruit purchases increased **(4-5%).**
- Dairy and refined grains also went up **(3-4%).**
- No real change in veggies, seafood, or whole grains.

Coupons Helped, Even If Not Used Much:

- **Only 7-10%** of coupons were used, but just seeing them changed buying habits.

Statistic analysis

HEI-2010 scores increased by 1.5 to 4.7 points ($p < 0.05$) → Shows significant improvement in diet quality.

Fruit purchases increased by ~4-5% ($p < 0.01$) → Statistically significant change.

Refined grains & dairy purchases rose by 3-4% ($p < 0.05$) → Moderate but meaningful shift.

No significant change in vegetable, seafood, or whole grain purchases ($p > 0.05$).
Coupon redemption was low (7-10%), but exposure still influenced purchasing behavior.

Statistical analysis confirms **personalized incentives improved diet quality**, but some food groups (veggies, seafood, whole grains) saw **little to no change.**

Results

Of the 224 participants, 209 were included in the analysis because they were disqualified for not purchasing foods from participating supermarkets or because their purchases were either too small or too large.

90% of participants were women, 94% were non-Hispanic White, and the average age was 55.4 years. 50% had a family income of $100,000 or more, and almost 49% held a bachelor's degree. Most participants (97%) said they were in good or excellent health and did not smoke.

The customized coupon program **improved** the **quality** of supermarket purchases. The first intervention period saw a marginal improvement in grocery purchase quality for the coupon-receiving group.

The second group showed even greater improvement in purchase quality, with a 4.6% increase in purchase quality.

When given coupons, participants spent more money on healthy meals, with a 1.38% increase in the first and 1.48% in the second phases. Over time, coupon usage increased, with 10% of coupons redeemed in the second phase.

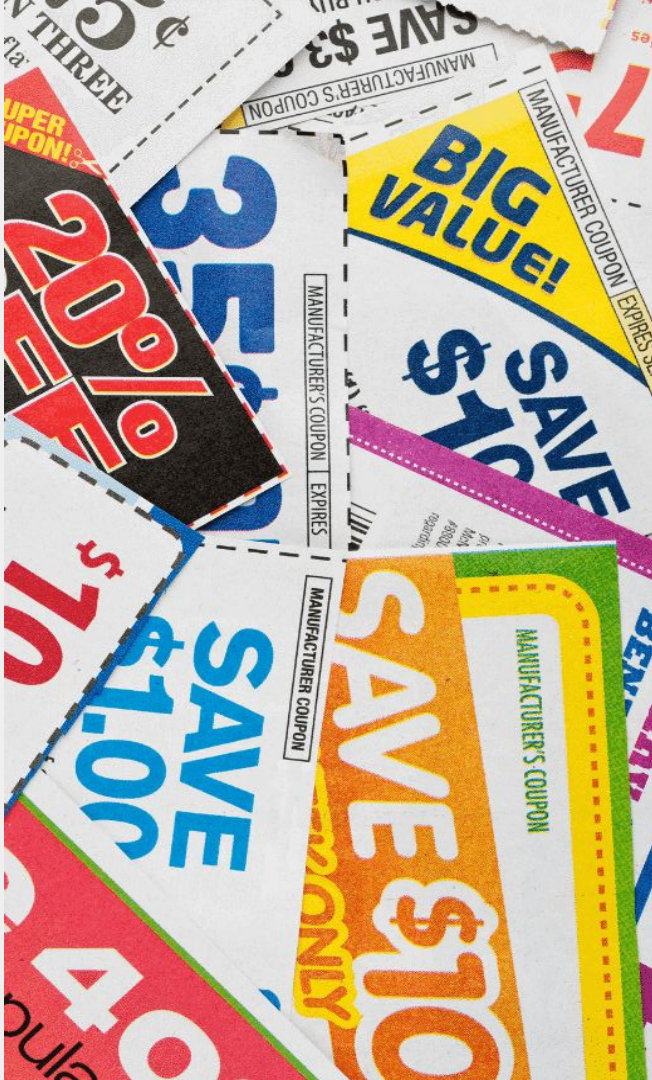
Discussion

If one is given the opportunity to save money on their favorite foods, they will take it; however, more people utilized the coupons in the second intervention period,

maybe because it was an upgrade to what they were receiving before?

The study demonstrates that better eating choices may be achieved by customizing rewards to each person's tastes with a data-tracking algorithm.

If this algorithm were to be turned into an app for people to download, who knows how many people would be influenced to purchase healthier food options



Conclusion

The findings support the notion that the customized healthy food reward algorithm is a good way to improve the nutritional quality of supermarket purchases.

Strengths

- Creative use of nutritional incentives powered by machine learning and personalization.
- strong sample size and high adherence rates.
- A direct comparison of the control and intervention periods was made possible by the design.

Limitations

- limited by the homogeneous sample, which was primarily non-Hispanic White, well-educated, and wealthy.
- The brief research duration and low effect sizes imply that additional time may be needed for the intervention to result in more significant improvements.
- The effectiveness of the intervention may have been diminished by technical problems with the registration system.

Thoughts

- I would emphasize including underprivileged neighborhoods and broaden the study to include a more varied sample. Less affluent people could utilize these kinds of coupons and nutrition education.
- I want to see what kind of information were in those emails

Application

- Enhancing the coupon system through a mobile app could enhance effectiveness and engagement.
- It suggests further exploration of integrating these platforms into public health initiatives, particularly in areas with limited access to nutritious meals.

Sources

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