# Evaluate the Effectiveness of an Email Campaign

Causal Inference Final Project Presentation

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*Feb. 26th, 2020*

# Agenda


01 Business Context

02 Data Description

03 Empirical Context

04 Evaluation of the Email Campaign

05 Optimization of the Email Campaign

06 Recommendations

07 Limitations

# Business Context

## Background

- A retail company that has an online website
- An email campaign: two kinds of emails (mens/womens)
- Three randomly selected groups
- Visits / Conversion / Spend
- Duration: 2 weeks

## Key Question

- How does the email campaign affect visits, conversion and spending?

# Data Description

## Size of Data

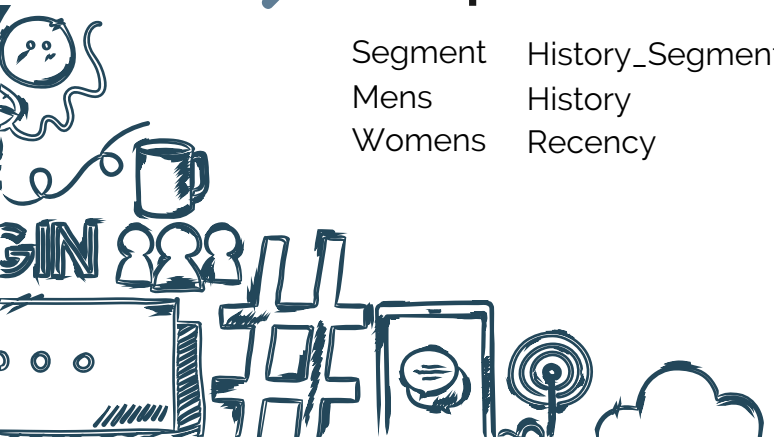
64,000 observations with 12 variables

## Independent Variables

| | | |
|---|---|---|
| Segment | History_Segment | Zip_Code |
| Mens | History | Channel |
| Womens | Recency | Newbie |

## Dependent Variables

Visits
Conversion
Spend



# Empirical Context

## Assumption

1. Randomized Check
2. Reasonably detect a change of no greater than 2%

## Threats to Causal Inference

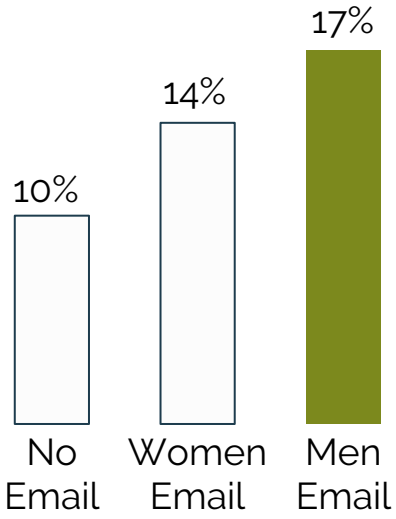
Sampling Error:
64000 customers may not be representative of the whole customer population

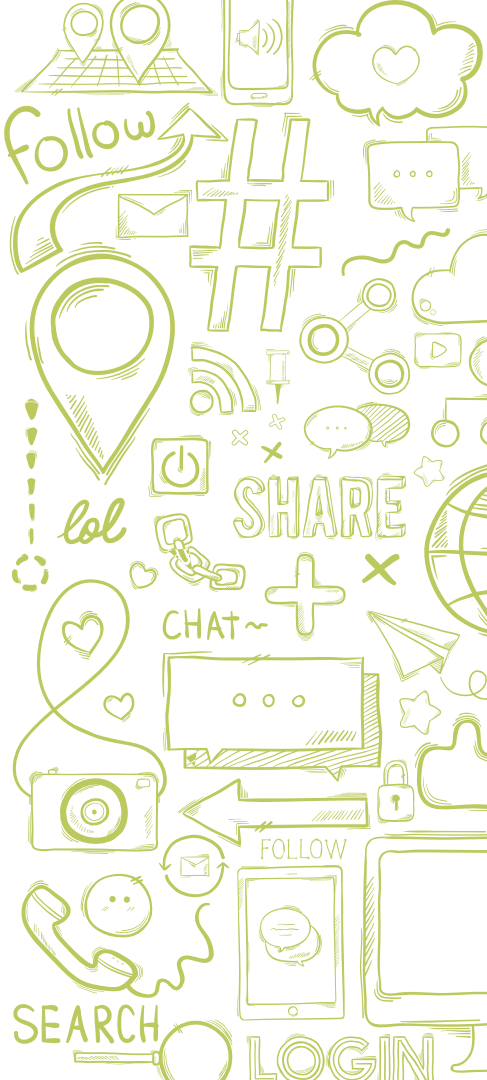
# Evaluation of the Email Campaign

# Increases in Visits and Conversion

## Increases in Visits

- 4% of Increase if received women emails
- 7% of increase if received men emails



# Increases in Visits and Conversion

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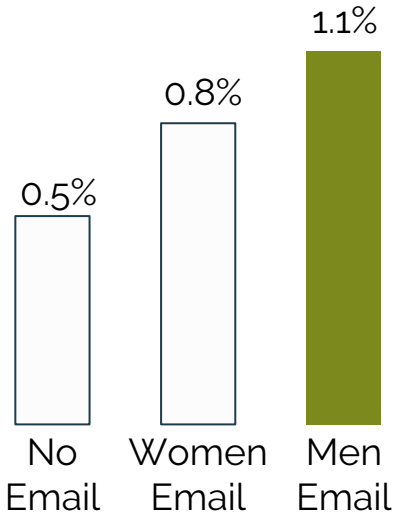
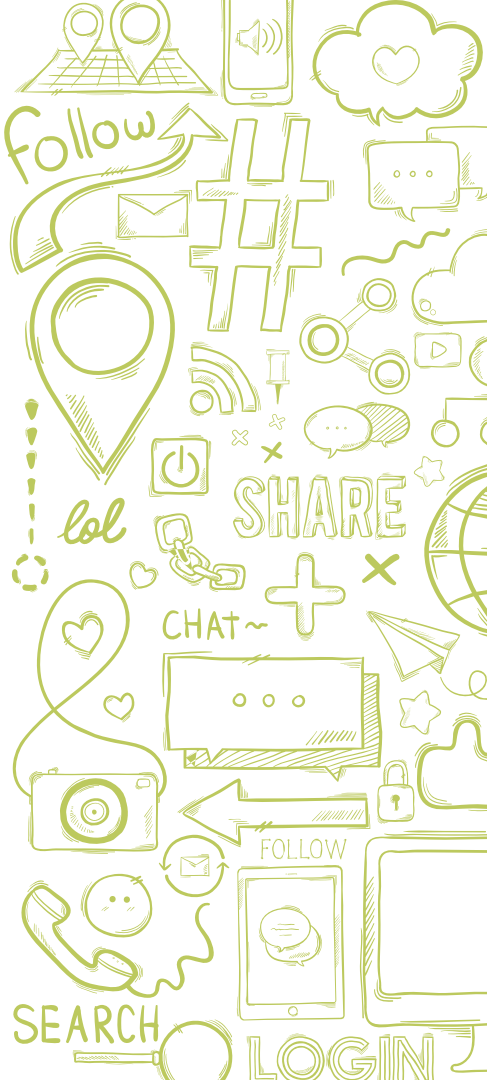
## Increases in Conversion

- 0.3% of Increase if received women emails
- 0.6% of increase if received men emails



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## No Significant Increase in Spending

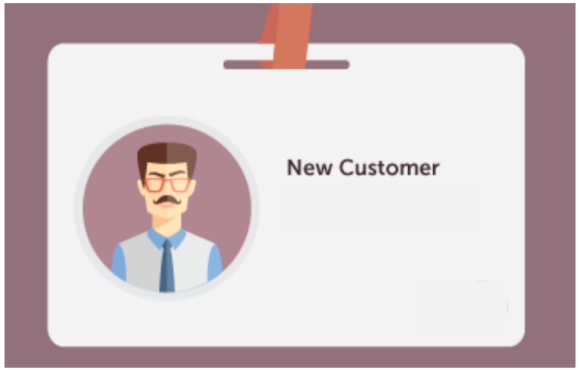
# New customers are less likely to visit the website and make any purchase compared to existing customers

## Visits & Conversion

Both campaigns improve likelihood of visits and conversion for new and existing customers

## Spending

No significant change in Spending



# Rural customers are more likely to visit the website and purchase products

## For Men's Campaign

Men's campaign is more successful in increasing visits and conversion on the website

## For Women's Campaign

Women's campaign is also successful in increasing visits to website but has no significant effect on conversion

# Customers who made purchases in the past are more likely to visit the website and make purchase

## For Men's Campaign

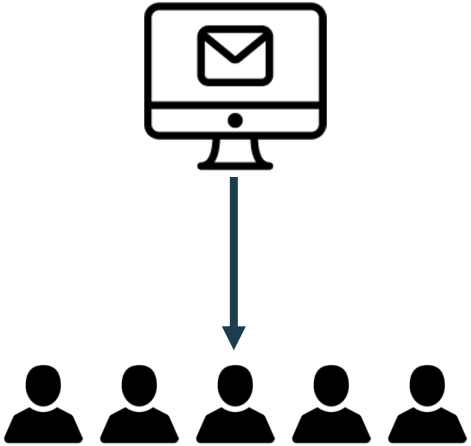
Sending women's emails to people who purchased men's product decreases likelihood of website visits and purchase

VS.

## For Women's Campaign

Women's campaign is also successful in increasing visits to website but has no significant effect on conversion

# What if we want to find the treatment effect on each individual customer?



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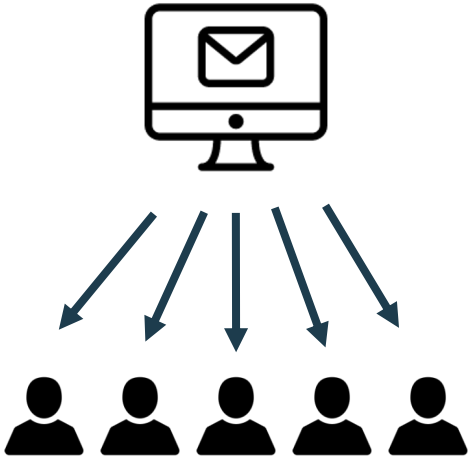
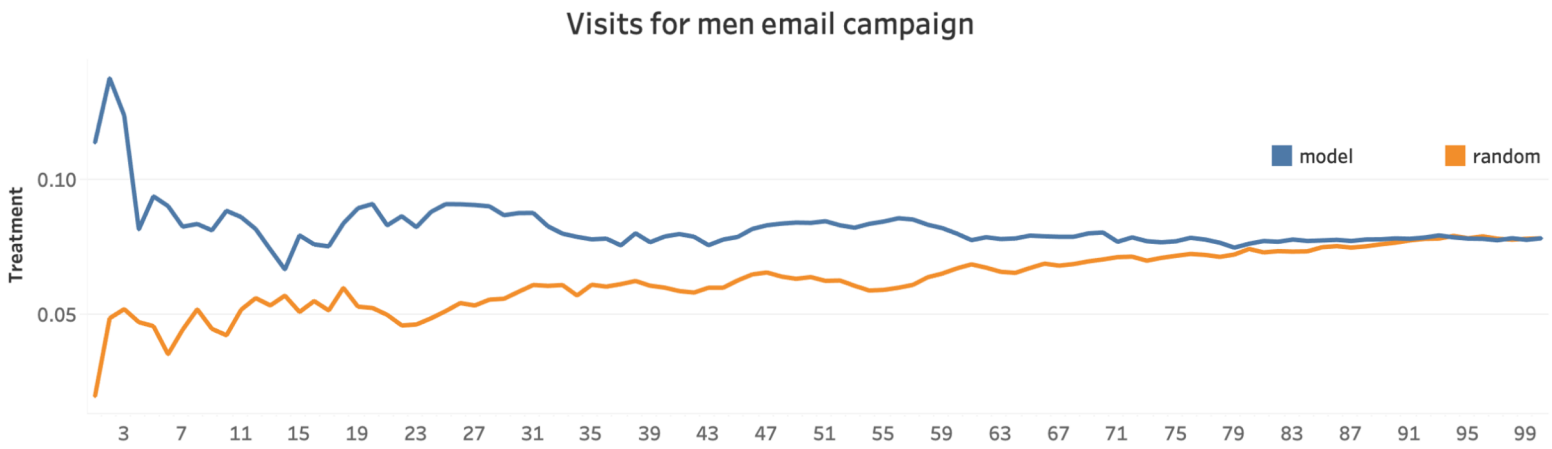
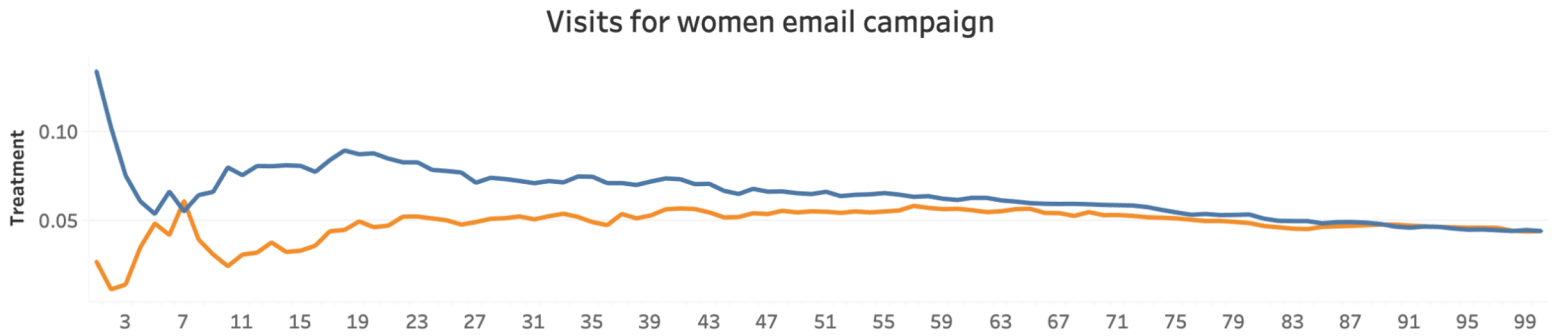


# Optimization of the Email Campaign

# Using Model Outperforms Random Selection



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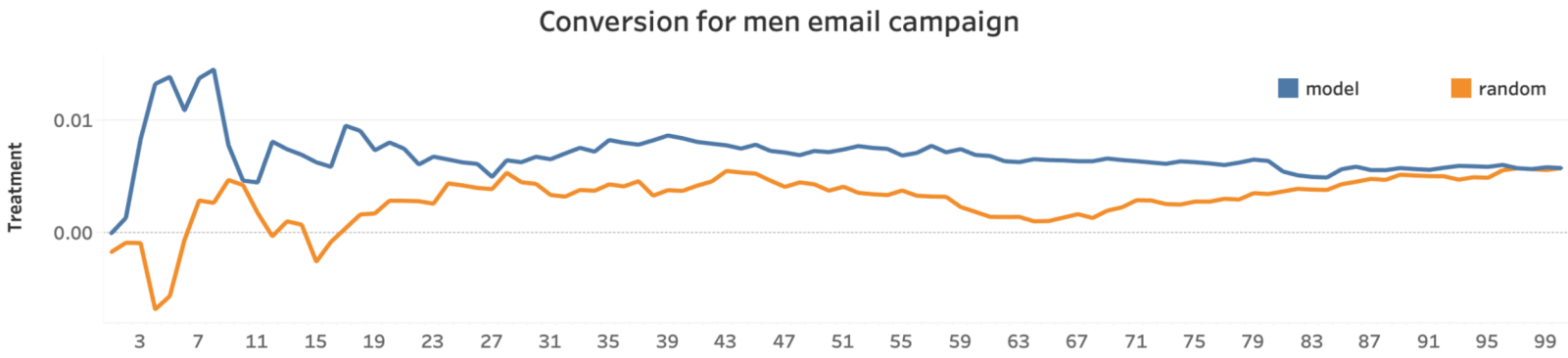
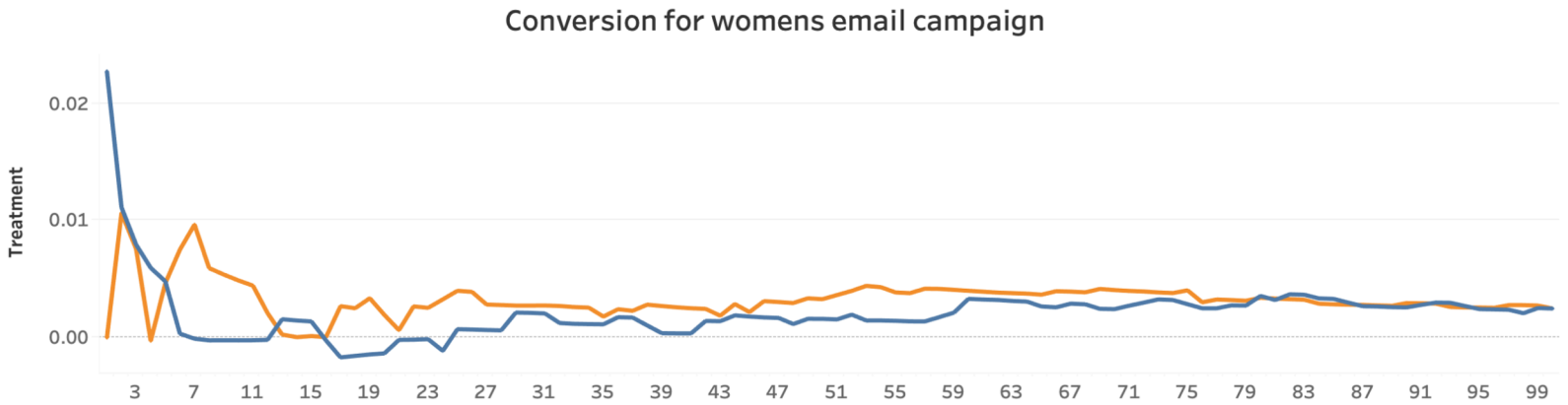


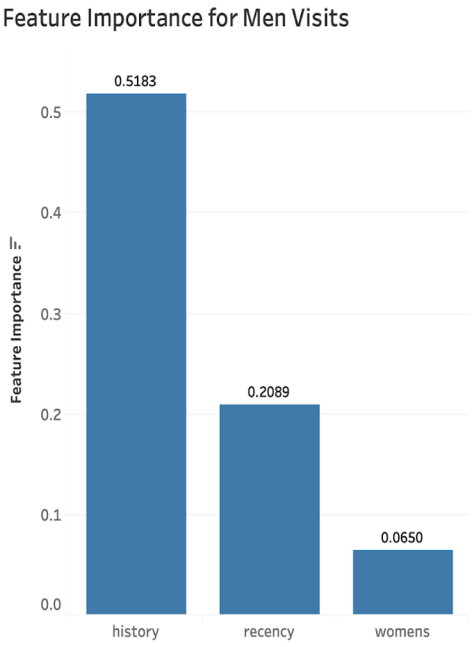



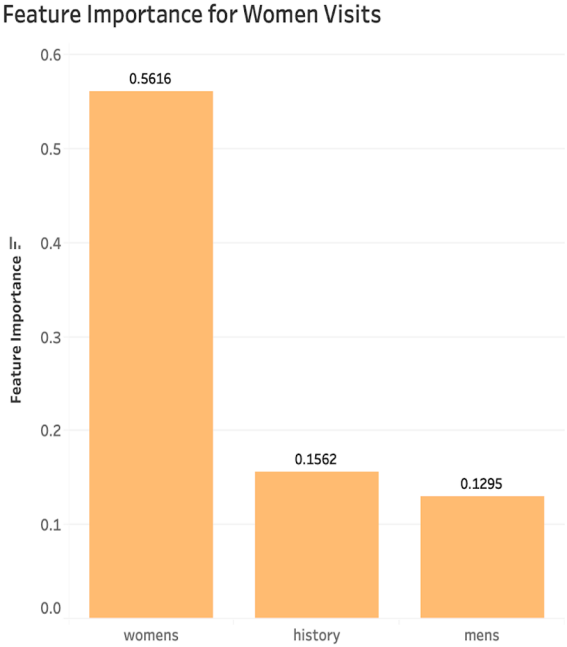
# Top 3 Most Important Factors for Visits

## Key Factors to Email Effectiveness

Historical Spending & Recency

Past Purchase on Women Products

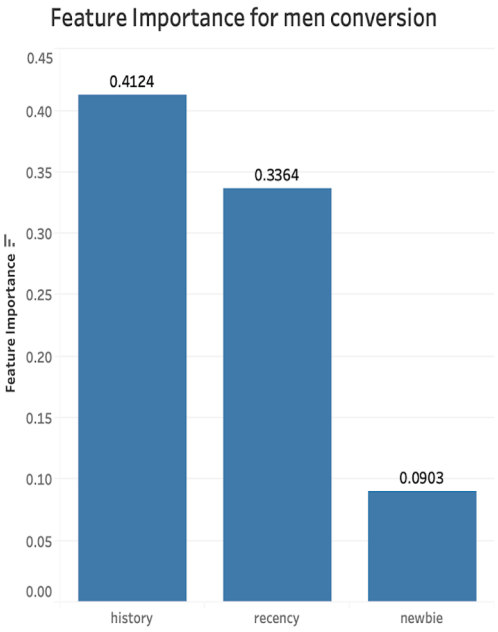


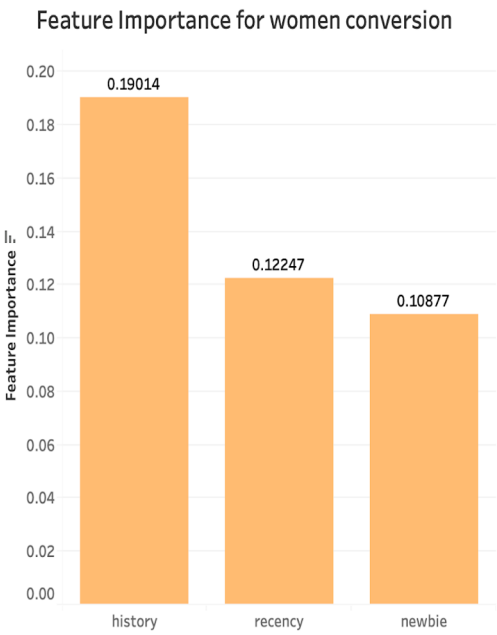



# Top 3 Most Important Factors for Conversions

## Key Factors to Email Effectiveness

- Past Purchase History & Recency
- Invest CRM to maintain and develop loyal customers



# Most Successful Subgroups in terms of Conversion

## Men's campaign

| Recency | History | Men | Women | Zip Code | Newbie | Channel | Effect | Overall |
|---|---|---|---|---|---|---|---|---|
| 3 | 750-1000 | Y | Y | Urban | New | Multi | 0.087 | 0.06 |
| 4 | 0-100 | Y | N | Urban | Existing | Web | 0.074 | 0.06 |

## Women's campaign

| Recency | History | Men | Women | Zip Code | Newbie | Channel | Effect | Overall |
|---|---|---|---|---|---|---|---|---|
| 10 | 100-200 | N | Y | Suburban | Existing | Web | 0.083 | 0.03 |
| 2 | 500-700 | Y | Y | Urban | New | Multi | 0.070 | 0.03 |

# Recommendations

- Men's and Women's campaigns are successful in increasing conversions and visits, while, also need to consider ROI.
- Causal Forest Model
- CRM and loyal customers program
- If we don't know any characteristics about the customer, sending men's email would be more efficient.

# Limitations

- Lack of **Demographic data** of customers

- **Inferential Threat**
  The communication between each treatment group may affect the initiative action of customers.

# Q & A