

Wine Retailer Case

MSMA Team 10

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Executive Summary



Goal

Evaluate whether email promotion is effective & who to target with email campaign.



Insights

- Email sending results in a **\$1.35** increase in purchase on average.
- Sav_blanc purchasers, recent buyers and high-spent buyers response more to email campaign.
- Average individual-level conditional causal effect of email sending is **\$1.28**.
- **55.25%** of all customers in the training set fall into targeted group.



Recommendation

Target high-spent buyers. Use causal forest model to predict purchase lift of new customers and target customers who score high.

Methodology

- **Average causal effect:**

- Use "Im" to evaluate the average causal effect on purchases.

- **Conditional causal effect:**

- **Slice and dice:** Use past purchase (by category) and recency as baseline variables for slicing and dicing on responses for email campaign to illustrate the potential for targeting
- **Causal forest:** Build a causal forest model including most variables to predict customers' purchase-lift caused by email campaign. Then calculate final score to decide whether to target or not.

Score = purchase-lift * 30% - 0.1

Average causal effect

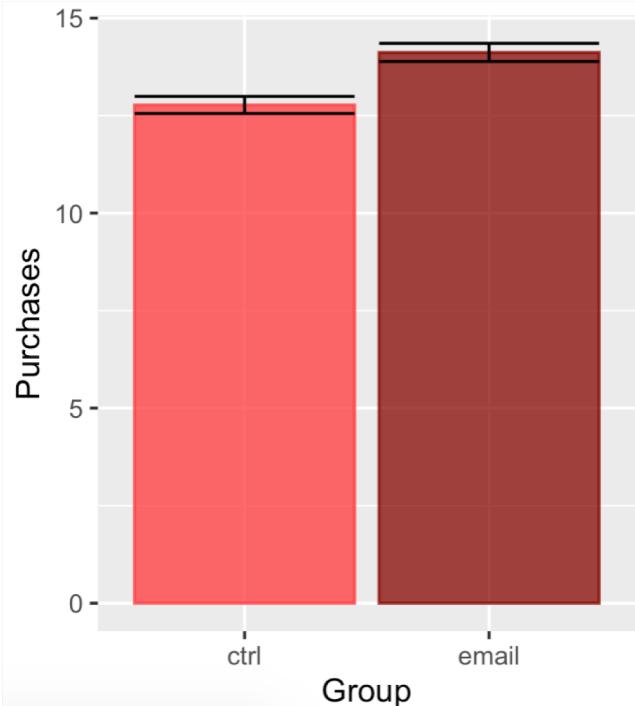
Email campaign does help increase purchase amount

- Email effect is highly significant, and the effect size is **\$1.35** for sending email.
- For control group, the average purchase amount is **\$12.77**, and for email group is **\$14.12**.

Coefficients:

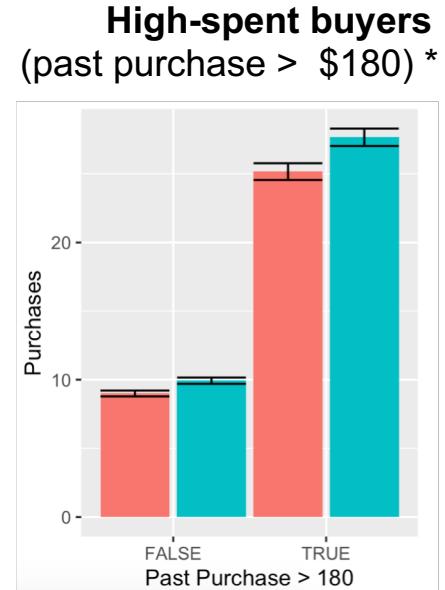
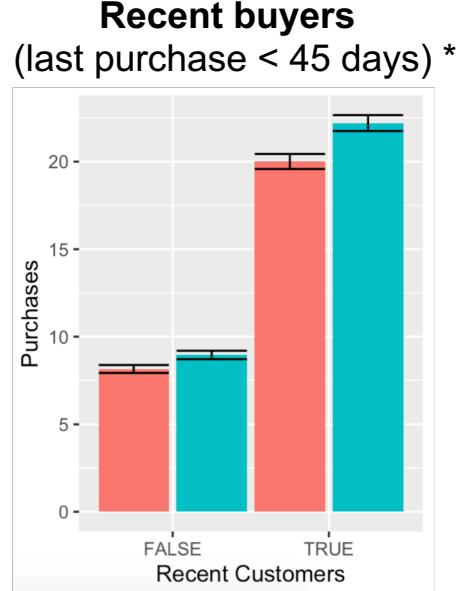
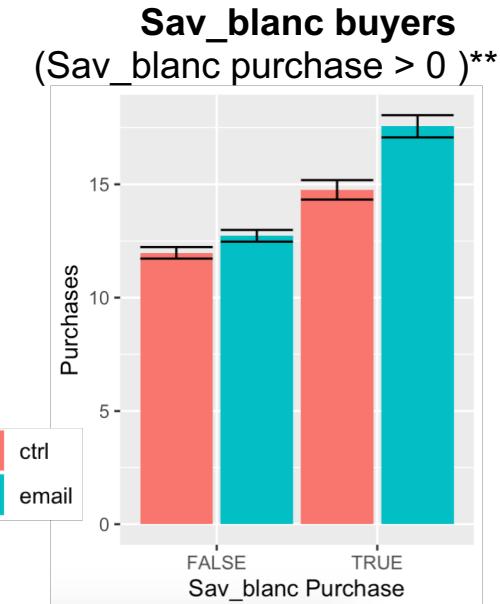
	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	12.7727	0.2260	56.528	< 2e-16 ***
groupemail	1.3465	0.3195	4.214	2.52e-05 ***

	group	open	click	purch	seopen	seclick	sepurch	N
1:	email	0.7957912	0.1345898	14.11913	0.002037245	0.00172474	0.2330652	39156
2:	ctrl	0.0000000	0.0000000	12.77266	0.000000000	0.000000000	0.2186123	39156



Slice and dice analysis

Sav purchase, recency and past purchase amount are three significant slices



- \$2.77 higher average purchases
- More affected by email, leading to \$2.05 more in spending

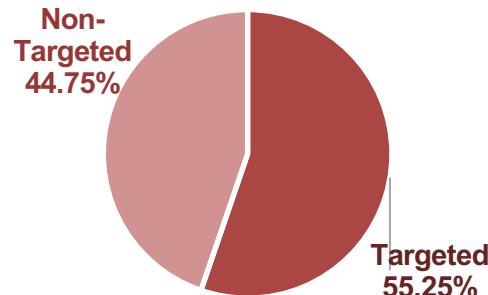
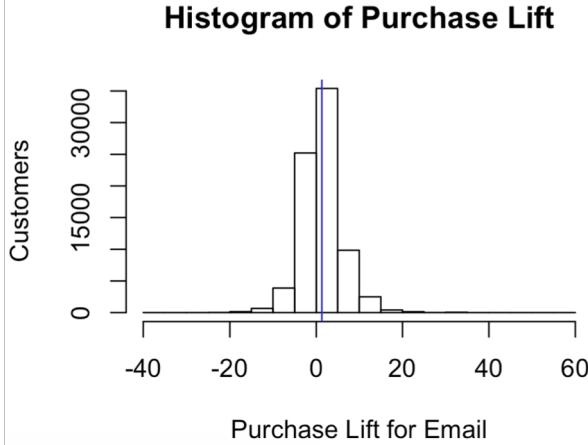
Signif. code: '**' 0.01 '*' 0.05

- \$11.84 higher average purchases
- More affected by email, leading to \$1.39 more in spending

- \$16.17 higher average purchases
- More affected by email, leading to \$1.56 more in spending

Targeted customer set

Average individual-level conditional causal effect is 1.28; 55.25% of all customers fall into targeted group



Causal Forest Model:

- Training data: whole dataset (78,312 customers)
- Average of individual-level conditional causal effect: **1.28**
- Close to average causal effect estimated earlier: **1.35**

Customer Scoring:

- Score = purchase_lift * 0.3 - 0.1
 - 0.3 - margin
 - 0.1 - email cost
- Score>0: Targeted group (35048 customers)
- Score<0: Non-targeted group (43264 customers)

Summary of baseline variables (mean):

	chard	sav_blanc	last_purch	cab	syrah	visits
Targeted	93.3	27.9	73.3	30.4	2.25	5.67
Non-Targeted	50.2	25.2	110.7	22.8	3.56	5.62

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