



Incremental Uplift Modelling

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Outline

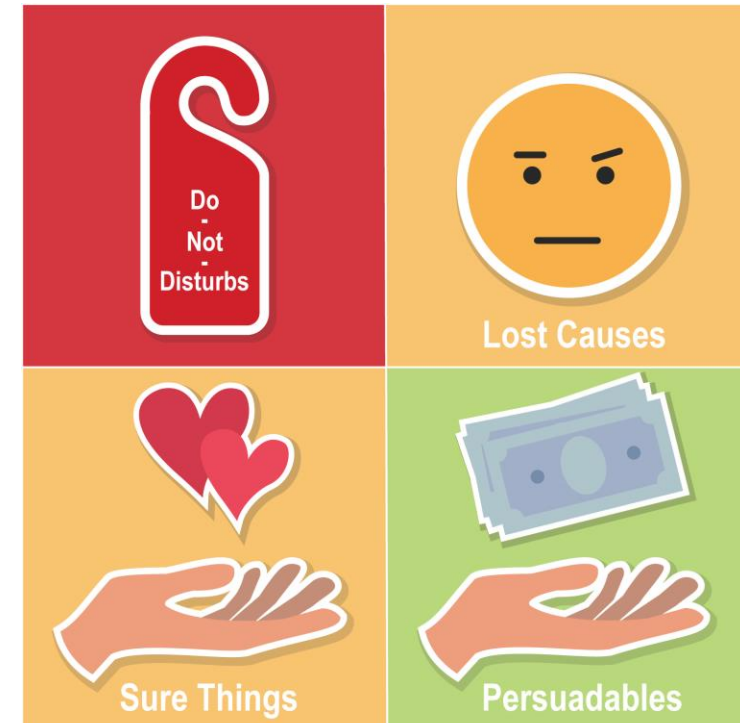
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Business Problem

Evaluate the effectiveness of a promotional campaign aimed at increasing sales of a specific product category.

To understand the incremental uplift of the promotion and determine whether "Buy One Get One" or "Discount" generate a higher uplift in sales.

1. **Do-Not-Disturbs** (a.k.a. Sleeping-dogs) have a strong negative response to a marketing communication.
2. **Lost Causes** will NOT purchase the product NO MATTER they are contacted or not.
3. **Sure Things** will purchase ANYWAY no matter they are contacted or not.
4. **Persuadables** will always respond POSITIVE to the marketing communication.



About Data

Dataset gives us an information about promotional campaign which was aimed at increasing sales and was targeted at 64000 customers.

Dataset consists of 9 features.

Treatment Variable : Offer (Buy One Get One | Discount | No Offer)

Target Variable : Conversion (Purchase | No Purchase)

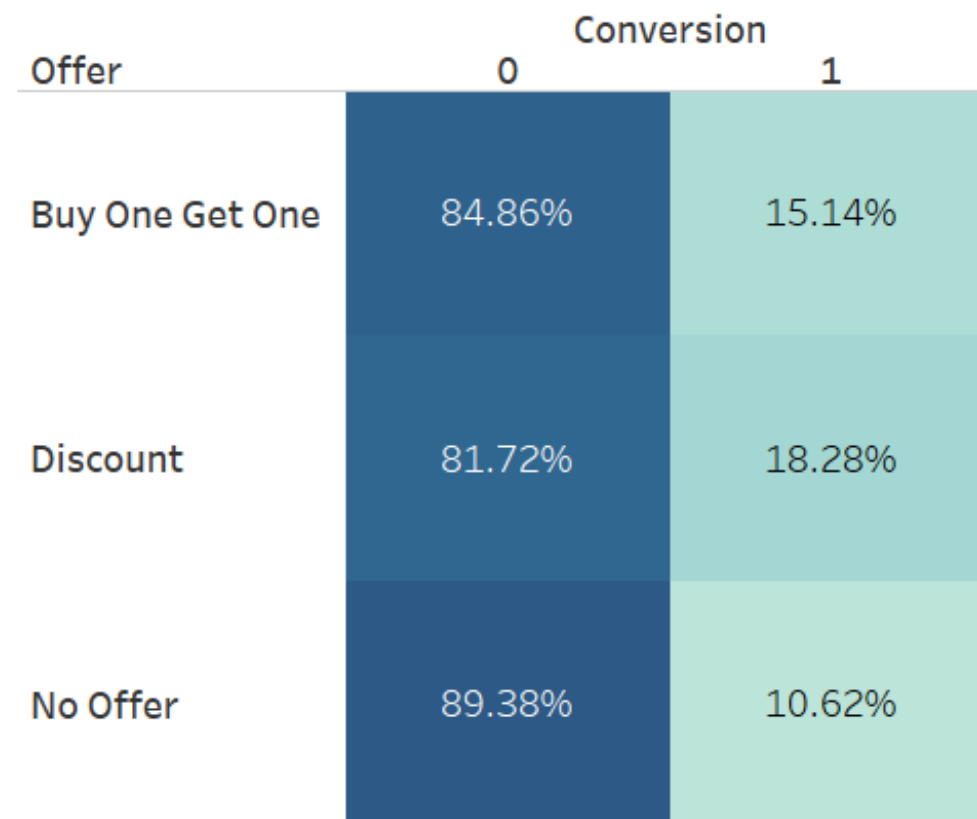
Customer demographics and behavioural data : 7 features

EDA

Customers by Offer

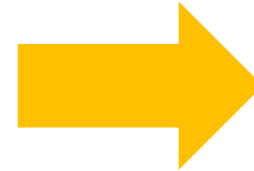


Offer and Conversions



Approach

| | Offer | Conversion |
|------|-----------------|------------|
| | Buy One Get One | 0 |
| | Discount | 1 |
| | Buy One Get One | 1 |
| | Discount | 0 |
| | No Offer | 1 |
| | No Offer | 0 |



| Discount | | |
|----------|----------|------------|
| | Offer | Conversion |
| | Discount | 1 |
| | Discount | 0 |
| | No Offer | 1 |
| | No Offer | 0 |

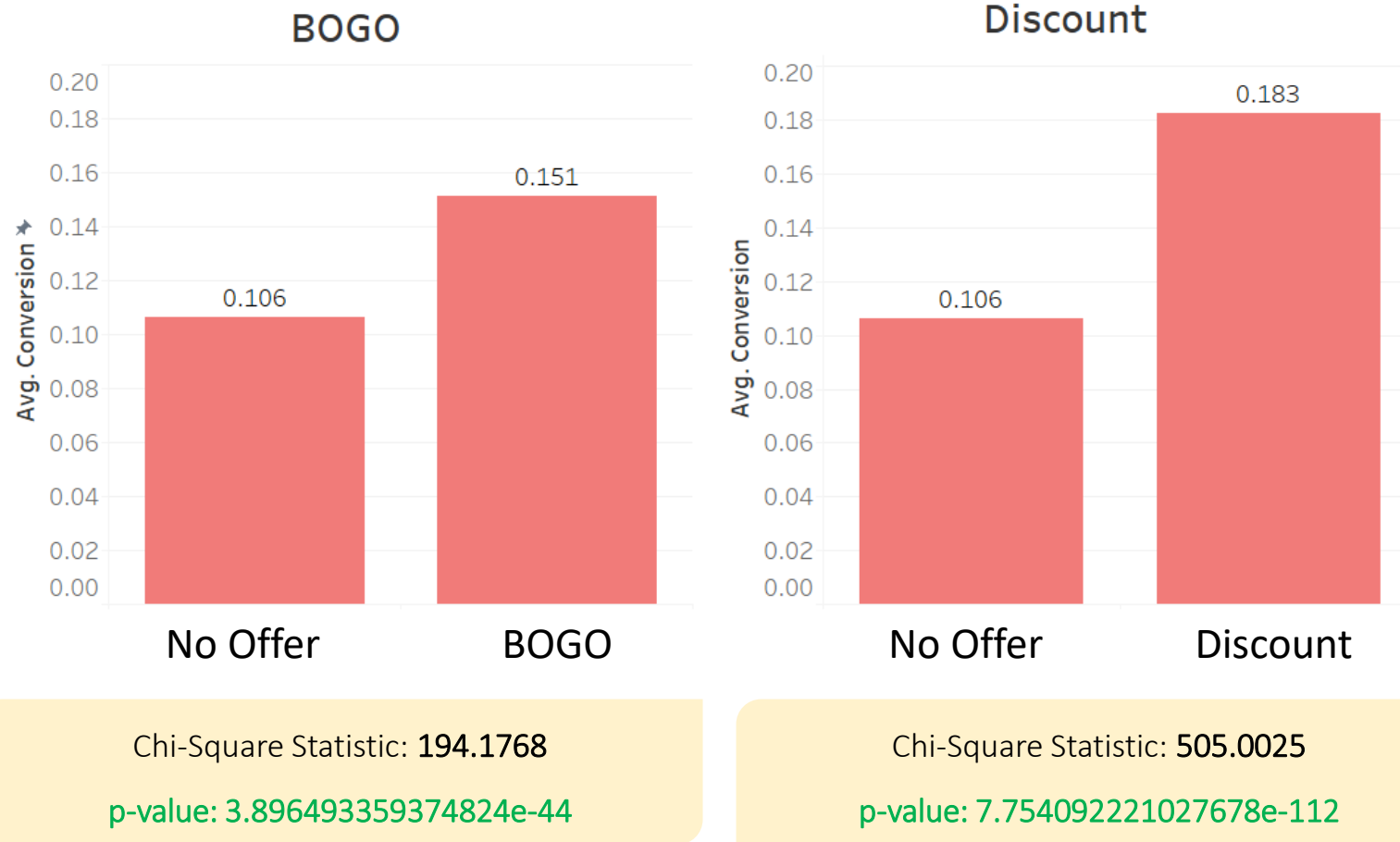


BOGO

| | Offer | Conversion |
|------|-----------------|------------|
| | Buy One Get One | 0 |
| | Buy One Get One | 1 |
| | No Offer | 1 |
| | No Offer | 0 |

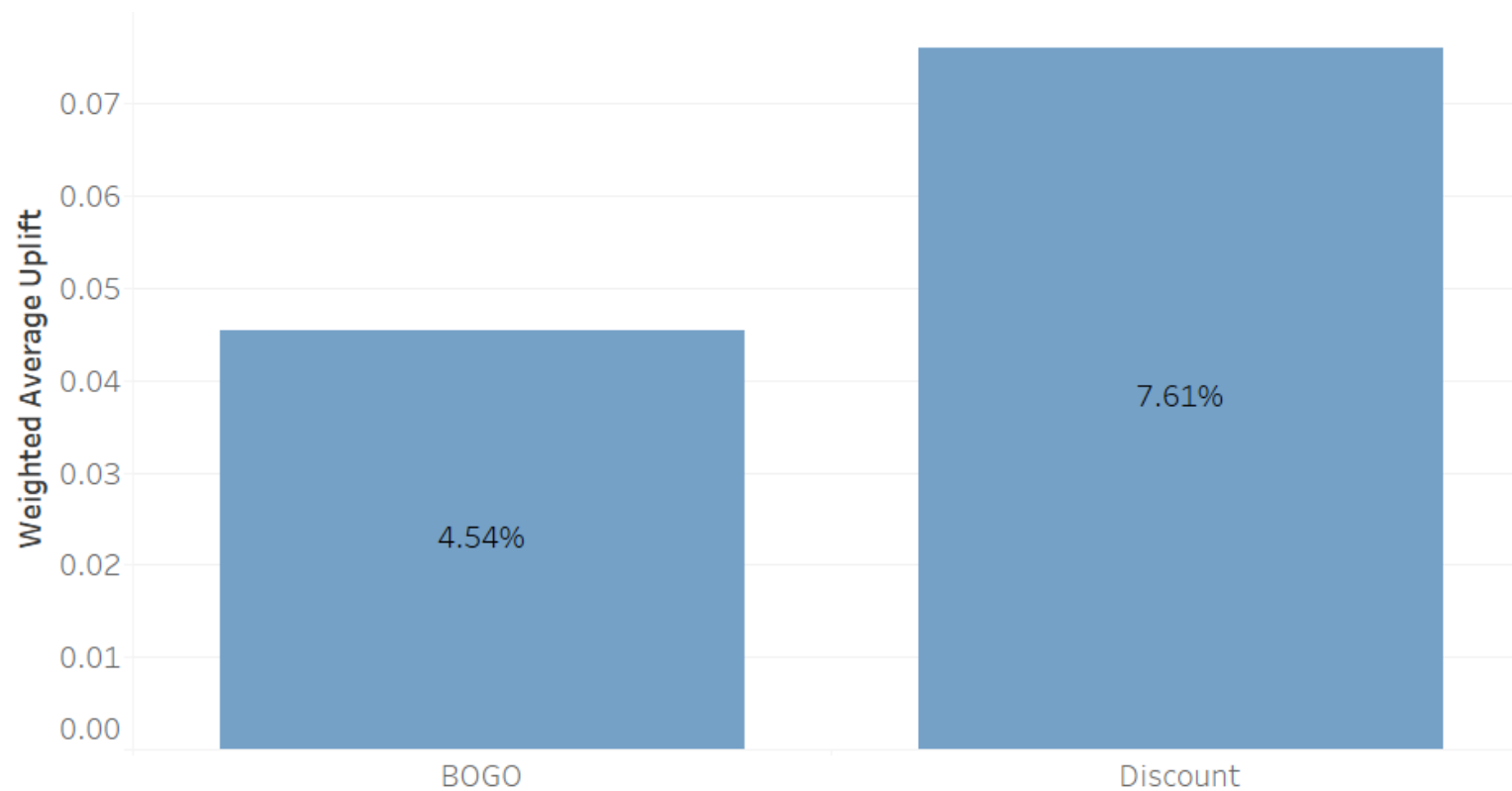
Performed Incremental Uplift Modelling on two new datasets : BOGO and Discount to calculate the uplift of the offers provided on the sales.

Effect of Treatment on Conversion



Observed P-value of Chi-square test is significantly lower than the threshold value 0.05 which concludes that the buyers' decision of purchase (Conversion) is related to the treatment (BOGO | Discount | No offer).

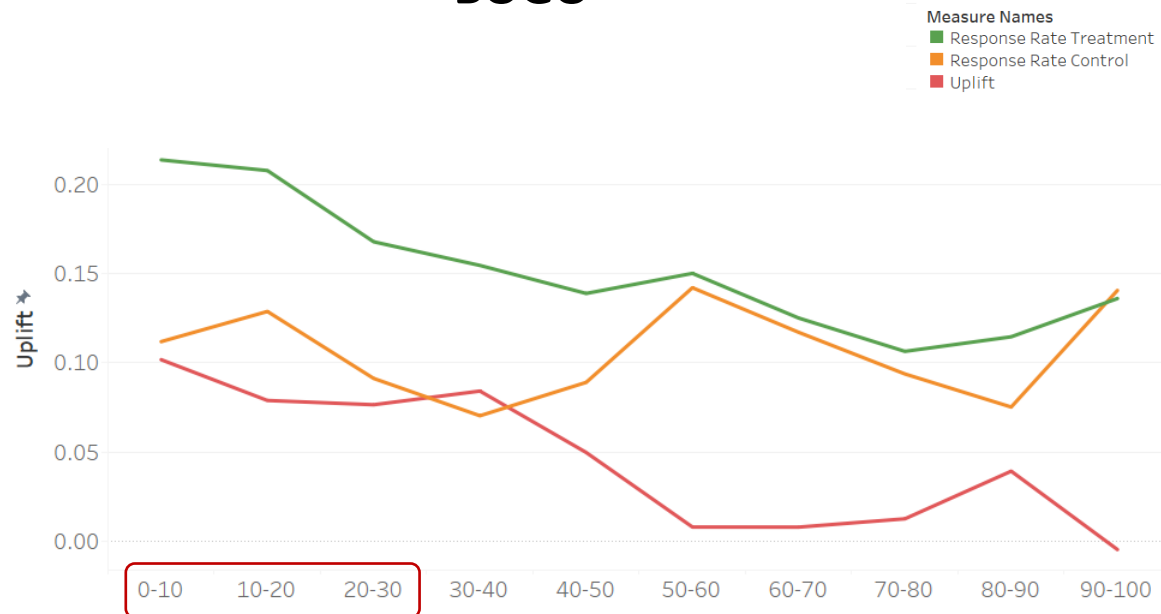
Weighted Average Uplift



- On average, customers who were offered the BOGO promotion are 4.54% more likely to make a purchase compared to customers who were not offered any promotion.
- On average, customers who were offered the Discount promotion are 7.61% more likely to make a purchase compared to customers who were not offered any promotion.

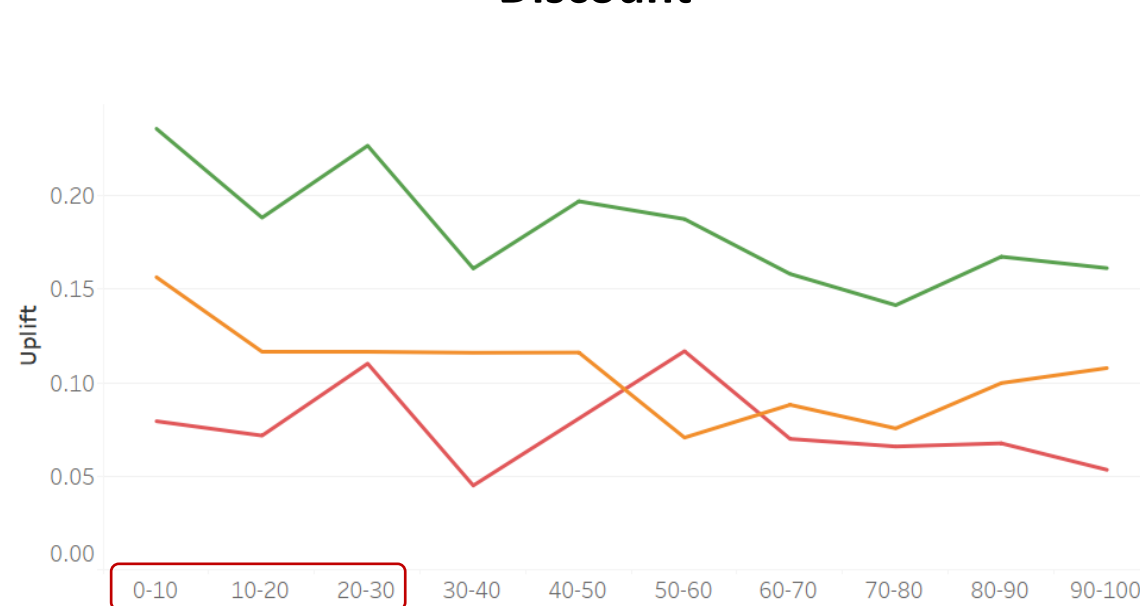
Uplift by Percentile

BOGO



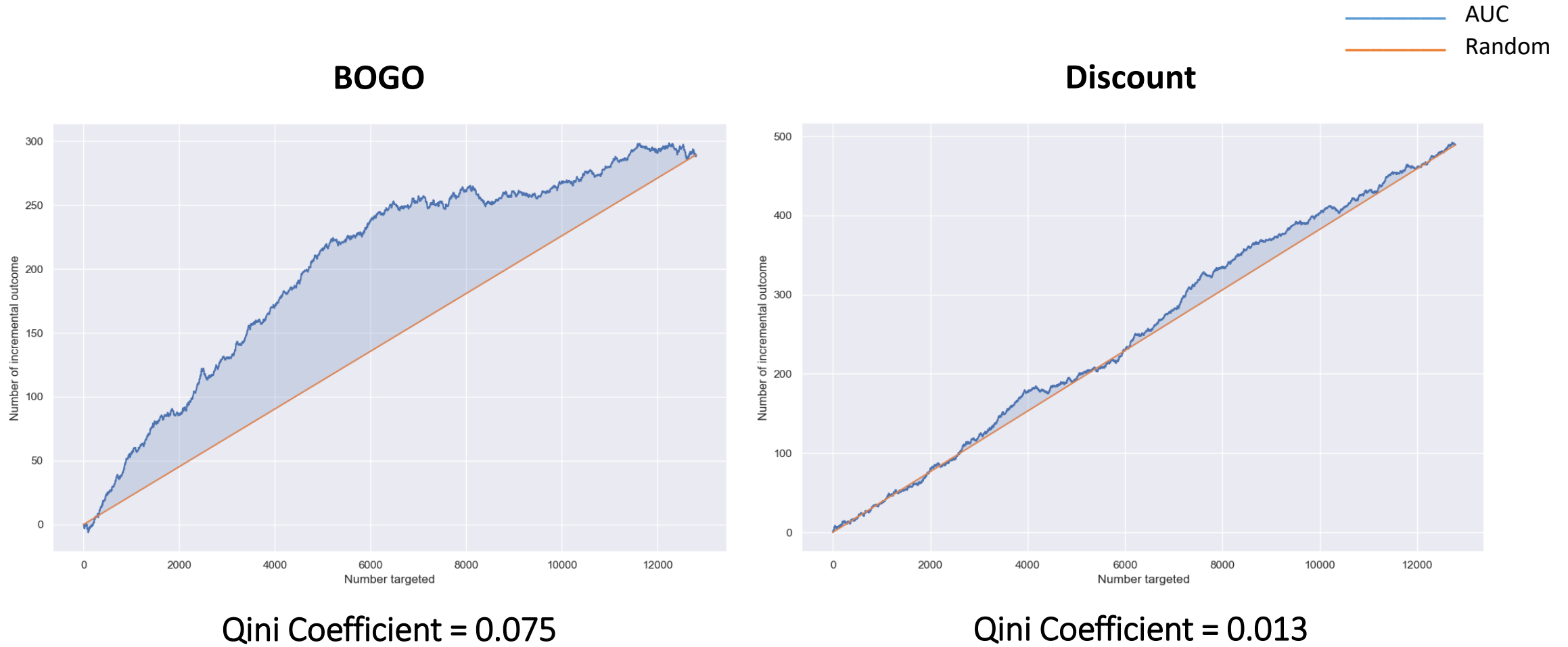
Uplift @25% = 8.89%

Discount



Uplift @25% = 7.98%

Model Evaluation



Conclusion

Weighted Average Uplift

BOGO (0.0454) < Discount (0.0761)



Overall, Discount offer is more effective in increasing customer response than the BOGO offer.



Better to opt for the offer 'Discount' in case company has the budget and can afford to target more customers.

Uplift @25%

BOGO (0.0889) > Discount (0.0798)



Indicates that the BOGO offer is more effective in increasing response rate among the top 25% of customers.



Better to opt for the offer 'BOGO' in case company has limited budget and wants to achieve higher uplift in sales.