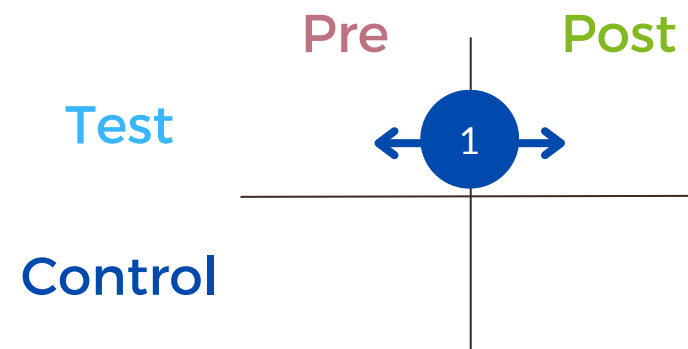


# PERFORMANCE MEASUREMENT

JORGE MOYA  
January 12th 2024

# Real Change

1) Did the Test-Group Revenue change?



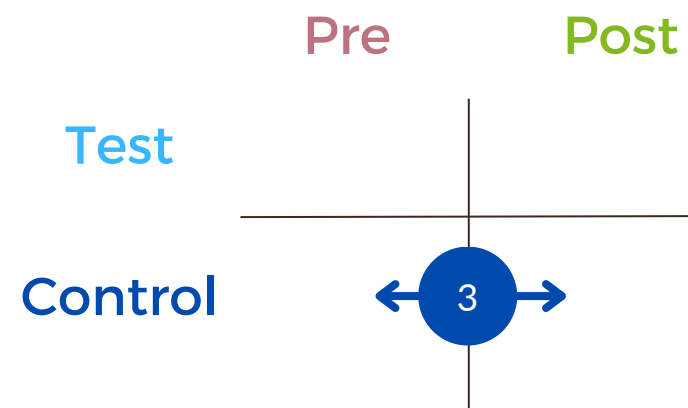
$$\text{Test Change} = R_{\text{test-pre}} \cdot \% \text{TestChange}$$



Hypothesis Testing

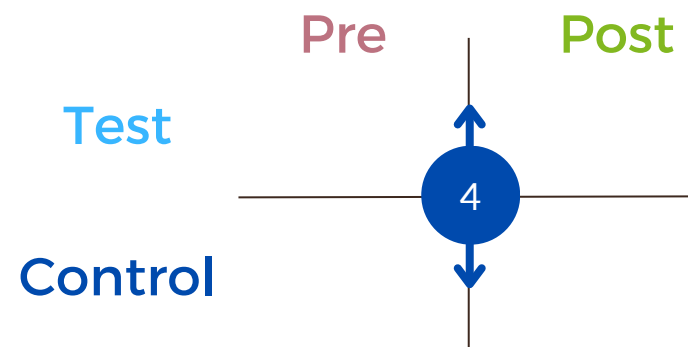
2) Was it because of chance?

3) What would have happened if we did nothing? Was the change entirely due to the Initiative?



$$\text{Ctrl Change} = R_{\text{ctrl-pre}} \cdot \% \text{CtrlChange} \quad \text{---} \text{2} \rightarrow \text{Hypothesis Testing}$$

4) What was the **Real Change**?



Are Control and Test comparable? They are supposed to be the same at the beginning. But, what if we have different number of players for control and test?

$$\text{Ctrl Comp Change} = R_{\text{ctrl-pre}} \cdot \% \text{CtrlChange} \cdot \frac{R_{\text{test-pre}}}{R_{\text{ctrl-pre}}}$$

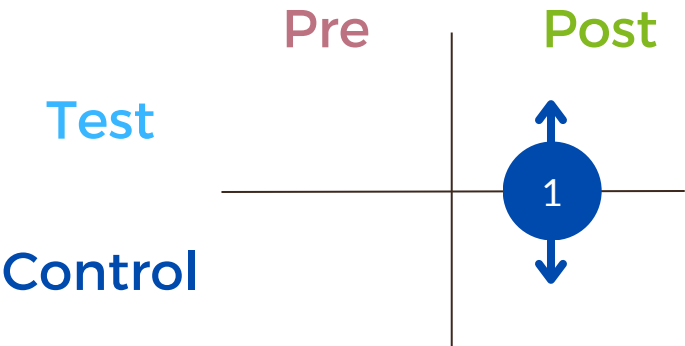
$$\text{Ctrl Comp Change} = R_{\text{test-pre}} \cdot \% \text{CtrlChange}$$

$$\text{Real Change} = \text{Test Change} - \text{Ctrl Comp Change} = R_{\text{test-pre}} \cdot (\% \text{TestChange} - \% \text{CtrlChange})$$

...

# Real Change - Option 2

1) Did the Test-Group Revenue change compared to Control-Group?

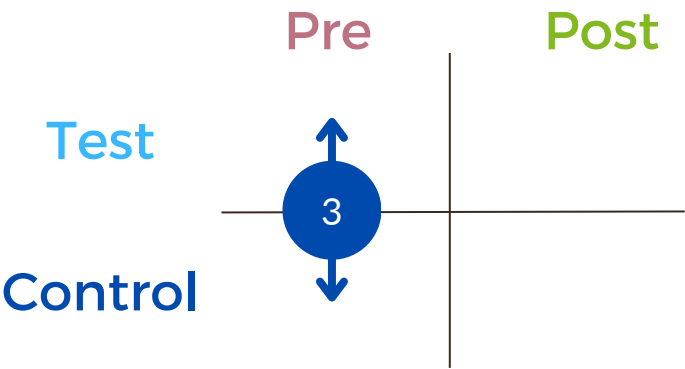


$$\text{Post Change} = R_{\text{test-post}} - R_{\text{ctrl-post}}$$

2  
Hypothesis Testing

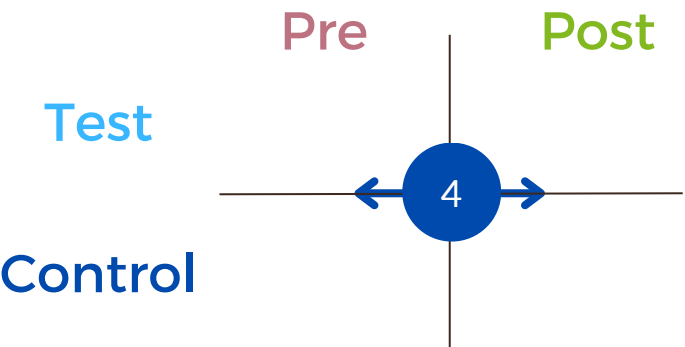
2) Was it because of chance?

3) Were they different before the Initiative?



$$\text{Pre Change} = R_{\text{test-pre}} - R_{\text{ctrl-pre}} \xrightarrow{2} \text{Hypothesis Testing}$$

4) What was the **Real Change**?



Are Control and Test comparable? They are supposed to be the same at the beginning. But, what if we have different number of players for control and test?

$$\text{Pre Comp Change} = R_{\text{test-pre}} - R_{\text{ctrl-pre}} \left( \frac{R_{\text{test-pre}}}{R_{\text{ctrl-pre}}} \right) = 0$$

$$\text{Post Comp Change} = R_{\text{test-post}} - R_{\text{ctrl-post}} \left( \frac{R_{\text{test-pre}}}{R_{\text{ctrl-pre}}} \right)$$

$$R_{\text{test-post}} - R_{\text{test-pre}} + R_{\text{test-pre}} - R_{\text{ctrl-post}} \left( \frac{R_{\text{test-pre}}}{R_{\text{ctrl-pre}}} \right)$$
$$R_{\text{test-pre}} \cdot \left( \frac{R_{\text{test-post}} - R_{\text{test-pre}}}{R_{\text{test-pre}}} \right) - R_{\text{test-pre}} \left( \frac{R_{\text{ctrl-post}} - R_{\text{ctrl-pre}}}{R_{\text{ctrl-pre}}} \right)$$

$$\text{Real Change} = \text{Post Comp Change} = R_{\text{test-pre}} \cdot (\% \text{TestChange} - \% \text{CtrlChange})$$

# Short-term -v3

## Period Real-Change

- ROI:  
\$-1,197 K Return compared with investment of \$954 K.
- NetWin\_Period:  
\$243 K decrease

### Nominal Test Change

| Metrics       | Pre         | Post        | Var        | Var%    |
|---------------|-------------|-------------|------------|---------|
| NetWin_Period | \$1,513,215 | \$1,249,485 | \$-263,730 | -17.43% |

### Nominal Control Change

| Metrics       | Pre         | Post        | Var       | Var%   |
|---------------|-------------|-------------|-----------|--------|
| NetWin_Period | \$1,513,215 | \$1,491,987 | \$-21,228 | -1.40% |

Real NetWin Change = \$1,5138 K (-17.43% - -1.40%) = \$-243 K

ROI= \$-243 K -954 K = \$-1,197 K

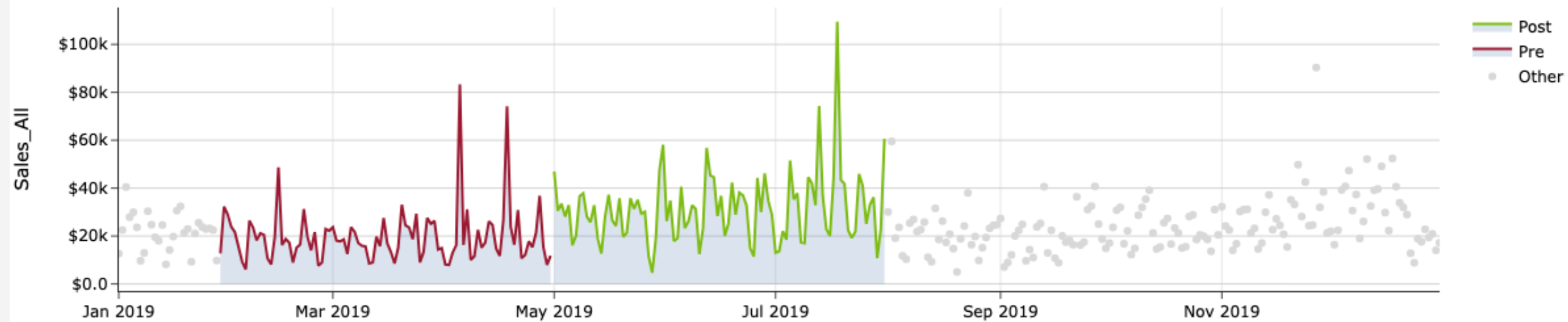
# Initiative: Buy One Get One

Period: May 1st to July 31st, 2019.

Days: 92 days

Number of Customers: 745

# Buy One Get One



**PRE-period: 92 days**

January 29th, 2019

to

April 30st, 2019

**POST-period: 92 days**

May 1st, 2019

to

July 31st, 2019

**Initiative: Buy One Get One**

**Period: May 1st to July 31st, 2019.**

**Number of Customers: 745**

---

AR

# Period Nominal-change

- Sales:

\$462 K increase

- Quantity:

35 K increase

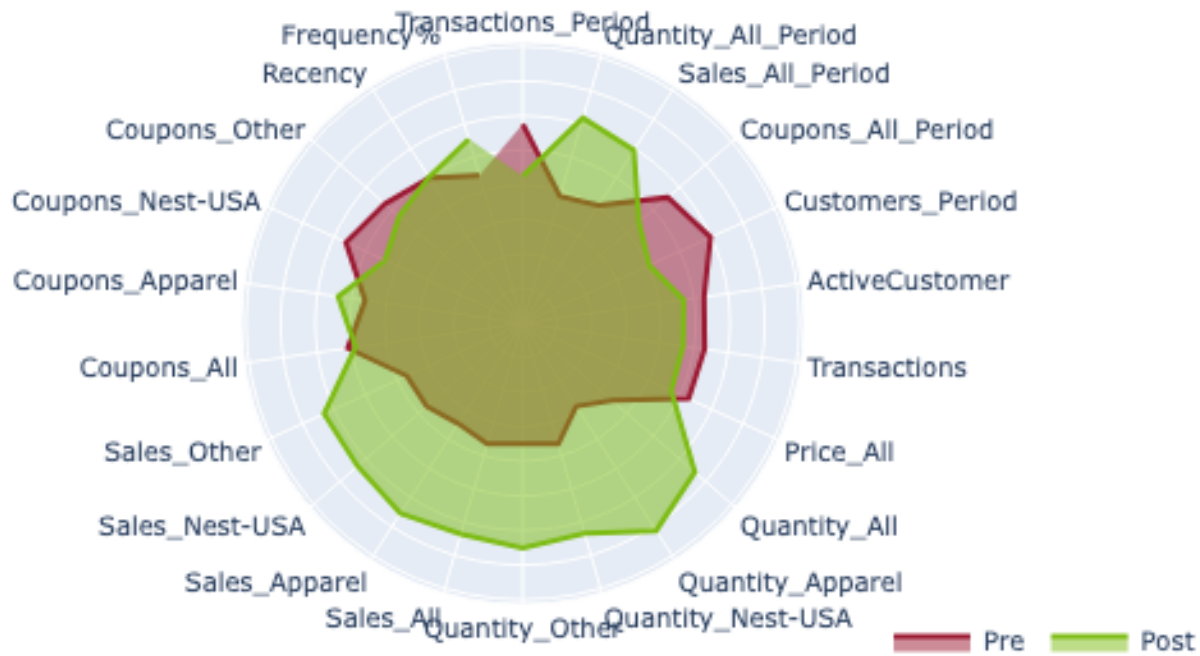
- Transactions:

1.5 K decrease

- Customers:

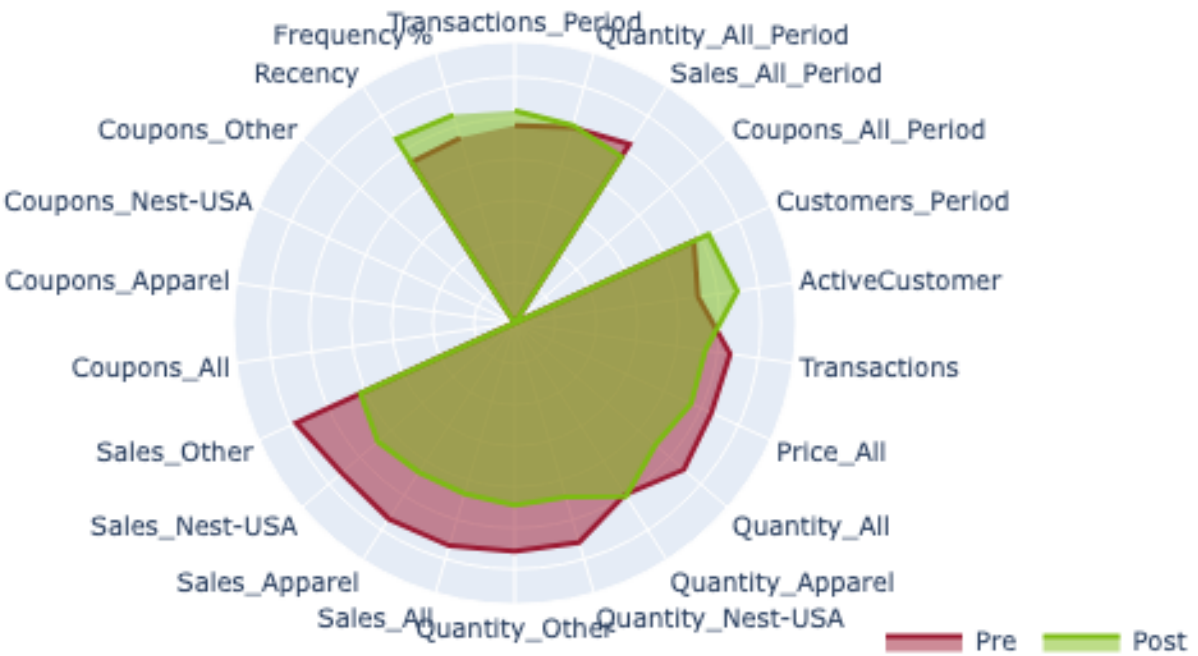
169 decrease

TEST | Promo: All | Initiative: BuyOneGetOne



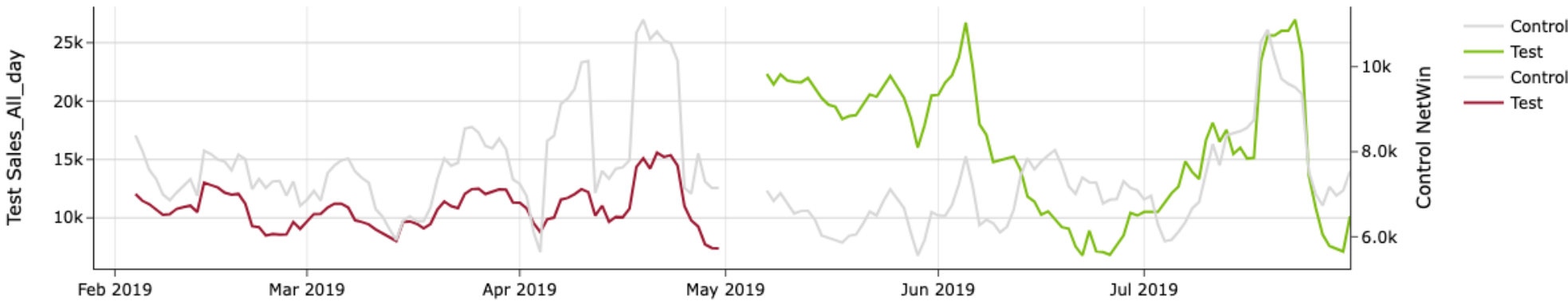
| Metrics             | Pre       | Post        | Var       | Var%    | Sign |
|---------------------|-----------|-------------|-----------|---------|------|
| DaysCount_Period    | 92        | 87          | -5        | -5.43%  | NA   |
| Transactions_Period | 5,712     | 4,226       | -1,486    | -26.02% | NA   |
| Quantity_All_Period | 56,440    | 91,317      | 34,877    | 61.79%  | NA   |
| Sales_All_Period    | \$992,364 | \$1,454,018 | \$461,654 | 46.52%  | NA   |
| Coupons_All_Period  | 9,688     | 7,774       | -1,914    | -19.76% | NA   |
| Customers_Period    | 519       | 350         | -169      | -32.56% | NA   |

CONTROL | Promo: NoPromo | Initiative: NoInitiative



| Metrics             | Pre       | Post      | Var       | Var%   | Sign |
|---------------------|-----------|-----------|-----------|--------|------|
| DaysCount_Period    | 92        | 92        | 0         | 0.00%  | NA   |
| Transactions_Period | 5,888     | 6,332     | 444       | 7.54%  | NA   |
| Quantity_All_Period | 33,644    | 34,013    | 369       | 1.10%  | NA   |
| Sales_All_Period    | \$714,480 | \$665,232 | \$-49,248 | -6.89% | NA   |
| Coupons_All_Period  | 0         | 0         | 0         | NA     | NA   |
| Customers_Period    | 527       | 570       | 43        | 8.16%  | NA   |

Sales\_All\_day (7-days Rollin Average)





# Period Real-change

• Sales:

\$530 K increase

• Quantity:

34 K increase

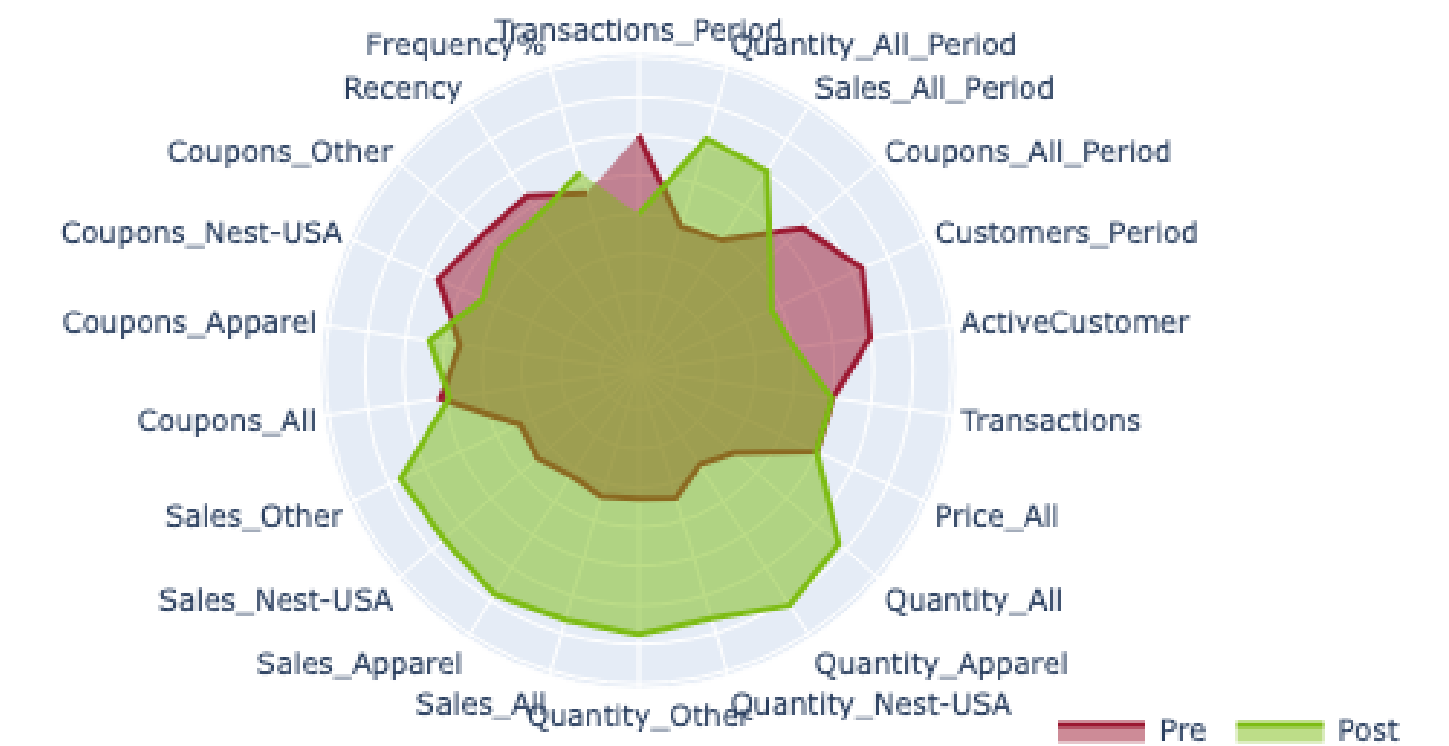
• Transactions:

1.9 K decrease

• Customers:

211 decrease

TEST-REAL | Promo: All | Initiative: BuyOneGetOne



| Metrics             | Pre       | Post        | Var       | Var%    | Sign |
|---------------------|-----------|-------------|-----------|---------|------|
| DaysCount_Period    | 92        | 87          | -5        | -5.43%  | NA   |
| Transactions_Period | 5,712     | 3,795       | -1,917    | -33.56% | NA   |
| Quantity_All_Period | 56,440    | 90,698      | 34,258    | 60.70%  | NA   |
| Sales_All_Period    | \$992,364 | \$1,522,420 | \$530,056 | 53.41%  | NA   |
| Coupons_All_Period  | 9,688     | 7,774       | -1,914    | -19.76% | NA   |
| Customers_Period    | 519       | 308         | -211      | -40.72% | NA   |
| ActiveCustomer      | 8         | 5           | -2        | -32.76% | Yes  |
| Transactions        | 8         | 8           | -0        | -0.34%  | Yes  |
| Price_All           | \$57      | \$57        | \$-0      | -0.14%  | Yes  |
| Quantity_All        | 82        | 171         | 90        | 109.60% | Yes  |
| Quantity_Apparel    | 10        | 25          | 15        | 148.61% | Yes  |
| Quantity_Nest-USA   | 7         | 14          | 7         | 94.49%  | Yes  |
| Quantity_Other      | 65        | 134         | 69        | 106.30% | Yes  |
| Sales_All           | \$1,438   | \$2,847     | \$1,409   | 97.98%  | Yes  |
| Sales_Apparel       | \$238     | \$508       | \$270     | 113.40% | Yes  |
| Sales_Nest-USA      | \$829     | \$1,597     | \$768     | 92.62%  | Yes  |
| Sales_Other         | \$371     | \$745       | \$374     | 100.75% | Yes  |
| Coupons_All         | 14        | 13          | -1        | -4.37%  | No   |
| Coupons_Apparel     | 5         | 5           | 1         | 17.03%  | Yes  |
| Coupons_Nest-USA    | 4         | 3           | -1        | -22.11% | Yes  |
| Coupons_Other       | 6         | 5           | -1        | -10.23% | No   |





# ACKNOWLEDGMENT

Open ☐

Open ☐

Open ☐

Open ☐

Open ☐

# APPENDIX

