

# **Pharmacy Analytics Case Study**

## **Objective**

To estimate the expected financial impact of increasing the visibility of non-medication items (vitamins, band-aids, etc.) during checkout and developing a strategy to assess the feature's effectiveness, post-implementation. This report includes a detailed analysis, SQL queries, assumptions, and a strategy to measure success.

## **Case Study Background**

From provided data, the customers order prescription drugs through the online app, and the company sends a courier to deliver the medications to the customer. The customers can now add non-medication items to their carts when checking out from the new feature.

The Product Team anticipates that 20% of consumers will begin adding non-medication items to their carts during checkout, thereby they are considering about changing the visibility of this function in February 2024. My role, as an analyst is to:

1. Evaluate the potential impact of the change.
2. Develop an experimentation plan to measure the feature's success.

## **Given Datasets:**

modealto.checkout\_attempts : 11,992 rows x 6 columns

Query 1

```
1 SELECT * FROM modealto.checkout_attempts;
```

Succeeded

	customer_id	checkout_started_at	checkout_completed_at	order_id	customer_added_non_med_to_order	order_total_dollars
1	1177	2023-11-01 06:45:18				
2	6119	2023-11-01 06:47:35				
3	8389	2023-11-01 06:50:25	2023-11-01 07:05:16	10000	false	11.75
4	6811	2023-11-01 06:55:26	2023-11-01 06:59:06	10001	false	19.83
5	9441	2023-11-01 06:58:34	2023-11-01 07:06:17	10002	false	21.59
6	1125	2023-11-01 07:05:30	2023-11-01 07:10:02	10003	false	15.5
7	7838	2023-11-01 07:14:33	2023-11-01 07:23:56	10004	false	15.49
8	5191	2023-11-01 07:17:54	2023-11-01 07:22:05	10005	false	20.01
9	5206	2023-11-01 07:21:56	2023-11-01 07:28:21	10006	false	24.18
10	1965	2023-11-01 07:24:20	2023-11-01 07:27:28	10007	false	23
11	1160	2023-11-01 07:34:20	2023-11-01 07:45:44	10008	false	18.08
12	5793	2023-11-01 07:41:15	2023-11-01 07:43:33	10009	false	14.75
13	1153	2023-11-01 07:42:05	2023-11-01 07:44:58	10010	false	18.4

Page 1 of 120

Showing rows 1-100 of 11,992 Columns 6 Size 492KB Run a few seconds ago Executed in 757ms

modealto.order\_status : 7156 rows x 4 columns

Query 1

```
1 SELECT * FROM modealto.order_status;
```

Succeeded

	order_id	customer_id	delivery_status	delivered_date
1	10000	8389	delivered	2023-11-04 00:00:00
2	10001	6811	delivered	2023-11-02 00:00:00
3	10002	9441	delivered	2023-11-03 00:00:00
4	10003	1125	delivered	2023-11-03 00:00:00
5	10004	7838	delivered	2023-11-02 00:00:00
6	10005	5191	delivered	2023-11-03 00:00:00
7	10006	5206	delivered	2023-11-04 00:00:00
8	10007	1965	delivered	2023-11-02 00:00:00
9	10008	1160	delivered	2023-11-04 00:00:00
10	10009	5793	delivered	2023-11-03 00:00:00
11	10010	1153	delivered	2023-11-02 00:00:00
12	10011	7846	delivered	2023-11-03 00:00:00
13	10012	7923	delivered	2023-11-04 00:00:00

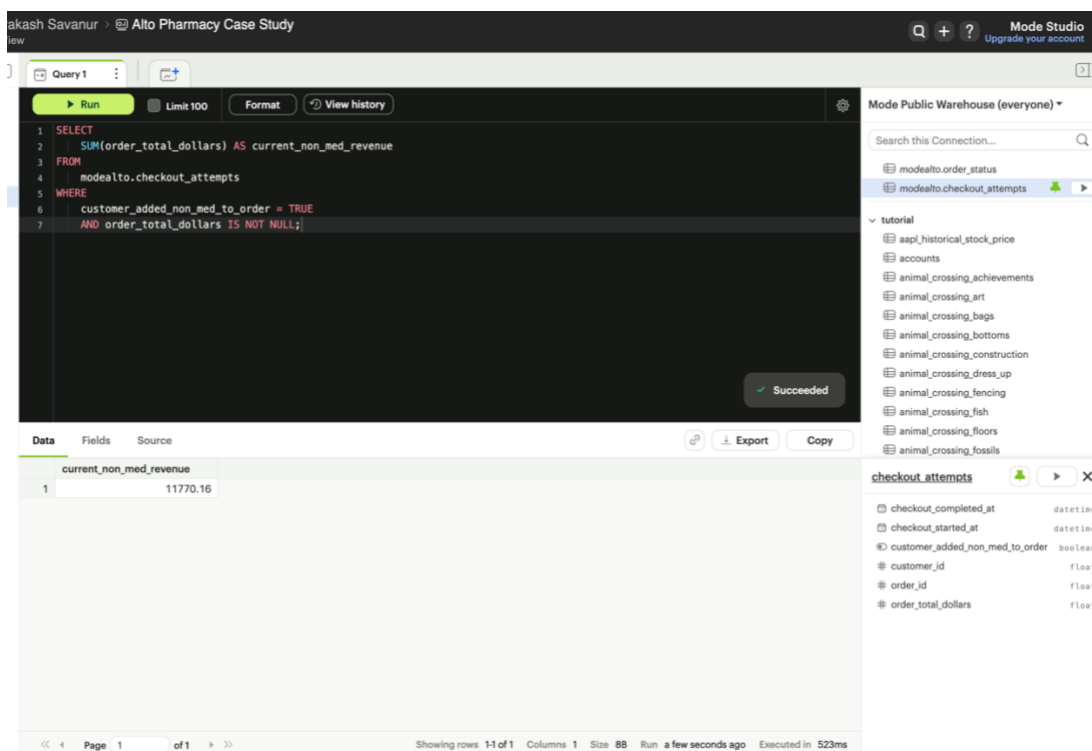
## Analysis 1: Financial Impact of the Proposed Change

### 1. Finding the current state of the orders on the App.

Before estimating the impact of the change, I analyzed the current usage of the non-medication item feature. I've considered the following points,

- Number of Checkouts. Considering customers who completed their order.
- The Percentage (%) of customers who currently add non-medication items.
- Average order value (\$) that includes non-medication items.

Calculating the total revenue from non-medication items :



The screenshot shows the Mode Studio interface. The SQL query in the editor is:

```
1 SELECT
2   SUM(order_total_dollars) AS current_non_med_revenue
3 FROM
4   modealto.checkout_attempts
5 WHERE
6   customer_added_non_med_to_order = TRUE
7   AND order_total_dollars IS NOT NULL;
```

The query has been executed successfully, as indicated by the "Succeeded" status. The results table shows one row of data:

current_non_med_revenue
11770.16

The right sidebar shows the database schema for "modealto", including tables like "order\_status", "checkout\_attempts", and "tutorial". The "checkout\_attempts" table is selected, and its fields are listed: "checkout\_completed\_at", "checkout\_started\_at", "customer\_added\_non\_med\_to\_order", "customer\_id", "order\_id", and "order\_total\_dollars".

**Result:** Currently, the total revenue from non-medication items is \$11,770.16

### 2. Estimating the future state of the orders on the App.

I estimated the future revenue based on the assumption that 20% of consumers would add non-medication products, as per the Product Team's expectation.

ash Savanur > Alto Pharmacy Case Study

Mode Studio Upgrade your account

Query 1 Visual Explorer

Run Limit 100 Format View history

```

1 WITH checkout_data AS (
2   SELECT
3     COUNT(DISTINCT customer_id) AS total_checkouts
4   FROM modealto.checkout_attempts
5   WHERE checkout_completed_at IS NOT NULL
6 )
7
8 SELECT
9   0.20 * checkout_data.total_checkouts *
10  (SELECT AVG(order_total_dollars) FROM modealto.checkout_attempts WHERE order_total_dollars IS NOT NULL)
11 AS projected_non_med_revenue
12 FROM
13   checkout_data;

```

Succeeded

Data Fields Source

	projected_non_med_revenue
1	20442.8393

Showing rows 1-1 of 1 Columns 1 Size 88 Run a few seconds ago Executed in 482ms

Mode Public Warehouse (everyone)

Search this Connection...

- modealto.order\_status
- modealto.checkout\_attempts
- tutorial
  - aapl\_historical\_stock\_price
  - accounts
  - animal\_crossing\_achievements
  - animal\_crossing\_art
  - animal\_crossing\_bags
  - animal\_crossing\_bottoms
  - animal\_crossing\_construction
  - animal\_crossing\_dress\_up
  - animal\_crossing\_fencing
  - animal\_crossing\_fish
  - animal\_crossing\_floors
  - animal\_crossing\_fossils
  - animal\_crossing\_headwear
  - animal\_crossing\_housewares
  - animal\_crossing\_insects
  - animal\_crossing\_miscellaneous
  - animal\_crossing\_music
  - animal\_crossing\_other
  - animal\_crossing\_photos
  - animal\_crossing\_posters
  - animal\_crossing\_recipes
  - animal\_crossing\_rugs
  - animal\_crossing\_shoes
  - animal\_crossing\_tools
  - animal\_crossing\_tops
  - animal\_crossing\_umbrellas
  - animal\_crossing\_villagers
  - animal\_crossing\_wall\_mounts

**Result:** In the future, the total revenue from non-medication items is \$20,442.84

### 3. Calculating the financial impact by comparing the projected future revenue to the current revenue.

ash Savanur > Alto Pharmacy Case Study

Mode Studio Upgrade your account

Query 1 Visual Explorer

Run Limit 100 Format View history

```

1 WITH current_revenue AS (
2   SELECT
3     SUM(order_total_dollars) AS current_non_med_revenue
4   FROM
5     modealto.checkout_attempts
6   WHERE
7     customer_added_non_med_to_order = TRUE
8     AND order_total_dollars IS NOT NULL
9 ),
10 projected_revenue AS (
11   SELECT
12     0.20 * COUNT(DISTINCT customer_id) * AVG(order_total_dollars) AS projected_non_med_revenue
13   FROM
14     modealto.checkout_attempts
15   WHERE
16     order_total_dollars IS NOT NULL
17 )
18
19 SELECT
20   projected_non_med_revenue - current_non_med_revenue AS estimated_additional_revenue
21 FROM
22   current_revenue, projected_revenue;
23

```

Succeeded

Data Fields Source

	estimated_additional_revenue
1	8672.6793

Showing rows 1-1 of 1 Columns 1 Size 88 Run a few seconds ago Executed in 499ms

**Result:** The additional revenue generated from the increased visibility of non-medication items is \$ 8672.67

### **Assumptions**

1. I assumed that 20% of customers will interact with the increased visibility feature, as estimated by the Product Team.
2. The average revenue per order remains constant before and after the feature change.
3. The addition of non-medication items won't affect the purchase of prescription medications.
4. The customer base will remain constant during and after the feature implementation.
5. There are no major updates or promotions, other than the visibility change, that will affect customer purchasing behaviour.

### **Analysis 2: Experimentation Plan to Measure Success After Implementing the Proposed Change**

I am conducting an A/B Test to measure if the implementation of increasing visibility of the non-medication items is a success or not.

I have split the customers to 2 groups.

1. Control group - The customers experiencing the existing checkout flow, where the non-medication items are less visible.
2. Test group - The customers experiencing the updated checkout flow, where the non-medication items are more visible.

The KPI (Key Performance Indicators) that I have considered for the success are : Percentage of customers adding non-medication items in both the groups, Total revenue from each group and Revenue per customer in each group.

The below SQL shows the selected customers randomly being assigned to the 2 groups.

- num\_customers calculates the total unique customers in each group.

- non\_med\_added calculates the number of customers who added non-medication items to their cart.
- total\_revenue calculates the total revenue generated by each group.

ash Savanur > Alto Pharmacy Case Study

Query 1 Visual Explorer

Run Limit 100 Format View history

```

1 WITH customer_grouping AS (
2   SELECT
3     customer_id,
4     CASE
5       WHEN RANDOM() < 0.5 THEN 'control'
6       ELSE 'test'
7     END AS test_group
8   FROM
9     modealto.checkout_attempts
10  )
11
12 SELECT
13   cg.test_group,
14   COUNT(DISTINCT ca.customer_id) AS num_customers,
15   SUM(CASE WHEN ca.customer_added_non_med_to_order = TRUE THEN 1 ELSE 0 END) AS non_med_added,
16   SUM(ca.order_total_dollars) AS total_revenue
17 FROM
18   modealto.checkout_attempts ca
19 JOIN
20   customer_grouping cg ON ca.customer_id = cg.customer_id
21 GROUP BY
22   cg.test_group;

```

Succeeded

	test_group	num_customers	non_med_added	total_revenue
1	control	4406	438	169471.75
2	test	4363	480	173421.1

Page 1 of 1

Showing rows 1-2 of 2 Columns 4 Size 59B Run a few seconds ago Executed in 537ms

1. Calculating the Percentage of customers adding non-medication items:
  - Control Group :  $438/4406 \times 100 = 9.94\%$
  - Test Group :  $480/4363 \times 100 = 11.001\%$
2. Calculating the Average revenue per customer:
  - Control Group :  $169471.75/4406 = 38.46\$$
  - Test Group :  $173421.1/4363 = 39.74\$$

## **Conclusion:**

Based on the difference between the control and test groups:

- From comparing the percentage of customers adding non-med items, there is an improvement in the test group (11.001%) compared to the control group (9.94%).
- From comparing the total revenue and average revenue per customer, the revenue per customer is almost identical for both groups, with the test group slightly more than the control group.

**These results were based on the randomly selected customers for the control and test group.**

Based on these results, the changes made in visibility of the non-medication items have not significantly increased the number of non-medication items added to carts (only 2% increase) or total revenue. To improve the result, I would make more aggressive changes to the visibility of non-medication items, by adding discounts and even personalised recommendations using Machine Learning and Artificial Intelligence. This would encourage customer behaviour change.