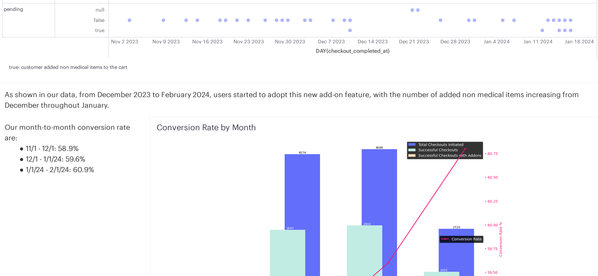
Cart Add-Ons Feature

In this report, we explore the impact of a new cart Add-Ons feature of an online pharmacy on revenue and conversion rate.

Exploratory Analysis

Like most online e-commerce apps, our customers interact with the app by adding prescription medications to a shopping cart. During the checkout process, we recently added a feature that allows customers to add additional, non-medication items to their cart. Users can also cancel an order after the order has been placed.

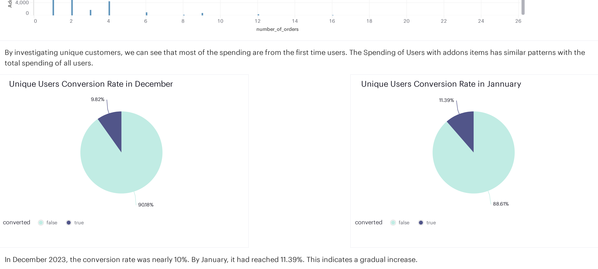


As shown in our data, from December 2023 to February 2024, users started to adopt this new add-on feature, with the number of added non medical items increasing from December throughout January.

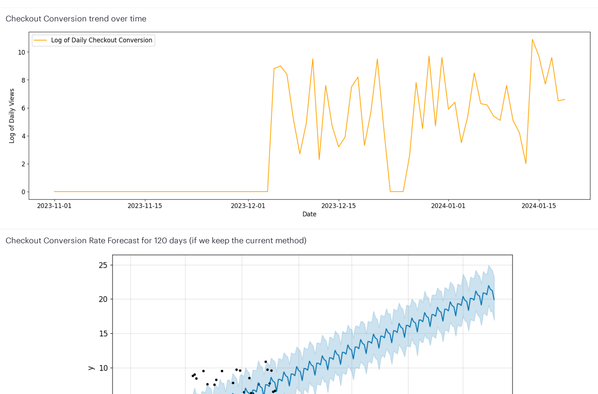
Our month-to-month conversion rate are:

- 11/1 - 12/1: 58.9%
- 12/1 - 1/1/24: 59.6%
- 1/1/24 - 2/1/24: 60.9%

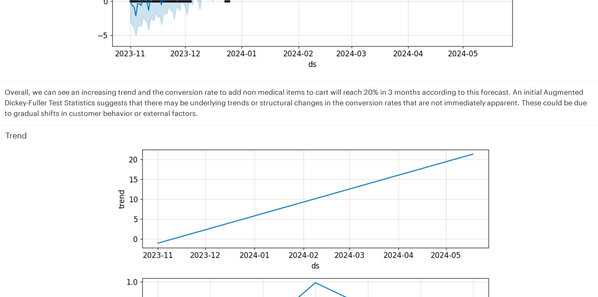
We can see a consistent upward trend in conversion rate in three months. It indicates that more customers who start the checkout process are completing their purchases. Overall, there's a 2 percentage point increase, which is significant in e-commerce terms.



Although the number of checkouts with non medical additional items slightly decreased from 216 to 175, there is a clear gain in the revenue portion from checkouts with add-ons. It increased from 11% to 13% of all successful checkouts.

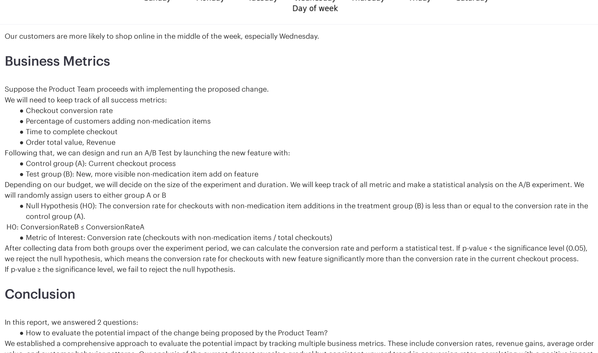


By investigating unique customers, we can see that most of the spending are from the first time users. The Spending of Users with addons items has similar patterns with the total spending of all users.



In December 2023, the conversion rate was nearly 10%. By January, it had reached 11.39%. This indicates a gradual increase.

Time Series Analysis of Daily Conversion Rates



Overall, we can see an increasing trend and the conversion rate to add non medical items to cart will reach 20% in 3 months according to this forecast. An initial Augmented Dickey-Fuller Test Statistics suggests that there may be underlying trends or structural changes in the conversion rates that are not immediately apparent. These could be due to gradual shifts in customer behavior or external factors.

Our customers are more likely to shop online in the middle of the week, especially Wednesday.

Business Metrics

Suppose the Product Team proceeds with implementing the proposed change.
We will need to keep track of all success metrics:

- Checkout conversion rate
- Percentage of customers adding non-medication items
- Time to complete checkout
- Order total value, Revenue

Following that, we can design and run an A/B Test by launching the new feature with:

- Control group (A): Current checkout process
- Test group (B): New, more visible non-medication item add on feature

Depending on our budget, we will decide on the size of the experiment and duration. We will keep track of all metric and make a statistical analysis on the A/B experiment. We will randomly assign users to either group A or B

- Null Hypothesis (H0): The conversion rate for checkouts with non-medication item additions in the treatment group (B) is less than or equal to the conversion rate in the control group (A).

H_0: $ConversionRate_B \leq ConversionRate_A$

- Metric of Interest: Conversion rate (checkouts with non-medication items / total checkouts)

After collecting data from both groups over the experiment period, we can calculate the conversion rate and perform a statistical test. If p-value < the significance level (0.05), we reject the null hypothesis, which means the conversion rate for checkouts with new feature significantly more than the conversion rate in the current checkout process.
If p-value ≥ the significance level, we fail to reject the null hypothesis.

Conclusion

In this report, we answered 2 questions:

- How to evaluate the potential impact of the change being proposed by the Product Team?

We established a comprehensive approach to evaluate the potential impact by tracking multiple business metrics. These include conversion rates, revenue gains, average order value, and customer behavior patterns. Our analysis of the current dataset reveals a gradual but consistent upward trend in conversion rates, correlating with a positive impact on revenue. This gradual improvement suggests significant potential for the Product Team's proposed feature. By increasing the visibility of non-medication items during checkout, we may accelerate this positive trend, potentially boosting customer awareness and increasing add-on purchases.

- Suppose the Product Team proceeds with implementing the proposed change. How to evaluate whether the change is a success?

We use A/B experiment and statistical tests mentioned above to measure the success of the project. By combining these quantitative measures with qualitative user feedback, we can comprehensively evaluate the success of the new feature. This data-driven approach will allow us to make informed decisions about full implementation, potential refinements, or the need for further experimentation.
In addition, there are some factors we want to consider moving forwards:

- Seasonal Effects: The improvement could partly be due to holiday shopping in December and January, when customers might be more motivated to complete purchases.
- Process Improvements: It's possible that the company made incremental improvements to the checkout process during this period, resulting in a better user experience.
- Customer Familiarity: Regular customers might be becoming more accustomed to the checkout process over time.