Subscription Churn Analysis

MLDS 401: Predictive Analytics I Project

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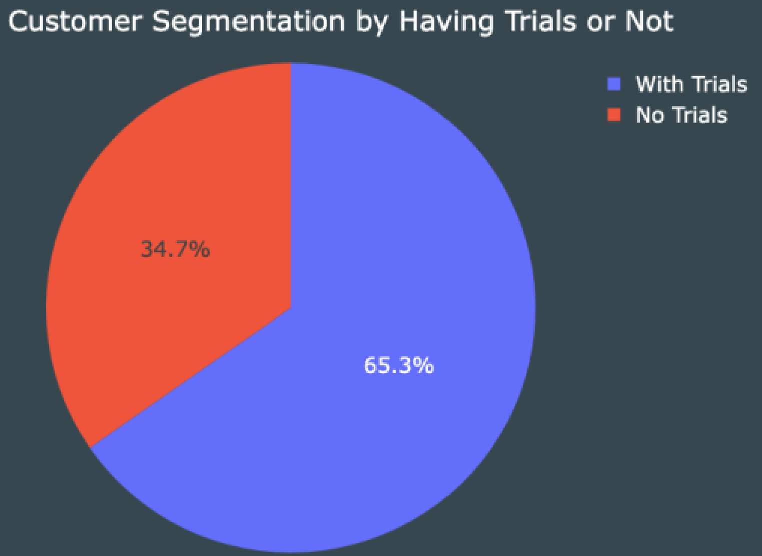
1 Business Questions

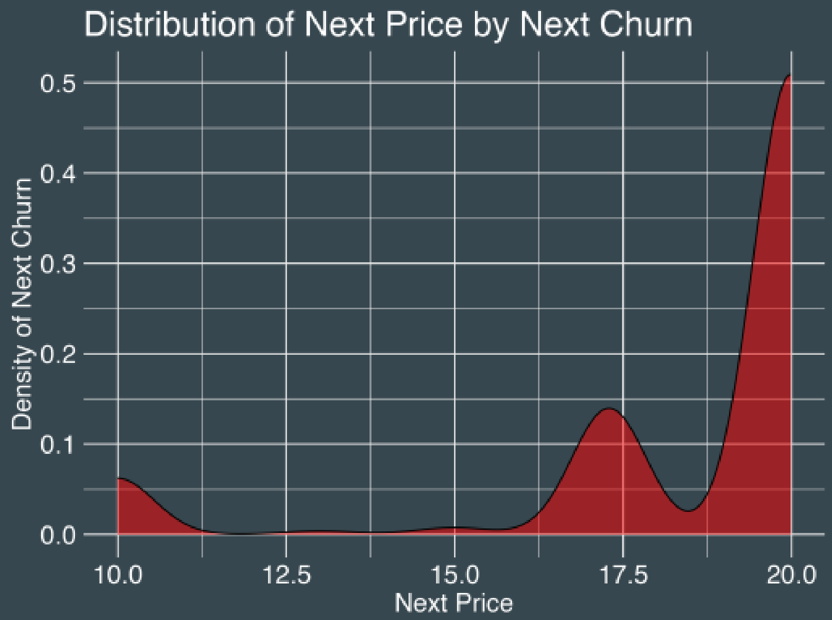
Business Questions

- How do **different factors** such as *trial offers, subscription price, customers' engagement, content preferences*, and *device usage* impact customer **churn rate**?
- What **strategies** can be implemented to **minimize churn rate** and enhance **customer loyalty** in this subscription-based service?

2 Subscription Churn Factor Analysis

Payment Effect: Trial & Price

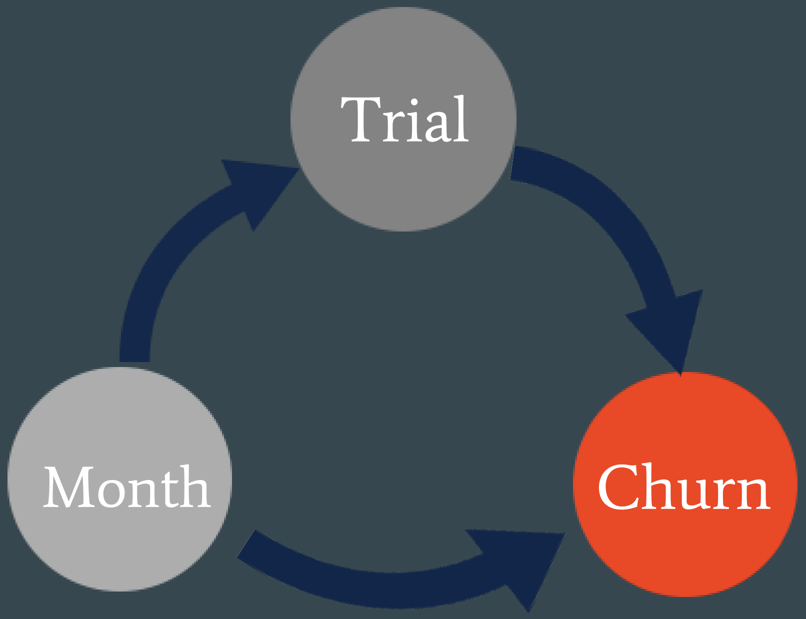




Around ⅔ of customers have *trials*, but the majority are only interested in the *trial* period and don't show long-term commitment to the subscription service

With a higher subscription *price*, customers are more likely to churn in the next month

Do we lose some variable(s)?

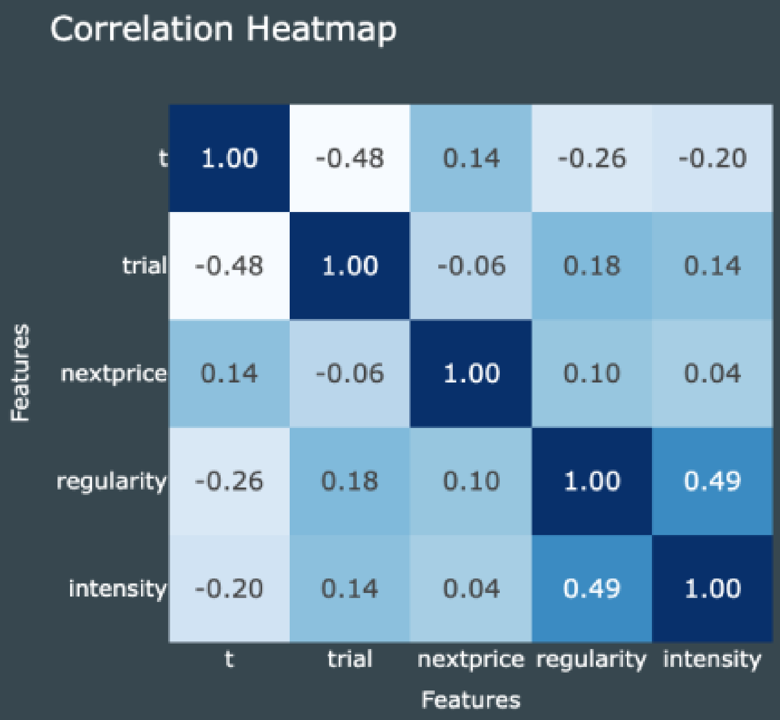


- Seasonal Patterns
- Promotions or Offers
- Trial Period Impact
- Behavior Change Over Time

Fork Structure => Keep *Month*!

Engagement Effect: Regularity & Intensity

- Examine their correlations and VIFs
  - Correlation between *regularity* and *intensity* is **0.49**
- P-values
  - The effect of *intensity* could be partly explained by *regularity*
- The *regularity*'s **sign** is **negative**: the more frequently customer reads in a certain month, the higher probability they will retain in subscription in the following month

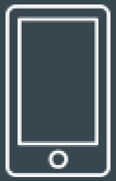


Content Effect

- P-values & AIC
  - In the model without *regularity*, *sports* and *news* are significant, whereas they become not significant after adding in *regularity*
  - The AIC of the model without *regularity* is higher than that with *regularity*
- After adding in *regularity*, the VIFs of all *content* variables become higher
- All *content* variables are not significant in the model, this tells us that the content readers are reading has **no** significant effect on the churn rate

Device Effect

- P-values
  - In the model without *regularity*, *desktop*, one of the device variables, is significant, whereas it becomes not significant after adding in *regularity*
- After adding in *regularity*, the VIFs of all *device* variables become higher
- All the *device* variables are not significant in the model, this tells us that the device readers are using has **no** significant effect on the churn rate



3 Conclusion

Conclusion: Data Science Insights

Stepwise Regression Evaluation:

- Month

- Trial

- Nextprice

- News

- Crime

- Regularity

Conclusion: Business Analytics Insights

- Loyal customers exhibit a lower tendency to churn over *months*, showing their loyalty to the service
- Customers commonly churn after their *trial* period
- *Nextprice* increase can trigger substantial customer churn
- *Regularity* has a high impact on the churn rate

=> **Our Model:** $nextchurn = \beta_0 + \beta_1\, month + \beta_2\, trial + \beta_3\, nextprice + \beta_4\, regularity$

Retain Customers	Drive Customers Away	No Substantial Effect
Month & *Regularity*	*Trial* & *NextPrice*	*Content* and *Device* Variables

Dismiss the *intensity* factor
due to **high collinearity**

4 Actionable Advice

Actionable Advice

- Implement a **notification system** to remind users of new articles, breaking news, or personalized
- Offer some **discounts** to retain customers to reduce the immediate loss after the *trial*
- Adjust the **gap** between the *trial* price and the *normal* price
- Introduce **loyalty programs**

Q&A