

Lark Health App Diabetes Prevention Program Insights EDA

10/03/2021

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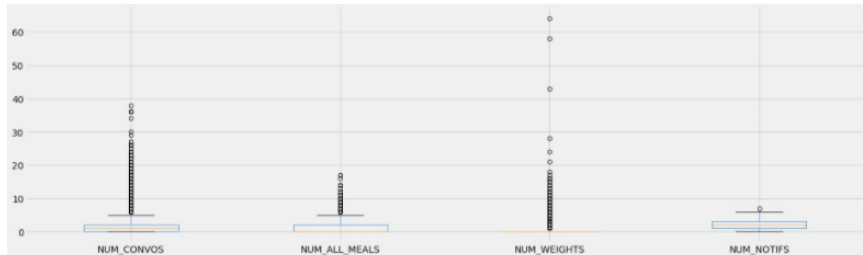
Summary and Recommendation

- **Why:** improve user engagement and reduce churn
- **Findings:**
 - “Holiday” and “New Year wish” effect on app engagement
 - Active users peak around beginning of December decrease, and rebound on January
 - New users have different behavior pattern from existing users
 - Mission finishers uses less time to complete mission
 - Missions finishers are highly engaged with apps
- **Recommendation**
 - **Design mission requires shorter completion time during holiday season**
 - Work on recruiting new users
- **Plan Forward:** investigating retention rate

Note: terms with underscore means new feature created in the notebook

Data preparation

Outlier detection



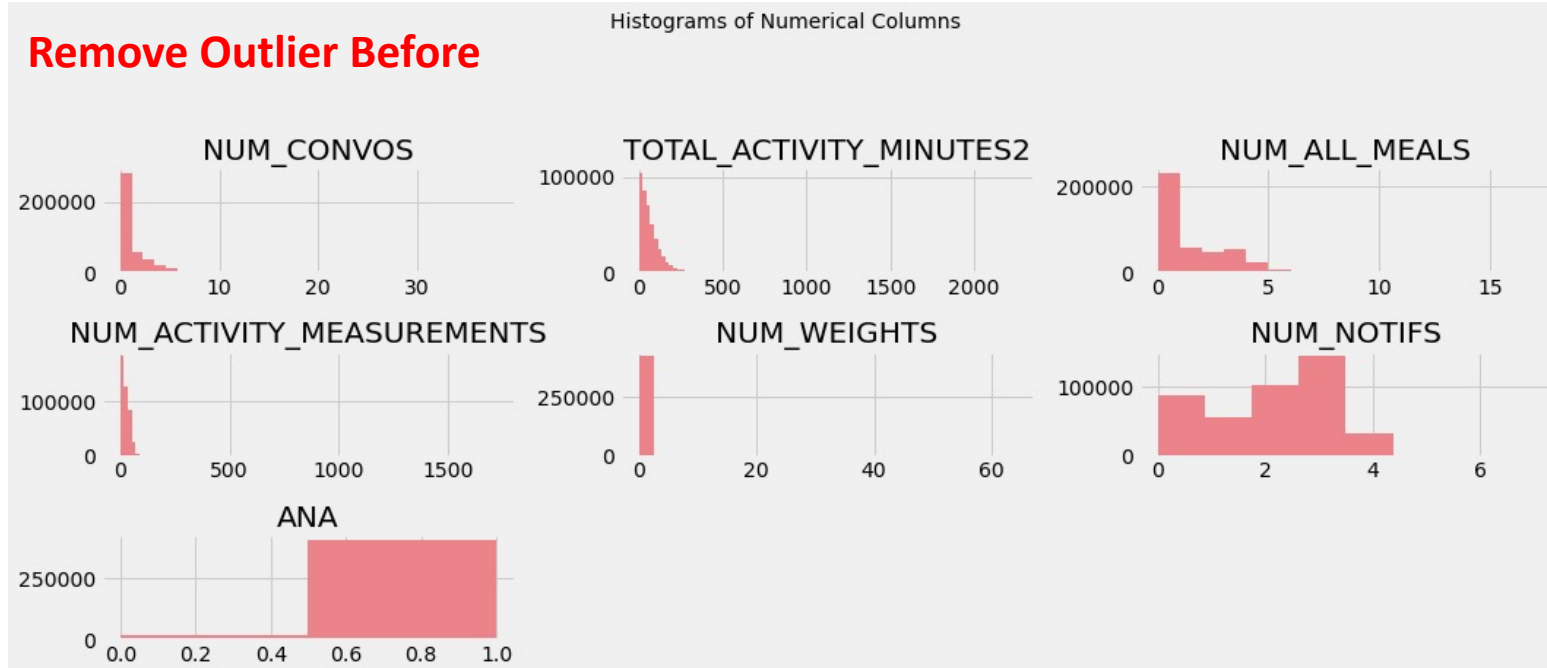
```
1 df_users[['TOTAL_ACTIVITY_MINUTES2', 'NUM_ACTIVITY_MEASUREMENTS']].boxplot(figsize=(20,6))
```

<AxesSubplot:>

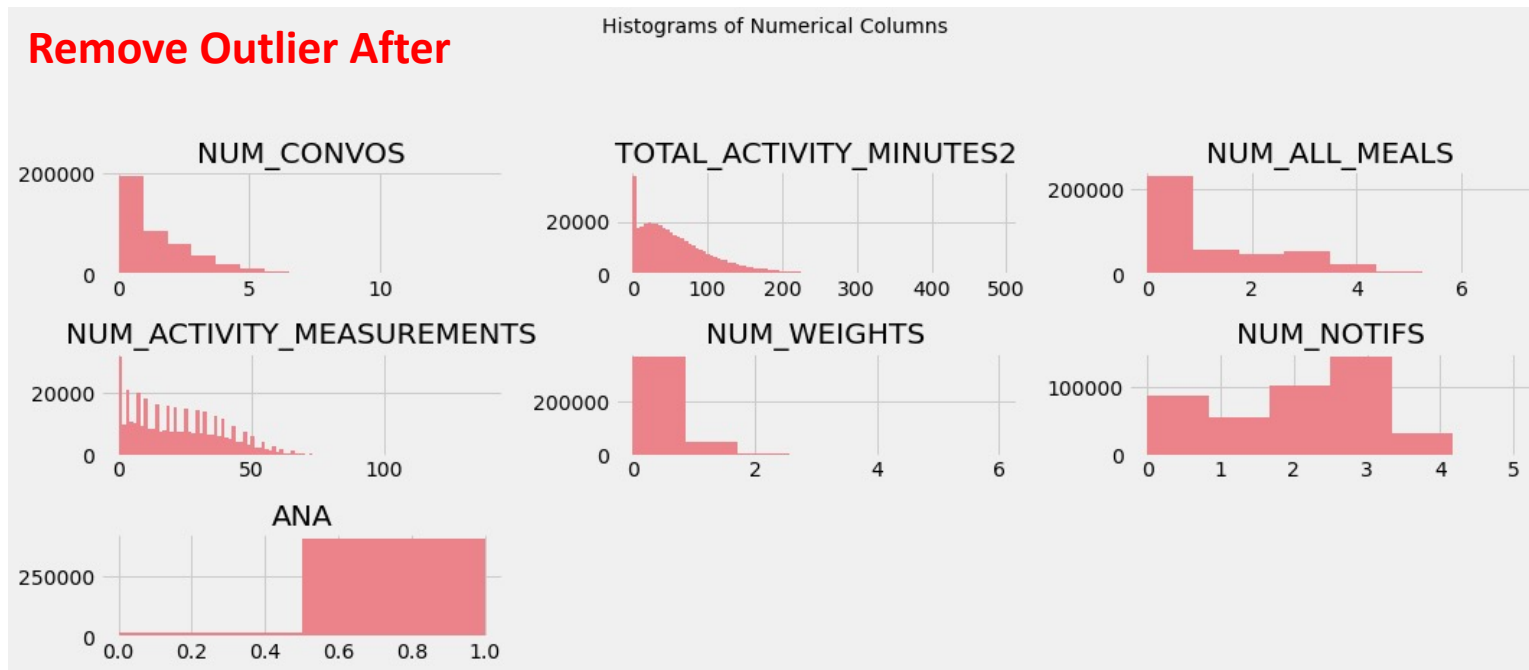


Note Many outliers, we need to aggregate to simplify

Remove Outlier Before



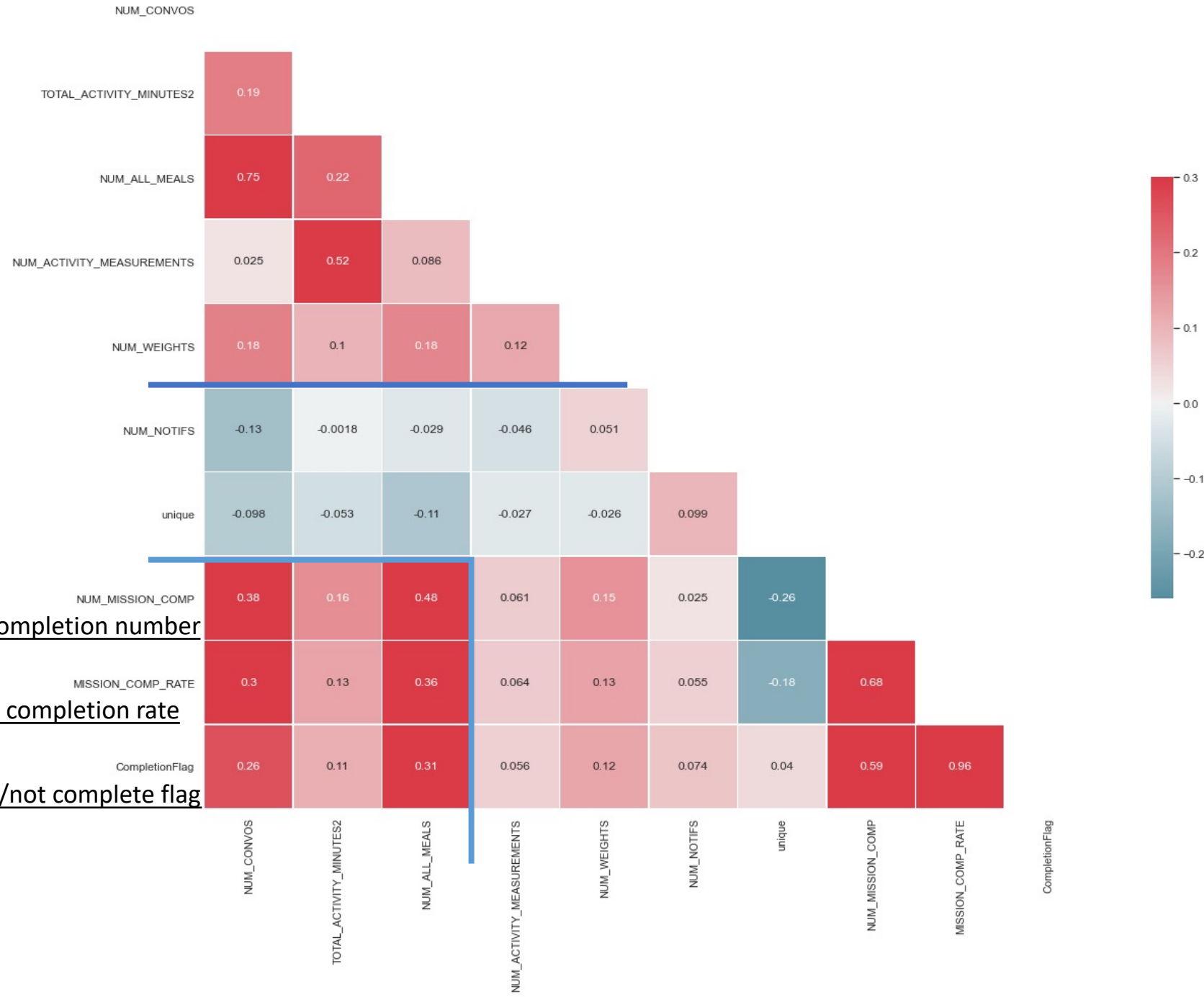
Remove Outlier After



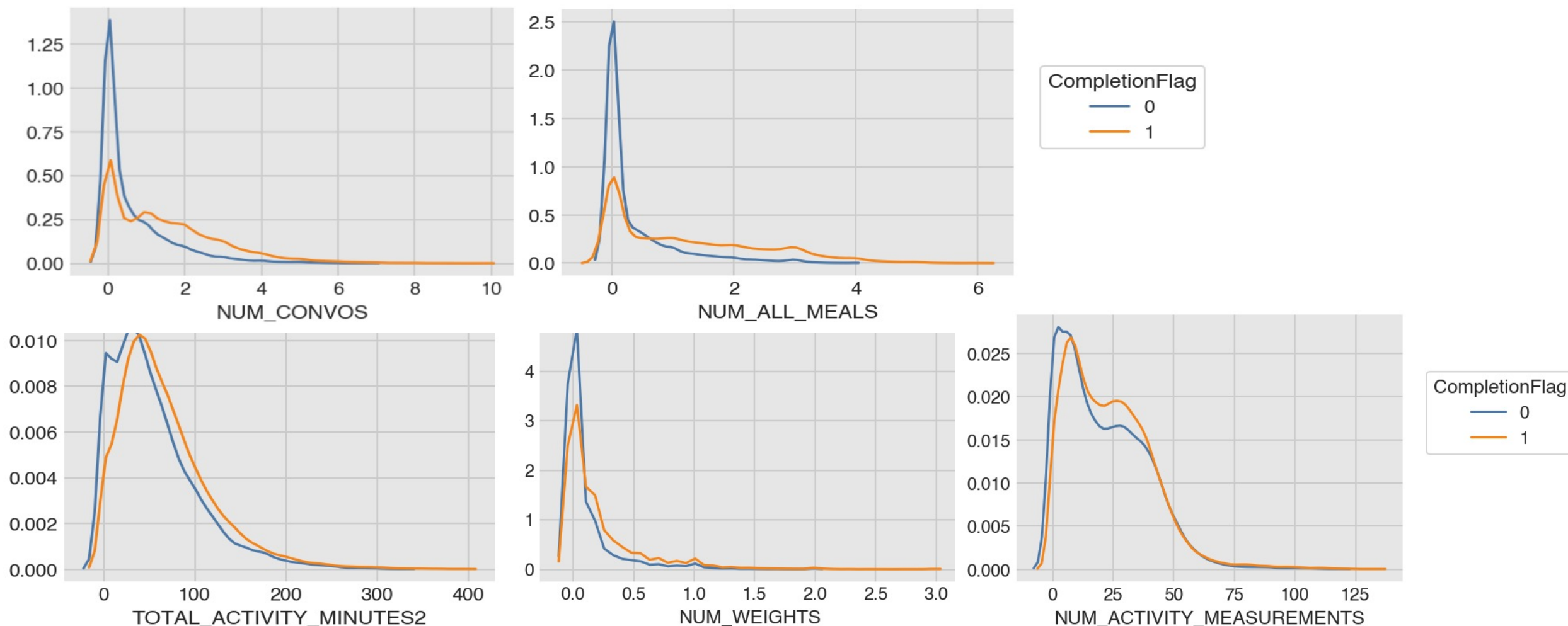
NUM_ACTIVITY_MEASUREMENT

Complete/not complete flag

- using app to track meals
- more conversations with reps
- Record num of meals
- Record Weights



Kde plots show finishing group has more App engagements



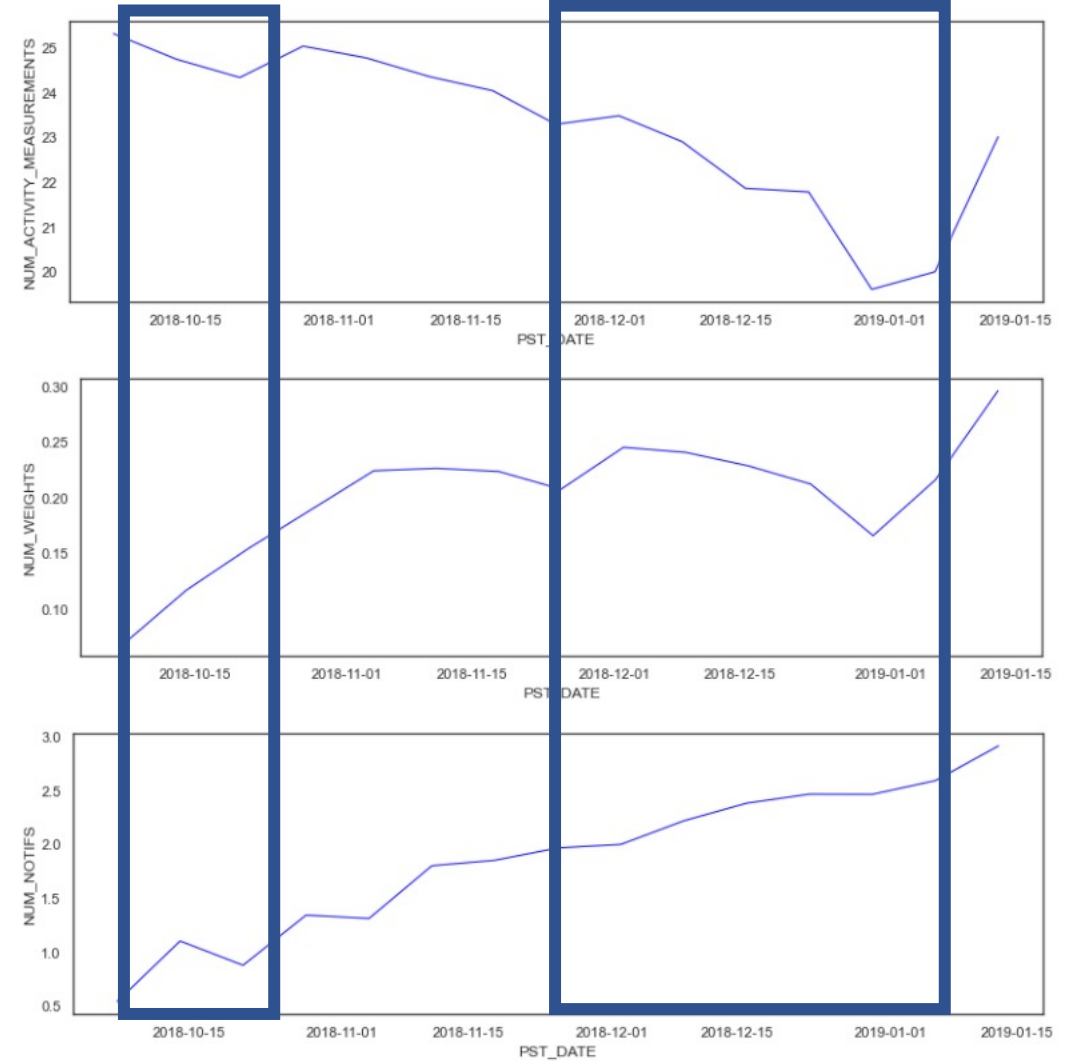
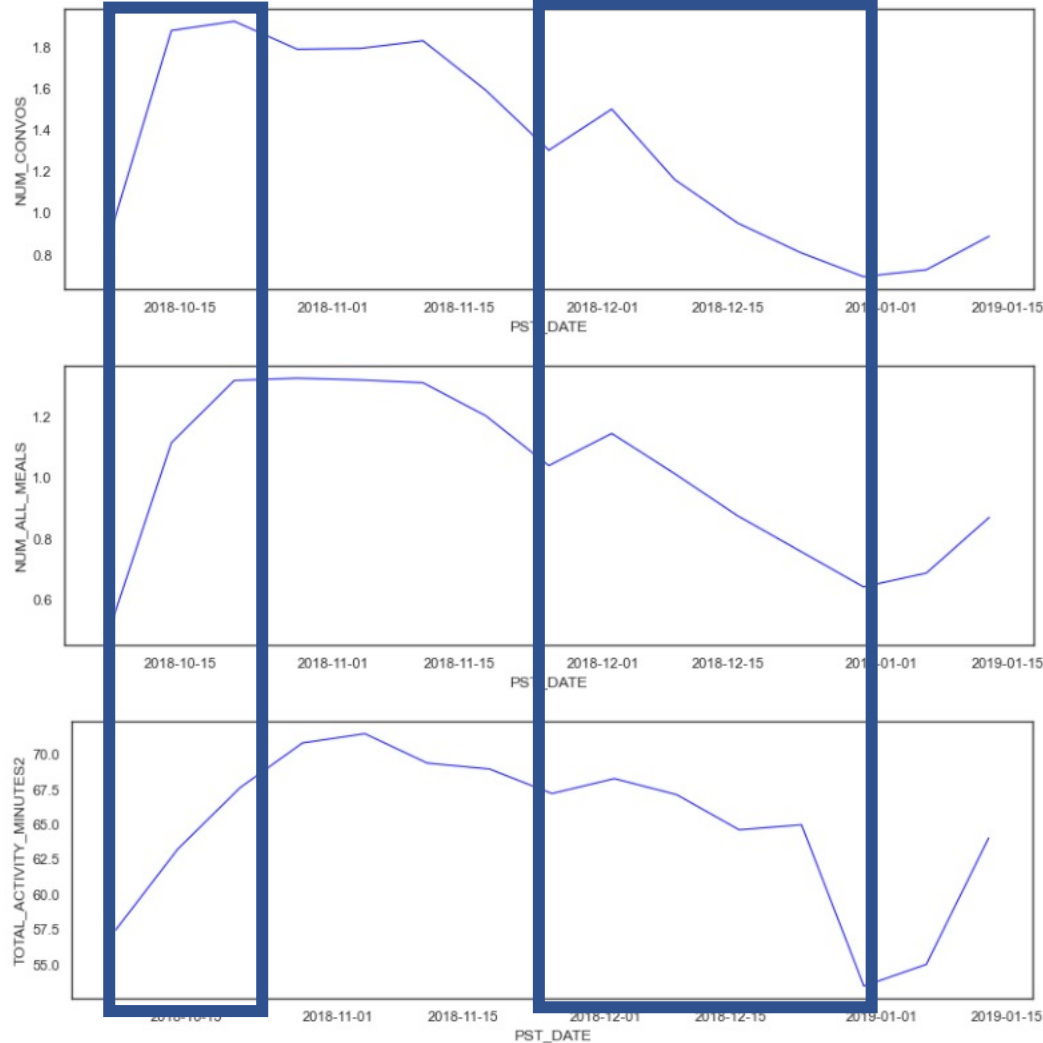
App User Weekly Average Engagement pattern of user engagement (1)

1. Rampup

2. Plato

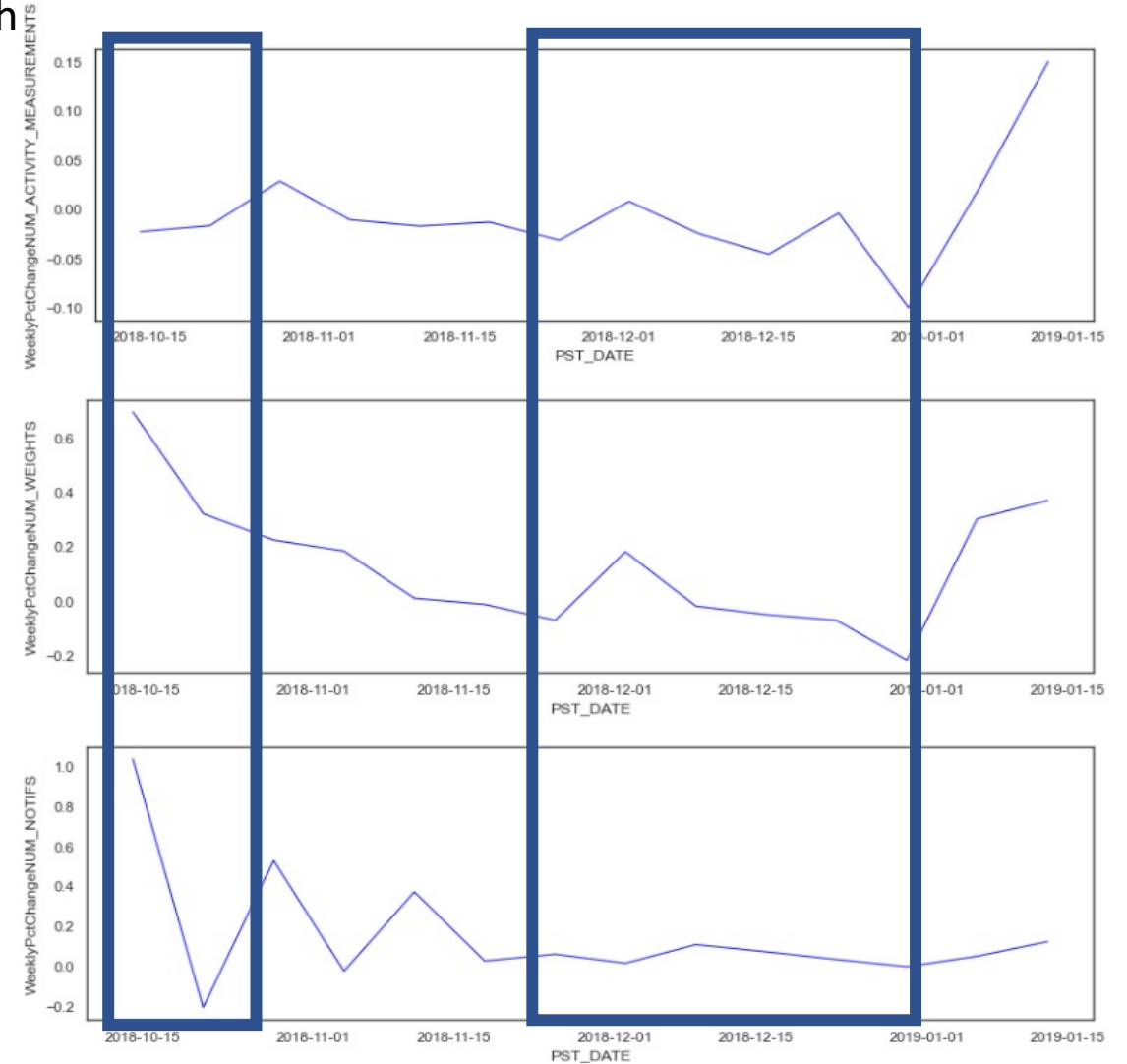
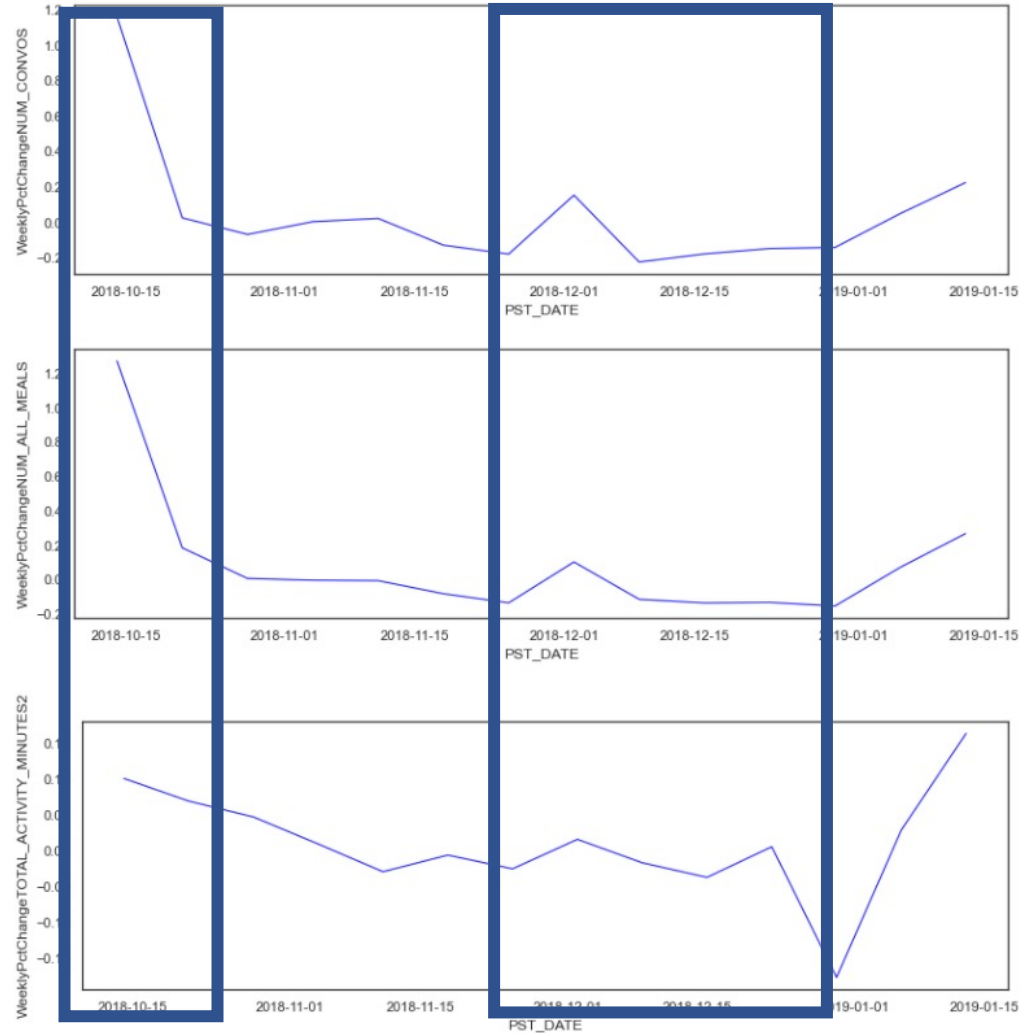
3. disengage

4. NewYearWish

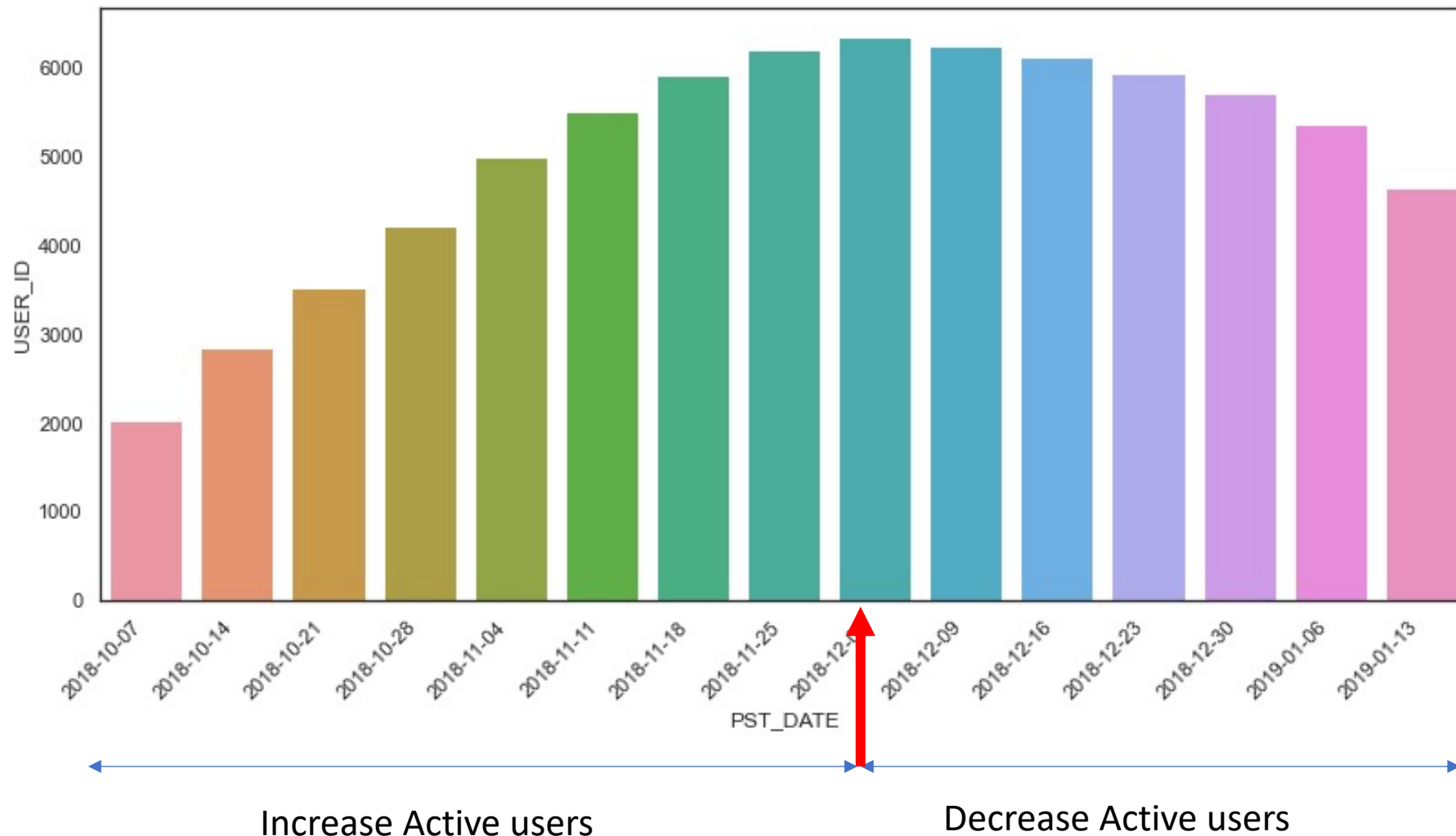


Weekly Average Engagement change rate pattern of user engagement (2)

1. Rampup 2. Plato 3. disengage 4. NewYearWish

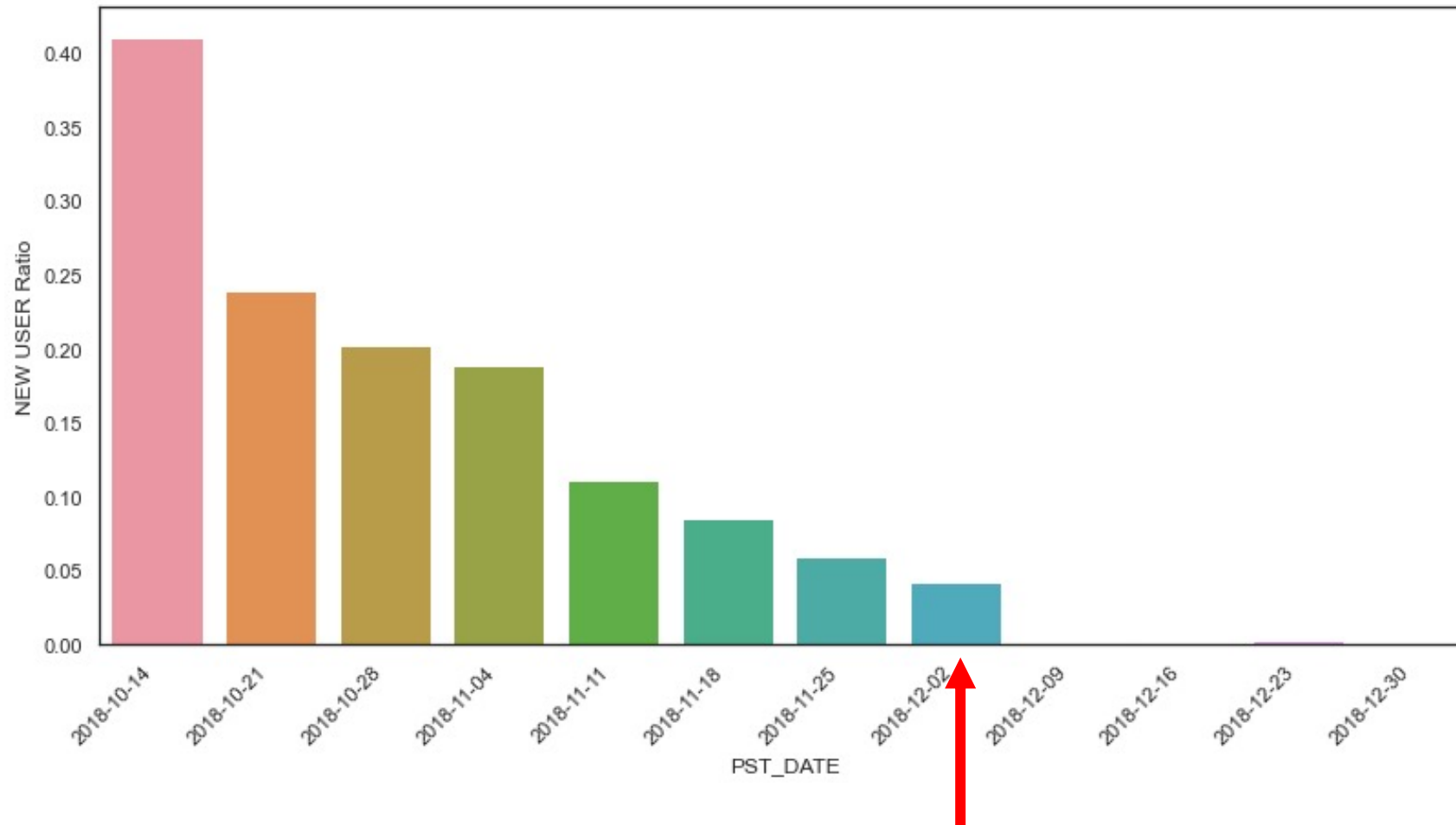


Active user number increases before December and reduces during Christmas season

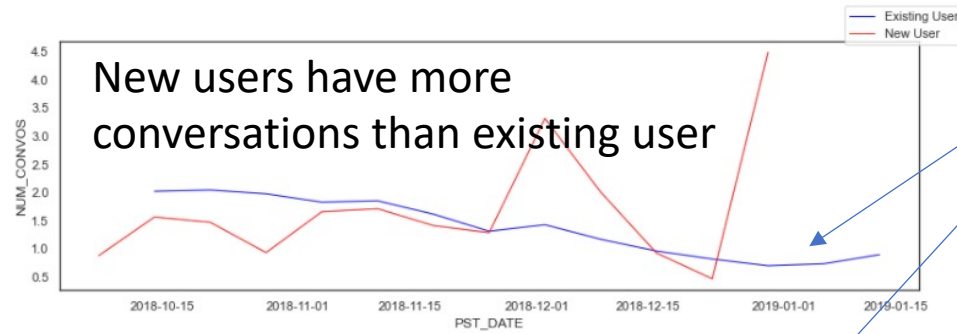


New User Ratio decreases with time

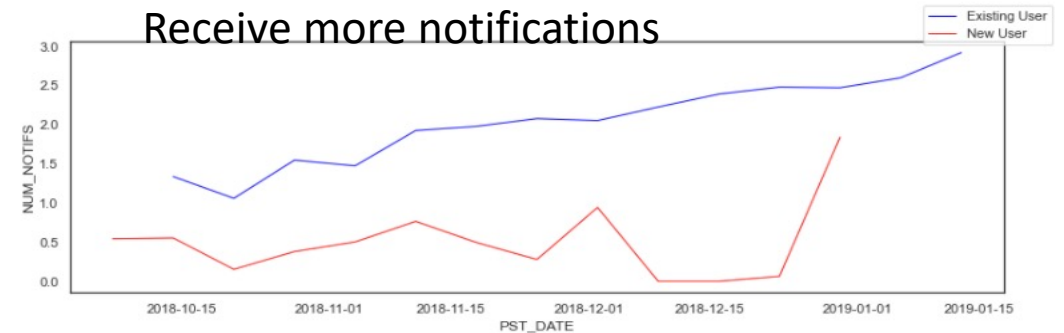
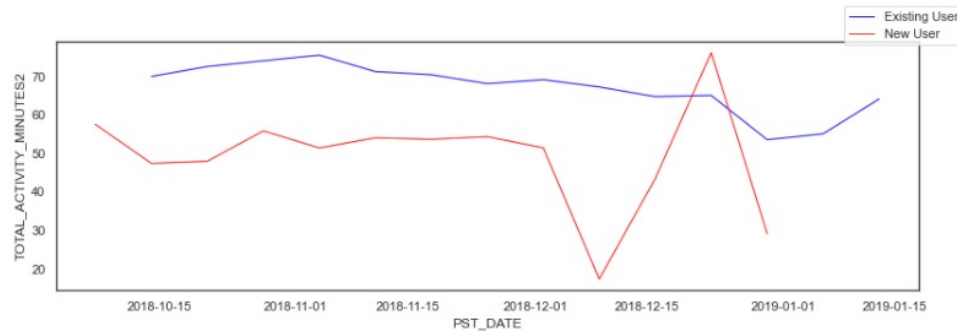
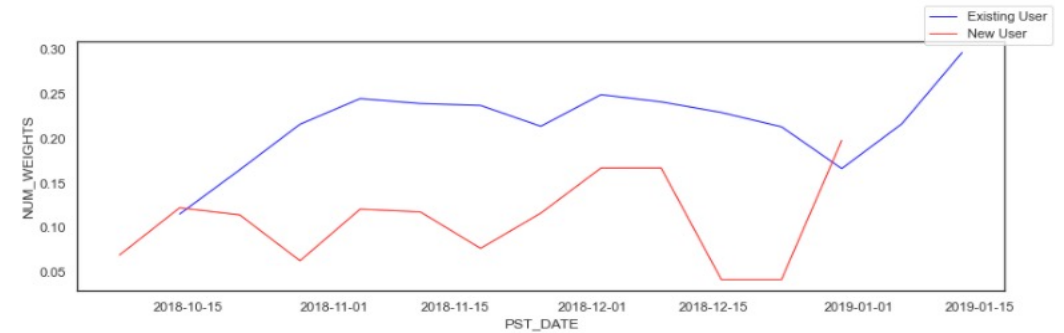
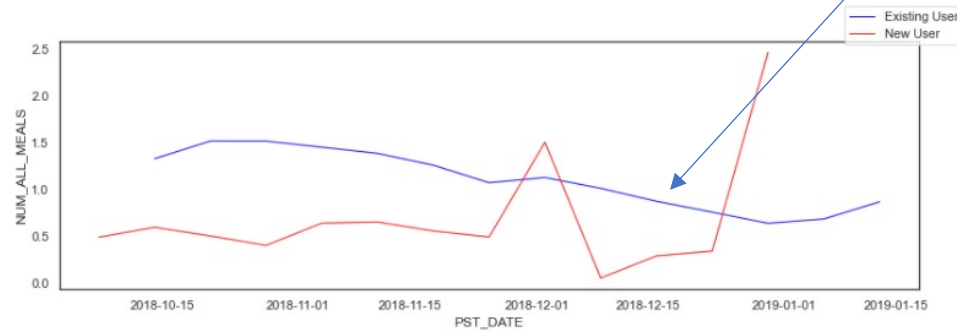
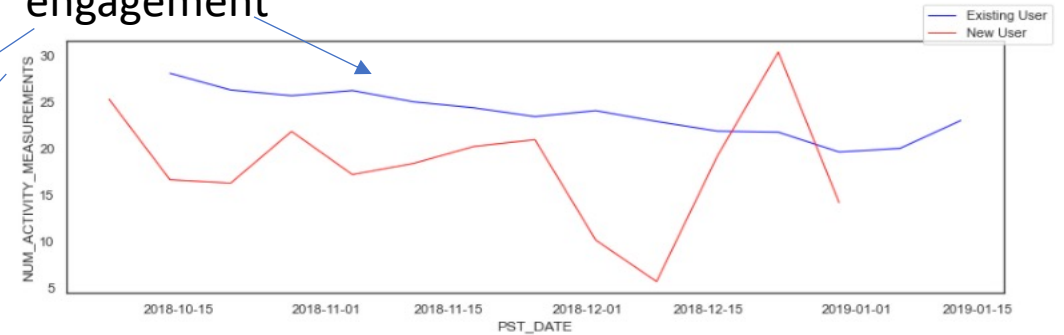
new users almost stop to sign up at beginning of December



Behavior of New and Existing Users



Existing users trending down on engagement



Weekly average days to complete mission

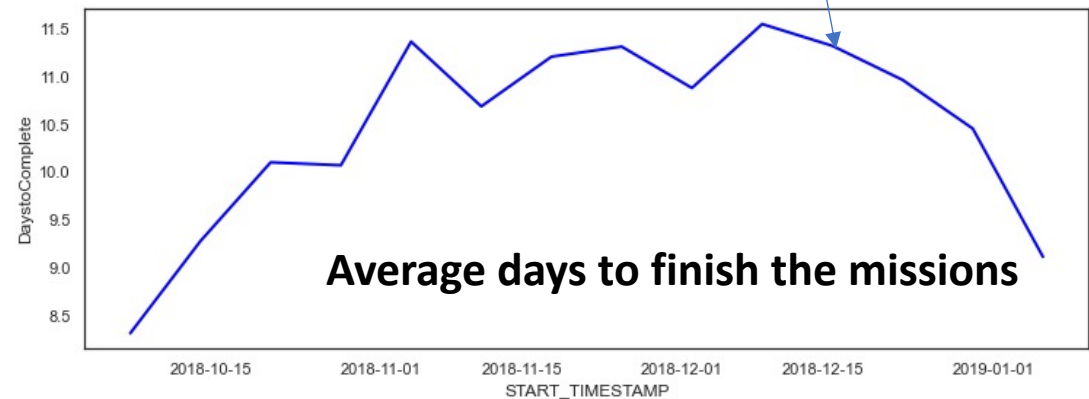
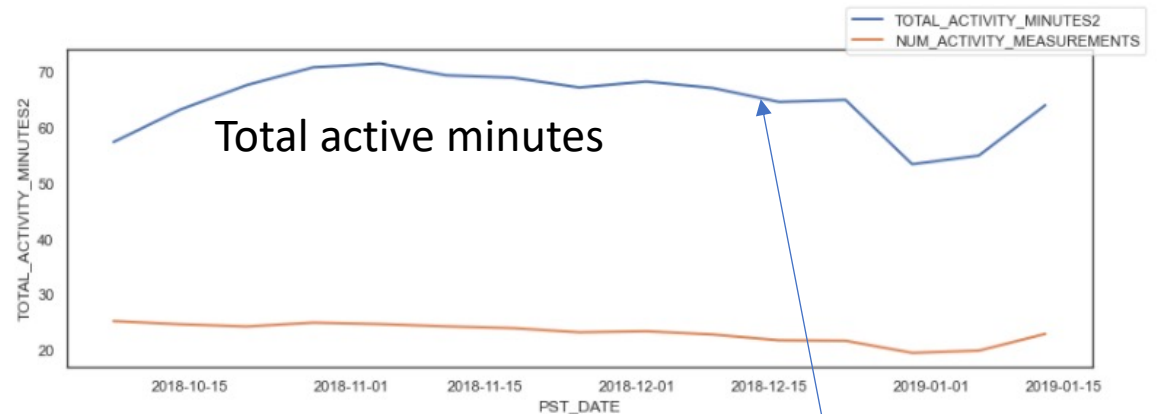
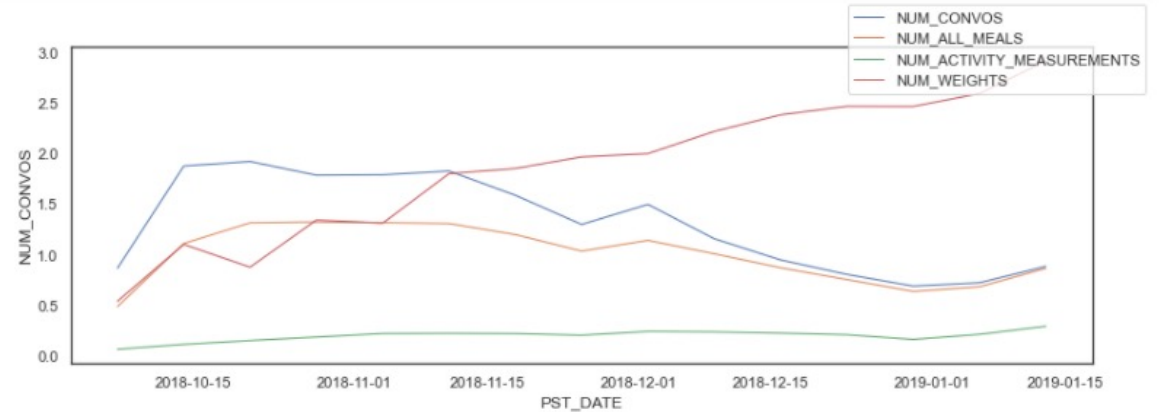
For mission finishers, average days to finish the missions decreases in holiday season, the over all trend is similar to that of length of activities.

Leading hypotheses are:

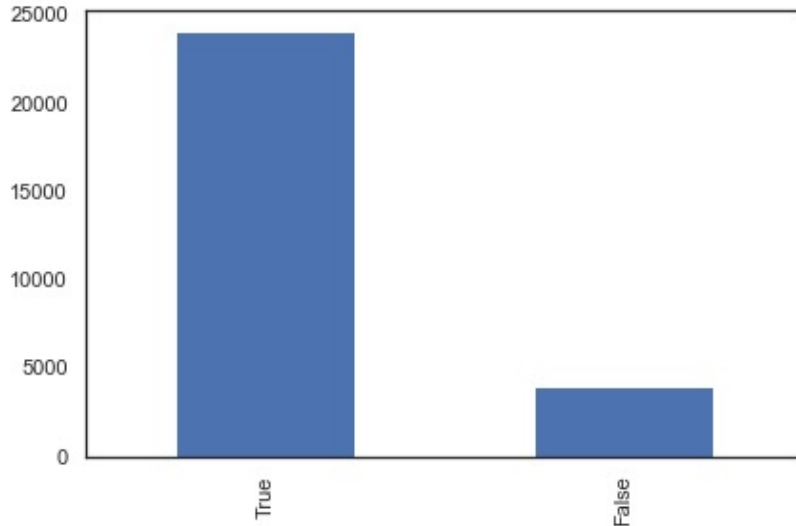
1. the user avg days to finish mission is based on the total activity minutes
2. users select missions which are less time consuming to finish

Thoughts:

Provide less time consuming “shorter” missions during holiday season to motivate more user engagement?



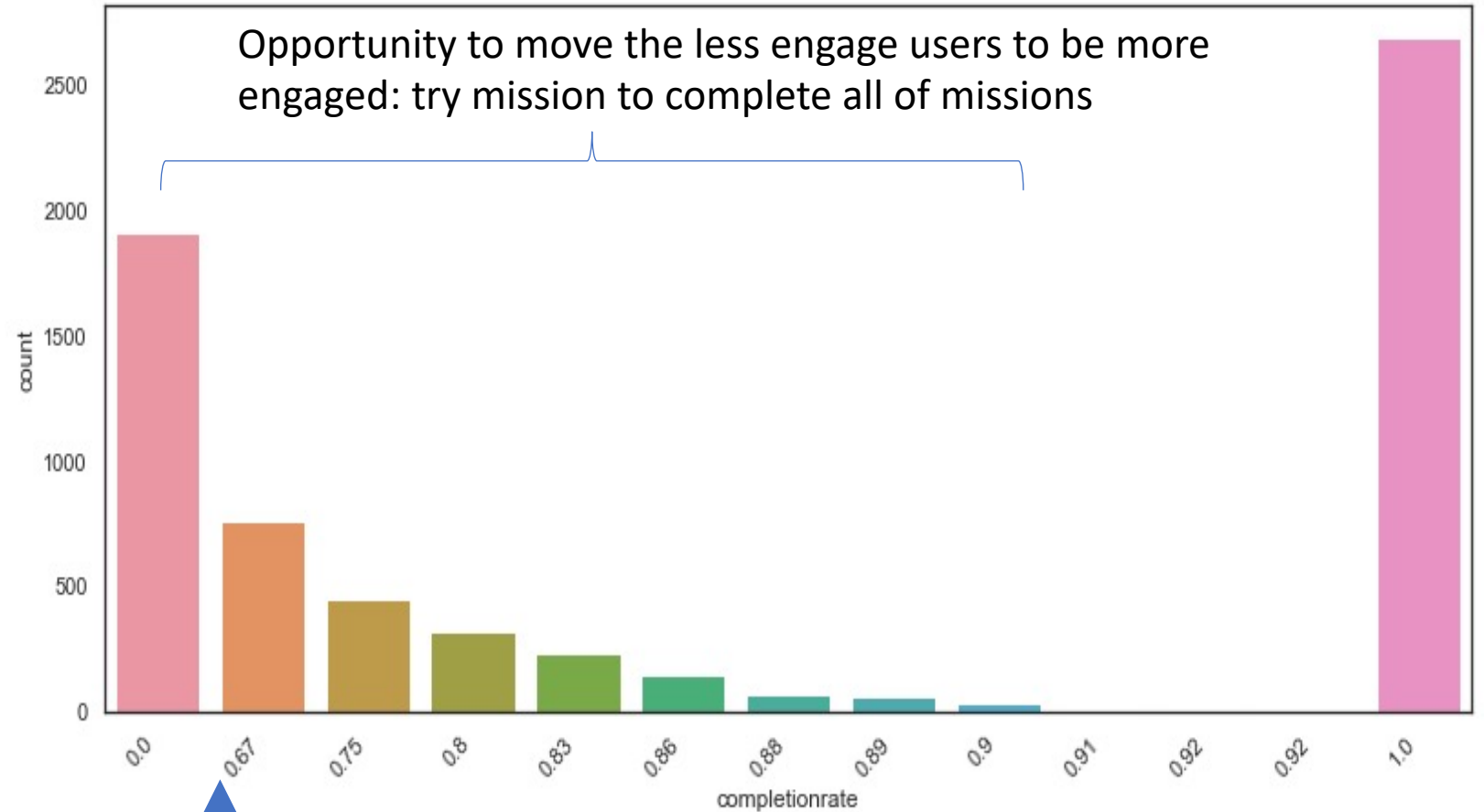
Mission Completion Rate Distribution



Majority users finish missions

Among the finished, most of them finish all missions

Some users finish 67%-99%



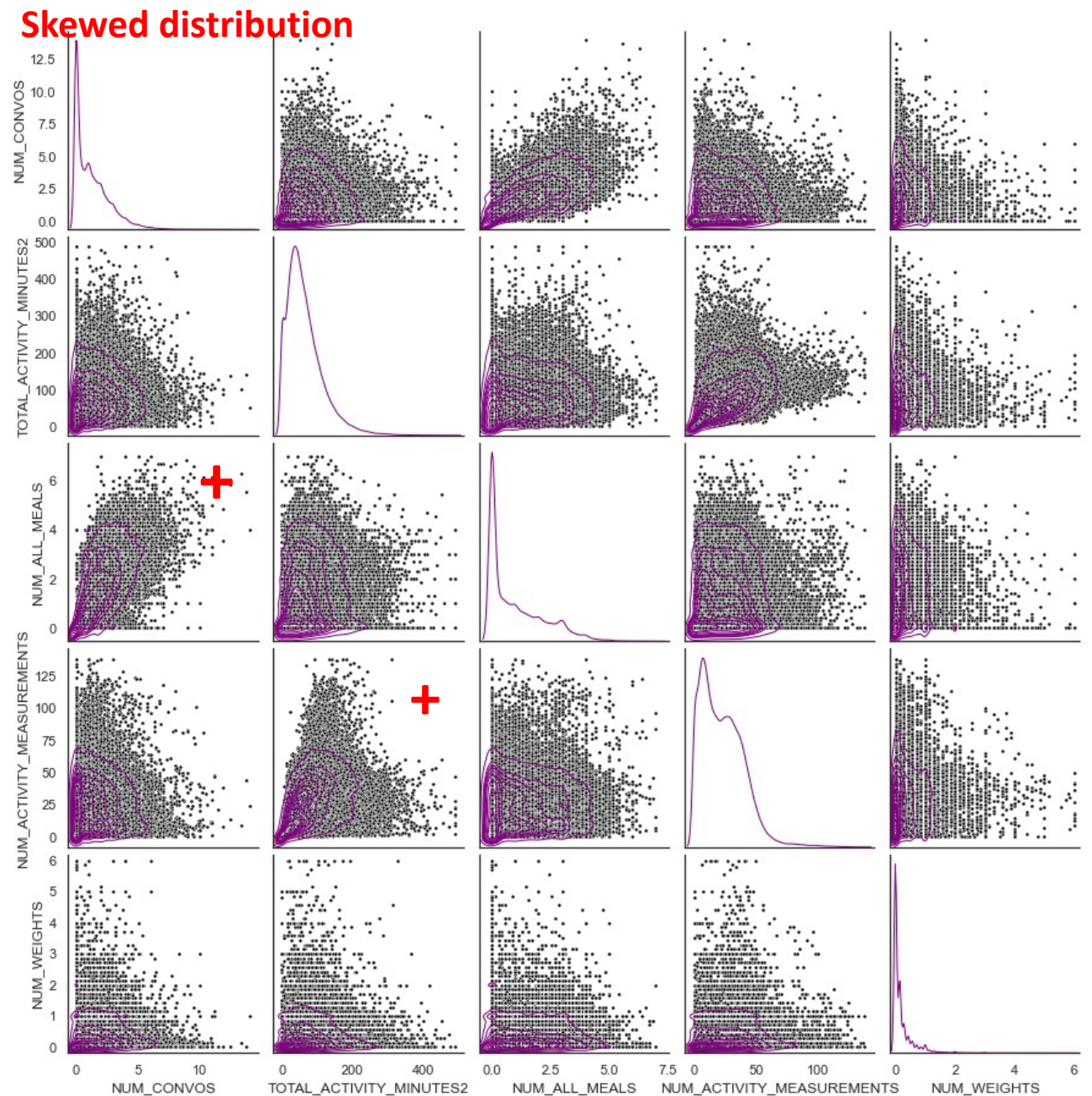
Note x-axis is not continuous

Data preparation

+ means higher correlation

Skewed distribution

Weak data correlation



Pairplot after log transformation