

Abstract

Roposo, a short video sharing platform owned by InMobi, is challenged by the severe lack of “active” creators, causing less diverse content creation. The dormant or “Tier 2” creators far outnumber the most active “Tier 1” creators.

Our purpose was to identify Tier 2 creators and find levers that could incentivize them into posting more often, or in other words, reduce their churn. We ran k-means clustering on the set of creators, and found that there are five distinct clusters, among which two lie on each extreme – most active (Tier 1) and totally inactive (hopeless). Our focus then was on the three remaining Tier 2 clusters. During EDA, we found that views and posting frequency were correlated, and so hypothesized giving free views as a potential lever. We ran survival analysis on the three clusters separately to define a churn cut-off for each, accounting for when 90% of creators in each cluster had posted. We used a combination of survival analysis, decision tree, and poisson regression models to propose that InMobi offer free views to those creators from the three Tier 2 clusters, who have less than 750 average views in the past 14 days. Doing so would potentially cause these creators to post more often, and not churn as a result.

Introduction

Roposo, owned by InMobi, is an Indian “short” video creation and sharing app, available in various local languages. Users on Roposo create short videos on its various channels dedicated to comedy, religion, dance, food, health, movies among others. A small subset of creators on the platform thrive (Tier 1) with the remainder lagging behind and having high churn rates (Tier 2). The remainder of users on the platform are viewers (Figure 1). In this project, our ultimate goal is to decrease the churn rate of Tier 2 creators by addressing the following questions: Who is likely to churn and why? If possible, can we determine the optimal intervention strategies to reduce the likelihood of churning?

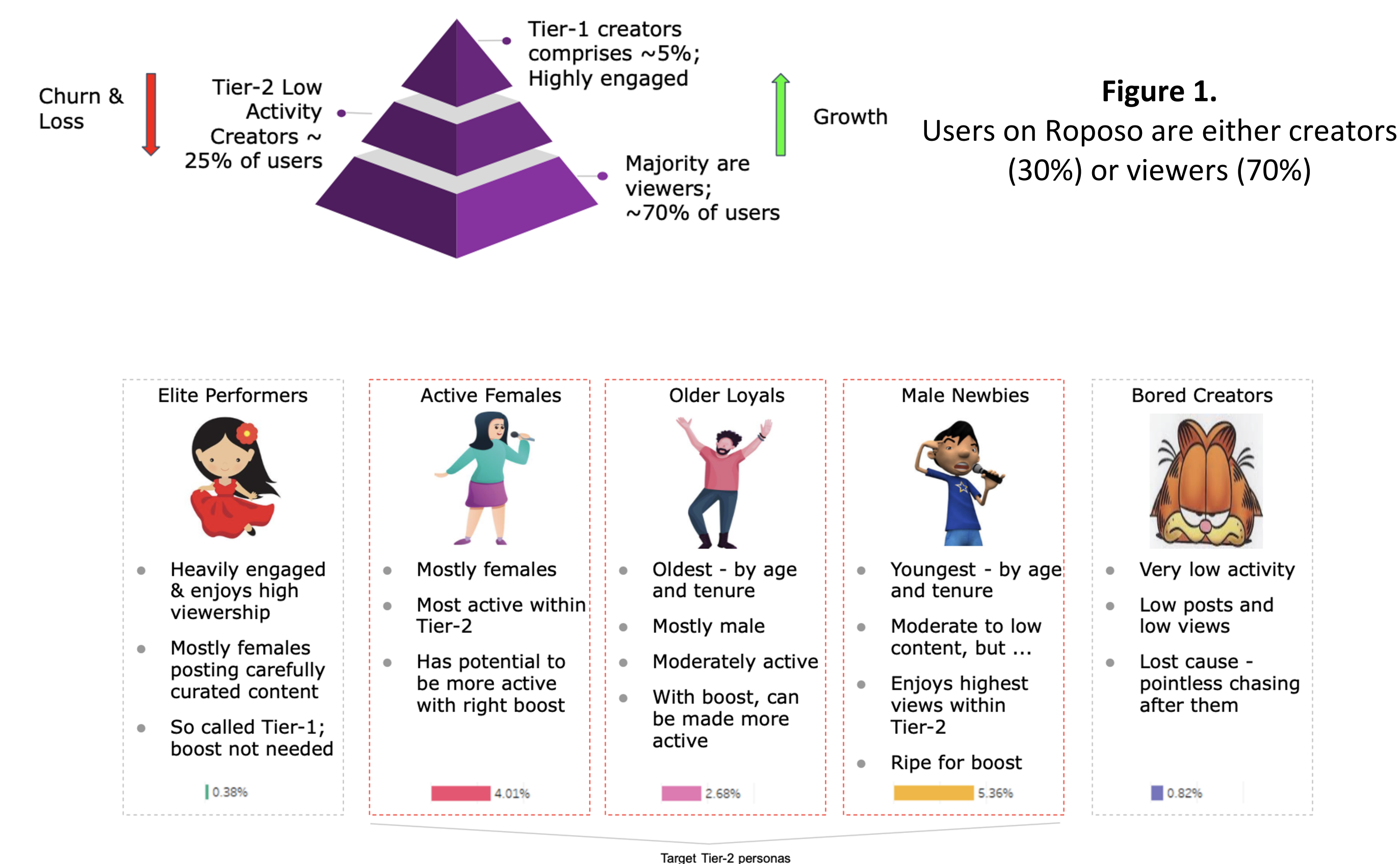


Figure 2.

K-means clustering algorithm distinguishes Tier 1 creators (Elite Performers) from Tier 2 creators.

Methods and Materials

Our analysis is focused on a subset of creators from the months of September 2020 to January 2021. Our dataset includes various characteristics about the creators, including demographic, behavioral, and engagement features.

We transform our data into time-series features. Specifically, we look at 1, 7, 14, 30, and 60 day rolling windows and compute metrics such as the number of views, the count of videos, and the average inter-posting time. We furthermore record demographic features such as gender, age, and tenure. At this stage we also compute our target variable, which is the time to the next video posting and the count of videos posted.

Results

We are able to distinguish Tier 1 and Tier 2 creator characteristics through K-means clustering. As shown in Figure 2, the Elite Performers do not need further incentives and generally have low churn, whereas the Bored Creators may not respond to any kind of intervention given their low activity on the platform. Therefore, our recommended intervention strategy focuses on Older Loyals, Male Newbies, and Active Females. Survival analysis further highlights the difference in posting characteristics (Figure 3). We also use this to define churn as the number of days where 90% of creators are expected to post since their last video.

We find that views are highly concentrated on the platform, and that within our target Tier 2 personas, those with lower views post less frequently. Based on these findings, we initially propose a strategy to boost views for Tier 2 creators who have less than 750 views in the preceding two weeks. We are able to further refine this target group based on a creator’s behavioral characteristics (count of videos posted and time since last video) and find that those within our refined target group are at much greater risk of churn (Figure 4).

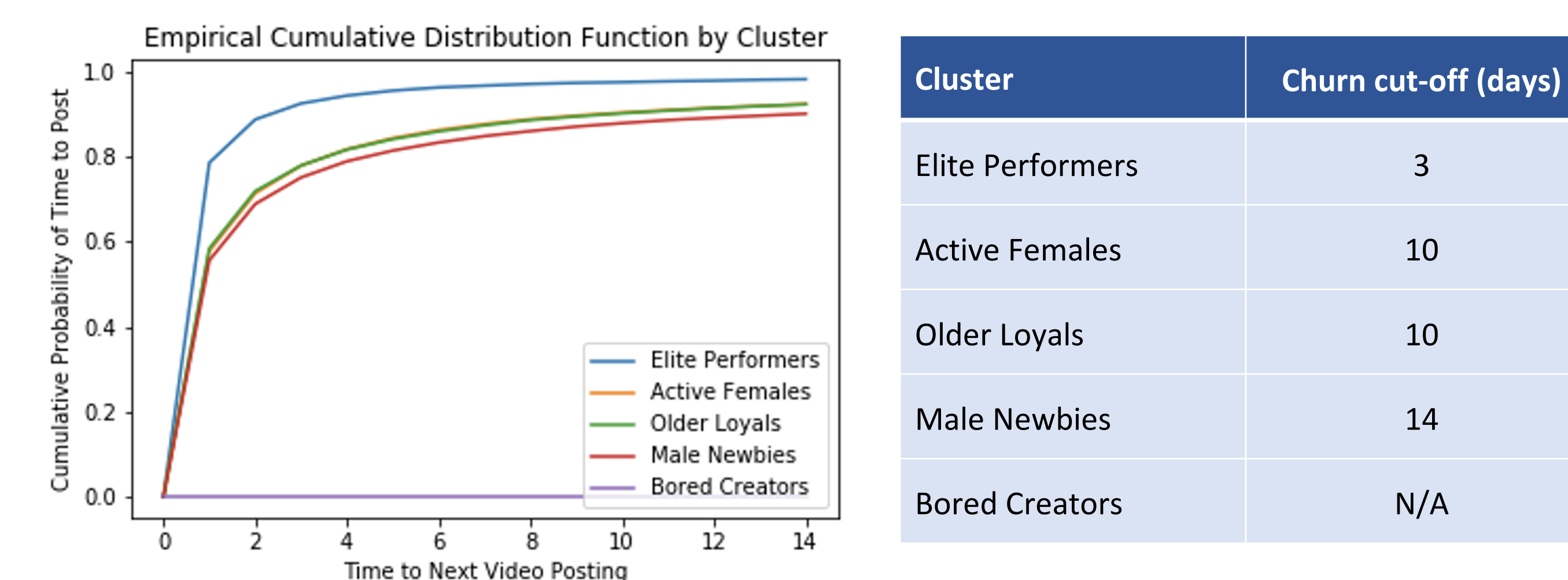


Figure 3.

A Kaplan Meier Survival Model shows that each cluster has different distributions in posting frequency, but the target tier 2 clusters have similar distributions. 90% of creators in the target tier 2 personas are expected to post within 10-14 days.

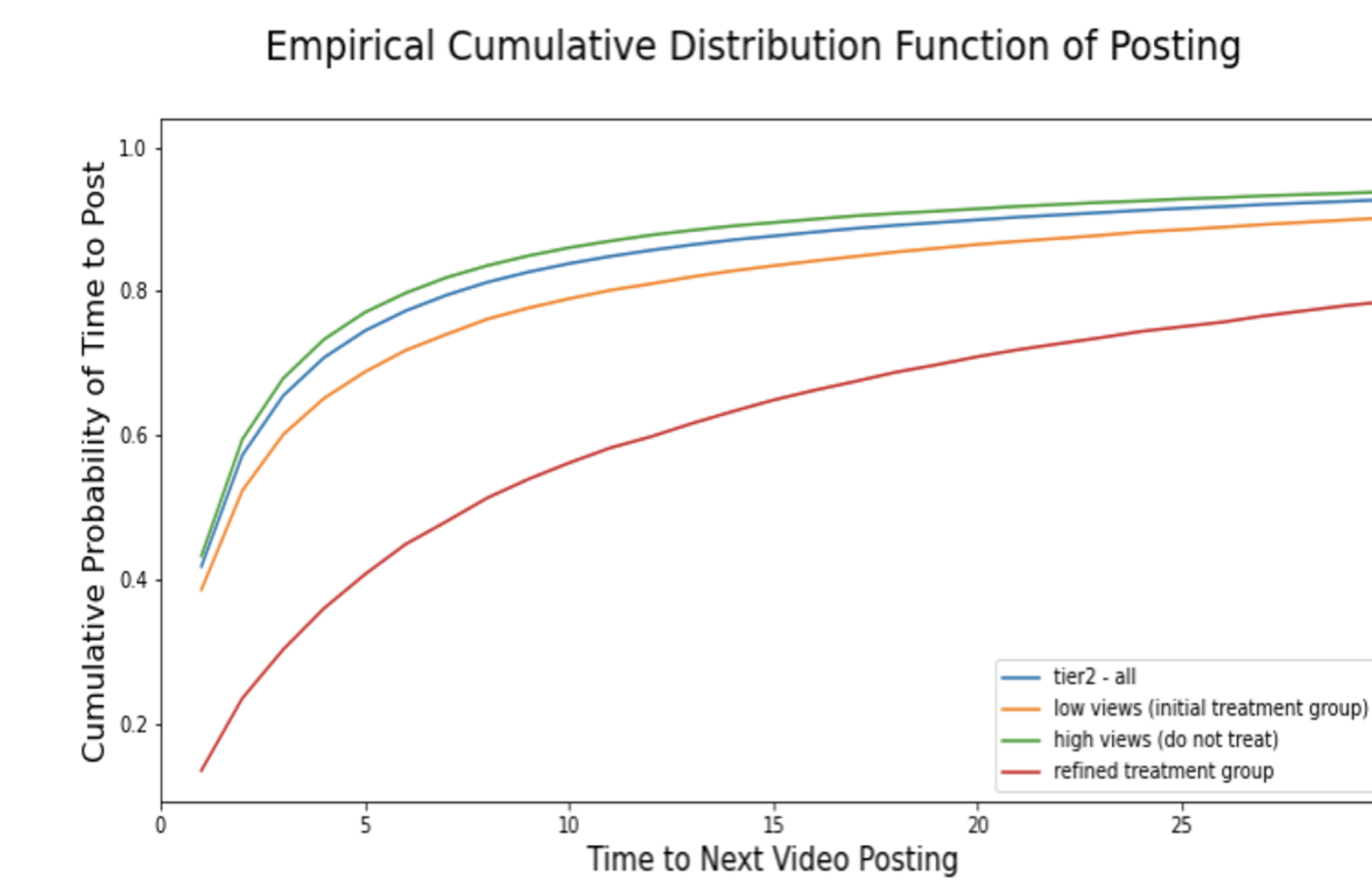


Figure 4.

A Cox Proportional Survival Model shows that the refined target group has significantly longer inter-posting times than the initial treatment group, suggesting that the refined target group is made up of those who are at higher risk of churning.

Group	Churn cut-off (days)
All Tier 2	12
Low Views (Initial Treatment Group)	18
High Views (Not in initial treatment group)	10
Refined Treatment Group	45

Discussion

Based on earlier analysis, we observe that the ideal group to target for increased views are Tier 2 creators who had less than or equal to 750 average views in the past 14 days. We attempt to further refine this target group using a tree-based classification model. The results from this model suggest refining our treatment group based on the number of videos a creator has posted in the past 14 days and days since last video posting.

We re-run our survival models to observe the posting characteristics of our proposed treatment group and compare the results to our previous proposed treatment group that was defined based on views. We find that the refined target group has significantly longer inter-posting times than the remaining members of their persona as well as those targeted solely based on views. This suggests that InMobi can better ration “free” boosted views to those most at risk. We furthermore are able to confirm that Older Loyals and Male Newbies appear to be more sensitive to the number of views, meaning that increased views are predicted to have greater impact for Older Loyals and Male Newbies than for Active Females. As mentioned above, this provides a further way for InMobi to prioritize free views.

Conclusions

To conclude, we note a few key highlights that we uncovered during this project. Views and posting frequency are correlated, and a few top creators, namely the Tier 1 creators, capture a high percentage of total views on the platform. The remaining creators, that is, Tier 2 creators, differ by their posting characteristics, and by extension, views, and clustering allows us to better understand the various personas that exist among Tier 2 creators.

Tier 2 creators suffer from churn, but given that creator churn is non-contractual or deterministic, we loosely define churn based on posting characteristics within each persona. There are several ways that InMobi can help less successful creators on the platform, including artificially boosting views, which is expected to reduce inter-posting time. While less successful creators can be broadly targeted, targeting specific creators based on behavioral and demographic rules will allow for a greater impact.

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