Insight on “Effect of Popularity Shocks on User Behavior”

by Deeptansh Sharma

Overview

This paper aims to analyze the effect of popularity shocks on user behavior. It presents the analysis to the following questions -

- Do users increase their posting behavior after receiving popularity shock?
- Do users alter their content, post receiving popularity shock?
- How long do the effects of popularity shock last?
- What type of activity characterizes the long-term sustainability of the effects of popularity shock?

For the analyses, a moving average comparison model was developed to assess the posting frequency of the user post ‘shock’ and detect it.

Also, an RDiT (Regression Discontinuity in Time) model was developed to analyze the user behavior after the ‘treatment’ v/s the ‘control’ group, that is the previous state before the shock.

Cosine Similarity was used to detect the similarity in the nature of the posts using captions and finding user posting behavior after the ‘shock’.

A Linear Regression Model was also developed for the Survival Analysis of the ‘shock’, to find out the survival rate of the shock, that is how long the effect of the ‘shock’ lasts and what are factors affecting it.

Observations

- Users increase their posting behavior post-shock.
- Though users increase their posting behavior post-shock, it also quickly decays off, as time progresses.
- Users, post-shock generate more similar content to the shock-inducing posts.
- Users who increase their positing frequency more, also tend to stay closer content-wise to the shock-related posts
- Popularity shocks are short-lived. The increased response received by users goes down to the pre-shock level very quickly after the shock.
- Maintaining a high posting frequency helps keep retaining the long-term effect.
- Users deviating away from the content which got them to the shock have shorter survival times of shock effect, at the same time having high similarity in consecutive posts can lead to repetitiveness which again causes the survival to go down.
- On the audience side, high engagement from the audience helps maintain the effect of popularity shocks.

Strengths

1. The paper acknowledges the difference between users' motivation to post content on sites like GitHub and Wikipedia (sites from which the underlying assumptions and motivations for a popularity shock and behavior of the user have been taken).

   It is accepted that the user's motivation to post content on these sites is much more directed towards non-monetary benefits such as reputation and collective identity, whereas on social media sites users post mainly due to monetary benefits and self-satisfaction.

2. The authors recognize the 'number of views' as a proxy for the post's popularity instead of the 'number of likes/comments' or 'shares'.

   This is a valid assumption due to the fact that in the world of fast-paced content, most users don't give a second thought to liking the post or commenting on it. Choosing the latter would have reduced and skewed the dataset for the input highly.

3. Only the first shock to the user is considered for the analysis. This selective preferential picking of one shock over the other is a very legitimate and sensible assumption to streamline the analysis. As users tend to learn and behave differently upon learning from the outcomes of previous shocks which would have biased the results.

4. The paper is extremely organized in asking the right questions and going into full depth to answer them very methodically.

   The implications and benefits of this research are tremendous to the Advertisers, Social Media Platforms and Users as well in a variety of domains.

Weaknesses

1. The ideology behind this paper from which a major hypothesis comes out of is “Operant Conditioning”. This states that a subject will continue to an action if he is positively rewarded for the same and will avoid doing it if there is a punishment in response to it.

   In the world of Social Media, users run after popularity which often comes from tasks which are not very well appreciated among the people. This although falls under punishment mechanism as people will criticize it. (For example: The recent uproar of ‘Boycott Bollywood’ or the ‘deliberate cringeworthy content created by Influencers’). This type of content also receives a popularity shock and is sometimes becomes even more viral than the normal appreciated content.

2. The analysis has only been done for the users having greater than 200 posts. This although increases the dataset but also refrains us from analyzing the behavior of relatively less popular users to popularity shocks. This also refrains us from analyzing the post that changed their mindset from posting very less to eventually increasing their posting frequency as lot.

3. Users who reached 200 posts within a very short span of time should have been removed from the dataset as they would likely have been spam accounts or those users who

already know the know-how behind a popularity shock and are already working towards it. Or some of these might have experienced a popularity shock on a different account as well.

This would have reduced some bias in the dataset.

Improvements

1. People should be divide into two category based on their ‘shock’, namely ‘Positive Shock’ and ‘Negative Shock’. This is to divide and analyze the response to the shock better. As some shocks might be due to heavy criticism from the public and might show a different characteristic in comparison to the normal ‘positive shock’.

2. An analysis involving new users or users who have less than 200 post must also be done to analyze how a new user behaves when he receives a popularity shock for the first time. This would help to analyze the mentality of people on Social Media especially the teenagers.

3. An analysis for the content that gave the users the ‘popularity shock’ can also be done to get an idea as to what kind of content serves as the best catalyst. It would also help in refining the parameters for the model for survival analysis as it would highlight the differences between the users who got a popularity shock and who didn’t on similar type of content posted.