**Methodology**

**Hypothesis 1: Click-bait and push notification is topic/ source dependent.**

In other words,the clickbait is positively correlated to articles dealing in human interest topics like entertainment, society and lifestyle, i.e. if the topic is more related to entertainment, society, and lifestyle, there are more clickbait in the push notification.

**Data analysis**

**Method 1:**

**Inferential analysis**: First do LDA analysis on push notifications, i.e. a topic modeling on push notifications; and then do probit regression by using Amazon Mechanical Turk as dependent variable.

**descriptive analysis:**

More clickbait: longer sentences, shorter length of the words, longer governing and dependent words, more stopwords, ‘Very Positive’ sentiments, more Internet slangs, more abnormal punctuation patterns, subjects are like “I, you, dog, everyone, girls, guys, he, here, it, kids, men, mom, one, parent, photos, reasons, she, something, that, they”, use determiners such as “their, my, which”, more person pronouns than proper nouns; patterns of N-grams differs,

1. Conventional non-clickbait headlines contain much larger proportion of proper nouns (POS tag: NN), indicating more content words and entities, than in clickbaits. (ii) Clickbait headlines contain more adverbs and determiners (POS tags: RB, DT, WDT) than non-clickbait headlines. (iii) Clickbaits also have higher proportion of personal and possessive pronouns (POS tags: PRP and PRP$) like her, his, its, you compared to non-clickbaits. (iv) Clickbaits and non-clickbaits use verbs in different ways.

**Need further discussion here**

Whether the receiver open/close the pushed notification? or should we do a questionnaire about the clickbait in each topic? such as Amazon Mechanical Turk workers(who are presented a definition of clcikbait, a title and a link to the associated url that they can then visit) on a Likert scale (0 = “Not clickbaiting”; .33 = “Slightly clickbaiting”; .66 = “Considerably clickbaiting”; 1 = “Heavily clickbaiting”), and the raw scores are available in their training data set along with mean, median and mode.

**References**: Chakraborty et al 2016. Mukherjee et. al. 2019

**Hypothesis 2: push notification is more click-baitness than traditional online media**

In other words, the clickbait is positively correlated to push notification compared to headlines. Same as the analysis of the first hypothesis except we work on comparing headlines to push notifications rather than different topics of notifications.

**Hypothesis 3: push notification elicits stronger emotional reactions than different groups**

The push notification is emotionally stronger than headlines, i.e. the push notifications are either more positive or negative than headlines.

Data analysis:

**Inferential analysis**: Do a sentiment analysis and emotion analysis on push notifications and headlines respectively. Compares the score of sentiment and emotions between two groups by T test.

**Need further discussion here**

The definition about different groups; whether we should involve Amazon Mechanical Turk

**Hypothesis 4: push notification causes high deviation from a regular emotional status**

**Need further discussion here**

If we do text analysis only, it will be similar to hypothesis 3; I remember that we discuss this hypothesis with the respect to receiver’s perception, or the response towards the push notification. I was wondering whether we are able to track responses, such as tweets with regards to push notification or through normal subscription.