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SOC 412

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An Online Engagement Experiment in an Interplanetary Exo-Biology Community:  
Pre-Registration Plan

**Introduction**

Online communities provide an important space for discussion and debate, especially now that humanity has spread across the stars and heavily relies on digital means of communication. From sports to politics to more obscure interests, there’s an online community for almost every topic imaginable. Thus, making everyone feel welcome is of the utmost importance to those who moderate these communities. The goal of this report is to explore new methods of encouraging participation in online discussions; specifically, we aim to discover whether or not “welcome messages” pinned to the top of a thread will increase engagement as measured by participant comments.

This experiment will take place in an interplanetary exo-biology community on Reddit. Participants come to this community for a wide array of reasons – to share their knowledge, meet others with similar interests, and discover jobs and opportunities in the field of exo-biology. Fierce debates about topics such as the nature of life and the politics of intergalactic exploration are frequent in this community; thus, this is an ideal community in which to test new methods of encouraging participation, as we want to ensure that controversial conversations don’t become vitriolic, and that members both old and new feel comfortable participating.

**Experiment Procedures**

The experiment has the following steps:

* We randomize posts to show or hide a welcome message at the top of the thread
  + Control: no welcome message above the poster’s content
  + Treatment: a message welcoming the viewer to the community and inviting them to participate in the discussion
* We observe the total number of comments received by each post
* We observe the number of comments posted by newcomers on each post
* Per our previous power analysis, in order to have an 80% chance of observing a statistically significant effect, we will run the experiment for 50 days.

**Outcomes**

The following variables will be used to estimate the effect of welcome messages on community participation. Newcomers are defined as accounts who have not contributed to a discussion in the exo-biology community within the past 6 months.

*Outcome 1: the total number of comments per post*

The unit of observation for this outcome is a post, and the measure is the total number of comments received by the post.

*Outcome 2: the total number of newcomer comments per post*

The unit of observation for this outcome is a post, and the measure is the number of comments posted by newcomers, as defined above.

**Estimation Procedures**

Individual posts are being randomized, which makes our analysis fairly simple. In order to find the ‘treatment effect’ of such a welcome message on the number of comments and newcomer comments, we can use linear regression (or a simple difference-in-means estimator) to calculate the basic treatment effect. Assume that our dataset is called ‘posts,’ and the relevant variable names are ‘numComments’ and ‘numNewcomer’ for the outcomes and ‘treatment’ is a binary indicator for treatment or not. Then the estimation procedure is:

```{r}

## number of comments analysis

lm(numComments ~ treatment, data = posts)

## number of newcomer comments analysis

lm(numComments ~ treatment, data = posts)

```

We can also control for various control variables depending on the covariates included in the resulting dataset. For example, posts made on weekdays may be systematically different in some way than posts made on the weekend. In that case, we could slightly change this analysis in order to adjust for these control variables:

```{r}

## number of comments analysis with controls

lm(numComments ~ treatment, + weekend data = posts)

**```**

**Community Q&A**

***GalagaGenius19:*** *These messages suck. For those of us on mobile phones, it's annoying to scroll past them. It won't make anything better, why are you wasting our time?*

We apologize that we weren’t able to optimize the welcome message for mobile users; your mobile experience will be back to normal once our experiment concludes in roughly 50 days. You may suspect that welcome messages won’t make anything better, but a previous study actually found that newcomer comments increased by 38%, while total comments increased by 10%. We’re excited to share the results from this study with the exo-biology community.

***MrAsteroid999:*** *This is just another example of the censorship and efforts to manipulate our lives by the reddit company. Stop messing with our lives, Princeton; we're not on your planet anymore!*

This study isn’t affiliated with Reddit; we are an independent team of researchers from Princeton University. Furthermore, we’re not removing any content from the subreddit, or censoring anyone’s opinions. In fact, we hope that our welcome messages will actually encourage more people to share their opinions with the rest of the community.

***FearMyBotanyPowers27:*** *This isn't real science. Most of the social sciences are just hand-waving anyway, since they can't control for unknown factors (I know space has messed with my head, rite?) and since all these studies have samples that are waay too small for the diversity of human experience out here in the 'verse.*

Experiments like this one are designed to solve this very problem - by randomizing our welcome messages, we can control for all of the ‘unknown factors’ you mentioned. Thanks to the wonders of the internet, our sample size can be quite large. Using the average number of daily posts to this subreddit (1,168), we estimate that our experiment will include 58,400 posts by the end - a fairly large sample size for social science!

***Sector28Counselor:*** *While I don't mind scrolling past these messages, I do worry that we'll lose some people. Are we really sure we want to risk that with this study?*

We hope to mitigate these types of concerns by posting this community Q&A. As we described earlier, previous studies have shown that these types of welcome message interventions can help grow communities in powerful ways. In discussion with the moderators, it was decided that these avenues for growth were worth exploring. Data on engagement and interactions will be monitored, and if a decrease is noticed because of these messages, we will adapt accordingly.