

Does Amazon favor its own products in search ranking?

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Introduction

With an estimated 40% market share of domestic ecommerce in 2021, Amazon is the largest online retailer in the US, making it an essential channel for online businesses. Yet in addition to being a conduit between buyers and sellers, Amazon also sells goods itself under first-party brands or via exclusive deals with manufacturers. This has prompted concerns that Amazon are favoring its own products over in search ranking. Using a database of highest ranking of Amazon and non-Amazon product in a sample of 3492 search, I applied Bayesian statistics to examine this allegation.

Research question:

Are Amazon-own brands more likely to be featured among top 4 products in a search than non-Amazon brands?

Data & Method

The data comes from an online investigation by The Markup. Using a bot to capture the results of 3492 search terms that feature Amazon-own brands, journalists index the highest rankings of Amazon and non-Amazon products, sponsored products included.

To find out the distribution of searches with Amazon and non-Amazon brands in the top 4 listings, I use Bayesian inference for binomial proportion with Beta approximation.

For my priors, I chose $\text{beta}(4,10)$ and $\text{beta}(10,10)$ for Amazon and non-Amazon brands respectively based on my belief that non-Amazon brands are more likely to ranking higher than Amazon brands. I then calculate the posterior distribution, mean, standard deviation and credible intervals using R.

In addition, I plot the posterior means by percentage of total product listings to account for the larger selection of non-Amazon products.

Results

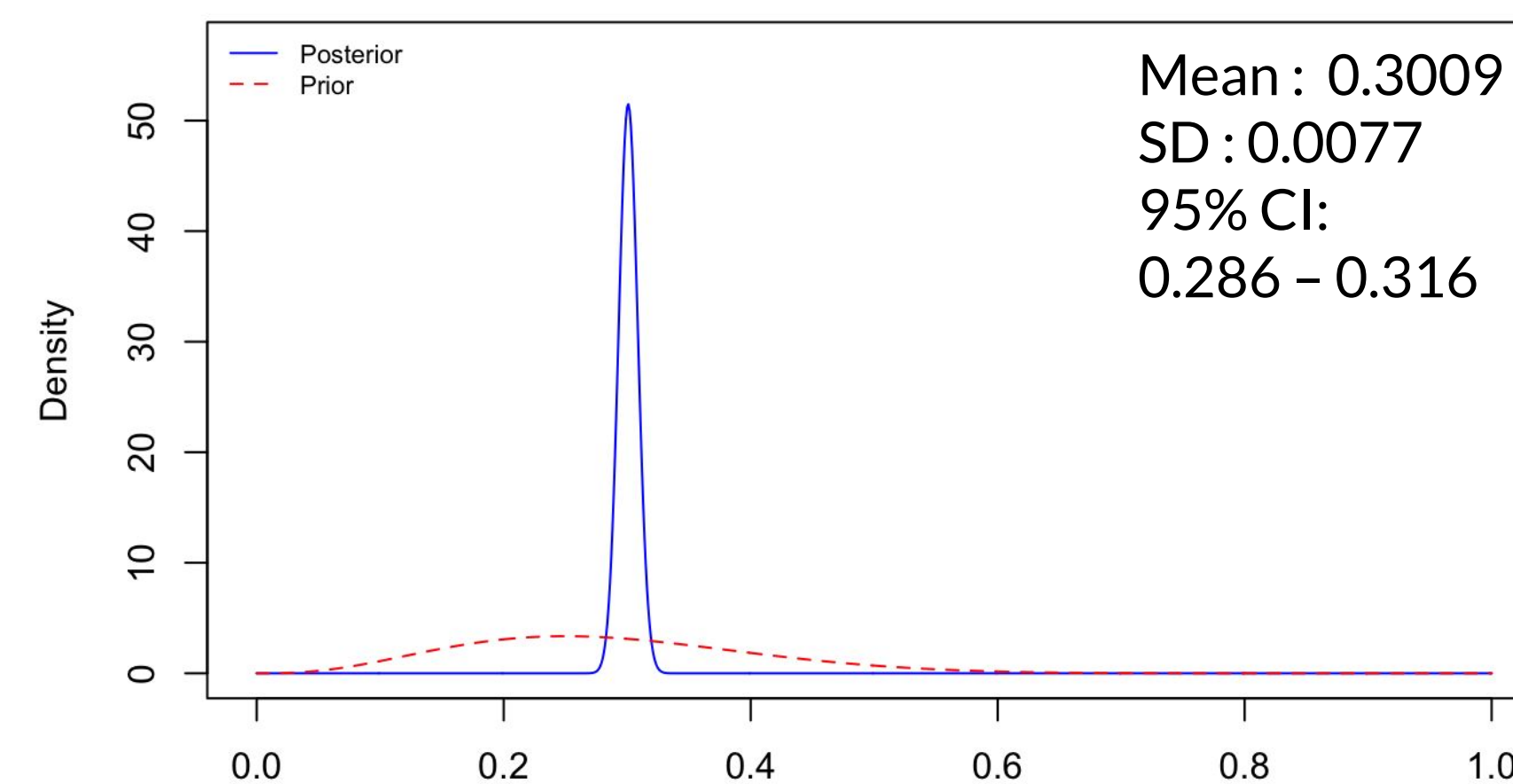


Fig 1: Probability of Amazon brands in top 4

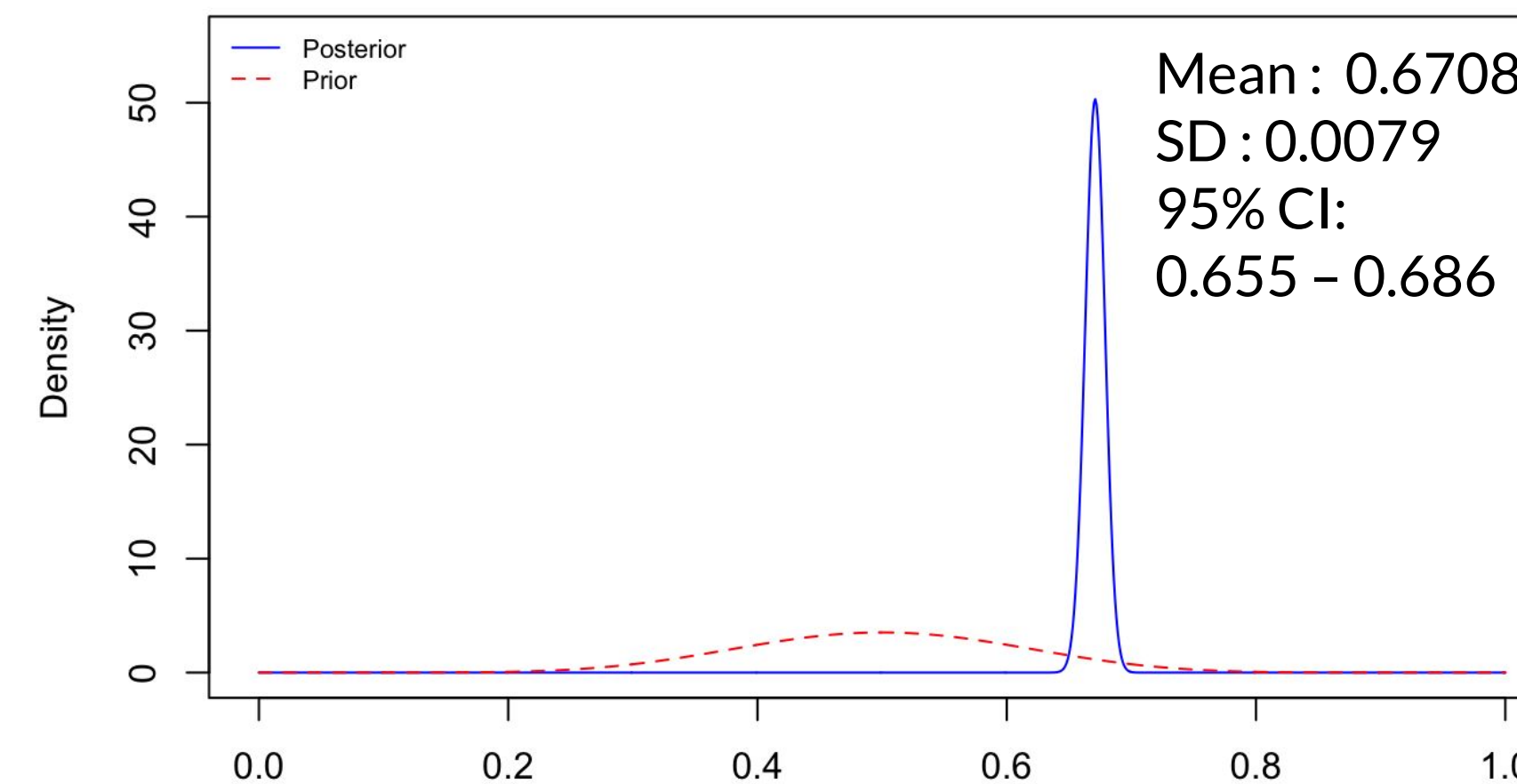


Fig 2: Probability of non-Amazon brands in top 4

Fig 3:



Discussion

Using Bayesian methods, I shown that non-Amazon products are more than twice as likely to be featured among the top 4 slots compared to Amazon brands, with small confidence intervals and standard deviation.

When we take into account the percentage of product listings, we see that compared to the reference line, Amazon products are slightly overrepresented in the top 4 spots while non-Amazon (competing) brands are heavily underrepresented.

In conclusion, there is evidence that Amazon are favoring its own products in the tops spots while pushing out competitors that are not paying for sponsorships.