Asset Types, Click-Through-Rates, and Cost-per-Click

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Questions:

1. How are the different assets performing on facebook and twitter?
2. How are the different assets performing by book genre?
3. Does Facebook or Twitter have a higher Click-through Rate (CTR)?
4. Does Facebook or Twitter have a higher Cost per Click (CPC)?

Biggest takeaway points:

- Twitter has a higher click-through rate than facebook. The Twitter click-through rate is nearly twice as high as the Facebook CTR (1.8 times). The click-through rate for both is around 1-2 %.

- However, Twitter has a higher bounce rate than facebook (meaning that a higher percentage of users who click through an ad and land on the website don't do anything else before they leave). So, it's not clear whether Twitter's higher CTR actually reflects increased engagement.

- Links have a lower bounce rate than videos and images overall (considering all genre types), but get fewer new sessions (new users) than videos and images. So, it's possible (but not certain) that fewer people click links, but the ones who do are more engaged.

- The difference in bounce rate between the asset types is strongest among STEM books (not including Nature) and General Interest books (religion, politics, music, education). Humanities and Nature books show less of a difference in results by asset type. Links bounce less than videos and images in these categories.

- Facebook likely has a higher cost per click than twitter, but the difference in absolute value seems small to me. The median for both is $0.22 and $0.33, respectively.
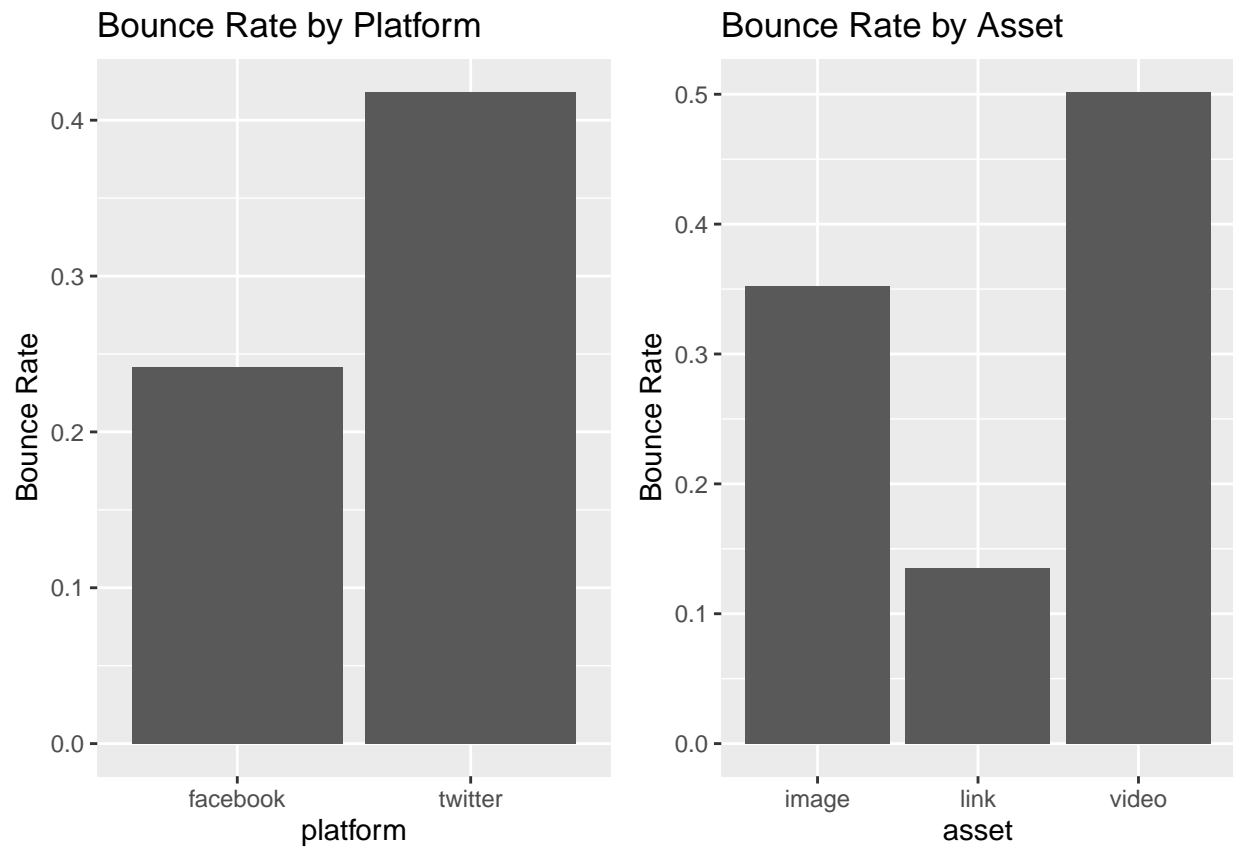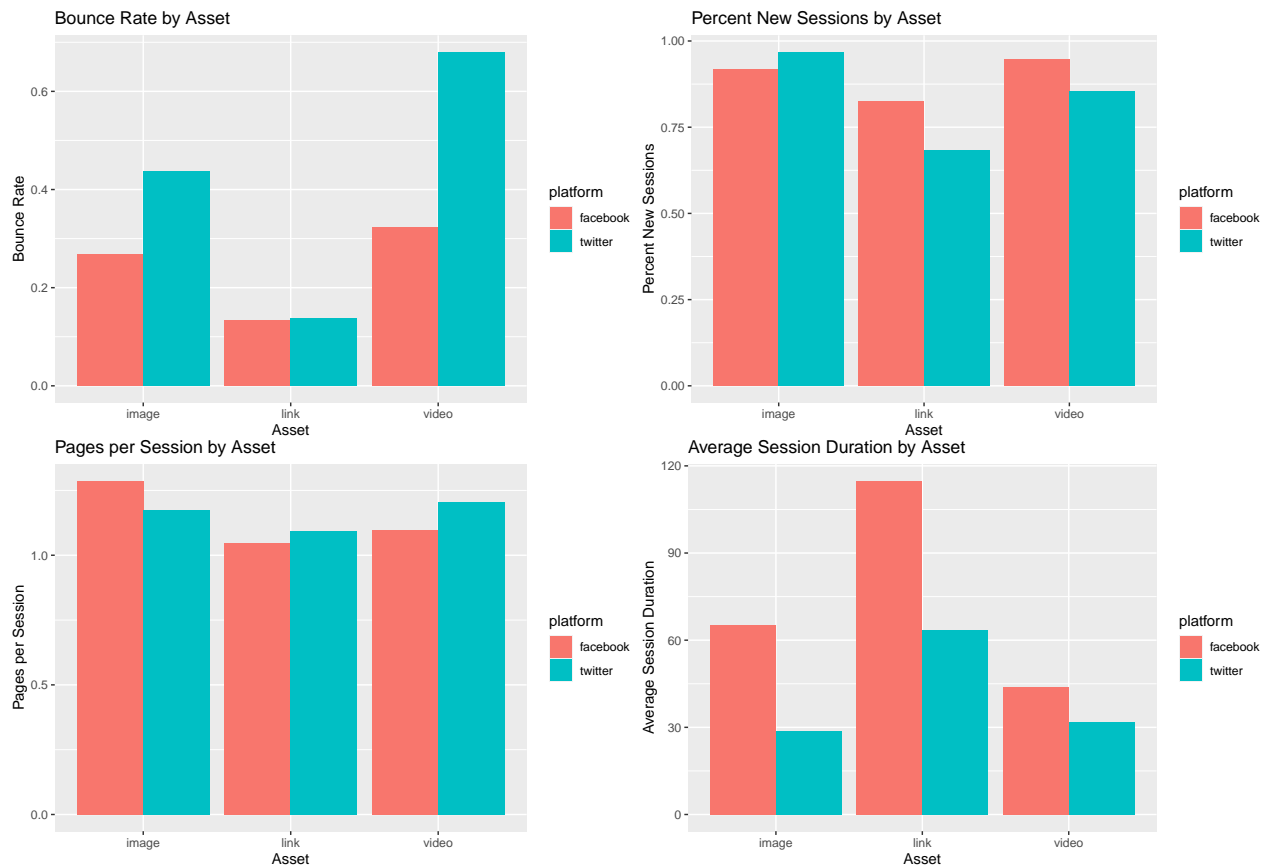
Figure 1: These graphs show that the bounce rate for twitter is higher than for facebook, and that the bounce rate for links is the lowest. Bounce rates are the percent of visitors who landed on the page but left without doing anything else.

1. Asset types on Facebook and Twitter:

Note how videos on twitter have the highest bounce rate; how links have a lower percent new sessions (meaning fewer sessions are due to new users); and how links on facebook have the highest average session duration (users spend a longer time on the web page after clicking through facebook links).

Summary: * Twitter has a higher bounce rate than facebook for all asset types combined.

- Links have a lower bounce rate than videos and images, for both platforms.

  – Videos have an especially high bounce rate on twitter.
  – Images on twitter have the second highest bounce rate.

- Links get fewer new sessions on facebook and twitter than videos and images.

  – BUT links may have higher average session durations than images and videos on both platforms. The highest session durations were from links on facebook.

- This *might* mean that fewer people click on links than images and videos, but people who do click on links engage more with the page they land on: they are less likely to bounce and more likely to stay longer.

  – NOTE: I say "might" because it's impossible to tell which assets are generating the most sessions with the data google analytics provides, because google analytics doesn't tell us how many campaigns were of each asset type. If you have a record of that, we could figure out which asset type is getting the most sessions.
  – Note number 2: It's not possible to test statistical significance of these differences, because google analytics pools all data for each asset, so I don't know the sample sizes.
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2. Asset types by genre group:

(Note: This is not limited to facebook and twitter display/paidsocial ads, because there is no way to select three dimensions on google analytics (i.e., campaign, source/medium, and ad content). All the campaigns here had facebook and instagram paidsocial ads, but the data may reflect images, links, and videos posted on other platforms for those campaigns)
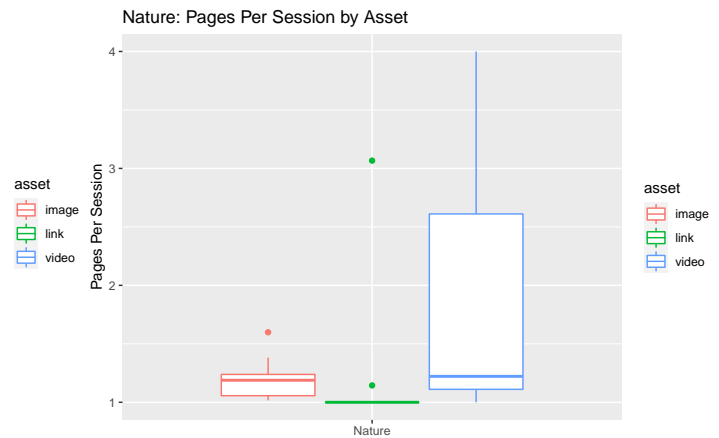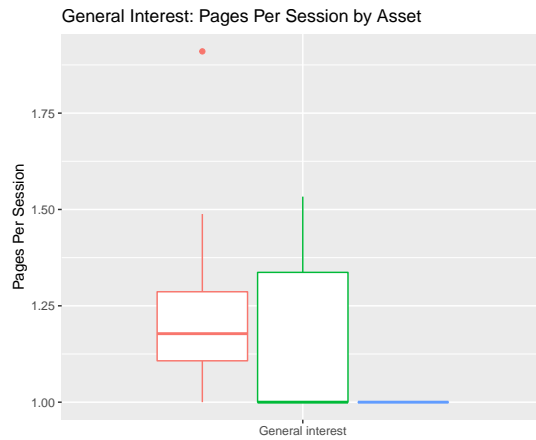
Bounce Rates
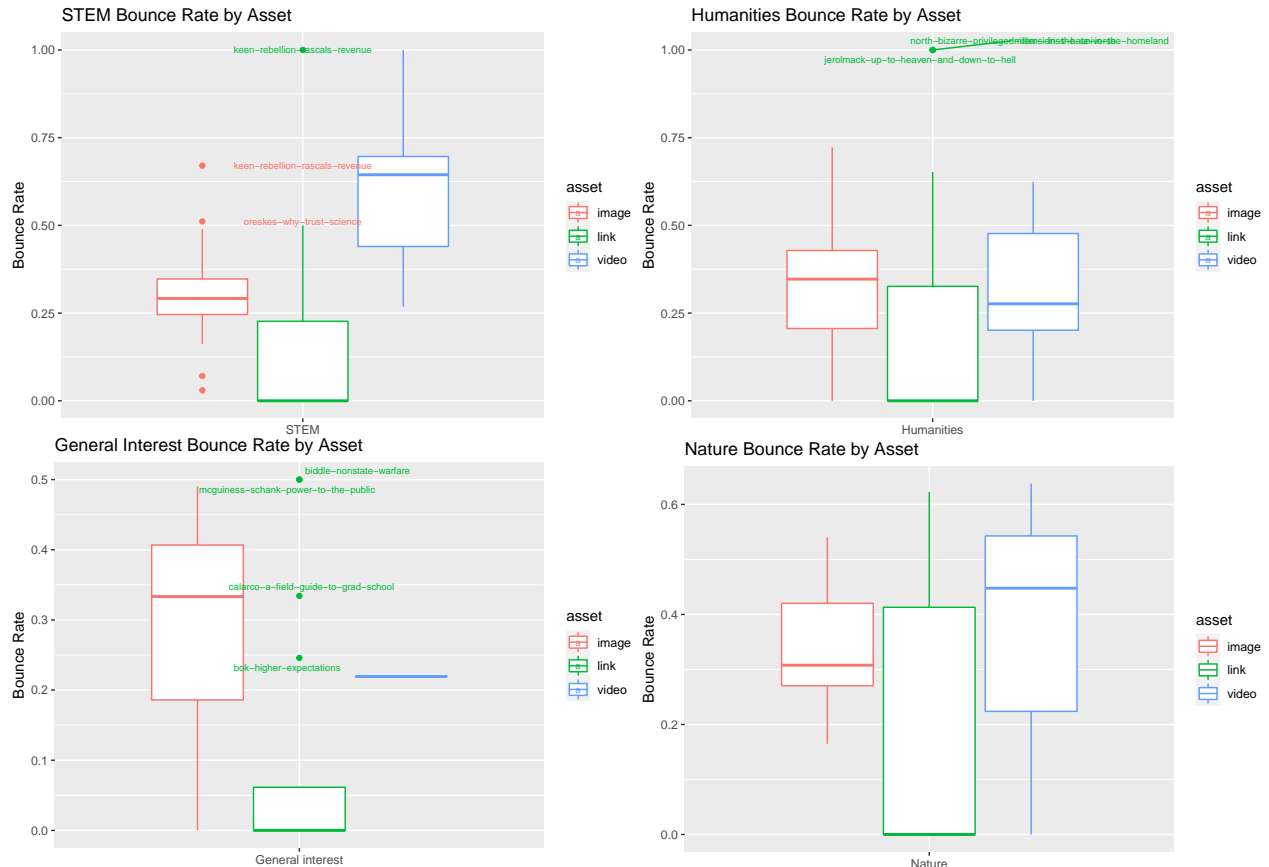
Note the high bounce rates of STEM videos (percent of users who land on the page and do nothing before leaving); and the low bounce rates of links, particularly STEM and General interest.
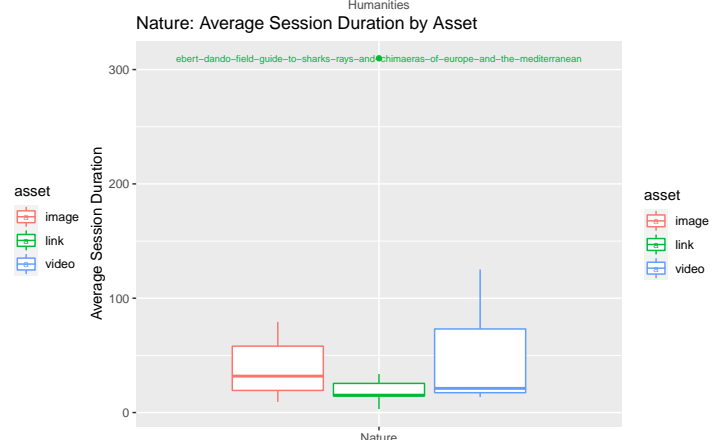
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Pages per Session:

General Interest: Pages Per Session by Asset

Nature: Pages Per Session by Asset
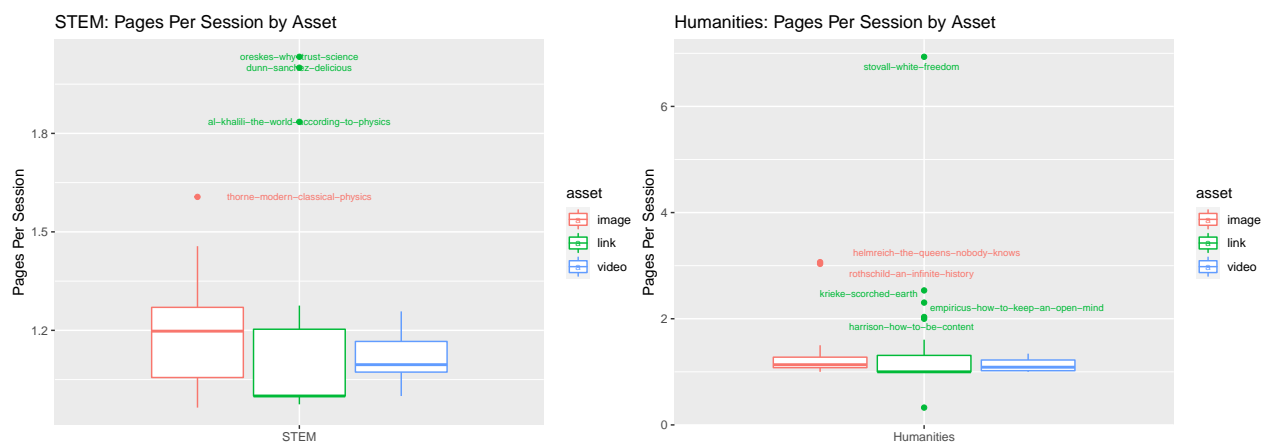
There is no real difference in pages per session (number of pages the user visited upon landing on the website), except perhaps for Nature videos.

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Average Session Duration:

STEM: Average Session Duration by Asset

Humanities: Average Session Duration by Asset

General Interest: Average Session Duration by Asset

Nature: Average Session Duration by Asset
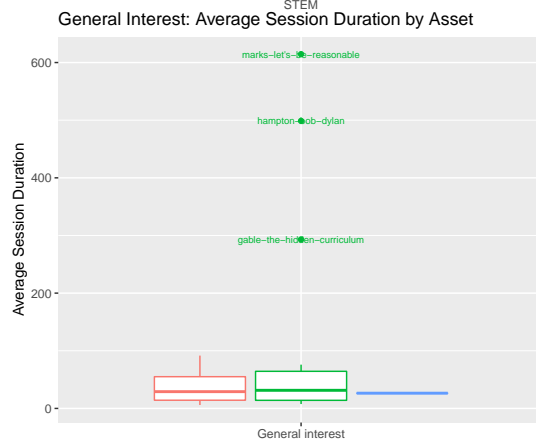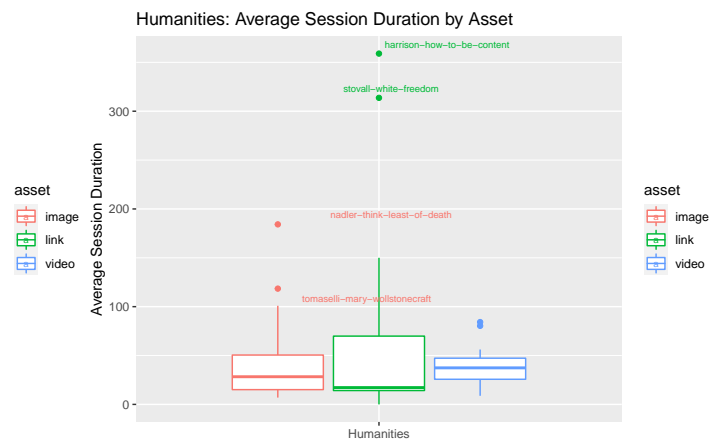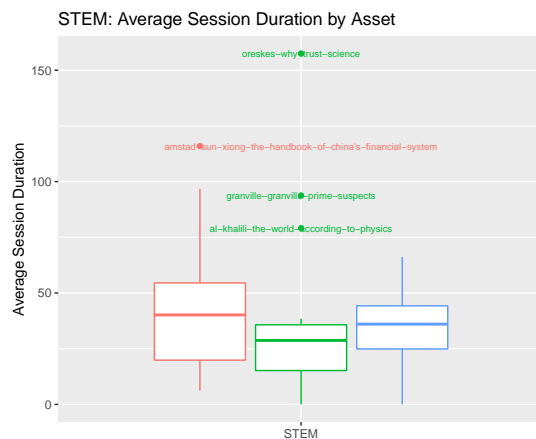
Average session duration is the average number of seconds the user spent on the website after clicking through. The outliers are of interest here, but there are no differences between the groups as a whole.

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Percent New Sessions:
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STEM: Percent New Sessions by Asset

Humanities: Percent New Sessions by Asset

General Interest: Percent New Sessions by Asset

Nature: Percent New Sessions by Asset
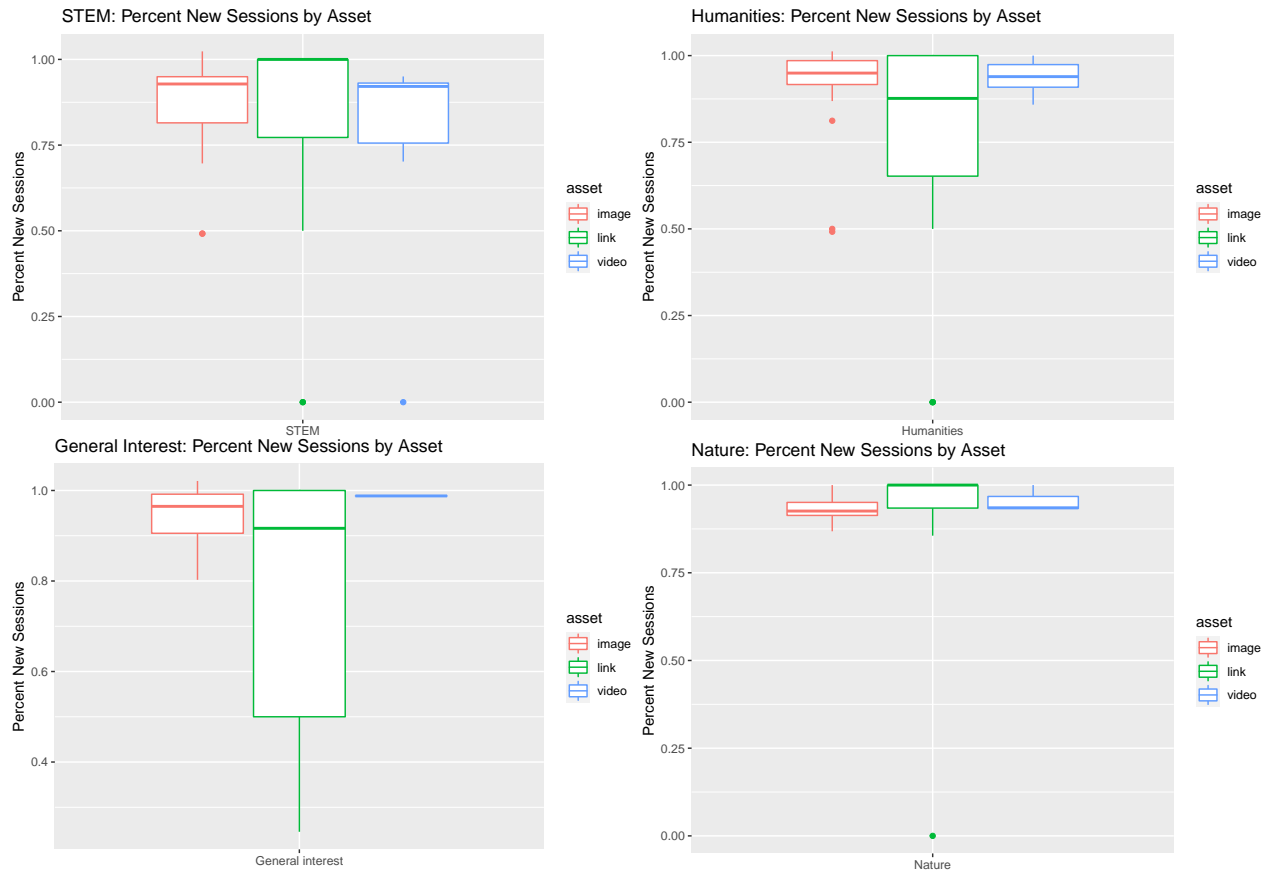
Note how links seem to generate fewer new sessions (percent of users who are new users), except in the Nature category. This is not statistically significant, but interesting.

Summary:

- Taking all campaigns together, links have a statistically significantly lower bounce rate than images and videos (this confirms what was suspected above).
  - The lower bounce rate for links is mostly true for STEM and General interest books, and less so for Humanities and Nature books, where links don't bounce quite as much.
  - (STEM assets give statistically significantly different bounce rates: links bounce the least, images next, and videos the most. Links for General interest books also bounce less than the other two asset types).

- The higher average session duration from links (suspected above) seems like it is due to a few outliers of very long average sessions in links for certain campaigns in the "general interest" group. There's no evidence of any difference in average session duration between assets in any of the genre groups.

- Links provide fewer new sessions than videos and images, overall. This was mostly true in Humanities and General interest categories than in Nature and STEM, where there was no real difference in new sessions between the assets.
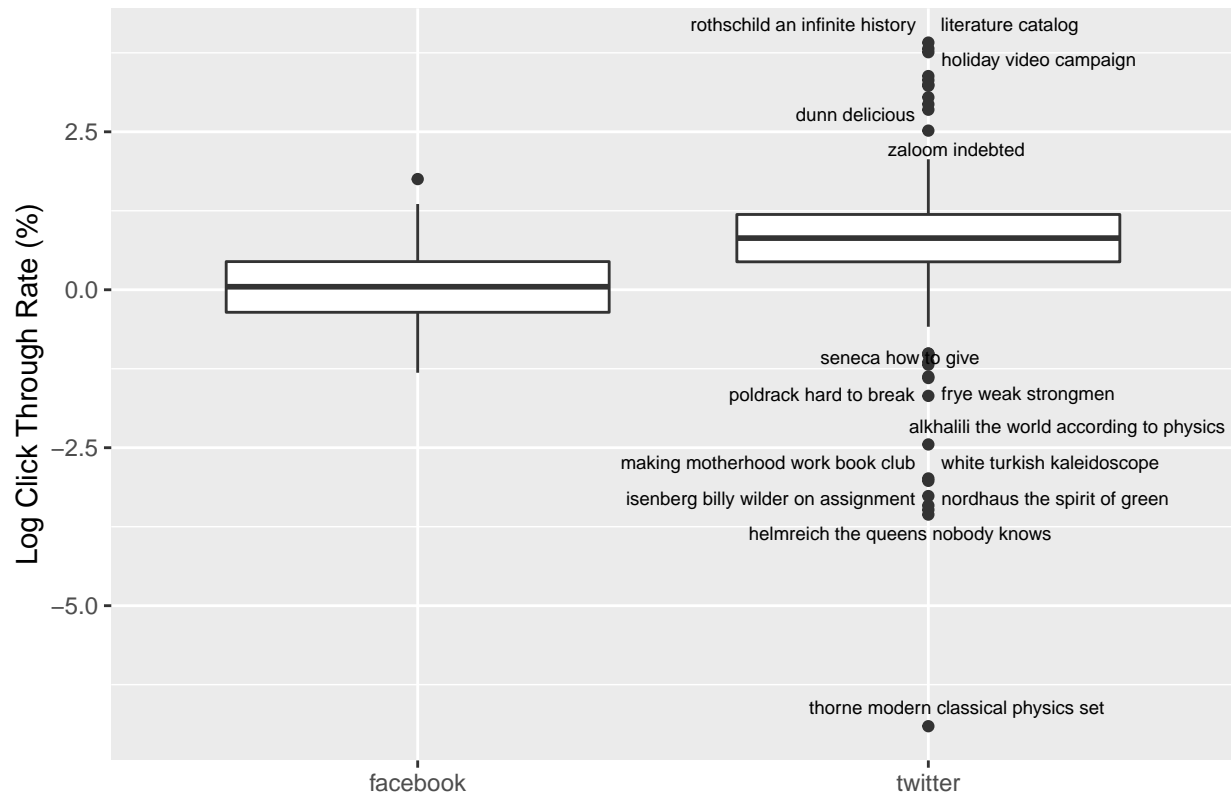
- There is no real difference in pages per session by book genre or by asset, though it is possible that Nature books may get more pages per session with videos.
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3. Click through rate (results rate):

Twitter has a higher click-through rate than facebook. The mean CTR for twitter is 4.47%, while the mean CTR for facebook is 1.30%. However, this difference in means is likely due to lots of outliers on twitter. Because twitter has so many outliers, a better measure of the difference is the medians: **the median CTR for facebook is 1.05%, while the median CTR for twitter is 2.27%.**

Since the distributions are so skewed, with many outliers, the log CTR is a better way to measure statistical significance of the difference. Using the log CTR, **it is estimated that the CTR for twitter is 1.81 times greater than for facebook (meaning that facebook has about 55% the CTR as twitter).** The 95% confidence interval for this estimate is 1.21 times to 2.72 times, which, since it does not straddle 1, suggests the two groups' CTRs are significantly different. A permutation test and a Rank-Sum test confirmed that the difference is significant.
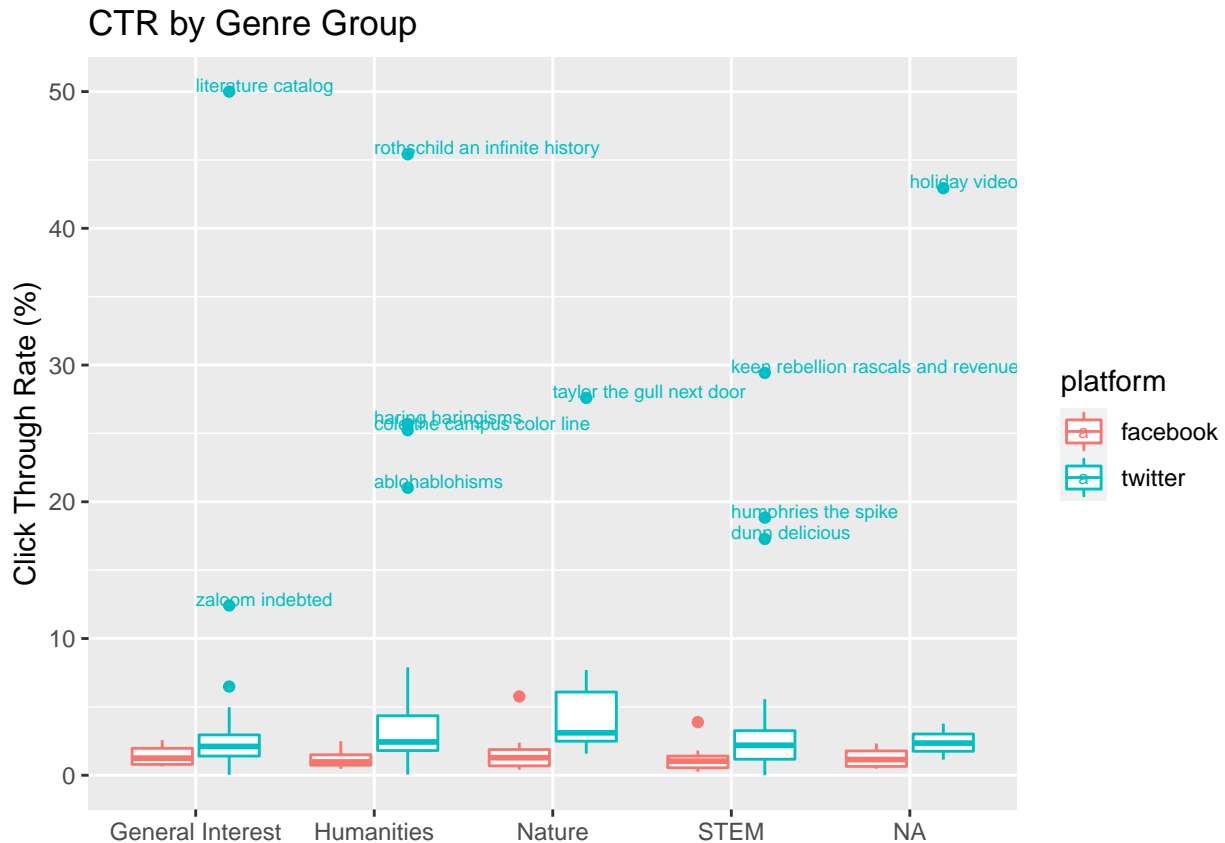
There was no substantial difference in CTR between the genres or grouped genres on twitter or facebook.
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Click Through Rate, Facebook vs. Twitter

Log Click Through Rate, Facebook vs. Twitter

rothschild an infinite history   literature catalog

holiday video campaign

dunn delicious

zaloom indebted

seneca how to give

poldrack hard to break ● frye weak strongmen

alkhalili the world according to physics

making motherhood work book club   white turkish kaleidoscope

isenberg billy wilder on assignment   nordhaus the spirit of green

helmreich the queens nobody knows

thorne modern classical physics set

facebook   twitter

Warning: Removed 21 rows containing non-finite values (stat_boxplot).
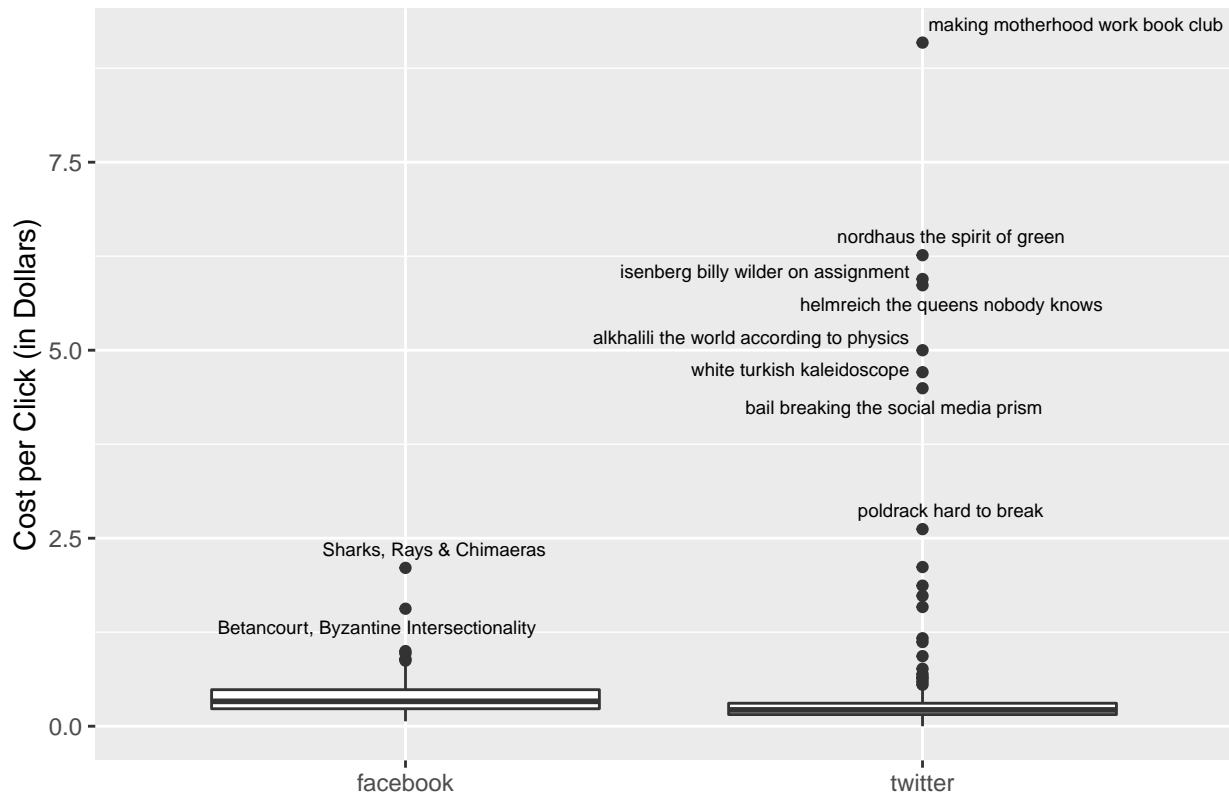
CTR by Genre Group

4. Cost per Click, Facebook vs. Twitter:

There are lots of outliers in the twitter group, which throws off the mean CPC. The mean twitter CPC is higher than facebook's (0.60 for twitter, and 0.44 for facebook). However, this is due to the outliers. **The median CPC for facebook is actually higher than the median for twitter ($0.33 vs. $0.22).**

It is estimated that **the cost per click (CPC) for facebook is 1.35 times more than the CPC for twitter.** The 95% confidence interval for this estimate is 0.98 to 1.84 times more, which, since it spans 1, indicates that the two groups' CPC's may be not be different. However, it is suggestive that facebook has a higher CPC than twitter. A permutation test and a rank-sum test also confirm that there is suggestive, but not conclusive (at the 0.05 level) evidence that facebook has a higher CPC than twitter.

There is no substantial difference in cost-per-click between the different genres or genre groups on either platform.

Cost Per Click, Facebook vs. Twitter

Cost per Click (log) by Genre Group