**Report on Columbia Missourian Facebook analytics**

**Summary**

For this project, I wanted to analyze the Columbia Missourian’s Facebook page and discover actionable insights for the publication. I used Excel functions to analyze page data from Feb. 1, 2016 to May 1, 2016, and I [replicated some of the functions in Python using Agate and Jupyter Notebook.](https://github.com/SarahDarby/assignments-advanced-data/blob/master/0509_FinalProject/longtermproject.ipynb) I looked at data from the Missourian’s overall page, its posts and its videos. I discovered interesting data from each.

In analyzing the Missourian’s overall Facebook page, I found that widely shared posts have the most impact on daily “like” growth for the page. I also found that posts reach 10 times more people than they engage, showing how difficult it is to inspire readers to be active with the Missourian’s posts. Posts with a hyper-community focus seem to be shared more than posts that report game scores or reveal the most important points in a story in the Facebook post. Looking at the page overall, I also found that most users only see content from the Missourian once each day. Although some users see content 6-10 a day, the Missourian can only reach most users with one particularly engaging post each day. The data also revealed that an average of only 60 people directly view the page each day, again highlighting how critically important it is to create engaging posts. This data shows the important role of the Facebook News Feed. The reach of a Facebook post directly affects if the post is seen in a user’s timeline or not. If a post is particularly engaging, many thousands more people, both readers who like the Missourian’s page and readers who don’t, see content from the Missourian. The Missourian should consider how it can optimize the content and publishing schedule on its page to make more posts “go viral” in the News Feed of users. More widely shared posts would help the Missourian increase likes on its page and overall reach of its content.

An analysis of the Missourian’s individual posts further revealed best practices for the page. Posts performed best on Tuesdays and Fridays and performed best at 6 p.m., 10 a.m. and 2 p.m. Posts had an average of 3,270 organic impressions compared to an average of 2,424 impressions each day from users that like the Missourian’s Facebook page. These numbers show that an average of over 800 users see a post from the Missourian despite not liking the page. Widely shared posts seemed to increase this number and tended to fall into a few categories such as hyper-local news and stories that evoke local pride, including a story about tiny houses for the homeless, new apartments for homeless veterans and a retired school librarian who is helping troops abroad. Based on this information, I think the Missourian would benefit from creating a strategic content calendar each month. Many of the top performing stories are evergreen community features that should be posted on optimal days and times. The Missourian would also benefit from writing posts with sharing goals in mind. The publication should conduct a more in-depth content analysis to determine the most engaging style of posts.

Finally, the Missourian’s video data showed that the top performing videos are 1 to 1:30 minutes, and are viewable with or without sound. Most videos are only viewed for 3 to 30 seconds, but more engaging videos have 24% of viewers watch the entire video. The Missourian should add subtitles to its videos to optimize mobile and desktop viewing.

**Excel operations**

* To better understand the Columbia Missourian’s Facebook account, I analyzed three different data sets. FBPageInsights.csv contains data for the Columbia Missourian’s overall page and highlights key page metrics for engagement, like sources and audience details. FBPostInsights.csv contains data for specific Facebook posts on the Columbia Missourian’s Facebook page and shows key post metrics for reach, impressions and feedback. Finally, VideoInsights.csv contains data for key video metrics including views, unique views, paid views and organic views. Each file contains three months’ worth of data from the Columbia Missourian’s Facebook page ranging Feb. 1, 2016 to May 1, 2016.
* This log serves to document my analytical process for this project. For each Excel operation I have documented the following:

1. Goal of operation
2. What I learned from function
3. What I did to discover the insights

**FBPageInsights.csv**

**Operation 1**

1. To start off, I wanted to get a sense of how the number of likes on the Columbia Missourian’s Facebook page changed over the past three months.
2. The page had 8,419 likes on Feb. 1, 2016 and 8,524 likes on May 1, 2016, or a 1.24% increase.
3. For this operation, I simply looked at the data in the “Lifetime Total Likes” column of the data.

**Operation 2**

1. For this operation, I wanted to determine which days the page received the most new likes.
2. The day with the highest amount of new likes was March 11, 2016 with 34 new likes. This spike seems to be caused by a very well-shared Facebook post that day about Bernie Sanders speaking in town (Which ended up being a false rumor). The original Facebook post reached nearly 38,000 people and had 2,900 comments, reactions and shares. It’s clear that a widely shared post can increase awareness and page likes for the Columbia Missourian’s page. Other new likes also resulted from a widely shared post. On March 4, 2016, the page received 20 new likes. That same day the Missourian shared a post about the 5-year-old daughter of Missouri assistant basketball coach Brad Loos, who underwent a successful cancerous tumor removal surgery. On April 28, 2016, the page received 20 new likes but did not publishing a particularly viral story. This spike seems to have been caused by community reaction to a story on the discovery of the sunken Malta ship in mid-Missouri. Although this story did not receive a ton of traffic from the Facebook post, we shared the story with a number of groups on Facebook, which may have contributed to new likes.
3. For this operation, I sorted the “Daily New Likes” column from largest to smallest and then cross referenced the dates with the most new likes and the Missourian’s Facebook posts from that day.

**Operation 3**

1. For this operation, I wanted to look at the number of daily page engaged users.
2. Not surprisingly, the days with the highest number of engaged users line up with the viral stories from March 11 and March 4. Although “Daily Total Reach” (The number of people who have seen something associated with the page) can sometimes differ from the “Daily Page Engaged Users” (The number of people who have clicked while on the page or engaged with the page), the data seems to closely align in this case. March 11 and March 4 also lead in “Daily Total Reach.”
3. For this operation, I sorted the “Daily Page Engaged Users column from largest to smallest.

**Operation 4**

1. For this operation, I wanted to take a closer look at “Daily Total Reach” and see if I could identify any stories that had high reach but low engagement.
2. Comparing the two columns of data, a few days stand out. On March 13, the page reached nearly 13,000 people, but only engaged 881 people. This is a fairly low ratio looking at the data. Comparing the two columns of data, it looks like most posts have a 1:10 ratio for engagement versus reach. For every engaged user, the page reaches 10 readers. On March 13, the page shared a handful of municipal election preview stories that underperformed in both engagement and reach. Other stories such as Bernie Sanders visiting Springfield reached a high amount of readers but were not as engaging. A handful of others days had posts that underperformed in terms of engagement. For example, the Missourian posted several stories on Feb. 28 that were widely viewed, including news that Columbia College was starting up its basketball program for the first time in 35 years. Other stories like a game update from the Mizzou women’s basketball team, and a recap post of the week’s top stories, received many times more views than shares and engagement. All of the Facebook posts associated with these stories included the main points from the story and may have discouraged readers from sharing.
3. For this operation, I first averaged all of the numbers in the “Daily Total Reach” column to determine a bar for measuring reach expectations (=AVERAGE(E3:E93)). I found that the page had a daily average of 1,065 engaged users. I then looked at days with a high total reach but low number of engaged users based on this average.

**Operation 5**

1. For this operation, I wanted to look at a metric called “Daily Total Frequency distribution to see, on average, the number of times people saw content about or from the Columbia Missourian’s Facebook page.
2. Using this metric, which shows, “The number of people your Page reached broken down by how many times people saw any content about your Page,” I was able to determine a general average for how many times people saw content from the Missourian each day. This data showed that the Columbia Missourian’s content is seen 1 time by an average of 5,760 unique users daily, 2 times by an average of 2,063 users, 3 times by an average of 974 users, 4 times by an average of 576 users, 5 times by an average of 373 users, 6-10 times by an average of 960 users, 11-20 times by an average of 629 users and 21+ times by an average of 194 users. These numbers are pretty interesting. The majority of users see content from the Missourian only once a day, but it’s surprising that the pendulum swings back up with some users seeing content from the Missourian 6-10 times a day. These numbers don’t completely reveal how Facebook’s algorithm works, but it gives some hints. Only the most active users seem to see the Missourian’s content frequently. Many others only see one particularly well performing post each day. These numbers show how readers can easily miss the Missourian’s average or underperforming posts.
3. To run this operation, I averaged each column that showed the number of times a user saw content from the Missourian. I used the function =AVERAGE(c2:c92) and modified it for each column.

**Operation 6**

1. For this operation, I wanted to look at the column “Daily Logged-In Page Views” to see how many people directly visit the Missourian’s Facebook page each day.
2. After averaging the data from this column, I was surprised to find that the Missourian only has a daily average of 60 page views from users logged into Facebook. This data points to the fact that most users like the Missourian’s page and then see most content from their news feeds. Since Facebook’s algorithm directly determines if a post will appear in the news feed, this statistic shows just how important it is to create engaging posts.
3. To calculate this data, I used the function =AVERAGE(z3:z93)

**FBPostInsights.csv**

**Operation 7**

1. To start off, I wanted to look at posts with the highest “Lifetime Post Total Reach” to begin to explore the data.
2. The post with the highest reach was an announcement about Bernie Sanders speaking in Columbia reaching more than 37,000. The next highest post was about the demolition of Quinton’s with a reach of about 19,000. Other top posts included excellent teacher awards, tiny houses for the homeless, MU Libraries budget shortfalls, 360-degree video of the Mizzou Alphas, a women’s basketball transfer player, Missouri basketball win, MU closure of two dorms and video of a Stephens College fashion exhibit. Overall, the top posts were all hyper local stories, and many of the top posts were exclusive multimedia pieces. Many of the top posts were also tied to news about MU.
3. I analyzed this data by sorting the “Lifetime Post Reach” column from largest to smallest.

**Operation 8**

1. I next wanted to look at “Lifetime Engaged Users” to see if the most engaging posts would differ much from the posts with the greatest reach.
2. Overall, most of the most engaging posts were also posts with some of the highest reach. However, there were a few stories that had higher engagement than they had reach including news of Spike Lee filming on campus and news of an MU student’s arrest for a campus rape. Except for the Bernie Sanders story, nearly all of the most engaging posts were related to MU or to downtown Columbia.
3. To look I this data, I sorted the “Lifetime Engaged Users” column from largest to smallest.

**Operation 9**

1. For this operation, I wanted to take a look at negative feedback posts received.
2. By looking at data for the “Lifetime Negative Feedback” column, I discovered that the Missourian has very low numbers of users providing negative feedback on the page. The posts with the highest amount of negative feedback was the Bernie Sanders post with negative feedback from 11 users. Overall, negative feedback seems to closely align with post reach and engagement. The most viewed posts also have the highest negative feedback. This seems to suggest that readers react positively to the Missourian’s content overall. The Missourian also heavily moderates negative feedback on its page, so this might contribute to these low numbers.
3. To look at this data, I sorted the “Lifetime Negative Feedback” column from largest to smallest.

**Operation 10**

1. For this next operation, I wanted to compare the average number of organic post impressions versus impressions from readers who like the Missourian’s page.
2. From sorting the data, I found that the Missourian has an average of 3,270 organic impressions on each of its posts. This number looks at the number of times a post is seen in the Facebook News Feed, ticker or on the page’s direct timeline. In comparison, the Missourian’s posts each receive an average of 2,424 impressions each day from users that like the Missourian’s Facebook page. The difference between these two numbers is over 800 users, showing that a significant portion of impressions to the page come from engagement with posts or posts that are shared on people’s timelines. Increasing organic impressions would be a great goal for the Missourian if it wanted to grow its Facebook audience overall.
3. To run this operation, I used the function =AVERAGE(m3:m502) and =AVERAGE(t3:t502) on the “Lifetime Post Organic Impressions” and “Lifetime Post Impressions” columns.

**Operation 11**

1. I next want to look at the highest performing posts to note any particular time of days that work well for posting.
2. Looking at the 50 posts with the most reach, a few times of day stand out. Within those top posts a total of 8 posts were posted at 6 p.m., 7 posts were posted at 10 a.m., 6 posts were posted at 2 p.m. and 5 posts were posted at 11 a.m. or 12 p.m. Based on this information, the Missourian might consider saving its feature pieces for these optimal times of the day. Strategically posting the best content at these times would help drive overall traffic.
3. I first sorted the data in the “Lifetime Post Total Reach” from largest to smallest. I then tallied up posting times for the top 50 posts.

**Operation 12**

1. I next wanted to look at the highest performing posts to note any particular days that work well for posting.
2. I again looked at the 50 posts with the most reach and found a few days that seem to be best for posting on Facebook. Tuesday was the best performing day with 11 of the top 50 posts published on this day. Friday had 10 of the top posts, Wednesday had 8, Monday and Thursday had 7, Sunday had 6 and Saturday had 2. This data really surprised me. I work on the Columbia Missourian’s community outreach team right now. We are usually understaffed on Friday, and we don’t focus much on social over the weekend. Based on this data, we are likely missing some opportunities with posts that might perform very well on a Friday.
3. I first sorted the data in the “Lifetime Post Total Reach” from largest to smallest. I then tallied up posting days for the top 50 posts.

**Operation 13**

1. I next wanted to look into some of the social sharing data on posts to see if I could notice any trends.
2. I first sorted both the “Like” and “Share” columns separately. The most liked and shared posts were pretty much the same as the posts that also received the most engagement and reach. The most shared posts seem to either be related to event based news, MU funding news or have some novel and/or community based focus. The Bernie Sanders story again dominated with the most shares. Other most shared stories include straight news stories such as the demolition of downtown buildings or legislative funding for MU. A final category included stories that evoke pride in the community, including a story about tiny houses for the homeless, new apartments for homeless veterans and a retired school librarian who is helping troops abroad. A fair amount of stories received many more likes than shares. This pattern seems to hold most true for breaking news stories such as sports results or news that journalism students studying abroad were safe after the Brussels attacks. These breaking news stories don’t necessarily incentivize the reader to take further action.
3. I sorted both the “like” and the “share” column from largest to smallest and observed the data.

**FBVideoInsights.csv**

**Operation 14**

1. To start off, I wanted to see which of the Missourian’s videos had the most total views.
2. The top performing video by far was a 1-minute video recapping all of the recent demolition downtown. This video received 38,000 impressions and more than 7,000 views. Other top videos included 1:30 feature on a Stephens College exhibit that reimagines clothes through the eyes of kids, a 1-minute clip of a Missourian editor talking about weather, 45 seconds of roughly edited clips of a church burning down in Sedalia and a 3:30 minute piece on a timbersports participant. What’s interesting about these videos is the variety. Well-edited videos perform well, but so do short, rough clips when they’re related to breaking news or weather. The best performing video, though, received more than three times as many views as any other video. This video had subtitles which I think contributed to the high number of views. Readers were able to easily watch the video on their phones or desktop without or without sound.
3. To look at this data, I sorted the “Lifetime Post Total Impressions” column from largest to smallest and then cross-referenced the data with the Missourian’s Facebook page.

**Operation 15**

1. I finally wanted to see how long the average viewer stuck with each video.
2. I looked at the average total views of each video within the first few seconds, 30 seconds in and 95% in to see how long viewers watched the videos. Overall, each video was viewed for more than three seconds an average of 1,126 times. Each video was viewed for at least 30 seconds an average of 302 times, and each video was watched to 95% of its length an average of 206 times. This data shows that there is a huge drop off in how long viewers watch a video. Roughly 18% of viewers who watched the first 3 seconds of a video watched the video to its completion. There is some good news, though. The Missourian’s top performing video with the subtitles had 24% of viewers watch until the end. Eliminating this video from the overall data reduces video completion rates to 14%. It’s clear that this short, explainer style video with subtitles seems to be most effective with viewers.
3. I averaged the “Lifetime Total Video Views” =AVERAGE(l3:l18), “Lifetime Total 30-Second Views” =AVERAGE(n3:n18), and “Lifetime Total Views to 95%” =AVERAGE(p3:p18), to look at this data. I then divided average “Lifetime Total Views to 95%” by average “Lifetime Total Video Views”