Design

Questionnaire Design

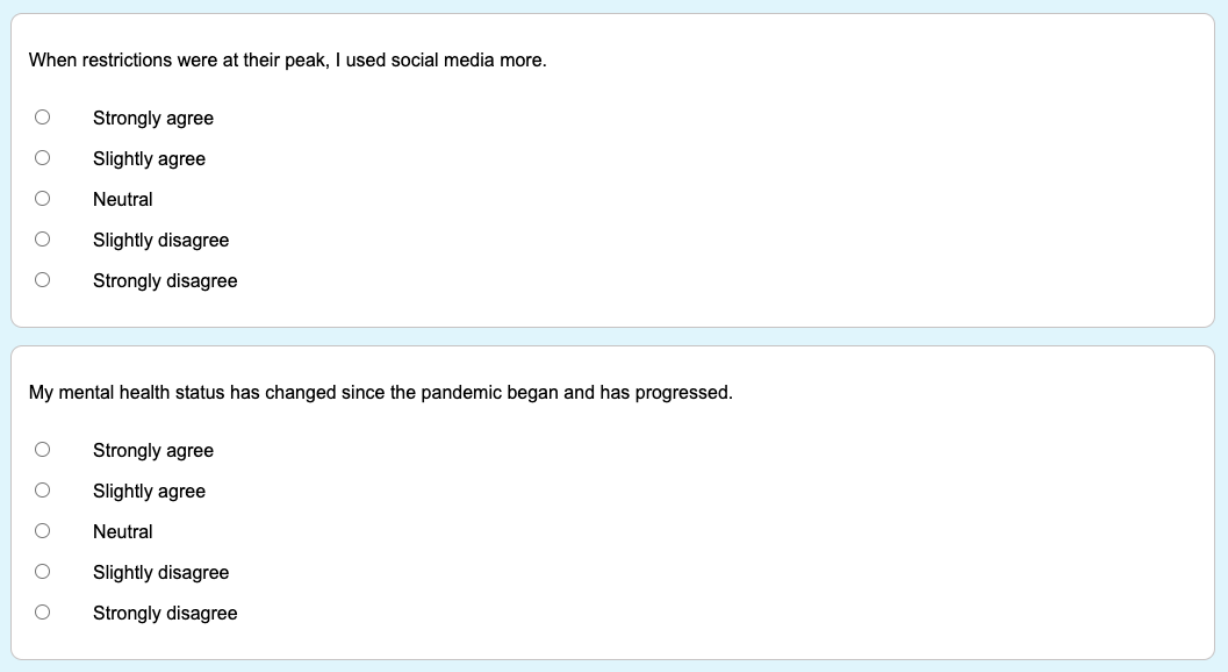
The decision was to use a questionnaire because this way I'm able to gather the data I need from those even though they're far away. A fair amount of the respondents ended up being from out of province as shown in Figure 1 below. In my case for the idea of mental health resources on social media, there will be many stakeholders involved (mainly users), this is another reason the choice to use a questionnaire was chose as a data gathering technique. Another reason a questionnaire was chosen was simply because there wasn't enough time to carry out interviews regarding the topic. Additionally designing and distributing a questionnaire was much cheaper and the analysis of the quantitative data was timelier than analyzing qualitative data from interviews would have been. Also, the nature of the data I was after (opinions via numerical data) seemed to fit a questionnaire better.

Figure 1 – Results about respondents current locations.

With regards to the questions in the survey, besides the demographical questions at the beginning, I kept the rest of the questions consistent using Likert rating scaled responses. For example, I lumped the questions regarding social media use together and kept the questions regarding mental health linked with social media together. By doing this the user can stay focused on one topic for a period of time, offering potentially more accurate responses as opposed to if the questions were showed disregarding theme. Demographic questions were important to add because I was interested if there was significant difference between males and female, or those with different relationship statuses, with regards to answers to other questions I separated sections of the questions based on what was being investigated. The results show that this did not end up being the case but nonetheless, they were important to add.

Figure 2 below is displays screenshot of a simple webpage I made to show how the questions were displayed to the user on Google Forms. Google Forms did a good job of laying out the questions in between small areas of whitespace with the suspected goal of not overwhelming/confusing respondents. At the same time, by having not too much whitespace, this keeps the appearance compact and manageable. By selecting the radio button, feedback is given to the respondent that they made their decision and they can move on to the next question.

Figure 2 – Displaying screenshot from webpage showcasing layout of questions respondents interacted with when taking survey.

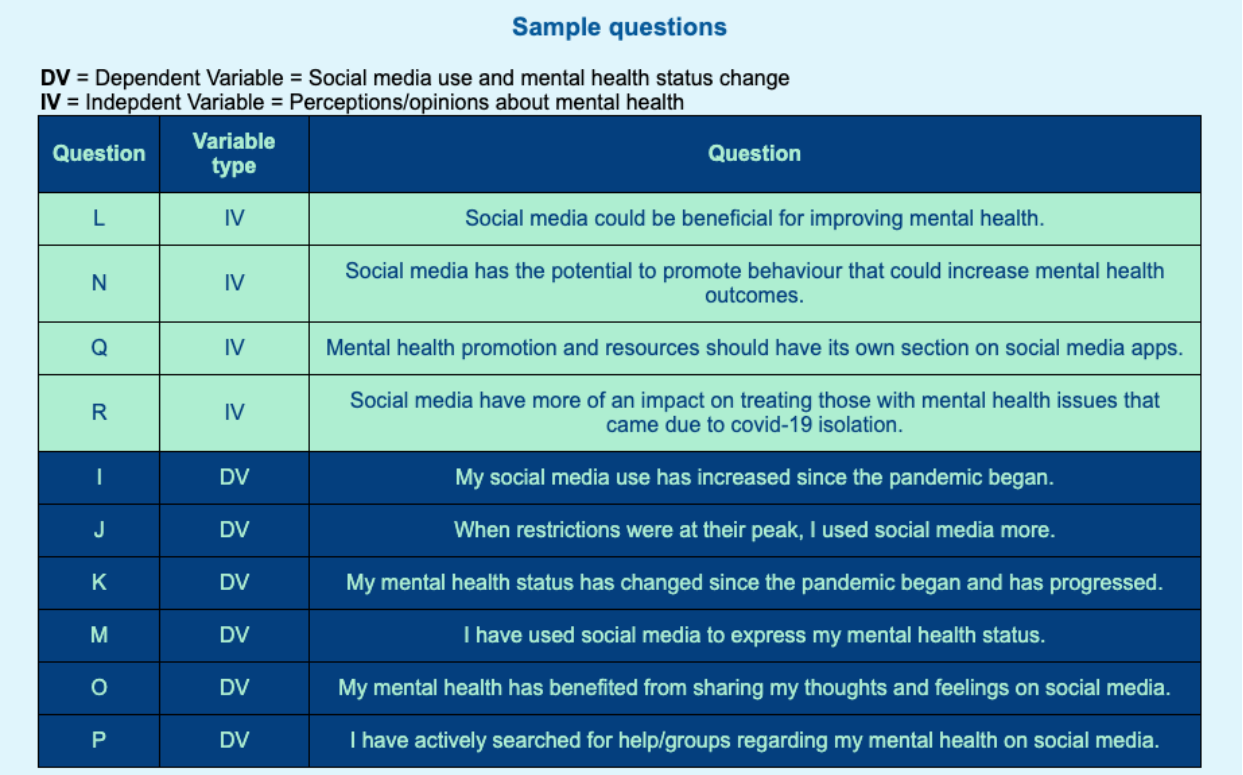


The goal of my survey was to try to learn about the user's social media use before and during COVID-19 in addition to discovering more about perceptions of mental health and its connection on social media. The survey consisted of 20 questions (excluding the informed consent question) with an estimated completion time of about 5 minutes. I added a *required* question at the beginning of the survey that asks for consent of the respondent. What the consent question asks if the respondent agrees with the terms mentioned in the introduction. The introduction discusses the purpose of the questionnaire being for an academic paper for university and that the results are kept anonymous. The survey was conducted used Google Forms and configured so no email addresses were collected with the submissions thus making the questionnaire anonymous. If the respondent did not agree with the terms in the consent question, they were directed to the end of the questionnaire to exit without giving any responses. Those who agreed with the terms were directed to the questions for completion. This consent question allowed me to only receive submissions I could use in my results for analysis saving me an intermediate step of sorting through the data one less time.

The survey was distributed on my personal social media accounts in an effort to target relevant users for the nature of the topic being studied, social media users. Because the survey was done anonymously, there was no debriefing was required after the fact.

All questions we're formed in Likert format using a Strongly agree – Strongly disagree scale and then later recoded to a numeric form for analysis. See screenshot below containing list of sample questions divided by variable type. These questions were used later in linear regression test. I tried to take some useability principle I learnt from Human Computer Interactions course by making the table as easy to read as possible using contrasting colors and effective alignment of text. I believe the combination of these helps for a more effective experience by enhancing another design principle: findability. When aspects of a display are put together with these principles in mind, I find that user experience goals are able to shine as well. I had a goal of cognitively stimulating the viewer in mind when writing the CSS for this table.

Figure 3 – Screenshot from webpage I made displaying sample questions from survey.



Sample questions

DV = Dependent Variable = Social media use and mental health status change
IV = Indepdent Variable = Perceptions/opinions about mental health

Question	Variable type	Question
L	IV	Social media could be beneficial for improving mental health.
N	IV	Social media has the potential to promote behaviour that could increase mental health outcomes.
Q	IV	Mental health promotion and resources should have its own section on social media apps.
R	IV	Social media have more of an impact on treating those with mental health issues that came due to covid-19 isolation.
I	DV	My social media use has increased since the pandemic began.
J	DV	When restrictions were at their peak, I used social media more.
K	DV	My mental health status has changed since the pandemic began and has progressed.
M	DV	I have used social media to express my mental health status.
O	DV	My mental health has benefited from sharing my thoughts and feelings on social media.
P	DV	I have actively searched for help/groups regarding my mental health on social media.

Outcome of Research

With regards to the survey, the raw data that came from the questionnaire was transferred from Google Forms to Google Sheets where it could be processed further. Google Forms displayed the data in a spreadsheet style which allowed me to look at all the data as a whole quite easily. Each row represented data from one respondent and each column represented each question. The first row was the question titles for each question. See sample of raw data below in Figure 4.

Figure 4 – Sample of raw data being displayed in Google Sheets.

G	H	I	J
How often do you use soc	I use social media for ente	I use social media for con	I use social media for new
5+ times a day	Strongly agree	Strongly agree	Strongly agree
5+ times a day	Strongly agree	Strongly agree	Slightly agree
5+ times a day	Strongly agree	Strongly agree	Strongly agree
5+ times a day	Strongly agree	Strongly agree	Strongly agree
5+ times a day	Strongly agree	Slightly agree	Slightly agree
2-4 times a day	Strongly agree	Slightly disagree	Strongly disagree
5+ times a day	Strongly agree	Slightly agree	Slightly disagree
5+ times a day	Strongly agree	Strongly agree	Strongly disagree

Analysis

Questionnaire data:

To start the analysis of my questionnaire data, I first had to recode the raw answers which were string's and recode them to numerical data. To accomplish this, I used the same medium where my raw data was, which was Google Sheets. In Google Sheets I used a function called "SWITCH" which allowed me to add numeric cases for each string value. Since my data was still in Likert format with strings for values, I had to recode it to numbers. The command I used was structured like this: =SWITCH(E2:E26, "Strongly agree", 1, "Slightly agree", 2, "Neutral", 3, "Slightly disagree", 4, "Strongly disagree", 5). By using this function I'm saying for all of the "Strongly agree" values, recode to 1, for all the "Slightly agree" values, recode to 2 etc. This was necessary to do in order to do any statistical analysis of regression since the data must be in numeric form. I decided to do a regression test I learnt about in a data analysis course because it seemed a lot like the conclusions we tried to draw in problems/assignments in that course. I selected some of the questions from my survey based on theme and put them into one of two categories, those which could be considered an independent variable and those which could be considered a dependent variable. I was interested to see if one's perceptions/opinions about mental health could predict that one's social media use and their mental health status change. To clarify, I treated a user's perceptions and opinions about mental health as the

independent variable and the user's social media use and mental health status change as the dependent variable.

The software I chose to use for analysis was PSPP, an analysis tool very similar to SPSS with some limitations. The first thing I had to do to accomplish this test once I had the data in numeric form was to figure out if the data, I was using was normally distributed. This would determine if I was to run a linear or ordinal regression. To begin I combined the questions that I felt related to the independent variable and dependent variables and computed means for each. I then ran a preliminary linear regression with residuals to give me a separate column with this information. I then ran a descriptive test to generate skewness and kurtosis values which would prove help me identify if my data was normalized or not. In the past I had been able to use SPSS output to determine normality, but with PSPP I had to do this extra step to determine it. To tell if the data is normally distributed, I divided the skewness value by its standard error value and did the same with the kurtosis value and its standard error. Since these values were both not higher than 1.96 or less than –1.96, it can be confirmed that the data is normally distributed. When I discovered my data was normally distributed, I then ran a linear regression test. Based on the results of the test, I was able to conclude that social media use and mental health status change could not be predicted by knowing one's perceptions and opinions of mental health because there was no significant regression (β=0.19, $R2$=-0.01, p=0.375).

Figure 5. Displaying screenshot from webpage displaying results from linear regression analysis.

Results from PSPP regression

Model Summary (SMUseMHStatusChangeMean)

R	R Square	Adjusted R Square	Std. Error of the Estimate
.19	.03	-.01	.75

Coefficients (SMUseMHStatusChangeMean)

	Unstandardized Coefficients		Standardized Coefficients			95% Confidence Interval for B	
	B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound
(Constant)	2.21	.69	.00	3.21	.004	.79	3.64
PerceptionsAboutMHMean	.24	.26	.19	.90	.375	-.31	.78

I was able to conclude that social media use and mental health status change could not be predicted by knowing one's perceptions and opinions of mental health because there was no significant regression (β=0.19, R2=-0.01, p=0.375)

There were some interesting findings in my data regarding results of individual questions being correlated with others. There were a few correlation results that made a lot of sense when I did run the correlations. For example, Figure 6 below shows a moderate correlation (Pearson's r=.687, p=.000) between questions I (My social media use has increased since the pandemic began) and J (When restrictions were stricter, I used social media more). This was expected as it makes sense that users had used more communicated based tools such as social media due to isolation to begin with, and with that type of behavior already in place, it makes sense that social media use would see a further increase as more restrictions rolled out because isolation became more and more necessary. See Fig below for output.

Figure 6 – Results of Pearsons correlation test between questions I(VAR009) and J(VAR010). A moderate correlation was found.

Correlations

		VAR009	VAR010
VAR009	Pearson Correlation	1.000	.687
	Sig. (2-tailed)		.000
	N	25	25
VAR010	Pearson Correlation	.687	1.000
	Sig. (2-tailed)	.000	
	N	25	25

Another uninteresting moderate correlation found was between social media use levels and the question “I use social media for communication”. The way I interpret this correlation is that communication is a major reason people use social media, which isn’t surprising because that’s the whole point. That said, there was some other interesting correlations between questions in the data. Figure 7 displays a moderate correlation between questions K(My mental health has changed since the pandemic began and has progressed) and N(social media has the potential to promote behavior that could increase mental health outcomes) with a Pearsons correlation of .495 and a p-value of .012. This is interesting because the significance suggests if users themselves notice changes in their own mental health, it gives them hope that social media has the potential to be of help to those with mental health issues. The idea that one must experience something first before having a strong opinion on it seems to apply here. See Fig below for output of this correlation.

Figure 7 – Results from Pearsons correlation test between questions K(VAR011) and N(VAR014). A moderate correlation was found.

Correlations

		VAR011	VAR014
VAR011	Pearson Correlation	1.000	.495[a]
	Sig. (2-tailed)		.012
	N	25	25
VAR014	Pearson Correlation	.495[a]	1.000
	Sig. (2-tailed)	.012	
	N	25	25

a. Significant at .05 level

In the case of my results, 66% of participants answered that they have not actively searched for help/groups regarding their mental health status, makes sense that there was a correlation with “I have used social media to express my mental health status” as the majority of the participants 64% disagreed with the statement. I found a correlation moderate correlation of .660 with a p-value of .000 which

makes sense again when you think of the result. See figure 8 below for output. User's most likely wouldn't be searching for help/groups for mental health on social media if they weren't prepared to or haven't shared their mental health status in that way in the past.

Figure 8 - Results from Pearsons correlation test between questions M(VAR013) and P(VAR016). A moderate correlation was found.

		VAR013	VAR016
	N	25	25
VAR016	Pearson Correlation	.660[a]	1.000
	Sig. (2-tailed)	.000	
	N	25	25

a. Significant at .05 level

Based on the significance of this correlation, it would be safe to assume that those who had shared they're mental health status on social media would be more likely to search for groups to aid them with mental health recovery. This idea was showcased with the results of another correlation involving one of the questions in the previous correlation. When running a correlation test for questions O (My mental health has benefitted from sharing thoughts and feelings on social media) and P (I have actively searched for help/groups regarding my mental health on social media), a moderate association of .452 with a p-value of p.023 was found. The finding suggests that if users share their mental health status on social media, they are also more likely to have also searched for help/groups regarding mental health on social media. See figure 9 below for output.

Figure 9 - Results from Pearsons correlation test between questions O(VAR015) and P(VAR016). A moderate correlation was found.

Correlations

		VAR015	VAR016
VAR015	Pearson Correlation	1.000	.452[a]
	Sig. (2-tailed)		.023
	N	25	25
VAR016	Pearson Correlation	.452[a]	1.000
	Sig. (2-tailed)	.023	
	N	25	25

a. Significant at .05 level

I found it also interesting to think about questions individually from the survey. Simply looking at the percentages of certain responses in Figure 10 allows for some meaningful analysis as well in my opinion. For example, with regards to the question “My mental health has benefited from sharing my thoughts and feelings on social media”, 44% of respondents disagreed suggesting that they haven’t considered sharing this kind of sensitive information while another 44% answered neutral. I found this very significant that 88% of respondents showed some kind of hesitation in their expression of emotions. To me this is quite a shocking finding that the large majority of respondents don’t feel comfortable sharing with others. Perhaps this lack of confidence could be remedied by a way to post anonymously in specialized groups.

Figure 10 – Percentages of respondents for each answer on question O. Results show majority of respondents either disagreed or were unsure.

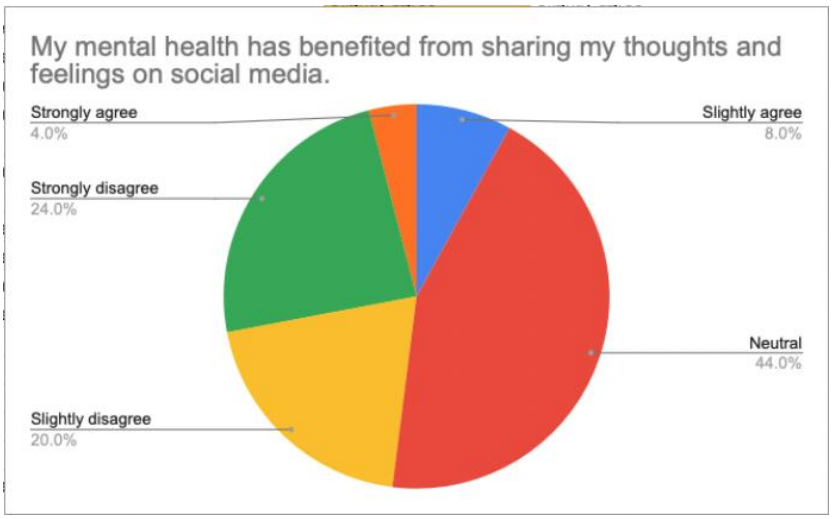
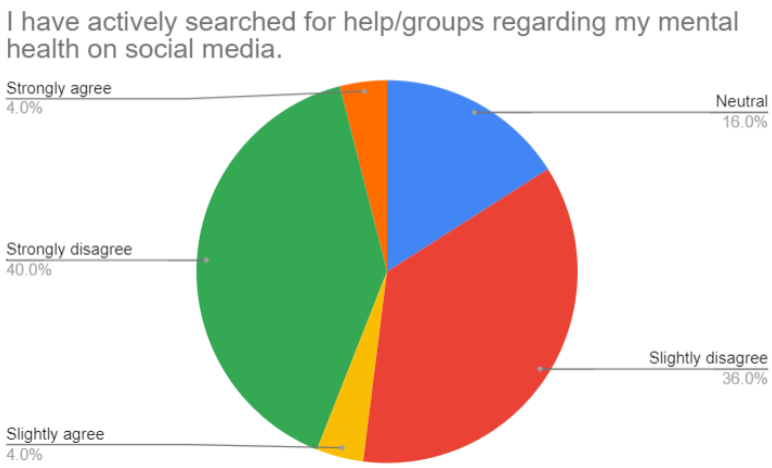


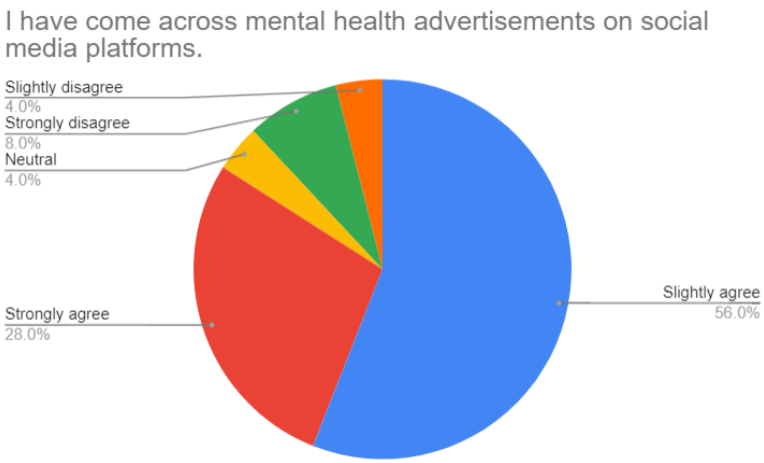
Figure 11 shows that 76% of respondents stated that they have never searched for help/groups regarding mental health on social media. This is in line with another set of questions where respondents answered that they primarily use social media for entertainment, communication and news. These results can suggest that either people are unaware of the popularity of peer-to-peer groups present online or they are too shy/embarrassed to take part. I interpret this result as a statement that the mental health stigma is still very much alive.

Figure 11 - Percentages of respondents for each answer on question P. Results show majority of respondents either disagreed or were unsure regarding searching for mental health resources on social media.



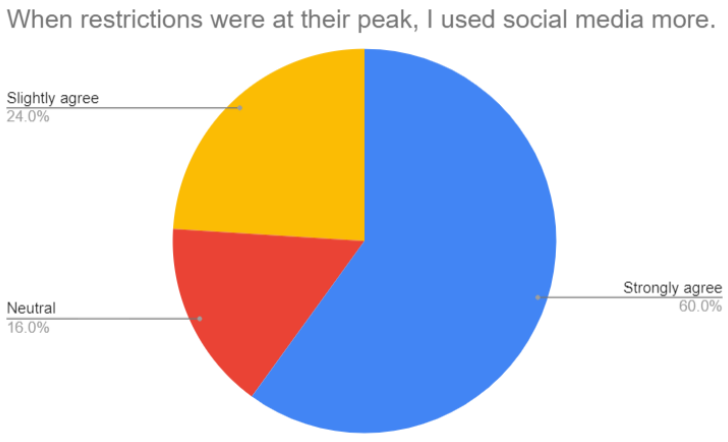
84% of the sample said they have come across mental health ads on social media platforms as shown in Figure 12. With that said, it appears that exposure is not the problem as to why mental health in a digital format isn't being taken advantage of. My idea is that if these ads were directed inwardly, directing users to the platforms they're already familiar with, this ease of access might be a key for successful recovery. It should also be noted that much of the ads regarding mental health seem to be informational in the sense where the resources are being discussed and praised, but direction might be blurry on how to get involved.

Figure 12 – This graph shows the heavy majority of respondents have come across mental health advertisements on social media.



To no surprise, 0% of respondents indicated that they used social media less when restrictions were at their peak (see figure 13 below). What this question does is just highlight the fact that users are already on the place there they're able to communicate with others. Having another goal of communication (mental health progress) would add a great deal of value to social media platforms by serving they're customers with an even more noble goal at heart.

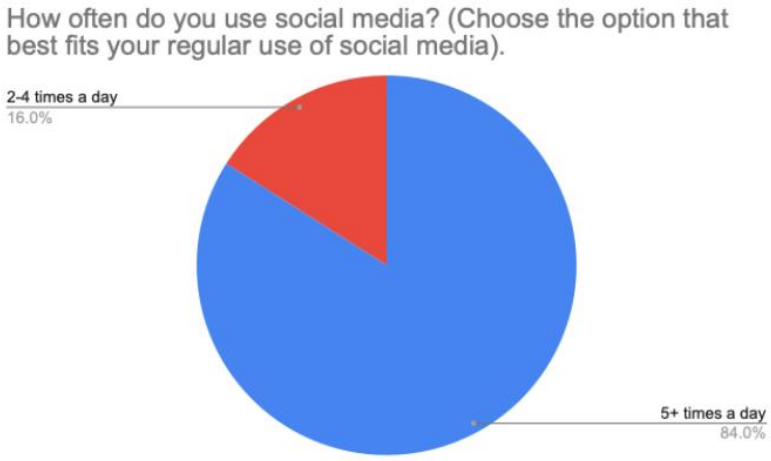
Figure 13 - Percentages of respondents for each answer on question J. Results show that 0 respondents said they used social media less during the pandemic.



Another telling result from my survey was the shear amount of time users spend on social media apps (see Figure 14 below). 84% of respondents indicated they use social media 5 or more times day

while the rest of the respondents use at least 2-4 times a day. This is significant because it means the opportunity is there for users to potentially take part in interactions that could help mental health outlook and healing by simply navigating elsewhere within the same website. This result can be interpreted as taking advantage of the ease of access and prior knowledge of how the platforms operate. In other words, positive transfer effects will take place with regards to the design, functionality and how to use the service because of prior knowledge. Consistency as a design principle would be taken advantage of users by them using the same platform they know how to function with already for a new task (mental health resources).

Figure 14 - Percentages of respondents for each answer on question E. Results show all respondents use social media at least 2-4 times a day, 84% of these claiming to use social media 5+ times a day.



Talk about how I'm drawing my knowledge from other courses. Talk about consistency as a design principle with regards to the website.