Student Mental Health Analysis

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The data for this analysis was collected to see if the pandemic worsened university students' mental health. This data was completed by 763 UK Undergraduate students using the 21 question Depression, Anxiety Stress Scale (DASS-21), see Toth, Faherty, and Raymond (2021) . This was done in Autumn over four years (2017-2020) by the School of Psychology at the University of Birmingham. There data can be found on this website. The DASS-21 survey can be found here

The questionnaire asks individuals whether a specific symptom was present over the past week, where the individual can responds with a 0 (did not apply to me at all over the last week) up to 3 (Applied to me very much or most of the time over the past week)

```
# showing the error in one of the data points
summary(StudentRawData$Question.19)
```

```
##    Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##  0.0000  0.0000  0.0000  0.5079  1.0000 11.0000
```

One value in question.19 takes value 11 which has been recorded in error. I will change it to 1.

```
# change this value to one
StudentRawData[642, 20] <- 1
# set gender as a factor variable
StudentRawData$gender <- factor(StudentRawData$gender)
# rename from gender to sex
StudentRawData <- StudentRawData %>%
    rename(sex = gender)
```

```
# data cleaning
levels(StudentRawData$sex) <- list(male = "male", female = "female", Other = "Other")
# create table to show the amount of missing data
NAs <- as.data.frame(colSums(is.na(StudentRawData)))
total <- nrow(StudentRawData)
NAs <- NAs %>%
    mutate(percNA = round(NAs/total * 100, 2))
# print nicely
kable(NAs, col.names = c("Number of NAs", "% NAs")) %>%
    kable_classic(full_width = F)
```

```
# cross table of sex and year
x <- table(StudentRawData$sex, StudentRawData$year)
# values which are na from the sex column over the four years
```

	Number of NAs	% NAs
ï..pp.number	0	0.00
Question.1	0	0.00
Question.2	0	0.00
Question.3	0	0.00
Question.4	0	0.00
Question.5	0	0.00
Question.6	0	0.00
Question.7	0	0.00
Question.8	0	0.00
Question.9	0	0.00
Question.10	0	0.00
Question.11	0	0.00
Question.12	0	0.00
Question.13	0	0.00
Question.14	0	0.00
Question.15	0	0.00
Question.16	0	0.00
Question.17	0	0.00
Question.18	0	0.00
Question.19	0	0.00
Question.20	0	0.00
Question.21	0	0.00
year	0	0.00
sex	91	11.94
age	0	0.00

Sex	Year			
	2017	2018	2019	2020
male	6	6	18	68
female	52	27	63	430
Other	0	0	0	1
NAs	89	0	0	2

```
NAs <- table(is.na(StudentRawData$sex), StudentRawData$year)[2, ]
table <- rbind(x, NAs)
kable(table) %>%
    add_header_above(c(Sex = 1, Year = 4)) %>%
    kable_classic(full_width = F)  #%>% save_kable(file = 'Studenttable_sexAndYear.png', zoom = 1.5)
```

```
# factor the age variable from numeric to factor with four levels
StudentRawData$age = cut(StudentRawData$age, breaks = c(0, 19, 20, 21, Inf), right = FALSE,
    labels = c("18 and under", "19", "20", "21 and over"))
# frequency table of the variable year
kable(t(xtabs(~year, data = StudentRawData)), caption = "Frequency table of number of data points withi
    kable_classic(latex_options = "HOLD_position")
```

Table 1: Frequency table of number of data points within each year

2017	2018	2019	2020
147	33	81	501

```
# frequency table of the variable sex
kable(t(xtabs(~sex, data = StudentRawData)), caption = "Frequency table showing how many males and femal
    kable_classic(latex_options = "HOLD_position")
```

Table 2: Frequency table showing how many males and females are in the dataset

male	female	Other
98	572	1

```
# frequency table of the variable age
kable(t(xtabs(~age, data = StudentRawData)), caption = "Frequency table showing ages in the dataset") %
    kable_classic(latex_options = "HOLD_position")
```

Table 3: Frequency table showing ages in the dataset

18 and under	19	20	21 and over
231	344	136	51

Table 1 is showing how many data points are given for each year. We can see that majority of the data points are from 2020 (66%). 2018 has the fewest points (4%)

Table 2 shows us there are almost six times as many females in this data set compared to males and 12% of the values are given as na. One reason for the significant different in male and female might be due to the stigma around men discussing their emotions and mental health. This could lead to less males willing to fill in this survey and led to a larger amount of female values.

Table 3 shows us that most of the ages are between 18-21 with some values above and 2 below. One value for age has been given as 0. I will remove this value from the data frame when using age.

The each question of the 21 questions is given to measure either depression, anxiety or stress. The questions are divided up as follows:

Depression: Questions 3, 5, 10, 13, 16, 17 and 21

Anxiety: Questions 2, 4, 7, 9, 15, 19 and 20

Stress: Questions 1, 6, 8, 11, 12, 14 and 18

I have added to the table the sums of these three scores below:

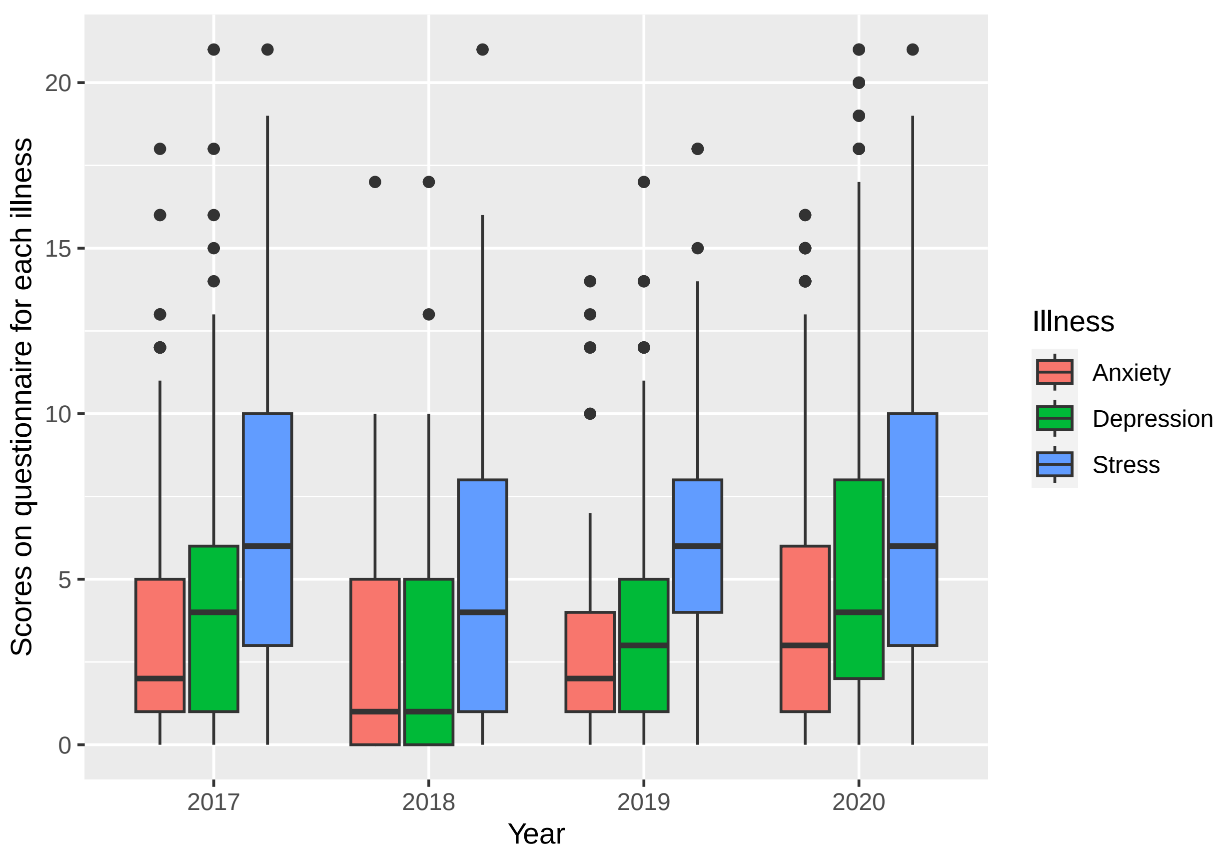
```
# calculating depression score by summing over the required questions
StudentRawData <- mutate(StudentRawData, DepressionScore = rowSums(dplyr::select(StudentRawData,
    Question.3, Question.5, Question.10, Question.13, Question.16, Question.17, Question.21)))

# calculating anxiety score by summing over the required questions
StudentRawData <- mutate(StudentRawData, AnxietyScore = rowSums(dplyr::select(StudentRawData,
    Question.2, Question.4, Question.7, Question.9, Question.15, Question.19, Question.20)))
```

```r
# calculating stress score by summing over the required questions
StudentRawData <- mutate(StudentRawData, StressScore = rowSums(dplyr::select(StudentRawData,
    Question.1, Question.6, Question.8, Question.11, Question.12, Question.14, Question.18)))
# for ease renaming the id column
names(StudentRawData)[names(StudentRawData) == "ï..pp.number"] <- "id"
```

Below I have plotted box plots for the three different scores for each year.

```r
# add the sums of depression, anxiety and stress scores to the data set
StudentData <- dplyr::select(StudentRawData, id, year, sex, age, DepressionScore,
    AnxietyScore, StressScore)
dasdf <- StudentData %>%
    pivot_longer(cols = c(DepressionScore, AnxietyScore, StressScore), names_to = "Type",
        values_to = "score")
# rename columns for ease of use
dasdf$Type[dasdf$Type == "AnxietyScore"] <- "Anxiety"
dasdf$Type[dasdf$Type == "DepressionScore"] <- "Depression"
dasdf$Type[dasdf$Type == "StressScore"] <- "Stress"
# create box plot of depression, anxiety and stress scores
ggplot(dasdf, aes(x = factor(year), y = score, fill = Type)) + geom_boxplot() + labs(x = "Year",
    y = "Scores on questionnaire for each illness") + scale_fill_discrete(name = "Illness")
```



What we can see as a general view for all the years is that people respond highest to stress questions, giving the highest average score, and least to anxiety questions having the lowest mean score.

2019 has less variation than the other years across all three scores, we would expect 2020 and 2017 to have high variation as there are more values, but 2018 also has a lot of variation despite having a small sample size.

For full details on the procedure to interpret the DASS-21 see Lovibond and Lovibond (1995)

This questionnaire (DASS-21) is a shortened version of the 42 question DASS. To interpret the results of the DASS-21, first multiply the scores for each section by 2 and use the following table:

```r
# create table to show how to interpret the DASS-21
interpret <- matrix(c("0-9", "10-13", "14-20", "21-27", "28+", "0-7", "8-9", "10-14",
    "15-19", "20+", "0-14", "15-18", "19-25", "26-33", "34+"), nrow = 5, dimnames = list(c("Normal",
    "Mild", "Moderate", "Severe", "Extremely Severe"), c("Depression Score", "Anxiety Score",
    "Stress Score")))
kable(interpret, align = "c") %>%
    kable_classic(latex_options = "HOLD_position", full_width = F)  #%>% save_kable(file = 'DASSInterpr
```

	Depression Score	Anxiety Score	Stress Score
Normal	0-9	0-7	0-14
Mild	10-13	8-9	15-18
Moderate	14-20	10-14	19-25
Severe	21-27	15-19	26-33
Extremely Severe	28+	20+	34+

I will add these interpretation to the table:

```r
# new column with scores multiplied by two
StudentData$DepressionType <- StudentData$DepressionScore * 2
StudentData$AnxietyType <- StudentData$AnxietyScore * 2
StudentData$StressType <- StudentData$StressScore * 2

# depression classifying based on the table above
StudentData$DepressionType = cut(StudentData$DepressionType, breaks = c(0, 10, 14,
    21, 28, 43), right = FALSE, labels = c("normal", "mild", "moderate", "severe",
    "extremely severe"))
StudentData$DepressionType <- as.factor(StudentData$DepressionType)

# anxiety classifying based on the table above
StudentData$AnxietyType = cut(StudentData$AnxietyType, breaks = c(0, 8, 10, 15, 20,
    43), right = FALSE, labels = c("normal", "mild", "moderate", "severe", "extremely severe"))
StudentData$AnxietyType <- as.factor(StudentData$AnxietyType)

# stress classifying based on the table above
StudentData$StressType = cut(StudentData$StressType, breaks = c(0, 15, 19, 26, 34,
    43), right = FALSE, labels = c("normal", "mild", "moderate", "severe", "extremely severe"))
StudentData$StressType <- as.factor(StudentData$StressType)
```

Here is what the data frame looks like now:

```r
# show the head of the dataframe to see what it looks like now
kable(head(StudentData), caption = "Head of the data frame") %>%
    kable_classic(latex_options = "HOLD_position")
```

Table 4: Head of the data frame

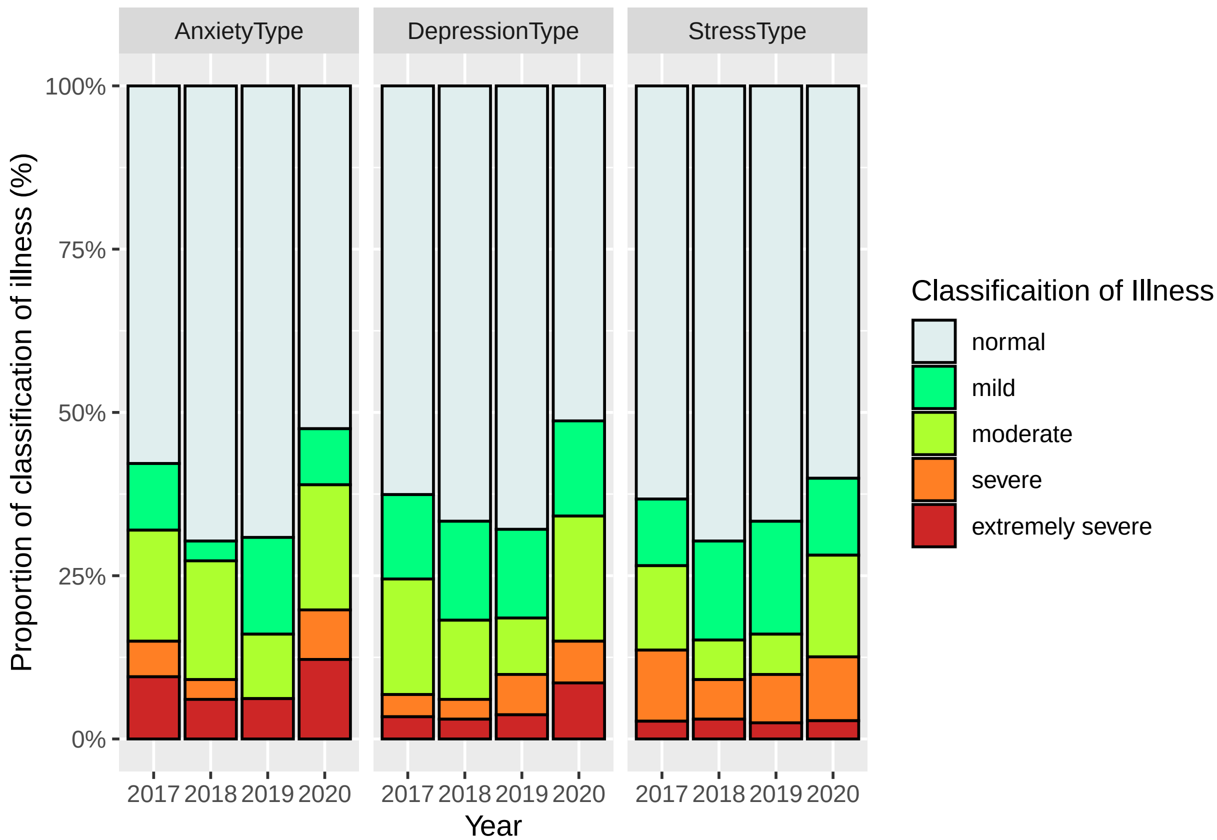
id	year	sex	age	DepressionScore	AnxietyScore	StressScore	DepressionType	AnxietyType
1	2020	male	19	13	9	12	severe	severe
2	2020	female	19	1	3	5	normal	normal
3	2020	female	19	3	2	1	normal	normal
4	2020	female	21 and over	4	3	6	normal	normal
5	2020	female	18 and under	7	10	14	moderate	extremely severe
6	2020	female	19	0	1	2	normal	normal

	Year			
	2017	2018	2019	2020
n	147	33	81	501
sex (%)				
male	6 (10.3)	6 (18.2)	18 (22.2)	68 (13.6)
female	52 (89.7)	27 (81.8)	63 (77.8)	430 (86.2)
Other	0 (0.0)	0 (0.0)	0 (0.0)	1 (0.2)
age (%)				
18 and under	34 (23.1)	12 (36.4)	16 (19.8)	169 (33.7)
19	73 (49.7)	13 (39.4)	33 (40.7)	225 (44.9)
20	32 (21.8)	4 (12.1)	22 (27.2)	78 (15.6)
21 and over	8 (5.4)	4 (12.1)	10 (12.3)	29 (5.8)
DepressionScore (mean (SD))	4.29 (3.98)	3.27 (4.30)	3.81 (3.87)	5.56 (4.82)
DepressionType - n (%)				
normal	92 (62.6)	22 (66.7)	55 (67.9)	257 (51.3)
mild	19 (12.9)	5 (15.2)	11 (13.6)	73 (14.6)
moderate	26 (17.7)	4 (12.1)	7 (8.6)	96 (19.2)
severe	5 (3.4)	1 (3.0)	5 (6.2)	32 (6.4)
extremely severe	5 (3.4)	1 (3.0)	3 (3.7)	43 (8.6)
AnxietyScore (mean (SD))	3.71 (3.87)	2.82 (3.88)	2.95 (3.12)	4.35 (3.78)
AnxietyType - n (%)				
normal	85 (57.8)	23 (69.7)	56 (69.1)	263 (52.5)
mild	15 (10.2)	1 (3.0)	12 (14.8)	43 (8.6)
moderate	25 (17.0)	6 (18.2)	8 (9.9)	96 (19.2)
severe	8 (5.4)	1 (3.0)	0 (0.0)	38 (7.6)
extremely severe	14 (9.5)	2 (6.1)	5 (6.2)	61 (12.2)
StressScore (mean (SD))	6.73 (4.64)	5.33 (5.02)	6.21 (4.08)	6.88 (4.57)
StressType - n (%)				
normal	93 (63.3)	23 (69.7)	54 (66.7)	301 (60.1)
mild	15 (10.2)	5 (15.2)	14 (17.3)	59 (11.8)
moderate	19 (12.9)	2 (6.1)	5 (6.2)	78 (15.6)
severe	16 (10.9)	2 (6.1)	6 (7.4)	49 (9.8)
extremely severe	4 (2.7)	1 (3.0)	2 (2.5)	14 (2.8)

```
#change the shape of the data set to be able to create the bar plot below by counting the different amo
dasdf <- StudentData %>% pivot_longer(cols = c(DepressionType, AnxietyType, StressType), names_to = "Ty
dasdf <-data.frame(table(dasdf$count, dasdf$Type, dasdf$year))

#barplot of classification of illnesses over 4 years
ggplot(dasdf, aes(x = Var3, y = Freq, fill = Var1)) +
  geom_col(colour = "black", position = "fill") +
```

```
    scale_y_continuous(labels = scales::percent) + # make sure to use proportions
      labs(x="Year", y="Proportion of classification of illness (%)") +
            facet_wrap(~ Var2) + #add some colours
  scale_fill_manual(values=c('azure2', 'springgreen1', 'greenyellow', 'chocolate1', 'firebrick3'), name
```



What we can see from the three plots is that there is a slight decrease in 'normal' cases of depression, anxiety and stress, meaning cases which are not normal have increased. We can also see that 2017 and 2020 had less normal cases compared to 2018 and 2019. This may be due to the fact there are less values in 2018 and 2019.

The increase in significant cases of stress from 2019 to 2020 is less compared to depression and anxiety.

	year			
	2017	2018	2019	2020
n	147	33	81	501
DepressionType - n (%)				
normal	92 (62.6)	22 (66.7)	55 (67.9)	257 (51.3)
mild	19 (12.9)	5 (15.2)	11 (13.6)	73 (14.6)
moderate	26 (17.7)	4 (12.1)	7 (8.6)	96 (19.2)
severe	5 (3.4)	1 (3.0)	5 (6.2)	32 (6.4)
extremely severe	5 (3.4)	1 (3.0)	3 (3.7)	43 (8.6)
AnxietyType - n (%)				
normal	85 (57.8)	23 (69.7)	56 (69.1)	263 (52.5)
mild	15 (10.2)	1 (3.0)	12 (14.8)	43 (8.6)
moderate	25 (17.0)	6 (18.2)	8 (9.9)	96 (19.2)
severe	8 (5.4)	1 (3.0)	0 (0.0)	38 (7.6)
extremely severe	14 (9.5)	2 (6.1)	5 (6.2)	61 (12.2)
StressType - n (%)				
normal	93 (63.3)	23 (69.7)	54 (66.7)	301 (60.1)
mild	15 (10.2)	5 (15.2)	14 (17.3)	59 (11.8)
moderate	19 (12.9)	2 (6.1)	5 (6.2)	78 (15.6)
severe	16 (10.9)	2 (6.1)	6 (7.4)	49 (9.8)
extremely severe	4 (2.7)	1 (3.0)	2 (2.5)	14 (2.8)

The table also confirm that there has been a reduction in normal cases of depression and anxiety from 2017 to 2020 (meaning an increase in more severe cases) but this is not the case with stress; severe and extremely severe (S&ES) cases of depression increase from 6.8% in 2017 to 15% in 2020. Similarly for anxiety, S&ES cases increased from 14.9% to 19.8% from 2017 to 2020. However E&ES cases of stress did not increase. Going from 13.6% to 12.6%, while having a dip to around 10% between 2018 and 2019.

Adding sex

Now I will look at the differences between sexes and the interpretation of scores. It is important to keep into consideration the fact there are many more female values than male values in the dataset. One possible reason for this is the stigma around men discussing their feelings and emotions. This means men are less likely to complete this survey as it has connotations with being weak. The large difference in the number of male and female responses, and the few number of male responses in general make it more difficult to come up with clear interpretations.

I have made sure to remove the 91 N/A values and the one 'other' values when using sex (which count for 12% of the data points) . It is important to note that all but two of the na values are from 2017.

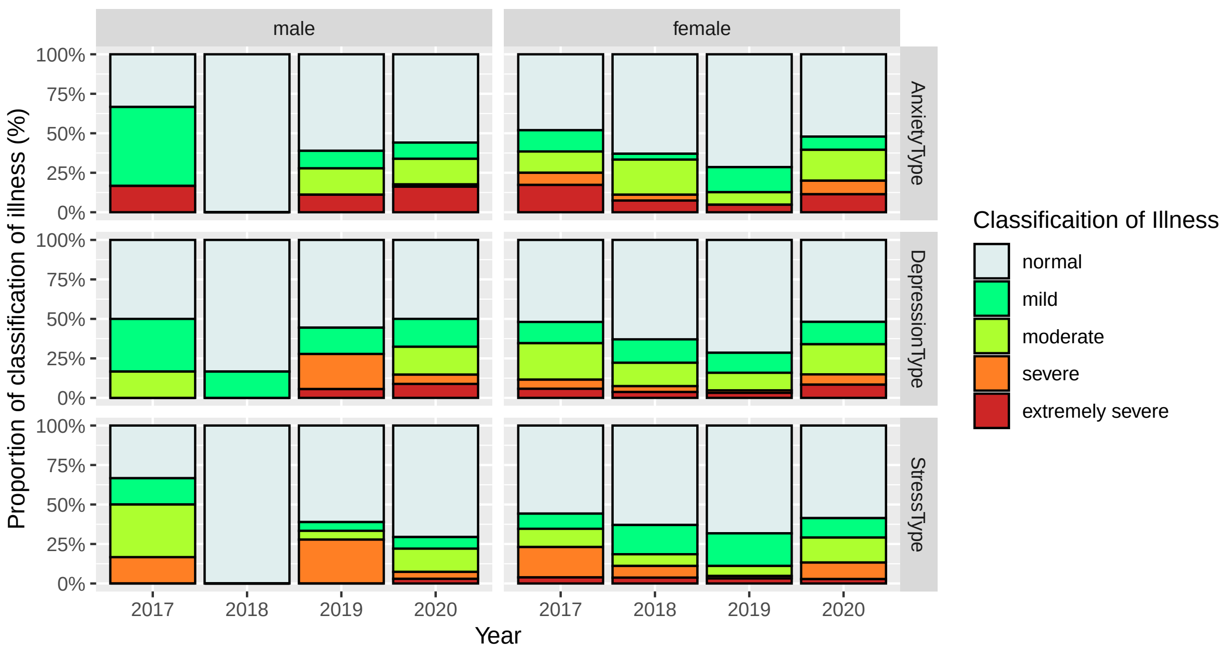
```
# Frequency table of gender and year
kable(table(StudentData$sex, StudentData$year), caption = "Frequency table of gender and year") %>%
    kable_classic(latex_options = "HOLD_position")
```

Table 5: Frequency table of gender and year

	2017	2018	2019	2020
male	6	6	18	68
female	52	27	63	430
Other	0	0	0	1

```
#removing 91 NA values and 1 'other' value
newStudentData <- StudentData
newStudentData <- droplevels(newStudentData[!newStudentData$sex == 'Other',])
newStudentData <- droplevels(newStudentData[!newStudentData$sex == 'N/A',])
#reshape the data set
dasdf <- newStudentData %>% pivot_longer(cols = c(DepressionType, AnxietyType, StressType), names_to =
dasdf <-data.frame(table(dasdf$count, dasdf$Type, dasdf$year, dasdf$sex))

ggplot(dasdf, aes(x = Var3, y = Freq, fill = Var1)) +
  geom_col(colour = "black", position = "fill") +
    scale_y_continuous(labels = scales::percent) +
      labs(x="Year", y="Proportion of classification of illness (%)", title = "") +
            facet_grid(Var2 ~ Var4) + # make sure to facet by sex and illness
  scale_fill_manual(values=c('azure2', 'springgreen1', 'greenyellow', 'chocolate1', 'firebrick3'), , nar
```



Depression: We can see that there is more variation from the years 2017-2019 for females compared to males. However for 2020, the distribution of depression is alike. It is difficult to look at the male group for the years 2017-2019 as there are so very few data points.

Anxiety: Above it is important to note that there was only one value for male 2018 which was classified as normal. For females we can see a increase in normal cases from 2017 to 2019 but then a large decrease showing more serious classifications of anxiety. We can see that males had more extremely severe cases of anxiety in 2020, but less severe cases compared to women.

Stress: The plot above shows us that the year 2017 had the most amount of serious cases for males and females.

Adding age

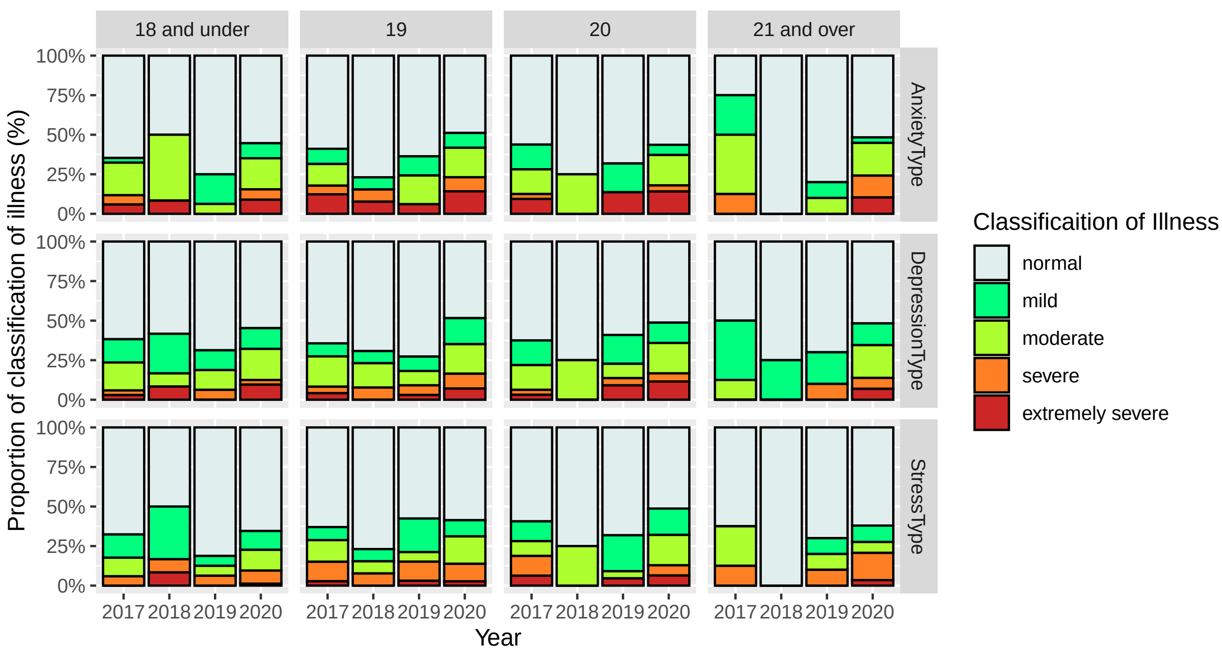
The reason to consider age is the fact that different aged university student would have different effects from the pandemic; if we assume that first years were aged 19 and under, and non-first years as ages 20 and above, we can decide if this has an effect students mental health. First years would have to have dealt with moving out and living alone for the first time for most people. Where as older students would have to have dealt with education disruption and online examinations.

I will factor the ages into groups, and group together the smaller extreme ages to reduce the number of factors.

There is one row where the age was given as 0. I have removed this for the figures and table below.

```
# removing one value with age as 0
StudentData <- StudentData[-475, ]
newStudentData <- StudentData
# reshape the data set
dasdf <- newStudentData %>%
    pivot_longer(cols = c(DepressionType, AnxietyType, StressType), names_to = "Type",
        values_to = "count")
dasdf <- data.frame(table(dasdf$count, dasdf$Type, dasdf$year, dasdf$age))

ggplot(dasdf, aes(x = Var3, y = Freq, fill = Var1)) + geom_col(colour = "black",
    position = "fill") + scale_y_continuous(labels = scales::percent) + labs(x = "Year",
    y = "Proportion of classification of illness (%)", title = "") + facet_grid(Var2 ~
    Var4) + scale_fill_manual(values = c("azure2", "springgreen1", "greenyellow",
    "chocolate1", "firebrick3"), , name = "Classificaition of Illness")
```



We can see that in 2020 there was a reduction in normal illnesses compared to previous years particularly with anxiety and depression. This can be seen for all ages but there is not a particular age group which has been significantly more affected than another.

Modelling

I will start with a linear model to see whether age and sex affect the scores received on the questionnaire. For this I will use the sum of respondents Depression, Anxiety and Stress score.

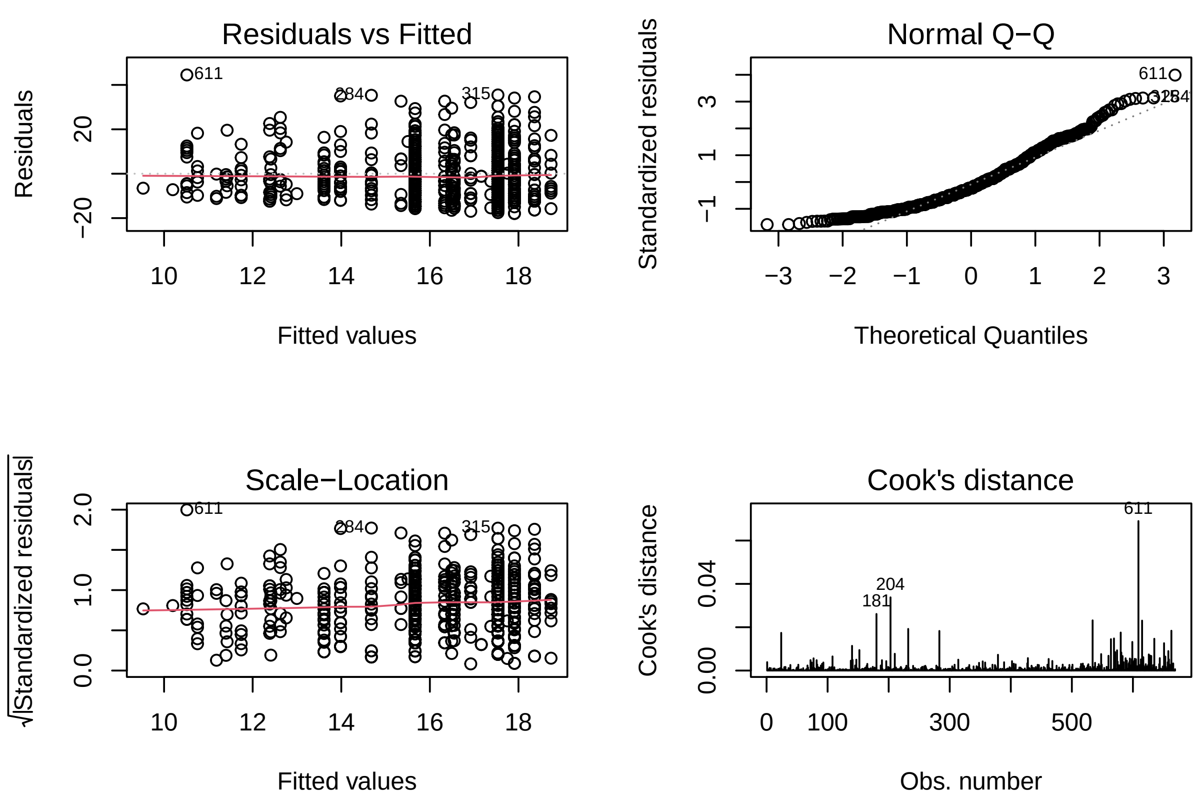
I have used the following linear model:

$$Y_i = \beta_0 + \beta_1 year_i + \beta_2 sex_i + \beta_3 age_i + \varepsilon_i$$

```
# cleaning the data leaving 667 values.
newStudentData <- StudentData
# remove the missing sex values and one other value
newStudentData <- droplevels(newStudentData[!newStudentData$sex == "Other", ])
newStudentData <- droplevels(newStudentData[!newStudentData$sex == "N/A", ])

newStudentData <- mutate(newStudentData, TotalScore = rowSums(dplyr::select(newStudentData,
    DepressionScore, AnxietyScore, StressScore)))
# set year as factor variable
newStudentData$year <- as.factor(newStudentData$year)
# set the year 2020 as the reference level
newStudentData$year <- relevel(newStudentData$year, ref = 4)

# create the linear model
lm1 <- lm(TotalScore ~ year + sex + age, data = newStudentData)
# plot the diagnostic plots
par(mfrow = c(2, 2))
plot(lm1, 1)
plot(lm1, 2)
plot(lm1, 3)
plot(lm1, 4)
```



```r
par(mfrow = c(1, 1))
# summary of linear model
summary(lm1)
```

```
##
## Call:
## lm(formula = TotalScore ~ year + sex + age, data = newStudentData)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -17.909  -8.666  -2.536   6.638  44.486
##
## Coefficients:
##                Estimate Std. Error t value Pr(>|t|)
## (Intercept)     14.6797     1.3719  10.700   <2e-16 ***
## year2017         0.8260     1.5756   0.524   0.6003
## year2018        -5.1522     2.0428  -2.522   0.0119 *
## year2019        -3.9252     1.3770  -2.850   0.0045 **
## sexfemale        0.9866     1.2485   0.790   0.4297
## age19            1.8699     1.0212   1.831   0.0675 .
## age20            2.2428     1.3284   1.688   0.0918 .
## age21 and over   0.6684     1.8793   0.356   0.7222
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 11.34 on 661 degrees of freedom
##   (91 observations deleted due to missingness)
## Multiple R-squared:  0.02882,    Adjusted R-squared:  0.01854
## F-statistic: 2.803 on 7 and 661 DF,  p-value: 0.007007
```

Looking at the plots above we can see that the residuals follow the straight line, hence we can assume homoscedasticity holds. The QQ plot shows us the the data is skewed compared to the normal distribution. The residuals vs leverage plot shows us that majority of the data points have very low leverage and would affect are coefficients much if they were removed. There are a few points with high residuals , but no points are close to the Cooks Distance.

One issue is the fact that we do not know if our data set includes the same individuals across the years 2017-2020. If this was the case, then our assumption of independence would be violated as previous years scores could affect future years for the same people.

Looking at the coefficients table we can see that there is evidence that individuals' scores would be lower in 2018 and 2019 compared to 2020, however there is insufficient evidence to suggest that scores were different in 2020 compared to 2017.

Looking at age we can see at a 5% significance level that there is significant evidence that ages 19 and 20 had higher scores on the questionnaire compared to individuals aged 18 and under. But there is not significant evidence to suggest that ages 21 and over had higher scores compared to individuals aged 18 and under.

```r
# summary of coefficients from linear model
table <- data.frame(coef(lm1), confint(lm1))

table %>%
    round(3) %>%
    kable(col.names = c("Coefficient Estimate", "CI 2.5%", "CI 97.5%")) %>%
    kable_classic(latex_options = "HOLD_position", full_width = F)  #%>% save_kable(file = 'DASCoeffici
```

	Coefficient Estimate	CI 2.5%	CI 97.5%
(Intercept)	14.680	11.986	17.374
year2017	0.826	-2.268	3.920
year2018	-5.152	-9.163	-1.141
year2019	-3.925	-6.629	-1.221
sexfemale	0.987	-1.465	3.438
age19	1.870	-0.135	3.875
age20	2.243	-0.366	4.851
age21 and over	0.668	-3.022	4.359

FOR THE APPENDIX:

```
# table for full DASS-21

dass <- matrix(c("I found it hard to wind down", "I was aware of dryness of my mouth",
    "I couldn't seem to experience any positive feeling at all", "I experienced breathing difficulty (e
    "I found it difficult to work up the initiative to do things", "I tended to over-react to situation
    " I experienced trembling (e.g. in the hands)", "I felt that I was using a lot of nervous energy",
    "I was worried about situations in which I might panic and make a fool of myself",
    "I felt that I had nothing to look forward to ", "I found myself getting agitated ",
    "I found it difficult to relax ", "I felt down-hearted and blue ", "I was intolerant of anything tha
    "I felt I was close to panic", " I was unable to become enthusiastic about anything",
    "I felt I wasn't worth much as a person ", " I felt that I was rather touchy ",
    "I was aware of the action of my heart in the absence of physical exertion (e.g. sense of heart rat
    "I felt scared without any good reason ", "I felt that life was meaningless",
    "Stress", "Anxiety", "Depression", "Anxiety", "Depression", "Stress", "Anxiety",
    "Stress", "Anxiety", "Depression", "Stress", "Stress", "Depression", "Stress",
    "Anxiety", "Depression", "Depression", "Stress", "Anxiety", "Anxiety", "Depression"),
    nrow = 21, dimnames = list(c("Question.1", "Question.2", "Question.3", "Question.4",
        "Question.5", "Question.6", "Question.7", "Question.8", "Question.9", "Question.10",
        "Question.11", "Question.12", "Question.13", "Question.14", "Question.15",
        "Question.16", "Question.17", "Question.18", "Question.19", "Question.20",
        "Question.21"), c("Symptom", "Illness")))

kable(dass, booktabs = TRUE) %>%
    kable_classic(latex_options = "HOLD_position", full_width = F, "striped") %>%
    column_spec(1, width = "1.3in") %>%
    row_spec(1:nrow(dass), extra_css = "padding: 10px")  #%>% save_kable(file = 'DASS21.png', zoom = 1)
```

	Symptom
Question.1	I found it hard to wind down
Question.2	I was aware of dryness of my mouth
Question.3	I couldn't seem to experience any positive feeling at all
Question.4	I experienced breathing difficulty (e.g. excessively rapid breathing, breathlessness in the absence o
Question.5	I found it difficult to work up the initiative to do things
Question.6	I tended to over-react to situations
Question.7	I experienced trembling (e.g. in the hands)
Question.8	I felt that I was using a lot of nervous energy
Question.9	I was worried about situations in which I might panic and make a fool of myself
Question.10	I felt that I had nothing to look forward to
Question.11	I found myself getting agitated
Question.12	I found it difficult to relax
Question.13	I felt down-hearted and blue
Question.14	I was intolerant of anything that kept me from getting on with what I was doing
Question.15	I felt I was close to panic
Question.16	I was unable to become enthusiastic about anything
Question.17	I felt I wasn't worth much as a person
Question.18	I felt that I was rather touchy
Question.19	I was aware of the action of my heart in the absence of physical exertion (e.g. sense of heart rate i
Question.20	I felt scared without any good reason
Question.21	I felt that life was meaningless

References

Lovibond, S. H., and Peter F. Lovibond. 1995. *Manual for the Depression Anxiety Stress Scales.* 2nd ed. sychology Foundation of Australia.

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