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The Impacts of the COVID-19 Pandemic on Higher Education Students in New Zealand

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Abstract

The coronavirus pandemic and associated move to online learning for students in higher education has been disruptive and challenging. We report on the New Zealand arm of an international survey of higher education students (n = 147). Using quantitative and qualitative data from the survey, we find that students coped reasonably well with the disruption to their studies and were generally satisfied with how their lecturers and institutions responded to unanticipated lockdowns. In comparison with the global sample, New Zealand students demonstrated a higher level of satisfaction. New Zealand students reported the highest satisfaction with recorded video lectures, whereas the global sample preferred real-time teaching. Many New Zealand students felt that their studies were negatively affected, and vulnerable groups such as students with low financial resources were the most severely affected. Moreover, students reported a range of negative emotions during lockdown that suggest mental health impacts may be a concern. Our results indicate that clear communication from authorities, reducing the uncertainty for students, and ensuring that vulnerable groups are appropriately supported, may be the best avenues to reduce negative impacts on students during future significant disruptions to study, whether pandemic-related or otherwise.

Keywords: COVID-19; lockdown; higher education; disruption; New Zealand

Introduction

In December 2019, a new disease labelled COVID-19 was detected in Wuhan, China (Chen et al., 2020). By January 2020, SARS-CoV-2 (the virus that causes COVID-19) had been confirmed and was already spreading worldwide (Pullano et al., 2020). The first case of COVID-19 was reported in New Zealand on 18 February 2020, and by 22 March, the number of confirmed cases was 66. Facing the prospect of a rapid increase in the number of coronavirus infections, as already seen in many other countries, the New Zealand government introduced a four-tier alert system on 21 March. New Zealand moved to Alert Level 3 on 23 March, and then to Alert Level 4 at 11:59 pm on 25 March.

Alert Levels 3 and 4 severely restricted the daily activities of people in New Zealand[1]. Under Alert Level 3, people were instructed to stay home other than for essential travel (for work, school if required, or limited recreation), physical distancing was required, gatherings were restricted to no more than ten people, and businesses could operate only if they could ensure they did so without close personal contact. Under Alert Level 4, all businesses and educational

[1] https://covid19.govt.nz/about-our-covid-19-response/history-of-the-covid-19-alert-system/#alert-levels

facilities were closed except for essential services (which included supermarkets, pharmacies, and petrol stations). New Zealand returned to Alert Level 3 on 27 April 2020, and by 8 June all restrictions had been lifted and the coronavirus had been effectively eliminated from the country. However, New Zealand's experience during April and May represents one of the strictest lockdowns worldwide (Baker et al., 2020).

Higher education institutions were severely affected by the lockdowns, with the change in alert levels (to Alert Level 4) being announced only weeks after the start of the first semester's teaching. Moreover, the Alert Level 3 restrictions were announced with only two days' notice, and higher education institutions responded by immediately cancelling in-person classes and replacing them with online classes. Assessment tasks that required in-person attendance on campus—such as tests, examinations, and laboratory sessions—could not proceed and had to be replaced with equivalent online assessments. In most instances, individual lecturers were left to determine how to adjust their classes to best meet learning objectives. While some support and guidance was available from the universities, the result was a mix of pedagogical approaches adapted at short notice to the online environment.

The rapid shift to online learning, along with the general upheaval of social and economic life, created significant disruption for higher education students. Students faced uncertainty about how their studies would be affected by the lockdown period, and most New Zealand universities responded by assuring students that their grades would not be adversely affected by the disruption (e.g., Owen, 2020; Wiltshire, 2020). For example, the University of Waikato applied "an automatic 'impaired performance' criteria across all students and comparing each student's grades from A Trimester 2020 to their average grades in 2019, or if they were a new student, comparing their grades to the paper average seen in previous years" (University of Waikato, 2020).

It's important to understand how these students were impacted by the pandemic and associated lockdowns and how they perceived the period of online learning. Although the coronavirus pandemic represents the first time in generations that university study has been significantly disrupted nationwide, it has been argued that pandemic diseases will be more common in future (e.g., Jain et al., 2018). The coronavirus pandemic itself is not yet over, and further outbreaks have led to localised lockdowns, including in Auckland in August 2020. Disruptions to teaching and learning may also occur at institutions due to natural disasters, such as the Christchurch earthquakes in 2010 and 2011 (Dohaney et al., 2020). Institutions and the government could benefit by having a greater understanding of how students adapted to their enforced online learning.

In this paper, we report on the New Zealand arm of an international study of the "Impact of the COVID-19 Pandemic on Life of Higher Education Students" (Aristovnik et al., 2020b). The global nature of the study means that we can compare students in New Zealand with their peers internationally, in terms of the immediate response to the pandemic and (where appropriate) lockdowns and online teaching and learning. The survey was conducted during a period in which New Zealand was in Level 3 lockdown, with no on-campus teaching and learning for university students. This was also the case for most of the international sample.

The international study has reported general findings elsewhere (see Aristovnik et al., 2020b), based on the full sample of over 30,000 students from 62 countries. Internationally, students were satisfied with the support of teaching staff during the pandemic but felt their workload had increased. They were concerned about their future professional careers and studying issues, and were feeling bored, anxious, and frustrated. We return to more detailed results from this international research later in the paper, and compare them with the New Zealand sample.

Our study is not the first to report on the impacts of the coronavirus pandemic on higher education students in New Zealand. Akuhata-Huntington (2020) surveyed Māori tertiary students and received 351 eligible responses from all eight universities. This qualitative study analysed data using mixed methods based on Mason Durie's model of Te Whare Tapa Whā (Durie, 1985). A range of issues were identified by the student respondents—including ICT accessibility and availability, greater financial stress and difficulty exercising, a stronger sense of disconnection, and sadness and isolation affecting mental health and wellbeing during lockdown. The research team felt that these effects were not isolated incidents during lockdown, rather that systemic inequities faced by Māori students in New Zealand universities were exacerbated during this time. Similarly, Akuhata-Huntington et al. (2020) outlined the experience of a Māori doctoral student resident in Australia. Taking a personal narrative perspective to represent student voice, the PhD. student presented a Māori response to COVID-19. Drawing on her interactions with a team of doctoral students, she highlighted a range of issues being experienced. These were consistent with Akuhata-Huntington's (2020) findings. The doctoral student emphasised the importance of her Māori values of family, community, and reliance on one another for care—and her personal faith (as opposed to institutional structures) as key to her coping with the consequences of COVID-19.

The international research literature on the impacts of the coronavirus pandemic on higher education students is growing. In particular, negative mental health impacts have been noted (Cao et al., 2020; Elmer et al., 2020; Paredes et al., 2021; Perz et al., 2020; Sundarasen et al., 2020), as well as impacts on students' financial and food security (Elmer et al., 2020; Owens et al., 2020), learning (Owusu-Fordjour et al., 2020), and student performance more broadly (Kamarianos et al., 2020; Gonzalez et al., 2020). In general, the literature concludes that building student resilience to challenges and adversity is important in the context of the pandemic (Bono et al., 2020; Liu et al., 2020; Ye et al., 2020), including through supportive processes and/or the provision of financial, logistical, technological, or psychological support where needed. Indeed, the importance of supporting resilience has been shown in other contexts (Fogarty-Perry, 2019; Fogarty-Perry & Seiuli, 2018; Southwick & Charney, 2012). Our paper contributes to this important evidence base by focusing on the experience of New Zealand students in comparison with a global sample.

The remainder of the paper is organised as follows. In the next section, we outline the data collection and analysis methods, both quantitative and qualitative. We then present the results of the quantitative analysis, followed by the qualitative analysis. Finally, we discuss the results in comparison with the global sample, and conclude the paper with some recommendations for government and higher education institutions.

Data and methods

As part of the international "Impact of the COVID-19 Pandemic on Life of Higher Education Students" project, a survey of New Zealand higher education students was undertaken. Respondents were recruited through an invitation to participate, which was distributed by their university. Although all eight New Zealand universities were invited to participate, only two (Victoria University of Wellington and the University of Waikato) agreed to do so. The online questionnaire was in English, and was common to all international cohorts of the study (see Aristovnik et al., 2020a for details). The survey included questions on the participants' demographic characteristics and academic life, whether they were studying from home, their social life, their emotional life, and their life circumstances. Most questions focused on the period of the pandemic at the time of the survey, while some questions asked retrospectively about the time before the pandemic (see Aristovnik et al., 2020a for details). A final open-ended qualitative question asked for respondents' "general views/words . . . of reflection on COVID-

19". The New Zealand arm of the study received ethics approval from the Waikato Management School Human Research Ethics Committee.

The survey was open from 5 May until 7 June 2020. New Zealand was in lockdown (Level 3 or Level 2) throughout that time, with no on-campus teaching or learning occurring. In total, 171 New Zealand respondents commenced the survey, and 147 respondents completed enough of the questionnaire (i.e., the demographic section plus at least six questions from the academic life section) to be included in the final sample for analysis. Overall, more than 31,000 respondents worldwide completed the survey, with 200 or more responses from each of 36 countries (Aristovnik et al., 2020b). New Zealand was the only country from the Oceania region to participate.

Given the relatively small sample size of 147 available for analysis, the quantitative analysis involved three steps. First, each outcome variable was tabulated, then statistical differences by each sociodemographic characteristic were tested in a univariate analysis. Each sociodemographic correlate achieving $p<0.1$ was then entered into a final multivariate regression model. Adjustments were not made for multiple hypothesis testing, so results in terms of statistical significance were treated with some caution where p-values were close to threshold for conventional statistical significance. Following the approach adopted in the international study (Aristovnik et al., 2020b), outcome variables that were measured as satisfaction (on a five-point Likert scale from "very dissatisfied" to "very satisfied") were treated as continuous variables for analysis. Outcome variables that were measured in terms of agreement (on a five-point Likert scale from "strongly disagree" to "strongly agree") were converted into binary variables with responses of "agree" and "strongly agree" coded as one, and zero otherwise. Linear probability regression models were preferred over logistic regression models for these variables, due to the ease of interpretation of the results. Because there was a small number of gender diverse students and students who were unwilling to give their gender, analysis by gender was conducted by comparing female students with all others. In all analyses, the base category for degree level was bachelor's degree, and the base category for field of study was Arts and Humanities. In analyses involving lost jobs, the sample is limited to respondents who reported having a job before the pandemic.

Table 1 Sociodemographic summary statistics

	New Zealand sample		Global sample
Variable	**Number**	**Percentage**	**Percentage**
Age			
Under 20	46	31.3	26.9
20–24	62	42.2	54.9
25–30	16	10.9	9.8
Over 30	23	15.7	8.4
Gender			
Male	37	25.2	34.4
Female	105	71.4	65.6
Gender diverse	3	2.0	Not reported
Prefer not to say	2	1.4	Not reported

Citizenship			
Domestic	130	88.4	94.1
International	17	11.6	5.9

Student status			
Full time	130	88.4	88.1
Part time	17	11.6	11.9

Level of study			
Bachelor's	111	75.5	80.5
Master's	28	19.1	14.8
Doctoral	8	5.4	4.7

Field of study			
Arts and humanities	16	11.0	10.2
Social sciences	103	70.6	37.0
Applied sciences	16	11.0	31.1
Natural and life sciences	11	7.5	21.7

Scholarship			
Yes	34	28.6	29.2
No	85	71.4	70.8

High ability to pay for studies			
Yes	63	52.5	52.6
No	57	47.5	47.4

Cancelled face-to-face classes			
Yes	122	83.0	86.7
No	7	4.8	13.3
Not applicable	18	12.2	Not reported

Moved home			
Yes	31	26.1	Not reported
No	88	73.9	Not reported

Lost job[a]			
Yes	17	21.5	61.7
No	62	78.5	38.3

Institution			
Victoria University of Wellington	51	34.7	N/A
University of Waikato	91	61.9	N/A
Other	5	3.4	N/A

[a] The denominator for students who lost their jobs is only those students who reported having a job before the pandemic.

Of the 147 valid responses to the survey, 80 respondents responded to the open-ended question "general views/words . . . of reflection on COVID-19" that was suitable for qualitative analysis. Of those, 71.3% were female, 87.5% were full-time students, 75% were bachelor's degree students, and 71.3% were social science students. Their average age was 25.5 years.

Drawing on Braun and Clarke's (2006) framework, the open-ended question responses were analysed thematically. First, we identified key words or ideas that were relevant to the higher education response to COVID-19 or the wider societal issues discussed in the media in terms of the lockdown and the pandemic. Using the key words and ideas identified in the first step, and taking account of points of similarity among responses, responses were coded into 15 key-word topics. Some responses were coded under several topics because of the multi-faceted nature of the answers. After each response had been allocated to an initial topic or topics, the responses were then re-coded in an iterative process to determine how often information relevant to the topics was located in each of the responses. This process resulted in some topics having more than 12 responses, while others had just one. The responses in dominant topics (six or more responses) were then re-read to further identify patterns and similarities within and across the answers.

The topics were then classified into the broader themes based on patterns of commonality determined by key words that evoked the value of collectivity and demonstrated emotive responses to the lockdown. From this process, three overarching themes were generated: collectivity, emotions, and higher education. The first two themes were complex and included a number of sub-themes. For the third theme, answers were clustered based on the way in which the respondents commented with specificity on higher education in light of their lockdown experiences. The sub-themes included under "collectivity" were reflective, general, gratitude, critical). Under "emotions" the sub-themes included depression and stress, general fears, fear of the unknown, fears for health, fear regarding the future/career/finances, balanced response, positive response, general stress, work/life/study balance. Under "higher education", responses were grouped into two sub-themes (negative views and balanced views).

Results

Satisfaction with online teaching and learning approaches

As noted in Table 1, 83% of respondents reported that their face-to-face classes had been cancelled. Other respondents presumably had no face-to-face classes because of the structure of their degree (such as being in a research-only degree), or interpreted the transfer of classes to an online environment as not constituting "cancellation" of classes. Respondents who answered that classes had been cancelled were asked a series of questions about changes in the teaching and learning environment (or academic life). The overall responses are summarised in Table 2, which also identifies the statistically significant sociodemographic correlates in each case. In terms of lectures, respondents were most satisfied with online video recordings (mean 3.80 on the 5-point satisfaction scale), followed by real-time video conferencing (3.58). These were also reported as the dominant forms of lectures during lockdown, with 67.8% of respondents reporting recorded videos and 23.1% reporting video conferencing as the dominant replacement for lectures.

Students who had lost their jobs had significantly higher satisfaction with recorded video lectures, while students with higher ability to pay had significantly higher satisfaction with lecture presentations that were sent directly to students. For tutorials, overall preferences were reversed, with respondents most satisfied with real-time video conferencing (3.69), followed by recorded video tutorials (3.57). Video conferencing was the dominant replacement for face-to-face tutorials, reported by 66.7% of respondents, followed by recorded video (17.1%). Students who had high ability to pay for their studies had significantly greater satisfaction with video-conferenced tutorials, students aged 25–30 (but not older) had significantly greater satisfaction with tutorial presentations sent directly to students, and all fields of study had significantly higher satisfaction with written tutorial forums and chats than students in arts and humanities.

Table 2 Satisfaction with online teaching and learning approaches

		Sociodemographic correlates	
Outcome	**Mean (SD) [global mean][a]**	**Univariate (coefficient)[b]**	**Multivariate (coefficient)[c]**
In place of face-to-face lectures, satisfaction with:			
Recorded video lectures	3.80 (1.04) [3.26]	Domestic (0.61*) Master's (-0.55**) High ability to pay (0.40*) Lost job (0.64***)	Lost job (0.66***)
Real time (video conferencing) lectures	3.58 (1.02) [3.30]	Age >30 (0.90***) Full-time (-0.58*)	-
Written forums, chat, etc.	3.31 (1.14) [3.14]	Full-time (-0.57*)	-
Lecture presentations sent to students	3.25 (1.22) [3.10]	Age 20–24 (-0.58**) Master's (0.54*) Social sciences (0.88*) High ability to pay (0.84**) Moved home (-0.89**)	High ability to pay (0.74**)
Recorded audio lectures	3.13 (1.22) [2.98]	-	-
In place of face-to-face tutorials, satisfaction with:			
Real time (video conferencing) tutorials	3.69 (1.13)	Social sciences (0.78*) Scholarship (0.44**) High ability to pay (0.49**)	High ability to pay (0.49**)
Recorded video tutorials	3.57 (1.01)	-	-
Written forums, chat, etc.	3.32 (1.19)	Social sciences (1.14***) Applied sciences (1.45***) Natural sciences (1.13**)	Social sciences (1.14***) Applied sciences (1.45***) Natural sciences (1.13**)
Recorded audio tutorials	3.12 (1.02)	-	-
Tutorial presentations sent to students	3.04 (1.05)	Age 25–30 (-0.95***) Full-time (-0.85**)	Age 25–30 (-0.95***)

[a] Global means are available only for satisfaction with lecture alternatives, and not for satisfaction with tutorial alternatives.

[b] Only statistically significant (at $p<0.1$) correlates are shown.

[c] Only statistically significant (at $p<0.05$) correlates are shown; * $p<0.1$; ** $p<0.05$; *** $p<0.01$.

Satisfaction with teaching and administrative support

Students' level of satisfaction with teaching and administrative support are summarised in Table 3. Students were more satisfied with lectures (3.76) than with supervision and mentorships (3.47) or tutorials, seminars, and practical classes (3.37). Students who had lost their jobs had significantly greater satisfaction with lectures, female students had significantly lower satisfaction with tutorials than male or other students, and full-time students had significantly lower satisfaction with supervision than part-time students. Students' level of satisfaction with support services was highest for teaching staff (3.96), tutors (3.74), and IT or technical support (3.74), and lowest for international offices (3.05) and finance and accounting (3.08). Students who had lost their jobs were significantly less satisfied with their institution's international office, and full-time students were significantly less satisfied with public relations than part-time students. Domestic students were significantly more satisfied with student counselling services than international students, and students who had moved home were significantly less satisfied than those who had not moved.

Table 3 Satisfaction with teaching and administrative support

		Sociodemographic correlates	
Outcome	**NZ mean (SD) [global mean][a]**	**Univariate (coefficient)[b]**	**Multivariate (coefficient)[c]**
Satisfaction with:			
Lectures	3.76 (1.06) [3.30]	Female (-0.48**) Social sciences (0.67*) Applied sciences (1.12***) Natural sciences (1.17**) Lost job (0.51**)	Applied sciences (0.96**) Natural sciences (1.10***) Lost job (0.55**)[d]
Supervisions and mentorships	3.47 (1.14) [3.20]	Full-time (-0.78**) Social sciences (1.63***) Applied sciences (2.20***) Natural sciences (1.25**) High ability to pay (0.63*)	Full-time (-0.71**) Social sciences (1.11***) Applied sciences (1.83***)
Tutorials, seminars, and practical classes	3.37 (1.17) [3.12]	Female (-0.75***) Social sciences (1.22***) Applied sciences (0.97**) High ability to pay (0.52**)	Female (-0.64**) Social sciences (0.89***)
Satisfaction with:			
Teaching staff	3.96 (0.91)	-	-
Tutors	3.74 (0.97)	Applied sciences (0.80*) Natural sciences (0.97**) High ability to pay (0.39*) Moved home (-0.51**)	-
Technical support and IT services	3.74 (1.00)	Age >30 (0.58*) Full-time (-0.53**)	-
Library	3.67 (1.09)	High ability to pay (0.48*)	-

Public relations (websites and social media)	3.65 (1.15)	Full-time (-0.82***)	Full-time (-0.82***)
Student affairs office	3.55 (1.08)	Master's (0.67**) Social sciences (0.95*) Applied sciences (1.13*) Natural sciences (1.33*)	-
Student counselling services	3.31 (1.11)	Domestic (1.44***) Full-time (-1.03***) Moved home (-0.83*)	Domestic (1.02**) Moved home (-0.89**)
Finance and accounting	3.08 (1.18)	Age >30 (1.08*) Social sciences (1.11*) Moved home (-0.99**)	-
International office	3.05 (1.28)	Age >30 (2.13***) Lost job (2.57***)	Lost job (2.67**)

[a] Global means are available only for satisfaction with teaching, and not for satisfaction with administrative support.

[b] Only statistically significant (at $p<0.1$) correlates are shown.

[c] Only statistically significant (at $p<0.05$) correlates are shown.

[d] When lost job was included as a covariate, no other correlate was statistically significant at $p<0.05$; * $p<0.1$; ** $p<0.05$; *** $p<0.01$.

Academic work and the academic environment

Respondents' agreement with statements about their academic work and the academic environment during the pandemic are summarised in Table 4. A majority of respondents agreed or strongly agreed with statements about their lecturers' activities during the pandemic. The lowest level of agreement (61.5%) was with lecturers being open to students' suggestions. Arts and humanities students showed the lowest level of agreement about whether lecturers had responded to their questions in a timely manner. Many students (74.5%) agreed that it was more difficult to focus on their studies, although this was statistically significant among students who had high ability to pay for their studies. A majority (53.5%) agreed that their performance as a student had worsened, while 22.8% agreed that their performance had improved. Students with high ability to pay were both statistically significantly more likely to say their performance had improved, and less likely to say it had worsened. Students were also obviously concerned about their ability to master the classwork and skills, but again this was of less concern for students with high ability to pay. Workload was also an issue—59.8% of students noted that their study workload was larger or significantly larger, while just 10.3% noted that it was smaller or significantly smaller. There were no robust sociodemographic correlates with workload, suggesting that all students experienced similar changes in workload during the pandemic.

Table 4 Academic work and the academic environment

		Sociodemographic correlates	
Statement: My lecturers…	**% agree or strongly agree**	**Univariate (coefficient)[a]**	**Multivariate (coefficient)[b]**
. . . have provided course assignments (e.g., readings, homework, quizzes) on a regular basis.	84.9	Female (-0.12*)	-
. . . have responded to my questions in a timely manner.	78.2	Age 20–24 (-0.19*) Female (-0.17**) Social sciences (0.45***) Applied sciences (0.55***)	Social sciences (0.36**) Applied sciences (0.46**)

		Natural sciences (0.51**) Scholarship (0.17**)	Natural sciences (0.51***) Scholarship (0.18**)
. . . have informed me on what exams will look like in this new situation.	77.7	High ability to pay (0.16*)	-
. . . have provided feedback on my performance on given assignments.	63.5	-	-
. . . have been open to students' suggestions and adjustments of online classes.	61.5	-	-

Statement			
It is more difficult for me to focus during online teaching in comparison to on-site teaching.	74.5	Age 25–30 (-0.39**) High ability to pay (-0.22***)	Age 25–30 (-0.44***) High ability to pay (-0.24***)
My performance as a student has worsened since on-site classes were cancelled.	53.5	Age 25–30 (-0.40***) High ability to pay (-0.18*) Moved home (0.19*)	Age 25–30 (-0.46***) High ability to pay (-0.21**)
I have adapted well to the new teaching and learning experience.	47.6	Age 25–30 (-0.29*)	-
I can master the skills taught in class this year even though on-site classes were cancelled.	44.6	Age 25–30 (0.35**) Age >30 (0.27*) Full-time (-0.25*) High ability to pay (0.29***)	Age 25–30 (0.43***) High ability to pay (0.32***)
I can figure out how to do the most difficult classwork since on-site classes were cancelled.	34.0	Age 25–30 (0.51***) Age >30 (0.46***) Full-time (-0.28*) Master's (0.26*) High ability to pay (0.19**) Lost job (0.28*)	Age 25–30 (0.56***) Age >30 (0.43**) High ability to pay (0.23**)[c]
My performance as a student has improved since on-site classes were cancelled.	22.8	Age >30 (-0.22**) Female (-0.21**) Natural sciences (0.41**) High ability to pay (0.29***)	High ability to pay (0.28***)
Workload (larger or significantly larger = 1)	59.8	Age 25–30 (-0.39***)	-

[a] Only statistically significant (at $p<0.1$) correlates are shown.

[b] Only statistically significant (at $p<0.05$) correlates are shown.

[c] When lost job was included as a covariate, age >30 was no longer statistically significant at $p<0.05$; * $p<0.1$; ** $p<0.05$; *** $p<0.01$.

Studying from home

Table 5 summarises respondents' access to the resources and infrastructure necessary for studying from home, and their confidence with activities associated with online learning. Respondents had high levels of access to most resources and infrastructure, but only 53.5% reported often or always having access to a quiet place to study. Importantly, only 70.0%

reported having access to a good internet connection. In both cases, students who had moved home since the pandemic started were less likely to have access. Respondents reported a high level of confidence with online learning activities, with the exception of applying advanced settings to software and programs (44.0%).

Table 5 Studying from home

		Sociodemographic correlates	
Often or always have access to:	**%**	**Univariate (coefficient)[a]**	**Multivariate (coefficient)[b]**
A computer	96.0	Domestic (-0.04**) Scholarship (0.06**)	Scholarship (0.06**)
Office supplies (e.g., notebooks, pens)	92.1	-	-
Webcam	91.1	Age 20–24 (-0.11*) Full-time (-0.10***)	-
Headphones and microphone	89.1	Female (-0.10*) Domestic (-0.12***) Applied sciences (0.27**)	Domestic (-0.09**)
Required software and programs	86.1	Full-time (-0.16***) Social sciences (0.27*) Lost job (-0.28**)	Full-time (-0.14***)[c]
A desk	72.0	Master's (0.20**) Applied sciences (0.36**) Scholarship (0.17*)	Scholarship (0.19**)
Course study materials (e.g., course readings)	70.3	Age >30 (0.21*) Social sciences (0.46***) Applied sciences (0.64***) Natural sciences (0.48**)	Social sciences (0.44***) Applied sciences (0.65***) Natural sciences (0.49**)
A good internet connection	70.0	Age 25–30 (0.22*) Domestic (-0.21*) Social sciences (0.44***) Applied sciences (0.64***) Natural sciences (0.60***) Moved home (-0.35***)	Social sciences (0.40***) Applied sciences (0.59***) Natural sciences (0.52***); Moved home (-0.30***)
A quiet place to study	53.5	Age 20–24 (-0.22*) Female (-0.27**) Applied sciences (0.55***) Moved home (-0.24**)	Moved home (-0.25**)
A printer	44.6	Domestic (0.37***)	Domestic (0.37***)

Statement: I am confident in . . .	**% agree or strongly agree**	**Univariate (coefficient)[a]**	**Multivariate (coefficient)[b]**
. . . using online communication platforms (email, messaging, etc.)	97.0	Female (-0.04*) Full-time (-0.03*) Masters (0.04*) Social sciences (-0.04*)	-
. . . browsing online information	92.1	Age 25–30 (-0.16**)	Age 25–30 (-0.15**)

		Age >30 (-0.16**) Full-time (-0.09***) Master's (0.10***)	
. . . online teaching platforms (e.g., Moodle, Blackboard)	90.1	Female (-0.09*)	-
. . . sharing digital content	86.1	Age 25–30 (-0.19***) Master's (0.17***) Natural sciences (0.27**)	Master's (0.18**)
. . . using online collaboration platforms (Zoom, MS Teams, Skype, etc.)	86.1	Age 25–30 (-0.13**) Natural sciences (0.27**)	-
. . . using software and programs required for my studies	76.2	Age 25–30 (0.28***); High ability to pay (0.16*); Moved home (-0.27**)	Age 25–30 (0.31***) Moved home (-0.22**)
. . . applying advanced settings to some software and programs.	44.0	Age 25–30 (0.29*) Age >30 (0.33**) Female (-0.21*) Social sciences (0.37***) Applied sciences (0.64***) High ability to pay (0.25**) Moved home (-0.35***)	Social sciences (0.23**) Applied sciences (0.45***) Moved home (-0.24**)

[a] Only statistically significant (at $p<0.1$) correlates are shown.

[b] Only statistically significant (at $p<0.05$) correlates are shown.

[c] When lost job was included as a covariate, full-time study was no longer statistically significant at $p<0.05$; * $p<0.1$; ** $p<0.05$; *** $p<0.01$.

Emotions experienced while studying during the pandemic

Finally, Table 6 summarises the emotional experience of respondents while studying during the pandemic. Respondents reported low levels of positive emotions including often or always feeling joyful (15.7%), proud (20.0%), or hopeful (25.6%). They reported high levels of negative emotions including often or always feeling frustrated (66.1%), anxious (64.5%), or bored (46.3%). Female respondents were statistically significantly more likely to report feeling frustrated or anxious, and significantly less likely to report feeling proud. Full-time students were statistically significantly more likely to report feeling hopeless than part-time students. Older students (aged over 30) were statistically significantly less likely to report feeling anxious, hopeless, or bored.

Table 6 Emotions experienced while studying during the pandemic

		Sociodemographic correlates	
Often or always feel:	**%**	**Univariate (coefficient)[a]**	**Multivariate (coefficient)[b]**
Frustrated	66.1	Female (0.33***)	Female (0.33***)
Anxious	64.5	Age>30 (-0.50***) Female (0.30***) Doctoral (-0.30*) Social sciences (-0.28***) Applied sciences (-0.27*) High ability to pay (-0.17*)	Age>30 (-0.48***) Female (0.25**)
Bored	46.3	Age>30 (-0.37***) Moved home (0.24**)	Age>30 (-0.33**)
Hopeless	27.3	Age>30 (-0.32***) Full-time (0.31***)	Age>30 (-0.28***) Full-time (0.15***)

		High ability to pay (-0.14*) Moved home (-0.35***)	
Hopeful	25.6	Female (-0.18*) Social sciences (0.26***) High ability to pay (0.16**)	-
Angry	22.3	Age>30 (-0.18**) Moved home (0.17*)	-
Proud	20.0	Female (-0.22**) Doctoral (-0.22***) High ability to pay (0.15**)	Female (-0.20**) Doctoral (-0.23***)
Relieved	17.4	Social sciences (0.19***) Applied sciences (0.20*)	Social sciences (0.19***)
Joyful	15.7	Female (-0.18**) Doctoral (-0.18***) High ability to pay (0.13**)	Doctoral (-0.18***)
Ashamed	12.4	-	-

[a] Only statistically significant (at $p<0.1$) correlates are shown.

[b] Only statistically significant (at $p<0.05$) correlates are shown; * $p<0.1$; ** $p<0.05$; *** $p<0.01$.

Qualitative analysis

As outlined in the methods section, three overarching themes (collectivity, emotions, and higher education) were identified, and these included several sub-themes: collectivity (reflective, general, gratitude, criticism); emotions (depression and stress, general fears, fear of the unknown, fears for health, fear regarding the future/career/finances, balanced response, positive response, general stress, work/life/study balance); and higher education (negative views, balanced views). The responses were clustered under each relevant sub-theme, with some responses applying to a range of themes. For example, the following quote fits with collectivity (reflective and gratitude), emotions (stress and balanced) and higher education (negative):

> I think it has been significantly challenging for all involved. It may seem like life for students did not change that much but online learning has its own challenges. These include trying to stay motivated and connect with other students for compulsory group assignments. The majority of group members are fine but there is definitely a lack of communication and assessment input from certain group members. I feel we as a nation and government have dealt well with the situation by understanding the importance of lockdown and having clear guidelines to follow. (Female, Bachelor's degree, Social Sciences, age 40).

The multi-faceted nature of this response indicates that students responded to the open-ended question in a variety of ways. Some combined insights on the personal effect of the lockdown with their more general views. However, many students chose to respond to the question from a more subjective perspective, homing in on their individual response to the crises. Some provided single word responses, evoking specific emotions that they were presumably feeling or had felt, while others provided only slightly more detail regarding their personal struggles:

> Depressing. (Female, Bachelor's degree, Applied Sciences, age 19)

> Not into it. (Gender diverse, Bachelor's degree, Natural Sciences, age 24)

> Stressful, life changing. (Female, Bachelor's degree, Social Sciences, age 21)

> Highly stressful and demotivating. (Female, Bachelor's degree, Natural and Life Sciences, age 20)

> Stressful and lonely. (Female, Master's, Social Sciences, age 22)

> Scary and worrying. (Male, Master's, Social Sciences, age 45)
>
> Disaster. (Male, Master's, Social Sciences, age 35)

The strongest thematic aspect was the number of comments that expressed different types of emotional responses to COVID 19 or the lockdown, such as those above. Many comments focused on negative responses to the pandemic, such as:

> This pandemic really affected my studies this year. It has been a bit stressful adjusting to the changes but I know we are social distancing for a good reason. (Female, Bachelor's degree, Social Sciences, age 18)

Fear, including fear of the unknown or fear for the future, was a common emotion.

For example:

> Alien, stressful, unreal threat. (Female, Bachelor's degree, Social Sciences, age 25)
>
> It's all been quite unknown. (Female, Bachelor's degree, Social Sciences, age 18)
>
> Has been incredibly stressful financially and also in terms of future life prospects regarding work, study and travel in particular. (Female, Bachelor's degree, Social Sciences, age 20).

Given the high response rate of women to the open-ended question, challenges resulting from having to balance study with other "shifts" (Sarkisian & Gerstel 2012) were also a common refrain. For example:

> COVID-19 has been difficult to adjust to and will take a while longer to adjust to. A lot of other things have impacted my ability to truly focus on my studies during this time too. (Female, Bachelor's degree, Social Sciences, age 20)
>
> It has been very challenging trying to manage working from home, study, children and home-schooling. My children couldn't leave the house and I couldn't even take refuge in my room to work. My toddler would camp outside the door crying. The first 3 weeks of lockdown were horrible. I cried every day and felt like a terrible parent, student and employee. Now that we are at level 2, I am happy to see people out and about smiling and working. It was an uplifting experience finally leaving the house after 5 weeks and seeing so many smiling also mixed bag. (Female, Master's, Social Science, age 34)

As the second comment above illustrates, there were also comments that expressed hope, or were overwhelmingly positive. In terms of the latter:

> Enjoyed the time with family and working from home. Introverts dream! (Female, Bachelor's degree, Applied Science, age 36).

There were also responses that sought to balance the negative comments, indicating a desire for resilience. For example:

> It's been shit, but I'm lucky to be in the country that am in. (Prefer not to say, Bachelor's degree, Arts and Humanities, age 22).

Significantly though, the majority of responses mirrored wider discussions in the media, such as singling out the good fortune of New Zealand due to the government and/or the leadership of Jacinda Ardern, as key factors in ensuring the safety of the nation. For example:

> The government, institutions, and citizens of my country have responded very well, but I can't speak for other countries. (Male, Bachelor's degree, Applied Sciences, age 27)

> The lockdown has been an eye-opening experience and has shaken my lifestyle greatly, but we will all get through it. I'm glad the government set out these measures to ensure that the virus did not spread more rapidly throughout NZ. (Female, Bachelor's degree, Social Sciences, age 23).

In contrast, three responses mirrored negative discussions in the media; two positioned the government's response as being over the top and one endorsed the view that COVID is the product of conspiracy theories. For example:

> Millions more will suffer from unemployment, debt, loss of homes, loss of their businesses than would have died from this hyped-up flu. Graduates will be suffering for the next 10 years because of governmental decisions for a flu that kills less people than cancer and other medical conditions based on worse case modelling. It is an absolute disgrace and my heart breaks for everyone that is going to be affected for the next 10 years . . . General view an absolute hoax. (Female, Bachelor's degree, Applied Sciences, age 23)

Finally, some of the comments focused on respondents' personal experiences of higher education during the lockdown period. These comments were relatively negative in orientation, such as:

> I am a mother of three and my husband also is studying. There was very little consideration and help given from the university and the government for people in our situation and it was disappointing. These last couple of months have been so hard emotionally and mentally. My university said all the right things but there was very little follow through or action. (Female, Bachelor's degree, Social Sciences, age 29)

> I think it has been significantly challenging for all involved. It may seem like life for students did not change that much but online learning has its own challenges. These include trying to stay motivated and connect with other students for compulsory group assignments. The majority of group members are fine but there is definitely a lack of communication and assessment input from certain group members. I feel we as a nation and government have dealt well with the situation by understanding the importance of lockdown and having clear guidelines to follow. (Female, Bachelor's degree, Social Sciences, age 40)

Overall, the qualitative comments reinforce the challenges identified in the quantitative analysis, particularly the strong emotional response of respondents. There is also much in common with the extant literature in terms of identifying the lockdown as a difficult and fearful experience. For example, respondents acknowledged that their support networks (families and friends) were key to coping with the challenges posed by the lockdown and the shift to online learning, resonating with the views in Akuhata-Huntington (2020).

Discussion

New Zealand has been fortunate in terms of the limited impact of the coronavirus pandemic to date, in comparison to other countries. At the time our survey was undertaken, there had been few cases or deaths, although New Zealand spent several weeks in Level 4 lockdown. The biggest impact on students in New Zealand and globally has been the cancellation of face-to-face classes with, in most cases, a variety of online options (either synchronous or asynchronous) replacing them.

New Zealand students on the whole were quite satisfied with the change in the nature of teaching and learning to the online environment, and were more satisfied than students from other world regions (Aristovnik et al., 2020b). However, not all alternative teaching approaches were rated equally, and New Zealand students reported highest satisfaction with recorded video lectures and real-time (video-conferenced) tutorials. In contrast, in the global sample real-time teaching received the highest satisfaction rating for both lectures and tutorials (although in general,

satisfaction was lower with all alternative teaching practices in the global sample compared with the New Zealand sample; refer to Table 2).

Student preferences and satisfaction may depend on the modes they have been exposed to. In the New Zealand sample, video recording was the dominant mode for replacing lectures, reported by 67.8% of respondents, compared with just 11.6% globally. Asynchronous recorded lectures offer flexibility for students to study at a time and pace that suits their needs and aspirations. However, that comes with a trade-off of the loss of in-class interaction. The improved opportunities for interaction with lecturers and other students in a smaller synchronous group setting such as a tutorial may explain students' higher satisfaction with synchronous video in that setting.

New Zealand students also showed a higher level of satisfaction with teaching and administrative support than the global sample, but they ranked the support services similarly to the ranking in the global sample (Table 3). Lectures received the highest satisfaction scores and tutorials the lowest. Students were most satisfied with teaching staff and least satisfied with finance and accounting, and the international office. These differences may simply reflect that New Zealand was less affected by the pandemic than other countries. Nevertheless, the impact on student finances due to lockdowns and reduced financial security in spite of generous wage subsidies for those whose part-time jobs were furloughed (e.g., hospitality workers), and the uncertainty around international travel and student visa holders, may have contributed to lower student satisfaction with those areas of the universities. Student counselling services also received a relatively low satisfaction rating, which might be problematic given the potential mental health impacts of the pandemic and associated lockdown (Cao et al., 2020; Elmer et al., 2020; Paredes et al., 2021; Perz et al., 2020; Sundarasen et al., 2020).

Respondents generally agreed that lecturers are directing academic work appropriately. However, only 61.5% agreed that lecturers had been open to students' suggestions in relation to online classes. The transition to teaching online was abrupt, with little time for lecturers to engage in the typical preparation; nor was there sufficient time to engage in a high degree of consultation with students over the necessary changes to course delivery and assessment. Nevertheless, New Zealand performed substantially better across these dimensions than other countries in the global sample (see Table 2 in Aristovnik et al., 2020b).

Students clearly faced difficulties with the transition to online learning, with many agreeing that it is more difficult to concentrate, and that their performance as a student had worsened. This was true of the global sample as well as the New Zealand sample. Moreover, over half of New Zealand students (59.8%) believed that their academic workload was larger or significantly larger than before. This was substantially higher than the 42.6% in the global sample, which may be cause for concern. A higher academic workload increases pressure on students, which may be particularly damaging in a period of substantial upheaval and uncertainty. This may also explain the large number of answers to the open-ended question that focused on negative emotional responses.

Respondents generally had access to the resources they needed to study from home, and expressed confidence in using the digital tools necessary for online study. The main exception was having a quiet place to study, which was reported by just 53.5% of respondents. This was similar to the "almost half" of respondents in the global sample (Aristovnik et al., 2020b, p. 24). When combined with higher workload, the lack of a quiet study space creates anxiety and exacerbates any workload pressures and learning challenges that students are facing. A good internet connection is an essential prerequisite for online study, but this was reported by just 70% of respondents. However, this was higher than the global sample, where only 59.9% of students had access to a good internet connection often or always. This result is similar to that described

by Akuhata-Huntington (2020), who found nearly a quarter of Māori students reported lacking a good internet connection.

Respondents demonstrated a higher propensity to experience negative emotions during the pandemic, including frustration, anxiety, and boredom. New Zealand students were substantially more frustrated than students from other countries (66.1% vs. 39.1%), and more anxious (64.5% vs. 39.8%). They were also less hopeful (25.6% vs. 39.4%) and less joyful (15.7% vs. 29.7%). While we cannot know from our data how the emotional experience of students compares with the time before the pandemic, these results are nevertheless concerning, and are similar to those reported in the Life Under Lockdown survey of the general population (Prickett et al., 2020). That survey found that young people (aged under 25 years) were more likely than older people to report negative emotions such as anger, depression, sadness, stress, and worry during lockdown, and were less likely to report enjoyment or happiness.

Students with a high ability to pay for their studies showed a higher degree of resilience in the face of the challenges posed by the pandemic and lockdowns, highlighting that students with lower access to financial resources faced particularly difficult circumstances. This finding was similar to those in the international study (Aristovnik et al., 2020b). Students with low ability to pay also tended to have lower satisfaction with online teaching and learning approaches. This may suggest that the financial pressures they faced affected how they perceived their studies, or inhibited them from using the online environment effectively to support their learning. Students with low ability to pay also reported more difficulty focusing during online teaching, and were significantly more likely to report that their performance as a student had worsened (and were less likely to report that their performance had improved). They were also less likely to report confidence with mastering the skills taught in their classes, and in figuring out how to do the most difficult classwork. Collectively, these results suggest that students with low financial resources are at greatest risk of being negatively affected by a disruption to their studies, such as those caused by the pandemic and associated lockdowns. Surprisingly though, students who had lost their jobs did not appear to suffer from the same hardships as those with low ability to pay for their studies. This is somewhat contrary to the findings of Fletcher et al., (2021), who reported that in the Life Under Lockdown survey, households where the respondent was aged under 25 experienced greater economic impacts of the lockdown. However, this difference may reflect the ability of some students to access financial support structures that might not be available to non-students in their wider familial networks.

Our study has a number of limitations. First and foremost, the data come from an international study, and questions were developed by an international team with no input from most countries. That means that some questions that would be of interest (such as particular changes in assessment styles) were not asked. Moreover, we are unable to disaggregate the results by ethnicity, because data on ethnicity was not collected in the survey. Nevertheless, the international nature of the survey is also a strength, providing detailed and comparable data across many countries (Aristovnik et al., 2020a). Second, because the data come from a single cross-sectional survey, we are unable to definitively say whether the statistical relationships are causal, or merely correlation. This is compounded by some sections of the survey, such as the questions about emotion, where there is no baseline for how often students felt different emotions before the pandemic. Longitudinal data would overcome these limitations to some extent, but not entirely, as it would have required the foresight to field a survey of students before the impacts of the pandemic were becoming established and lockdowns ensued. Third, the sample size for New Zealand of 147 respondents is relatively small, and due to item non-response, the sample size for some analyses is even smaller. This limits the statistical power to detect small relationships between the outcome variables and sociodemographic characteristics of the sample. Finally, the qualitative analysis was limited to data collected on a single, open-ended question at the end of the survey. Not all students provided a response to this question,

which was at the end of the survey. Moreover, the question asked for general views or reflections on COVID-19, and did not specifically ask about students' experiences. A more thoughtfully worded question would have attracted more useful responses. In spite of this, we were able to extract some important themes from these data to support the quantitative analysis from the rest of the survey.

Overall, it is clear that most students had the tools and resilience to cope with the impacts and changes that the coronavirus pandemic and associated lockdowns imposed on them. However, many students felt that their studies were negatively affected and that vulnerable groups, such as students with low financial resources, were most severely affected. Fortunately, pandemics are not common. However, the current pandemic is not over, and with new and potentially more infectious variants of the coronavirus now spreading worldwide (e.g., Wise 2020), future lockdowns remain possible. Higher education institutions and the government should take note of these results.

Students need more certainty about the effect of lockdowns on their studies, including what it means for classes and assessment. This information should be quickly and clearly disseminated to students when a lockdown is initiated. Students should also be advised—in advance—of what a lockdown might mean for their studies, and how the institution would deal with the situation. Students need access to appropriate counselling services which must be scaled up during periods of lockdown to ensure that students' anxieties and worries can be appropriately addressed. This is particularly important for students who are facing changes in their home or working lives as well as their study, and for younger students who may be in their first sustained period away from their family and support networks. Finally, appropriate financial support must be available to help vulnerable students to deal with the economic consequences of a lockdown, and to ensure that they can afford access to the tools and resources that they need to maintain their studies.

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References

Akuhata-Huntington, Z. (2020). Impacts of the COVID-19 lockdown on Māori university students. Te Mana Ākonga. https://www.temanaakonga.org.nz/nga-puka

Akuhata-Huntington, Z., Foster, S., Gillon, A., Merito, M., Oliver, L., Parata, N., Ualesi, Y., & Naepi, S. (2020). COVID-19 and indigenous resilience. *Higher Education Research and Development, 39*(7), 1377–1383. https://doi.org/10.1080/07294360.2020.1823327

Aristovnik, A., Keržič, D., Ravšelj, D., Tomaževič, N., & Umek, L. (2020a). *A global student survey: "Impacts of the COVID-19 pandemic on life of higher education students"—Methodological Framework 2020*. http://www.covidsoclab.org/wp-content/uploads/2020/06/Covid19-Methodological-Framework-17062020.pdf

Aristovnik, A., Keržič, D., Ravšelj, D., Tomaževič, N., & Umek, L. (2020b). Impacts of the COVID-19 pandemic on life of higher education students: A global perspective. *Preprints.* https://doi.org/10.20944/preprints202008.0246.v1

Baker, M. G., Wilson, N., & Anglemyer, A. (2020). Successful elimination of COVID-19 transmission in New Zealand. *New England Journal of Medicine*, 383, e56. https://doi.org/10.1056/NEJMc2025203

Bono, G., Reil, K., & Hescox, J. (2020). Stress and wellbeing in urban college students during the COVID-19 pandemic: Can grit and gratitude help? *International Journal of Wellbeing, 10*(3), 39–57. https://www.internationaljournalofwellbeing.org/index.php/ijow/article/view/1331

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology, 3*(1), 77–101. https://www.tandfonline.com/doi/abs/10.1191/1478088706QP063OA

Cao, W., Fang, Z., Hou, G., Han, M., Xu, X., Dong, J., & Zheng, J. (2020). The psychological impact of the COVID-19 epidemic on college students in China. *Psychiatry Research, 287*(112934), 1–5. https://doi.org/10.1016/j.psychres.2020.112934

Chen, N., Zhou, M., Dong, X., Qu, J., Gong, F., Han, Y., Qiu, Y., Wang, J., Liu, Y., Wei, Y., Xia, J., Yu, T., Zhang, X., & Zhang, L. (2020). Epidemiological and clinical characteristics of 99 cases of 2019 novel coronavirus pneumonia in Wuhan, China: A descriptive study. *Lancet*, 395(10223), 507–513. https://doi.org/10.1016/S0140-6736(20)30211-7

Dohaney, J., De Róiste, M., Salmon, R. A., & Sutherland, K. (2020). Benefits, barriers, and incentives for improved resilience to disruption in university teaching. *International Journal of Disaster Risk Reduction, 50*, 101691. https://doi.org/10.1016/j.ijdrr.2020.101691

Durie, M. H. (1985). A Maori perspective of health. *Social Science & Medicine*, 20, 483–486. https://doi.org/10.1016/0277-9536(85)90363-6

Elmer, T., Mepham, K., & Stadtfeld, C. (2020). Students under lockdown: Comparisons of students' social networks and mental health before and during the COVID-19 crisis in Switzerland. *PLoS ONE, 15*(7), 1–22. https://doi.org/10.1371/journal.pone.0236337

Fletcher, M., Prickett, K. C., & Chapple, S. (2021). Immediate employment and income impacts of COVID-19 in New Zealand: Evidence from a survey conducted during the Alert Level 4 lockdown, *New Zealand Economic Papers, 56*(1), 106–113. https://doi.org/10.1080/00779954.2020.1870537

Fogarty-Perry, B. (2019). *Strategies that enhance resilience in parents of children with physical disability*. [Unpublished Master's thesis]. Otago Polytechnic.

Fogarty-Perry, B., & Seiuli, A. (2018). Resilience in practice? A case study highlighting the need for collaboration in supporting Pasifika students in Tertiary Education. Pacific Tertiary Education Forum; 6–7 September; Wellington.

Gonzalez, T., de la Rubia, M. A., Hincz, K. P., Comas-Lopez, M., Subirats, L., Fort, S., & Sacha, G. M. (2020). Influence of COVID-19 confinement on students' performance in higher education. *PLoS ONE, 15*(10), e0239490. https://doi.org/10.1371/journal.pone.0239490

Jain, V., Duse, A., & Bausch, D. G. (2018). Planning for large epidemics and pandemics: Challenges from a policy perspective. *Current Opinion in Infectious Diseases, 31*(4), 316–324. https://doi.org/10.1097/QCO.0000000000000462

Kamarianos, I., Adamopoulou, A., Lambropoulos, H., & Stamelos, G. (2020). Towards an understanding of university students' response in times of pandemic crisis (COVID-19).

European Journal of Education Studies, 7(7), 20–40. http://dx.doi.org/10.46827/ejes.v7i7.3149

Liu, C. H., Pinder-Amaker, S., Hahm, H. C., & Chen, J. A. (2020). Priorities for addressing the impact of the COVID-19 pandemic on college student mental health. *Journal of American College Health*. https://doi.org/10.1080/07448481.2020.1803882

Owen, C. (2020, May 8). Coronavirus: Auckland University students will have grades scaled up. *Stuff*. https://www.stuff.co.nz/national/education/121455289/coronavirus-auckland-university-students-will-have-grades-scaled-up.

Owens, M. R., Brito-Silva, F., Kirkland, T., Moore, C. E., Davis, K. E., Patterson, M. A., Miketinas, D. C., & Tucker, W. J. (2020). Prevalence and social determinants of food insecurity among college students during the COVID-19 pandemic. *Nutrients, 12*(9), 2515. https://doi.org/10.3390/nu12092515

Owusu-Fordjour, C., Koomson, C. K., & Hanson, D. (2020). The impact of COVID-19 on learning**:** The perspective of the Ghanaian student. *European Journal of Education Studies, 7*, 1–14. https://www.oapub.org/edu/index.php/ejes/article/viewFile/3000/5638

Paredes, M. R., Apaolaza, V., Fernandez-Robin, C., Hartmann, P., & Yanez-Martinez, D. (2021). The impact of COVID-19 pandemic on subjective mental well-being: The interplay of perceived threat, future anxiety and resilience. *Personality and Individual Differences, 170*(110455), 1–22. https://doi.org/10.1016/j.paid.2020.110455

Perz, C. A., Lang, B. A., & Harrington, R. (2020). Validation of the fear of COVID-19 scale in a US college sample. *International Journal of Mental Health and Addiction, 20*, 273–283. https://doi.org/10.1007/s11469-020-00356-3.

Prickett, K. C., Fletcher, M., Chapple, S., Doan, N., & Smith, C. (2020). Life in lockdown: The economic and social effect of lockdown during Alert Level 4 in New Zealand. *Institute for Governance and Policy Studies Working Paper 20/03*. Te Kura Kāwangatanga: Institute for Governance and Policy Studies Working Papers, Victoria University of Wellington. http://researcharchive.vuw.ac.nz/handle/10063/9022

Pullano, G., Pinotti, F., Valdano, E., Boëlle, P-Y., Poletto, C., & Colizza, V. (2020). Novel coronavirus (2019-nCoV) early-stage importation risk to Europe, January 2020. *Euro Surveillance, 25*(4). https://www.eurosurveillance.org/content/10.2807/1560-7917.ES.2020.25.4.2000057/

Sarkisian, N., & Gerstel, N. (2012). *Nuclear family values, extended family lives: The power of race, class, and gender*. Routledge. https://doi.org/10.4324/9780203141977

Southwick, S. M., & Charney, D. S. (2012). *Resilience: The science of mastering life's greatest challenges*. Cambridge University Press.

Sundarasen, S., Chinna, K., Kamaludin, K., Nurunnabi, M., Baloch, G. M., Khoshaim, H. B., Hossain, S. F. A., & Sukayt, A. (2020). Psychological impact of COVID-19 and lockdown among university students in Malaysia: Implications and policy recommendations. *International Journal of Environmental Research and Public Health, 17*(17), 6206. https://doi.org/10.3390/ijerph17176206

University of Waikato. (2020, September 30). Grades show University of Waikato students fared well through COVID-19 lockdown. *University of Waikato*. https://www.waikato.ac.nz/news-opinion/media/2020/grades-show-university-of-waikato-students-fared-well-through-covid-19-lockdown

Wiltshire, L. (2020, June 11). Students not happy with Victoria University's plan to scale grades. *Stuff*. https://www.stuff.co.nz/national/education/121789671/students-not-happy-with-victoria-universitys-plan-to-scale-grades

Wise, J. (2020). COVID-19: New coronavirus variant is identified in UK. *BMJ*, *371*, m4857. https://doi.org/10.1136/bmj.m4857

Ye, Z., Yang, X., Zeng, C., Wang, Y., Shen, Z., Li, X., & Lin, D. (2020). Resilience, social support, and coping as mediators between COVID-19-related stressful experiences and acute stress disorder among college students in China. *Applied Psychology: Health and Wellbeing, 12*(4), 1074–1094. https://doi.org/10.1111/aphw.12211

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Cameron, M., Fogarty-Perry, B., & Piercy, G. (2022). The impacts of the COVID-19 pandemic on higher education students in New Zealand. *Journal of Open, Flexible and Distance Learning, 26*(1), [42–62.].