
COVID-19's Impact on College Students

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Problem Statement

How has the pandemic impacted student learning and well-being?

- How has online learning affected undergraduate college students' well-being and mental health
- How does their well-being and mental health impact their academic success?



Literature Review - Academic Success

- The pandemic led to steep declines in enrollment at community colleges (Morona, 2020)
 - Have more non-academic obligations than traditional university students
- Online learning exacerbated dropout rates, and therefore negatively impacted academic success at community colleges



Literature Review - Academic Success (Students' Preference)

Table 1

Descriptive statistics.

Item	<i>n</i>	<i>M</i>	<i>SD</i>
Attitude - Prefer Face-to-face	249	4.49	0.89
Attitude - Prefer Online Learning	249	1.98	1.23
Struggle w/Online Learning	249	3.69	1.41
Affect (satisfied w/courses)	249	3.32	1.25
Motivation – Before	247	3.19	0.62
Motivation – After	240	2.27	0.81
Use of Technology - Before	243	3.09	0.73
Use of Technology - After	238	4.28	0.73
Self-efficacy	236	2.63	0.87
Accessibility	227	3.40	0.59
Cognitive Engagement	235	2.39	0.92

Motivation Scale

1=not motivating

2=slightly motivating

3=motivating

4=very motivating

Literature Review -Academic Success (Students' Environment)

Table 3

Qualitative data display.

	Theme	Category	Students
Challenges	Situational and Environmental Challenges	Concentration Difficulties Living at Home	38
		Stress Balancing Life	23
		Financial Hardship	17
		Lack of Social Interaction	9
		Sudden Life Changes	7
	Online Educational Challenges	Online Learning Was Difficult	38
		Lack of Supporting Academic Resources	25
		Workload Increased	11
		Being Distracted During Class	10
		Unfamiliar Online Technology	3
	Emotional Challenges	Lack of Motivation	26
		Negative Emotions	25
Positive Aspects	Increased Family Time Personal Improvement	More Family Time	66
		Self-care and Personal Growth	15
		More Sleep	9
		Managing Own Time	8
		Financial Benefits	7
	New Activities	Practicing Hobbies	41
		Gaining New Skills	17
	Absence of Positive Aspects	No positive aspects or change	18

Literature Review - Mental Health and Well-Being

- Abrupt shift to online learning forced students to distance themselves from their peers (Lederer et al., 2020)
- Negatively impacted their sense of social connectedness and belonging
 - Led to increased feelings of isolation and depression
- The pandemic has increased mental health issues among students

Literature Review - Mental Health and Well-Being

Table-II: Medical students feedback about stress allied queries (n=530).

Survey statement	Strongly agree & Agree		Neutral		Strongly disagree & Disagree		Parametric P-value
	Female	Male	Female	Male	Female	Male	
Do you have frequent thoughts of being infected during this pandemic?	98 (33.33)	43(18.22)	96 (32.65)	57 (24.15)	100 (34.01)	136 (57.63)	<.001
Have you felt depressed during this quarantine?	66 (22.45)	59(25)	62 (21.09)	69 (29.24)	166 (56.46)	108 (45.76)	0.034
Have you felt hopeless, exhausted or emotionally unresponsive during this quarantine?	116 (39.46)	86(36.44)	40 (13.61)	43 (18.22)	138 (46.94)	107 (45.34)	0.339
Have you noticed a reduction in your awareness or feeling of being confused?	103 (35.03)	85(36.02)	51 (17.35)	65 (27.54)	140 (47.62)	86(36.44)	0.006
Have you felt a sense of being emotionally detached from family, friends, etc.?	127 (43.2)	107(45.34)	64 (21.77)	53 (22.46)	103 (35.03)	76 (32.2)	0.789
Did you invest more time on reading or watching COVID-19 related information?	113 (38.44)	47 (19.92)	76 (25.85)	81 (34.32)	105 (35.71)	108 (45.76)	0.001
Do you have anxiety dealing with febrile patients?	78 (26.53)	89 (37.71)	109 (37.07)	72 (30.51)	107 (36.39)	75(31.78)	0.022
Have you been anxious or having insomnia during this quarantine?	127 (43.2)	79 (33.47)	47 (15.99)	37 (15.68)	120 (40.82)	120 (50.85)	0.047
Have you had episodes of indecisiveness or poor concentration during this quarantine?	132 (44.9)	80 (33.9)	55 (18.71)	41 (17.37)	107 (36.39)	115 (48.73)	0.012
Have you been afraid of going home because there is a possibility of infecting your family?	110 (37.41)	90 (38.14)	51 (17.35)	61 (25.85)	133 (45.24)	85(36.02)	0.027
Are you having a lack of motor coordination?	56 (19.05)	73 (30.93)	47 (15.99)	18 (7.63)	191 (64.97)	145 (61.44)	0.001
Are you feeling a slowness in execution of movement?	79 (26.87)	64 (27.12)	36 (12.24)	51 (21.61)	179 (60.88)	121 (51.27)	0.010

Data Collection

- Undergraduate college students (18-22)
- Self-reported questionnaires
 - Qualifying questions (undergrad and online)
 - Well-being
 - Perceived stress scale
 - Pandemic specific stressor questions
 - Academic Performance
 - Fall 2019 and Fall 2020 GPA
 - Demographic questions
- Snowball sampling method

For each question choose from the following alternatives:

0 - never 1 - almost never 2 - sometimes 3 - fairly often 4 - very often

- _____ 1. In the last month, how often have you been upset because of something that happened unexpectedly?
- _____ 2. In the last month, how often have you felt that you were unable to control the important things in your life?
- _____ 3. In the last month, how often have you felt nervous and stressed?
- _____ 4. In the last month, how often have you felt confident about your ability to handle your personal problems?
- _____ 5. In the last month, how often have you felt that things were going your way?
- _____ 6. In the last month, how often have you found that you could not cope with all the things that you had to do?
- _____ 7. In the last month, how often have you been able to control irritations in your life?
- _____ 8. In the last month, how often have you felt that you were on top of things?
- _____ 9. In the last month, how often have you been angered because of things that happened that were outside of your control?
- _____ 10. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?

Cohen (1983)

Data Preparation

- Perceived Stress Scale Score
 - Scores of questions 4, 5, 7, and 8 will be reversed
 - $0 = 4, 1 = 3, 2 = 2, 3 = 1, 4 = 0$
 - All 10 scores will be added up to get the total
- Pandemic Specific Stressors
 - Adding the total score across 10 items
- Student Performance (GPA)
 - Difference between Fall 2019 and Fall 2020 GPA

Analytical Methods

- Descriptive statistics
- Logistic Regression
 - Independent variables
 - Perceived stress
 - Pandemic specific stress
 - Dependent variable
 - GPA
- Clustering
 - Silhouette plots to determine the optimal number of clusters
 - K-means clustering



Our Expectations

- Number of participants
 - > 100 participants
- Student stress level - High
 - Pandemic & Personal Issues
 - P value in the regression
- GPA
 - Average of 3.0/4.0
- Confusion Matrix
 - Above 50% accuracy
- Clustering
 - Optimal numbers of cluster to be 3
 - Medium - high Silhouette Score with high dense on effected group

Limitations

Only use grade point average

- Interaction with professors
- Class attendances
- Teacher to student ratio

Sampling Method

- Subjective bias
- Time



Implications

Due to the spread of the pandemic, both online learning shift and students' well beings have direct effect on students' performance in school

Further Analysis

- Online learning support
 - Rehabilitation
 - Online advisor
- Monitoring students
 - Develop an effective ways to monitor students remotely
- Adjustment of online curriculum
 - More interaction among instructors and peers

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