CSC110 Project Proposal: Your Anxiety During COVID-19

Fardin Faruk, Sharon Hsieh, Sinan Li, Jeffery Zhan

Friday, November 5, 2021

Problem Description and Research Question

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), commonly known for causing the illness COVID-19, spread wildly after its emergence in late 2019 (Britannica, T. Editors of Encyclopaedia, 2021). Following its discovery, society as we knew it was upended, and countries went into lockdown. Individuals were required to stay home to prevent the spread of the virus, restricting any socializing to very minimal interactions with others. Tested by working from home, unemployment, lack of social connections and many more challenges, many individuals found it challenging to adapt, making them especially vulnerable to mental health complications (World Health Organization, 2021).

While COVID-19 has proven challenging to combat, Canada has put forth their best efforts to prevent the spread of the virus, becoming one of the top vaccinated countries in the world (Mathieu et al., 2021). Despite social regulations having been eased, many of the psychological effects linger. In fact, mental health has become such a prominent concern due to the pandemic that analysts at The National Institute of Mental Health now describe online therapy as essential (Prout, 2021).

There is no doubt that the onset of the pandemic affected everyone differently — some found it easy to adjust, some struggled to do so, and many experienced some combination of the two — all for varying reasons. We would like to measure these differences quantitatively. Thus, we decided to research and answer the question: what is the relationship between one's identity and the degree to which COVID-19 has impacted their mental health?

Our research will examine various traits that the subjects of the survey have, such as their education level, marital status, gender, and age, then compare their surveyed response to the pandemic alongside their traits and identities to determine a relationship between certain identity groups and the socio-psychological effects COVID-19 has had on them. From the results, we will ascertain which types of people are more susceptible to psychological issues due to the pandemic. We believe that this data can be applied to strengthen mental health resources and allow for more specialized and efficient care.

Dataset Description

COVIDistrees Global Survey dataset on psychological and behavioural consequences of the COVID-19 outbreak (Yamada et al., 2020) is a survey which was organized by researchers in over 90 universities across the globe, investigating the mental health conditions and personal views surrounding COVID-19. It was conducted during the first major wave of the pandemic, and the responses of approximately 125,000 participants aged 18 and over, ranging across 42 countries, were recorded through this survey. The data is stored in a .csv file with each row containing information about a single person, including their gender, age, occupation status, marital status, and more. The file also includes each participant's responses to a broad range of questions posed on the survey about COVID-19. These questions range from questions about the individual's support systems to questions about how they obtain information about COVID-19. Most questions were answered through a six-point Likert scale, which will help us quantify each participant's responses.

Computational Plan

Our computational plan is composed of three stages:

• Stage 1: Read the data from the CSV file containing the test subjects' information and responses

0.000.05.00.004717 540	Deminion Deministration	Demonia Ordera decrea harbelor mador	Some College or equivalent	See and the second	Aspertine yes	ti Demjalate Demjalatishina Separat Separat	Own, de Deer, riskgro	Print.			in AD less AD shook Book PERIS DOLA 1 South PERIS DO.	A BREVENIUS	· ·	d manyana and a	and Printers Could's	manyana suut) ma	M. Printer Country in	any management of the	Commonta to		CHARLE STREET	C GLOSPINGS G	Day property Contraction
0 2020-05-2020-2777 SWI	20 Mais	College degree, bachelor, mader College degree, bachelor, mader			Dates yes	ALMERICA STATE STATE	2 %	Life range or with minor changes	NA NA	2 NA		2	5								- 1	2 744. 74	. 100
0 2004-05-20-23-30-15 UR 7 2008-05-20-22-60-15 SARI	00 Main 07 Ferrida	Gollege degree, bachelor, master Some Callege, short continuing education or equivale			Aspettra no	CORDS Street	2 10	Life ramins an with minor changes bound			10A 10A 10A 10A 10A	*	1								- 1		- 4
7 2008-00-00328-035 SWH 0 2008-06-29-22-47-17 RG	77 Male						0 No			2 149		NA .	194.	M N		M 194.	504	194.		A 100	198.	194. 19	. 104
2004-06-29-22-47-17-865		College disgree, bachelor, master			Sulpaia no			Life names an arith miner changes			Pagen 3 No. 3		3	5 3				3	- 4		3	4 4	
2505-05-25-22-42:30 SAR	01 Female	Some Callege, what continuing education or equivale		Retired A	Argentina no	Mercosa Manediochipting	0 Yes	board		8 Program		9	2 NA	3 19			2 M				1 NA		
1 2020-06-29-21-26-09 /7	68 Male	College dagree, banhalor, master	College degree	Relieved 2	Rely no	Sprin Maried Inhabiting	0 No	Life series or with minor shanges			Propert D No. 1	9	3	4 4		4		2	3		2	3 7	2
0 2929-05-29-21-25:07 SWR	29 Otherwoodcratter no	tay Some College, short continuing education or equivale		Patrine engineed A	Argentina no	Onder Other or would rather rat a	1 No.	board		1 Program		2	5	4 3		5			2	4	1	3 6	
2 2020 06-20-21-25-17 5085	36 Female	Up to 12 years of school	Up to 12 years of sohool	Sat employed	Aspertina no	Drive Name Married Installating	1 No.	Life samles on with minor sharingers	1	2 101	Pagent No. 3	3	3	4 4		4	4	3	3		3	3 8	
2000-00-09-21 10-09 SAN	25 Female	College degree, bachelor, mader	Cuttege degree	Full time employed IT	Persona yes	Parani Marradochioting	765 766	Life-carries on with minor changes		2 Program	er 10 Mar. 10 2		2	4 4	1			2			1	2 7	
A 2505-05-30-20-04-47 SWD	00 Female	College degree, banhalor, master	Gollege degree	Sharieri J	America on	La Finia Marinetino della	1 %n	bristed		3 10	Property Set non 5	4	4	1 1		2						5 No. 10	4 164
1975-06-90 10 Mark 1980	47 famou	Other more, butlets, mater	Victo 12 years of exhaut	Extraparations	America co	Contide Maniedompting	1.50	bornet	- 4	A Broome	m A 104 No. 1	9	1							- 1	- 1	7 104 10	
2020 OR 20120 TA15 TAN	21 Female	Colors decree barbalo made		Full time employed /		Terradictions Stock	0.16		- 1	2 Proper							- 1	- 1	- :				
2001-05-00 20 20 20 20 20 20 20 20 20 20 20 20 2	42 Female	Spro-Freen of exhaut		Full time amplicated in		Farene Manadomomo	4 10	65885			M M 1												
								MA.	NA NA			1	3	9 5								1 8	
2020 On 20 10 MAS SWY	All Female	Some Callege, what continuing education or equivale				Saria Fe Single	2 No.	Life series or with minor shanges		2 Program		9	2	4 4		4		3			2	1 8	
2929-05-90 10-47-45 SME	25 Female	College degree, bachelor, master	None	Screngisped 6	Panama no	NA Manadomoting	2 No	board		2 55	Pregrand No 3	2	5	4 3		5	- 6					3 194. 19	i 164
2020 OR 20 10-17 DK SWY	AD Male	PiC/Dorlande	Some College or equivalent	Full time employed	Aspertine NA	Serie Fe Manied in habiting	0 Yes	Life sanios on with minor changes.	1	2 101	Propertition 3	3	4	4 3		1	3	2		2	2	4 4	7
2929-05-30 10:30:45 SAIS	60 Female	PrOrtocenne	Onlyge degree	Retired 8	Mexico yes	Ouded to Mileto Manied completing	0.16	Ufo-comise on an usual		2 Program	m0 NA Nitsun 1		4	5 5		5	- 6	- 1		- 1	1	1 16	- 10
2020-06-30 19-30-12 SAM	10 Female	Up to 12 years of subset	Up to 9 years of solved	Not employed 2	Persona co	No. Managionalina	2 Not sure	Life parties an eith minor chances	4	2 Program	mil Nr. Seiner 2	4	4	3 4		- 4	- 1	2	- 4	- 1	2	2 1	
2909-06-90 1901-15 SWI	00 Female	Spro-12 years of school	Up to 8 years of school	Setundant	America co	Contribute Decreated interest	2 No.	Life-carries an with minor changes		2.35	76. 76. 50. 76.	10	104	N 10		NA 194		. 100		100	- 100	104 10	
2000 OR 30 10 47 43 EMB	di femin	Up to 12 years of school	Units 12 years of school	Bellevi	America on	Balla Other or enall safter set to	0.16	Life series or with minor charges		2 10	Present No. 3			4 1						4		4 4	
PRODUCTURE TO CAN	20 Female	Statements	Some College or equivalent			Estado-de Minico Single	1 10	bornel		2 Program													
2004 OF SET SET SAME	00 Female	PERsonne	Some Corage or equivalent		Mexico no	During de Winiss - Dynamich desert	0 Ym	histeri	- 7		Property Str. 1	NA .	TAK.	M N		M NA	504	194.		a 14	198.	10. 10	. 194
												3	3	4 4		3		3			3	1 1	10
2909-05-09 10:00:07 FR	29 Female	Profession	Up to 9 years of school			Te de France Maniedronaphing	9 No	Life-comise on with minor changes			ITA NA. No. 3	4	4	4 4		4						3 5	
2020-00-20 11.27 to SAN	67 Female				Mexico res	CDMX Divorativishmed	1 16	Installed in residual bandity of similar installs	m 0	2 NA	Propert D Not sure 3	2	3	4 1				1			1	1 2	
2929-05-29 17:05:29 SWR	60 Female	College degree, bachelor, master	Up to 12 years of school	Retired .	Argentine no	enterios Manadionaphing	0 No	Life-carries an with minor changes		9 NA	164. 164. 2	2	t	4 4	- 1	4		t	2			2 10	,
2020 OF 20 16 26 66 SAN	40 Female	PiCiDoclarate	Some	Related	Messo yes	Aparationes Maniedishability	2 Yes	histed		2.10	Pagan D Salare 4	3	1	a 1		- 4	- 1				4	1 0	
2909-05-90 10:00:02 SWD	40 Female	94	Up to 9 years of school	Partition amplicant A	America on	Neugam Single	2 10	Uncomies or with minor changes		1 Program	m A 166 No. 1			4 4	-					- 1		1 6	
2929-06-29 16-08-29 SAM	35 Female	College diagram, bascholar, master		Self-amployed 2		Parami Manindischabiling	8.96	betrief		4 Program				4 4			- 1				- 1	1 1	- 1
2003-00-00 10:00:40 SAR	on Female	Some College, what continuing education or equivale	of Up to Eyean of exhaut	Full time amplicant of	terration on	Cordicio Other or would rather rait in	1 10	Life-coming on with minor changes	- 1	2 No.	Property No. 1					- :		- 1	- 1	- 1		1 1	- :-
2020-00-00 TESSAN SAN	Si Person			Not employed J	regenera 10	Controls Married substitute		Construe or the fills draiges	- 1		Program 2 No. 10	1		1					- 1	,			
2000 OE SE 15.55.69 SWI	60 Female 60 Female	Same Callege, shart continuing education or equivalent College degree, bachelor, marker	Up to 12 years of school	Student S	Augustina no	Contribute Married constitutions of the Contribution of the Contri	1 No.	Life ranks at with minor chances		2 No.		NA.	ne.	no N		nn 166		166.		at 168	- 44	na. 16	. 144
												9		4		- 4	2		- 5			3 3	- 4
2020-06-30 16-61-05 EMB	65 Male	College disgree, bashelor, master	Up to 12 years of sohool			NA Marted soluting	3 Yes	Indialed	2	1 146	Program C No. 2 No. No. No. No. No.	3	3	3 3		4		3	2	- 1	3	2 8	
2929-05-90 10:00:00 EN	47 Female	Up to 12 years of achool	Up to 12 years of school			NA Ovocadividosed	5 No	Life-carries an with minor changes	NA NA			58	164.	MA N		NA 164.	56	194.		rik NA	164.	164. 16	NA 164
2020-06-20 16-05-12 KD	33 Female	College degree, bachelor, master		Full time employed 5		Stems, Vojeta Single	0 No	Life santes an eith minor changes	NA NA		Pagan S Notace 3	3	3	3 2		- 4	3	3	3		4	4 6	
2929-05-29 10 11:25 SME	00 Female	PhD/Soctime	Up to 5 years of school			universidad santance Gingle	9 No.	board		8 Program	m 0 NA. No. 2	0	1	5 5	- 1	5		1	2	- 1	4	1 6	
2020 OI - 30 TS 10 AS SWIT	T3 Persola	Some Cullege, what continuing education or equivale	ed. Status Furnish of subset	Related /	Aspetina no	Mendias Mantedisducting	1 %	Life santes an eith minor changes		2 58	Prepare C No 3	3	3	3 3	- 1					3	4	4 4	,
2828-05-30 15:00:07 :00	At Fample	Vip-to 12 years of school	Up to 12 years of school	Setumber	Outputs no	-(LEFV(LEFE) Manadometro	1 100	boles		8 Program	m 0 NA Net sup 3	A	4	A 8								1 2	3 164
2020-00-29 14-8627 803	60 Pemale	College degree, bachelor, master	Same College or managed and	Darley .	Britania no	No. Householder	1 30	14	4 10	Proper								- 1	- 1	- 1	- 1	3 100	3 94
2000-06-36 14-8423 SMP	50 Female 50 Female	Some Onlege, short continuing education or equivale	Some College or equivalent or Some College or equivalent			Serts Fe Manadonaphro		Un-coming on with minor changes	1 50	Program		1	1		-			- :			-:-		- 1 ***
2020-05-30 14-44-78 SAR 2020-06-29 14-43-32 SAR	52 Female 55 Female	Some Cultiga, short continuing education or equivale Cultiga diagree, bachelor, master	Op to 6 years of solved	randra engraped A	regardine no	Santa Fe Manied consisting Dates Other or exact agree set or	1 No	Life-comins on with minor changes Life-comins on with minor changes	1 54		Property 2 Ven	1	1					- 1	- 1		- 1		- :
2000-00-00-14-25-20 SAN 2000-00-00-14-25-20 SAN			Gp to 6 years of school (in to 12 years of school	Sui employed 3			, 0 Wm	Life sandes an with minor changes.	- 5			2	3	4 2	-	- 4	- 1	3		- 4		3 7	
	00 Main	PhD/Soctorate			Argertina no	Sets to Ovorset interest	9 No		2	8 Program		2	4	4 4		4			ž	- 4	,	5 7	
2020-08-30 14.25-49 17	60 Female		nd. Up to 12 years of school			Ligaria Divoranti hiderand	1 Not save	Life santes an eith minor shanges		2 NA	166. 166. 506. 166.	M	166.	M N		MA NA	MA.	196.		rat tot	101.	191. 19	t 166
2929-05-29 14:00:04 (00	00 Female	Up to 12 years of school	Up to 9 years of school			-CLB421SLB40E Manadomoting	9 No	Life-carries an with minor changes	2		Pagan 9 Notava 4	4		4 3		4		5		2	4	2 2	
2020-06-29 14.35-36 SAN	63 Female	Cultege dagree, bachelor, master	Up to 12 years of school	Bet-englished 1	Minore no	ESTADO DE MESCO Marinesuración	0 Yes	Life-santes an eith minor changes		1 Program	m A NA Na 2	2	4	2 4		4	4	3	3		1	2 1	1.96
2929-05-30 14:50:09 SWD	60 Female	Up to 8 years of school	None	Belied J	Argentine no	NA Discretivideset	1 %s	Use carries an with minor changes		8 Program	er A NA No 3		2	5 8		5	4		2	4	2	4 5	,
2020-00-20 14 15 00 SMI	90 Mer	PODuctorie	State Freezy of school	Full time engineed II	Minor Intel	tweeu Manadomptro	2 764	borne		2.56	Prepart to 2											1 1	
2929-05-29 14 15:09 SMS	40 Male	PhOrboctunite	Up to 8 years of exhed			Panama Maniadromoting	2 760	Life-carries on with minor changes	- 4	1 Program							- 4	- 1	- 1				- :
2020 OF 28 TA-62 OF SME	SS Mer	POSwinds	Up to 12 years of school	Full time employed I		Parama Married trabalistics	2 101	Life series or with miner sharpes	- 1		Propert D No. 1						- 1	-					
2028-05-29 12-40-45 00	50 Female	Vigito 12 years of school	Ohio 12 Jame is enims	Self-employed (renera no	rear measurably	2 100	Unicaries or with minor changes	-	1 10	Proport Nation NA NA		4					-			-	1 /	
2021-06-29 13-14-20 500	10 Female					-U-017U-006 Trye	2 70	De-caries of with time changes	2 10			NA .	PM.	M N		M PA				5 NA	- 14	PM.	-
2000-00-00 13.14.00 MIS	10 Female 20 Female	Up to 9 years of solved		Self-engined S Soviet A	America on			Life series or with minor changes	3 M	Program 3 No		4	4	3 3				- 4		- 4	-	4 1	
		Some College, short continuing education or equivalent				Onero Single	0 No.				Pagan 9 No 4	9	4	2 8	-				- 5	- 1		4 6	,
2020-00-29 13.36:00 SAN	37 Male	College degree, bachelor, mader		Full line employed IP		NA Manadouniday	1 %	Life-santes as with etinar changes		1 Program		2	3	4 4			4	3		3	3	3 8	
2828-05-30 10:01:04 DA	50 Female	Up to 12 years of school	Up to 9 years of school			NA Maniedronioling	0 No	Life carries an with minor changes			NA. NA. 1	4	1	0 1		4				4		4 6	ž.
2020-00-29 TX 39/30 Pf	31 Persole	College degree, bachelor, mader		Full time employed IT		Princes Managoraphy	0.764	Life-cardes an with minor changes	NA NA	Program		2	4	5 4		4						3 9	10
2929-05-29 12:00-58 PM	67 Female	Gollege degree, barhelm, master	College degree	Belied 6	Brigaria yes	-KA-8411KI-9408: Okymethideset	0 Yes	bolated			Propert 9 No 3	4	4	4 3		4		4		9		3 5	6
2909-00-30 TX.31 OZ SWE	DT Female	State 12 years of exhaut	Torre	Full time employed of	Aspettre no	Sara Fe Manadomotro	2 %	Life-carries an with minor changes	2.50	101	76. 76. 2		3	5 4			2	2			2	4 9	
2909-05-90 12:01:40 SME	29 Female	Profession	Onlege degree	Full time amplicant of	Occurry on	NA Single	164 No.	Life-contine on an around	50 50	10	Program 9 No. 8			4 4							- 1	2 6	,
2020-06-30 13:00:19 SWN	El Mer	POSwinds		Full time employed .		Circles Marted substitute	0 Yes	hitel		2 101	NA NA NA NA	10	104	44 9		AA 100				No. 100	100	104 10	
2929-05-29 12-19-51 00	52 Female	Vip-to 12 years of school	Up to 12 years of school	Patrino ampliqued ()	States on	-(J-8410S-9400: Manadoonsbing	0.10	Life-centies an with minor changes		9 10	Pagan S Not ave 8			4 4							4		-
2020-00-29 11:00:18 SWI	Of Person	Some Cultege, what continuing education or equivale		Part of the property of	Assertine no	Drive Nos Single	2 70	Life carries an eith minor charges	- 1	2 Program							- 1		- 1				
2021-05-29 19:21-57 SME	00 Female	some Carego, train commany escation or exposure	None	Self-employed 8	Augusta 160	Service Manadombing		Contacted by Not Hold Grander								-		-					
		Vig-to 12 years of school			Mexico no		A No	Uth-carries or with etinor changes	- 2	4 Program	at A NA No 3	5		5 4		5						3 6	- 4
2009-00-29 1139-03 SMI	St Main	MOTocomie	Sume Cultege or equivalent	. Bet-englished P	Persona no	NA Manadomoting	3 No			1 101	Pregan 2 Re 1	2	3	5 4		- 4	- 4				1	2 3	
2828-06-29 11:22-15 (96)	AS Female	Gollege degree, barhelor, master	Some College or equivalent		Sulgaria no	-(J-8456(J-6445 Manietischebting	5 Yes	Us ranks as with minor changes	NA		NA NA 4	4	5	4 2					4 1		3	4 2	- 6
2008-00-29 11.22:29 PI	35 Female	Others degree, bachetor, mader	Store Cultige or equivalent			familia Suori Manadoniphing	1 766	Life-carries an with minor changes		1 Program			3	5 4							1	3 5	
2828-06-30 11-41-09 (SWN	67 Male	Some Callege, what continuing education or equivale				Burrow-lines Manied to habiling	1 No	bolated				2	4	6 8	-	6		3			4	5 3	
2020 Ot 20 10 42 67 PF	30 Persole	Some Callege, what continuing education or equivale	of Up to 12 years of school	Full time employed.	Firtand no	Usernan Single	0 Yes	Life santes on with minor changes.		2 Proper	er A 164. Not sure 2	2	3	4 4	-	3	4			4	3	1 6	,
2028-05-29 10-47-08 00	55 Female	Some Callege, short continuing education or equivale			Outputs no	-(J-840)(J-940) Osomethideset	NA Yes	(An option on an around	50 50		Pagan F Net auro F			4 1			- 1			2		2 4	
2020-00-00 YO MUZE PEU	65 Person	Outrear decree, bushelor, mader			Turnin (tr	NA Divined hidered	2 76	hatel	1	1 Program		4	2	4	-	- 1	- 1		- 1	4		, .	
2828-05-80 12-13-25 (96)	75 Female	Gollege degree, bachelor, master			Sulgaria no	-SLEEPH-SLEEP Oppositiviteset	0 Yes	bristed		9 149	NA NA NA NA	10	166	Ma N		NA 196	-	196		to to	166	166 16	4 194
2020-0-200-0-0	18 Person	State 17 years of subset	Outlage dagree	Buert 1	Shown no	-U-007U-000 Other or equit rather rat is	2.70	Life-carries art with retror changes		2 Program	1 N N N									"	- 1		
2025-05-20-02-03-03-03-03-03-03-03-03-03-03-03-03-03-	42 Female	College degree, barrheler, master	College degree	Full Street produced 1		Curted de Mileiro - Single	0.30	heleted			Person li Marana II		1	4	-	- 1	- 1		- 1	- 1	1		
THE CO. OF CO. ST. CO. C.	A) Famou	State 12 years of school			Aspetina no	Contract Married company	1 70	house.	1 10	Program							- 1	- 1		- 1	-:-		- ;
100 OF SECURITY SAN	67 Female	Sprin Toyens of school		Retired A		Dute Sind	0.00	bosted		2 No	100 NA NA NA	1	-	1			,		- 1				
2004-06-30-00-2023 SAFE	61 Female 27 Male	Opino Pyrem of school Opinos degree, bachelor, mader	None		Argentina no		0 No	Title carries as with minor chances		5 NA		NA.	ne.	nn N		nn Hi		166.		et 168	166	na. N	. 164
												*	1	1		. 4			,		- 1		
2020 OF 30 OF 18 ST SWY	40 Female	PhG/Enrichade	Some College or equivalent			Erice Size Single	2 Van	Life series on with minor shanges				NA.	166.	MA N		NA NA	NA.	196.		46 146	166	166. 16	. 166
2020-00-30 OK-89-37 SIG	00 Persole	Cultege dagree, bachelor, mader	Some Cultege or equivalent			-U-BET-SYDEE Discontinued	NA Not sure	MA.	NA NA	Program		2	1	5 5							2	1 196	- 10
2824-05-30-06-90-55 SWN	AT Male	Some College, short continuing education or equivale				Sets to Manustronioling	4 No	bolised				1	4	5 5		3		5	5	5	4	1 166. 16	n 166
2009-00-29 CT-40-48 SME	21 Female	College degree, bachelor, mader		Set-englished 1		James Manadomoting	0.764	bound		2 Program		5	3	2 3			2				4	4 8	10
2624-05-30 67-25-29 (8G	54 Female	Some College, wheel continuing education or equivale	nt Some College or equivalent	Partition employed 1	Sulgeria no	-(J.841S-90E) Manadonaphing	2 No	bolated		9 NA	Program C No 3		3	4 3	-	4				9	5	3 4	
000 CA CE 72 DE-00-0000	Of Female	College degree, bachelor, mader	Up to 12 years of school	Shows 6	Shipping no	-U-86FU-96C Manadomotog	0.764	Life-carries art with minor changes		2 Program	MA NA No 3	2	3	5 4							1	1 5	
2929 OF 29 CT OROS BG	58 Female	College degree, banhalor, master		Student 2	86. m	-CLEENCLEEN Single	4 No	Life carries an with minor changes		2 141	Propert C No. 2	0	3	8 4		3	A		3.1	NA	3	3 3	3
909-00-90 67 1020 960	Of Female	PiOrtoctinate	Victo 12 years of exheat		Shipping no	-U-66TS-96E Manadompto	2 760	Life-carries an with minor changes	2	2 10	Program 2 No. 3	2	2		-			,			,	2 4	- 10
DECORPORATE DE	Of Female	Unit 13 com of minor	Up to 12 years of school		benefits on	Contentes Single	0.00	Life carries an eith minor changes	- 1	2 10	No. No. 4	1	1					- 1	- :	- :	- 1		- 1
975.05.75.70.13 GG	AS Female	Opings degree, bachelor, mader		Est time appropriat		-Charles (September 1998)	0.00	Life carries at with minor changes			Present No. 1	1						- 1		- :		1 1	- 1
100 OF 05 05 05 05 06 05 05 05 05 05 05 05 05 05 05 05 05 05	65 Ferrale 50 Ferrale	College degree, bachelor, master Grillens degree, bachelor, master			dutparis no America no	-U-84T1-S1-94BC Discontinuous Sens Fa Single	0 10	Ut-carries or with minor changes beliefed	- 7	2 NA 2 Promer		1			- 1					- 1			
																- 5						5 8	
	30 Female	Cultege degree, bachelor, mader	Up to 12 years of school		United Kingdo no	Hubberthild Single	0 Yes	board		1 58			3	4 2			- 1		- 4			2 2	
	TS Male	Some College, what continuing education or equivale			Argentine no	Mendoes Okromed hiderand	1 Yes	Universities are as associal	1	3 Program		1	4	A 4			- 6	- 1		4	4	1 10	16
3924-05-24-06-04-09 SWN	50 Female	Some Callege, short continuing education or equivalent				Contract Single	1 164	board				M	194.	MA N		M NA	100	796		r/R 198.	504.	198. 19	196
2929-05-29-06:04:09 SWN 2929-05-30-00:1027 SWN	55 Female	Some Callege, what continuing education or equivale	nt. Up to 6 years of school	Soi employed	Secretaries and the year	Strips Manied inchesting	3 Yes	Life carries an with minor changes	NA NA	NA	166. 166. 4 166.	NA.	166.			3	5 M	166.		4	3 166	166. 16	s. 166.
2024-06-26-06-04-09 (SWI) 2026-06-26-06-70-27 (SWI) 2024-06-36-06-67-20 (SWI)	45 Female	Some Cuttege, what continuing education or equivalent	of 100 to 12 years of extrest	Set-engined	Sulparia no	-(J-6411S-948) Manadompto	2 %	borne		1 10	76 76 86	5 50		,			-		- 4		5 705		
2028-06-26-06-24-09 SWN		Some College, what continuing education or equivale	ed. Up to 12 years of solver	Full Street employment	German yes	Honora Manied soluting	0 Ym	Life names on with minor changes	10 10	100	Present No. 3		1	4 1	-	- 100			- 1	- 1	1	1 .	
200.05.20.00.000 SW1 200.05.20.05.737 SW1 200.05.20.05.730 SR 200.05.20.05.730 SS 200.05.20.05.730 SS		Some College, what continuing education or equivalent			Shipping no	-U-6410U-900 Discretivities	4 100	Life-coming on with minor changes		t Program	rapara M							- 1		- :			
200.05.20.00.000 SW1 200.05.20.05.737 SW1 200.05.20.05.730 SR 200.05.20.05.730 SS 200.05.20.05.730 SS	SI Male				America no		0.00	Life carries on with minor changes			Property Ves 4					4 100							
200.05.20.00.00.00 SWI 200.05.20.00.00.00 200.05.20.05.00 SW 200.05.20.05.00 SW 200.05.20.05.00 SW 200.05.20.05.00 SW 200.05.20.05.00 SW	67 Male 50 Ferrale				Supporting no	Sounds Single of Letter by Substitute of States	3 %	Life service or with minor changes. Life-coming on with minor changes	- 4	1 10										- 1			
2001-05-20-06-04-09 SAIN 2001-05-20-06-10-27 SAIN 2001-05-20-06-10-27 SAIN 2001-05-20-06-17-07 SAIN 2001-05-20-06-17-07 SAIN 2001-05-20-06-17-08 SAIN 2001-05-20-06-17-08 SAIN 2001-05-20-06-20-06-17-08 2001-05-20-06-20-06-17-08	50 Female 50 Female	Some Callege, what continuing education or equivale	us your confis is adverse.					Life-carries an with minor changes			Pagan 9 Yes 8	2		0 4	- 1	- 4	- 6						5
2001-05-20-06-04-09 SWN 2001-05-05-06-05-05-05-05-05-05-05-05-05-05-05-05-05-	07 Male 00 Ferrale 18 Ferrale 02 Ferrale	College degree, bachelor, master	College degree																				
2004-06-29 00014-09 0041 2004-06-20 01/227 5849 2004-06-20 01/229 08 2004-06-20 01/249 06 2004-06-20 04/249 06 2004-06-20 04/249 06 2004-06-20 04/249 06 2004-06-20 04/249 06 2004-06-20 04/249 06 2004-06-20 04/249 06	50 Ferrals 50 Ferrals 50 Ferrals 50 Ferrals	College dagne, bachelor, matter Seme College, when continuing education or equivale	Cologa degree of Cologa degree	M I	Sulpris no	43-8400-43-8440 Single	0 Yes	belief	2		m 5 NA No 3	2	6	5 3				- 1				1 8	
2000-00-20 0027291 589 2000-00-20 000-20 00 000 2000-00-20 000-20 000 2000-00-20 000-20 00 2000-00-20 000-20 00 2000-000-000-20 00 2000-000-000-20 00 2000-000-000-000-20 00 2000-000-000-000-000 2000-000-000-000-000 2000-000-000-000 2000-000-000-000 2000-000-000 2000-000-000 2000-000-000 2000-000-000 2000-000-000 2	00 Female 18 Female 00 Female 00 Female 20 Female	College degree, technics, master Same Callege, what continuing advantion-or equivale College degree, technics, master	College degree Onlege degree Up to 9 years of school	Shaher C	Sulpris no Olina no	-0.600-51000 Single -0.400-0.001 Manadonideng	0 No.	bristed Life-carries an with minor changes	4	2 Program	HA NA 194 3	2	4	5 3		3	9	1 3	5		1	: :	
2001.05.20 00(14.00 004) 2001.05.20 05 1231 12 949 2001.05.20 05 1231 12 949 2001.05.20 05 1231 12 949 2001.05.20 05 1231 12 949 2001.05.20 05 12 949 2001.0	51 Main 50 Fermin 15 Fermin 60 Fermin 20 Fermin 20 Fermin 50 Main	Oolege degree, bathelor, matter Some Callege, short continuing education or equivale Oolege degree, bathelor, matter Some Callege, short continuing education or equivale	Odings degree Odings degree Op to 9 years of school of Up to 6 years of school	Shows C	Sulpris no Otins no Argentra no	-U-600U-000 Single -U-600U-000 Manadodubsking Diess Single		bristed	4 0	2 Program 3 NA	IFA NA 16 3 Proper S No 2	2 1	4	5 3		2 2	9 6	3	5 4 3	1	2 1	1 8 2 9 3 6	
2001-06-20 003400 0040 0040 0050 0050 0050 0050 0	00 Female 18 Female 00 Female 00 Female 20 Female	College degree, technics, master Same Callege, what continuing advantion-or equivale College degree, technics, master	Odings degree Odings degree Op to 9 years of school of Up to 6 years of school	Shows of Full time ampliqued of Full time ampliqued of Full time ampliqued of Full time ampliqued of the Full time ampliqued of t	Skipela no Olina no Argentna no Sault-Africa no	-0.600-51000 Single -0.400-0.001 Manadonideng			0 0	2 Program 3 NA	HA NA 194 3	2 1	6 4 3	5 3 2 5 6 4 MA N		3 5 8	1 2 5	1 3 3	5 4 3	1 1 5	1 2 1	1 6 2 8 3 6 104 70	9 9 6

Figure 1: Sample Data

- Create dictionaries categorizing each identity group (e.g. gender, age, etc.). The keys are strings representing each identity group (e.g. 'Male', 'Female', or '15to19', '20to29', ...), and the values are integers measuring an identity group's average anxiety level, initialized to zero.

• Stage 2: Compute the data

- For each row, use the responses to calculate an anxiety score. Go through all identity group dictionaries and add the anxiety score to the corresponding keys. Track the population of each identity group.
- Calculate the average score for each identity group using its total score divided by its population.
- Find the maximum and minimum anxiety scores from every possible combination of identity groups, label them s_{max} and s_{min} respectively. Then, calculate their difference: $\Delta s = s_{\text{max}} s_{\text{min}}$. This is the scale of anxiety levels based on the entire population.

• Stage 3: Display the data

- First, show the average anxiety levels of each category of identities using a series of graphs, selected by the user using a drop-down menu. Scores for non-numerical attributes (gender, education, marital status, etc.) will be visualized using bar graphs, while scores for the age groups will be displayed with a histogram.
- The user's anxiety score the mean anxiety score of the user's inputted identity groups is ranked within the population. This ranking, as a percentage, will be represented by r.

*
$$r = \left(1 - \frac{s_{\text{usr}} - s_{\text{min}}}{\Delta s}\right) \times 100\%$$
, where s_{usr} is the mean of all groups' anxiety scores.

- Add interactivity by also allowing the user to see their rankings (using separate calculations) within specific identity groups, selected from a drop-down menu. This ranking will be r_2 .
 - * r_2 is calculated in a similar fashion to r, except excluding all other identities in the same category when computing $s_{2,\text{max}}$ and $s_{2,\text{min}}$.
- The textual output will be "You are less/more likely to be anxious than r % of the population" or "... than r_2 % of <selected_identity>." These statistics will also be displayed graphically using a gauge or a progress bar.

We will be using the external library PyQt5 to create an interactive graphical user interface (Riverbank Computing Limited., 2021). We will use the package's QWidget class along with its subclasses: QPushButton as interactive buttons; QLabel as text display; QLineEdit as one-line text input; plus many more to make the interface organized and engaging. To plot the data, we will be using PyQtGraph, a graphing library designed for PyQt5 (pyqtgraph, 2021). Compared to other mainstream plotting libraries, PyQt5 provides a fast refresh speed for rapid plot updates, making navigation between the graphs of different identity groups efficient. We will potentially be using the pyqtgraph.PlotWidget().plot(x, y) function to create the required graphs.

References

- Britannica, T. Editors of Encyclopaedia (2021, August 31). coronavirus. Encyclopedia Britannica. https://www.britannica.com/science/coronavirus-virus-group
- Government of Canada. (2021). https://health-infobase.canada.ca/covid-19/epidemiological-summary-covid-19-cases.html
- Mathieu, E., Ritchie, H., Ortiz-Ospina, E., Roser, M., Hasell, J., Appel, C., Giattino, C., & Rodés-Guirao, L. (2021). A global database of COVID-19 vaccinations. *Nature Human Behaviour*, 5(7), 947-953. https://doi.org/10.1038/s41562-021-01122-8
- Prout, T. (2021, July 8). The importance of mental health during a pandemic. *National University*. https://www.nu.edu/resources/the-importance-of-mental-health-during-a-pandemic/
- pyqtgraph. (2021). PyQtGraph (version 0.12.3) [Computer software]. https://www.pyqtgraph.org/
- Riverbank Computing Limited. (2021). PyQt5 (Version 5.15.6) [Computer software]. https://pypi.org/project/PyQt5/World Health Organization. (2021). #HealthyAtHome Mental health. https://www.who.int/campaigns/connecting-the-world-to-combat-coronavirus/healthyathome/healthyathome—mental-health
- Yamada, Y., Ćepulić, D.-B., Coll-Martín, T., Debove, S., Gautreau, G., Han, H., Rasmussen, J., Tran, T. P., Travaglino, G. A., Blackburn, A. M., Boullu, L., Bujić, M., Byrne, G., Caniëls, M. C. J., Flis, I., Kowal, M., Rachev, N. R., Reynoso-Alcántara, V., Zerhouni, O. . . . Consortium, C. O. G. S. (2021). COVIDiSTRESS Global Survey dataset on psychological and behavioural consequences of the COVID-19 outbreak. *Scientific Data*, 8(1), 3. https://doi.org/10.1038/s41597-020-00784-9