How Personally Relevant Cases of COVID-19 Influence Individuals' Level of Concern towards the Virus

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Abstract - This paper presents the findings of a statistical analysis exploring the ways in which personally relevant cases of COVID-19 influence an individual's level of concern towards the virus. The analysis makes use of public opinion data collected throughout the pandemic by a market research company called Ipsos. This study conducts an OLS regression analysis using three different samples of data from three distinct periods of time during the pandemic. The paper addresses each component of the study's deductive approach, outlining everything from the initial hypothesis to the conclusions and broader implications. Ultimately, this study does show evidence that an individual's personal experience with COVID-19 influences their attitudes towards the virus. This is consistent with the findings of previous psychological research that has explored how personally salient information affects humans' attitudes and beliefs.

Keywords - Level of Concern, COVID-19, Regression, Personally Relevant, Community

Introduction and Theory

Psychological research has uncovered many flaws that exist in human beings' cognitive processing. Oftentimes cognitive biases affect the way that we interpret and evaluate sensory information, which in turn influences our perception of world events.[1] Many academic studies have highlighted the apparent human tendency to

[1] Hilbert, M. (2012). Toward a synthesis of cognitive biases: How noisy information processing can bias human decision making. *Psychological Bulletin, 138*(2), 211–237. https://doi.org/10.1037/a0025940

overemphasize information that is personally relevant to us.[2] This can be attributed to attentional bias, which characterizes our tendency to focus on certain stimuli while ignoring others.

These cognitive biases and heuristics are especially interesting when we consider the role that they currently play in shaping our perception of COVID-19. COVID-19 has killed almost 300,000 Americans (as of December 2020), and the preventative lockdown measures implemented throughout the country in response to the virus have caused widespread unemployment and severe economic hardship. As a result of all of this turmoil, the pandemic has rightfully invoked varying amounts of fear and concern in every American citizen.

If our cognitive processes were always completely rational, we would expect individuals' level of concern towards the pandemic to stem from their evaluation of objective facts and metrics related to COVID-19. That is, we might expect an individual, in determining the severity of the outbreak and the appropriate level of concern to express towards it, to consider things such as the national mortality rate, the number of active cases, the unemployment rate, the vaccine timeline, etc. However, given what we know about our cognition and the biases that cause us to deviate from a strictly rational approach, it is likely that our evaluation of the COVID-19 outbreak is not entirely rooted in objectivity. Instead, I expect that personally relevant accounts of individual cases of COVID-19 disproportionately affect our perception of the virus.

I theorize that an individual's personal connection to positive cases of COVID-19 significantly influences their level of concern towards the virus. I predict that knowing someone that has tested positive for the virus increases an individual's level of concern towards COVID-19. I also expect that an even greater positive relationship exists between knowing someone who has died of COVID-19 and an individual's level of concern. In my study, I evaluate this theory by analyzing public opinion data from a series of surveys that have been conducted in waves throughout the pandemic. I look at three different waves of the survey to explore how the relationship between my variables of interest has varied over the last nine months. My results indicate that on average we can expect to find that individuals who know someone that has died of COVID-19 will express more concern towards the pandemic than those who don't know someone. Additionally, my findings suggest that for many variables, their ability to predict an individual's level of concern has varied throughout the pandemic depending on the different surges of the outbreak.

[2] Bradley C. Riemann & Richard J. McNally (1995) Cognitive processing of personally relevant information, Cognition and Emotion, 9:4, 325-340, DOI: 10.1080/02699939508408970

Theory and Previous Literature

Given the novelty of COVID-19, there is a very limited amount of previous literature on this particular subject. Nevertheless, over the course of the pandemic, a number of academics have begun analyzing the concept of fear as it relates to the Coronavirus. On March 27th of this year, the Internal Journal of Mental Health and Addiction published a report entitled *The Fear of COVID-19 Scale: Development and Initial Validation*.[3] The article outlines the methodology and findings of a study conducted by Daniel Kwasi Ahorsu and five others. In this study, researchers develop an instrument that measures the amount of COVID-19 fear present within individuals. In order to create this tool, researchers conducted an extensive literature review and extracted every metric previously used in an academic work to measure fear. 30 fear-measuring metrics were ultimately selected, at which point panels of highly qualified fear-studying individuals were assembled in order to assess each metric. There were multiple rounds of assessment, during which panelists rigorously evaluated each metric and chose to eliminate metrics thought to be inadequate for any reason. In the end, seven fear-measuring metrics remained to serve as the input for this Fear of COVID-19 Scale. Each of the seven inputs was recorded using a five-point Likert-type scale, and the combined score of an individual's seven metrics represented his or her overall fear of COVID-19. Thus, each participant's fear towards COVID-19 ranged from a minimum of 7 (1 on each measure) to a maximum of 35 (five on each measure).

The data from the participants in this study (717 Iranian citizens) was used to judge the functionality of the Fear of COVID-19 Scale (FCV-19S). The paper reports that the "findings demonstrated that the FCV-19S has a stable unidimensional structure with robust psychometric properties." Additionally, potentially confounding variables such as age and sex were found to cause no disruption to the response pattern, suggesting that the FCV-19S is a reliable gauge of the psychological effects produced from COVID-19 in various types of individuals.

My project shares the same overarching objective as Ahorsu et al. in this study. Both Ahorsu et al. and I seek to better understand the psychological effects of COVID-19, and more specifically the fear and concern that the virus invokes in individuals. The tangible external destruction that this virus has caused within society is obvious; however the internal effects it has caused within individuals is rather unclear. It is entirely possible that individuals' extreme levels of concern

[3] D.K. Ahorsu, C.Y. Lin, V. Imani *et al.* The Fear of COVID-19 Scale: Development and Initial Validation. *Int J Ment Health Addiction* (2020). https://doi.org/10.1007/s11469-020-00270-8

towards the virus may be exacerbating the harm of the virus itself. This study by Ahorsu et al. is one of the few pieces of academic literature so far that has shed light on the significance of fear as it relates to this pandemic. While my project seeks to achieve the same goal, my underlying analysis differs from that of Ahorsu et al. in three noticeable ways. First, Ahorsu et al. focus on the precise measurement of individuals' fear of COVID-19, whereas I accept the accuracy of the self-reported data and instead spend my time analyzing how different variables, mainly personally relevant information, amplify individuals' concern towards COVID-19. Second, my data consists of American participants while Ahorsu et al. use data from Iranian participants. Finally, Ahorsu et al.'s study was conducted in March at the very outset of the pandemic. In contrast, I examine data from three different periods of time (May, July and October of 2020) in order to understand how individuals' concern towards COVID-19 has changed as the pandemic has progressed.

Data

The data that I use for my analysis comes from a series of surveys sponsored by Axios. Axios is a media company that was founded in 2016 that seeks to be nonpartisan. The different surveys within this Axios-sponsored study are facilitated by a third-party market research company called Ipsos. Ipsos has delivered these surveys to individuals during the pandemic through a web-based platform called KnowledgePanel. I am able to access the corresponding data through the Roper Center for Public Opinion Research.

The Axios/Ipsos Coronavirus Index Study has been carried out in multiple different installments over the course of the pandemic. As of today, the study includes 31 waves of surveys, with the first wave taking place in March and the most recent wave taking place in mid October. Each survey wave includes between 1,000 and 1,100 American adult participants. The core survey questions remain consistent in each wave;however, some questions have been added over time in response to different developments with the virus. In addition to collecting participants' demographic characteristics, each survey asks individuals questions about their experiences during the pandemic. The responses generate data on individuals' level of activity and internal feelings and beliefs during the outbreak.

In my analysis, I specifically look at three survey waves: One which ran from May 15th through May 18th, one which ran from July 31st through August 3rd, and one which ran from October 16th through October 19th.[4] In considering which

[4] Axios. Axios/Ipsos Coronavirus Index Wave 27. (Dataset, Version 2). Cornell University, Ithaca, NY: Roper Center for Public Opinion Research, Nov-11-2020. Web. Dec-14-2020. doi:10.25940/ROPER-31117737

waves to use for my analysis, I needed to ensure that a sufficient number of participants in each wave knew of individuals that had contracted or died from COVID-19. As such, I was reluctant to use waves from March and April because of the limited amount of testing that was available during this time. Additionally, I wanted to examine three waves that were substantially spaced apart in order to evaluate differences in participants' response patterns over the last nine months. Using this selection criteria, I eventually settled on these three waves. For the sake of simplicity, from here on out I will refer to these waves as Wave 1 (May), Wave 2 (Jul/Aug) and Wave 3 (Oct).

In my study, an individual's level of concern towards COVID-19 serves as my dependent variable. The Axios/Ipsos surveys ask individuals, "How concerned are you, if at all, about the coronavirus or COVID-19 outbreak?" Participants then select from one of the following responses: extremely, very, somewhat, not very, or not at all concerned. When coding this categorical variable, I designed it as a numerical scale in which four represents 'extremely concerned' and zero represents 'not at all concerned'.

The independent variables in my study derive from the following three survey questions: 1.) "Do you personally know anyone in the U.S. who has tested positive for the coronavirus? 2.) Do you personally know anyone in the U.S. who has died due to the coronavirus? 3.) Does the person or
do any of the people that you know who have tested positive for the coronavirus live in your community?" Participants' answers to each question are translated into binary code with zero representing a 'no' response and one representing a 'yes' response. Each of these three variables examines an individual's personal connection to individual cases of COVID-19. I am interested in understanding the predictive power of a 'yes' answer to any combination of these three questions as it relates to an individual's level of concern towards the virus.

I include control variables in my analysis for all of the demographic characteristics which I believe have the potential to interfere with and confound the relationship between my independent and dependent variables. In other words, in order to ensure that my analysis highlights the relationship between personally relevant cases of COVID-19 and an individual's level of concern towards the virus, I control for participants' partisanship, age, gender, urban-rural classification, regional location, ethnicity, and income.

An individual's party alignment has shaped their social distancing behavior during the lockdown. An individual's level of activity during the pandemic influences both the chances that they know someone that has contracted the virus and their personal fear towards the virus. In order to measure the influence of a liberal or conservative political ideology, I make Republicans my excluded group and create two dummy variables for Independents and Democrats.

An individual's age is closely connected to his or her fear of the virus, as the elderly are typically more at risk from the virus than younger individuals. Additionally, different age groups are very likely to have different personal connections to individual cases of COVID-19. In my analysis, individuals between the ages of 18 and 40 serve as my excluded group and I create two binary variables for individuals between the ages of 41 and 60 and individuals over the age of 60.

I control for sex because of the possibility of gender differences in cautious behavior toward the pandemic. Females serve as my excluded group, against which I measure the effect of being male. I also include controls for two types of geographical location. The first is urban-rural classification. Cities have experienced larger outbreaks than rural areas, and as such, individuals dwelling in urban areas may be more likely to know individuals with the virus and may also be more fearful of the virus. Rural dwellers serve as my excluded group, against which I measure the effect of living in an urban area and living in a suburban area. Additionally, I also control for regions of the country because different regions have experienced surges in cases at different times throughout the pandemic. The Midwest serves as my excluded group and I create three variables that represent individuals living in the South, West and Northeast.

My final two variables control for participants' income and ethnicity. Health organizations have reported that COVID-19 has disproportionately affected racial minorities and low income earners. For individuals in these groups, this unfortunate reality very likely affects the number of individuals they know who have contracted the virus as well as their personal level of concern towards the virus. For income, low income earners ($0k - $59,999) serve as my excluded group, against which I measure the effect of mid-level income earners ($60k - $124,999) and high income earners ($125,000+). For ethnicity, racial minorities and dual-raced individuals serve as my excluded group, against which I measure the effect of being White.

My dependent, independent and control variables remain the same for each survey wave that I inspect in my study. Nevertheless, with each passing day more and more people contract and die of COVID-19. As a result, the number of individuals answering 'yes' in my independent variables increases with each survey wave. This makes it so that the number of 'yes' responses for these variables is greater in Wave 2 than in Wave 1 and greater still in Wave 3 than in Wave 2. Furthermore, for an individual to answer the 'lives in your community' question, he or she must necessarily know someone that has contracted the virus. Therefore for this 'community' variable, all of the observations where participants do not know someone that has contracted COVID-19 must be deleted. As such, the sample size for this independent variable is substantially smaller than for the others. Below I include a descriptive statistics table for Wave 3, which is the most recent wave in my analysis. The exhibit displays several of the basic underlying features within the

variables that I use for my analysis.

Table 1- Wave 3: Descriptive Statistics of the Variables used in the Regressions

Statistic	N	Mean	St. Dev.	Min	Max
Concern about outbreak (4 = extremely concerned)	997	2.597	1.169	0.000	4.000
Know Someone who Contracted Virus	1,001	0.612	0.487	0.000	1.000
Know Someone who Died from Virus	1,000	0.222	0.416	0.000	1.000
Person who Contracted lives in your Community	612	0.544	0.498	0.000	1.000
Independent	914	0.303	0.460	0.000	1.000
Democrat	914	0.381	0.486	0.000	1.000
Age 41-60	1,004	0.331	0.471	0	1
Age over 60	1,004	0.367	0.482	0	1
Male	1,004	0.506	0.500	0	1
Lives in Suburbs	1,004	0.485	0.500	0	1
Lives in Urban Area	1,004	0.358	0.480	0	1
Lives in Northeast	1,004	0.172	0.378	0	1
Lives in South	1,004	0.355	0.479	0	1
Lives in West	1,004	0.247	0.431	0	1
White	1,004	0.685	0.465	0	1
Middle-Level Income	1,004	0.344	0.475	0	1
High Income	1,004	0.275	0.447	0	1

Hypotheses and Empirical Tests

I hypothesize that individuals who know someone that has contracted the virus will report a higher level of concern on average than those who do not know someone. Additionally, I expect this effect to be amplified for individuals who know someone that has died of the virus and for individuals who know someone that has tested positive in their community. Finally, I expect that the magnitude of these variables' effect on an individual's level of concern has diminished over time. I predict that in May, knowing someone that contracted COVID-19 (Wave 1) had a larger increase on an individual's level of concern than it did in October (Wave 3).

The null hypothesis in my analysis holds that there is no statistically significant relationship between an individual's level of concern towards the virus and knowing someone that has contracted COVID-19, died of COVID-19, or contracted COVID-19 and lives in one's community. The alternative hypothesis being tested is that knowing someone in any of these three categories increases an individual's level of concern towards COVID-19. In order to reject the null hypothesis, the independent variables must create a sizable difference in an individual's level of concern with a low probability that this difference can be attributed to chance alone.

I use two sets of multivariate Ordinary Least Square (OLS) regressions to test my hypotheses. In each regression, an individual's level of concern acts as my dependent variable. For my first set of OLS regressions, knowing someone that has contracted COVID-19 and knowing someone that has died of COVID-19 act as my

independent variables. In my second set of OLS regressions, knowing someone that has died of COVID-19 and knowing someone that has contracted the virus in one's community act as my independent variables. Since the 'lives in one's community' variable is necessarily dependent on knowing someone with the virus, I can not include both of these variables in the same regression.

For both sets of regressions, I run one regression without controls and one regression with controls. This allows me to measure the impact of adding controls to my regressions. The regressions with controls are less likely to contain omitted variable bias, and thus I can be more confident that the independent variables in these regressions are responsible for the effect they produce on an individual's level of concern. Finally, each regression in my analysis is weighted in order to create a sample that more closely resembles a representative portion of the population.

Results

Table 2 displays the output from my first set of OLS regressions while Table 3 displays the output from my second set of OLS regressions. Each table displays the regressions for each of the three survey waves. In addition, each survey wave includes two regressions, one with control variables and one without control variables.

The results from my analysis support some of my hypotheses and contradict others. When discussing the results, I will refer to my dependent variable as *concern* and to my three independent variables as *pos, died,* and *comm*. Additionally, in the regression tables the asterisks next to the numbers denote specific ranges of p-values. Using the analytical standard of 0.05, we can assume that any number with two or more stars is statistically significant.

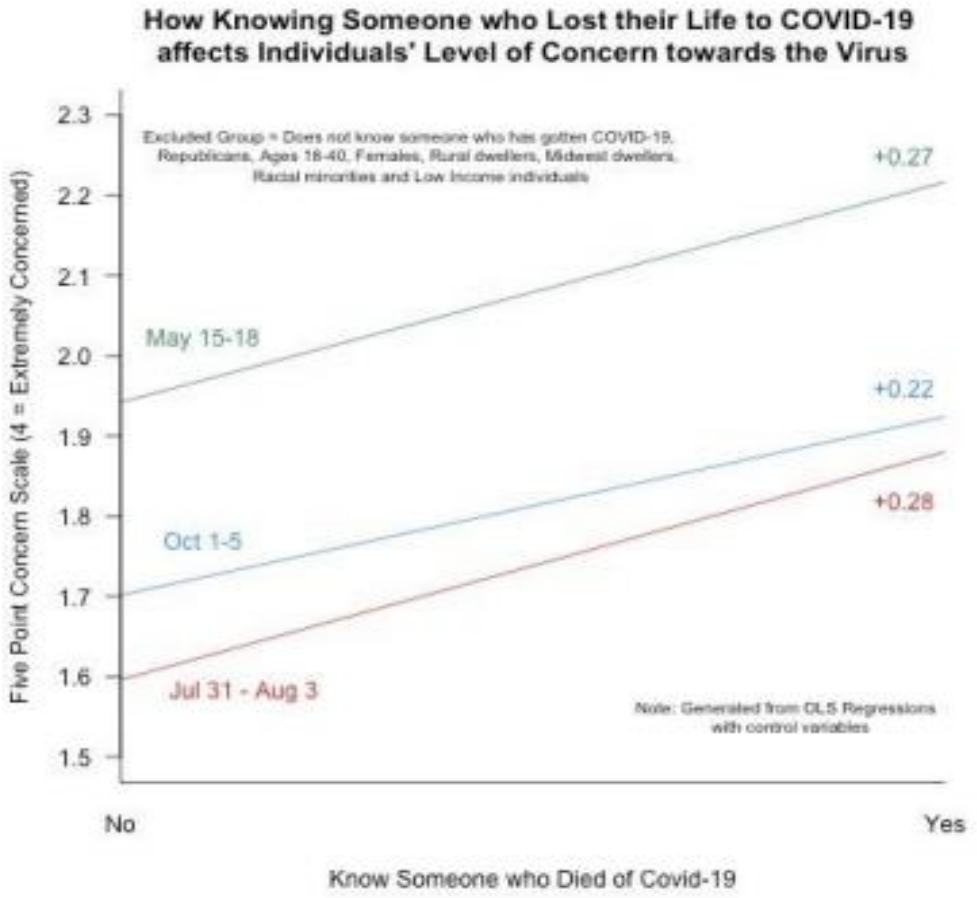
Looking first at Table 2, we see that *died* maintains a p-value of 0.05 or less in each survey wave and in each regression with and without controls. Additionally, the coefficient for *died* with control variables in place ranges from 0.22 - 0.28. The dependent variable *concern* takes on values from zero to four, with each numerical increase representing an elevated level of fear in respondents. The intercept in the regressions with controls ranges between 1.5 and 1.95. Therefore, these results suggest that throughout the pandemic an individual who knows someone that died of COVID-19 is about 14% (0.25 / 1.75 ~ 1/7) more concerned about the virus than an individual who does not know someone. This data gives us reason to reject the null hypothesis for *died*. The relationship between *died* and *concern* is visually depicted in the graph on page 10.

The coefficients for *pos* are more inconsistent than for *died*. For Waves 1 and 3, we see coefficients of 0.14 and 0.17. Additionally, the p-value for Wave 1 is within 0.1

while the p-value for Wave 3 is within 0.05. In contrast, the *pos* coefficient for Wave 2 is 0.06, which is much smaller than the other two waves, and the p-value is 0.39, which tells us that there is very little chance of statistical significance. So, we fail to reject the null hypothesis for Wave 2 and reject the null hypothesis for Wave 3. Wave 1 is ambiguous, as the coefficient is substantially large but the p-value (0.07) is slightly greater than the 0.05 benchmark. However, I can confidently conclude from the data that knowing someone that has contracted COVID-19 had a much stronger influence on an individual's level of concern in May and October than in the middle of the summer. These two periods align with the two major surges in the virus that we have witnessed over the course of the last few months, with one in the spring and the other in the fall. Thus, there is some evidence to suggest that knowing someone that has contracted COVID-19 increases an individual's level of concern during surges in the outbreak.

Additionally, we can assert that on average knowing someone that has died of COVID-19 increases an individual's concern towards the virus more than simply knowing someone that has contracted the virus.

Only a few of the control variables in this set of regressions produce a consistent statistically significant effect on an individual's level of concern. Generally speaking, we see that the older and more liberal someone is, the more concerned they tend to be of the Coronavirus. Males also appear to express less concern towards the virus on average than females. However, for the remaining control variables, the size of both their coefficients and p-values are very sporadic across the different regressions. In fact, it is difficult to find any patterns in the relationships exhibited.



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It is possible that regional effect on concern is somewhat correlated with the different surges in each region. Individuals in the Northeast were significantly more concerned than those in the Midwest during Waves 1 and 3, while Southerners were significantly more concerned than Midwesterners during Wave 2. The South experienced a significant increase in cases during June and July, while the Northeast's primary surges were in the spring and again in the fall. The results also suggest that on average Whites and higher income earners are less concerned about the virus than racial minorities and lower income earners; however, the p-values across the three waves are not low enough to reject the possibility that this is due to chance alone. Finally, for urban-rural classification, I am only able to reject the null hypothesis in Wave 3, in which suburban dwellers were 0.18 units more concerned and urban dwellers were 0.27 units more concerned than rural dwellers.

Table 2: Level of Concern towards Outbreak and Knowing Someone who Contracted or Died of COVID-19

	Reported Level of Concern					
	Three Survey Waves					
	May 15-18		Jul 31-Aug 3		Oct 1-5	
	(1)	(2)	(3)	(4)	(5)	(6)
Know Someone who Tested Positive	0.234***	0.142*	-0.033	0.058	0.078	0.170**
	(0.083)	(0.080)	(0.071)	(0.068)	(0.079)	(0.074)
Know Someone who Died of Covid	0.457***	0.275**	0.435***	0.284***	0.377***	0.222***
	(0.114)	(0.109)	(0.091)	(0.087)	(0.091)	(0.085)
Independent		0.280***		0.727***		0.527***
		(0.087)		(0.083)		(0.087)
Democrat		0.822***		1.024***		1.096***
		(0.084)		(0.083)		(0.084)
Age between 41 and 60		0.301***		0.431***		-0.021
		(0.080)		(0.076)		(0.081)
Age over 60		0.469***		0.635***		0.429***
		(0.083)		(0.081)		(0.083)
Male		-0.189***		-0.053		-0.216***
		(0.067)		(0.064)		(0.067)
Live in Suburbs		0.148		0.073		0.182*
		(0.098)		(0.089)		(0.100)
Live in Urban Area		0.144		0.085		0.270**
		(0.104)		(0.098)		(0.106)
Live in Northeast		0.237**		0.161		0.267**
		(0.107)		(0.103)		(0.111)
Live in South		0.173*		0.274***		0.122
		(0.092)		(0.087)		(0.093)
Live in West		-0.047		0.240**		0.118
		(0.103)		(0.097)		(0.104)
White		-0.078		-0.096		-0.209***
		(0.076)		(0.074)		(0.077)
Mid Level Income		-0.055		-0.222***		-0.110
		(0.079)		(0.076)		(0.081)
High Income		-0.101		-0.099		0.002
		(0.085)		(0.081)		(0.086)
Constant	2.544***	1.942***	2.632***	1.596***	2.456***	1.702***
	(0.043)	(0.150)	(0.047)	(0.148)	(0.060)	(0.162)
Observations	1,000	933	1,118	1,017	996	911
R2	0.042	0.196	0.021	0.239	0.022	0.265
Note:						*p<0.1; **p<0.05; ***p<0.01

There are a few other noteworthy takeaways from Table 2. First, we see on average that as controls are added to the regressions, the coefficients for *pos* and *died* decrease. This shows that control variables such as partisanship and age are at least partially responsible for the effect that we witness in the regressions without controls.

Additionally, it is interesting to see how the constant changes in each regression with controls. The constant represents the average level of concern of all of the excluded groups. We see that participants were the least concerned in Wave 2 and the most concerned in Wave 1. This makes sense, as back in May there was still lots of uncertainty and widespread fear. In the middle of the summer, more information became available and case numbers dropped. However, as the fall began, we saw national case numbers rise again, which may explain why the average level of concern increases from Waves 2 to 3.

Looking next at Table 3, we see that knowing someone that has had COVID-19 in one's community only produced a statistically significant change in an individual's level of concern in Wave 1. Interestingly enough however, we see that when we add controls to the regression in Wave 1, *comm* becomes statistically significant while *died* loses its significance. As such, for Wave 1 we reject the null hypothesis for *comm* and fail to reject the null hypothesis for *died*. This suggests that early on in the pandemic, individuals who knew someone that had contracted the virus in their community were approximately 0.268 units more concerned towards the virus than those who knew someone that had contracted the virus but did not live in their community. This implies that at the outset of the pandemic, it was the location of the personally relevant COVID-19 cases (in someone's community) rather than the outcome (death) that was producing an increase in individuals' level of concern. An interpretation of this could be that early on, individuals were terrified of getting the virus given the lack of uncertainty surrounding its
effects.

Additionally, given the novelty of the virus, knowing somebody in one's community that tested positive would certainly induce a lot of fear. However, as time has progressed we have all known of more and more individuals that have gotten it, and so simply knowing someone that has contracted the virus, regardless of the proximity to you, has become less meaningful. Meanwhile, knowing someone that has died from COVID-19 continues to increase concern within individuals because it gives individuals a close glimpse at the deadly nature of the virus.

Table 3: Level of Concern and Knowing Someone who Tested Positive in your Community

	Reported Level of Concern					
	Three Survey Waves					
	May 15-18		Jul 31-Aug 3		Oct 1-6	
	(1)	(2)	(3)	(4)	(5)	(6)
Know Someone w Covid in your Community	0.203	0.268**	0.001	0.048	0.066	0.142
	(0.123)	(0.122)	(0.094)	(0.090)	(0.092)	(0.087)
Know Someone who Died of Covid	0.416***	0.188	0.406***	0.280***	0.449***	0.299***
	(0.125)	(0.130)	(0.101)	(0.098)	(0.097)	(0.095)
Independent		0.137		0.632***		0.516***
		(0.173)		(0.117)		(0.111)
Democrat		0.562***		0.961***		1.083***
		(0.160)		(0.116)		(0.106)
Age between 41 and 60		0.098		0.489***		-0.086
		(0.139)		(0.102)		(0.101)
Age over 60		0.369**		0.636***		0.302***
		(0.158)		(0.120)		(0.107)
Male		-0.235*		0.015		-0.202**
		(0.120)		(0.091)		(0.085)
Live in Suburbs		0.209		0.188		0.310**
		(0.182)		(0.127)		(0.125)
Live in Urban Area		0.510**		0.246*		0.294**
		(0.201)		(0.138)		(0.132)
Live in Northeast		0.319*		-0.029		0.287**
		(0.174)		(0.145)		(0.137)
Live in South		0.270		0.169		0.044
		(0.168)		(0.122)		(0.112)
Live in West		-0.041		0.157		0.077
		(0.187)		(0.139)		(0.132)
White		-0.063		0.062		-0.101
		(0.132)		(0.103)		(0.099)
Mid Level Income		-0.109		-0.360***		-0.175*
		(0.144)		(0.109)		(0.103)
High Income		-0.150		-0.204*		-0.015
		(0.151)		(0.114)		(0.109)
Constant	2.713***	2.117***	2.605***	1.599***	2.476***	1.753***
	(0.086)	(0.284)	(0.072)	(0.204)	(0.072)	(0.201)
Observations	329	309	516	473	612	568
R2	0.045	0.179	0.031	0.259	0.036	0.266
Note:					*p<0.1; **p<0.05; ***p<0.01	

One crucial component of the data in Table 3 is that the number of observations used for these regressions is relatively small. This is on account of the fact that an individual must know at least one person that has contracted the virus in order to answer the question "does the person or do any of the people that you

know who have tested positive for the coronavirus live in your community." Thus, we cannot be as certain about the results in this set of regressions as we are about the set of regressions in Table 2.

Discussion and Conclusion

In summary, we can conclude that there is evidence that an individual's personal connection and relationship to positive cases of COVID-19 significantly increases his or her level of concern towards the virus. Additionally, we have witnessed various predictors of an individual's level of concern change in terms of their size and certainty at different times throughout the pandemic. Early on, knowing someone that had COVID-19 in your community seemed to substantially increase an individual's level of concern; however, this relationship disappeared in later survey waves. Knowing someone that died from COVID-19 produced a consistent increase in concern in almost every wave, regardless whether or not the regressions included control variables. Finally, we saw that during the periods of surges in the outbreak, individuals that simply knew someone that had tested positive for the virus would on average be more concerned than those who did not know anyone that tested positive.

There was a surprising amount of irregularity in the relationship between many of the control variables and an individual's level of concern. Nevertheless, there was evidence that some controls, such as geographic location, served as predictors of an individual's level of concern only during the different surges of the outbreak.

Similar to the study conducted by Ahorsu et al., my analysis suggests that our fear of COVID-19 is affected by our subjective experience and connection to the virus itself. These results highlight the need for additional research regarding the role that individuals' internal emotions play in contributing to the harmful nature of the virus itself.

It is always important to consider potential confounds that could undermine the validity of the results of a study. For instance, in the Axios/Ipsos Coronavirus Index Study participants filled out their survey online. The reliability of online surveys is questionable, and it is well-documented that certain types of individuals are more likely to take surveys than others. This is oftentimes difficult to account for even when using weights in the data. In addition, I use a self-reported five-point scale of an individual's level of concern as the dependent variable in my regressions, and it is fair to question whether this is the most accurate measure of concern. Finally, it would have been useful to be able to include controls for an individual's personal health conditions. It is possible that individuals with underlying health conditions are more likely to be concerned of the virus and more likely to know individuals who have died from the virus,

which would potentially confound the results of the regression analyses.

I would have also liked to have been able to look at information regarding the specific nature of the COVID-19 cases that individuals knew of. For instance, it is possible that the severity of the known case corresponds to an individual's level of concern. I say this because many individuals know friends or family members that have tested positive and experienced no symptoms. In these cases, it is realistic to think that this experience might diminish an individual's level of concern towards the virus. This may be an intriguing area to explore further for anybody that is interested in expanding upon my work in this study.

This study is meaningful because it allows us to gain a better understanding of fear and concern as it relates to COVID-19. Fear, on account of its ability to alter the way that we think and act, is undoubtedly one of the greatest enemies to mankind. The findings in this study align with our preexisting knowledge of how human beings overemphasize personally relevant information when forming judgments and decisions. We see that despite the large amounts of overarching information available regarding who is vulnerable to the virus and what the typical symptoms are, it is the individual cases that we all know of that ultimately affect how we interpret the virus' severity. As such, the role that fear plays in aggravating the destructiveness of the pandemic cannot be understated. When individuals that know of positive cases think of COVID-19, they likely think of the family member, friend, or co-worker that has contracted the virus. The closeness of the virus in this instance makes the danger feel more tangible and real, and as such, we see that these individuals express greater levels of concern than individuals who do not know someone that has contracted the virus.

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