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New Measures of the COVID-19 Pandemic: A New Time-Series Dataset

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The multitude of papers exploring the effects of the COVID-19 pandemic over the last 12 months has motivated us to develop new, alternative measures of COVID-19. One limitation of current research has been the lack of robustness in quantifying the effects of the pandemic. We use a novel approach, word searches from popular newspaper articles, to capture key variants of proxies for the pandemic. We thus construct six different indices relating to the COVID-19 pandemic, including a COVID index, a medical index, a vaccine index, a travel index, an uncertainty index, and an aggregate COVID-19 sentiment index.

I. Introduction

The literature on the COVID-19 pandemic from a business and economics point of view has grown at an unprecedented rate, with over 100 papers on this subject in business and economics journals (for surveys of the literature, see Padhan & Prabheesh, 2021; Sha & Sharma, 2020; Sharma & Sha, 2020). In this note, we develop different measures of COVID-19 using data from all articles on the COVID-19 pandemic in the 45 most popular newspapers worldwide. We propose a total of 327 keywords that relate to different aspects of COVID-19. These keywords are exhaustive and thus representative of the pandemic, allowing us to construct its different dimensions. Specifically, we develop indices for travel, vaccine, medical, COVID-19, and uncertainty. We add to these five indices an aggregate index (containing all 327 words) we refer to as the pandemic sentiment index. These six indices capture all COVID-19-related matters, are unique, and differ from what has been predominantly used in the literature.

Specifically, we consider the different proxies used in the literature. The most popular measure of COVID-19 has been the number of deaths and the number of virus cases (Gurrib et al., 2021; Haroon & Rizvi, 2020). Other COVID-19 measures include the Google-based COVID-19 fear sentiment and investor attention to the pandemic (Chen et al., 2020), a global fear index that combines indices of COVID-19 cases and deaths (Salisu & Akanni, 2020), an index of uncertainty due to pandemics and epidemics (Salisu & Sikiru, 2020), an accounting index reflecting the periods before and after the COVID-19 outbreak (He et al., 2020), and other government response indices, such as the COVID-19 government re-

sponse stringency, containment and health, and economic support indices (Chang et al., 2021).

The literature has not considered more specific news-based measures, such as those that relate to the development of vaccines (our vaccine index), medical progress (our medical index), or travel (our travel index). Researchers have used COVID measures such as the numbers of deaths and infections from COVID-19 and governmental responses to the virus, and, in this regard, our COVID index is similar but sharply different in the way we measure it (see Section II for details). Our set of keywords provides a COVID-19 measure that goes far beyond numbers of virus cases and deaths, and we therefore consider it a more comprehensive measure of COVID-19.

Similarly, while researchers have used measures of COVID-19-related uncertainty (e.g., Ahir et al., 2019; Chen et al., 2020; Salisu & Akanni, 2020; Salisu & Sikiru, 2020), they capture only a narrow definition of uncertainty. Our measure, because it covers keywords depicting uncertainty, is broader and, at the very least, offers an alternative proxy for uncertainty due to the pandemic. Finally, our aggregate measure of COVID-19 (A_COVID), which incorporates all 327 words, is a broad representation of pandemic sentiment, both positive and negative, and it stands out as an overall measure of pandemic sentiment.

Our contribution to the literature consists of our alternative measures of COVID-19. We do not obtain these by counting the numbers of deaths and virus cases, as has predominantly been done, but by searching for keywords in newspapers that best represent the ramifications of the COVID-19 pandemic. In addition, we offer variants of the COVID-19 proxies that capture events related to vaccines,

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medical progress, travel, and uncertainty. We provide a total of six indices representing different aspects of the pandemic, none of which have been considered to date, at least from a business and economics point of view. This variety of indices offers researchers an opportunity to a) conduct robustness tests on previous findings in the literature and b) determine the effects of specific COVID-19-related developments on financial and economic systems. Our proposed dataset thus provides a platform for additional research.

II. Index construction

A. Data collection

Our data collection begins with the identification of keywords that relate to the COVID-19 pandemic. The search is broad, to be as informative and accommodative of the pandemic as possible. We thus create a dictionary of 327 words, which are listed in [Table 1](#) (Panel A). This is the first step.

The second step is to consider the newspapers from which to extract COVID-19-related articles. From Narayan's (2019) list of 100 major sources of newspapers globally, we select 41 international newspapers, which represent the bulk of the publications, and add another four premier publications (*The Washington Post*, *Los Angeles Times*, *USA Today*, and *Chicago Tribune*) for our data. These newspapers are available from the ProQuest database, our main data source for newspapers. [Table 1](#) (Panel B) shows the list of newspapers.

B. Index construction

For each of the 45 newspapers, we retrieve daily news articles published between December 31, 2019, and to April 28, 2021, from the ProQuest database. The start date is motivated by the discovery of the COVID-19 virus while the end data is based on the time this paper was concluded. Using the ProQuest TDM Python algorithm, we count the number of times each word in our dictionary appears in these publications' daily articles. For each type of data (i.e., COVID, medical, vaccine, travel, uncertainty, and aggregate), say, T , we sum the daily word count, as detailed in [Table 2](#).

In the next step, we run a heteroskedasticity-consistent ordinary least squares (OLS) regression of T on day-of-the-week dummy variables. We exclude the Wednesday dummy to avoid the dummy variable trap. The resulting constant and residuals from the OLS model are added to adjust the data for day-of-the-week effects. We thus obtain $T - adjusted_t$, where t denotes time. In the third step, we compute the index as

$$T - adjusted\ Index_t = \left(\frac{T - adjusted_t - \min(T - adjusted_t)}{\max(T - adjusted_t) - \min(T - adjusted_t)} \right) * 100 \quad (1)$$

III. Dataset

The time-series indices based on Equation (1) are presented in [Table 3](#). There are six indices, and the aggregate index includes all 327 keywords. An MS Excel version of the dataset is available from the authors.

IV. Concluding remarks

The objective of this note is to present a new dataset for measures of COVID-19. Motivated by the large volume of empirical studies on the COVID-19 pandemic, we present researchers with multiple proxies for COVID-19, allowing future researchers to both test new hypotheses and confirm the robustness of existing empirical conclusions. We intend to update the dataset quarterly and post the updated data on various platforms, including the journal's webpage, the authors' homepages, and ResearchGate.

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Table 1: List of international newspapers and the dictionary of words used to construct the indices

Panel A: Dictionary of words						
Layoff	Criminals	Electricity	Care	Hoard	Predicted	Legislating
Layoffs	Criminally	Internet	Symptoms	Hoards	Prediction	Legislator
Aircraft	Cybercrime	Blackout	Symptom	Hoarded	Predictions	Legislators
Crews	Cybercrimes	Failure	Crew	Hoarder	Forecast	Legislature
Redundant	Airline	Failed	Pilot	Hoarders	Forecasts	Legislatures
Pilots	plane	Failures	Diagnosis	Hack	Forecasting	Cybercriminals
Downsize	Theft	Internet	Diagnose	Hacks	Uncertain	Cybercriminal
Downsized	Cybertheft	Generator	Diagnosed	Hacked	Uncertainty	Unemployment
Downsized	Steal	Oil	Recover	Hacking	Risk	Aircrafts
Downsizing	Stealing	Covid-19	Recovered	Hackers	Risks	Airplane
Cabin	Stolen	Covid	Recovering	Security	Risked	Airplanes
Income	Prosecute	Coronavirus	Recovery	Secure	Riskier	Asymptomatic
Incomes	Prosecutes	Pandemic	Recoveries	Secured	Riskiest	Redundancies
Wage	Prosecutor	Epidemic	Recovers	Securing	Risky	Symptomatic
Wages	Prosecutors	Virus	Isolated	Secures	Riskiness	Unemployed
Pay	Prosecutorial	Viruses	Isolate	Cyber	Risking	Attendant
Pays	Prosecuted	Vaccine	Isolating	Safety	Default	Attendants
Paid	Law	Vaccines	Isolation	Workers	Defaults	Downsizings
Payment	Laws	Doctor	Quarantine	Worker	Defaulting	Cabins
Payments	Lawsuit	Doctors	Quarantines	Work	Defaulted	Flight
Hours	Lawsuits	Medicines	Quarantined	Workforce	Freeze	Flights
Union	Court	Medicine	Airport	Bank	Freezes	Passengers
Unions	Magistrate	Nurse	Airports	Banks	Freezing	Economy
Unionised	Fraud	Nurses	Hotel	Banked	Froze	Business
Bargain	Fraudulent	Hospital	Hotels	Banking	Bankrupt	Vacation
Bargains	Justice	Hospitals	Airfare	Credit	Bankruptcy	Ambulances
Bargained	Witness	Emergency	Airfares	Credits	Death	Motels
Bargaining	Witnesses	Died	Curfew	Card	Bankrupted	Accommodation
Shutdown	Witnessed	Motel	Restrict	Cards	Defer	Recession
Shutdowns	Testify	Ambulance	Restricts	Mortgage	Defers	Recessions
Lockdown	Testifying	Patient	Restricting	Mortgages	Deferred	Possible
Lockdowns	Testimony	Patients	Restricted	Dead	Deferment	Possibility
Salary	Victims	Serious	Restriction	Loan	Regulations	Possibilities
Salaries	Victim	Seriously	Restrictions	Loans	Regulation	Precaution
Firing	Victimized	Intensive	Facemask	Interests	Regulate	Precautions
Fired	Victimised	Contagious	Mask	Interest	Regulates	Bankruptcies
Suspend	Employer	Spreads	Face	Rate	Regulating	Reregulation
Suspends	Employers	Spread	Hygiene	Rates	Regulated	Mortgaged
Suspended	Employees	Infections	Hygienic	Inflation	Deaths	Suspensions
Suspension	Employee	Infection	Sanitize	Debt	Regulator	Emergencies
Die	Employed	Infectious	Sanitizes	Debts	Regulators	Social
Quit	Employment	Infect	Sanitized	House	Act	Distance
Quits	Labor	Infects	Sanitizers	Houses	Acts	Distances
Jobs	Labour	Infected	Sanitiser	Housing	Legislation	Distanced
Crimes	Power	Outbreaks	Sanitisers	Predict	Legislate	Distancing
Crime	Outage	Outbreak	Sanitizing	Predicts	Legislates	

Criminal	Loadshedding	Health	Hoarding	Predictive	Legislated
Panel B: Newspaper source					
BBC		Manila Bulletin		The Australian	
The Guardian		The Scotsman		The Irish Examiner	
Australian Broadcasting Corporation		The Canadian Press		The Herald (Glasgow, Scotland)	
Calgary Herald		ArabianBusiness.com		China Daily	
The Independent		Times of India		Pakistan Press International Information Services	
All Africa		Toronto Star		Kuwait News Agency (Kuna)	
The Australian Financial Review		Business World (Philippines)		The Advertiser (Adelaide)	
The Globe and Mail		The New York Times		Press Trust of India	
Xinhua News Agency		Kyodo News		The Hindu (India)	
The Wall Street Journal		The Times (U.K.)		Jiji Press	
The Telegraph (U.K.)		The Daily Express (U.K.)		National Post	
EFE News Service		Daily Mail (U.K.)		Los Angeles Times	
Ottawa Citizen		The Irish Times		USA Today	
South China Morning Post		The New Zealand Herald		The Washington Post	
Sputnik News Service		Irish Independent		Chicago Tribune	

The table shows the list of international newspapers and the dictionary of words used to construct data on the six COVID-19-related indices. Panel A contains a dictionary of words while Panel B contains the list of newspapers. For each of these newspapers, we retrieve daily news articles published each business day from 2019-12-31 to 2021-04-28.

Table 2: List of words included in the construction of each index

covid =covid+covid_19+pandemic+coronavirus+virus+viruses+contagious+infect+infected+infections+infectious+infects+spread+spreads+outbreak+outbreaks+serious+patient+patients+emergencies+emergency+ambulance+asymptomatic+ambulances+symptom+symptoms+diagnose+diagnosed+symptomatic+isolate+isolated+isolating+isolation+quarantine+quarantined+quarantines+dead+deaths+death+die+died+shutdown+shutdowns+curfew
medical =doctor+doctors+medicine+mask+medicines+nurse+nurses+health+care+recover+recovered+recoveries+recovering+recovers+recovery
travel =aircraft+aircrafts+airfare+airfares+airline+airplane+airplanes+airport+airports+attendant+attendants+pilot+pilots+plane+cabin+cabins+flight+flights+passengers+vacation+motel+motels+accomodation
vaccine = vaccine + vaccines
uncertainty =uncertain+uncertainty+risk+risked+risky+riskier+riskiest+risking+risks+riskiness
Aggregate =all words in Panel A, Table 1

This table provides details of words used to represent each measure of COVID-19 for index construction. Covid is our COVID-19 measure; medical relates to a medical index; travel relates to a travel index; vaccine relates to a vaccine index; uncertainty relates to an uncertainty index; and aggregate relates to an aggregate COVID-19 index, capturing the pandemic sentiment.

Table 3: Time-series dataset on COVID-19 related indices

Date	A_COVID Index	Medical Index	Travel Index	Uncertainty Index	Vaccine Index	COVID Index
12/31/2019	26.60	26.87	17.82	31.95	16.39	26.28
1/01/2020	22.20	24.45	18.30	22.56	16.39	25.55
1/02/2020	27.52	27.41	24.53	37.99	18.25	26.16
1/03/2020	0.00	0.00	34.58	19.20	0.00	0.00
1/06/2020	33.67	29.90	25.87	43.99	19.50	28.99
1/07/2020	30.87	29.38	24.83	38.60	16.34	26.68
1/08/2020	31.19	27.90	49.23	35.86	16.82	27.03
1/09/2020	32.98	28.88	67.41	40.44	17.27	26.42
1/10/2020	9.42	3.33	100.00	14.00	0.32	0.12
1/13/2020	35.69	31.61	44.72	46.66	19.74	29.25
1/14/2020	31.53	28.89	44.04	46.82	16.32	26.73
1/15/2020	33.94	30.17	42.29	46.80	16.66	26.97
1/16/2020	30.34	29.09	27.83	42.05	17.23	25.95
1/17/2020	7.95	5.97	35.64	22.05	0.83	0.60
1/20/2020	34.98	33.37	23.64	41.23	20.01	29.58
1/21/2020	35.04	33.12	29.83	49.36	16.70	29.82
1/22/2020	36.73	33.81	39.19	40.94	17.46	30.86
1/23/2020	36.65	33.92	44.67	42.71	18.54	31.74
1/24/2020	16.63	19.24	41.59	25.02	1.72	14.12
1/27/2020	36.99	35.79	37.94	45.87	20.04	34.70
1/28/2020	36.95	34.27	47.79	52.86	18.60	35.02
1/29/2020	38.36	33.60	43.75	51.26	18.04	34.72
1/30/2020	38.48	34.20	46.71	42.71	18.99	34.50
1/31/2020	27.70	25.22	61.91	40.24	3.82	21.57
2/03/2020	40.52	36.56	37.99	42.68	20.99	36.13
2/04/2020	37.83	35.59	48.37	43.15	18.15	35.12
2/05/2020	38.46	36.10	46.18	38.53	17.08	35.36
2/06/2020	41.59	37.52	53.91	44.02	19.14	36.06
2/07/2020	28.11	23.66	63.98	30.40	1.95	19.81
2/10/2020	42.15	37.91	38.62	49.15	19.89	36.82
2/11/2020	41.71	38.33	35.87	48.05	17.18	36.11
2/12/2020	39.69	37.21	23.81	44.70	17.48	35.24
2/13/2020	40.89	35.74	36.14	50.54	17.84	35.57
2/14/2020	23.23	19.97	48.26	28.08	2.02	17.24
2/17/2020	38.21	36.81	36.57	40.18	20.23	35.36
2/18/2020	37.36	33.14	38.28	41.53	16.88	33.35
2/19/2020	38.25	32.27	35.40	44.92	16.95	33.64
2/20/2020	39.91	34.54	40.18	47.87	17.77	34.05
2/21/2020	20.31	15.24	46.46	27.34	3.08	16.01
2/24/2020	40.40	36.24	26.54	54.49	20.01	37.02
2/25/2020	40.41	36.75	24.51	55.14	17.62	37.25
2/26/2020	41.75	37.74	26.61	49.69	18.85	39.36
2/27/2020	43.32	39.15	37.89	54.04	17.96	40.03
2/28/2020	30.36	25.96	43.05	46.89	2.00	33.50
3/02/2020	44.16	42.36	27.65	50.77	21.03	42.28
3/03/2020	46.48	43.31	35.55	63.01	18.92	43.48

Date	A_COVID Index	Medical Index	Travel Index	Uncertainty Index	Vaccine Index	COVID Index
3/04/2020	47.36	44.20	30.08	62.59	18.50	45.18
3/05/2020	48.31	45.13	42.43	56.01	19.96	46.38
3/06/2020	44.24	43.52	71.44	57.52	7.08	44.99
3/09/2020	50.30	46.19	45.70	50.86	20.53	46.95
3/10/2020	55.58	48.48	49.30	64.93	18.31	52.71
3/11/2020	53.22	48.85	46.67	58.61	18.25	51.78
3/12/2020	61.79	54.39	45.99	68.26	19.52	59.24
3/13/2020	78.64	71.18	99.09	99.91	6.03	85.67
3/16/2020	62.97	56.00	51.25	71.81	23.07	62.45
3/17/2020	66.09	58.94	50.32	70.80	20.40	65.64
3/18/2020	68.10	60.52	43.51	70.03	23.84	67.03
3/19/2020	68.02	59.80	45.73	70.93	19.67	67.48
3/20/2020	94.38	79.64	83.83	94.36	8.87	95.35
3/23/2020	69.05	63.66	45.70	75.40	22.51	68.16
3/24/2020	74.29	66.46	47.77	79.89	19.73	71.08
3/25/2020	74.50	68.39	48.05	70.33	19.33	70.29
3/26/2020	71.13	65.71	42.13	72.98	20.70	69.20
3/27/2020	100.00	92.78	47.97	94.49	6.91	100.00
3/30/2020	70.12	64.43	41.48	66.74	21.88	67.83
3/31/2020	71.10	65.99	42.16	69.92	19.99	68.66
4/01/2020	69.84	63.82	28.64	68.63	18.69	67.69
4/02/2020	69.80	65.98	32.36	60.38	20.35	67.96
4/03/2020	98.90	99.44	33.45	80.18	5.97	97.84
4/06/2020	66.69	65.60	27.92	69.49	21.88	64.92
4/07/2020	70.32	71.69	28.64	66.77	21.08	68.33
4/08/2020	70.56	72.05	27.16	68.15	19.41	67.84
4/09/2020	69.87	68.43	22.72	64.32	21.45	66.76
4/10/2020	81.07	94.06	16.93	75.55	9.87	86.70
4/13/2020	61.70	64.51	24.83	60.17	22.90	60.70
4/14/2020	70.15	73.01	25.42	62.57	23.61	67.97
4/15/2020	74.45	74.32	31.33	66.53	22.33	70.85
4/16/2020	70.83	73.28	27.60	68.39	22.53	67.50
4/17/2020	93.44	100.00	22.67	87.62	15.47	92.88
4/20/2020	64.20	62.79	22.77	62.45	25.25	60.82
4/21/2020	67.43	63.64	26.78	66.60	21.95	63.64
4/22/2020	68.39	66.27	29.19	71.78	23.48	64.13
4/23/2020	66.16	64.68	21.71	65.81	24.95	63.91
4/24/2020	85.79	83.73	16.89	86.61	16.91	84.09
4/27/2020	65.80	63.39	24.60	70.41	24.58	60.98
4/28/2020	67.79	66.21	24.53	66.55	22.22	63.59
4/29/2020	63.01	61.71	26.63	62.59	23.01	60.38
4/30/2020	65.17	64.59	28.72	76.00	24.08	62.52
5/01/2020	78.69	76.41	28.94	84.25	15.36	77.47
5/04/2020	62.96	59.48	31.52	64.55	25.74	58.17
5/05/2020	64.07	57.89	28.07	64.67	24.85	59.12
5/06/2020	67.84	63.31	36.76	75.89	23.61	62.07
5/07/2020	64.92	59.42	29.21	77.57	20.80	59.76

Date	A_COVID Index	Medical Index	Travel Index	Uncertainty Index	Vaccine Index	COVID Index
5/08/2020	81.51	75.11	39.17	85.91	10.92	74.62
5/11/2020	65.59	59.61	36.80	73.25	23.07	58.24
5/12/2020	66.09	61.01	38.35	77.71	23.37	58.59
5/13/2020	66.15	62.37	42.81	77.77	21.88	60.28
5/14/2020	66.20	60.18	32.85	78.67	23.41	58.80
5/15/2020	81.13	75.89	49.92	93.53	20.99	73.06
5/18/2020	59.89	56.16	38.64	71.07	29.22	55.00
5/19/2020	65.26	63.83	38.20	71.23	26.63	58.67
5/20/2020	62.32	56.07	33.64	75.71	25.45	55.97
5/21/2020	60.89	58.37	42.05	71.19	22.86	55.39
5/22/2020	73.41	60.60	85.30	100.00	15.75	65.82
5/25/2020	54.28	45.86	38.81	62.14	23.48	51.26
5/26/2020	59.38	55.65	55.04	66.29	24.08	55.09
5/27/2020	57.91	52.43	53.01	62.24	22.06	54.30
5/28/2020	59.95	54.44	41.94	64.76	22.29	54.31
5/29/2020	68.22	55.67	42.97	80.36	9.19	61.62
6/01/2020	55.38	49.37	29.02	70.50	21.96	51.64
6/02/2020	56.07	47.07	29.53	60.43	19.88	51.89
6/03/2020	56.78	50.35	35.78	67.80	21.75	52.07
6/04/2020	54.83	47.99	33.11	58.20	23.16	51.20
6/05/2020	66.19	53.88	32.48	72.18	16.20	59.83
6/08/2020	55.95	52.05	25.82	64.94	22.72	51.39
6/09/2020	55.19	47.07	32.56	53.34	19.96	50.33
6/10/2020	55.05	49.12	27.56	63.25	20.44	50.66
6/11/2020	52.95	49.03	26.47	57.67	20.47	49.64
6/12/2020	59.10	52.47	29.24	73.49	10.50	56.11
6/15/2020	54.61	48.22	40.63	55.41	22.85	49.70
6/16/2020	55.43	47.92	34.09	61.52	20.82	50.21
6/17/2020	56.40	49.70	30.97	61.45	22.41	51.11
6/18/2020	53.51	47.73	32.00	63.36	21.87	49.88
6/19/2020	56.35	47.83	25.21	62.64	6.57	54.04
6/22/2020	54.45	49.31	24.93	63.41	21.32	50.52
6/23/2020	53.76	47.61	28.83	60.52	19.10	48.74
6/24/2020	54.85	47.72	26.25	72.08	21.20	49.74
6/25/2020	52.72	48.34	32.26	58.59	21.57	49.80
6/26/2020	55.98	46.84	33.79	64.22	8.58	54.80
6/29/2020	54.05	49.54	31.08	59.56	21.59	49.26
6/30/2020	54.37	48.18	24.89	57.63	21.31	48.75
7/01/2020	49.64	45.22	31.80	52.31	19.19	46.49
7/02/2020	56.51	50.01	30.27	59.81	23.07	50.08
7/03/2020	54.60	49.37	33.01	74.98	9.27	50.80
7/06/2020	54.52	50.38	29.09	59.39	23.55	50.06
7/07/2020	52.43	50.00	24.96	57.15	22.31	49.13
7/08/2020	57.32	53.01	28.92	62.98	19.97	50.89
7/09/2020	55.46	51.79	28.53	59.99	21.07	49.28
7/10/2020	61.29	52.72	30.53	71.04	8.57	55.06
7/13/2020	54.87	52.62	26.78	59.69	24.64	50.45

Date	A_COVID Index	Medical Index	Travel Index	Uncertainty Index	Vaccine Index	COVID Index
7/14/2020	56.39	53.90	28.96	59.64	25.65	51.08
7/15/2020	55.53	53.47	34.40	63.33	24.93	48.81
7/16/2020	56.38	51.19	26.05	61.56	25.98	50.34
7/17/2020	63.42	58.41	28.18	72.53	15.32	56.39
7/20/2020	54.66	51.49	28.01	62.19	31.04	49.46
7/21/2020	57.47	52.70	22.37	61.39	32.35	51.09
7/22/2020	55.80	53.33	24.06	60.05	27.53	49.66
7/23/2020	53.44	49.76	25.12	55.75	23.82	48.67
7/24/2020	58.05	57.14	27.67	68.37	14.36	54.73
7/27/2020	55.85	52.57	30.29	68.97	24.24	51.25
7/28/2020	57.17	52.50	30.21	63.49	25.31	52.53
7/29/2020	55.11	52.87	24.30	59.09	24.92	50.45
7/30/2020	56.60	53.24	31.09	65.24	23.76	52.17
7/31/2020	58.51	53.34	30.55	84.78	12.37	55.61
8/03/2020	52.34	48.13	27.01	60.22	24.89	48.22
8/04/2020	52.05	49.66	24.47	72.63	22.07	49.23
8/05/2020	55.85	52.92	26.16	56.25	26.08	51.97
8/06/2020	51.47	47.22	19.74	56.93	22.71	48.40
8/07/2020	57.00	50.58	38.22	64.09	15.04	52.24
8/10/2020	52.14	49.01	27.24	58.99	22.85	47.57
8/11/2020	54.09	50.98	24.91	57.85	27.50	49.09
8/12/2020	54.36	49.93	26.71	57.21	30.48	49.57
8/13/2020	52.38	47.86	26.20	59.16	23.90	48.78
8/14/2020	50.72	46.89	20.85	59.06	19.23	50.52
8/17/2020	48.00	44.54	24.32	54.09	25.54	45.09
8/18/2020	51.51	48.82	22.31	58.55	23.86	47.72
8/19/2020	48.88	48.02	23.11	56.20	24.23	46.13
8/20/2020	50.83	47.48	22.49	59.73	27.70	47.27
8/21/2020	48.12	47.63	26.14	63.91	16.39	46.58
8/24/2020	50.71	48.58	24.83	64.02	28.84	46.37
8/25/2020	50.49	48.02	20.02	61.61	25.89	46.74
8/26/2020	51.67	48.99	25.82	59.66	26.19	47.49
8/27/2020	49.98	45.96	22.77	56.53	23.75	46.04
8/28/2020	52.11	48.50	25.57	62.90	17.59	47.60
8/31/2020	48.84	47.54	27.77	56.81	27.50	45.02
9/01/2020	48.26	44.08	35.82	55.44	24.38	44.55
9/02/2020	49.01	46.11	31.63	61.28	24.47	45.37
9/03/2020	47.38	44.28	32.62	55.57	24.10	44.77
9/04/2020	46.70	41.40	40.66	61.77	17.70	44.78
9/07/2020	48.03	42.90	30.89	48.93	26.98	44.56
9/08/2020	50.32	46.58	25.13	63.05	27.35	46.11
9/09/2020	51.67	48.19	30.59	61.28	28.49	46.46
9/10/2020	52.00	48.58	29.44	66.11	29.75	47.90
9/11/2020	47.61	44.95	24.87	55.07	16.95	44.66
9/14/2020	52.04	49.08	29.74	61.40	26.73	45.69
9/15/2020	50.34	48.76	30.42	59.51	23.42	45.62
9/16/2020	47.74	47.29	27.92	50.65	20.63	43.32

Date	A_COVID Index	Medical Index	Travel Index	Uncertainty Index	Vaccine Index	COVID Index
9/17/2020	52.68	50.31	33.38	54.87	28.05	46.63
9/18/2020	48.42	46.11	19.49	47.20	16.40	44.58
9/21/2020	50.01	44.83	23.85	54.18	24.96	45.74
9/22/2020	51.97	46.81	23.79	61.17	26.14	47.98
9/23/2020	54.58	49.89	23.79	62.85	26.44	47.86
9/24/2020	54.76	48.79	21.60	62.31	27.47	47.26
9/25/2020	48.35	43.79	15.59	53.81	20.86	43.47
9/28/2020	50.09	44.19	24.62	53.17	23.89	44.70
9/29/2020	50.50	45.45	20.25	50.06	23.18	45.90
9/30/2020	51.28	47.94	21.56	58.17	23.10	45.50
10/01/2020	49.57	46.88	21.79	54.52	22.21	44.66
10/02/2020	49.51	50.56	6.21	74.63	14.09	47.76
10/05/2020	53.12	53.16	20.36	65.77	24.45	48.49
10/06/2020	52.92	53.44	15.51	59.95	23.48	48.32
10/07/2020	52.79	50.79	18.98	59.27	23.09	47.50
10/08/2020	52.04	48.72	17.39	58.81	21.86	46.93
10/09/2020	51.13	52.05	7.01	54.64	14.07	46.36
10/12/2020	47.38	44.24	19.81	53.57	24.20	44.06
10/13/2020	52.32	48.76	21.54	57.85	25.02	46.87
10/14/2020	54.85	51.47	23.22	56.42	27.44	47.96
10/15/2020	52.74	49.57	24.55	63.44	24.21	46.42
10/16/2020	51.47	47.61	17.71	55.29	21.68	45.04
10/19/2020	51.01	47.02	21.78	57.24	26.40	45.42
10/20/2020	49.48	47.01	19.60	56.89	26.43	45.01
10/21/2020	48.57	44.27	14.68	55.55	25.20	44.68
10/22/2020	49.21	46.07	20.01	56.62	25.89	45.33
10/23/2020	42.49	40.40	6.48	41.64	18.54	40.57
10/26/2020	46.13	43.71	20.49	48.41	27.29	43.38
10/27/2020	45.98	42.58	20.21	52.69	26.94	43.41
10/28/2020	49.23	44.25	21.33	52.70	25.90	44.54
10/29/2020	45.82	44.52	17.83	52.20	23.26	44.54
10/30/2020	49.78	37.69	9.94	48.69	13.89	43.20
11/02/2020	51.12	44.73	24.81	52.65	23.61	44.84
11/03/2020	48.39	42.32	20.46	55.62	23.25	43.29
11/04/2020	48.29	42.45	17.37	57.78	22.71	42.83
11/05/2020	47.84	41.91	15.22	59.46	23.28	42.18
11/06/2020	41.43	35.65	2.46	45.41	12.69	36.16
11/09/2020	47.45	44.26	20.55	49.46	38.47	43.73
11/10/2020	50.44	46.35	22.65	48.53	58.82	44.78
11/11/2020	45.99	43.62	22.48	53.75	50.42	42.20
11/12/2020	48.38	47.80	19.38	51.59	39.91	44.30
11/13/2020	39.82	37.98	0.81	44.79	38.57	39.14
11/16/2020	46.55	44.42	15.80	47.09	39.95	44.04
11/17/2020	46.30	44.18	22.18	49.10	43.22	42.88
11/18/2020	47.25	42.71	22.05	53.93	34.80	43.55
11/19/2020	49.50	45.64	23.81	56.14	41.41	45.04
11/20/2020	47.99	43.47	2.20	44.84	48.48	43.37

Date	A_COVID Index	Medical Index	Travel Index	Uncertainty Index	Vaccine Index	COVID Index
11/23/2020	52.91	48.04	26.90	64.37	43.78	45.43
11/24/2020	52.68	46.02	30.04	62.31	52.14	45.42
11/25/2020	48.91	44.92	21.84	58.08	37.80	44.21
11/26/2020	48.76	46.08	22.53	52.25	35.66	43.09
11/27/2020	44.44	39.73	9.30	56.08	46.06	38.21
11/30/2020	49.46	47.97	18.49	55.71	36.37	44.53
12/01/2020	51.18	48.20	21.08	58.11	38.50	45.12
12/02/2020	50.59	48.75	16.90	63.33	54.49	44.65
12/03/2020	51.66	50.17	19.17	56.53	63.65	44.65
12/04/2020	48.70	44.14	7.48	50.39	76.52	39.52
12/07/2020	50.17	49.21	22.92	49.76	47.06	44.28
12/08/2020	46.98	43.90	16.59	50.63	57.23	41.57
12/09/2020	49.54	47.49	21.65	50.60	56.75	42.69
12/10/2020	49.92	50.17	17.45	54.91	54.48	43.33
12/11/2020	48.65	51.32	13.24	55.12	82.70	40.23
12/14/2020	51.60	50.17	22.29	51.73	51.95	44.53
12/15/2020	49.60	49.18	19.45	48.92	52.68	43.16
12/16/2020	50.56	48.92	22.43	58.70	52.99	44.19
12/17/2020	50.69	48.17	21.86	53.73	41.72	44.12
12/18/2020	51.82	49.74	10.32	52.84	73.88	44.16
12/21/2020	51.94	46.73	37.90	54.53	42.47	47.17
12/22/2020	50.51	45.55	42.24	53.52	41.49	46.07
12/23/2020	48.18	44.03	42.48	44.13	42.96	45.25
12/24/2020	36.55	37.17	20.10	32.39	35.51	39.98
12/25/2020	10.17	18.67	3.69	0.00	39.20	27.32
12/28/2020	40.20	40.38	19.07	40.10	36.15	41.36
12/29/2020	43.30	41.83	23.92	41.53	42.10	42.69
12/30/2020	47.29	47.17	33.83	43.69	54.63	46.57
12/31/2020	45.06	44.49	27.07	41.70	54.29	45.47
1/01/2021	30.44	43.16	7.71	28.83	66.85	37.55
1/04/2021	51.41	52.08	26.23	59.26	57.23	46.39
1/05/2021	46.83	45.96	16.52	50.94	51.98	43.11
1/06/2021	37.67	36.59	16.25	36.69	39.35	38.94
1/07/2021	47.95	46.11	20.58	46.43	46.24	43.81
1/08/2021	53.82	49.55	36.80	45.67	68.39	44.10
1/11/2021	51.86	50.27	33.09	52.17	43.26	46.05
1/12/2021	51.03	49.26	24.09	54.74	47.87	45.34
1/13/2021	52.59	52.23	27.52	53.36	52.81	46.58
1/14/2021	48.95	47.41	24.50	49.84	56.13	44.26
1/15/2021	53.68	55.99	21.55	39.94	95.76	42.59
1/18/2021	51.40	51.05	35.34	51.82	54.23	44.62
1/19/2021	51.05	51.67	26.16	50.06	57.85	44.19
1/20/2021	50.29	48.16	19.09	51.65	51.03	43.30
1/21/2021	48.03	47.40	20.86	46.73	50.20	42.23
1/22/2021	54.74	55.96	24.58	56.12	77.79	43.40
1/25/2021	49.73	48.23	25.29	54.44	47.31	45.14
1/26/2021	51.98	50.74	22.92	55.05	54.72	45.23

Date	A_COVID Index	Medical Index	Travel Index	Uncertainty Index	Vaccine Index	COVID Index
1/27/2021	49.17	46.96	20.59	49.47	57.94	45.34
1/28/2021	48.64	46.28	25.08	51.68	52.94	45.03
1/29/2021	52.65	47.84	16.86	47.94	100.00	41.14
2/01/2021	51.68	50.27	21.18	52.26	55.22	44.36
2/02/2021	49.51	47.53	22.54	46.87	56.10	43.32
2/03/2021	49.46	46.29	18.68	49.25	56.86	42.89
2/04/2021	47.90	46.75	17.34	44.11	51.78	42.06
2/05/2021	48.79	46.04	12.88	46.02	81.59	37.27
2/08/2021	49.01	46.44	19.15	47.44	49.54	43.07
2/09/2021	48.32	47.23	18.24	55.22	51.66	42.10
2/10/2021	48.59	46.01	26.06	51.17	44.35	42.43
2/11/2021	47.68	46.02	21.37	49.01	47.67	41.58
2/12/2021	45.80	44.55	14.19	49.56	65.17	35.48
2/15/2021	42.49	40.37	17.20	43.03	41.52	39.91
2/16/2021	46.58	45.09	25.55	51.33	47.05	41.17
2/17/2021	44.31	43.01	15.65	45.40	46.73	40.69
2/18/2021	48.26	45.83	17.03	53.30	46.80	42.13
2/19/2021	48.68	44.44	17.25	38.45	77.94	35.36
2/22/2021	49.74	46.33	27.22	54.62	48.80	42.79
2/23/2021	47.37	41.88	25.04	50.06	47.79	41.47
2/24/2021	48.05	46.37	24.17	48.33	48.32	41.35
2/25/2021	48.33	48.90	18.51	52.81	56.10	41.76
2/26/2021	48.71	43.73	4.66	51.09	78.23	36.10
3/01/2021	49.86	47.53	19.93	49.59	50.82	43.29
3/02/2021	48.40	50.81	20.29	48.40	54.07	41.92
3/03/2021	48.09	47.55	16.29	44.61	54.81	40.73
3/04/2021	51.47	47.03	19.10	51.02	54.72	41.10
3/05/2021	49.41	47.02	8.75	44.05	79.94	34.89
3/08/2021	49.35	48.53	14.72	47.09	42.20	41.82
3/09/2021	44.87	44.97	18.73	49.14	41.93	40.06
3/10/2021	46.24	44.71	16.52	50.12	47.65	40.73
3/11/2021	45.11	44.00	16.47	43.98	47.80	40.64
3/12/2021	39.17	40.15	0.00	38.15	73.75	33.36
3/15/2021	48.87	44.71	19.60	53.92	51.28	42.66
3/16/2021	48.13	45.18	15.87	50.19	54.91	41.77
3/17/2021	47.46	43.84	18.24	57.91	51.73	41.82
3/18/2021	47.30	44.07	17.43	47.70	55.99	41.25
3/19/2021	47.24	42.94	8.64	50.74	77.52	35.99
3/22/2021	48.29	45.05	20.32	56.72	49.25	42.77
3/23/2021	47.94	42.53	19.98	51.59	50.64	42.62
3/24/2021	49.03	45.45	17.98	57.78	50.77	42.18
3/25/2021	48.06	46.24	16.18	52.25	52.65	42.16
3/26/2021	43.57	39.14	8.37	38.93	71.62	34.73
3/29/2021	48.06	47.02	21.35	53.17	46.61	42.45
3/30/2021	44.56	43.76	17.67	51.46	46.74	40.74
3/31/2021	46.50	44.92	21.35	58.87	48.89	41.77
4/01/2021	47.74	45.33	20.03	54.00	49.47	42.53

Date	A_COVID Index	Medical Index	Travel Index	Uncertainty Index	Vaccine Index	COVID Index
4/02/2021	35.06	34.00	4.62	34.82	60.03	34.05
4/05/2021	45.06	42.28	16.21	49.59	42.95	41.88
4/06/2021	45.34	44.59	16.82	44.16	43.25	42.69
4/07/2021	48.66	47.66	18.83	59.62	57.67	44.29
4/08/2021	47.86	46.44	17.83	67.38	60.84	42.78
4/09/2021	43.82	43.17	5.64	47.55	75.22	39.26
4/12/2021	48.77	45.37	22.14	53.35	45.03	44.35
4/13/2021	45.93	43.57	21.57	45.38	45.89	42.29
4/14/2021	46.46	44.29	17.77	55.07	54.69	42.28
4/15/2021	46.36	44.20	20.82	53.56	51.82	42.62
4/16/2021	43.19	44.03	5.40	44.31	64.43	40.12
4/19/2021	49.79	48.21	20.00	57.59	43.97	45.25
4/20/2021	51.46	49.97	28.60	56.71	45.12	45.37
4/21/2021	49.41	46.31	22.16	50.08	41.42	45.00
4/22/2021	47.80	44.81	21.01	51.15	42.70	43.70
4/23/2021	51.96	49.43	19.32	56.12	67.33	46.20
4/26/2021	52.55	48.29	24.51	52.56	45.89	47.11
4/27/2021	45.34	43.91	16.80	43.98	41.94	42.55
4/28/2021	45.10	43.77	17.84	45.00	38.39	42.90

This table presents the time-series index for each measure/proxy of the COVID-19 pandemic. A_COVID Index is an aggregate measure that includes all 327 words as noted in [Table 1](#) (Panel A). This is followed by the medical index, a travel index; an uncertainty index; a vaccine index; and the COVID index. Specific details on the words contained in each index can be found in [Table 2](#). The index covers the sample 12/31/2019 to 4/28/2021.



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REFERENCES

- Ahir, H., Bloom, N., & Furceri, D. (2019). *The World Uncertainty Index* (SIEPR Working Paper No. 19-027). Stanford Institute for Economic Policy Research.
- Chang, C.-P., Feng, G.-F., & Zheng, M. (2021). Government Fighting Pandemic, Stock Market Return, and COVID-19 Virus Outbreak. *Emerging Markets Finance and Trade*, 1–18. <https://doi.org/10.1080/1540496x.2021.1873129>
- Chen, C., Liu, L., & Zhao, N. (2020). Fear sentiment, uncertainty, and bitcoin price dynamics: The case of COVID-19. *Emerging Markets Finance and Trade*, 56(10), 2298–2309. <https://doi.org/10.1080/1540496x.2020.1787150>
- Gurrib, I., Kweh, Q. L., Contu, D., & Kamalov, F. (2021). COVID-19, Short-selling Ban and Energy Stock Prices. *Energy Research Letters*, 1(4). <https://doi.org/10.46557/001c.18562>
- Haroon, O., & Rizvi, S. A. R. (2020). Flatten the curve and stock market liquidity—an inquiry into emerging economies. *Emerging Markets Finance and Trade*, 56(10), 2151–2161. <https://doi.org/10.1080/1540496x.2020.1784716>
- He, P., Niu, H., Sun, Z., & Li, T. (2020). Accounting index of COVID-19 impact on Chinese industries: A case study using big data portrait analysis. *Emerging Markets Finance and Trade*, 56(10), 2332–2349. <https://doi.org/10.1080/1540496x.2020.1785866>
- Narayan, P. K. (2019). Can stale oil price news predict stock returns? *Energy Economics*, 83, 430–444. <https://doi.org/10.1016/j.eneco.2019.07.022>
- Padhan, R., & Prabheesh, K. P. (2021). The economics of COVID-19 pandemic: A survey. *Economic Analysis and Policy*, 70, 220–237. <https://doi.org/10.1016/j.eap.2021.02.012>
- Salisu, A. A., & Akanni, L. O. (2020). Constructing a global fear index for COVID-19 pandemic. *Emerging Markets Finance and Trade*, 56(10), 2213–2230. <https://doi.org/10.1080/1540496x.2020.1785424>
- Salisu, A. A., & Sikiru, A. A. (2020). Pandemics and the Asia-Pacific Islamic Stocks. *Asian Economics Letters*, 1(1). <https://doi.org/10.46557/001c.17413>
- Sha, Y., & Sharma, S. S. (2020). Research on Pandemics. *Emerging Markets Finance and Trade*, 56(10), 2133–2137. <https://doi.org/10.1080/1540496x.2020.1795467>
- Sharma, S. S., & Sha, Y. (2020). Part A: Special Section on COVID-19 Research. *Emerging Markets Finance and Trade*, 56(15), 3551–3553. <https://doi.org/10.1080/1540496x.2020.1858617>