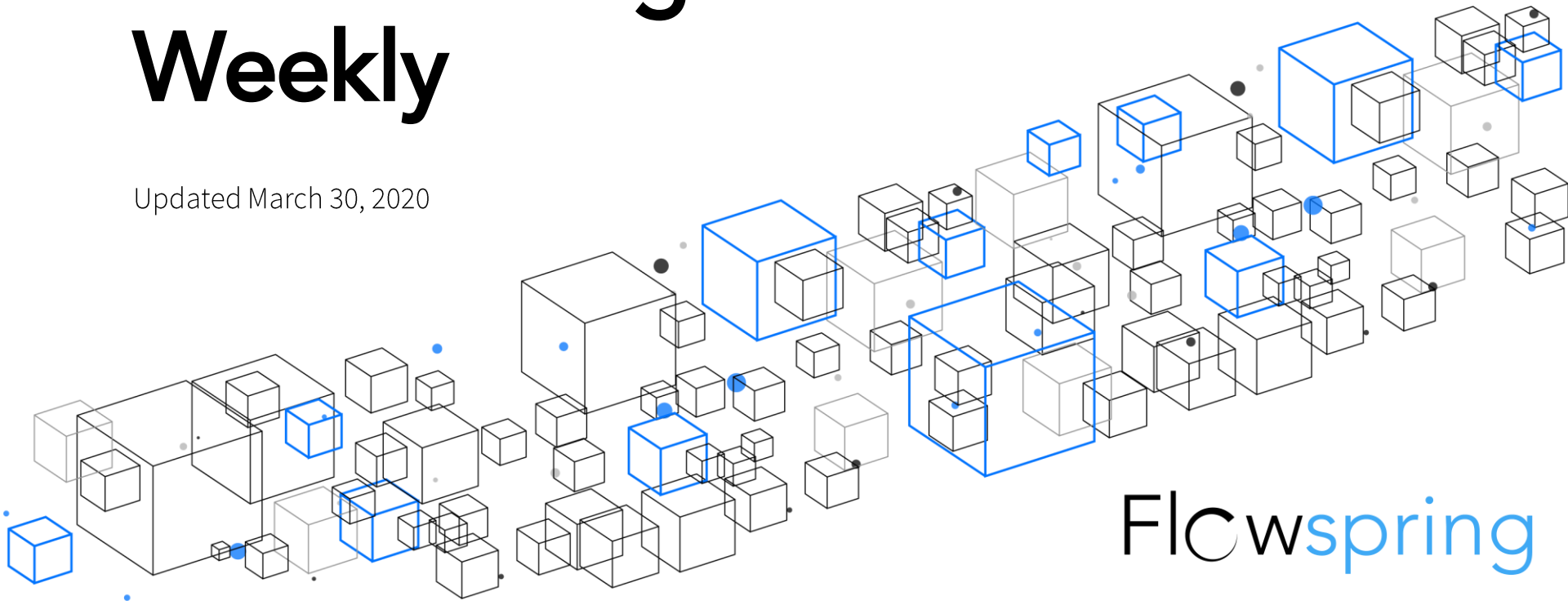


COVID-19 Asset Management Weekly

Updated March 30, 2020



Flcwspring

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Commentary

This past week was eventful. The novel coronavirus has spread with little impediment in countries outside of China, resulting in the United States having the largest number of cases worldwide with more than 40% of US cases originating in New York.

Testing capacity in the US has increased 3-fold, however, it is unlikely this capacity has caught up to the true number of cases. Fortunately, several innovations have been announced, including one from Abbott Labs, which may shorten the wait for test results from hours and days down to minutes.

The weekly growth rate of confirmed positive cases in the US moderated over the week to 317% from 778% the week prior, in no doubt partially due to the patchwork of social distancing policies implemented by state and local governments in the United States.

The economic news has been mixed. On March 26th the US reported 3.3 million new unemployment claims – the largest number ever reported. To counter this, congress passed a massive \$2 trillion stimulus package. In response to these events, equity markets rallied more than 10%, bring it it out of bear market territory.

In the week ahead, it will be key to observe

whether daily growth rates in the confirmed continue their decline. As the length and severity of this first wave will be dependent upon how quickly we can bring the growth rate below the case conclusion rate.

Economic uncertainty remains high, which means markets should remain volatile. However, it's hard to imagine a more uncertain state of the world. As medical professionals learn more about the virus and its progression, we expect uncertainty will decline, and markets will rebound to some extent.

In these times, asset managers should be working to retain their investors as best they can. Those who survive this crisis will inherit a world that temporarily faces less competition, and therefore more opportunity for growth.

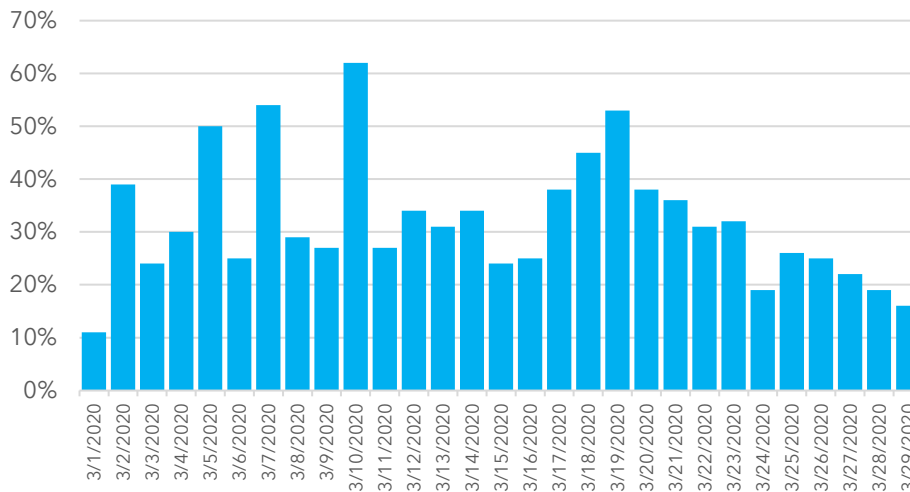
Summary of the week of March 23rd

	US	Global
New Cases	119,299	385,921
New Recovered	4,397	52,685
New Deaths	2,281	20,690

The daily growth rate of confirmed cases in the United States has been falling since March 19th when it had a local peak at over 50%. The length and severity of the remainder of the first wave of this virus will be dependent on whether this trend will continue or stall.

The growth in deaths in the United States continues to outpace that of other countries. It should be expected that this week we'll reach the unfortunate milestone of more deaths from the novel coronavirus than lives lost in the immediate events of September 11th.

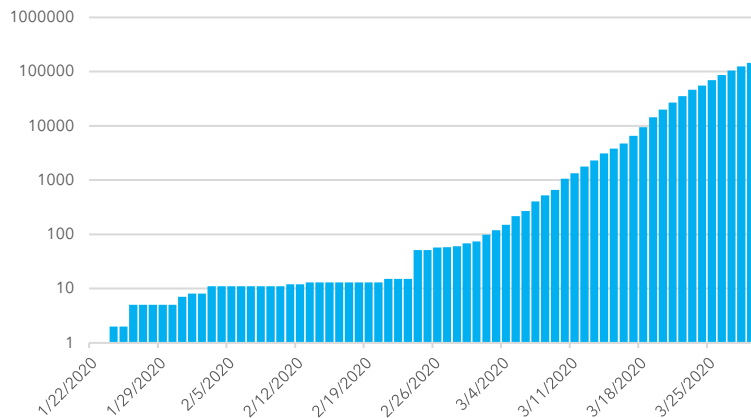
Daily Growth Rate of Active Cases in the United States



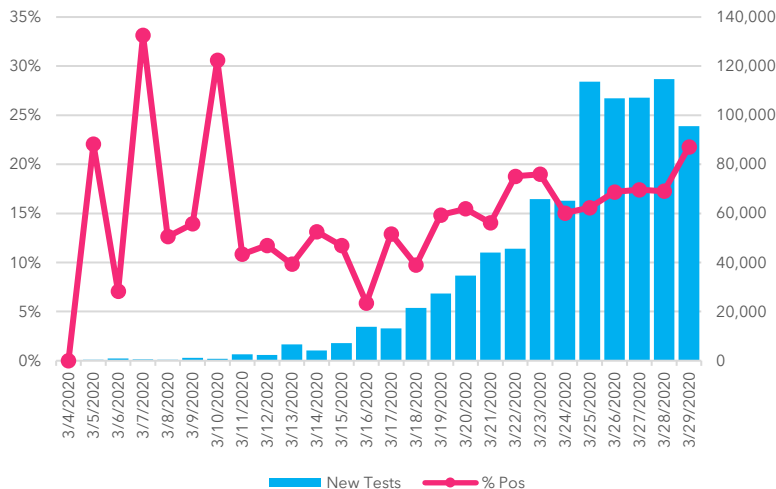
Sources: <http://worldometers.info/coronavirus/coronavirus-cases>

COVID-19 crisis to date

US Case Count



Number of Tests per Day, and Percent Positive for SARS-CoV-2



November 17: First COVID-19 case originated in a 55-year old man in China's Hubei province

December 31: China confirms they are treating dozens of cases of a new virus

January 11: China reports first death from SARS-COV-2, a 61-year-old man

January 20: First confirmed cases outside mainland China appear in Japan, South Korea, and Thailand

January 21: First case confirmed in United States

January 23: Wuhan, China cut off by Chinese authorities

January 30: WHO declares global health emergency

February 2: First death reported outside of China

February 5: The Diamond Princess cruise ship is quarantined in Japan

February 14: First death in Europe

February 29: First death in United States

March 3: Federal Reserve cuts interest rates by 50 basis points

March 13: President Trump declares a national emergency

March 16: Federal Reserve cuts interest rates to 0%

March 18: President Trump signs coronavirus relief package into law

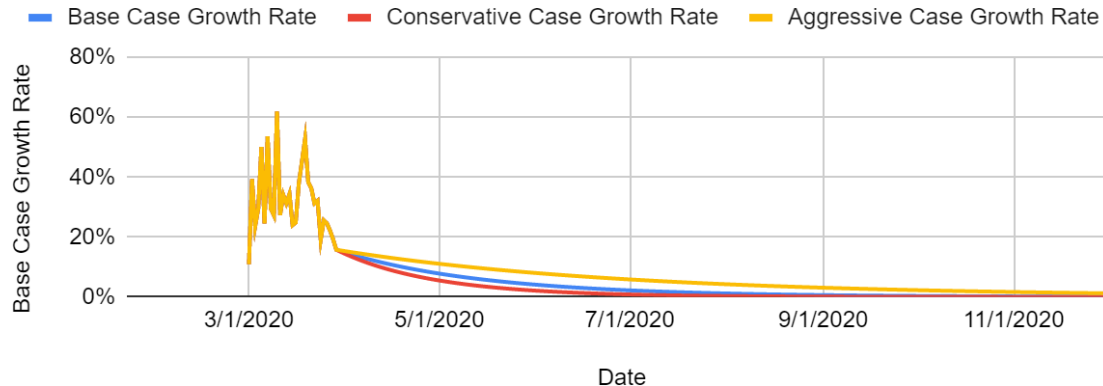
March 25: Congress passes \$2 trillion fiscal stimulus bill

March 26: US reports a record 3.3 million new unemployment claims

Sources: New York Times, CNN, <http://worldometers.info/coronavirus/coronavirus-cases>

Pandemic severity is very sensitive to assumptions

Growth Rate vs. Date

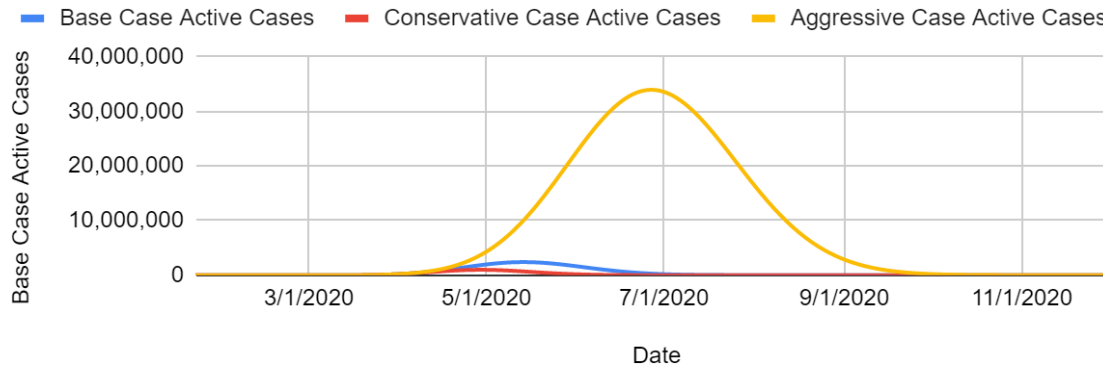


Our simple model of the virus's progression is based on two assumptions:

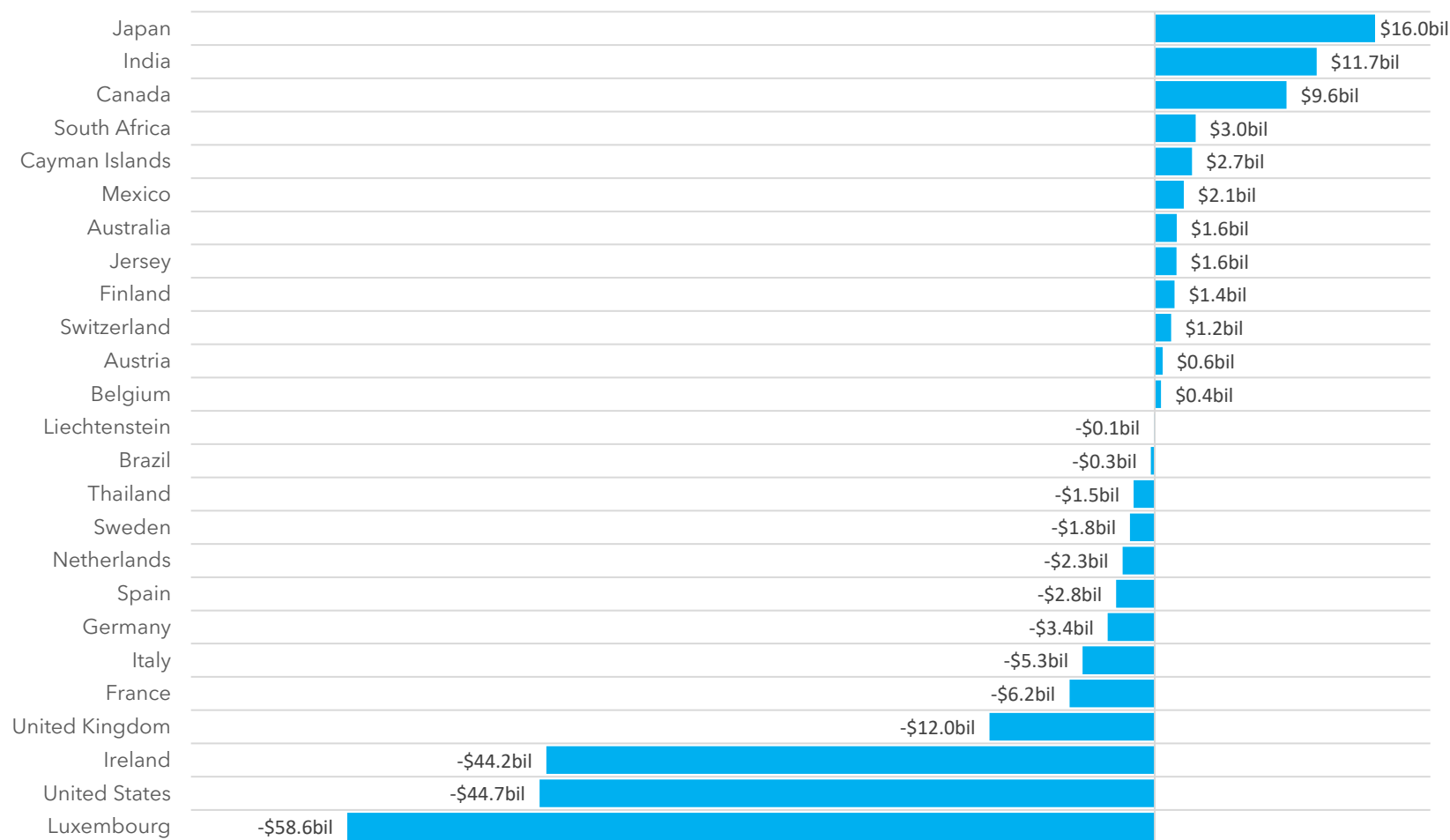
1. The rate at which active cases create new cases
2. The time period of case conclusion (17 days)

By varying our assumption for the decline in assumption #1, we can model different scenarios for the progression of the virus. The ultimate peak of active cases is very sensitive to minute changes in the decay of daily viral growth.

Active Cases vs. Date

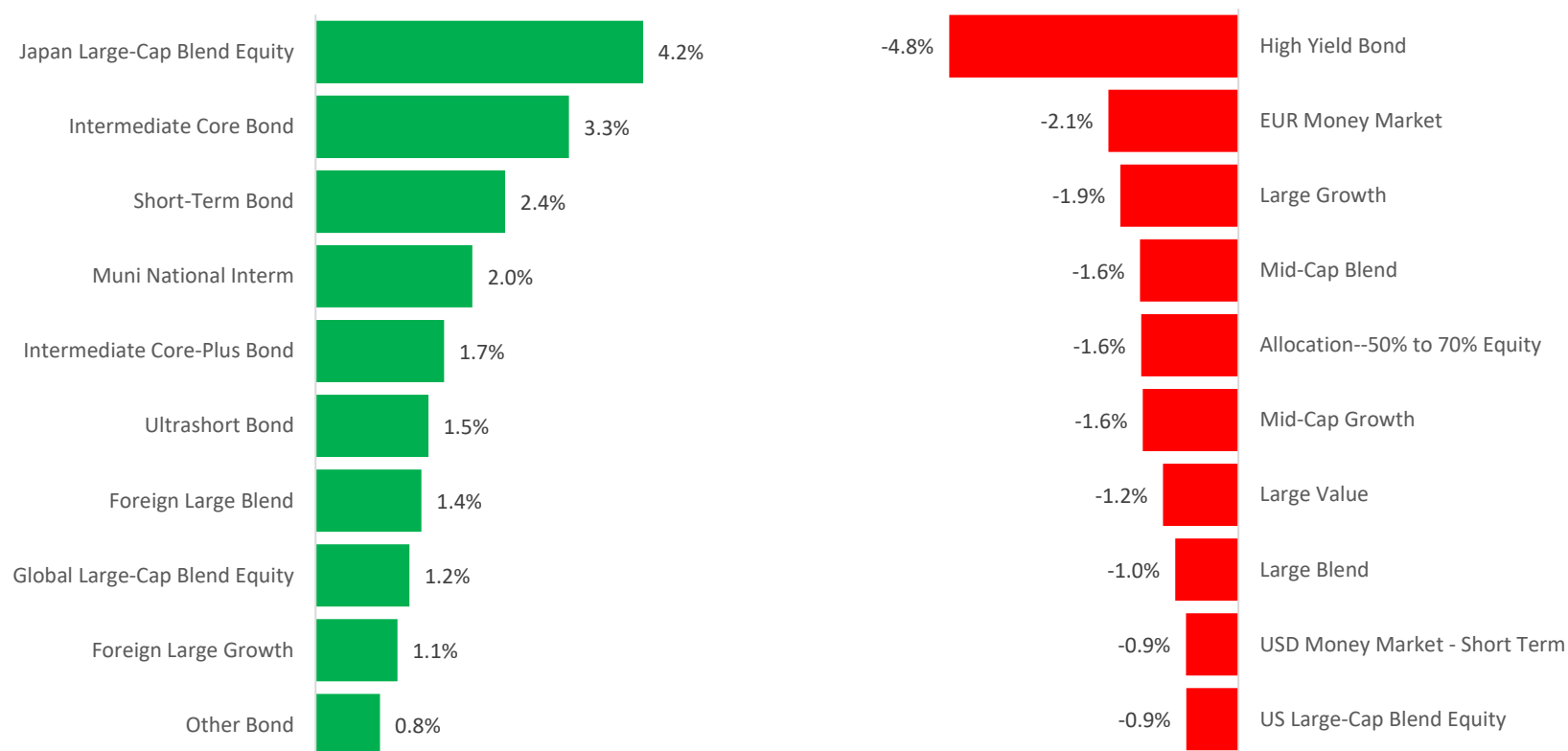


Asset flows by country 2020 YTD



Source: Flowspring Data

Most extreme investor preferences among top 25 categories since first US case confirmed



These numbers represent the expected organic growth rate of each category attributable to investors' aggregate preference for that category.

With an overarching theme of flight to safety, we are finding investors are also expressing geographic, asset class, and duration preferences while reallocating their assets across various fund categories.

Source: Flowspring Estimates

Largest flows among major fund families 2020 YTD

Flow (Since 2020-02-01)	From	To
4,124,275,040	iShares	Vanguard
3,837,720,837	State Street	Vanguard
3,316,042,365	Invesco	iShares
1,330,927,196	T. Rowe Price	iShares
1,219,596,791	Invesco	Vanguard
1,049,364,599	Invesco	State Street
1,026,747,630	iShares	Charles Schwab
942,503,284	State Street	iShares
884,207,813	Xtrackers	iShares
879,552,742	Vanguard	Fidelity
845,739,884	American Funds	State Street
793,626,527	JPMorgan	Vanguard
653,736,345	Xtrackers	Vanguard
631,978,821	American Funds	iShares
620,671,604	T. Rowe Price	State Street
595,275,779	American Funds	Fidelity
592,012,596	BlackRock	iShares
590,277,918	JPMorgan	iShares
495,789,118	State Street	Charles Schwab
490,090,038	Invesco	ProShares
485,980,342	T. Rowe Price	TIAA
471,974,801	Vanguard	Baird
457,708,092	JPMorgan	State Street
455,192,350	Eurizon	BG
453,625,049	Natixis	Vanguard
442,334,337	Goldman Sachs	State Street
432,056,457	Dimensional	T. Rowe Price
427,380,352	Nomura	Daiwa
419,563,512	Jackson National	T. Rowe Price
418,550,691	T. Rowe Price	Vanguard
406,038,690	Natixis	iShares
397,458,789	Vanguard	Legg Mason
395,283,385	Amundi	DWS
394,940,882	PIMCO	iShares
393,026,409	BlackRock	State Street
383,792,720	PRIMECAP	T. Rowe Price
374,538,024	Lord Abbett	American Funds
370,631,602	Goldman Sachs	iShares
364,946,526	Invesco	JPMorgan
364,642,448	VALIC	iShares
359,322,631	Vanguard	Nuveen
357,670,896	JPMorgan	PGIM Funds
357,078,098	Eurizon	Flossbach von Storch
356,687,762	UBS	Swisscanto
355,547,562	Dimensional	Vanguard
350,216,853	Amundi	BNP Paribas
346,015,932	Morgan Stanley	State Street
343,906,529	Dimensional	iShares
336,058,020	PIMCO	State Street
335,428,193	Russell Investments	Vanguard

Vanguard is the big winner of competitive flows thus far in 2020, winning huge amounts of capital from iShares, State Street, Invesco, and JPMorgan.

However, iShares isn't asleep – they've done well against Invesco, State Street, T. Rowe Price, and Xtrackers over this time period. We expect asset flows to be even more impactful as the volatility in capital markets dies down and investors contemplate their asset class allocation and fund selections in the wake of this crisis.

Source: Flowspring Estimates

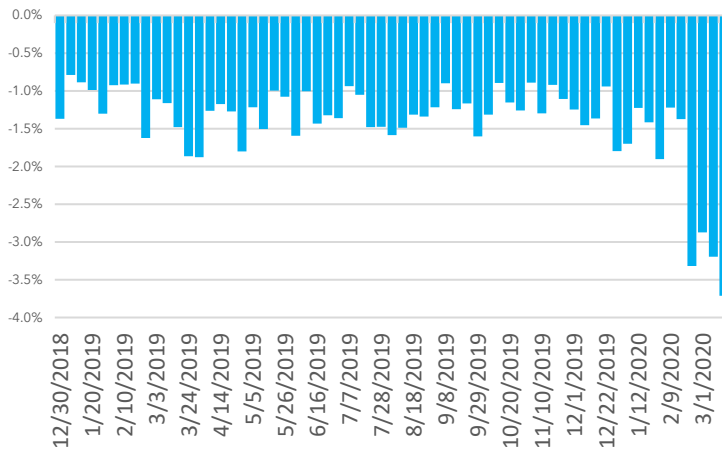
Fund family asset changes 2020 YTD

Fund Family	Asset Change	Asset Growth	Organic Growth	Capital Appreciation
Dimensional	(141,511,327,547)	-29.3%	-0.8%	-28.4%
Legg Mason	(23,063,645,679)	-29.1%	-1.6%	-27.5%
Delaware	(18,533,723,704)	-28.9%	-3.7%	-25.2%
Baillie Gifford	(18,851,296,039)	-28.3%	0.1%	-28.3%
Natixis	(40,347,341,630)	-28.0%	-3.2%	-24.8%
MFS	(58,699,894,522)	-26.4%	-0.3%	-26.1%
Swedbank	(29,367,540,282)	-26.3%	-1.1%	-25.2%
Fidelity	(61,362,852,373)	-26.0%	-1.3%	-24.7%
iShares	(23,417,133,460)	-25.4%	0.3%	-25.8%
Principal	(46,961,508,023)	-25.2%	-0.6%	-24.6%
American Funds	(430,794,399,666)	-24.2%	-0.6%	-23.6%
Nikko AM	(28,298,122,016)	-23.7%	1.7%	-25.4%
Vanguard	(41,730,655,963)	-23.4%	1.7%	-25.1%
Voya	(22,294,311,026)	-23.2%	-1.7%	-21.5%
Wells Fargo	(20,574,699,047)	-22.9%	-2.4%	-20.5%
Daiwa	(32,838,122,056)	-22.8%	1.5%	-24.2%
Columbia Threadneedle Investments	(38,594,446,757)	-22.7%	-0.6%	-22.1%
Allianz Global Investors	(39,280,784,679)	-22.6%	-1.9%	-20.7%
Nomura	(57,949,733,525)	-22.0%	1.8%	-23.8%
JPMorgan	(129,451,473,043)	-20.7%	-1.1%	-19.5%
BlackRock	(106,801,177,010)	-19.2%	-1.6%	-17.6%
Aberdeen Asset Management	(20,179,511,864)	-19.1%	-4.6%	-14.5%
DWS	(41,464,920,611)	-19.0%	-0.7%	-18.3%
Pictet	(19,243,918,452)	-18.0%	2.6%	-20.7%
Morgan Stanley	(19,428,058,468)	-17.1%	-2.6%	-14.5%

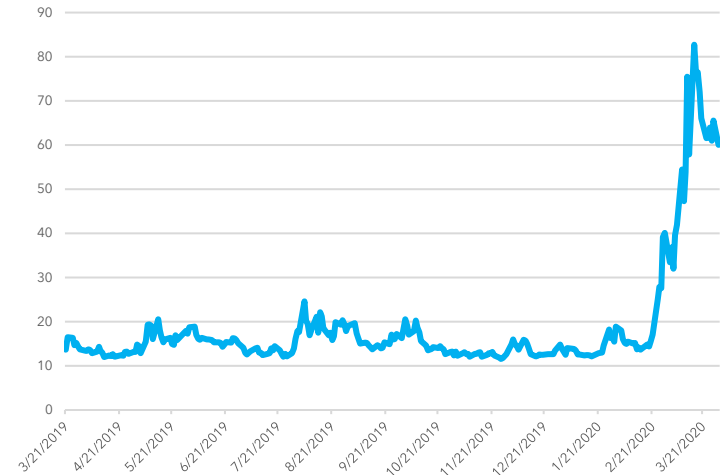
Source: Flowspring Data

Investors are squarely in fearful territory

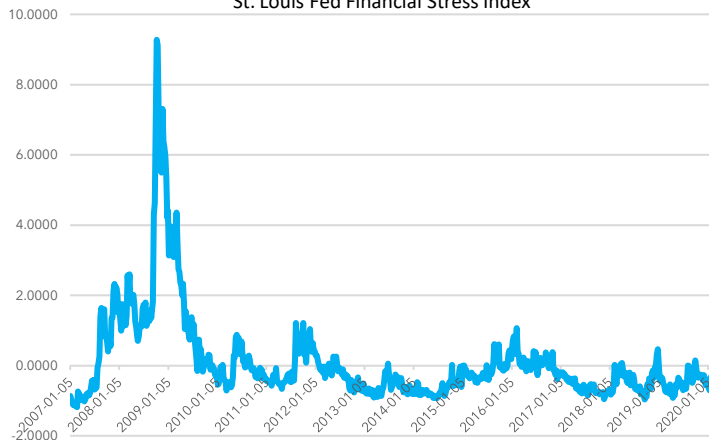
Annualized weekly investor preference for high volatility funds vs low volatility funds



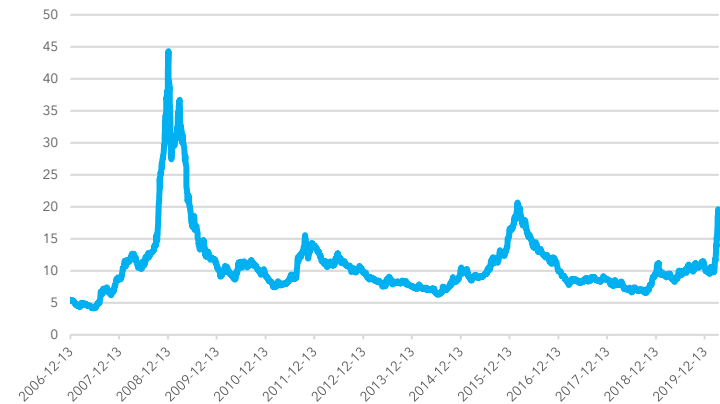
VIX Volatility index



St. Louis Fed Financial Stress Index

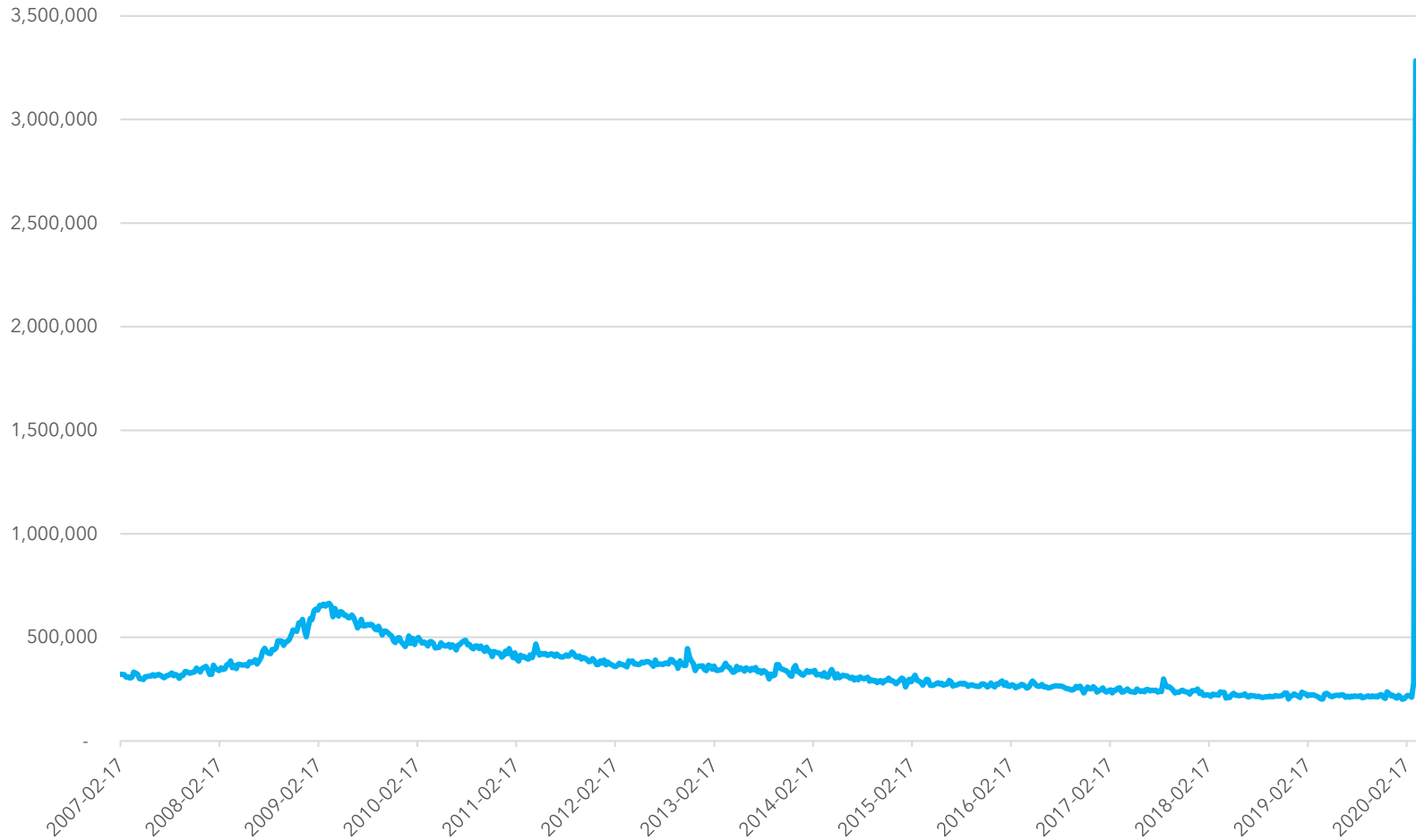


BAML Option Adjusted High Yield Spread



Source: St. Louis Federal Reserve

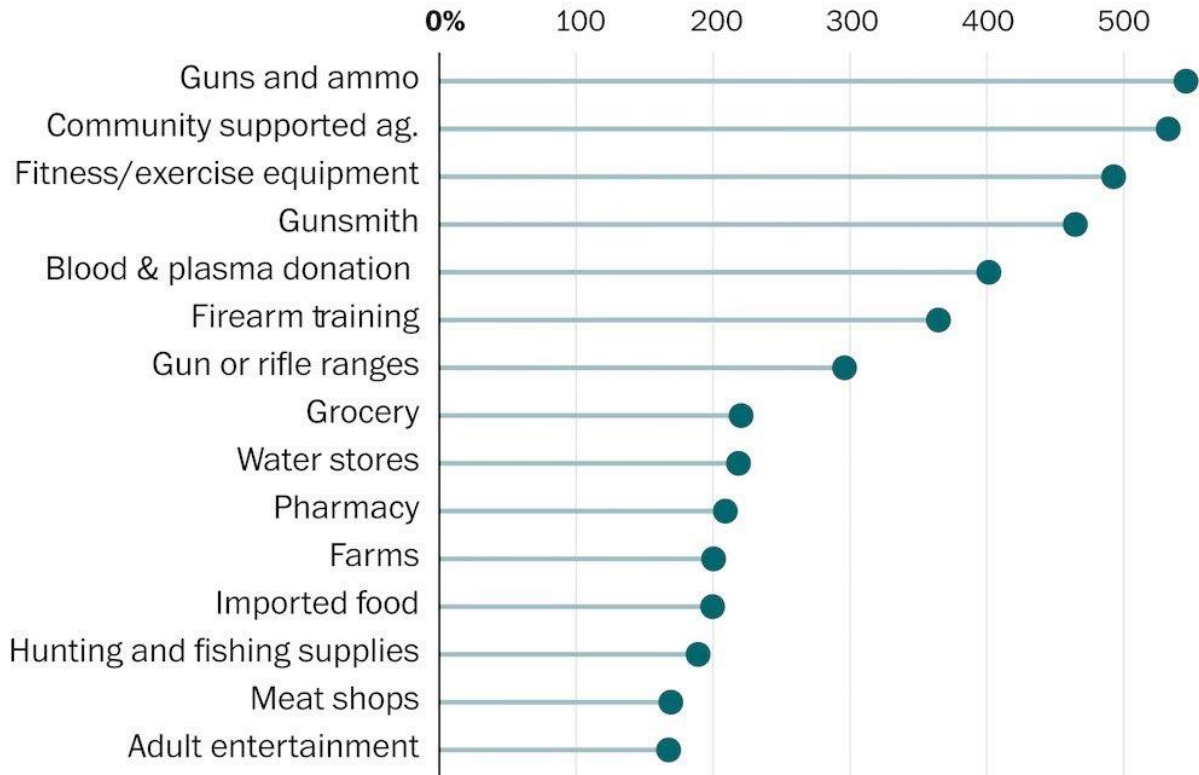
Weekly unemployment claims have skyrocketed to record levels



Guns, healthcare/pharma, food, and adult entertainment soar

Businesses where activity **rose** the most

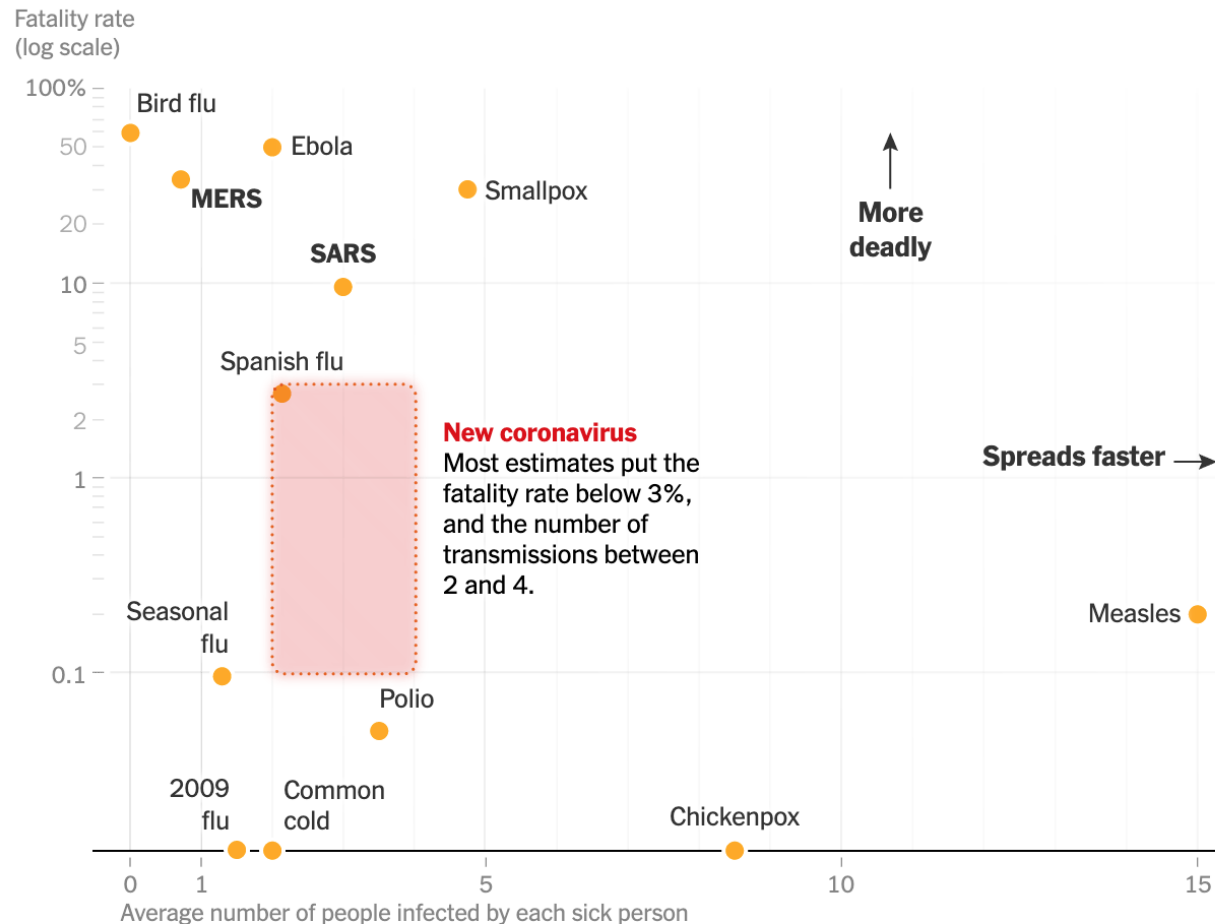
Change from a year earlier in activity, normalized to March 1, 2020



Source: Yelp

THE WASHINGTON POST

SARS-CoV-2 transmission and deadliness



Note: Average case-fatality rates and transmission numbers are shown. Estimates of case-fatality rates can vary, and numbers for the new coronavirus are preliminary estimates.

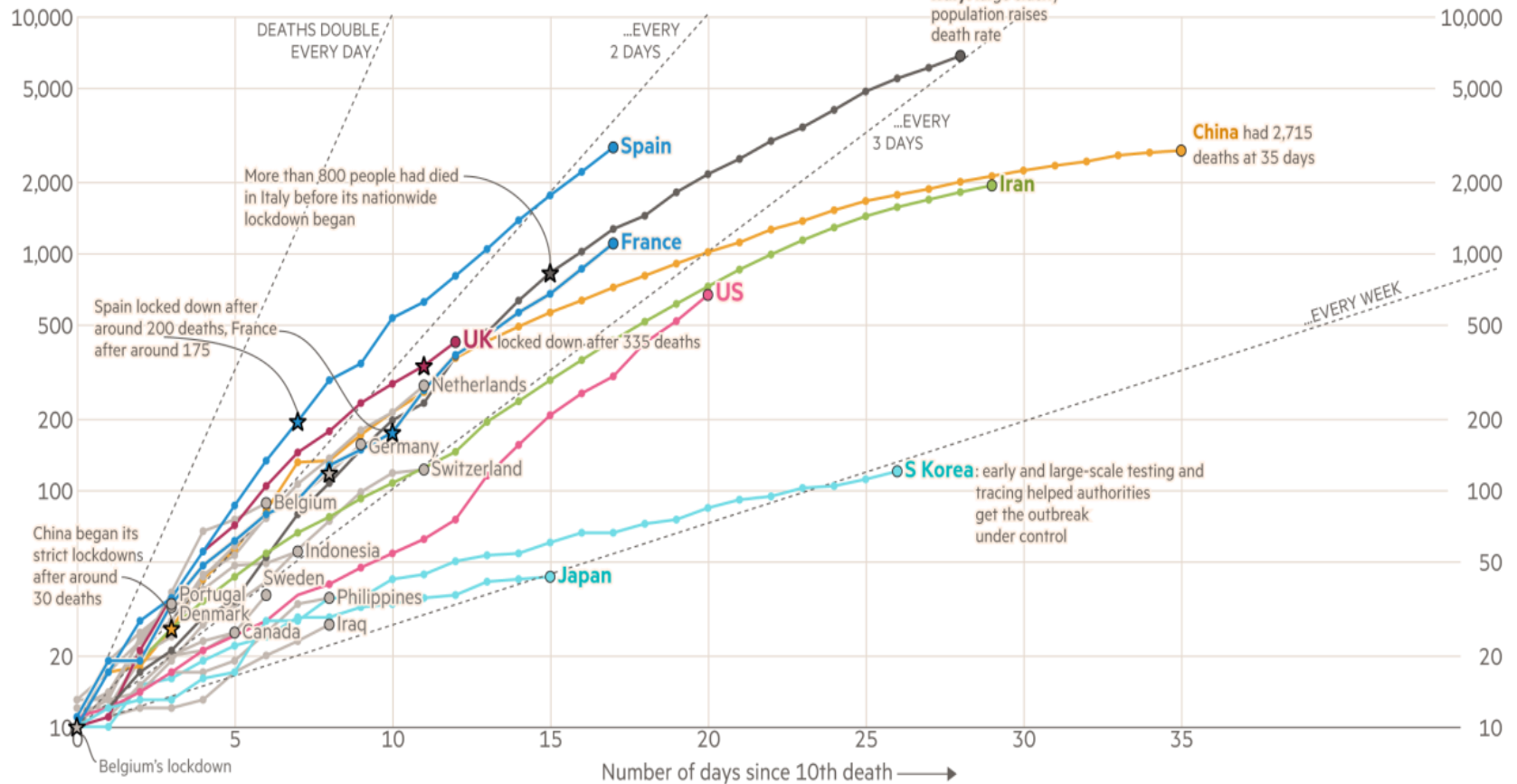
Source: New York Times

Country trajectories

Italy and Spain have had more deaths attributed to coronavirus than China did at the same stage

Cumulative number of deaths, by number of days since 10th death

Nationwide lockdowns: ★



FT graphic: John Burn-Murdoch / @jburnmurdoch

Source: FT analysis of Johns Hopkins University, CSSE; Worldometers; FT research. Data updated March 24, 19:00 GMT

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Glossary

COVID-19 (Coronavirus Disease 2019) is the infections disease caused by the virus SARS-CoV-2 (Severe Acute Respiratory Syndrome Coronavirus 2). Originating in Wuhan, China, the spread of SARS-CoV-2 has led to a pandemic which has affected nations on 6 of the 7 continents.

R_0 is the basic reproduction number of a virus. It represents the number of people an infected person can expect to pass the infection to.

CFR is the case fatality rate. It represents the expectation for the percentage of infected cases that will end in death.

Helpful links regarding coronavirus information

Best Dashboards for Monitoring Global Cases

<https://coronavirus.1point3acres.com/>

<https://gisanddata.maps.arcgis.com/apps/opsdashboard/index.html#/bda7594740fd40299423467b48e9ecf6>

<https://www.worldometers.info/coronavirus/coronavirus-cases/>

World Health Organization (WHO) page on COVID-19

<https://www.who.int/emergencies/diseases/novel-coronavirus-2019>

US CDC COVID-19 page

<https://www.cdc.gov/coronavirus/2019-nCoV/index.html>

Epidemic Calculator – Enter your Assumptions, see how the epidemic unfolds

<https://gabgoh.github.io/COVID/index.html>

General Information

https://en.wikipedia.org/wiki/Coronavirus_disease_2019

https://en.wikipedia.org/wiki/Severe_acute_respiratory_syndrome_coronavirus_2

<https://www.soa.org/globalassets/assets/files/resources/research-report/2020/2020-covid-19-research-brief.pdf>