

The many disasters of the COVID-19 pandemic

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Principles of Complex Systems, Vols. 1, 2, & 3D
CSYS/MATH 6701, 6713, & a pretend number, 2024–2025

Prof. Peter Sheridan Dodds

Computational Story Lab | Vermont Complex Systems Center
Santa Fe Institute | University of Vermont



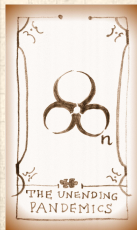
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Epidemiology

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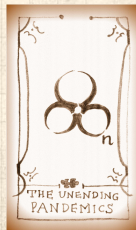


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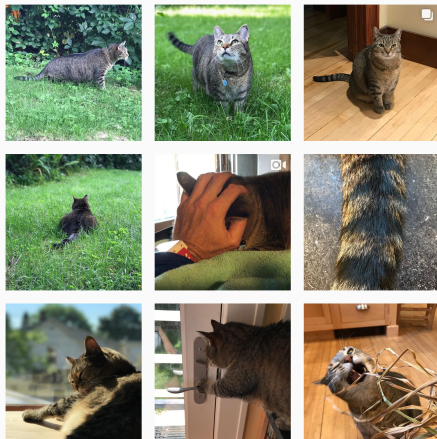
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Outline

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First: The Truth

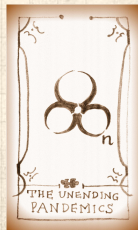
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COVID-19 is a conspiracy



First: The Truth


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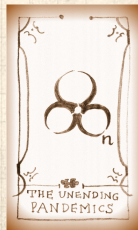
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COVID-19 is a conspiracy

 It's not a real contagion.



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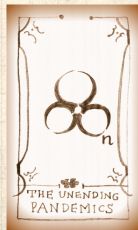
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COVID-19 is a conspiracy

 It's not a real contagion.

 Contagion: *con* = 'with' + *tangere* 'to touch.'



First: The Truth

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COVID-19 is a conspiracy

- It's not a real contagion.
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First: The Truth

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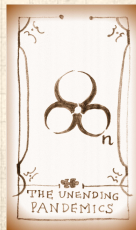
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- It's not a real contagion.
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- WHO declares COVID-19 transmission may be via airborne particles in ...



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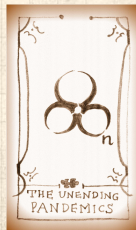
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- It's not a real contagion.
- Contagion: *con* = 'with' + *tangere* 'to touch.'
- Conspiracy: *con* = 'with' + *tangere* 'to breathe.'
- WHO declares COVID-19 transmission may be via airborne particles in ... May, 2021 ↗ after long resisting doing so ↗




-  2020-01-14: WHO tweeted: 
“Preliminary investigations conducted by the Chinese authorities have found no clear evidence of human-to-human transmission of the novel #coronavirus.”
-  2020-03-30: WHO Official Defends Guidance: 'We're Not Seeing' Airborne Transmission 

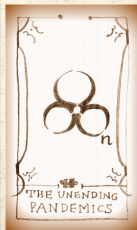


The whole concept of 'disaster' is a disaster:





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 Dis + Aster = Bad Star = Astrological Ill Fate.






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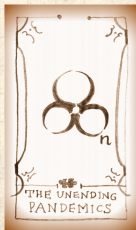
 Dis + Aster = Bad Star = Astrological Ill Fate.

 If the heavens are a clockwork, then all was foretold.







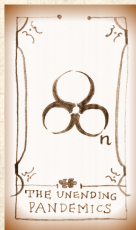
The whole concept of 'disaster' is a disaster:

-  Dis + Aster = Bad Star = Astrological Ill Fate.
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-  The stars and planets are the shadowy cabal.








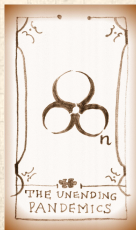
The whole concept of 'disaster' is a disaster:

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-  If the heavens are a clockwork, then all was foretold.
-  The stars and planets are the shadowy cabal.
-  But we know there are different timelines available.




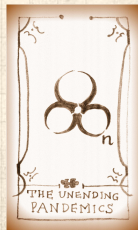
The whole concept of 'disaster' is a disaster:

-  Dis + Aster = Bad Star = Astrological Ill Fate.
-  If the heavens are a clockwork, then all was foretold.
-  The stars and planets are the shadowy cabal.
-  But we know there are different timelines available.
-  Fate is a sometimes food, and there is only the story of fate.
(more later in PoCS, Vol. 1).





Journal entry, 2020-02-11:

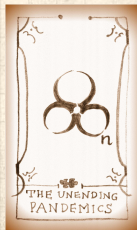
 Coronavirus






Journal entry, 2020-02-11:

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 The idiocy about R_0 continues.




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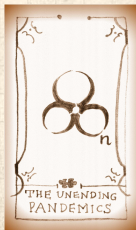
-  Coronavirus
-  The idiocy about R_0 continues.
-  Unbelievably believably bad science.



Journal entry, 2020-02-21:


Twitter DMs to a colleague:


 Okay: The scientists studying pandemics need to be able to present some kind set of numbers that show how bad things are. The whole R_0 disaster has been waiting to happen because people have been ... lazily having fun with math models? Unconcerned about how to communicate vital scientific information? Stupid? I don't know. Maybe a radar plot visualization. I don't know.

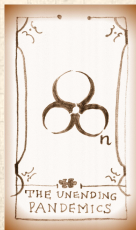


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 "When these three boundaries are crossed, we are in trouble"



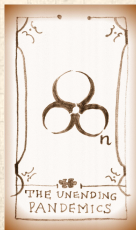
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🧱 “When these three boundaries are crossed, we are in trouble”

🧱 Measles has an R_0 of 20. We should all have it. Of course, there's no f**king time scale for R_0 so we don't know when that happens.



Journal entry, 2020-02-21, cont.:

Twitter DMs to a colleague:

 One of the core pieces we had in our old paper: “What is N?”



Journal entry, 2020-02-21, cont.:

Twitter DMs to a colleague:

- 📦 One of the core pieces we had in our old paper: “What is N?”
- 📦 And rare events matter so, so much. I keep seeing new countries report their first case.



Journal entry, 2020-02-21, cont.:

Twitter DMs to a colleague:

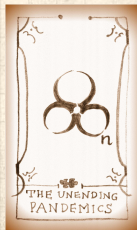
- One of the core pieces we had in our old paper: “What is N ?”
- And rare events matter so, so much. I keep seeing new countries report their first case.
- South Korea with the church. WaPo says cases are “soaring” there. I haven’t seen the numbers.




vtdigger :





2023-03-10: Tuesday basketball game, UVM beats UMBC
81-74.



vtdigger :


 2023-03-10: Tuesday basketball game, UVM beats UMBC
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 2020-06-07: 2020/06/07: Six who attended UVM basketball
playoff contracted Covid-19 

“We weren’t thinking about Covid at all.”




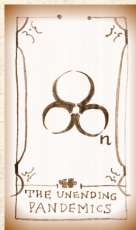
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“We weren’t thinking about Covid at all.”

 At least 50 people would experience symptoms.





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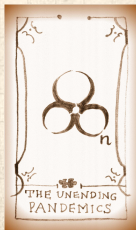
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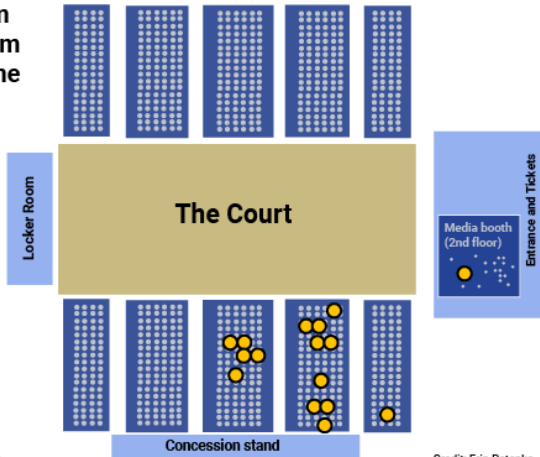
 Three people in attendance would die.



2020-06-10: Spread of Covid-19 from UVM game more extensive than thought

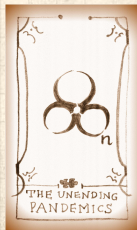
The cases from one Patrick Gym basketball game

 = Positive case





Seating locations are approximate.

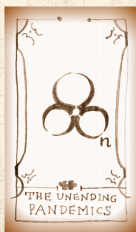
Credit: Erin Petenko



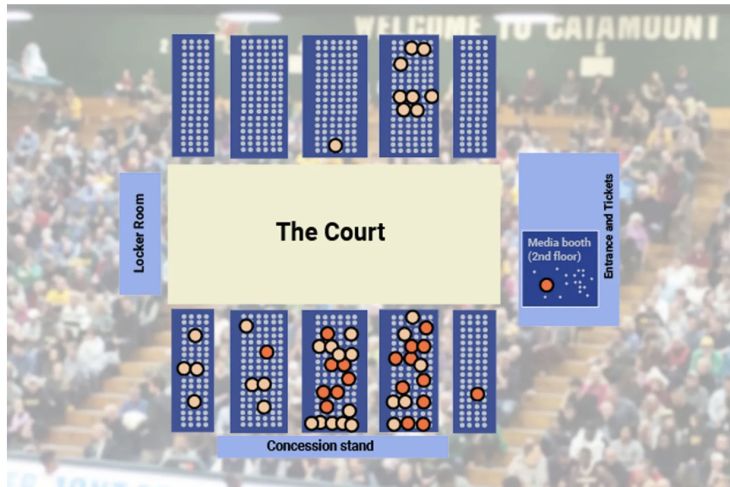
[vtdigger](#) :

 [2020-06-18: UVM basketball game was a major spreading event, VTDigger survey finds](#) 

“...the 3,200 cheering fans filling Patrick Gym represented all the ways not to act in a pandemic: squeezed shoulder-to-shoulder on the bleachers, offering high fives, yelling, sharing pizza with neighbors.”



 2020-06-21: The Deeper Dig: How Covid-19 spread at a UVM basketball game 



What is haPpeNing?

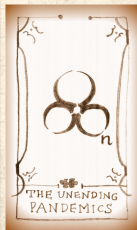
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On March 11, within about 15 minutes after 9 pm US EST:



What is haPpeNing?

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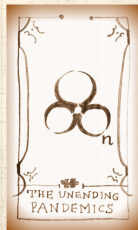
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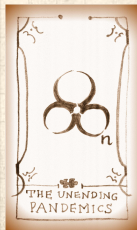
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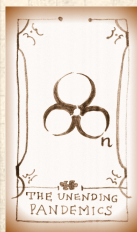
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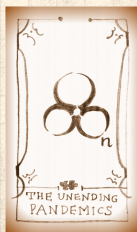
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2. The National Basketball Association put its season on hold indefinitely due to the COVID-19 pandemic.
3. Trump gave an Oval Office Address during which the Dow Jones Industrial Average futures dropped.
4. Also: former US vice presidential candidate Sarah Palin was appearing on the popular Fox TV show “The Masked Singer” performing Sir Mix-A-Lot’s “Baby Got Back” in a bear costume.






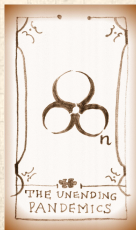
2020-03-15, journal entry:

They look like us now  

 What must be done, and must have been done from the start:


In general for pandemics:


-  Limit contact, groups, travel.
-  Wear masks, PPE.
-  Don't breathe other people's air, don't lick surfaces.




2020-03-15, journal entry:


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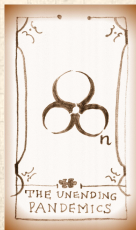
 Test everyone.

In general for pandemics:

 Limit contact, groups, travel.




 Wear masks, PPE.

 Don't breathe other people's air, don't lick surfaces.






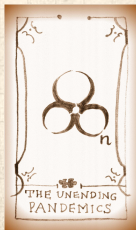
2020-03-15, journal entry:

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-  What must be done, and must have been done from the start:
-  Test everyone.
-  We need sunlight, we need knowledge.





In general for pandemics:

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-  Wear masks, PPE.
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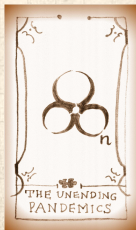
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-  What must be done, and must have been done from the start:
-  Test everyone.
-  We need sunlight, we need knowledge.
-  And we needed to be prepared.

In general for pandemics:

-  Limit contact, groups, travel.
-  Wear masks, PPE.
-  Don't breathe other people's air, don't lick surfaces.






“Narrative Epidemiology” through TV Tropes:

 The virus is the Big Bad   and a Complete Monster  



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 Ignore the Scientists  



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 Asymptomatic spreaders: The Virus   looks like us
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 Failure to act as one against a remorseless unified foe: Let's Split Up, Gang  









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 Vaccine as a silver bullet  









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 Failure to act as one against a remorseless unified foe: Let's Split Up, Gang  

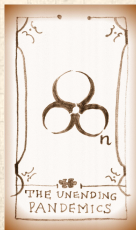
 Vaccine as a silver bullet  

 Bill Gates created the virus and wants to put chips in your head: Poison-and-Cure Gambit  





























“Narrative Epidemiology” through TV Tropes:

-  The virus is the Big Bad   and a Complete Monster  
-  Ignore the Scientists  
-  Asymptomatic spreaders: The Virus   looks like us
now  
-  Failure to act as one against a remorseless unified foe: Let’s Split Up, Gang  
-  Vaccine as a silver bullet  
-  Bill Gates created the virus and wants to put chips in your head: Poison-and-Cure Gambit  
-  Fear that disaster leads to worse: Tyrant Takes the Helm  



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-  Bill Gates created the virus and wants to put chips in your head: Poison-and-Cure Gambit  
-  Fear that disaster leads to worse: Tyrant Takes the Helm  
-  Fundamental problem: We much prefer stories of individuals, not systems.



Story versus the Virus

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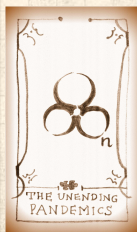
The peril

Journal entry, 2020-03-21:

The complete incompetence of Trump, our doom

Washington Post article, March 20 

Azar couldn't get through to Trump to speak with him about the virus until Jan. 18, according to two senior administration officials. When he reached Trump by phone, the president interjected to ask about vaping and when flavored vaping products would be back on the market, the senior administration officials said.



Story versus the Virus

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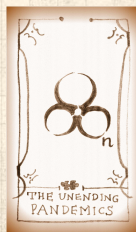
The peril

Journal entry, 2020-03-21, cont.:

On Feb. 25, Nancy Messonnier, a senior CDC official, sounded perhaps the most significant public alarm to that point, when she told reporters that the coronavirus was likely to spread within communities in the United States and that disruptions to daily life could be “severe.” Trump called Azar on his way back from a trip to India and complained that Messonnier was scaring the stock markets, according to two senior administration officials.



Like life, death finds a way.



Mismeasurement of Death


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System failure—things fall apart

 We couldn't and still can't count cases and deaths properly.



Mismeasurement of Death

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System failure—things fall apart

- 🧱 We couldn't and still can't count cases and deaths properly.
- 🧱 All up-to-date pandemic dashboards are wrong.



Mismeasurement of Death




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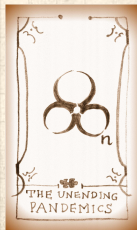
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-  All up-to-date pandemic dashboards are wrong.
-  No error bars.



Mismeasurement of Death





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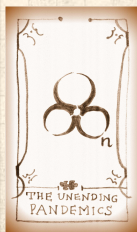
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-  We couldn't and still can't count cases and deaths properly.
-  All up-to-date pandemic dashboards are wrong.
-  No error bars.
-  Like flying a plane with instruments showing readings from 3 hours ago.



Mismeasurement of Death

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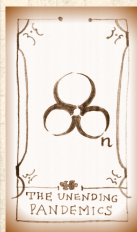
Narrative
Epidemiology

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Mismeasurement of Death








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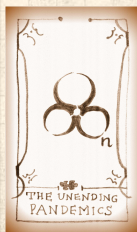
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-  Estimate: Over 500,000 excess deaths in the US from March 15 to December 31, 2020.



Eight significant digits, no errors:

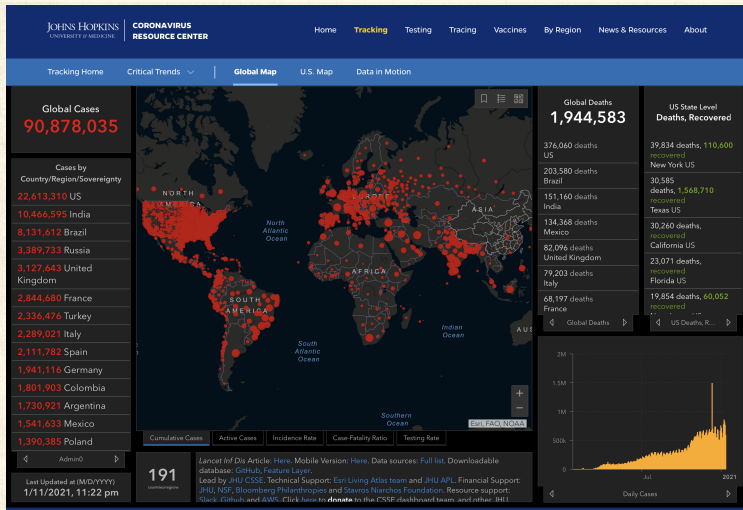
January 11, 2020, Johns Hopkins:

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January 7, 2020, Financial Times, beautiful, misleading:

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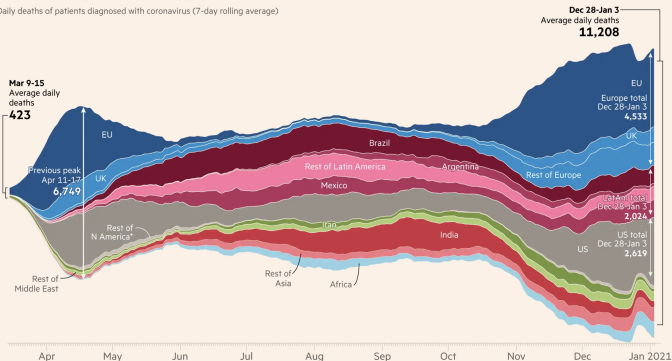
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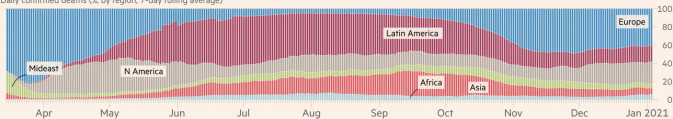
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Covid-19's soaring death toll dwarfs figures from first wave

Daily deaths of patients diagnosed with coronavirus (7-day rolling average)

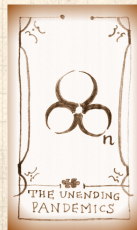


Daily confirmed deaths (% by region, 7-day rolling average)



FT graphic: Steven Bernard / @sdbernard

Source: FT analysis of data from WHO, Covid Tracking Project, Johns Hopkins University, and the U.S. Public Health Agency.



<https://www.ft.com>

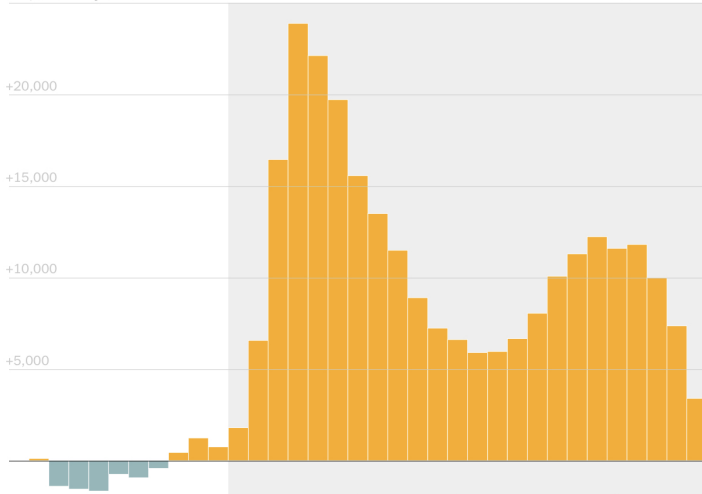
Eventually: time series with excess deaths:

September 20, New York Times:

U.S. Deaths Above or Below Normal

257,900 excess deaths from March 15 to Aug. 29

+25,000 weekly deaths



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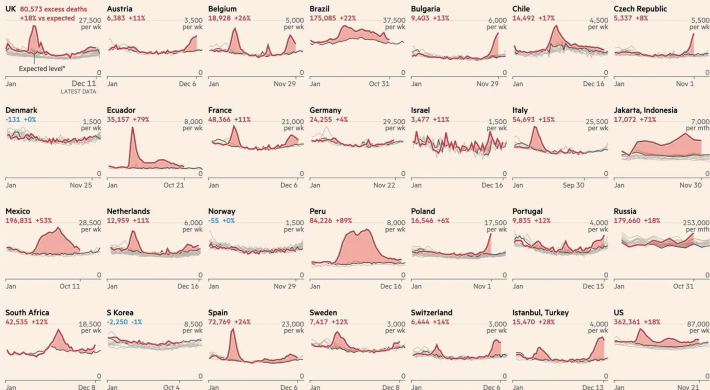


Financial Times:

January 7, 2020, Financial Times:

Death rates have climbed far above historical averages in many countries that have faced Covid-19 outbreaks

Number of deaths per week from all causes, 2020 vs recent years: Shading indicates total excess deaths since 100 confirmed cases in the country



*Adjusted for trend over recent years
Sources: FT analysis of mortality data from individual countries and the Human Mortality Database. Data updated December 22
FT graphic: John Burn-Murdoch / @burnmurdoch
© FT

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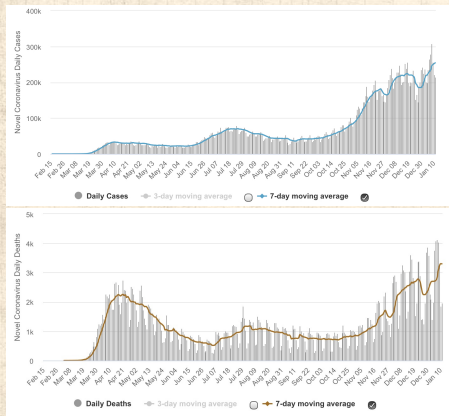
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The humans:

Timely delivery of Stimulus Packages for the Virus and SIR models:



Vacations + fatigue + stories.

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The failure of epidemiological models


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Farr's model : Normal distribution for case load.





The failure of epidemiological models


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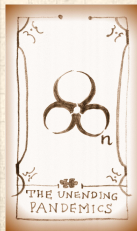
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 Farr's Law!





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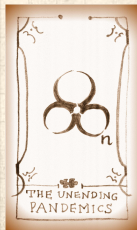
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 Farr's model : Normal distribution for case load.

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 Non-mechanistic, farcical.





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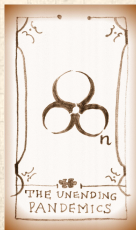
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 Non-mechanistic, farcical.

 Sigmoid functions appear everywhere and are easily produced by gimmick models.



Mass negligent geronticide:



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Emergence of differential age mortality:

-  Older people are not economically important.
-  Shutting down society will ... ?



Why not let it rip?


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Especially early on, but throughout:

 “It’s no worse than the flu.”

“Flatten the curve”

