The many disasters of the COVID-19 pandemic

Last updated: 2024/11/24, 20:22:56 EST

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























Licensed under the Creative Commons Attribution 4.0 International

The PoCSverse COVID-19 disasters 1 of 28

Varrative Epidemiolo

The dashboards are all



These slides are brought to you by:



The PoCSverse COVID-19 disasters

Narrative Epidemiology

The dashboards are all wrong



These slides are also brought to you by:

Special Guest Executive Producer



On Instagram at pratchett_the_cat

The PoCSverse COVID-19 disasters 3 of 28

Narrative Epidemiology

The dashboards are all wrong



Outline

The PoCSverse COVID-19 disasters 4 of 28

Narrative Epidemiology

The dashboards are all wrong

The peril

Narrative Epidemiology

The dashboards are all wrong



COVID-19 is a conspiracy

The PoCSverse COVID-19 disasters 5 of 28

Narrative Epidemiology

The dashboards are all wrong



The PoCSverse COVID-19 disasters 5 of 28

Narrative Epidemiology

The dashboards are all wrong

The peril

COVID-19 is a conspiracy

& It's not a real contagion.



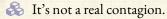
The PoCSverse COVID-19 disasters 5 of 28

Narrative Epidemiology

The dashboards are all wrong

The peril

COVID-19 is a conspiracy



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



The PoCSverse COVID-19 disasters 5 of 28

Narrative Epidemiology

The dashboards are all wrong

The peril

COVID-19 is a conspiracy

& It's not a real contagion.

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

& Conspiracy **\(\mathbb{C}**: con='with' + spiro **\(\mathbb{C}\)** = 'to breathe.'



The PoCSverse COVID-19 disasters 5 of 28

Narrative Epidemiol

The dashboards are all wrong

The peril

COVID-19 is a conspiracy

- & It's not a real contagion.
- \Leftrightarrow Contagion \square : con='with' + tangere='to touch.'
- & Conspiracy \square : con= with $+ spiro \square =$ to breathe.
- WHO declares COVID-19 transmission may be via airborne particles in ...



The PoCSverse COVID-19 disasters 5 of 28

Narrative Epidemiol

The dashboards are all wrong

The peril

COVID-19 is a conspiracy

& It's not a real contagion.

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

Conspiracy
 Con='with' + spiro
 = 'to breathe.'

WHO declares COVID-19 transmission may be via airborne particles in ... May, 2021 after long resisting doing so



The PoCSverse COVID-19 disasters 6 of 28

Narrative Epidemiol

The dashboards are all wrong

The peril

"Preliminary investigations conducted by the Chinese authorities have found no clear evidence of human-to-human transmission of the novel #coronavirus."





The PoCSverse COVID-19 disasters 7 of 28

Narrative Epidemiology

The dashboards are all wrong



Dis + Aster = Bad Star = Astrological Ill Fate.

The PoCSverse COVID-19 disasters 7 of 28

Epidemiology

The dashboards are all wrong



Dis + Aster = Bad Star = Astrological Ill Fate.

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

The PoCSverse COVID-19 disasters 7 of 28

Narrative Epidemiole

The dashboards are all wrong





Dis + Aster = Bad Star = Astrological Ill Fate.



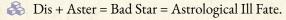
A If the heavens are a clockwork, then all was foretold.

The stars and planets are the shadowy cabal.

The PoCSverse COVID-19 disasters 7 of 28

The dashboards are all wrong





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 PoCSverse COVID-19 disasters 7 of 28

Narrative Epidemiole

The dashboards are all wrong



- Dis + Aster = Bad Star = Astrological Ill Fate.
- If the heavens are a clockwork, then all was foretold.
- A 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).

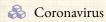
The PoCSverse COVID-19 disasters 7 of 28

Narrative Epidemiol

The dashboards are all wrong



Journal entry, 2020-02-11:



The PoCSverse COVID-19 disasters 8 of 28

Narrative Epidemiology

The dashboards are all wrong

771 -1



Journal entry, 2020-02-11:



Coronavirus



 \clubsuit The idiocy about R_0 continues.

The PoCSverse COVID-19 disasters 8 of 28

Epidemiology

The dashboards are all wrong



Journal entry, 2020-02-11:

Coronavirus

 \clubsuit The idiocy about R_0 continues.

Unbelievably believably bad science.

The PoCSverse COVID-19 disasters 8 of 28

Narrative Epidemiol

The dashboards are all wrong



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.

The PoCSverse COVID-19 disasters 9 of 28

Narrative Epidemiolo

The dashboards are all wrong



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.

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

The PoCSverse COVID-19 disasters 9 of 28

Narrative Epidemiolog

The dashboards are all wrong



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.

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.

The PoCSverse COVID-19 disasters 9 of 28

The dashboards are all



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?"

The PoCSverse COVID-19 disasters 10 of 28

Narrative Epidemiol

The dashboards are all wrong



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.

The PoCSverse COVID-19 disasters 10 of 28

Narrative Epidemiolog

The dashboards are all wrong



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.

The PoCSverse COVID-19 disasters 10 of 28

Narrative Epidemiolo

The dashboards are all wrong







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

The PoCSverse COVID-19 disasters 11 of 28

Epidemiology

The dashboards are all wrong





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



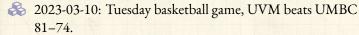
2020-06-07: 2020/06/07: Six who attended UVM basketball playoff contracted Covid-19

"We weren't thinking about Covid at all."

The PoCSverse COVID-19 disasters 11 of 28

The dashboards are all wrong





2020-06-07: 2020/06/07: Six who attended UVM basketball playoff contracted Covid-19

"We weren't thinking about Covid at all."

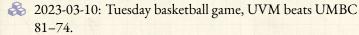
At least 50 people would experience symptoms.

The PoCSverse COVID-19 disasters 11 of 28

Narrative Epidemiolo

The dashboards are all wrong





2020-06-07: 2020/06/07: Six who attended UVM basketball playoff contracted Covid-19

"We weren't thinking about Covid at all."

At least 50 people would experience symptoms.

Three people in attendance would die.

The PoCSverse COVID-19 disasters 11 of 28

Narrative Epidemiole

The dashboards are all wrong





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

The cases from one Patrick Gym basketball game = Positive case The Court Media booth Concession stand

The PoCSverse COVID-19 disasters 12 of 28

The dashboards are all wrong

The peril



Seating locations are approximate.

Credit: Frin Petenko

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."

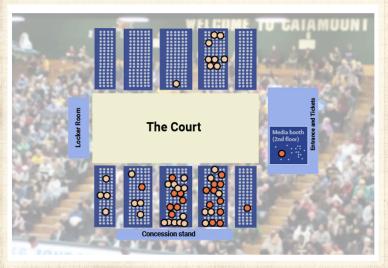
The PoCSverse COVID-19 disasters 13 of 28

The dashboards are all wrong





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



The PoCSverse COVID-19 disasters 14 of 28

The dashboards are all wrong



What is haPpeNing?

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

The PoCSverse COVID-19 disasters 15 of 28

Narrative Epidemiology

The dashboards are all wrong



What is haPpeNing?

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

1. Tom Hanks and Rita Wilson announced that they had tested positive for COVID-19.

The PoCSverse COVID-19 disasters 15 of 28

Narrative Epidemiology

The dashboards are all wrong



What is haPpeNing?

The PoCSverse COVID-19 disasters 15 of 28

Narrative Epidemiolo

The dashboards are all wrong

The peril

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

- Tom Hanks and Rita Wilson announced that they had tested positive for COVID-19.
- 2. The National Basketball Association put its season on hold indefinitely due to the COVID-19 pandemic.



What is haPpeNing?

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

- Tom Hanks and Rita Wilson announced that they had tested positive for COVID-19.
- 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.

The PoCSverse COVID-19 disasters 15 of 28

Narrative Epidemiolo

The dashboards are all wrong



What is haPpeNing?

The PoCSverse COVID-19 disasters 15 of 28

Narrative Epidemiole

The dashboards are all wrong

The peril

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

- Tom Hanks and Rita Wilson announced that they had tested positive for COVID-19.
- 2. The National Basketball Association put its season on hold indefinitely due to the COVID-19 pandemic.
- 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.



They look like us now & 🗹



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

The PoCSverse COVID-19 disasters 16 of 28

The dashboards are all wrong



¹Solid life general-purpose life advice.

They look like us now ?

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

Test everyone.

The PoCSverse COVID-19 disasters 16 of 28

Narrative Epidemiolo

The dashboards are all wrong



¹Solid life general-purpose life advice.

They look like us now ?

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

Test everyone.

We need sunlight, we need knowledge.

The PoCSverse COVID-19 disasters 16 of 28

Narrative Epidemiolo

The dashboards are all wrong



They look like us now ?

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.

The PoCSverse COVID-19 disasters 16 of 28

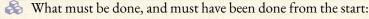
Narrative Epidemiolo

The dashboards are all wrong



¹Solid life general-purpose life advice.

They look like us now & C



A 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.

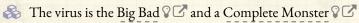
Don't breathe other people's air, don't lick surfaces. 1

The PoCSverse COVID-19 disasters 16 of 28

Narrative Epidemiolo

The dashboards are all wrong





The PoCSverse COVID-19 disasters 17 of 28

Narrative Epidemiology

The dashboards are all wrong



² Always: Make Sure He's Dead ♥ ☑. Rule #2: Double Tap ♥ ☑ Double Tap.

🙈 The virus is the Big Bad 🎖 🗹 and a Complete Monster 🖇 🗹

🙈 Ignore the Scientists 🖓 🗹

The PoCSverse COVID-19 disasters 17 of 28

Narrative Ēpidemiology

The dashboards are all wrong



² Always: Make Sure He's Dead ♥ ☑. Rule #2: Double Tap ♥ ☑ Double Tap.

💸 The virus is the Big Bad 🖓 🗹 and a Complete Monster 🖓 🗹

🙈 Ignore the Scientists 🖓 🗹

Asymptomatic spreaders: The Virus V looks like us now V

The PoCSverse COVID-19 disasters 17 of 28

Narrative Epidemiology

The dashboards are all wrong



² Always: Make Sure He's Dead V. Rule #2: Double Tap V. Double Tap.

💸 The virus is the Big Bad 🎖 🗹 and a Complete Monster 🖇 🗹

🙈 Ignore the Scientists 🖓 🗹

Asymptomatic spreaders: The Virus V looks like us now V looks

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

The PoCSverse COVID-19 disasters 17 of 28

Narrative Epidemiology

The dashboards are all wrong



² Always: Make Sure He's Dead ♥ ☑. Rule #2: Double Tap ♥ ☑ Double Tap.

The virus is the Big Bad 🖓 🗹 and a Complete Monster 🖓 🗹

Ignore the Scientists ? If

Asymptomatic spreaders: The Virus V looks like us now V looks

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

The PoCSverse COVID-19 disasters 17 of 28

Narrative Epidemiology

The dashboards are all wrong



²Always: Make Sure He's Dead ♥ ☑. Rule #2: Double Tap ♥ ☑ Double Tap.

The virus is the Big Bad ♥ ☑ and a Complete Monster ♥ ☑

Ignore the Scientists \(\subseteq \subseteq \)

Asymptomatic spreaders: The Virus VI looks like us now VI

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

Bill Gates created the virus and wants to put chips in your head: Poison-and-Cure Gambit ♀ The PoCSverse COVID-19 disasters 17 of 28

Narrative Epidemiology

The dashboards are all wrong



²Always: Make Sure He's Dead ♥ ☑. Rule #2: Double Tap ♥ ☑ Double Tap.

💸 The virus is the Big Bad 🛭 🗹 and a Complete Monster 🖫 🗹

Ignore the Scientists ? If

Asymptomatic spreaders: The Virus V looks like us now V looks

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

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 ♥
✓

The PoCSverse COVID-19 disasters 17 of 28

Narrative Epidemiology

The dashboards are all wrong



²Always: Make Sure He's Dead ♥ ☑. Rule #2: Double Tap ♥ ☑ Double Tap.

The virus is the Big Bad ♥ ☑ and a Complete Monster ♥ ☑

Ignore the Scientists ? If

Asymptomatic spreaders: The Virus V looks like us now V looks

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

Bill Gates created the virus and wants to put chips in your head: Poison-and-Cure Gambit \(\sigma \overline{\mathcal{C}} \)

🙈 Fear that disaster leads to worse: Tyrant Takes the Helm 🖓 🗹

Resurgence: Back from the Dead V 2

The PoCSverse COVID-19 disasters 17 of 28

Narrative Ēpidemiology

The dashboards are all



²Always: Make Sure He's Dead ♥ ☑. Rule #2: Double Tap ♥ ☑ Double Tap.

🙈 The virus is the Big Bad 🎖 🗹 and a Complete Monster 🕻 🗹

Ignore the Scientists \(\sigma \subseteq \sigma \)

Asymptomatic spreaders: The Virus V looks like us now V l

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

Bill Gates created the virus and wants to put chips in your head: Poison-and-Cure Gambit \(\sqrt{\textsuperignt{\textsuperignerign}{\textsuperignt{\textsuperignerign}{\textsuperignt{\textsuperignerign}{\textsuperign}}} \)

🙈 Fear that disaster leads to worse: Tyrant Takes the Helm 🖓 🗹

Resurgence: Back from the Dead \$\alpha^2\$

Fundamental problem: We much prefer stories of individuals, not systems.

The PoCSverse COVID-19 disasters 17 of 28

Narrative Ēpidemiology

The dashboards are all



² Always: Make Sure He's Dead ♥ ☑. Rule #2: Double Tap ♥ ☑ Double Tap.

Story versus the Virus

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.

The PoCSverse COVID-19 disasters 18 of 28

Epidemiology

The dashboards are all wrong

The peril

Narrative



Story versus the Virus

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.

The PoCSverse COVID-19 disasters 19 of 28

Narrative Epidemiology

The dashboards are all



System failure—things fall apart



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

The PoCSverse COVID-19 disasters 20 of 28

The dashboards are all wrong



System failure—things fall apart



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



For a long time, all up-to-date pandemic dashboards were wrong.

The PoCSverse COVID-19 disasters 20 of 28

The dashboards are all wrong



System failure—things fall apart



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



For a long time, all up-to-date pandemic dashboards were wrong.



No error bars.

The PoCSverse COVID-19 disasters 20 of 28

The dashboards are all wrong



System failure—things fall apart



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



For a long time, all up-to-date pandemic dashboards were wrong.



No error bars.



Like flying a plane with instruments showing readings from 3 hours ago.

The PoCSverse COVID-19 disasters 20 of 28

The dashboards are all wrong



System failure—things fall apart



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



For a long time, all up-to-date pandemic dashboards were wrong.



No error bars.



Like flying a plane with instruments showing readings from 3 hours ago.



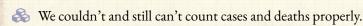
We need a Grim Scorekeeper.

The PoCSverse COVID-19 disasters 20 of 28

The dashboards are all wrong



System failure—things fall apart



- For a long time, all up-to-date pandemic dashboards were wrong.
- No error bars.
- Like flying a plane with instruments showing readings from 3 hours ago.
- We need a Grim Scorekeeper.
- Excess deaths in the US have run at about 35% more than reported COVID deaths.

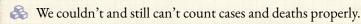
The PoCSverse COVID-19 disasters 20 of 28

Narrative Epidemiolog

The dashboards are all wrong



System failure—things fall apart



For a long time, all up-to-date pandemic dashboards were wrong.

No error bars.

Like flying a plane with instruments showing readings from 3 hours ago.

& We need a Grim Scorekeeper.

Excess deaths in the US have run at about 35% more than reported COVID deaths.

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

The PoCSverse COVID-19 disasters 20 of 28

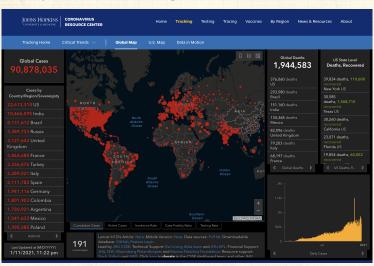
Narrative Epidemiolo

The dashboards are all wrong



Eight significant digits, no errors:

January 11, 2020, Johns Hopkins:



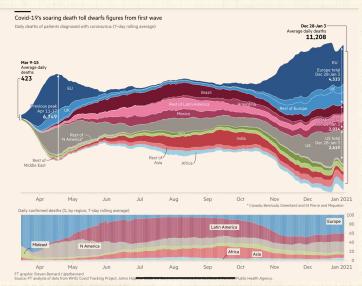
The PoCSverse COVID-19 disasters 21 of 28

Narrative Epidemiology

The dashboards are all wrong



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



The PoCSverse COVID-19 disasters 22 of 28

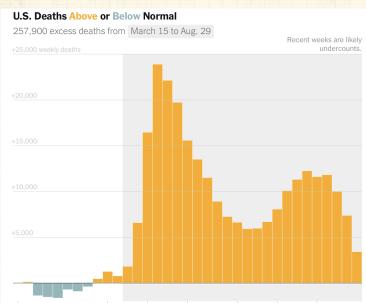
Narrative Epidemiologi

The dashboards are all wrong



Eventually: time series with excess deaths:

September 20, New York Times:



The PoCSverse COVID-19 disasters 23 of 28

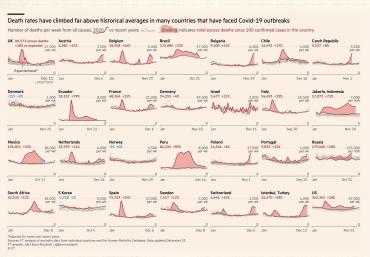
Narrative Epidemiology

The dashboards are all wrong



Financial Times, excess deaths:

January 7, 2020, Financial Times:



The PoCSverse COVID-19 disasters 24 of 28

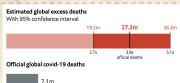
Narrative

The dashboards are all wrong

e neril



The Economist: The Pandemic's True Death Toll

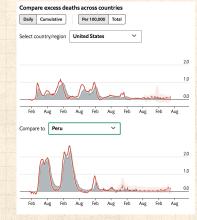


H OW MANY people have died because of the covid19 pandemic? The answer depends both on the data available, and on how you define "because". Many people who die while infected with SARS-CoV-2 are never tested for it, and do not enter the official totals. Conversely, some people whose deaths have been attributed to covid-19 had other ailments that might have ended their lives on a similar timeframe anyway.

And what about people who died of preventable causes

during the pandemic, because hospitals full of covid-19 patients could not treat them? If such cases count, they must be offset by deaths that did not occur but would have in normal times, such as those caused by flu or air

pollution.



The PoCSverse COVID-19 disasters 25 of 28

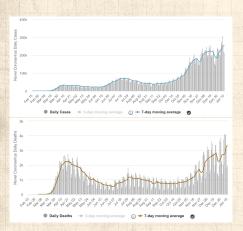
Narrative Epidemiol

The dashboards are all wrong



The humans:

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



Vacations + fatigue + stories.

The PoCSverse COVID-19 disasters 26 of 28

Narrative Epidemiology

The dashboards are all wrong



The PoCSverse COVID-19 disasters 27 of 28

Narrative Epidemiol

The dashboards are all wrong

The peril

A Farr's model : Normal distribution for case load.



🙈 Farr's model 🗹: Normal distribution for case load.

备 Farr's Law!

The PoCSverse COVID-19 disasters 27 of 28

Narrative Epidemiolos

The dashboards are all wrong



Farr's model : Normal distribution for case load.

A Farr's Law!



Non-mechanistic, farcical.

The PoCSverse COVID-19 disasters 27 of 28

The dashboards are all wrong



The PoCSverse COVID-19 disasters 27 of 28

Narrative Epidemiolo

The dashboards are all wrong

- 🚵 Farr's model 🗹: Normal distribution for case load.
- 备 Farr's Law!
- Non-mechanistic, farcical.
- Sigmoid functions appear everywhere and are easily produced by gimmick models.



Mass negligent geronticide:

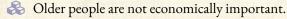
The PoCSverse COVID-19 disasters 28 of 28

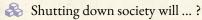
Narrative Epidemiolo

The dashboards are all wrong

The peril

Emergence of differential age mortality:







Why not let it rip?

The PoCSverse COVID-19 disasters 29 of 28

Epidemiology

The dashboards are all wrong

The peril

Especially early on, but throughout:



"It's no worse than the flu."

"Flatten the curve"



Temporary page!

LETEX was unable to guess the total number of pages correctly. As there was some unprocessed data that should have been added to the final page this extra page has been added to receive it. If you rerun the document (without altering it) this surplus page will go away, because LETEX now knows how many pages to expect for this document.