

Weathering the Storm:  
An All Hands on Deck  
Response to an  
Infodemic & How to prepare  
for the future

KATELYN JETELINA, MPH PHD | May 17, 2022



Who am I?



Who am I?



# March 2020

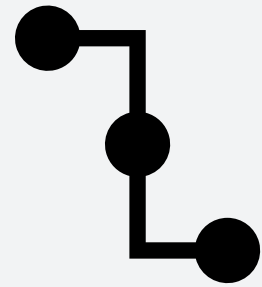
Emergence of two,  
concurrent pandemics



Disease due to SARS-CoV-2

Misinformation due to lack  
of communication

March 2020



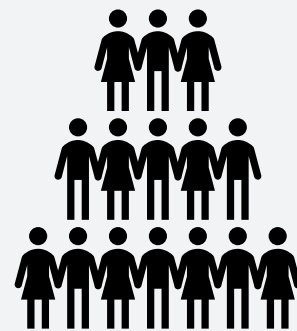
Scrambling for data



Making sense of the patterns elsewhere to inform policy



Displaying the data



Communicate to public

File Message Help Acrobat Tell me what you want to do

Ignore Delete Archive Reply Reply Forward Meeting More -

Junk - Delete Archive Reply Reply Forward Meeting More -

Keep To Manager Done Create New

Team Email

Reply & Delete

Rules -

Move Actions -

Mark Unread Categorize Follow Up -

Tags

Translate Find Related - Select -

Editing

Read Aloud Speech Zoom

Report Phishing



Wed 3/18/2020 9:38 AM

Jetelina, Katelyn K

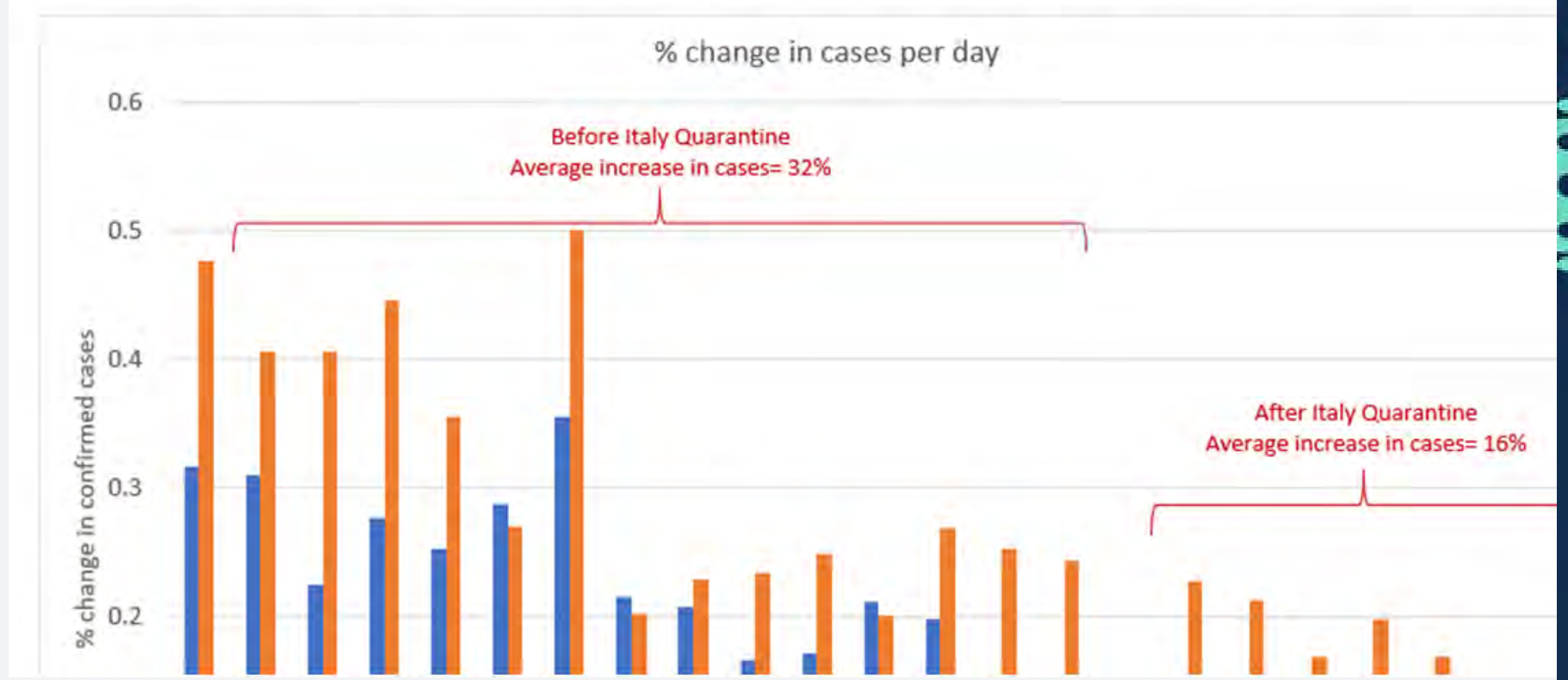
RE: Resources and help for a new way of working

To Bala, Bijal A; George, Vincy S; Barnes, James S; Barnett, Elishia M; Beauchamp, Alaina M; Berry, Diane; Booker, Quiera S; Craker, Kelsey; Goulet, Grace K; Keeton, Juang M; Law, Sarah K; Lee, Thakur, Barsha; Turner-Little, Montgomery S; Ward, Rikki; Weerakoon, Sitara M; Wiegand, Jared G; Xie, Luyu; Yap, Chiu Feng; Yoon, Teresa; Allicock, Marlyn A; Atem, Folefac D; Cannell, Mich Jackson, Sherry D; Long, Dorsey K; Nunez, Juan C; Patterson, Molly B; Morales Marroquin, Flor Elisa

You replied to this message on 3/19/2020 9:27 AM.

Your daily data driven update...

There is a lot of uncertainty around social distancing. I made this graph (#imnotagraphicdesigner; data up to date as of 6:00AM CST) to see if Italy's quarantine SLOWED after the quarantine was put in place on March 9 (their Day 16). This is very promising! The impact of quarantines takes about 7-10 days, so we sho



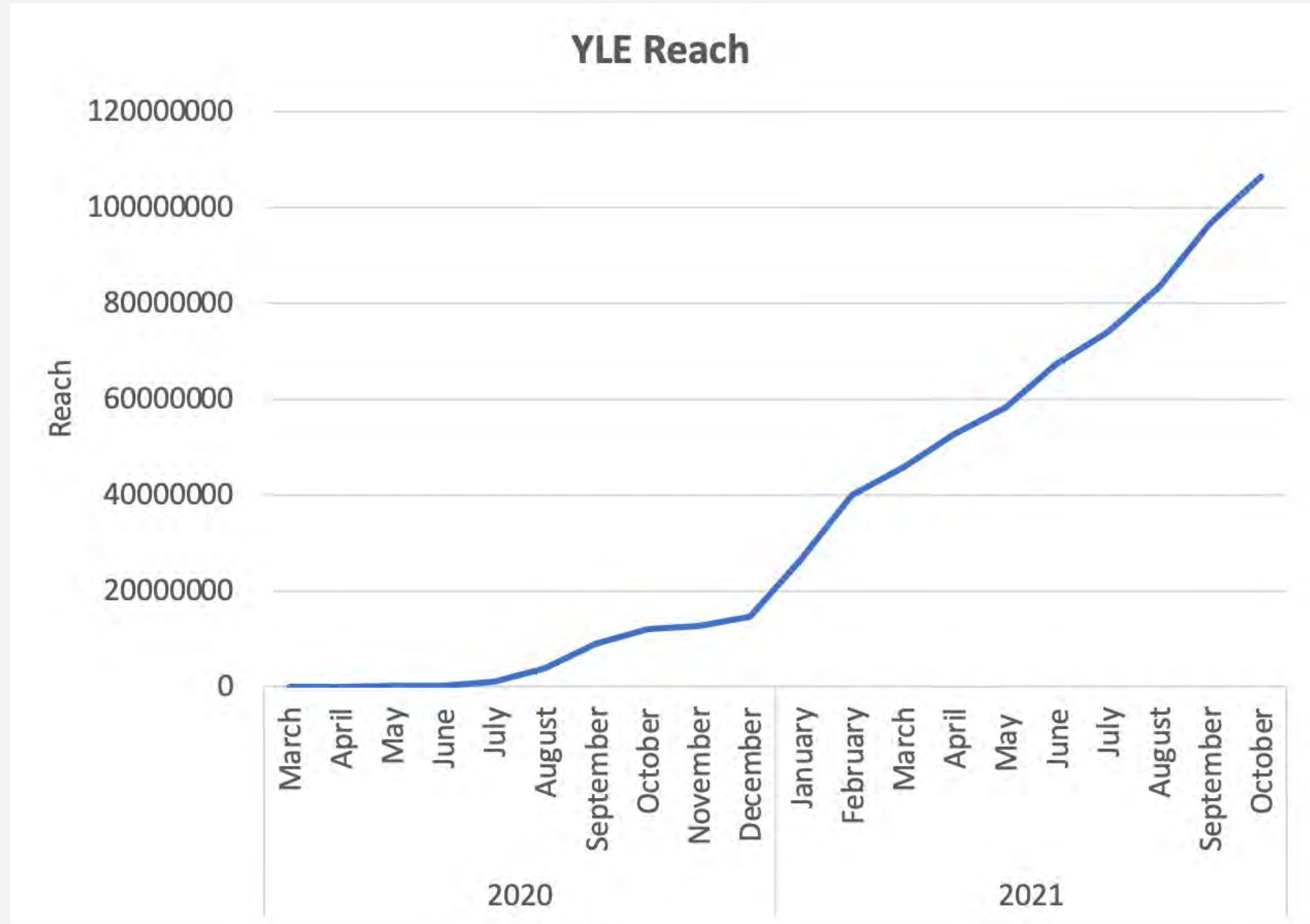
# YOUR LOCAL EPIDEMIOLOGIST

Closing the loop: Translating public health science for every day use

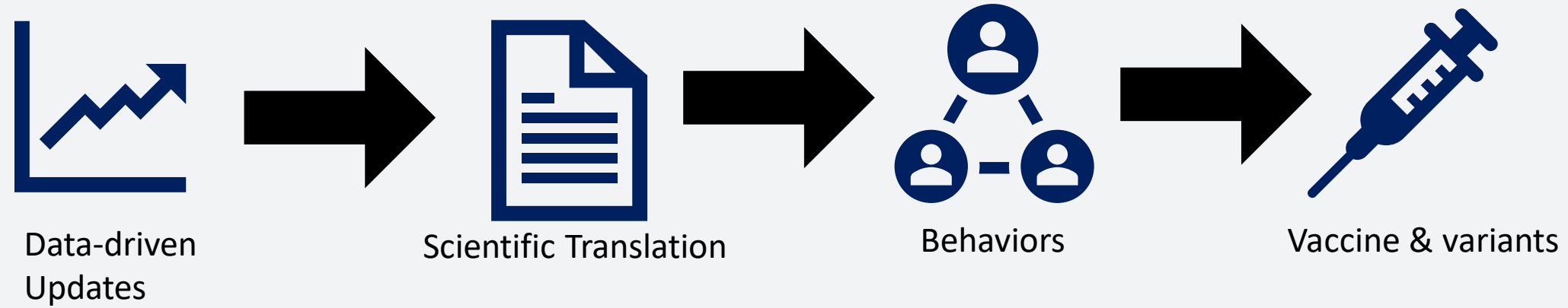
By: Dr. Katelyn Jetelina, MPH PhD

## Gaps Identified:

1. Scientific “translation”
2. Platform for direct communication



# Waves of Scientific Communication



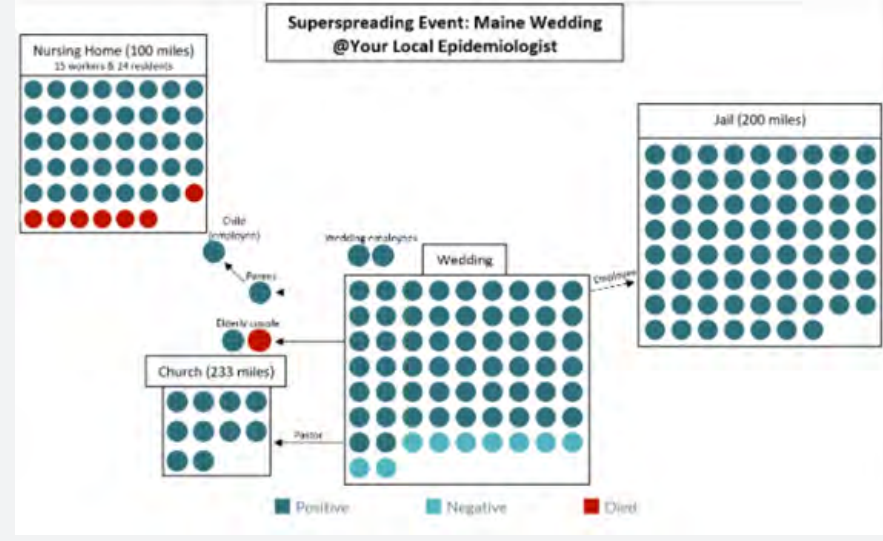
Published by Katelyn Jetelina · April 2, 2020 ·  
 your daily data-driven update...  
 I saw a news article the other day that predicted the next epicenters: DC, LA, Miami, New Orleans, and Dallas. All these cities are a few days behind NYC. So, I tried to replicate their findings. I was curious to see what they were seeing (and frankly, whether these predictions were data driven).  
 Below is what I found using the best data available to me. New Orleans and Miami are actually increasing at FASTER speeds than NYC. I'm just not s... [See More](#)



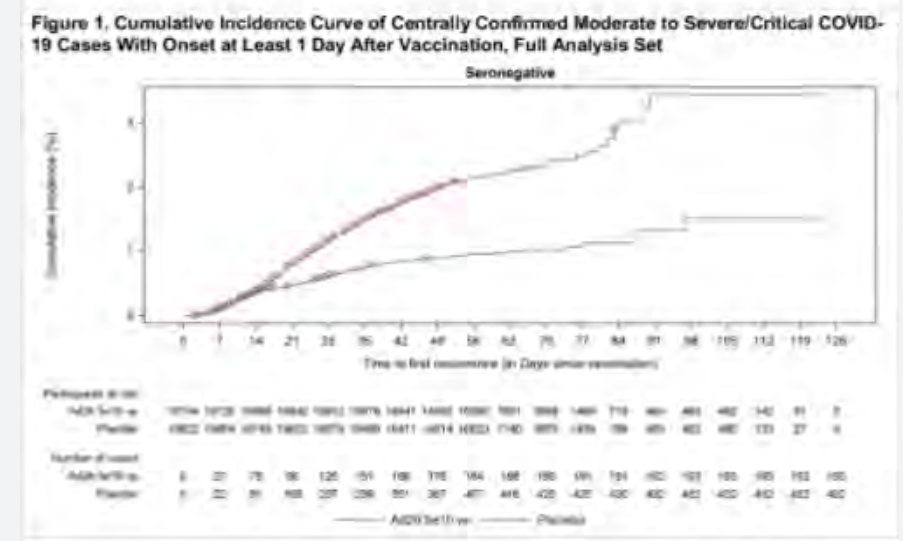
your local epidemiologist is snaring a COVID-19 Update.  
 August 4, 2020 ·  
 Alright, now we are talking! I knew this had to be coming out soon... A meta-analysis on COVID19 drug treatments (yes, including hydroxychloroquine).  
 What is a meta-analysis? One massive study that combines the results of ALL previous studies. This is a really powerful tool because it takes into account whether past studies were "strong" or "weak". It also takes into account different populations (think different genes, different environments, different cultures, different c... [See More](#)

	Mortality	Mechanical ventilation	Adverse events	Viral clearance	Duration of hospital stay	ICU length of stay	Duration of mechanical ventilation	Time to symptom resolution	Time to clear
Standard care	330 per 1000	114 per 1000	15 per 1000	500 per 1000	7 days	10 days	10 days	19 days	8 days
Alpha lipic acid									
Botocavi marboxil									
Chloroquine*									
Glucos corticoids	11.9% (14.0% to 11.3%)	17.9% (11.7% to 24.0%)							
Diammonium Glycylsulfonate									
Favipiravir									
Hydroxy-chloroquine	-32.7% (-33.0% to -32.4%)	185.04 (24.88 to 670.00)	985.04 (24.88 to 985.10)	83.30 (-342.90 to 413.67)				4.53 (-5.78 to -3.47)	-0.46 (-3 to 3.47)
Interferon beta-1a									
Lopinavir-Ritonavir	-71.13 (-196.58 to 109.37)			238.91 (478.10 to 234.68)	1.42 (-1.303 to 0.02)			-1.27 (-2.00 to -0.37)	-0.23 (-3 to 4.2)
Novaferron									

your local epidemiologist is sharing a COVID-19 Update.  
 September 24, 2020 ·  
 Superspreading events (SSE)...  
 ...are fascinating to me. Maybe because they are so difficult to predict, and therefore, challenging to prevent. They are also not new. In 1997, scientists estimated that 20% of the population contributes to 80% of transmission of infectious diseases. This has been seen with TB, Measles, SARS, MERS, and Ebola. For example, during SARS, one hotel guest caused 4 national and international clusters. For Ebola, 3% of cases were responsible for 61% of... [See More](#)



your local epidemiologist is sharing a COVID-19 Update.  
 Published by Katelyn Jetelina · February 24 at 9:26 AM ·  
 Prep for FDA Meeting: J&J data (there's a lot of big stuff in here)...  
 Only two days until the FDA meeting (Feb 26) where an external advisory group will meet to discuss (and ultimately recommend or not recommend) the Johnson and Johnson (J&J) vaccine for emergency use in the U.S. This meeting is important for a couple reasons:  
 1. This is the first COVID19 vaccine up that is not an mRNA vaccine (I've talked about the J&J vaccine and the biotechnology before)  
 2. This is the f... [See More](#)





**Mis** information

Why is this happening?





"We're not just fighting an epidemic; we're fighting an **infodemic**. Fake news spreads faster and more easily than this virus, and is just as dangerous."

-Dr. Tedros Adhanom Ghebreyesus

Feb 15, 2020

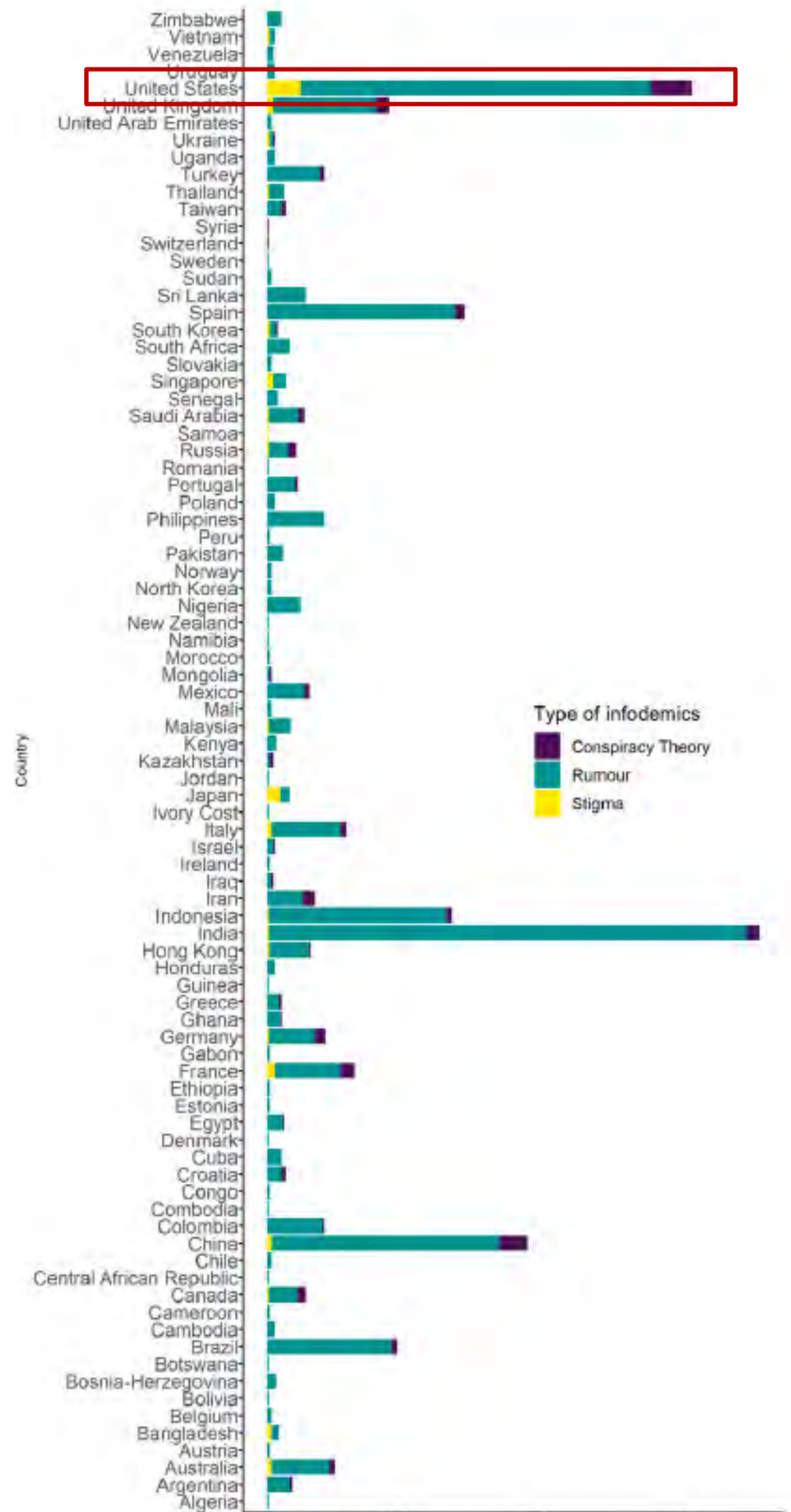
## COVID-19–Related Infodemic and Its Impact on Public Health: A Global Social Media Analysis

Md Saiful Islam,<sup>1,2\*</sup> Tonmoy Sarkar,<sup>1</sup> Sazzad Hossain Khan,<sup>1</sup> Abu-Hena Mostofa Kamal,<sup>3</sup> S. M. Murshid Hasan,<sup>4</sup> Alamgir Kabir,<sup>2,5</sup>  
Dalia Yeasmin,<sup>1</sup> Mohammad Ariful Islam,<sup>1</sup> Kamal Ibne Amin Chowdhury,<sup>1</sup> Kazi Selim Anwar,<sup>6</sup> Abrar Ahmad Chughtai,<sup>2</sup> and  
Holly Seale<sup>2</sup>

In f o d e m i c



Mis i n f o r m a t i o n



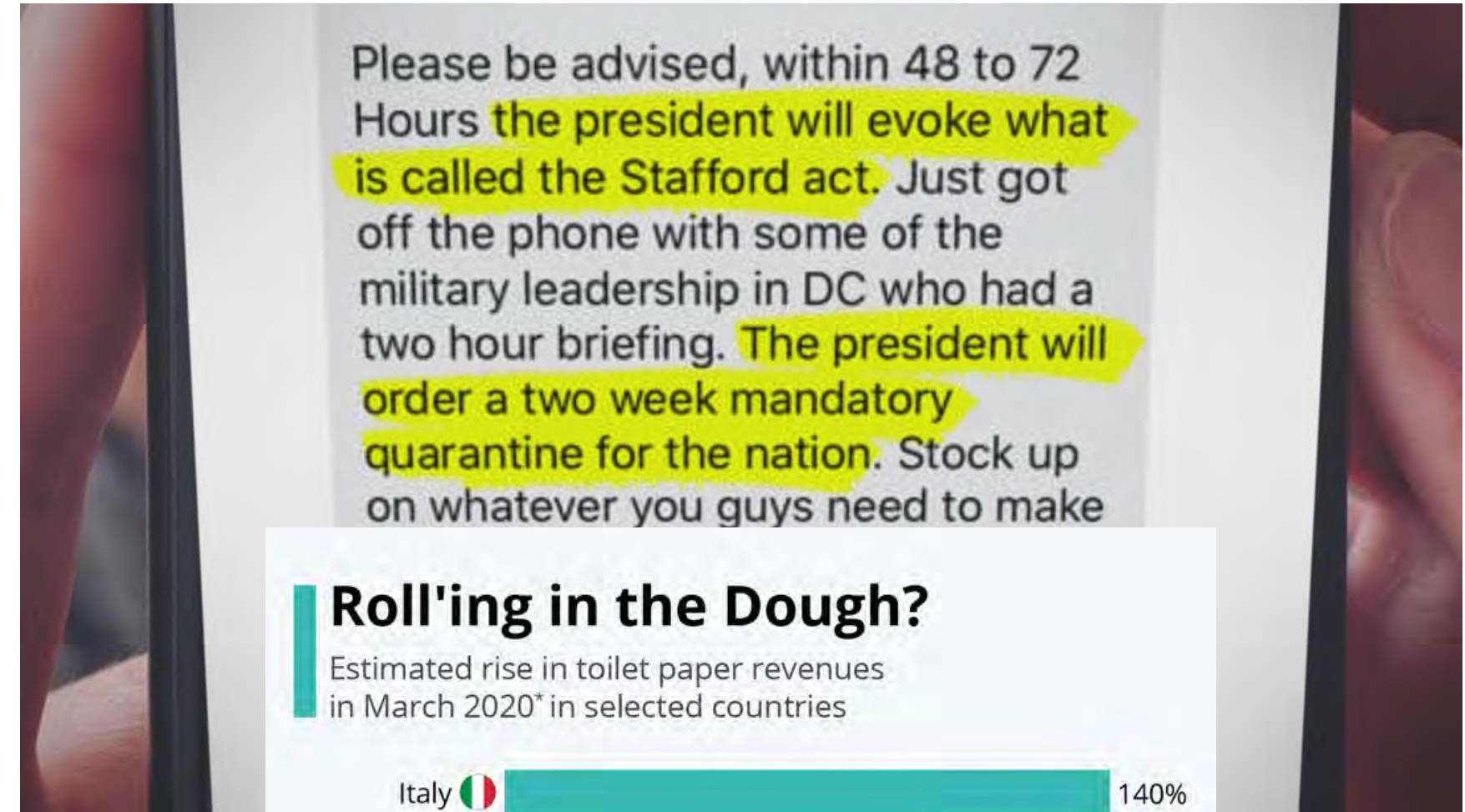
In f o d e m i c



Mis in f o r m a t i o n

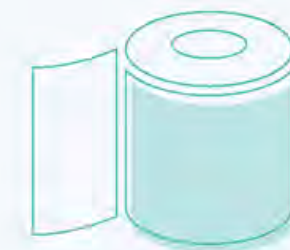
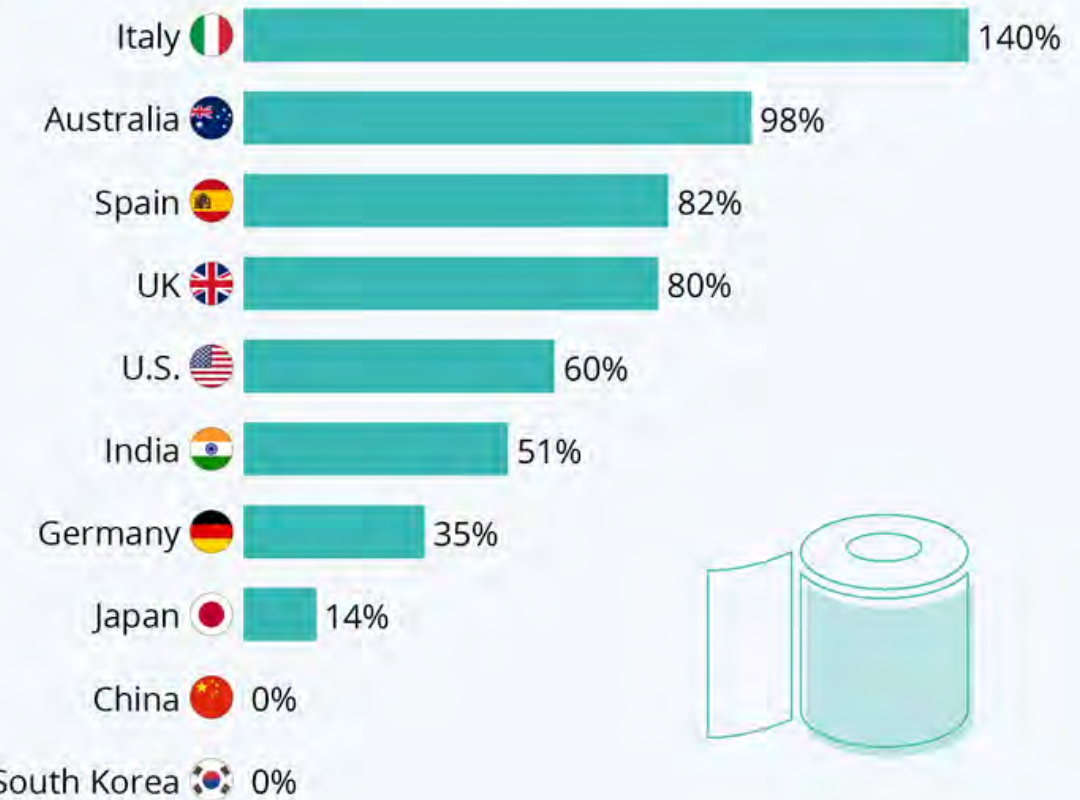


Suboptimal control of  
the pandemic



### Roll'ing in the Dough?

Estimated rise in toilet paper revenues in March 2020\* in selected countries



\* compared to March 2019  
Analysis of 16 countries  
Source: Statista Consumer Market Outlook



In f o d e m i c



Mis i n f o r m a t i o n



Sub o p t i m a l c o n t r o l o f  
t h e p a n d e m i c

## Italy prohibits travel and cancels all public events in its northern region to contain coronavirus

By Tara John and Ben Wedeman, CNN

Updated 1849 GMT (0249 HKT) March 8, 2020



In f o d e m i c



Mis i n f o r m a t i o n



Suboptimal control of  
the pandemic

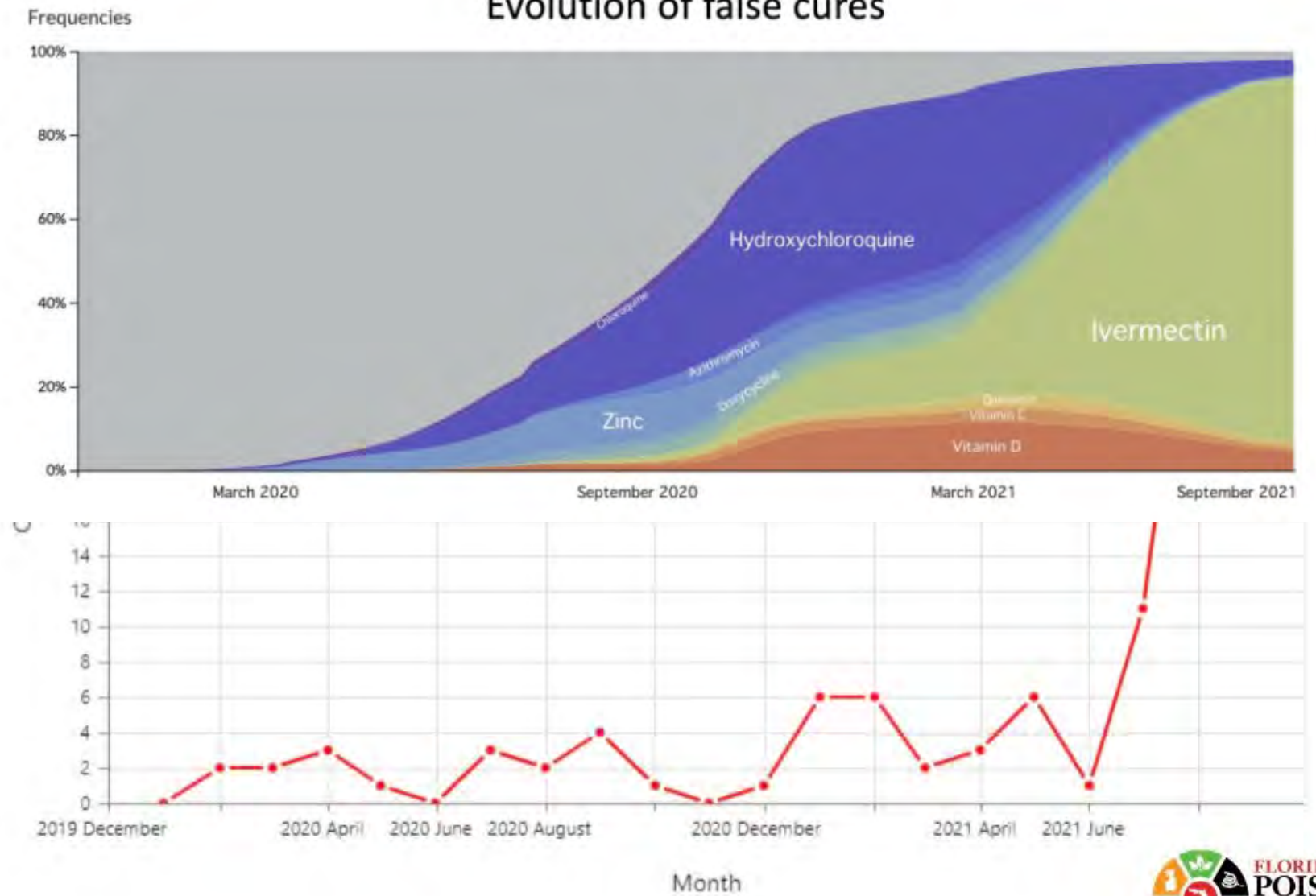


Gboyega Akosile  
@gboyegaakosile



Please note: Hospitals Now Receiving Patients Suffering From Chloroquine Poisoning, Says Gov @jidesanwoolu's SSA on Health, Dr @Oreoluwa\_Finnih She urged people against massive consumption of Chloroquine as a measure to fight #coronavirus

Evolution of false cures



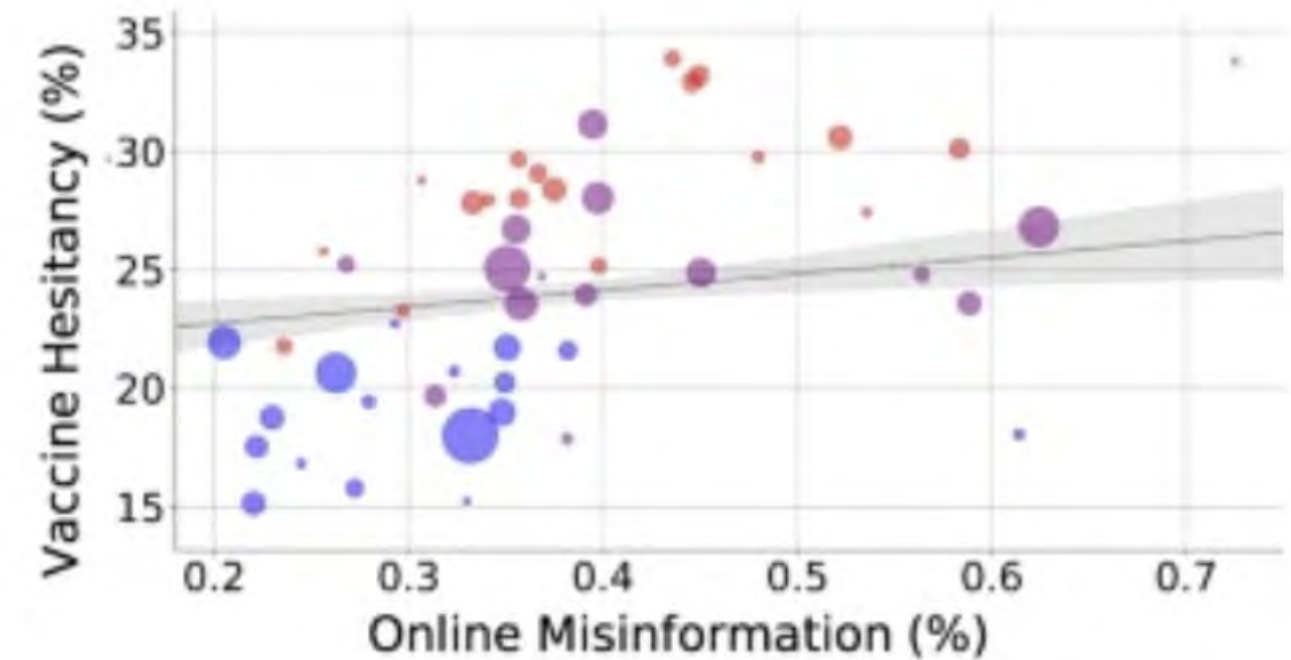
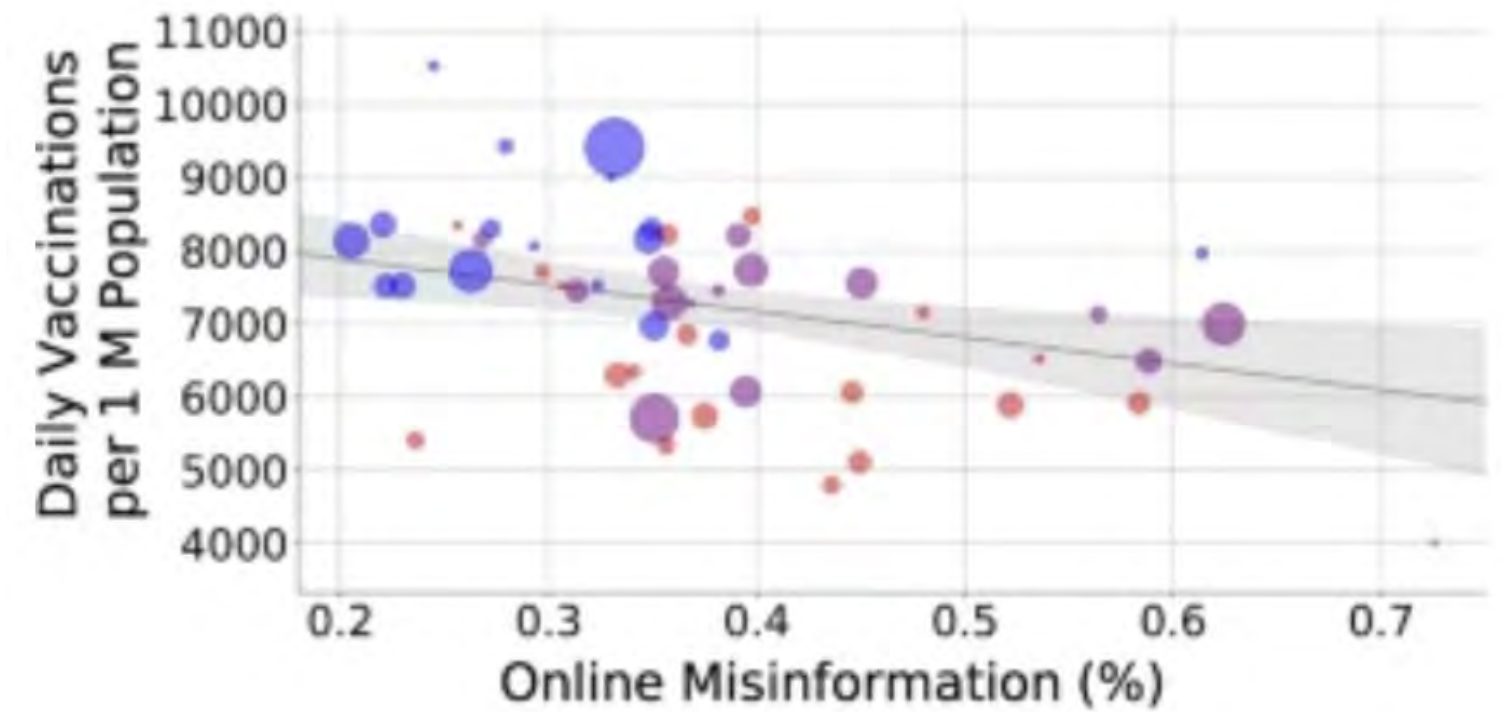
Infodemic



Misinformation



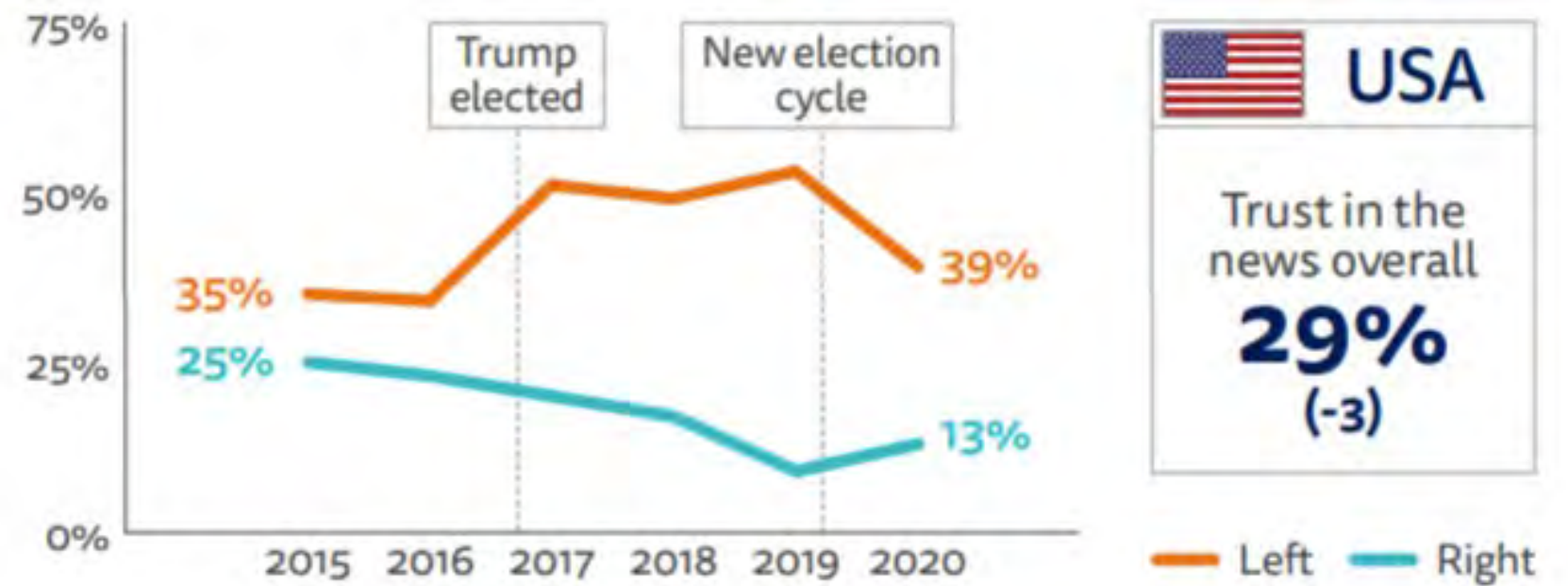
Suboptimal control of  
the pandemic





# Combating Misinformation

# 1. Know the landscape: Information ecosystem is changing



PROPORTION THAT USED EACH AS A SOURCE OF NEWS IN THE LAST WEEK (APRIL 2020) – SELECTED COUNTRIES

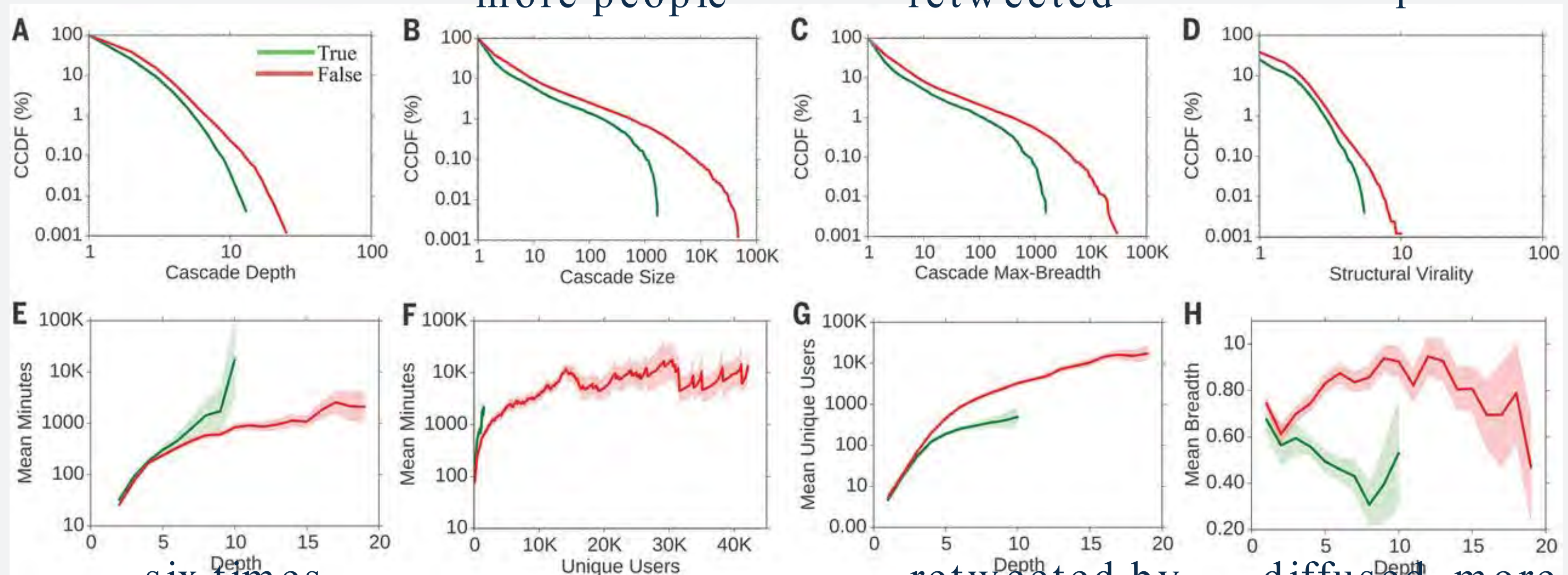
	Online (incl. social media)	TV	Social media	Radio	Print (incl. mags)
UK	79%	71%	47%	35%	18%
USA	73%	60%	47%	21%	16%
Germany	69%	72%	39%	41%	26%
Spain	83%	71%	63%	24%	28%
South Korea	85%	65%	51%	14%	19%
Argentina	90%	77%	78%	24%	30%
Average change from January	+2	+5	+5	+2	-2

# Misinformation goes farther, faster, deeper, and more broadly than the truth

reached far more people

more people retweeted

spread through peer-to-peer



six times faster at spreading

retweeted by more unique users

diffused more broadly

1. Know the landscape:  
Our relationship to  
information is  
emotional

- Language that plays on fear gets high engagement.

## Few Facts, Millions Of Clicks: Fearmongering Vaccine Stories Go Viral Online

March 25, 2021 · 5:00 AM ET



MILES PARKS

SECTIONS

SOUTH FLORIDA  
**SunSentinel**

LOG

Rents are rising as  
homebuyers get priced out  
of the market



ASK IRA: Would Lowry in  
place of Dragic be enough of  
a Heat upgrade?



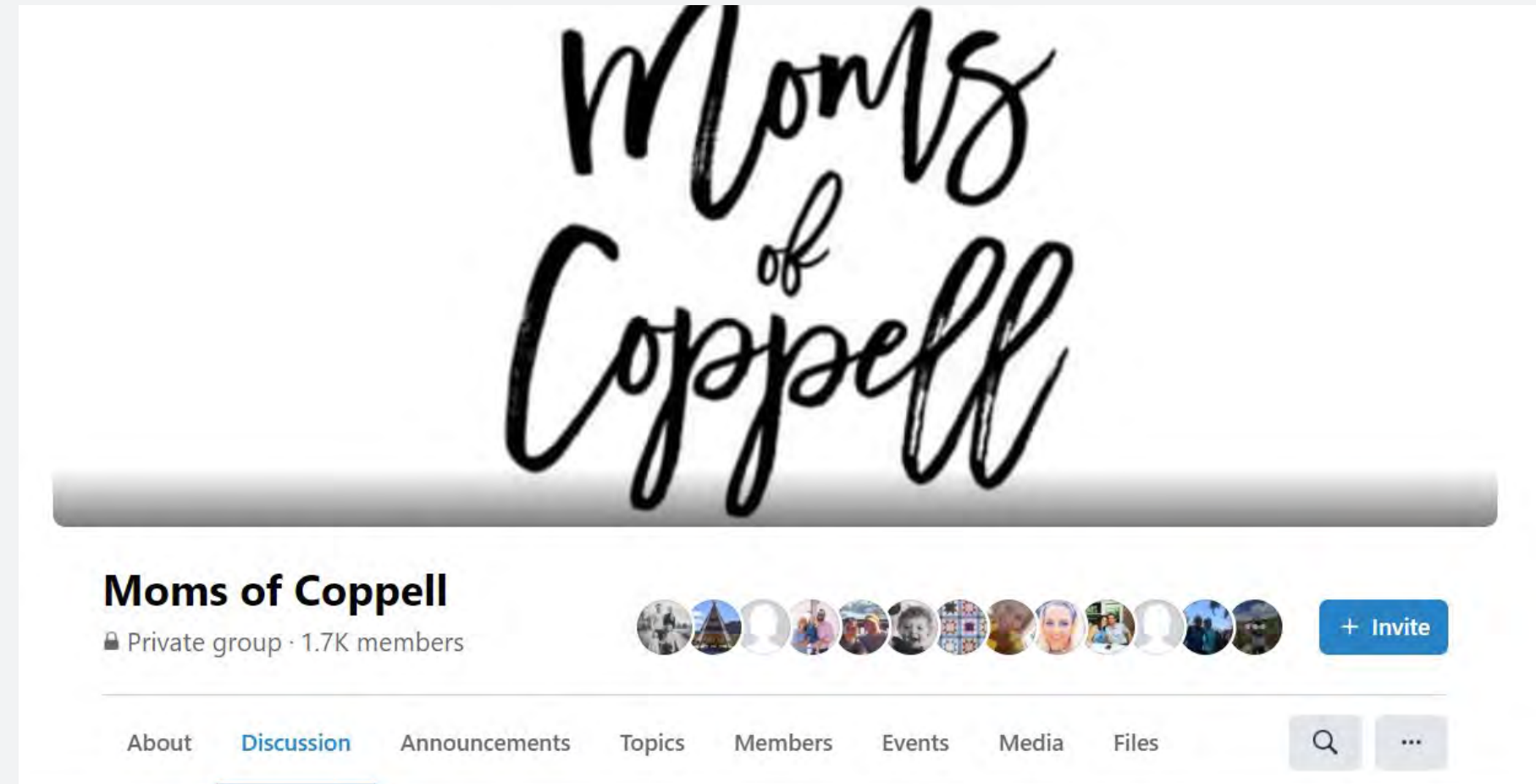
CORONAVIRUS

### A 'healthy' doctor died two weeks after getting a COVID-19 vaccine

JAN 08, 2021 AT 11:22 AM

1. Know the landscape:

Misinformation circulates in spaces that feel safe



## 2. Recognize what's spreading: **Listen**

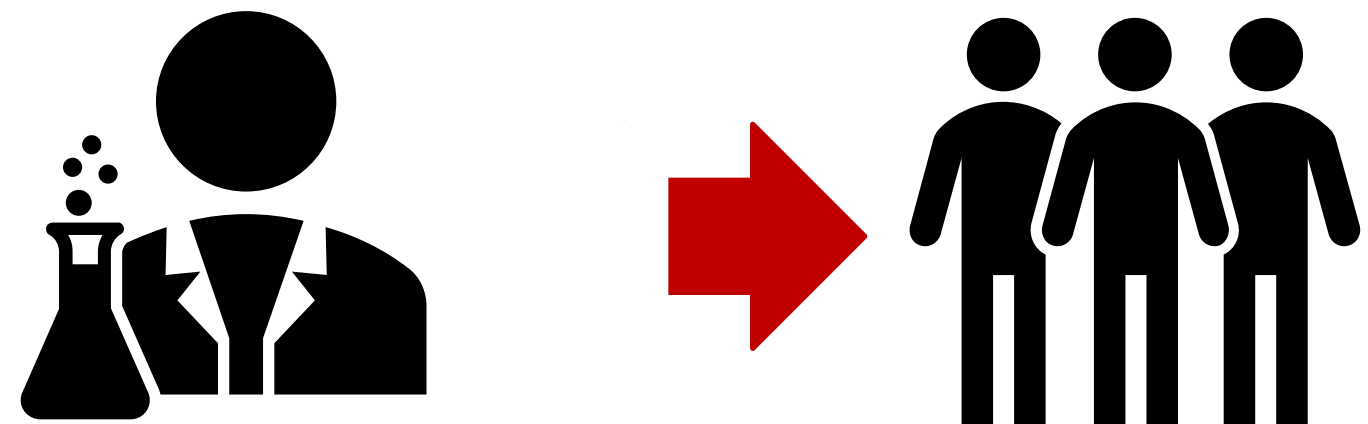
### Hearing

- Easy: accidental; automatic.
- Passive: involuntary; effortless.
- Physical Function: involves the ears.

### Listening

- Hard: requires practice and being alert.
- Active: a conscious effort; requires focused involvement.
- Internal Behavior: involves mind and body.

- Legitimate concerns exist
- Look for questions. Open a tip line
- Communication is a two-way street



- Know where people are talking

3. Find the **kernel** of  
truth

Mis -

- information

Liberty Lost!

# HEALTH IMPACT NEWS

America Under Siege! A Beacon of Light Exposing the Truth in the Dark

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May 5, 2021

Print This Post

## CDC: 4,178 Americans DEAD Following Experimental COVID Injections – Deaths from COVID Shots now Equal 20 Years of Recorded Deaths Following Vaccines Since 2001

Age	Count	Percent
< 3 Years	2,171	51.91%
3-6 Years	65	1.55%
6-9 Years	28	0.67%
9-12 Years	38	0.91%
12-17 Years	109	2.61%
17-44 Years	234	5.6%
44-65 Years	263	6.29%
65-75 Years	263	6.29%
75+ Years	532	12.72%
Unknown	479	11.45%
<b>TOTAL</b>	<b>4,182</b>	<b>100%</b>

Inaccurate conclusion: “The vaccine itself will kill you.”



Mis -


- information

**Daz Harmer** @DazHarmer Follow

Ex-Pfizer Doctor requests a stop of ALL #Corona vaccination studies.

Significant safety concerns expressed by an increasing number of renowned scientists against the vaccine and the study design.

"#Covid #Vaccine is Female Sterilization"



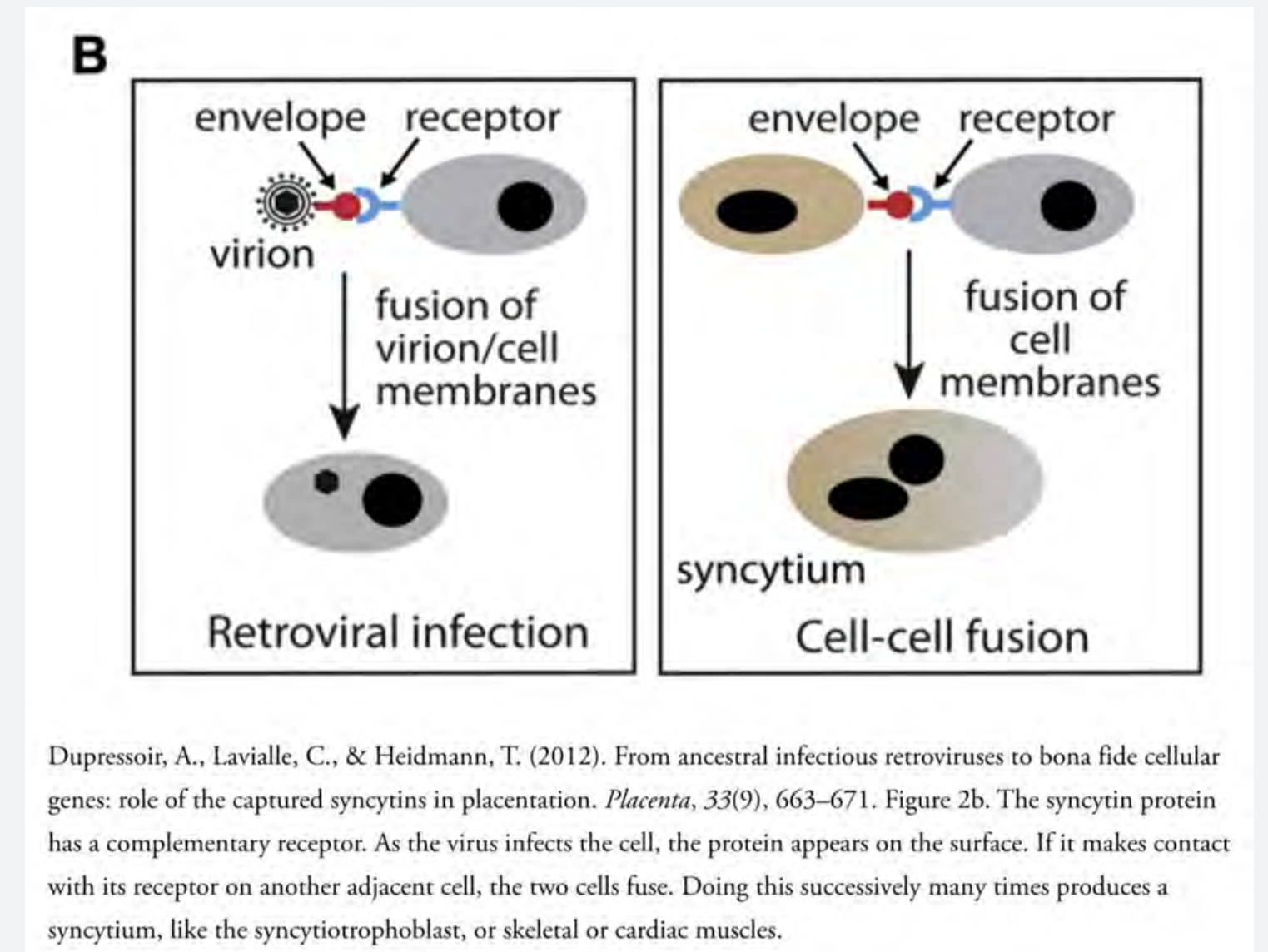
**URGENT PETITION**  
to European Medicines Agency  
**STOP Covid Vaccine Studies**

**Wolfgang Wodarg** **Dr. Mike Yeadon**

**Head of Pfizer Research: Covid Vaccine is Female Sterilization**  
The vaccine contains a spike protein (see image) called syncytin-1, vital for the formation of human placenta in women. If the vaccine works so that we form an

healthandmoneynews.wordpress.com

6:56 AM - 3 Dec 2020




Inaccurate conclusion: "Vaccines cause infertility"

Mis -

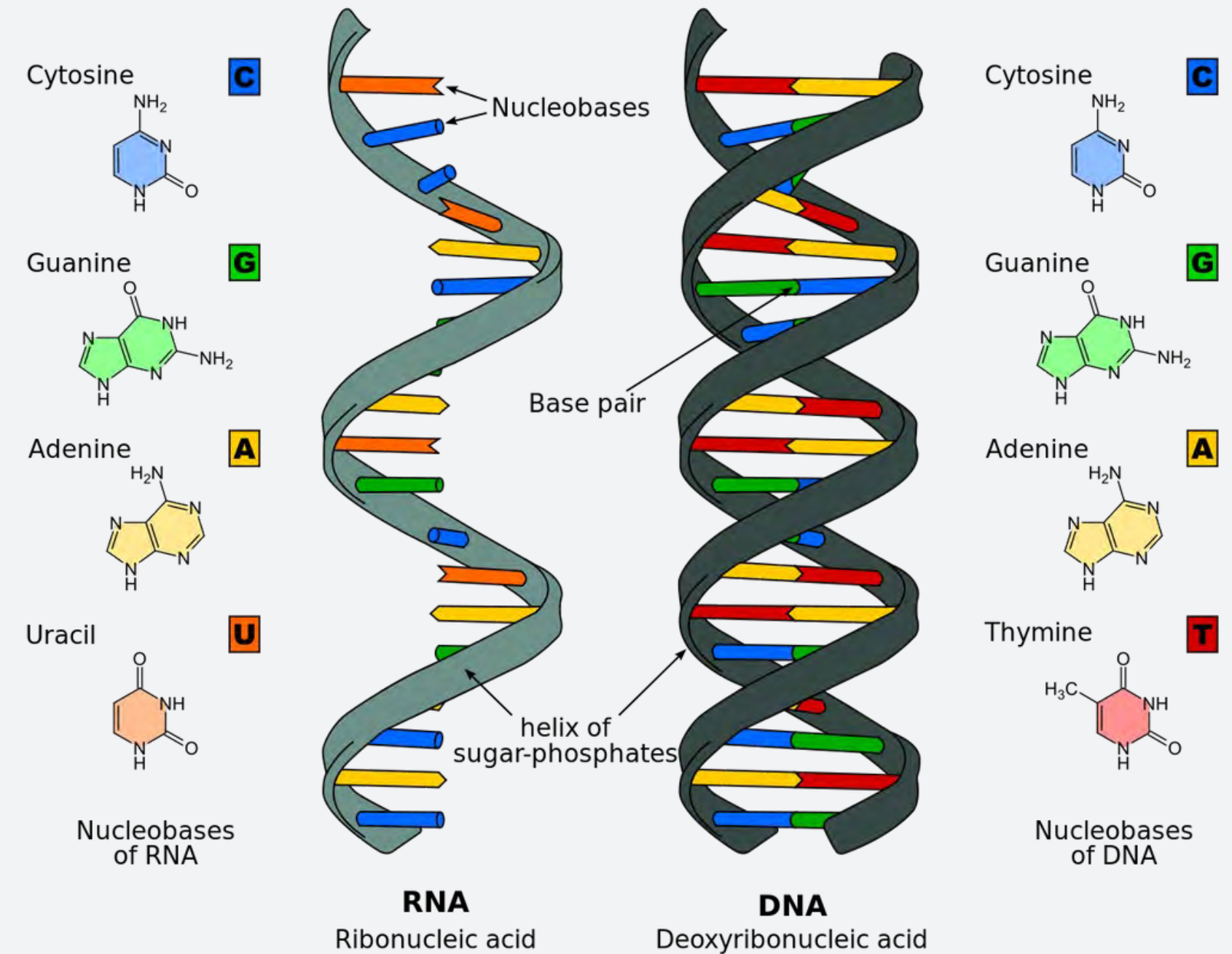
- information

**Moderna Chief Medical Officer Admits mRNA Alters DNA**



When "changing" a line of code or "introducing" a line of code (referring to DNA), the "code" or DNA is then altered, meaning the individual or "subject" has now had their genome changed to what the "scientists" have coded. The individual or subject is no longer a creation of God but a creation of man, meaning the individual or subject could be the object of a "patent".

He goes on to say, the mRNA would tell the cells to "code" for the protein of the "virus". This "viral protein" is foreign to the body. The individual's body is making a foreign protein the immune system is to attack. When the body makes a protein the immune system then attacks, your immune system is attacking a protein your body is making, meaning what is occurring in an "auto-immune response" or "auto-immune disease".



Inaccurate conclusion: "mRNA will change my DNA"

4. Start combating:  
Lead with truth

"Yes, VAERS states that 4,000 people have died from the vaccine"

"Yes, mRNA sounds like DNA"

"No, we don't know long term outcomes of the COVID19 vaccine"

4. Start combating:  
Offer a lternative explanation

Liberty Lost!

# HEALTH IMPACT NEWS

America Under Siege! A Beacon of Light Exposing the Truth in the Dark

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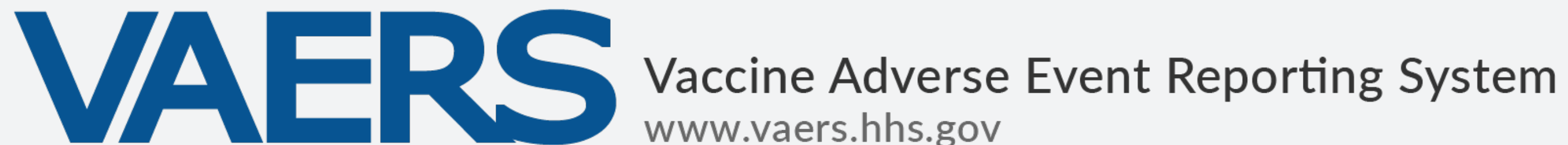
May 5, 2021

Print This Post

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75+ Years	532	12.72%
Unknown	479	11.45%
<b>TOTAL</b>	<b>4,182</b>	<b>100%</b>

## Alternative explanation:



The reports may contain information that is incomplete, inaccurate, coincidental, or unverifiable.

Inclusion of events in VAERS data does not imply causality

"No, we don't know long term outcomes of  
the mRNA vaccine"

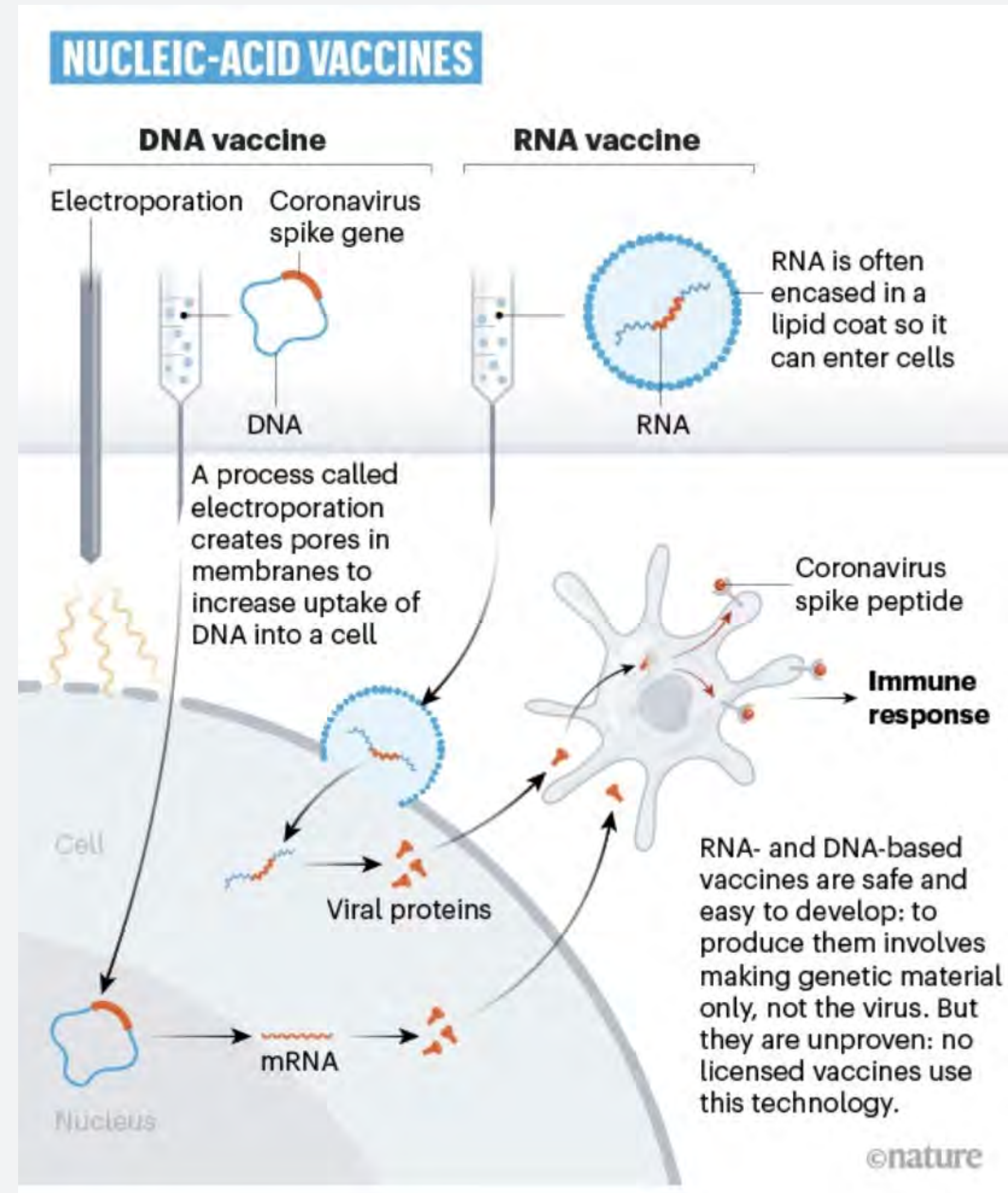
*Alternative explanation:*

- Vaccine ingredients are cleared from the body quickly
- In the history of vaccines, side effects have only popped up  
within 6-8 weeks

Inaccurate conclusion: “mRNA will change our DNA”

## Alternative explanation:

- mRNA do not have the “secret door code”(called nuclear access signal) that would allow it to enter
- mRNA cannot be converted to DNA. This would require a tool called “reverse transcriptase”, which the vaccine doesn't have.
- mRNA cannot insert itself into the DNA. The mRNA would need a tool called “integrase” to do this, which the vaccine doesn't have.

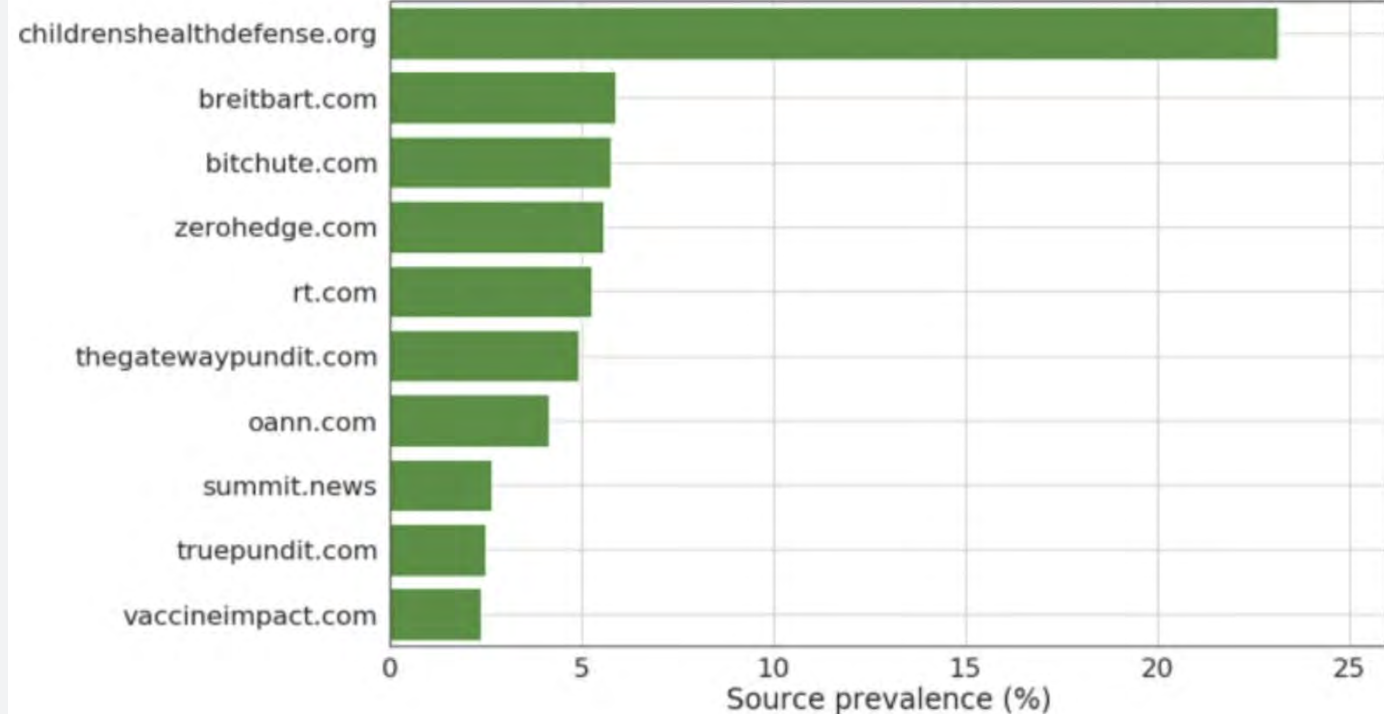
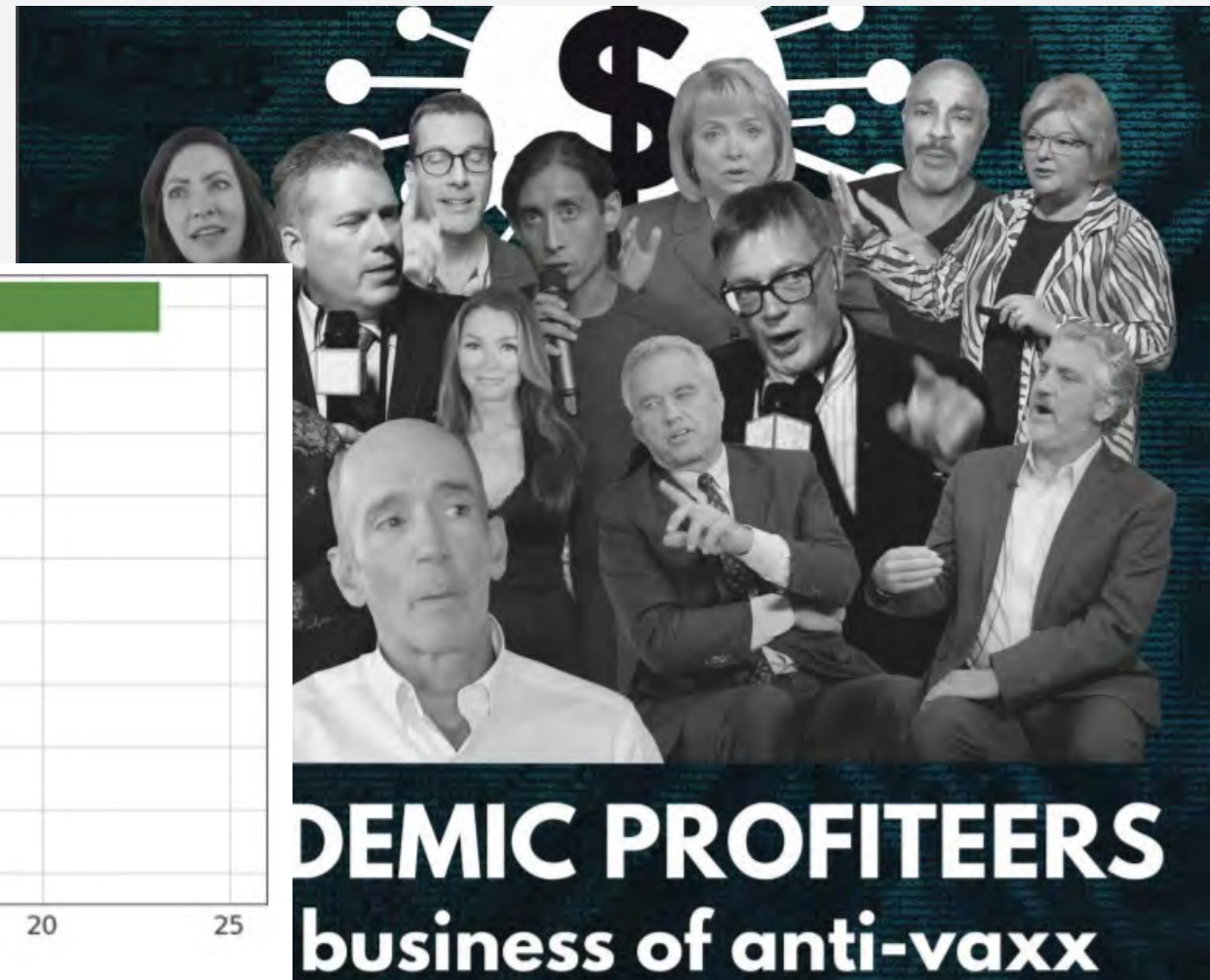


Christian Elliot  · Apr 5 · 17 min read

# 18 Reasons I Won't Be Getting a Covid Vaccine

Updated: Apr 19

Alternative explanation:



Investigations

## A major funder of the anti-vaccine movement has made millions selling natural health products





## 4. Start combating: Language matters

Here's why Facebook, YouTube, and more are removing that **dumb** Plandemic video

**Coronavirus : 9 réactions **absurdes** des humains face à l'épidémie**

**'Absolutely insane': Anti-vaxxers promote coronavirus conspiracies**

**A bizarre conspiracy theory puts Bill Gates at the center of the coronavirus crisis — and major conservative pundits are circulating it**

---

**Coronavirus y conspiración: historia de las teorías absurdas durante las pandemias**

*Alors que l'épidémie continue de gagner du terrain, les théories fumeuses sur l'origine du coronavirus fleurissent sur internet. Petit flartlège.*

# Combating misinformation

- Know the landscape
  - Where it's spreading
  - Driven by emotion and safety
- Recognize what's spreading
  - What are questions?
- Find the kernel of truth
- Countering
  - Lead with truth
  - Offer alternative
  - Paying attention to language

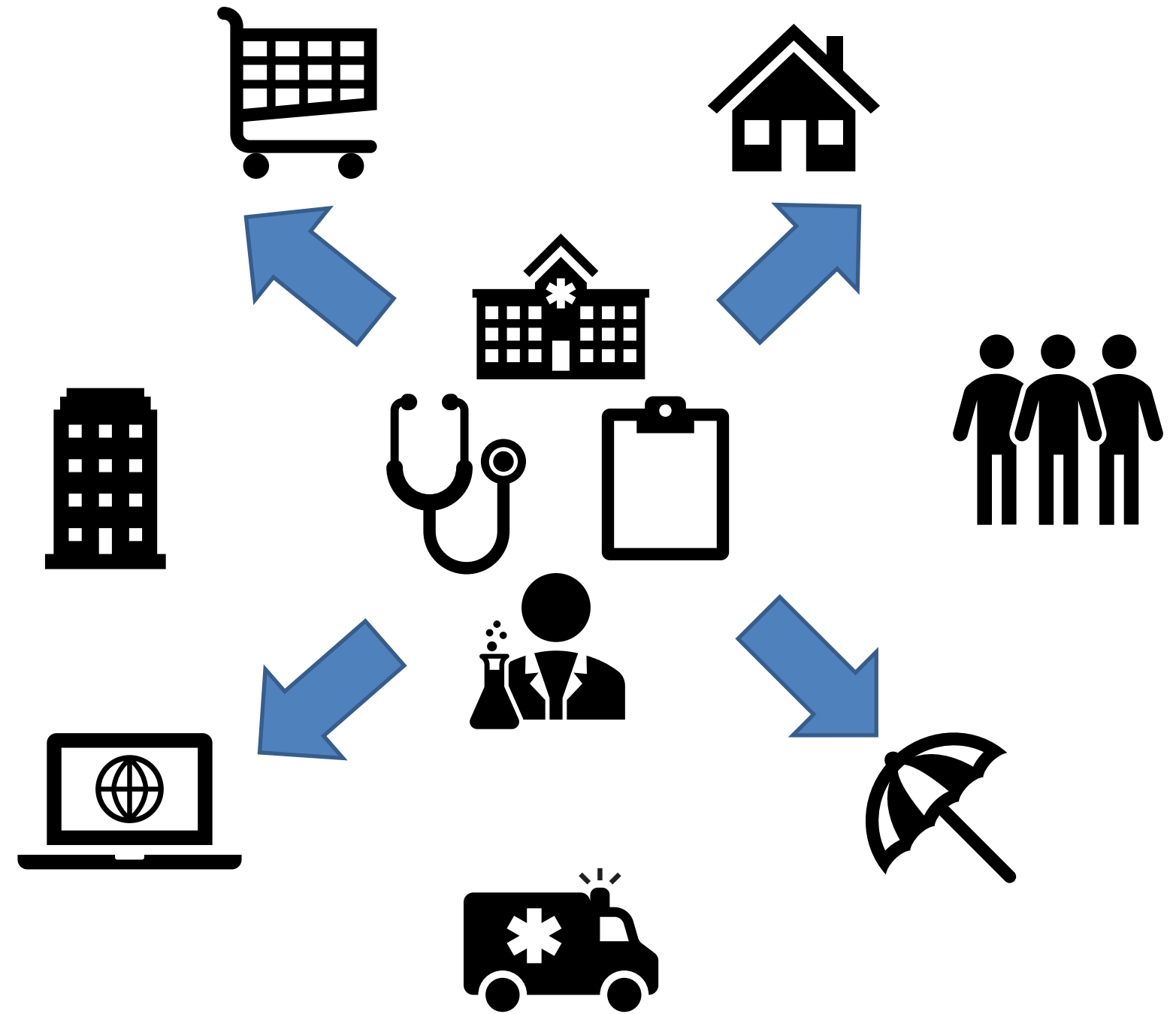
# Lessons Learned

Fighting  
misinformation is  
**exhausting**

"A lie can go around the world  
before the truth gets its pants  
on."

-Winston Churchill

Recognize the  
role **you** play



Be **proactive** instead  
of reactive

# COVID-19 ADOLESCENT VACCINE

## Top 7 parental concerns answered

### The vaccine was not rushed

Speed does not mean rushed. It meant leveraging a whole lot of smart people, money, and decades of previous work to get us a vaccine in 9 months. This included:

1. Previous research (which started in 2003 thanks to SARS, COVID19's cousin);
2. Lots of money and resources for scientists around the world;
3. Production started before clinical trials were complete because the government financially supported the effort;
4. Although vaccines went through Phase I, II, and III, phases were overlapped to remove white space. This is standard practice;
5. High rates of disease in the community (unfortunately) meant we didn't have to wait for a minimum number of COVID19 cases during clinical trials;
6. Over 150,000 people flooded to participate in the U.S. trials. This couldn't have been done without each and every one of them

### Adolescents will likely experience side effects

- Mostly mild-to-moderate side effects were reported in clinical trials: fever, fatigue, headaches, chills, diarrhea, muscle and joint pain
- Worse side effects with the second dose compared to the first
- Swollen lymph nodes were more common in the vaccine group compared to placebo. All cases resolved within 1 week

### The vaccine is effective

- 100% efficacy in clinical trials (16 cases of COVID in placebo and 0 in vaccinated)
- There were no severe cases of COVID19 during this study
- Research shows the vaccines help avoid long COVID19 and improve symptoms of those already with long COVID19

### There is a need

- Adolescents have the highest rate of infection and symptomatic infection (compared to adults and children), but hospitalizations are lower than adults
- There have been 127 COVID19 adolescent deaths since the beginning of the pandemic. Although this seems low, death among adolescents is low overall. COVID19 is a top 10 cause of death for adolescents
- There have been 3,742 MIS-C cases since the pandemic; 21% were among adolescents. Severity of MIS-C is worse for adolescents compared to younger children
- Vaccines significantly reduce community transmission

### mRNA does not change DNA

It's biologically impossible for messenger RNA (mRNA) to alter DNA. In order for a mRNA vaccine to alter someone's DNA, several events would have to occur...

1. mRNA cannot enter the cell nucleus, where DNA lives. mRNA does not have the "secret door code" (called nuclear access signal) that would allow it to enter. mRNA vaccines can't get in.
2. mRNA can't be converted to DNA. This would require a tool called "reverse transcriptase", which the vaccine doesn't have.
3. mRNA cannot insert itself into the DNA. The mRNA would need a tool called "integrase" to do this, which the vaccine doesn't have.

The biotechnology has never been approved by the FDA before. It's NOT because the past mRNA vaccines (for cancer, allergies, and SARS) have been deemed unsafe. It's because past mRNA vaccines haven't been very effective. mRNA breaks down very quickly, so it needs to be transported by something. Finding that something has been a challenge. For COVID19, scientists found that fat bubbles for COVID19 worked great

### Long term side effects, like infertility, are highly unlikely

We do not know the long term effects of mRNA COVID19 vaccines. However, based on our knowledge of mRNA and the human body, we do not expect long term side effects:

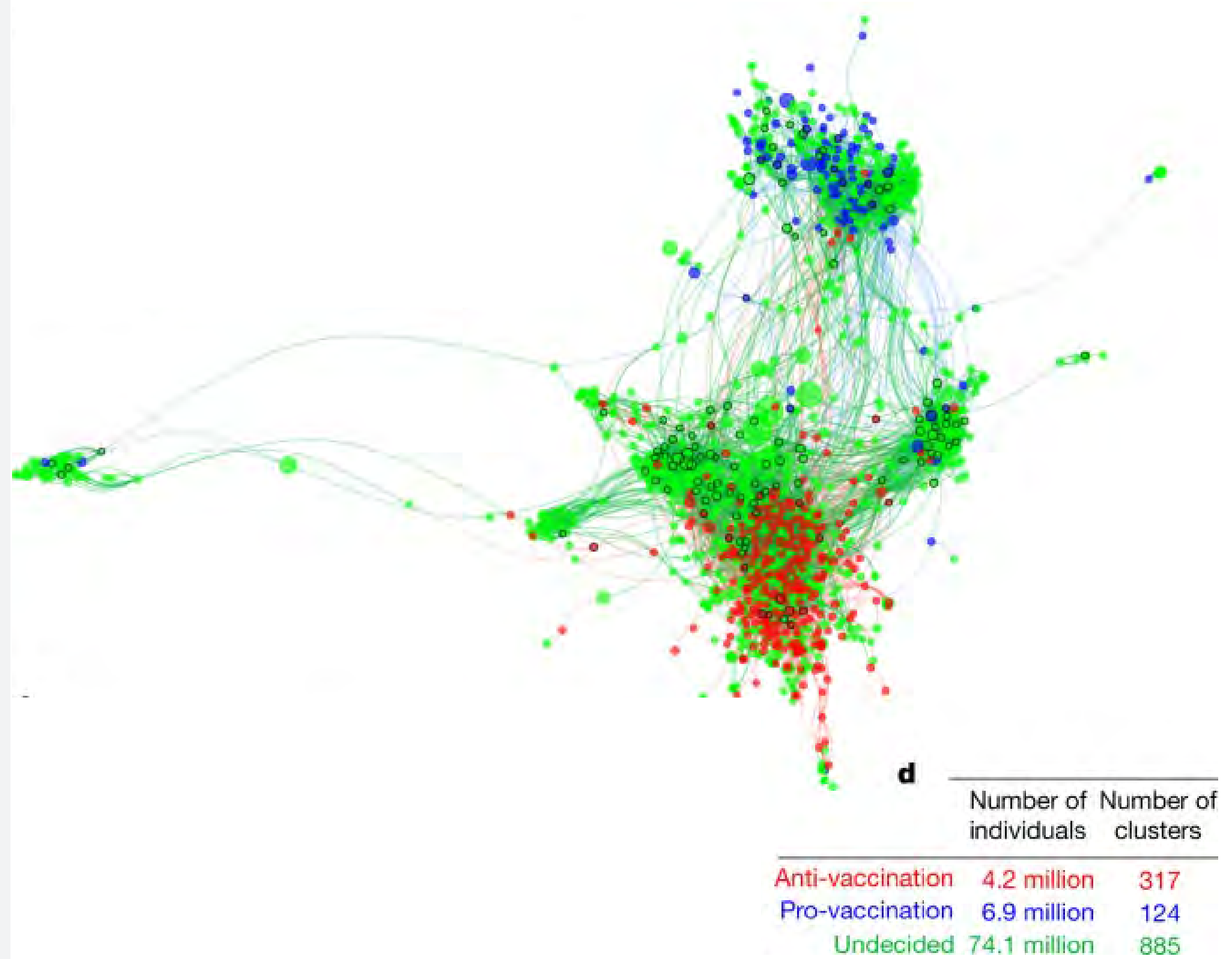
- Vaccine ingredients are cleared from the body very quickly. mRNA is very fragile and degrades within 72 hours of injection. The "fat bubbles" or lipids leave within days
  - mRNA vaccines are not made up of the actual pathogen. This means that they don't contain weakened, dead, or noninfectious parts of a virus
  - In the history of vaccines, serious adverse side effects have only popped up in the first 2 months of receiving the vaccine
  - Individuals who got pregnant after the vaccine had no complications from the vaccine
- There are anecdotal reports that women's menstrual cycles change after a COVID19 vaccine. The body is mounting an immune response and this is likely a side effect, like fever.

### Previously recovered adolescents still need the vaccine

Efficacy of "natural" immunity is high, but adolescents still need the vaccine:

- Getting a vaccine, even for people who have already recovered from COVID-19, strengthens your immune response (antibody and T-cell protection)
- The vaccine better protects against variants of concern
- The immune system is messier from natural infection. Its not as focused as vaccine immunity.

Be inclusive



Johnson et al. (2020) The online competition between pro- and anti-vaccination views. Nature.

# We need to **prepare** for the future

## Serious Viral Outbreaks Over Past 100 Years

	<b>Name</b>	<b>Virus Type</b>	<b>Year Began</b>	<b>Global Deaths</b>	<b>US. Deaths</b>
1	<b>Spanish Flu</b>	Orthomyxovirus	1918	50,000,000	<b>675,000</b>
2	<b>Asian Flu (H2N2)</b>	Orthomyxovirus	1957	1,100,000	<b>116,000</b>
3	<b>Hong Kong Flu (H3N2)</b>	Orthomyxovirus	1968	1,000,000	<b>100,000</b>
4	<b>HIV</b>	Retrovirus	1981	32,700,000	<b>700,000</b>
5	<b>SARS-CoV-1</b>	Coronavirus	2002	774	
6	<b>Influenza (H1N1)</b>	Orthomyxovirus	2009	284,000	<b>12,469</b>
7	<b>MERS</b>	Coronavirus	2012	875	
8	<b>Ebola</b>	Filovirus	2014	11,310	<b>1</b>
9	<b>Zika</b>	Flavivirus	2015	N/A	
10	<b>Ebola</b>	Filovirus	2018	2,300	
11	<b>SARS-CoV-2</b>	Coronavirus	2019	4,100,000+	<b>621,000+</b>



We need to **prepare** for the future

## American Pandemic Preparedness: Transforming Our Capabilities

September 2021



EXECUTIVE OFFICE OF THE PRESIDENT  
WASHINGTON, D.C. 20503

August 27, 2021



M-21-32

MEMORANDUM FOR THE HEADS OF EXECUTIVE DEPARTMENTS AND AGENCIES

FROM: SHALANDA D. YOUNG *Shalanda D. Young*  
ACTING DIRECTOR  
OFFICE OF MANAGEMENT AND BUDGET

DR. ERIC S. LANDER *Eric S. Lander*  
DIRECTOR  
OFFICE OF SCIENCE AND TECHNOLOGY POLICY

SUBJECT: Multi-Agency Research and Development Priorities for the FY 2023 Budget

## A critique...

“Science is a tool that should be available to every American. More inclusive engagement in science benefits the American people, the environment, and the economy. The American public must be both knowledgeable about and involved in science research and its products, thereby fostering trust.”

## A critique...

1. Communicate the threat clearly.  
The majority of Americans get their news and health information from social media
2. Address the circulating misinformation
3. Engage with community stakeholders to amplify evidence-based information through grassroots networks;
4. Improve health communication
5. Listen

"Misinformation is not like a plumbing problem you fix. It is a **social condition**, like crime, that you must constantly monitor and adjust to."

-TOM ROSENSTIEL



# Questions?

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