

2026

Love Thy Neighbor:

The Role of Vaccines in Community Care

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Acknowledgement

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University of Nebraska Medical Center



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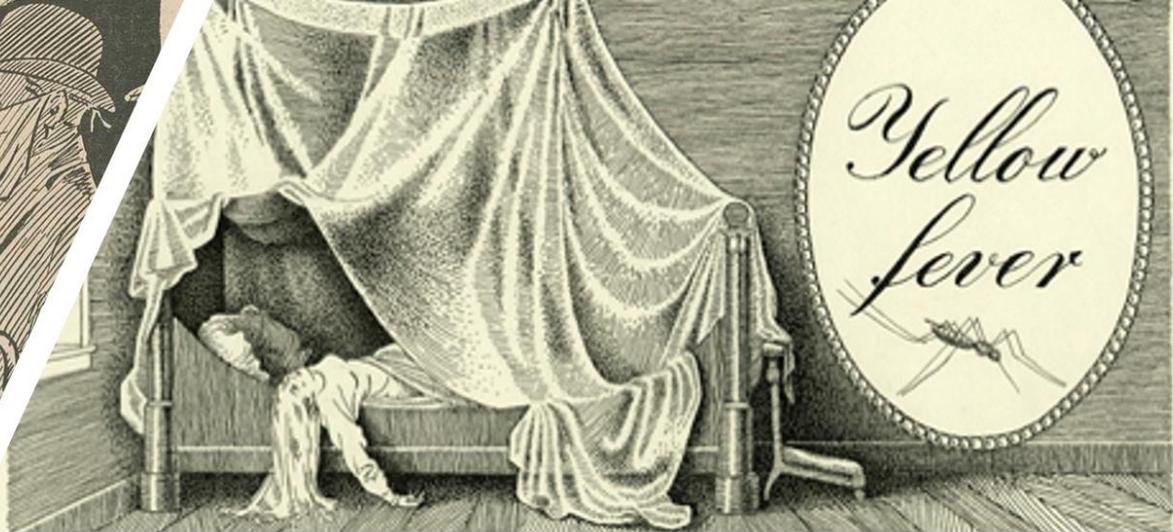
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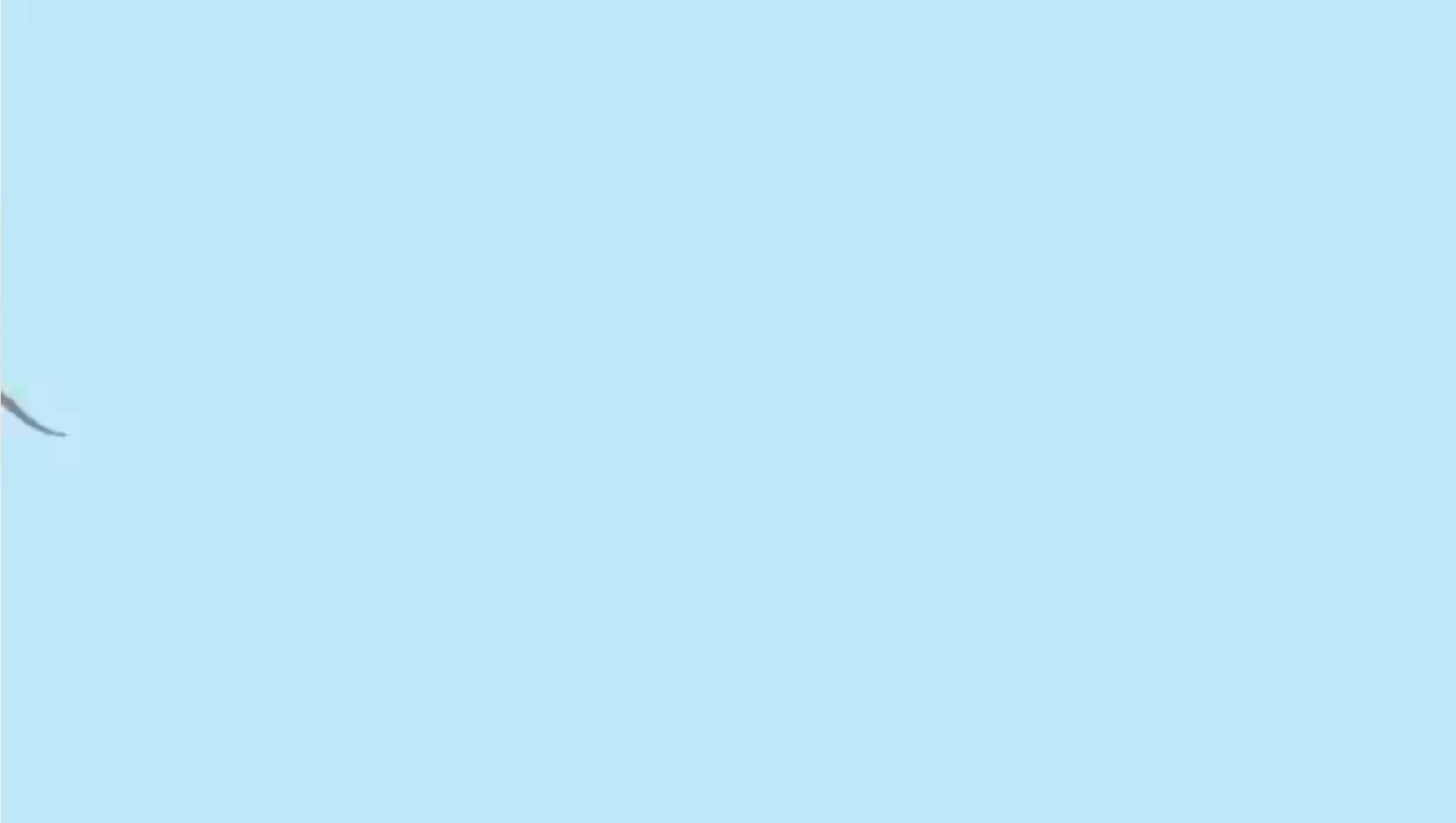


London Field by J.D. Speer & Co. St. Louis

THE APPEARANCE AFTER DEATH OF A VICTIM TO THE INDIAN

WHO DIED AT SUNDERLAND





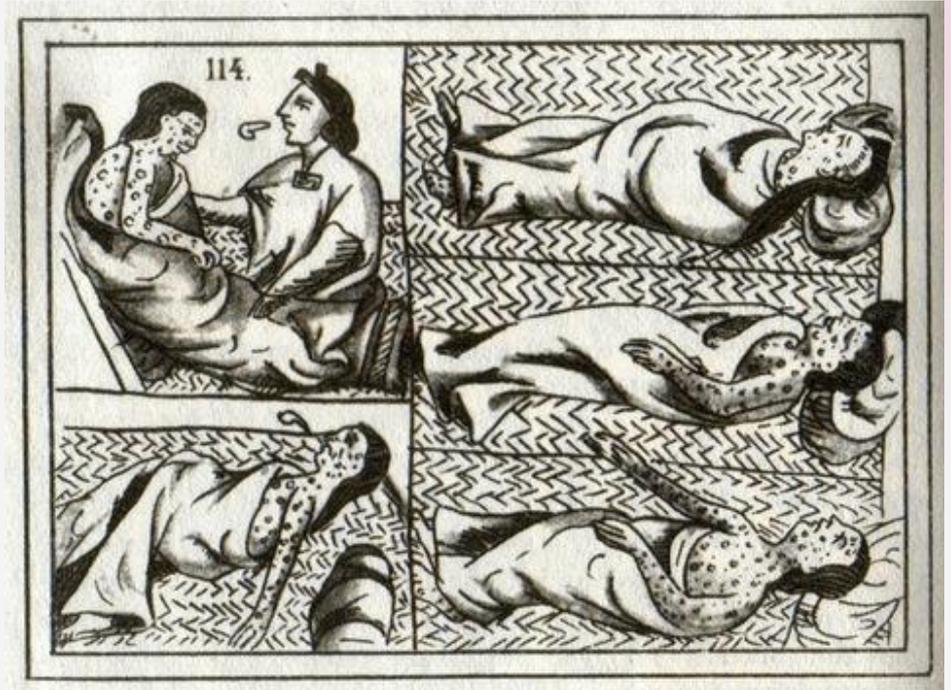
Edward Jenner: The Father of Vaccination



- Recognizes cowpox not only protected against smallpox, but could be transmitted intentionally to give protection
- May 1796: Jenner uses matter from fresh cowpox lesions of dairymaid, Sarah Nelms (pictured), to inoculate 8-year-old James Phipps
 - James develops a mild fever and loses appetite, but recovers within a few weeks
- Jenner inoculates James again, this time with smallpox
 - No disease develops, and Jenner concludes the protection was complete
- This would lay the foundation for vaccination, which quickly spread as treatment throughout England and most European countries

Smallpox Immunity & Treatment

- It was common knowledge that survivors of smallpox had immunity to the disease
- Survivors were documented in 430 B.C. from those caring for persons with smallpox, playing a crucial role in treatment as they possessed natural immunity



Key Historical Milestones

Era	Location	Milestone
c. 1000 CE	China	Traditional origin during the Song Dynasty (insufflation).
1549 CE	China	Earliest published description of variolation in a medical text.
16th-17th century 1670 CE	India & Middle East Ottoman Empire	Variolation in Ayurvedic texts Circassian traders introduce variolation to the Turkish court.
1700 CE	London	The Royal Society receives the first reports of Chinese insufflation.
1721 CE	England / USA	Lady Mary Wortley Montagu (UK) and Cotton Mather (Boston) popularize the practice in the West.

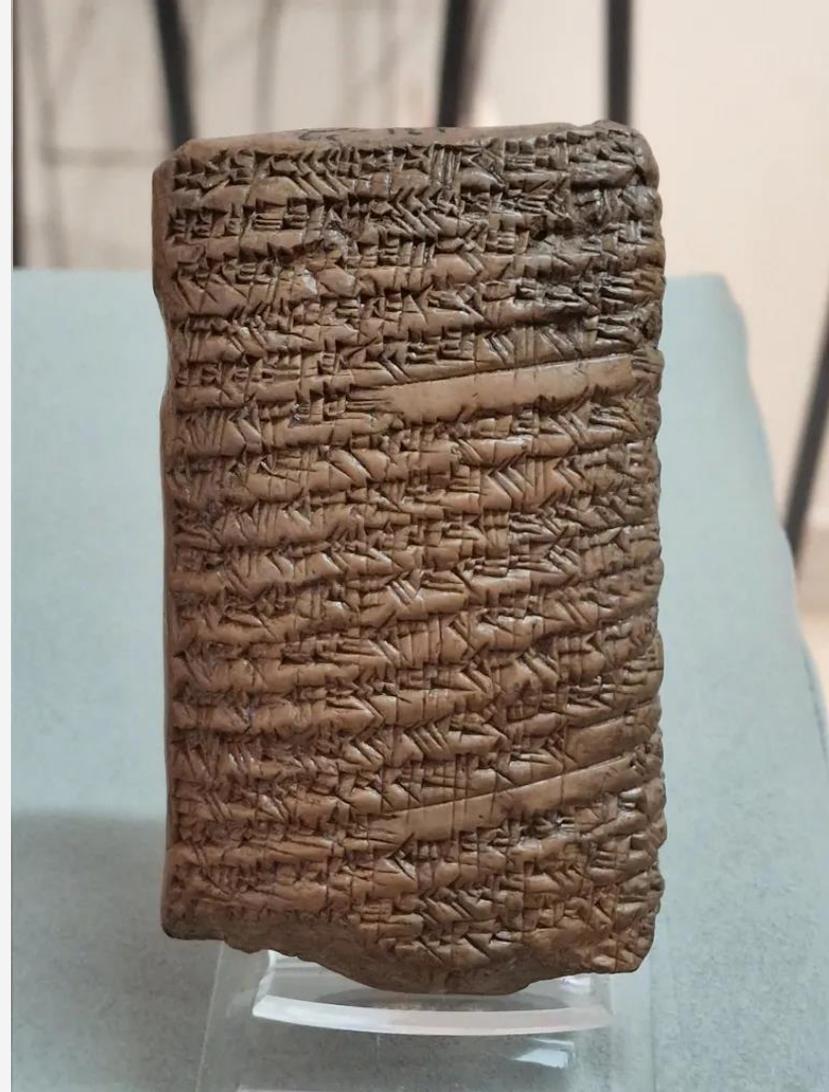


Pictured: Lady Mary Wortley Montagu

Earliest Example of Common Science Sense

Rabies

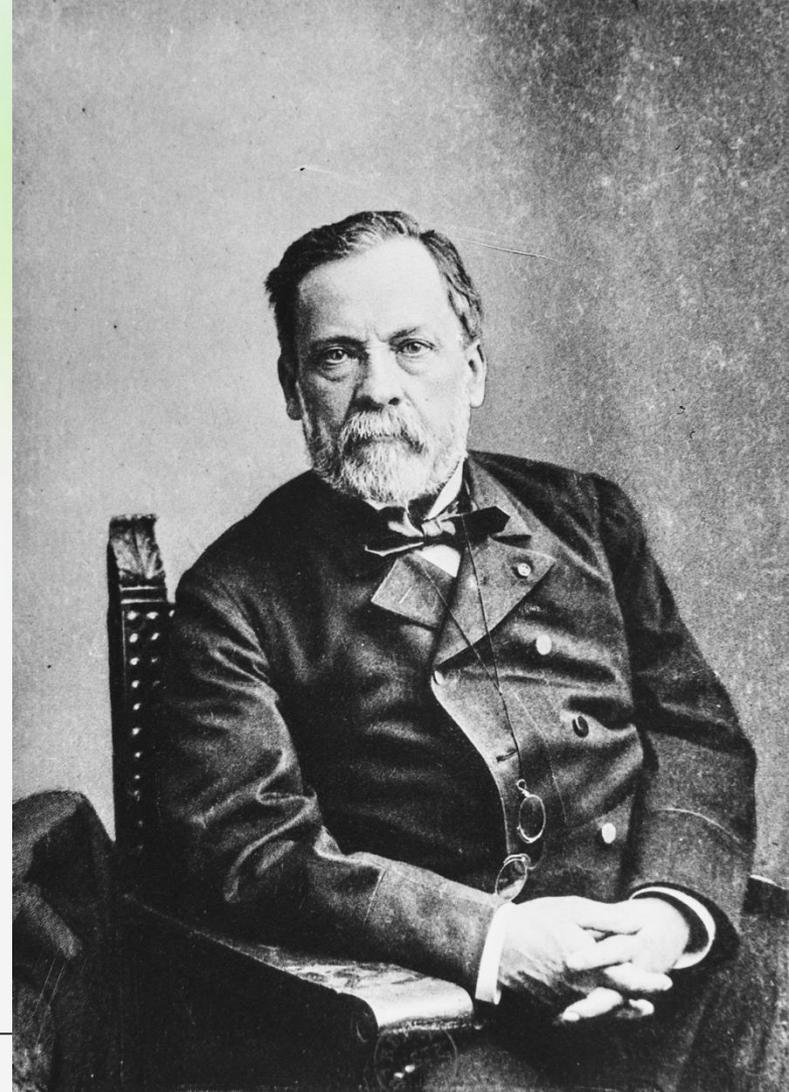
The Codex of Eshnunna in Mesopotamia (1930 BCE) serves as the first written record of rabies, instructing rabid dog owners to prevent bites.



Louis Pasteur:

The Father of Laboratory-Produced Vaccines & Immunology

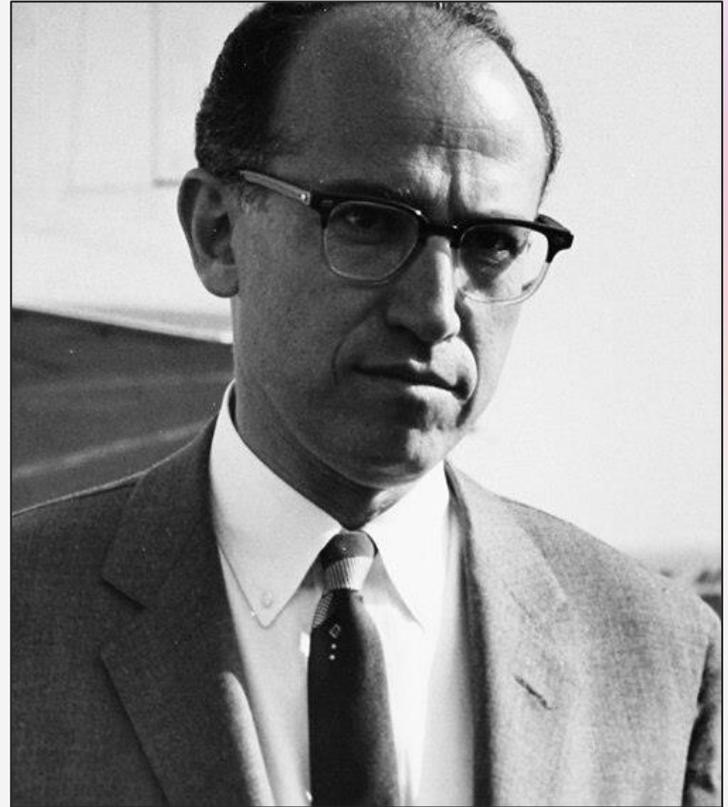
- Helped establish germ theory, laying the groundwork for microbiology
- Developed laboratory-produced vaccines
 - Inoculated chickens with attenuated form of cholera and demonstrated they were resistant to the fully virulent strain
- Developed vaccines for cholera, anthrax, and rabies



Jonas Salk:

An Altruistic Hero to Many

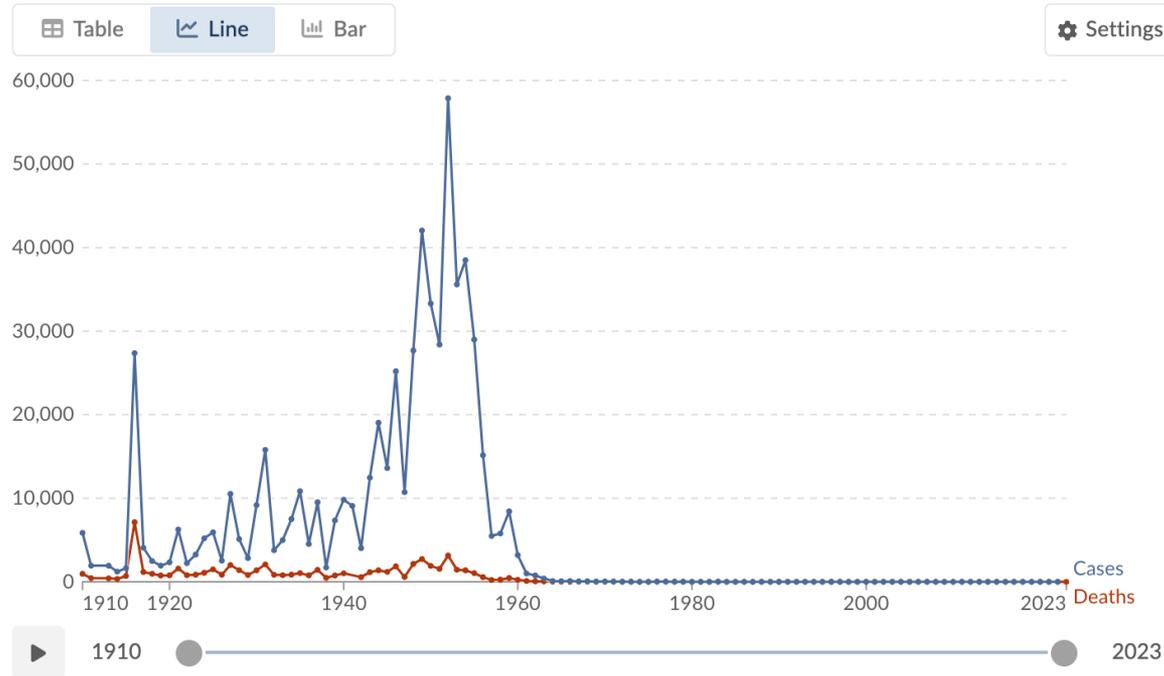
- Salk pursued a vaccine based on killed poliovirus
- His vaccine underwent one of the largest clinical trials in history, with close to 2 million children, known as the “Polio Pioneers”
- On April 12, 1955, the vaccine was deemed both safe and effective
- Salk famously declined to patent the vaccine, stating “Could you patent the sun?”



Reported polio cases and deaths, United States, 1910 to 2023

Our World
in Data

The reported figures include both wild- and vaccine-derived poliovirus infections that occurred indigenously and as imported cases.



Data source: Public Health Reports (1942); United States Census Bureau (1945); Centers for Disease Control and Prevention (2023) – [Learn more about this data](#)

Note: Only cases and deaths from acute polio infections are included.

OurWorldinData.org/polio | CC BY





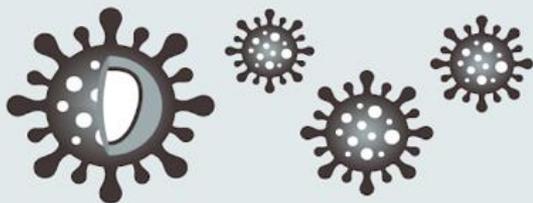
Immune cell

v



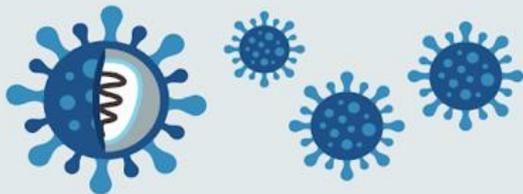
FOUR WAYS TO MAKE A VACCINE

INACTIVATED VACCINES



Use a killed virus to trigger an immune response.

ATTENUATED VACCINES



Use a weakened virus to trigger the immune response.

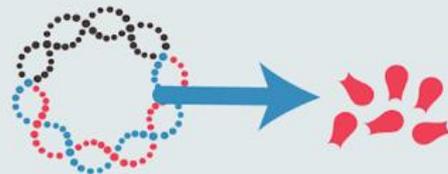


SUBUNIT VACCINES



Use only a portion of a virus to teach the immune system to recognize the whole virus.

NUCLEIC ACID VACCINES



Use virus DNA or RNA to enable human cells to manufacture portions of a virus to trigger the immune response.



The University of Arizona
Health Sciences

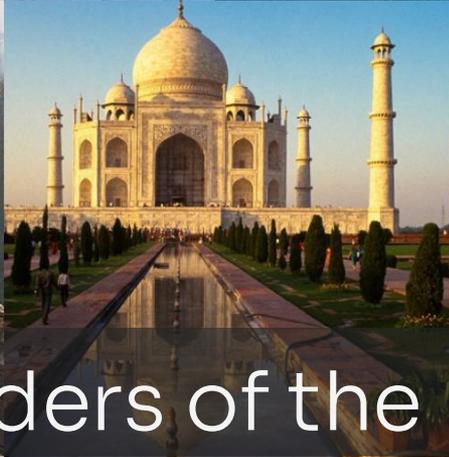
Vaccines: Training your immune system to protect you from deadly germs without the whole 'suffering and dying part'.

-Ali S Khan

02

Vaccines are Medical Miracles





The 8 Wonders of the Modern World

Pop Quiz!

In the last 50 years, how many lives has vaccination saved, globally?

- A. 67 million
- B. 99 million
- C. 132 million
- D. 154 million



That's the equivalent of 6 lives every minute!



Immunization is the single greatest contribution of any health intervention, ensuring babies not only reach their 1st birthday, but continue living healthy lives.

Diseases Alleviated by Vaccines

- Diphtheria
- Haemophilus influenzae type B
- Hepatitis B
- Japanese encephalitis
- Measles
- Meningitis A
- Pertussis
- Invasive pneumococcal disease
- Polio
- Rotavirus
- Rubella
- Tetanus
- Tuberculosis
- Yellow fever

Over the past 50 years, vaccinations against these 14 diseases has directly contributed to reducing infant deaths by 40% globally, and by more than 50% in the African region.

Vaccine-preventable diseases in the US

Shown is the reduction of cases and deaths after the introduction of the vaccine

Our World
in Data



Data source: Roush and Murphy (2007) - Historical comparisons of morbidity and mortality for vaccine-preventable diseases in the United States.

In The Journal of the American Medical Association, 298, 18, 2155--2163.

Licensed under CC-BY by the author Max Roser

Health & Economic Benefits of Routine Childhood Immunizations

TABLE 1. Estimated number of illnesses, hospitalizations, and deaths prevented by routine childhood immunization against selected vaccine-preventable diseases in 30 cohorts of children – United States, 1994–2023



Vaccine-preventable disease	Illnesses prevented (x 1,000)	Hospitalizations prevented (x 1,000)	Deaths prevented (x 1,000)
Diphtheria	7,528	7,528	752.8
Tetanus	5	5	0.7
Pertussis	80,738	3,646	28.4
<i>Haemophilus influenzae</i> type b	536	495	20.3
Polio	1,847	786	21.9
Measles	104,984	13,172	85.0
Mumps	63,355	2,020	0.3
Rubella	54,225	199	0.4
Congenital rubella syndrome	17	26	1.9
Hepatitis B	6,061	940	90.1
Varicella*	106,270	272	1.9
Hepatitis A*	4,048	78	1.5
Pneumococcus-related diseases**	47,804	1,969	123.2
Rotavirus*	30,265	819	0.4
Total	507,683	31,955	1,128.8

* Varicella vaccine for 1996–2023 cohorts, hepatitis A vaccine for 2006–2023, pneumococcal conjugate vaccine for 2001–2023, and rotavirus vaccine for 2006–2023 cohorts.
 ** Includes invasive pneumococcal disease, otitis media, and pneumonia.

TABLE 2. Lifetime health and economic outcomes in 30 cohorts of children – United States, 1994–2023



Outcome	All children born 1994–2023
Total illnesses prevented (x 1,000)	507,683
Total hospitalizations prevented (x 1,000)	31,955
Total deaths prevented (x 1,000)	1,129
Direct cost of immunization (billion, \$)	240
Societal cost of immunization (billion, \$)	268
Benefits in direct costs (billion, \$)	780
Benefits in societal costs (billion, \$)	2,931
Direct net savings (billion, \$)	540
Societal net savings (billion, \$)	2,663
Payer benefit-cost ratio*	3.3
Societal benefit-cost ratio [†]	10.9

* Payer benefit-cost ratio = benefits in direct costs / direct cost of immunization.

[†] Societal benefit-cost ratio = benefits in societal costs / societal cost of immunization.

Congenital rubella syndrome

Pre-vaccine: **0.76 cases**
per million per year
(1966-69)

99.6%
reduction

Post-vaccine: **0.003 cases**
per million per year

Pre-vaccine: **no data**
(1966-69)

no
data

Post-vaccine: **0 deaths**
per million per year

Smallpox

Pre-vaccine: **250 cases**
per million per year
(1900-49)

100%
reduction

Post-vaccine: **0 cases**
per million per year

Pre-vaccine: **2.9 deaths**
per million per year
(1900-49)

100%
reduction

Post-vaccine: **0 deaths**
per million per year

Tetanus

Pre-vaccine: **4 cases**
per million per year
(1947-49)

96.6%
reduction

Post-vaccine: **0.14 cases**
per million per year

Pre-vaccine: **3.2 deaths**
per million per year
(1947-49)

99.6%
reduction

Post-vaccine: **0.01 deaths**
per million per year

Hepatitis A

Pre-vaccine: **465 cases**
per million per year
(1986-95)

89%
reduction

Post-vaccine: **51 cases**
per million per year

Pre-vaccine: **0.5 deaths**
per million per year
(1986-95)

88.7%
reduction

Post-vaccine: **0.06 deaths**
per million per year

Acute hepatitis B

Pre-vaccine: **273 cases**
per million per year
(1982-91)

83.9%
reduction

Post-vaccine: **44 cases**
per million per year

Pre-vaccine: **1 death**
per million per year
(1982-91)

83.6%
reduction

Post-vaccine: **0.16 deaths**
per million per year

Haemophilus influenzae type B

Pre-vaccine: **84 cases**
per million per year
(1980s)

99.8%
reduction

Post-vaccine: **0.17 cases**
per million per year

Pre-vaccine: **no data**
(1980s)

no
data

Post-vaccine: **0.02 deaths**
per million per year

Pneumococcal disease

Pre-vaccine: **233 cases**
per million per year
(1997-99)

40.5%
reduction

Post-vaccine: **139 cases**
per million per year

Pre-vaccine: **24 deaths**
per million per year
(1997-99)

31.3%
reduction

Post-vaccine: **16.5 deaths**
per million per year

Varicella

Pre-vaccine: **16018 cases**
per million per year
(1990-94)

87.2%
reduction

Post-vaccine: **2046 cases**
per million per year

Pre-vaccine: **0.41 deaths**
per million per year
(1990-94)

84.3%
reduction

Post-vaccine: **0.06 deaths**
per million per year

Data source: Roush and Murphy (2007) - Historical comparisons of morbidity and mortality for vaccine-preventable diseases in the United States. In The Journal of the American Medical Association, 298, 18, 2155--2163. Licensed under CC-BY by the author Max Roser

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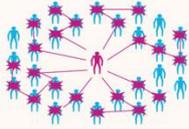
03

Protecting Our Communities

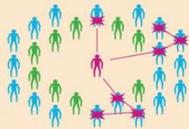


The Importance of Herd Immunity

HOW HERD IMMUNITY WORKS



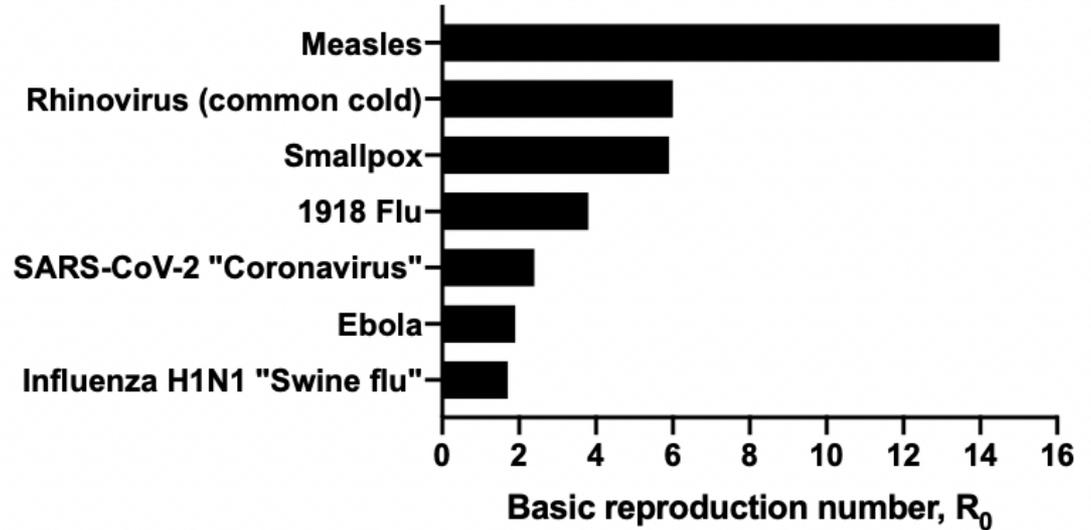
When no one has immunity, contagion has many opportunities to spread quickly.



The more immunity we have in the system, the less often contagion comes into contact with the susceptible.



Spread of contagious disease is contained.





South Carolina measles outbreak hits 876 with 29 new cases

News brief | February 3, 2026

Stephanie Soucheray, MA



Aleksandr Zyablitskiy / iStock

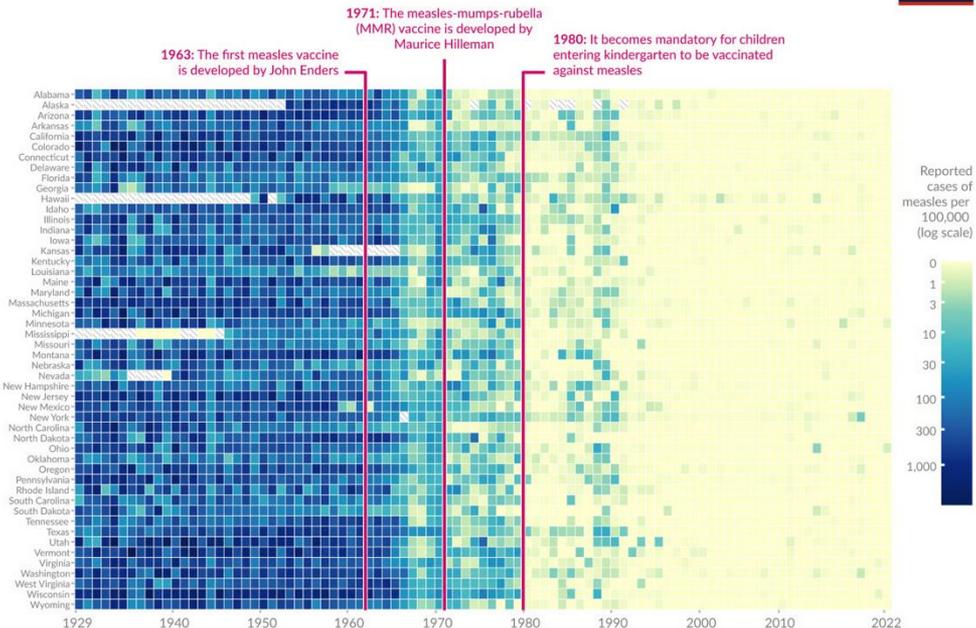
Today the South Carolina Department of Public Health (DPH) said the state's outbreak total is now 876, after adding 29 more cases since January 30 in an outbreak report.

"DPH has also confirmed a case of measles in a Sumter County resident. At this point in the investigation, it is not yet clear whether this new case is linked to the Upstate outbreak centered around Spartanburg County or if the

case may have been exposed where measles is occurring in other locations," **DPH said in its report.**

[Get CIDRAP updates](#)

Vaccines reduced measles cases across US states

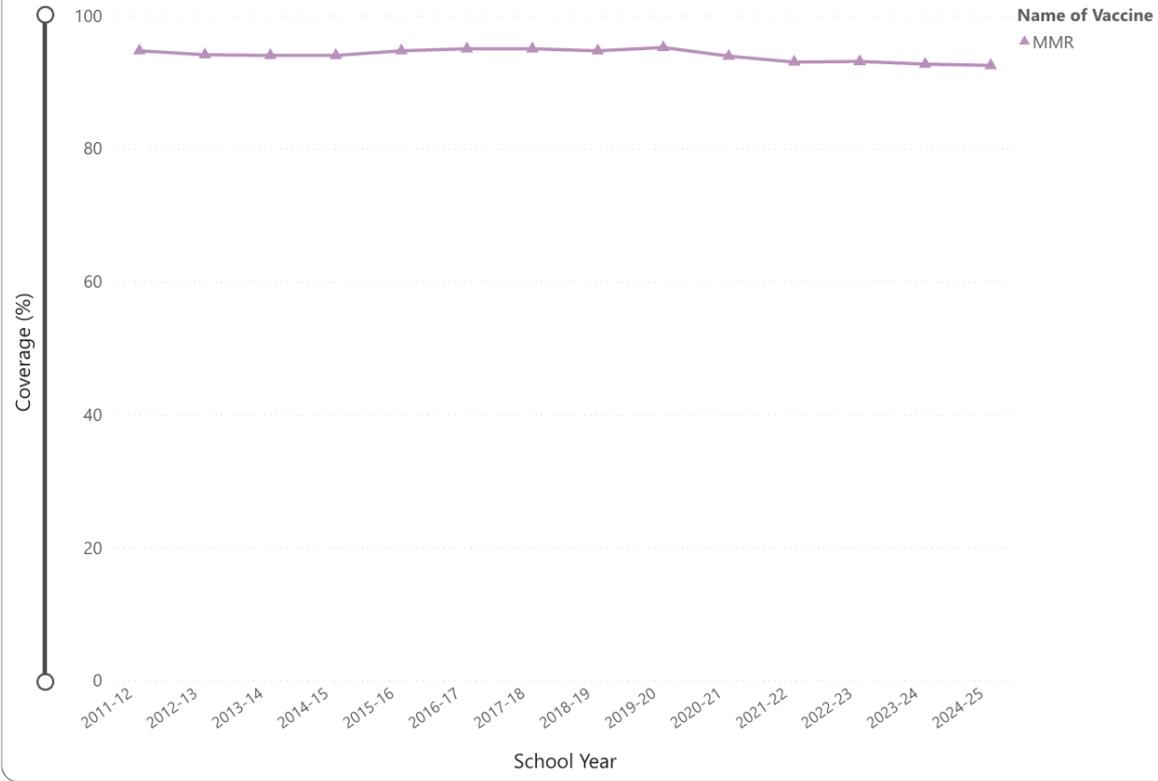


Data source: Project Tycho (2018); Centers for Disease Control and Prevention (1959–2022)

OurWorldinData.org – Research and data to make progress against the world's largest problems.

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National Vaccination Coverage among Kindergarteners by School Year



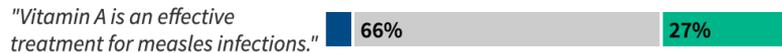
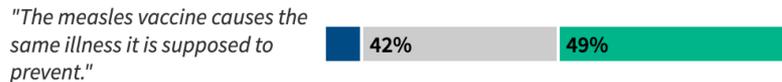
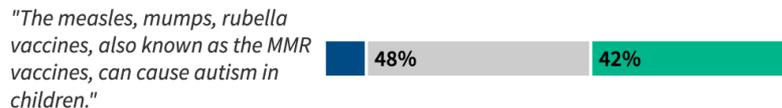
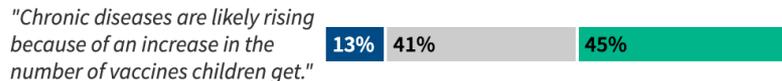
MMR
Kindergarten
Vaccine
Coverage

Misinformation & Distrust: A New Kind of Epidemic

Few Parents Say They Think False Statements About Vaccines and Measles are True, But At Least Four In Ten Express Uncertainty

Do you think each of the following statements is true, false, or do you not know enough to say?

■ True ■ Don't know enough to say ■ False



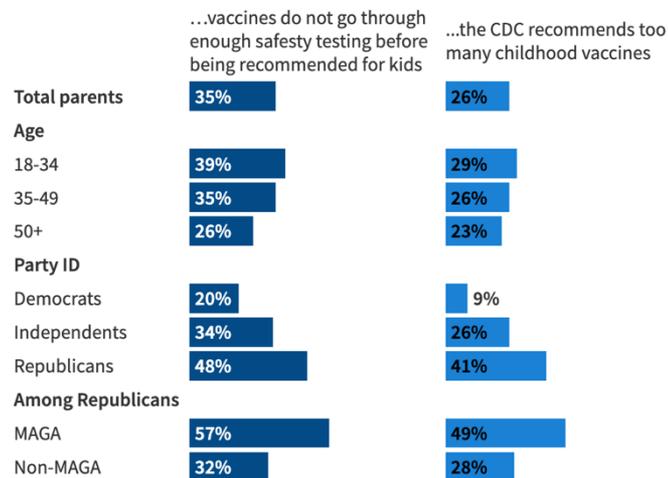
Note: Among parents of children under age 18. See topline for full question wording.

Source: KFF/The Washington Post Survey of Parents (July 18-August 4, 2025) • [Get the data](#) • [Download PNG](#)

KFF | The Washington Post

Many Parents Express Doubt Over Childhood Vaccine Recommendations and Safety, Including Larger Shares of Younger Parents and Republican Parents

Percent of parents who say...



Note: Among parents of children under age 18. Independents include those who identify with 'Other' party. See topline for full question wording.

Source: KFF/The Washington Post Survey of Parents (July 18-August 4, 2025) • [Get the data](#) • [Download PNG](#)

KFF | The Washington Post

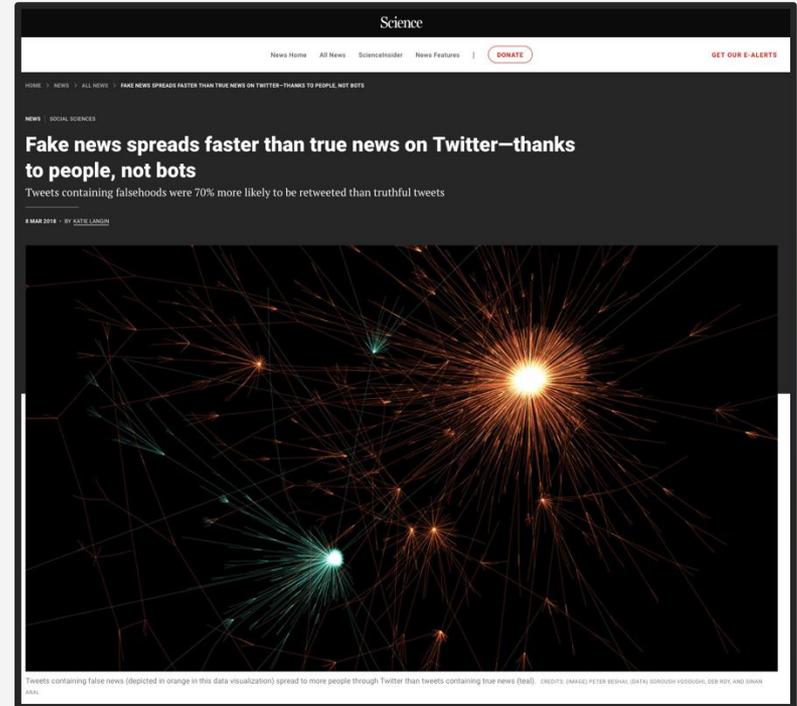
Vaccine misinformation existed well before COVID-19.



The Cow Pock — or — the Wonderful Effects of the New Inoculation! — Pub. June 22. 1800. By W. Humphrey, 5, Jamaica Street. — *vide the Publications of the Anti-Vaccine Society.*

The Danger of Misinformation

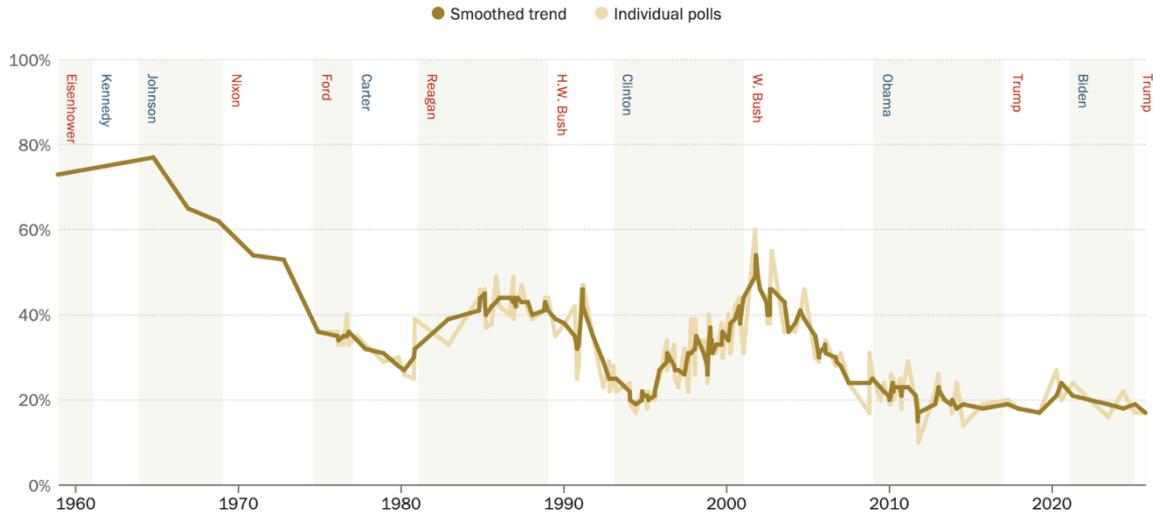
- People are more likely to share misinformation when it aligns with personal identity or social norms
- Social media information is largely unchecked and unverified
- Rapid publication and ‘sharing’ allows ordinary users to distribute information to large audience



Trust in the Government is Dropping

Public trust in government near historic lows

% who say they trust the government in Washington to do what is right *just about always/most of the time*

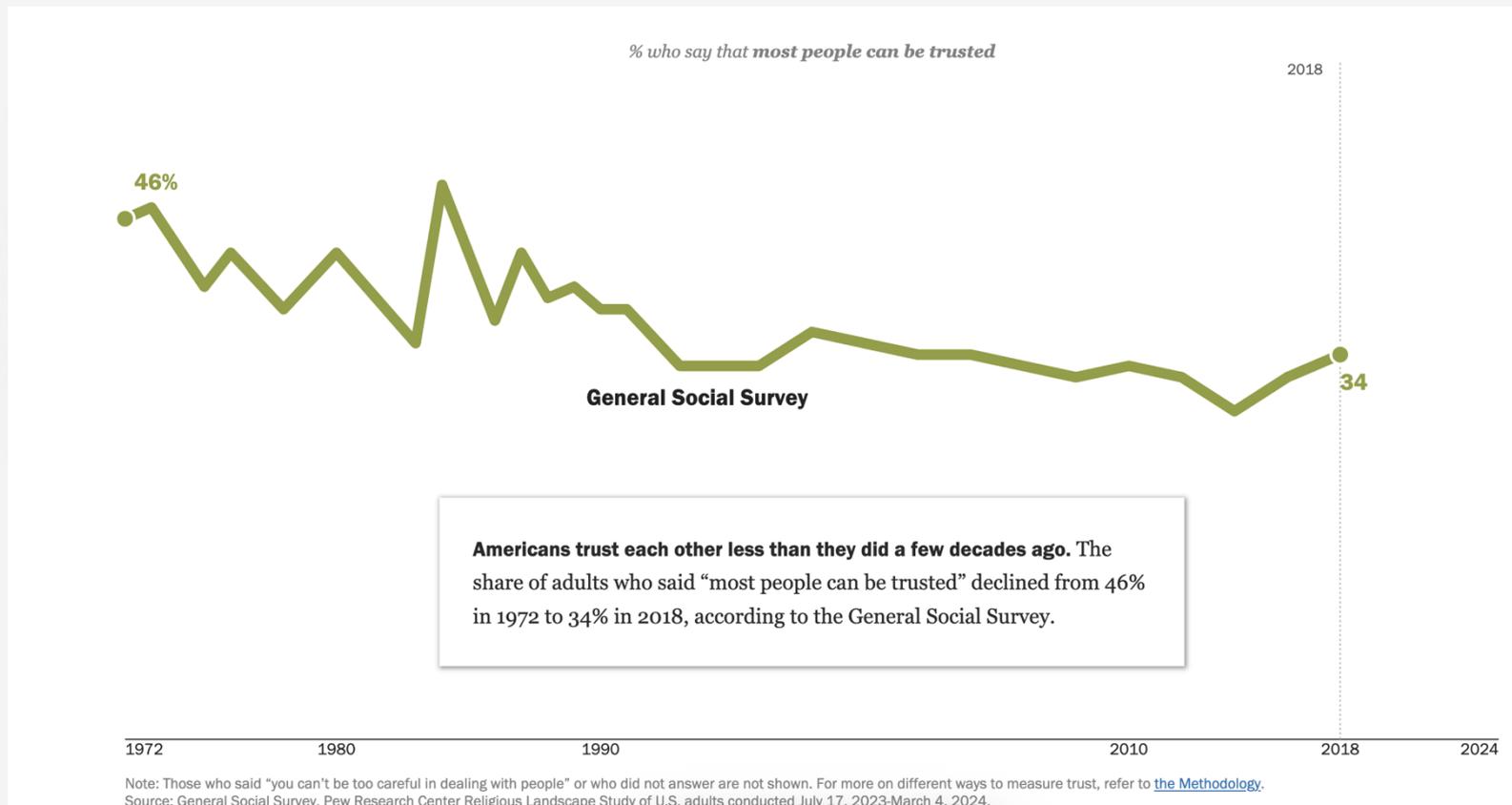


Note: From 1976-February 2025, the smoothed trend line represents a three-survey moving average. Data prior to 1976, and the most recent number (September 2025), are from individual polls.

Sources: Pew Research Center, National Election Studies, Gallup, ABC/Washington Post, CBS/New York Times, and CNN surveys.

PEW RESEARCH CENTER

But also in each other!



The Six Core Principles of Crisis Communication

1. Be First
2. Be Right
3. Be Credible
4. Express Empathy
5. Promote Action
6. Show Respect



While these are great techniques, it is not enough without a foundation of **trust and partnership.**

Trusted Voices are the Most Common Form of Information

 **Pew Research Center**

RESEARCH TOPICS ▾ PUBLICATIONS OUR METHODS SHORT READS

Home > Research Topics > News Habits & Media > News Media Trends > ...

SHORT READS | SEPTEMBER 26, 2024

Friends, family and neighbors are Americans' most common source of local news

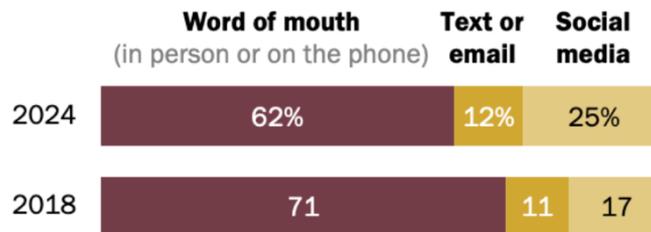
 Add Us On Google

BY ELISA SHEARER



Getting local news from others still primarily happens via word of mouth

Among U.S. adults who get local news from friends, family and neighbors, % who get that news via ...



Note: Respondents who did not answer are not shown.
Source: Pew Research Center survey of U.S. adults conducted Jan. 22-28, 2024.

PEW-KNIGHT INITIATIVE

Public Health Systems

Nursing Homes

Community
Centers

Public Health
Agency

Tribal Health

Elected Officials

Employers

Corrections

Transit

Fire

Water Safety

Laboratories

Hospitals

Doctors

Pharmacists

Community
Health Leaders

Schools

Churches

Healthcare
Providers

Environmental
Health

Media

Philanthropists

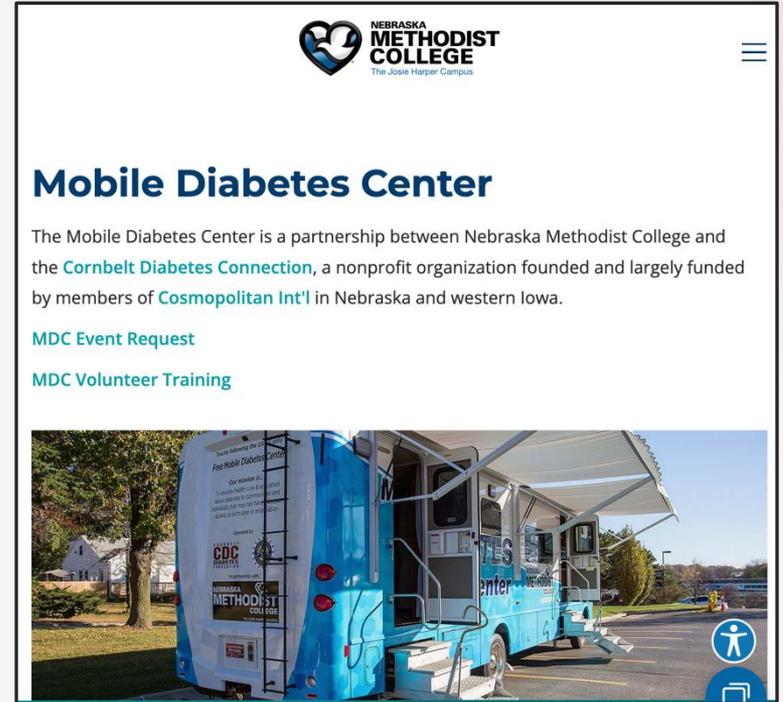
Law Enforcement

Businesses

Mental Health
Specialists

Expanding Coalitions

- Engaging faith-based organizations as partners in healthcare initiatives can increase vaccine acceptance, optimize limited health resources, and reach underserved populations
- Faith organizations have a trusted, positive influence in their communities
- Deeply-involved in their communities, organizations can address specific community needs



NEBRASKA METHODIST COLLEGE
The Josie Harper Campus

Mobile Diabetes Center

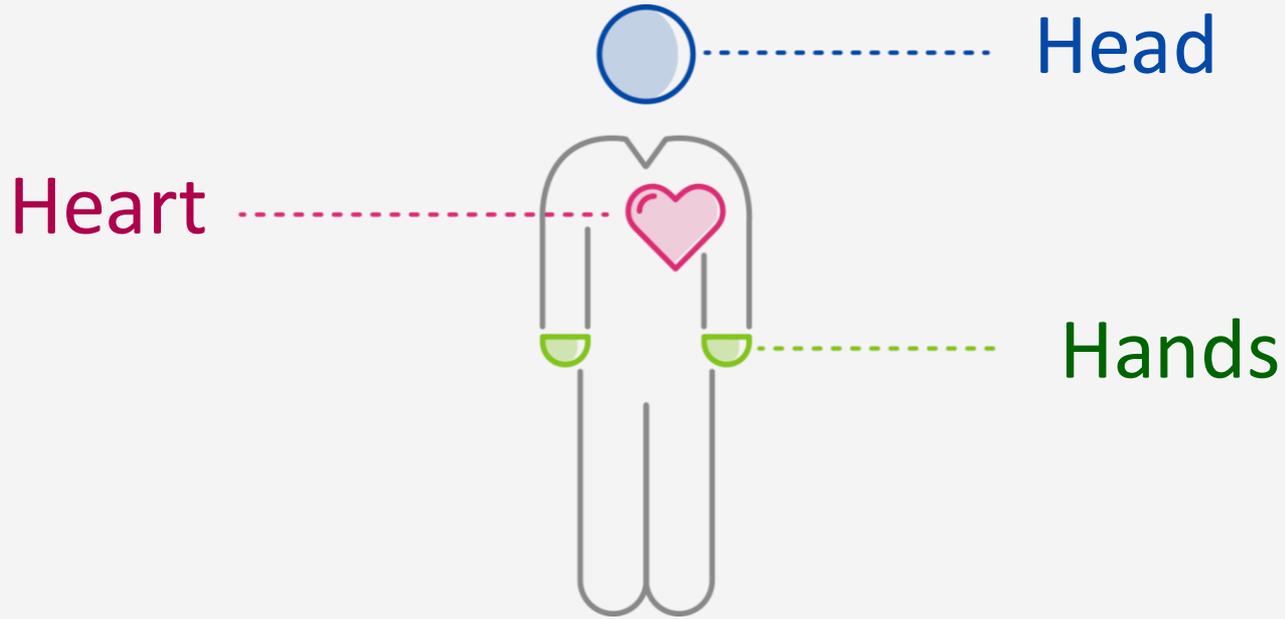
The Mobile Diabetes Center is a partnership between Nebraska Methodist College and the [Cornbelt Diabetes Connection](#), a nonprofit organization founded and largely funded by members of [Cosmopolitan Int'l](#) in Nebraska and western Iowa.

[MDC Event Request](#)

[MDC Volunteer Training](#)



...and you are an invaluable part of the system!



Thanks!

Ali S. Khan, MD, MPH, MBA

 :DrAliSKhan

Richard Holland Presidential Chair
Dean, UNMC College of Public Health
Assistant Surgeon General, U.S. Public Health Service (ret.)



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