2nd National Dialogue on Ethics and Pandemic Science

Pre-reading materials

- Survey Findings Brief
- Case Study 1 - Bio-safety
- Case Study 2 - AI & Machine Learning
- Case Study 3 - Animal Surveillance

What we Heard this Summer

Public views on AI tools for pandemic research



We surveyed 1000 adults across the United States to understand how people think about using AI for pandemic and prediction

82%

of respondents supported at least one use of AI in pandemic prediction

70% supported extraction

74% supported prediction

63% supported both

58%

of respondents reported trust in at least one use of AI

50%

of respondents reported concern in at least one use of AI

25% reported concerns in both uses of AI

22%

of respondents reported both trust and concern for AI

Support and concern can exist at the same time.

Many people see the potential benefits of AI in pandemic research, while also recognizing important risks.

What concerned people?

Accuracy

AI systems will produce inaccurate or unreliable results

Misuse and dual use

Information developed to help prevent pandemics could also be misused

Transparency

People want to understand how the systems create predictions and who is responsible

What builds confidence?

- ✓ Clear information about who is creating and using the AI models.
- ✓ Involvement of human experts in direct and frequent oversight
- ✓ Results and uncertainty communicated by a trusted source

Trusted sources matter

Percentage of respondents who trusted science conducted by:

Universities	94.1%
Government	77.8%
Medical Industry	75.9%

Who expressed more concern?

- Individuals with a high perceived disease risk
- Workers in medical and outdoor sectors
- People with low trust in the AI systems

How we did the survey

- 1000 U.S adults
- 250 from each U.S region
- Nationally representative by age, gender and ethnicity
- Survey distributed through CloudResearch Connect
- Quality checks included approval-rating filter and attention checks
- Participants responded to two uses of AI: extracting/summarizing scientific papers nd disease host predicrion

Case Study 1

Protecting Farm Workers During an Avian Flu Outbreak in Harlow County

In Harlow County, a region with a mix of large and small livestock farms, veterinarians recently confirmed an outbreak of highly pathogenic avian influenza, or HPAI (a fast-spreading, often fatal flu virus in birds), in several poultry flocks. A smaller number of cases have also turned up in dairy cattle, and a handful of farm workers who had close contact with sick animals have tested positive for the virus as well. Public health officials are watching closely, because every time a virus like this infects a new species, including humans, it has a chance to change in ways that could let it spread more easily from person to person.

In response, the Harlow County Department of Agriculture, the county health department, and researchers from Bridgeport State University have launched a joint study to understand how the virus is spreading on farms and how to better protect the people who work on them. Dr. Anita Roswell, an epidemiologist at Bridgeport State, is co-leading the project with the county's chief veterinarian. The study includes farms of many sizes, from large commercial operations to small family dairies like the one Hank Delgado runs with his two adult children. The Delgado Dairy produces milk from 40 cows.

The research team plans to test whether protective gear, such as respirators and eye shields, meaningfully reduces workers' infection risk during high-contact tasks like milking. They plan to use the results to evaluate specific changes farms could make. The team's guiding question is which practices and working conditions matter most for farm workers' infection risk during an outbreak, and how that risk can be reduced without putting farms out of business. The research team is about to apply for emergency funding, so there is still time to make decisions about the design, including who will be on the project team, which farms they will partner with, which exact protective gear they will test, and what methods they will use to test their effectiveness.

Consider the following questions:

Who are all of the affected parties in this case? In other words, who is affected and how across the research pipeline?

What is at stake in this situation for each of the affected parties? In other words, what matters to affected communities? For example, health, economic impact.

Case Study 2

The Pandemic Host Prediction Initiative

After a string of high-profile disease outbreaks that jumped from animals to humans, a group of universities and research labs launched a joint effort they call the Pandemic Host Prediction Initiative. The goal is to build a computer model that can predict which wild animal species are most likely to be carrying viruses that could someday infect people.

Dr. Richard Mark, a computational biologist, is leading the computer modeling team, working alongside disease ecologists who study wildlife in the field. Together they are combining several types of information into one large dataset. The computer scientists on the team are using machine learning; a set of statistical methods that let a computer identify patterns from data. They are combining the outputs of several machine learning models to produce a single score for each of the thousands of animal species, which will tell them how likely each species is to be an unknown host for a future pandemic virus. Because a prediction like this is only useful if people can trust and act on it, the team is also building ways to show which specific traits or data points most influenced each species' score.

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Case Study 3

The Calder County Deer Health Project

In Calder County, wildlife biologists recently discovered that SARS-CoV-2 (the virus responsible for a major recent human respiratory illness) had begun spreading among white-tailed deer. At the same time, chronic wasting disease, or CWD (a serious disease that affects the brain and nervous system of deer and can spread among deer herds), continues to spread through both wild and captive herds, drawing considerable local media attention.

In response, Ashford State University and the Calder County Department of Natural Resources have proposed a multi-year surveillance project meant to help prevent future disease outbreaks that start in deer populations. Dr. Patricia Alvarez, a wildlife disease researcher at Ashford State, is leading the effort. The plan calls for collecting blood, nasal swabs, and tissue samples from thousands of deer across the county, focusing on areas with large deer populations and evident CWD, or frequent contact between deer and people. They will study whether disease samples found in one part of the county are different from those found elsewhere. This could help them identify areas where more monitoring is needed.

Hunters would play an important role in the project. Dr. Alvarez is aware of a public health program in Texas in which hunters could choose to bring harvested deer to local check stations for wildlife management staff to collect samples from. She is unsure if that will work in Calder County. The team is also considering safely trapping and releasing live deer to collect samples. Part of the challenge is that recent neighborhood developments meant to increase affordable housing have made deer habitats less predictable. Dr Alvarez is also considering asking some farmers and landowners about deer activity near crops, feed storage, water sources, livestock areas, or wooded land.

The researchers have also contacted Nestle Ridge Tribal Association, whose reservation borders Calder County, about working together on monitoring deer on tribal lands. Tribal wildlife officials are open to the project because community members are concerned about CWD. However, they want to make sure that the work does not create unnecessary fear, blame, or harm for tribal communities.

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