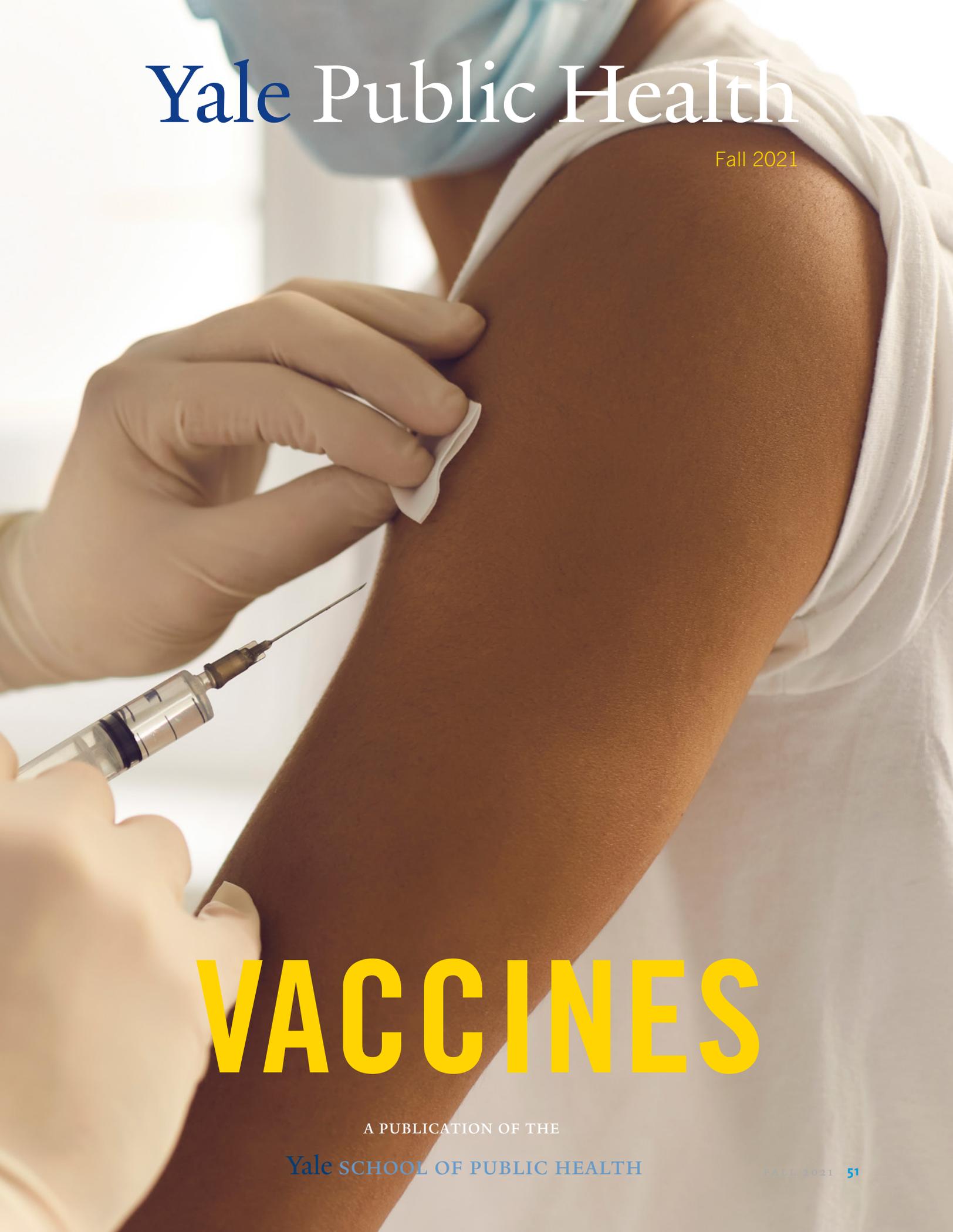


# Yale Public Health

Fall 2021



# VACCINES

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FALL 2021 51



Yale's Lanman Center, a multipurpose sports complex, became a field hospital and, more recently, the university's primary vaccination center. It has since come full circle and is being used for athletics once again.

# Yale Public Health

## VACCINES

Fall 2021

### VACCINE SCIENTISTS

YSPH researchers are investigating vaccines—and vaccine strategies—for COVID-19 and other diseases.



### PANDEMIC SERVICE

YSPH experts answer the call and share their expertise with governments facing complex vaccination questions.



### ADVOCATING BETTER HEALTH

A new state law that expands vaccine requirements in Connecticut's schools is supported by YSPH faculty.



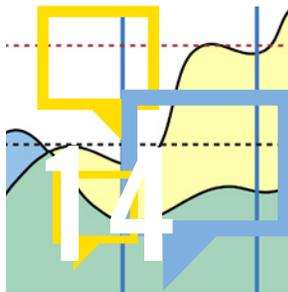
### YALE'S VACCINE PIONEER

A tribute to an early trailblazer—scientifically and socially—in the field of vaccinology.



### 2 DEAN'S MESSAGE

### 3 ADVANCES



### IMPROVING PUBLIC HEALTH

The need for boosters and can dollar stores aid vaccine distribution?

### Q&A WITH JULIE GERBERDING

Former head of the CDC discusses vaccine successes—and challenges.



### PETER HOTEZ

Noted virologist offers a YSPH audience advice, opinions and prescriptions amid a pandemic.



### 34 STUDENTS

### 46 ALUMNI

### 56 YSPH NOTES

### 65 AWARDS & HONORS

# DEAN'S MESSAGE

Like thousands of others in Connecticut, I received my COVID-19 vaccine shots at Yale's Lanman Center. After some transient post-vaccine discomfort, I could begin a return to a more normal life.

Like billions of people worldwide, I had hoped for a COVID-19 vaccine since the virus first appeared. We all remember well the truly dark days filled with misery and death. Communities and cities alike were reduced to ghost towns. People retreated to their homes. Fear was palpable. As an older man (though not too old!), I am particularly vulnerable to COVID-19. We all know that the elderly have suffered the most. Getting sick, and making others sick, was always at the forefront of personal considerations. The masks and vaccines have changed all of this. I can protect myself and others; if infected, the consequences are comparatively benign.

As dean, I could not be prouder of the work done here during the long and painful ordeal of the pandemic. Our school distinguished itself during the outbreak and the spread of the virus. This remarkable work did not slow during the period when the vaccines were introduced, and it continues today with a focus on vaccine hesitancy, molecular surveillance and distribution in low- and middle-income nations.

In these pages of *Yale Public Health*, you will learn about YSPH service to Connecticut, as the state carefully navigated its way out of a near-total shutdown with the help of the vaccines. This service also took place on the national and international levels. In the realm of research, our scientists not only contributed to major discoveries related to the COVID-19 vaccines, but they also



Sten H. Vermund

took leadership roles in studying vaccine development, effectiveness and deployment relating to a host of other diseases.

Our faculty played important roles in public advocacy to change long-standing laws surrounding vaccines, in order to make the public safer. You will read about our distinguished history in vaccinology and the extraordinary work of a YSPH alumna in Bhutan to keep her country safe. Our students share the thoughtful, and often personal, reasons that led them to get vaccinated.

The depth and breadth of expertise at our school is astonishing, and it nicely complements the theme of Yale's brand-new capital campaign: For Humanity. The work that we do every day in YSPH really is about humanity, about building a better future where people are freer of the ravages of disease and health access inequities. Better health outcomes for all populations and communities is the cornerstone of our mission, the ethos of our school.

I look forward to seeing you soon in person, thanks to the vaccines and the dedicated service of public health professionals here and the world over.

*Sten H. Vermund, M.D., Ph.D.*  
*Dean, Yale School of Public Health*  
*Twitter: @SVermund*

## Yale Public Health

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# LGBTQ COMMUNITY CENTERS PLAY VITAL ROLE IN MENTAL HEALTH SUPPORT

Surveys of LGBTQ community centers across the United States found that these venues provide critical front-line mental health services to a population that often faces stigma and a host of other challenges to their emotional well-being.

The research team, led by John Pachankis, Ph.D., the Susan Dwight Bliss Associate Professor of Public Health in the Department of Social and Behavioral Sciences and director of Yale's LGBTQ Mental Health Initiative, collaborated with CenterLink, a coordinating hub of LGBTQ community centers across the United States. The team interviewed the CEOs and directors of 60 LGBTQ community centers in what is believed to be one of the most comprehensive studies to date on the role of these venues in promoting positive mental health outcomes.

The study found that, despite small budgets and limited mental health staff and resources, LGBTQ community centers are:

- Ideal venues through which to implement LGBTQ-affirmative, evidence-based mental health treatments.
- Especially appropriate sites for delivering low-cost, online and efficient treatment approaches to overcome barriers to wider implementation of needed mental health services to the LGBTQ community.
- Appropriate venues for reaching LGBTQ people nationwide with effective LGBTQ-focused mental health care.

“Our findings suggest that LGBTQ community centers are vital to the mental health of this community and, furthermore, that their numbers should be expanded so that they can reach a larger portion of the population,” Pachankis said. “These centers are really on the front line and have been for a long time.”

The study lays the groundwork for working with LGBTQ community centers nationwide to enhance their capacity to deliver evidence-based mental health care. Based on these results, Pachankis and his team are training about 120 mental health providers in nearly 60 LGBTQ community centers across 21 states to deliver LGBTQ-affirmative care.

LGBTQ populations represent one of the highest-risk groups for depression, anxiety, suicidality, substance abuse and other mental health problems. The increased risk is understood to result from the combined stressors facing this population, including stigma and discrimination. LGBTQ people seek mental health treatment at higher rates than the general population at the same time that many are still not reached because of financial concern, worries about provider competence and other barriers to care.

The study is published in the journal *Psychiatric Services*.

*Michael Greenwood*



# A FLAVORED VAPING BAN MAY HAVE LED TEENS TO CIGARETTES

When San Francisco voters overwhelmingly approved a 2018 ballot measure banning the sale of flavored tobacco products—including menthol cigarettes and flavored vape liquids—public health advocates celebrated. After all, tobacco use poses a significant threat to public health and health equity, and flavors are particularly attractive to youths.

But according to a new study from the Yale School of Public Health, that law may have had the opposite effect. Analyses found that, after the ban’s implementation, the odds of San Francisco high school students smoking conventional cigarettes doubled relative to trends in school districts without the ban, even when adjusting for individual demographics and other tobacco policies.

The study is believed to be the first to assess how complete flavor bans affect youth smoking habits.

“These findings suggest a need for caution,” said Abigail Friedman, Ph.D., the study’s author and an associate professor in the Department of Health Policy and Management. “While neither smoking cigarettes nor vaping nicotine are safe per se, the bulk of current evidence indicates substantially greater harms from smoking, which is responsible for nearly 1 in 5 adult deaths annually. Even if it is well-intentioned, a law that increases youth smoking could pose a threat to public health.”

Friedman used data on high school students under 18 years of age from the Youth Risk Behavior Surveillance System’s 2011-19 school district surveys. Prior to the ban’s implementation, smoking rates for

the preceding 30 days in San Francisco and the comparison school districts were similar and declining. Yet once the flavor ban was fully implemented in 2019, San Francisco’s smoking rates diverged from trends observed elsewhere, increasing as the comparison districts’ rates continued to fall.

To explain these results, Friedman noted that electronic nicotine delivery systems have been the most popular tobacco product among U.S. youths since at least 2014, with flavored options largely preferred.

As similar restrictions appear across the country, the findings suggest that policymakers should be careful not to indirectly push minors toward cigarettes in their quest to reduce vaping, she said.

What does Friedman suggest as an alternative? A good candidate might be restricting all tobacco product sales to adults 21 and older.

The study is published in the journal *JAMA Pediatrics*.

*Matthew Kristoffersen*





## HEAT, HUMIDITY & UV RAYS LINKED TO COVID-19 TRANSMISSION

While physical proximity and not wearing face masks are well-known factors in the spread of COVID-19, meteorological variables such as temperature, humidity and ultraviolet (UV) radiation also appear to aid the transmission of SARS-CoV-2, the virus that causes COVID-19.

A research team led by Kai Chen, Ph.D., assistant professor in the Department of Environmental Health Sciences and a member of the Yale Center on Climate Change and Health, investigated 2,669 counties throughout all regions and states in the United States from March 15 to Dec. 31, 2020, to determine how readily the virus was transmitted.

They found that warmer temperatures (above 20 degrees Celsius, or 68 degrees Fahrenheit), increased humidity and higher levels of UV radiation were moderately associated with a lower reproductive number (a measurement of how many new infections are caused by a single infected person in a fully susceptible population), meaning that these factors were likewise associated with decreased person-to-person transmission. Of the three factors, absolute humidity (the actual amount of moisture in the air, regardless of the air's temperature) played the greatest role.

The study provides one of the most robust bodies of scientific evidence yet linking weather conditions to the transmission of SARS-CoV-2. Early epidemiological studies of COVID-19 and meteorological factors offered uncertain and contradictory findings, mainly due to short

study periods, inadequate control for confounding, and inappropriate COVID-19-related outcome variables and statistical methods.

"A unique strength of our study was its comprehensive control for the space- and time-varying nonmeteorological factors, including using the reproductive number adjusted for public health interventions and simultaneously controlling for spatially and temporally heterogeneous confounders," said Chen.

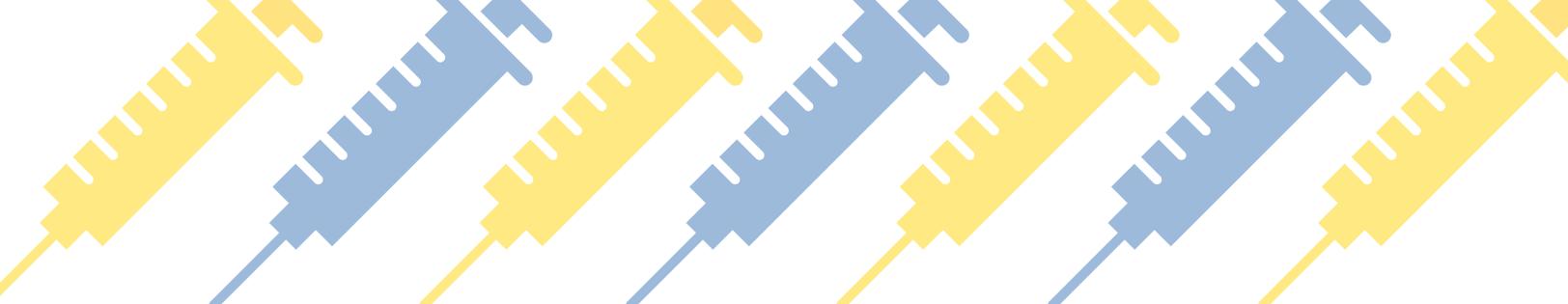
In total, Chen and the members of his research team determined 17.5% of the virus's reproductive number was attributable to meteorological factors. Specifically, they found that temperature accounted for 3.73%, humidity for 9.35% and UV radiation for 4.44%.

The fractions attributable to meteorological factors generally were higher in northern counties than in southern counties, meaning the people living in regions such as New England may need to be especially vigilant about the increased transmissibility of SARS-CoV-2 in winter, when cold and dry weather and low levels of UV radiation offer favorable conditions for COVID-19 spread, the researchers said.

The study is published in the journal *Nature Communications*.

*Michael Greenwood*





# VACCINE SCIENTISTS

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YSPH researchers are investigating vaccines—and vaccine strategies—for COVID-19 and a host of other diseases.

The Yale School of Public Health has a comprehensive vaccine research and policy portfolio. Faculty conduct vaccine trials, evaluate immune responses to vaccination, gauge vaccine safety, assess the impact of vaccination programs and develop interventions to increase acceptance of vaccines.

Moreover, faculty have been instrumental in developing U.S. and global vaccine policy and have been at the forefront of advocating for global vaccine equity, said vaccinologist Saad Omer, Ph.D., M.P.H., director of the Yale Institute for Global Health and Susan Dwight Bliss Professor of Epidemiology of Microbial Diseases.

Examples of infectious diseases covered by YSPH research include COVID-19, influenza, measles, pertussis, typhoid, respiratory syncytial virus and human papillomavirus. The school's external vaccine

research partners include the World Health Organization, Gavi, Facebook, the Centers for Disease Control and Prevention, the National Institutes of Health and the Bill & Melinda Gates Foundation.

“The vaccine research being led by YSPH is exceptional,” said Melinda Irwin, Ph.D., the Susan Dwight Bliss Professor of Epidemiology and associate dean of research. “Spanning from the laboratory to the clinic and the community, our studies are examining biological, behavioral, social and structural factors impacting vaccine efficacy and uptake. Using innovative approaches, our results have and will continue to increase our knowledge as to the impact of vaccines, inform future vaccine research and policy, and ultimately save lives.”

# SEEKING THE 'HOLY GRAIL'

“ THESE FINDINGS TAKE US ONE STEP CLOSER TO ACHIEVING THE HOLY GRAIL FOR THE FIELD, WHICH IS AN EFFECTIVE VACCINE...”

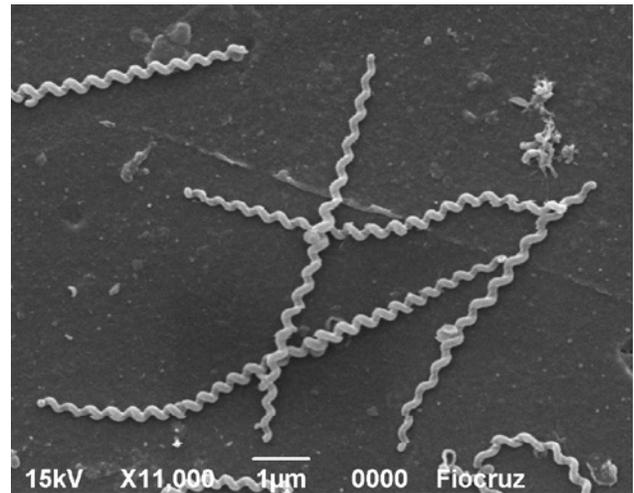
~Albert Ko

Scientists at the Yale School of Public Health are helping design a proof-of-concept vaccine that could protect against a family of bacteria responsible for deadly blood infections in humans and animals.

If successful in future trials, the vaccine candidate would be considered a “holy grail” public health intervention and could prevent thousands of deaths each year from the bacteria, known as *Leptospira*. The test results were published in the journal *eLife*.

A broad range of mammals, including rats, harbor *Leptospira* in their kidneys and release it into the environment through their urine. Humans and animals can get the bacteria after coming into contact with the contaminated water or soil. Once it gets in the body, *Leptospira* can cause life-threatening conditions, including Weil’s disease and lung hemorrhage. It’s an especially worrisome disease in the world’s most impoverished populations, infecting millions yearly according to some estimates.

But coming up with a universal vaccine for a family of bacteria with around 300 varieties has proven challenging. For the cure to work, researchers typically need to find a common feature among all the bacteria that will trigger an immune response. In this study, however, scientists at YSPH and at laboratories across the world have found a potential different solution: disabling a protein in the bacteria’s tail known as FcpA.



“With this study, we wanted to see whether using engineered *Leptospira* that lacks a functional FcpA molecule has the potential for a vaccine that could provide major public health benefit,” said YSPH Research Scientist Elsie Wunder Jr., Ph.D., the study’s lead author.

The results were promising. After the lab-grown *Leptospira* was given to hamsters and mice, it spread throughout the body and trained their cells to fight the bacteria by developing antibodies. No traces of the bacteria could be detected in the animals’ kidney tissue or blood several days later. This shows that the vaccine worked: *Leptospira* was killed before it could cause disease – leptospirosis – or death.

“These findings take us one step closer to achieving the holy grail for the field, which is an effective vaccine that protects against the many *Leptospira* species,” said YSPH Professor Albert Ko, M.D., the Raj and Indra Nooyi Professor of Public Health and the study’s senior author.



# TRACKING ASYMPTOMATIC CASES IN CHILDREN

A simulation study from researchers at the Yale School of Public Health suggests that early detection of asymptomatic COVID-19 in children would be as effective as vaccination at containing the virus.

The results, derived from a detailed computer model, show that restricting vaccine access to adults would not be sufficient to stop the pandemic from worsening. In fact, without a concerted effort to trace the virus before symptoms appear, vaccination rates would have to be far higher than rates at the time the study was conducted to contain outbreaks in the short term. The study, led by Alison Galvani, Ph.D., the Burnett and Stender Families Professor of Epidemiology and the director of the Center for Infectious Disease Modeling and Analysis at YSPH, was published in *JAMA Network Open*.

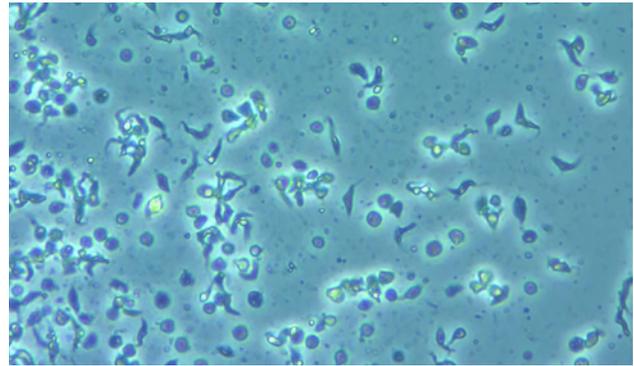
Without the typical markers of infection, children and adults can pass on the virus without knowing it—a potent contributor to worldwide disease rates. Tracking this “silent” transmission can be an effective way of controlling the coronavirus, especially through routine testing at schools and other settings.

Indeed, the researchers found, identifying just 11% of all silent cases in children within two days of infection and 14% within three days could significantly mitigate the spread of the disease even with a majority of adults being unvaccinated. Data from the model also suggest that the speed of identification is more important than the proportion of cases discovered.

“Therefore,” they wrote, “enhancing the capacity for rapid tracing of contacts of symptomatic individuals is critical to mitigating disease transmission.”

Since gaps still remain in scientists’ understanding of the vaccines’ effects on children, this approach could become an effective tool to keep communities safe as vaccination drives and clinical trials continue, the researchers wrote.

# COUNTERING A TSETSE FLY'S BITE



The bite of a tsetse fly transmits African trypanosomes, single-cell parasites that cause devastating diseases in humans as well as domesticated animals throughout large swaths of Africa.

Strategies used to curtail the spread of these diseases, which rely primarily on reducing the tsetse fly populations with traps and insecticides, and on curing infected individuals, are only somewhat effective. The presence of animal reservoirs further complicates disease control and necessitates more effective controls, such as a vaccine.

The development of effective anti-trypanosomal vaccines has been unsuccessful because the parasite constantly displays different surface coat antigens (a process called antigenic variation) within its mammalian host. Researchers in the lab of Professor Serap Aksoy, Ph.D., are working to develop novel strategies to prevent trypanosome-induced disease by learning more about parasite development in tsetse, with the intention of inhibiting transmission from the fly to mammalian hosts.

More specifically, Aksoy's team is developing a transmission-blocking vaccine that would prevent trypanosomes present in tsetse saliva from establishing an infection in the mammalian host bite site. Tsetse's salivary glands harbor several developmental forms of the parasite, only one of which, the metacyclic, is able to establish an infection in mammals after the bite of an infectious fly. Aksoy and colleagues performed single-cell RNA sequencing of trypanosomes present in tsetse's salivary glands and identified metacyclic cell genetic signatures that encode proteins unique to the surface of metacyclic cells.

“ I THINK AN EFFECTIVE VACCINE AGAINST THIS DISEASE IS POSSIBLE ONE DAY. THIS WOULD BE HUGE VICTORY FOR PUBLIC HEALTH AND FOR AFRICA.”

~Serap Aksoy

In particular, the team discovered a new family of genes known as Fam10, one of which exhibited promising results when used as a vaccine antigen in laboratory tests. The onset of disease was significantly reduced in immunized mice compared with controls that received a non-metacyclic parasite vaccine antigen. Additional studies with Fam10 antigens are under way in Aksoy's lab to enhance the efficacy of vaccines that block trypanosomal transmission.

“I think an effective vaccine against this disease is possible one day. This would be huge victory for public health and for Africa,” said Aksoy. “We are working diligently with our partners here and in Africa to help make this happen sooner.”





“INFRASTRUCTURE WILL CONTRIBUTE AT LEAST AS MUCH TO THE SUCCESS OF THE VACCINATION PROGRAM AS WILL THE VACCINE ITSELF.”

~A. David Paltiel

# CRITICAL TO SUCCESS

Factors relating to the manufacture, distribution and public acceptance of a COVID-19 vaccination program, as well as the severity of the pandemic, will contribute more to the success of the program than the efficacy of the vaccine itself, YSPH-led research predicted.

The research published in the journal *Health Affairs* in late 2020 came as the global effort to develop COVID-19 vaccines for approval by the Food and Drug Administration and large-scale distribution was nearing completion.

For instance, would a vaccine that has limited impact on transmission but significantly reduces progression to a more severe level of disease be acceptable? Alternatively, how might such a vaccine be compared with one that lowers susceptibility to infection but has no impact on disease progression? Once vaccination begins, what individual and public health benefits should the public expect from vaccines based on their performance in clinical trials? Finally, what other factors will shape the success of COVID-19 vaccination programs?

Investigators led by YSPH Professor A. David Paltiel, MBA., Ph.D., began by assembling data on the epidemiology of SARS-CoV-2 and the natural history of COVID-19. They then used an original mathematical model to estimate cumulative infections, hospitalizations

and deaths. Furthermore, they characterized the success of a vaccination program based on a number of interacting factors: the efficacy of the vaccine, the speed of manufacturing and distribution, the persuasiveness of public campaigns to promote vaccine acceptance, and the severity of the pandemic when the vaccine is introduced into the community.

“Infrastructure will contribute at least as much to the success of the vaccination program as will the vaccine itself,” said Paltiel. “The population benefits of vaccination will decline rapidly in the face of manufacturing or deployment delays, significant vaccine hesitancy or greater epidemic severity.”

The findings highlighted the urgent need for health officials to invest greater financial resources and attention to vaccine production and distribution programs and to redouble efforts to promote public confidence in COVID-19 vaccines, said Jason L. Schwartz, Ph.D., associate professor in the Department of Health Policy and Management at YSPH and one of the authors of the study.

“Even with a highly effective vaccine, we will still need sustained adherence to masking, physical distancing and other mitigation practices for some time to bring the public health crisis under control,” Schwartz said.

# ROTAVIRUS VACCINE ALSO PROTECTS AGAINST TRANSMISSION



A vaccine against rotavirus was effective at preventing person-to-person disease transmission in households in urban Malawi, an important finding that further illustrates the benefits of inoculation, especially in resource-poor settings.

Yale School of Public Health Associate Professor Virginia Pitzer, Sc.D., and colleagues analyzed stool samples from dozens of children infected with rotavirus, a highly contagious disease that can cause diarrhea, despite having been previously vaccinated. They then tracked the stool of people in the same household for as long as two weeks to see if disease had spread.

What they found was telling: The severity of the symptoms presented by those infected with rotavirus played a key part in disease transmission. Children with severe bouts of rotavirus-induced diarrhea ended up more likely to give the virus to other household contacts. Because the vaccine provides stronger protection against severe diarrhea, they estimate that rotavirus vaccination can reduce household transmission by as much as 39%.

Published in *The Lancet Infectious Diseases*, the study is believed to be the first to gauge the effectiveness of the rotavirus vaccine against household transmission in a

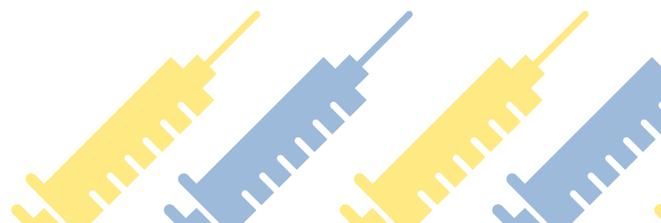
“OUR RESULTS SHOW THAT BY PREVENTING THE SEVEREST FORMS OF ROTAVIRUS DIARRHEA, ROTAVIRUS VACCINES CAN ALSO HELP TO REDUCE TRANSMISSION OF THE VIRUS.”

~Virginia Pitzer

low-income country. Other studies have tracked infections in New Zealand, the United States and other high-income areas, but the unique challenges that populations in low-income countries such as Malawi face—tight quarters, food insecurity and lower direct protection from rotavirus vaccines—make focused attention all the more necessary, Pitzer said.

Indeed, the researchers found that the rotavirus vaccine was not effective at preventing diarrhea among all vaccinated children in Malawi, and there were high rates of transmission to household contacts. Still, the vaccine should remain a critical public health intervention to control the virus, they wrote—especially in locations with limited resources.

“Our results show that by preventing the severest forms of rotavirus diarrhea, rotavirus vaccines can also help to reduce transmission of the virus. Given the high burden of rotavirus diarrhea in Malawi and other low-income countries, this additional protection adds to the overall value of the vaccine,” Pitzer said.





# GAMMA VARIANT VULNERABLE TO VACCINE

The AstraZeneca vaccine, widely used in Brazil and elsewhere in response to a wave of infections from the SARS-CoV-2 gamma variant, affords significant protection to older populations when the vaccine's full two-dose schedule is completed.

Research by the Yale School of Public Health and a host of Brazilian and international scientists analyzed how adults aged 60 and older in São Paulo responded to either just one dose of the vaccine or the full two-dose regimen during extensive transmission of the gamma variant (also known as P.1 or the "Brazilian variant"). This variant has caused widespread sickness and death since it emerged in Brazil last year and has subsequently spread elsewhere in South American and beyond.

"These findings have major implications for policy in many countries that have spaced out vaccination and especially those in South America that are undergoing large gamma-associated epidemics," said Julio Croda, M.D., Ph.D., adjunct associate professor at the Yale School of Public Health, a researcher at the Oswaldo Cruz Foundation in Brazil and the study's principal investigator. Known as ChAdOx1, the AstraZeneca vaccine is used worldwide for COVID-19.

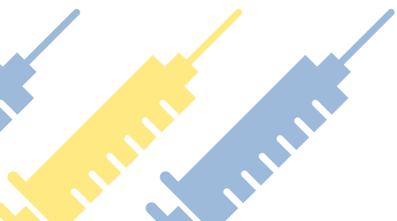
The researchers found that a single dose of the vaccine among the older adults conferred protection against COVID-19, but its effectiveness was modest. One dose had an overall effectiveness of 33% against symptomatic illness and reduced hospitalizations by 55% and deaths by 61%.

““ THESE FINDINGS HAVE MAJOR IMPLICATIONS FOR POLICY IN MANY COUNTRIES.”

~Julio Croda

In contrast, a second dose of the AstraZeneca vaccine was found to provide significantly higher protection. A complete two-dose regimen provided an overall effectiveness of 78% against COVID-19 and reduced hospitalizations by 88% and deaths by 94%.

"The good news is that this vaccine was highly effective in protecting the elderly during an epidemic where the gamma variant caused more than 80% of the cases," said Albert Ko, M.D., the Raj and Indra Nooyi Professor of Public Health at the Yale School of Public Health and the study's co-principal investigator. "However, unlike the experience with ChAdOx1 in other settings, two doses are needed to reach optimal levels of protection in this vulnerable population and in the setting of extensive gamma variant transmission."



# A DOLLAR STORE SOLUTION?

BY SABRINA (YIHUA) SU



Ever since the United States missed its July 4 goal of getting 70% of adults their first shot of the COVID-19 vaccine, hesitancy has become one of the nation's most concerning topics. But who exactly are the ones who have not received a shot, and what is preventing it? *The New York Times* analyzed a large-scale survey that explored the potential root causes keeping people from getting vaccinated and classified them into four categories: COVID-19 Skeptics, Cost-Anxious, System Distrusters and the Watchful.

Misinformation was the key that led to vaccine hesitancy across these groups. People who fall into one of the four groups seemed to be misled by false claims on the virus and vaccines from the news media or elsewhere. Confirmation bias also exists, as people tend to stick to their prior conclusions and listen to or follow only certain politicians and influencers. Thus, people with different socioeconomic backgrounds, from different communities in terms of race, ethnicity or political leanings, could share tendencies toward certain pieces of misinformation.

According to one of our published studies on early responses to COVID-19 on Twitter, people from high-income areas and those in less-resourced areas reacted differently when the pandemic first hit the United States in 2020. Our study highlighted the need to address specific fears and concerns of these communities through public health messaging at a granular level. We further demonstrated the potential of people, especially those from less-resourced areas, being disproportionately affected by misinformation. Instant and personalized public health messaging campaigns should take place as soon as possible to achieve better reach and spread.

Even more essential is understanding the major concerns and turning them into actionable insights. The analysis

from *The New York Times* reveals detailed concerns from public beliefs and hints at potential solutions. For instance, the Cost-Anxious and System Distrusters likely have poor proximity to vaccines and other resources based on their historical experiences. That is, time and cost constraints and resource accessibility have been holding them back from vaccination.

That raised the issue of how to best bring vaccines to their neighborhoods.

From another study on retail vaccine availability, we assessed providing vaccines at the ubiquitous Dollar General stores in addition to the current Federal Retail Pharmacy Program partners. Store locations are chosen in part based on proximity to target customers, and evidence showed that Dollar General has done better reaching vulnerable communities than current partnered pharmacies. Our study further showed that using Dollar General stores as vaccination sites would offer considerable proximity benefits, particularly for low-income households, people living in rural counties, Black Americans and Hispanic Americans in several regions of the United States.

In summary, misinformation and confirmation bias, whether caused by fake news, false claims or political allegiance, can lead to vaccine hesitancy. Public messaging at a granular level, together with actionable policies, is essential to reversing this trend. Enhancing proximity to vaccination sites could be our next step as it ensures access, equity and high rates of vaccination among low-income and minority communities that are more likely than others to experience vaccine hesitancy.

President Joe Biden's push to bring the vaccine conversation directly to the front doors of Americans faced criticism. Perhaps it would be worth trying to offer their Dollar General neighbors as a convenient vaccine choice. [YPH](#)

*Sabrina (Yihua) Su is an M.S. student in health informatics at the Yale School of Public Health. She recently co-authored a study in Computers in Biology and Medicine that assessed COVID-19 concerns across areas with socioeconomic disparities and a study in the Journal of Urban Economics that explored equity in vaccine distribution.*

# ARE ADDITIONAL BOOSTERS NEEDED? IT IS A MATTER OF WHEN

BY AKIKO IWASAKI

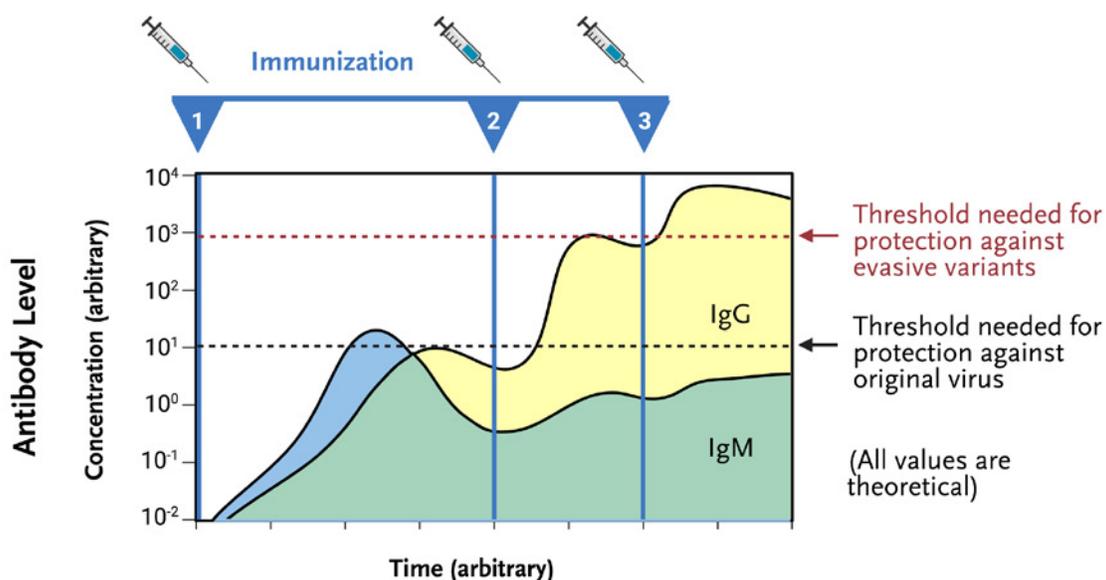
Over the past 19 months of the COVID-19 pandemic, we have learned much about vaccines. The great news is that we have safe, effective vaccines, many of which prevent over 90% of severe disease against all variants. This is spectacular, a major scientific feat. However, the question is whether we are going to need additional booster shots in the future. What happens if protection diminishes over time? What if current vaccines prove less effective against new variants?

To answer these questions, we need to understand how vaccines work. Vaccines trigger our body's immune system to produce T-cells and antibodies specific to the

virus. In the case of mRNA (Pfizer and Moderna) and adeno-vectored vaccines (AstraZeneca, Johnson & Johnson, Sputnik V), the spike protein of the SARS-CoV-2 is the target antigen. This is because the virus uses spike protein to bind to our cell surface receptor (ACE<sub>2</sub>) and enter the cells; antibodies can block this interaction. These mRNA and viral vaccines consist of nucleic acid inside a vehicle (RNA in lipid nanoparticles, DNA in adenovirus capsid).

Once inside the host cell, the nucleic acid serves as the template for the host cell machinery to produce the spike protein, which is detected by our immune system to trigger T-cell and antibody responses. This process of stimulating

## The Effect of Booster Vaccinations on Antibody Levels



T-cells (which become killer cells) and B-cells (which produce antibodies) takes a week or two to kick in. After the first shot of vaccine, the immune system generates pretty good levels of antibodies that can block incoming virus. However, this first shot is not very effective against the emerging viral variants, which have sufficiently mutated the spike protein to evade the antibody responses generated against the original strain of SARS-CoV-2 (which is used in vaccines). Moreover, the delta variant is highly transmissible, rendering the single shot even less effective in preventing infection and disease.

“SO, WILL WE EVER NEED ADDITIONAL BOOSTER SHOTS IN THE FUTURE? IT IS A MATTER OF WHEN. IT IS ALL ABOUT KEEPING YOUR IMMUNE RESPONSES ABOVE THE THRESHOLD OF PROTECTION AGAINST THE CIRCULATING VARIANT.”

~Akiko Iwasaki

This is where the second shot comes in. People who got the first shot of vaccine are given the second shot (21 days later in the case of Pfizer, 28 days later for Moderna) to increase the level, function and duration of immunity. The second dose triggers memory T- and B-cells to make even better killer T-cell and antibody responses. Because the second jab induces higher amounts of antibodies, even if they are not perfectly matched to the spikes on variants, they are good enough to block the virus infection. So far, the real-world data tell us that two doses of the Pfizer vaccine are 85% to 90% effective against symptomatic infection with the delta variant and that two doses of the AstraZeneca vaccines are 61%-72% effective. Studies also indicate that immune responses induced by vaccines are likely long lasting.

So, will we ever need additional booster shots in the future? It is a matter of when. It is all about keeping your immune responses above the threshold of protection against the circulating variant. Below, I share my own opinion on the need for boosters in various categories of individuals based on my own understanding of the transmission, immunology and vaccine effectiveness. This may not exactly align with what is being recommended by the Centers for Disease Control and Prevention at this time, but I hope it will inform future recommendations.

If you are immunocompetent and fully vaccinated, you may not need a booster now but will likely need a booster in the future to maintain high levels of immune defense. However, if you are immunocompromised due to cancer, transplants or HIV, a third shot of mRNA vaccines will help elevate the antibody levels above the threshold in some. Other immunocompromised persons may require extra help to prevent protection, such as monoclonal antibodies. If you are older than 65 years of age, you will benefit from the third dose of vaccine. If you received the J&J vaccine (a single shot), you will benefit from the booster (second) shot. Studies have shown that the adenoviral-vectored vaccine (like J&J) followed by an mRNA vaccine provides more robust antibody responses. Even if you are an immunocompetent, fully mRNA vaccinated person, if you are at high risk of exposure with virus (such as front-line workers and health care workers), or if you frequently come into contact with individuals at high risk of developing severe disease, a booster shot may help prevent transmission.

In addition, should a variant that further evades antibody responses arise in the future, a booster will help (see red dotted line in figure). Our work has demonstrated that a previously infected person who received two doses of mRNA vaccines has much more cross-protective neutralizing antibodies against the beta and gamma variants than those who are vaccinated without prior infection. These data suggest that a third dose of vaccine may similarly elevate antibody levels against such variants. Even if no such variants are around, an additional shot will boost the waning immune responses sometime in the future.

In theory, the booster does not have to be the same as the prior vaccine. In fact, evidence is emerging that a mix-and-match strategy may be more effective. However, more research is needed to provide a definitive answer as to the safety and optimal timing of these shots. Importantly, in addition to considering booster shots, we should be focusing on giving the first shot to the rest of the world with no access to vaccines. [YPH](#)

*Akiko Iwasaki, Ph.D., is the Waldemar Von Zedtwitz Professor of Immunobiology and Molecular, Cellular and Developmental Biology at the Yale School of Medicine and professor of epidemiology at the Yale School of Public Health. She is also an investigator at the Howard Hughes Medical Institute.*

“

# VACCINE VIEWS

The good, the bad and the unresolved on COVID-19 vaccinations.

BY MICHAEL GREENWOOD

The speed with which vaccines were developed for COVID-19 was astonishing, and scientists even managed to harness a new technology in the process. The rollout of the vaccines has been impressive as well, but not without its problems and shortcomings. A range of experts at the Yale School of Public Health provide their views on what went right, what wasn't handled so well, or the challenges posed by a mass vaccination campaign that still remain.

The deployment of a public-private partnership in vaccine development was a remarkable success, including the conduct of an expedited, yet thorough, review by the Food and Drug Administration. The national and global narrative also made clear the need to revitalize public health infrastructure, workforce, procedures and planning.



DEAN STEN H. VERMUND,  
M.D., PH.D., YALE SCHOOL  
OF PUBLIC HEALTH

**BUT...**

Many government leaders failed to lead by example, eschewing mask use and flaunting guidance as to small groups or stay-at-home mandates. Public health departments had been chronically undercapacitated, a disadvantage when a rapid response was needed.

”



The fact that even one safe and effective COVID-19 vaccine exists is extraordinary, not to mention having multiple vaccines, all developed at record speed. COVID-19 vaccines are a testament to the power of science, human ingenuity and public-private cooperation.



ANANT SHAH, M.P.H. '07,  
VACCINE EXPERT  
IN PRIVATE INDUSTRY

## BUT...

But, as the saying goes: Vaccines don't save people, vaccination does. Despite monumental efforts by companies, national governments and the international COVID Vaccines Facility (COVAX), there remains a dangerous, worldwide vaccination divide. Much more must still be done to achieve higher, faster, more equitable vaccination coverage for everyone, everywhere—lives and the global economy depend on it.

Developing a new vaccine for an emerging pathogen and completing regulatory review and assessment for safety and efficacy over months without skipping any steps necessary was an absolute success. I received the same vaccine in my arm in less than nine months after consenting to my first participation in an mRNA-1273 phase 1 trial. This reinforces our trust of the scientific community.

## BUT...



INCI YILDIRIM, M.D., PH.D., M.SC.,  
ASSOCIATE PROFESSOR,  
YALE SCHOOL OF MEDICINE;  
ASSOCIATE PROFESSOR, YALE  
SCHOOL OF PUBLIC HEALTH

Communication in everything related to this pandemic could have been better. This includes the vaccine messages, but also other mitigation measures. As a pediatrician, I think the delay in initiation of the pediatric vaccine trials contributed to anxiety that we all share around having our children back in school. High-income countries, including the United States, need also to be more active in increasing vaccine production and supply to vulnerable populations in the world. Until we resolve the disparity between rich and poor countries, we all are susceptible to more transmissible and dangerous variants.

# BUT...

Connecticut has been a leader in communicating updates regularly and often to its residents. The now-defunct daily COVID-19 updates provided timely guidance and information to those with access to Connecticut Network.



Equity, particularly racial equity, remains an issue! This pandemic disproportionately impacted people who are African American/Black, Latina/o and Native American. We were slow to respond and adapt our testing strategies to account for this, and the same is true for our vaccination strategies. Now as we see variants on the rise, we are still working on finding exactly what does and does not work to increase vaccine confidence in communities that lack trust in the government and in health care. Connecticut has a ways to go on building trust, increasing vaccine confidence and advancing health equity.

TEKISHA DWAN EVERETTE, PH.D., IS IN THE ADVANCED PROFESSIONAL M.P.H. PROGRAM AT YSPH AND IS EXECUTIVE DIRECTOR OF HEALTH EQUITY SOLUTIONS

The development, evaluation and approval of safe and effective vaccines within one year of the SARS-CoV-2 emergence is the public health success story. The rapid implementation of vaccination in Connecticut as well as in wealthy parts of the world is another, as evidenced by the large numbers of estimated lives saved in these regions.

The major failure has been the inability to translate the public health benefit of vaccines globally and especially in the most vulnerable segments at risk for COVID-19 in our country and the world. Unless we do so, we are a highly interconnected world and will have continued threats due to the spread of new variants that may compromise the benefit afforded by vaccines and the gains made in countries privileged to have implemented vaccination.

# BUT...



ALBERT KO, M.D.,  
RAJ AND INDRA NOOYI PROFESSOR OF PUBLIC HEALTH



My focus is on the challenges that we still face. I'll mention just two. The first is the global catastrophe. Nobody on the planet is safe until we are all safe. How do we share the benefits of vaccine development—a miracle paid for and owned by U.S. taxpayers and their investment in basic research for the last 30 years—with the rest of the world? The second is children. How do we keep them safe and in school while accelerating the pediatric vaccine development and approval process?



A. DAVID PALTIEL, MBA, PH.D.,  
PROFESSOR, YALE SCHOOL OF PUBLIC HEALTH

The Pfizer and Moderna vaccines target the spike protein of SARS-CoV-2, which presents a surface that antibodies will easily encounter. It was a good target for the first vaccines, which had to be developed and deployed quickly. However, the surface region of the spike has evolved in the zoonotic reservoir—and now in humans—to easily proffer divergent structures with each mutation. In fact, it surely has evolved to be an evolvable structure that rapidly evades previous immunity with one or a few mutations. Therefore, the next generation of vaccine development should include as targets the membrane and envelope proteins. These proteins also feature external surfaces that are somewhat shielded by the spike and evolve at a much slower rate than the spike. It would be more challenging to devise an efficacious vaccine that targets these shielded proteins, but such a vaccine could provide much more general—perhaps even lifelong—protection, instead of the shorter duration of protection that we can count on from a spike-targeting vaccine.



JEFFREY TOWNSEND, PH.D.,  
ELIHU PROFESSOR OF BIostatISTICS, YALE SCHOOL OF PUBLIC HEALTH  
& PROFESSOR OF ECOLOGY AND EVOLUTIONARY BIOLOGY

# BUT...

To support the global response to COVID-19, the dynamism and diversity of R&D efforts in the United States and other countries (including China, Russia and Europe as a whole) by dozens of teams incentivized by the prospect of attractive markets have driven unprecedented success in the design, development, testing and licensing of multiple COVID-19 vaccines of good efficacy in record time. This has created the potential for rapid distributions and uptake of vaccines everywhere.



ROBERT HECHT, PH.D.,  
PROFESSOR,  
YALE SCHOOL OF PUBLIC HEALTH

Tragically, despite the technology successes, our efforts to plan and finance rapid production scale up so that all countries could distribute and administer vaccines to their population have been a colossal failure. Narrow vaccine nationalism, lack of technology transfer agreements in advance of the pandemic that could be quickly activated (vaccines are complex biological products that cannot be easily copied, even when patents are waived), and the total absence of global leadership and coordination to expand manufacturing to the needed scale and offer suppliers clear and predictable payment have led to today's situation, where less than 5% of the population is vaccinated in many African and Asian countries, despite high demand from the people. This is fueling repeated surges of infection and cycles of illness and death that are entirely avoidable and is also promoting the spread of new virus variants and prolonging the travel bans and other forms of paralysis of our global system. We must fix this before the next pandemic strikes.

The vaccines in use in the United States have benefited from a rigorous, transparent, independent and science-based review process from the scientists at the Food and Drug Administration and their expert advisers. These regulatory processes—free from political interference—were essential to the unprecedented pace of vaccination in the months following their authorization.



JASON L. SCHWARTZ, PH.D.,  
ASSOCIATE PROFESSOR, YALE SCHOOL OF PUBLIC HEALTH



# ADVISING ON ALL LEVELS

YSPH experts answer the call and share their expertise with governments facing complex vaccination questions.

BY JEANNA LUCCI CANAPARI

If infectious disease experts at the Yale School of Public Health ever needed a compelling reason to step out of their labs or away from their research and share their expertise with the wider world, they have one now.

“We are in a pandemic,” said Albert Ko, M.D., the Raj and Indra Nooyi Professor of Public Health. “It’s important that we provide service and contribute to the response. It is a strong motivating force that resonates with all of our colleagues at the school.”

Ko is among many Yale School of Public Health researchers who answered the call to lend their specialized knowledge to state, national and even international efforts to stop the spread of COVID-19 and help guide vaccine policy and strategy. He was tapped by Connecticut Gov. Ned Lamont to co-chair the Reopen Connecticut Advisory Group and serve on the state’s Vaccine Advisory Group science subcommittee. “It is critical in a pandemic to take the innovation and rigor of academics and translate it into public policy and action,” said Ko.

The Vaccine Advisory Group was convened in October 2020 – before any vaccine had received even emergency use authorization by the Food and Drug Administration (FDA) – to help the state government navigate the distribution of any COVID-19 vaccines when they became available. In addition to turning to public health experts and health care professionals, Lamont tapped state lawmakers and representatives from private industry to get their perspectives on how to shape the state’s vaccination effort.

“It is always a tricky process,” Ko said. “Public health is a key cornerstone of society but is one piece in overall well-being. All considerations have to be balanced, and that’s the job of elected officials. There are often trade-offs.

# 63%

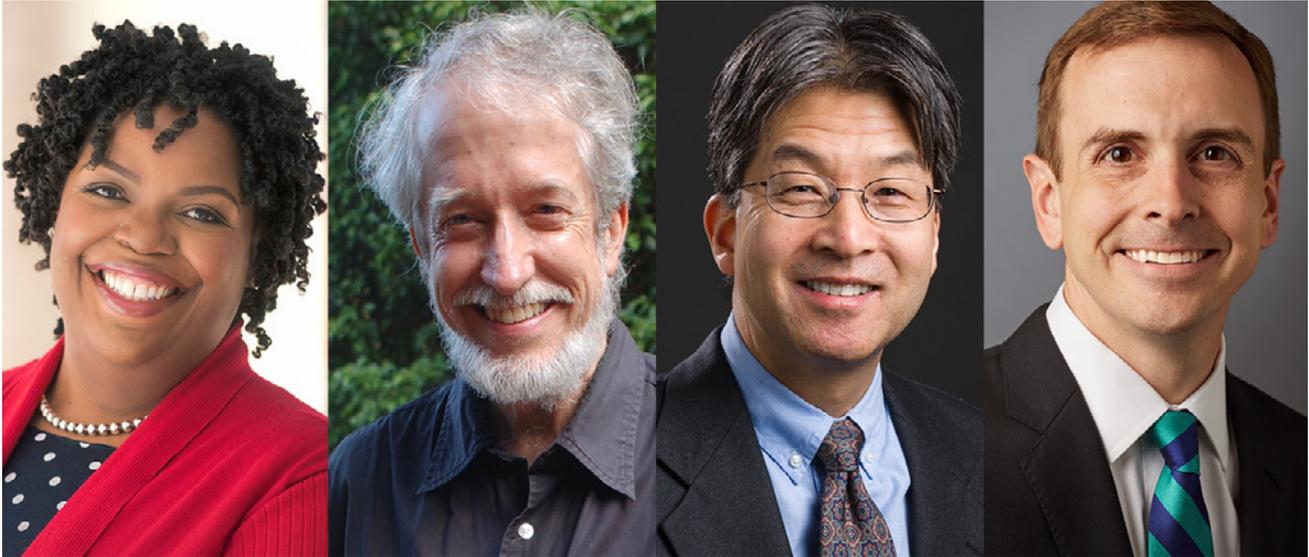
**ELIGIBLE CONNECTICUT RESIDENTS VACCINATED BY SUMMER 2021 COMPARED WITH THE NATIONAL RATE OF 50%**

Safe and effective vaccines are different. That is a win-win situation for everybody and on all fronts.”

Yet for many, the COVID-19 vaccine was not viewed as a win-win. It was becoming clear, when the advisory group convened, that political challenges might interfere with public acceptance of the vaccine. “Because you have sound evidence or good expertise doesn’t necessarily mean you are going to make good policy,” Ko said.

Connecticut was among many states that understood the necessity of forming their own groups to guide vaccine policy, in the absence of a unified strategy from the federal government. Additionally, because the COVID-19 vaccine was being administered to the public with only an emergency use authorization, rather than full approval of the FDA, the group provided an extra layer of guidance and protection.

Vaccinologist Saad Omer, Ph.D., M.P.H., director of the Yale Institute for Global Health and Susan Dwight Bliss Professor of Epidemiology, also participates in national and international committees that were convened to guide policy, including the National Academies of Sciences, Engineering and Medicine committee aimed at driving an equitable distribution of COVID-19 vaccines, and the World Health



Yale School of Public Health faculty served on Connecticut’s Vaccine Advisory Group to help guide the rollout of the COVID-19 vaccines. They are (from left): Tekisha Dwan Everette, James Hadler, Albert Ko and Jason Schwartz.

Organization’s Strategic Advisory Group of Experts on Immunization’s COVID-focused working group.

“Democracies at their best, at any level – state, federal or local – empower those who contribute to a robust marketplace of ideas. It is not the technocrat closest to the dictator who is influencing policy,” Omer said. “Those who contribute these ideas have the responsibility to present the best possible evidence, without partisan politics, to the policymakers.”

The state advisory group was split into three subcommittees: one focused on communication to the public, one on allocation of the vaccines once they were received, and a scientific subcommittee to examine the therapeutic efficacy of the vaccines.

“Our group was created at a time when there were concerns, frankly, about the integrity of federal decision-making process,” said Jason L. Schwartz, Ph.D., associate professor in the Department of Health Policy and Management and the chair of the advisory group’s subcommittee on science.

He said the group examined the data provided by the vaccine manufacturers so the vaccines could be distributed to the public as quickly – and safely – as possible, while also withstanding political pressure to rush a vaccine to market ahead of the November presidential election without adequate safeguards.

“This was made easier by being able to see the FDA’s detailed analysis of the data on safety and efficacy and by the timing of the request for emergency use authorization: after the presidential election when the political pressure to approve vaccine would be less of a factor,” said James Hadler, M.D., M.P.H. ’82, a senior epidemiologist with the

Emerging Infections Program at the Yale School of Public Health and a clinical professor at the Yale School of Medicine. From 1984 to 2008, he was Connecticut’s state epidemiologist.

The state also needed to ensure that any vaccine would be distributed as equitably among state residents as possible, and that it reached all communities, particularly marginalized and vulnerable groups. A member of the allocation subcommittee, Tekisha Dwan Everette, Ph.D., an adjunct assistant professor at the time of her appointment (and now a student in the Advanced Professional M.P.H. Program), emphasized measuring the disproportionate impact of COVID-19 on Black and brown communities to ensure vaccine access for the most marginalized groups. Everette said she recognizes that the data will likely show what is already known: that the inequities observed among racial minorities before the pandemic will be the same observed throughout the pandemic if left unaddressed.

The advisory group’s effort peaked over the winter, when vaccines were becoming available for broadening use, and the group was unanimous in its recommendation for each of the three available vaccines, Moderna, Pfizer, and Johnson and Johnson, to be administered to Connecticut residents. In the spring, as the vaccine began to reach wide swaths of Connecticut residents, the advisory group’s work came to an end. As of the summer of 2021, Connecticut had one of the highest rates of vaccination of any U.S. state, with more than 63% of eligible residents vaccinated, compared with the national rate of 50%.

“Overall, I think Connecticut has fared very well in its vaccine effort,” Hadler said. “We’d like to have even higher vaccination levels than we have, and we’re continuing our efforts to vaccinate as many as possible.” 

## SUCCESSSES, SHORTFALLS AND SCIENCE



Julie Gerberding

Julie Gerberding discusses the COVID-19 vaccines, the potential of mRNA platforms and the vexing challenge posed by vaccine resisters.

Julie L. Gerberding, M.D., M.P.H., is widely recognized as an infectious disease expert and was the first woman to serve as the director of the Centers for Disease Control and Prevention. She is currently executive vice president and chief patient officer at Merck & Co. Inc., where she oversees patient engagement, corporate social responsibility and other responsibilities. Dr. Gerberding took time out of her busy schedule to answer questions from *Yale Public Health* about COVID-19 vaccines, vaccine policy and the anti-vax movement.

### How do we better share the benefits of vaccine development with the rest of the world?

**JG:** It's natural for countries to protect their own citizens, but enlightened governments will realize that they also have a humanitarian obligation to help nations with less capacity and capability. One strategy is for each country to commit to supplying a proportion of its countermeasures to a global pool like COVAX [the international cooperative program established to ensure that low- and middle-income countries have fair access to COVID-19 vaccines]. Supply alone is not enough, though. Distribution and uptake are lagging way behind the need. Many countries do not have vaccine distribution systems and immunization programs for adolescents and adults. The program resources they do have are often diverted from existing pediatric immunization activities, resulting in delays, discontinuation, or poor uptake

of other vaccines. Also, without trust, vaccine doses will not end up in the arms of those who need them most.

### What impressed you most about the expeditious development of COVID-19 vaccines?

**JG:** Never in the history of the biopharmaceutical industry have so many innovative products entered clinical development this fast. There are more than 800 vaccines, antivirals, medicines and immunologics in clinical development. This reflects not only the advanced state of our biosciences but also the commitment of thousands of investigators. But we didn't start from scratch in 2020. These scientists are building on years – if not decades – of work, particularly the coronavirus research that commenced in the aftermath of the SARS outbreak in 2003 and the ongoing MERS outbreak.

### Merck has been manufacturing COVID-19 vaccines that were developed by other companies. Why did Merck do this?

**JG:** Companies across the entire biopharmaceutical spectrum have stepped forward to collaborate in unprecedented ways. Planning clinical trial designs and endpoints in conjunction with regulatory agencies, sharing scarce supplies and supporting broad manufacturing agreements exemplify some of the ways that we have pulled together to expedite development and access.

Merck took these steps because we have the capacity, expertise and commitment to contribute whatever we can to speed mitigation and recovery from this pandemic. This is one more example of our core purpose and long tradition of contributing to the solution of global health threats.

### Looking back, what do you think was the greatest shortcoming associated with vaccine development and/or distribution?

**JG:** We probably spent too much time focusing on the absolute number of doses we can produce and much less time



thinking about all the other end-to-end requirements which are critical for deploying them in a trusted and equitable manner. Communication with public stakeholders has been particularly problematic, especially in countries where the messages have been distorted by politics and self-serving agendas.

#### **How can we keep children safe and in school while accelerating the pediatric vaccine development and approval process?**

**JG:** Keeping children safe in this pandemic remains a conundrum. We are fortunate that children are less likely to sustain the severe consequences of the virus variants that are circulating so far, but they are certainly not immune to infection and can serve as sources of transmission to other, more vulnerable, people. I hope that children can return to school even if that means that masking is necessary, since we are paying a dear price for the disruption to their education and social development during these important years.

#### **Are mRNA vaccines a quantum leap in vaccine R&D? What additional potential do they hold to create effective vaccines against other pathogens?**

**JG:** We are extremely fortunate that the mRNA vaccine platforms have proven to be so useful for eliciting immunity to the SARS-CoV-2 spike protein. The spike protein is apparently a powerful antigen, and we are taking advantage of that across the portfolio of nearly all the relevant SARS-CoV-2 vaccines. It is premature to predict whether or not an mRNA approach will be useful for other viral infections, but it's highly likely that the lessons learned from successful vaccines in this pandemic will inform future development.

#### **What can be done to lower the high cost of mRNA vaccines?**

**JG:** The cost of making vaccines improves with increases in the yield and speed of manufacturing. The more doses that

are made, the lower the fixed costs per dose. Supply chain and distribution efficiency are also critical factors. Single-dose vaccines, vaccines formulated to allow prolonged storage, and those packaged in the smallest possible footprint will help lower costs as well. Skin patches or oral vaccines could also help.

#### **What can we do to counter the anti-vaccine movement?**

**JG:** There are many factors behind vaccine hesitancy. Cultural, religious and medical reasons can prevent individuals from getting vaccinated – including long-standing mistrust of science and the government. That's especially an issue in some African American communities.

But more important factors are misinformation – false information that is disseminated without intent to deceive – and even worse, disinformation – deliberately false information intended to deceive, confuse or influence. Political motivations are certainly conspicuous accelerants of their spread on social media. The tragic consequence is that the pandemic continues to propagate and the socioeconomic impact mounts.

#### **Public health schools have been deeply involved in the pandemic. How do you see such contributions expanding and evolving?**

**JG:** Schools have an opportunity to conduct the research and teaching necessary to move us to an advanced framework that reflects our new reality. Our strategic doctrine needs to move from containment to a doctrine that puts much more emphasis on prediction and preemption. Interdisciplinary programs with concentrations in, for example, geospatial monitoring, data sciences, risk communications and behavioral economics are all relevant areas for inclusion. [YPH](#)

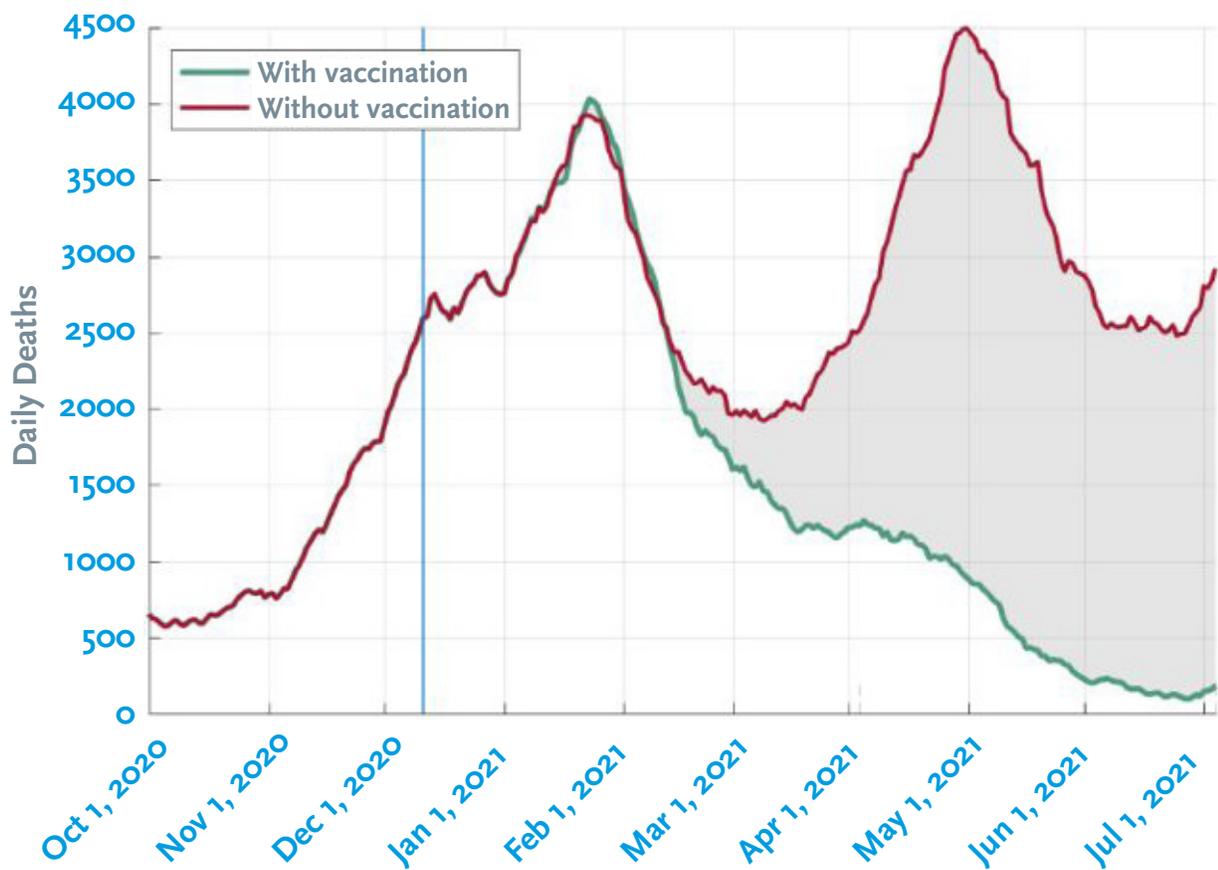
# VACCINES SAVE

The coordinated and rapid COVID-19 vaccination campaign launched in the United States in late 2020 saved some 279,000 lives through July 2021 and prevented 1.25 million hospitalizations.

The gains, however, could be swiftly reversed by the highly transmissible delta variant, which has the potential to unleash a surge of new cases among the millions of people in the United States who remain unvaccinated.

Alison Galvani, the Burnett and Stender Families Professor of Epidemiology and the director of the Center for Infectious Disease Modeling and Analysis at YSPH, led the study to gauge how effective the vaccines have been in saving lives. The graph on the left shows the death toll with no vaccines. The graph on the right forecasts the death toll with a vaccination rate of 50%.

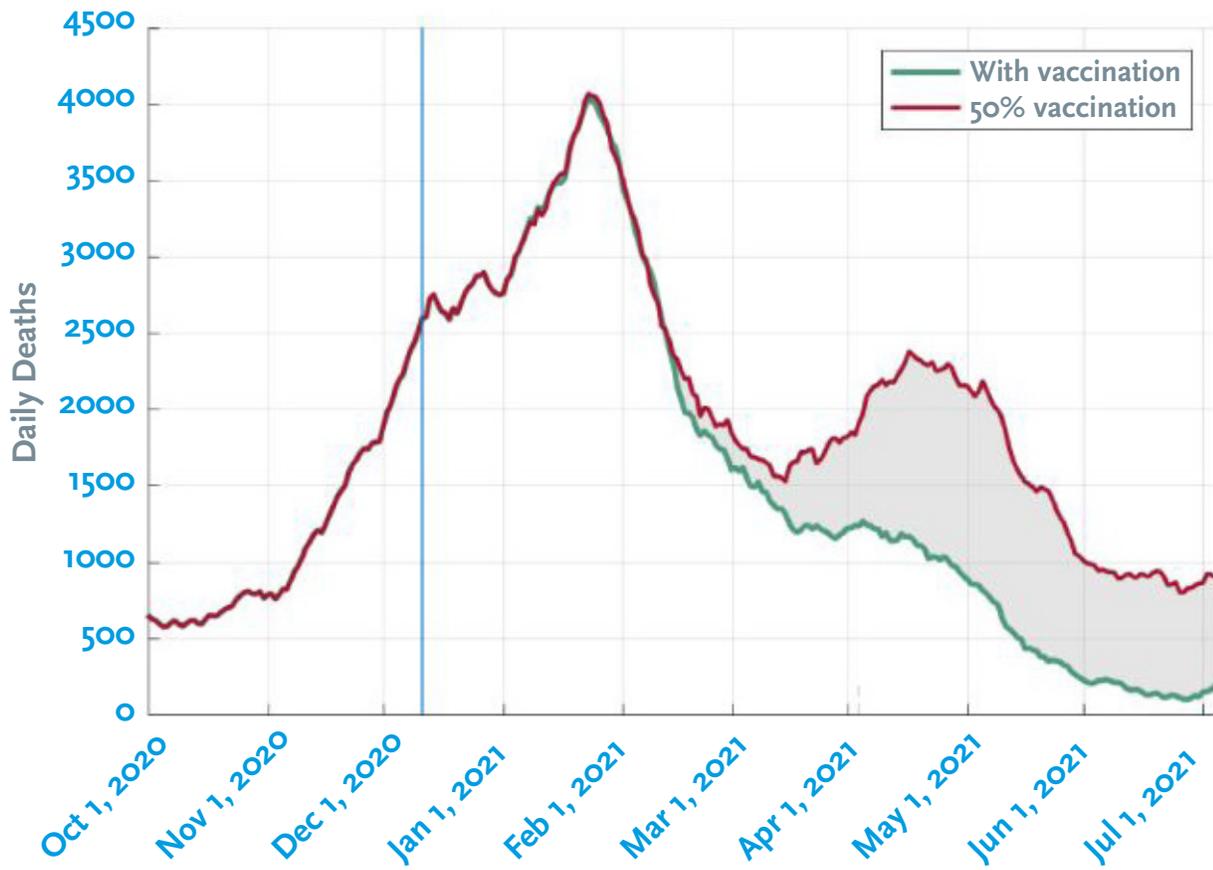
The study was published by The Commonwealth Fund.





“THE VACCINES HAVE BEEN STRIKINGLY SUCCESSFUL.”

~Alison Galvani



# LIVES

# VACCINE ADVOCACY

YSPH experts testify in favor of a new state law that expands vaccine requirements in Connecticut's schools.

BY JEANNA LUCCI CANAPARI

After a long and contentious public debate, the Connecticut Legislature enacted a law in April that eliminated religious exemptions to required school-entry vaccines.

The overwhelming scientific evidence behind the removal of the exemption, and the significant benefit to public health, prompted Yale School of Public Health experts to step up to the microphone, and out of their comfort zones, to speak up in support of the legislation.

The legislation, Public Act 21-6, addresses the serious concerns of public health experts and others in the community that an increase in unvaccinated children in schools puts children who cannot be vaccinated for medical reasons, or who are immunocompromised, at greater risk of measles and other infectious diseases. In enacting the legislation, Connecticut became one of just six states that allow exemptions to vaccines only for medical reasons, and not due to religion or personal belief. As a researcher whose work focuses on vaccines, Professor Linda Niccolai, Ph.D., testified before the state Public Health Committee in February 2020.

“People do have the freedom to practice their own religion in this country, however with vaccines, it is more complicated,” Niccolai said in an interview. “Your right to practice your religion does not include the right to harm other people. But it is such a personal issue, and people feel very strongly about it on both sides.”

The legislation garnered bipartisan support. “With an increasing number of children not being vaccinated, the threat of diseases that have been nearly eradicated is surfacing once again,” said state Sen. Christine Cohen, a Democrat from Guilford who supported the legislation. “It is our job to protect the youth of Connecticut and ensure that only those instances where it is medically necessary not to be immunized are honored. It really came down to science and safeguarding the health of our communities.”

According to the Connecticut Department of Public Health's School Immunization Survey, religious exemptions have been on the rise for several years. In 1999, only 0.2% of schoolchildren claimed religious exemptions to vaccines, with the share rising to 2.1% in the most recent school year. These figures do not include the COVID-19 vaccine and reflect only school-required vaccines, including those for diphtheria, measles, tetanus and other infectious diseases.



Saad Omer, Susan Dwight Bliss Professor of Epidemiology of Microbial Diseases at the Yale School of Public Health and director of the Yale Institute for Global Health, testifies before a legislative subcommittee on a bill to eliminate religious exemptions for vaccinations in Connecticut schools.

“Our elected officials are not epidemiologists, and I felt a real obligation to shed some light on the science for them so they could do what in my opinion was the right thing. Which they did,” said Niccolai, a professor in the Department of Epidemiology of Microbial Diseases.

Saad Omer, M.B.B.S., M.P.H., Ph.D., Susan Dwight Bliss Professor of Epidemiology of Microbial Diseases and director of the Yale Institute for Global Health, was one of the first researchers to testify in favor of the legislation.



“One direct way of improving people’s lives is through evidence-informed legislation,” he said. “It is our responsibility to do the best research possible and synthesize it in a way that is policy relevant, then share it persistently and proactively with policymakers.”

Still, getting the legislation passed was difficult. According to The Associated Press, nearly 2,000 protesters descended on the Capitol building in Hartford during the public hearings for the legislation. “It was packed,” Niccolai recalled. “There were lines around the building to get in. Most of those people did not support this legislation. I saw only one person carrying a sign that was pro-vaccine.”



Professor Linda Niccolai

In her testimony, Niccolai emphasized the scientific evidence that supports immunization, and its safety (disclosure: Niccolai is a scientific adviser for vaccine manufacturers Merck and Moderna). Her assertions met with an audible negative reaction from the crowd. “When I said the vaccines were safe, there was an outburst, like laughing, or chortling,” she said. Putting herself in such a hostile, public environment made Niccolai uncomfortable, she said, and well out of her comfort zone. “People confronted me and asked me hard questions. In the bathroom, outside the building, wherever I was. People were very critical of my work, and my testimony and my reasons for being there.”

Scenes from Connecticut’s state Capitol in Hartford as legislators consider a bill requiring all students to be vaccinated. The proposal drew passionate crowds, both in favor of and opposed to the measure.

Nevertheless, she knew she had an important reason for being there. “I have this internal driving force that I have science on my side,” she said. “That gives me reassurance. And this is for the common good. This is what we do in public health.”

Many of the people who opposed elimination of the religious exemption were at the Capitol to protest the requirement of vaccines beyond the scope of religion and rejected what they saw as an infringement on their individual rights. “The thing they repeatedly say is, ‘My child, my choice,’” said Niccolai. “But I am not swayed by that argument. We do things every day with our children so that they can be healthy, contributing members of society.” She cited laws mandating seat belts and bike helmets as examples. “There are children out there who can’t medically get vaccines, and they have as much of a right to go to school as anyone else.”

Many of the protesters also rejected the general safety of vaccines.

“To be clear, no vaccine is without side effects,” Niccolai responded. “But people have to do a risk/benefit calculation. Parents in their head say, ‘Getting the vaccine is riskier than not getting the vaccine.’ And that is true. But the proper risk/benefit calculation is the risk of the vaccine versus the risk of the infection. The risk from a vaccine is very, very small, in contrast to the risk of infectious diseases.”

While Niccolai might feel relieved to get back to her research, and away from the podium, she realizes that the discoveries she makes do not end with her. “Doing the science is one thing, but for it to make a difference, we need to communicate – to lay people, legislators, the press,” she said. “Otherwise it’s all for naught.” [YPH](#)

# NOTABLE VACCINE ADVOCATE AND EXPERT PAYS VIRTUAL VISIT TO YSPH

Peter Hotez offers advice, opinions and prescriptions amid a pandemic.

The vaccines currently available for COVID-19 offer a clear path out of the ongoing pandemic, but there is a very real obstacle: the anti-science movement.

During a virtual lecture at the Yale School of Public Health in March, Peter Hotez, B.A. '80, M.D., Ph.D., a leading virologist and dean of the National School of Tropical Medicine at Baylor College of Medicine in Texas, outlined the stakes for public health as governments and health organizations attempt to administer vaccines for COVID-19 amid strong pushback from segments of the populations that are deeply skeptical.

Time, meanwhile, is of the essence, as variants appear and spread rapidly from country to country, continent to continent.

"I think we have our hands full," Hotez, formerly a faculty member at the Yale School of Medicine, observed at the Frank Black Memorial Lecture, an annual event that honors Frank Black, a Yale School of Public Health faculty member from 1955 until his retirement in 1996. Black, Ph.D., was only the third scientist to use the measles vaccine in humans and pioneered the *in vitro* cultivation of the virus and tested the efficacy of measles vaccines in susceptible populations in both the United States and abroad.

Here is a selection of Hotez's observations, opinions and prescriptions.

Indeed, Hotez cited the anti-science movement as one of the biggest drivers of this pandemic and others, along with factors such as war, climate change and rapid urbanization.

The anti-vaccine movement is deeply suspicious and rooted in skepticism and even outright denial of scientific evidence.

The movement is big and seems to be getting bigger. In fact, the anti-vax movement has become a globalized, anti-science empire.

"It's the poor living among the wealthy who are most affected," Hotez said.

Vaccines may not filter to low- and middle-income countries in a timely fashion.

It is imperative to vaccinate Africa as soon as possible. Scale of what needs to be done: 1.1 billion people in sub-Saharan Africa needed to be vaccinated as of early March.

“My concern is that we are running out of options for global health.”

21st century drivers of pandemics include poverty, war, political instability, urbanization, deforestation, climate change and anti-science.

Vaccines may not work as well against some of the variants emerging in early 2021. “A number of us are wringing our hands on the best way to deal with this.”



Most vaccine-hesitant groups are heavily composed of white Republicans and supporters of former President Donald Trump. There is no evidence that vaccines cause autism, but there is a lot of anger among anti-vaccine advocates.

Hotez is no stranger to autism. He wrote a book about his daughter, Rachel, who is on the autism spectrum, and argues that vaccines had nothing to do with her condition.

“These vaccines ultimately save your life.”

Hotez has been called the “original gangster villain” for his vaccine advocacy by some in the anti-vax movement. The internet and social media have helped accelerate the anti-vax movement, which has expanded into mask wearing and social distancing.

Hotez himself received the Pfizer vaccine, but advises: “Don’t overthink this. They all work the same way.”

# YALE'S VACCINE PIONEER



# A tribute to an early trailblazer – scientifically and socially – in the field of vaccinology.

BY NANCY H. RUDDLE

Dorothy Millicent Horstmann, M.D., is justly honored as a major figure in public health – internationally, nationally and locally.

She made major contributions to the development and implementation of several vaccines during her remarkable career. Perhaps her most notable accomplishments involved the polio virus, but her studies of rubella in New Haven schoolchildren were critical to authorization of that vaccine. She did all of this as the first woman to be awarded tenure and a professorship at Yale School of Medicine in the Departments of Pediatrics and Epidemiology (the precursor to the Yale School of Public Health) and was the first woman at Yale University to receive an endowed chair. Horstmann was the recipient of many additional honors including election to the National Academy of Sciences and presidency of the Infectious Diseases Society of America.

In the laboratory, as she evaluated the mechanism of polio virus pathogenesis, she made the surprising discovery that the virus could be present in the bloodstream by evaluating the blood of 111 suspected polio cases at Yale New Haven Hospital. She found the virus in the blood of only one individual, but it was very early in the disease. She extended this finding to monkeys and confirmed that the virus was in the blood at early stages and was excreted from the gastrointestinal tract in later stages. The realization that the virus was present in the blood was of profound importance: First, it showed that the virus could infect the brain through the bloodstream, not by traveling along nerves as had been assumed up to that time. Second, it demonstrated that a vaccine that generated antibodies in the blood could effectively combat the virus.

Horstmann was also instrumental in evaluating the oral, live, attenuated Sabin polio vaccine and the inactivated Salk vaccine in several Connecticut towns, a village in Arizona and in Costa Rica. She also evaluated the oral vaccine in Czechoslovakia, Poland, and, most significantly, Russia. She carried out the Russia study for the World Health Organization, which led to the vaccine's eventual distribution in the United States. These studies were the culmination of an intense scientific debate between proponents of the oral attenuated Sabin vaccine (including Horstmann) and those who favored the inactivated injectable Salk vaccine. In fact, both vaccines are used depending on various circumstances and together they have led to the near eradication of polio.

Horstmann's accomplishments did not end there. She made major contributions to the clinical epidemiology of the rubella, coxsackie and echo viruses. Her rubella studies, for example, demonstrated that vaccine immunization was superior to natural infection in generating long-term protection and led to the licensing of rubella vaccine in children in the United States in 1969.

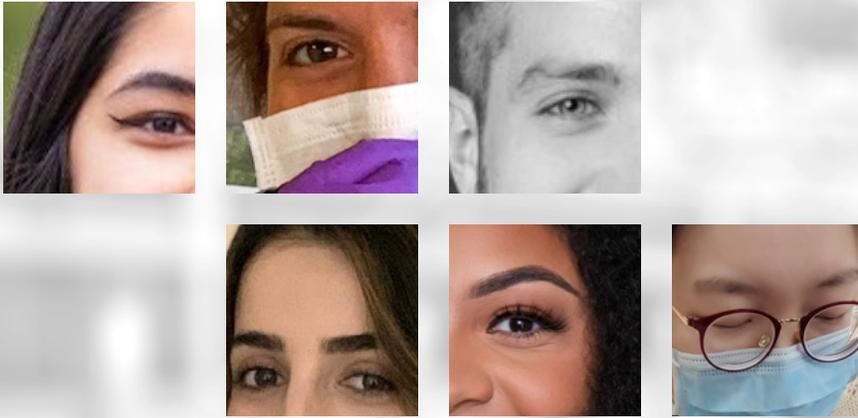
Dorothy Horstmann was born in 1911 in Spokane, Washington. She graduated from the University of California at Berkeley in 1936 and the University of California at San Francisco Medical School in 1940. This was during the depths of the Depression, and she supported her tuition by giving piano lessons. She arrived at Yale in 1942 and joined the group of John Rodman Paul, who led the Yale Poliomyelitis Unit. With the exception of a few years as a visiting researcher at other institutions, she spent her entire career at Yale.

She could often be found in her office at 60 College St., hard at work, even after "retirement." She was a role model and inspiration to junior colleagues as a scientist and as a woman who had made sacrifices and overcome many obstacles during a time that was not friendly to professional women. It took Yale 20 years to grant her tenure, even though she had long established herself as a world-famous scientist.

Horstmann was fiercely committed to attaining the highest standards and pushed junior faculty as well to succeed. The Friday Journal clubs are legendary for providing an exciting forum to swap ideas and debate issues in infectious disease epidemiology. She was also a citizen of the world, enjoying cultural pursuits, particularly the opera and the music of Mozart and travel to visit colleagues in far-off places. Her pioneering achievements as a scientist, woman and vaccine developer have been and continue to be an inspiration to those who are carrying out outstanding work, especially during COVID-19, at YSPH.

Dorothy Horstmann died in New Haven in 2001. Her legacy is profound and enduring. She motivated generations of scientists, including many young women who shared her love of knowledge and discovery and fierce determination to succeed. I was one of them. 

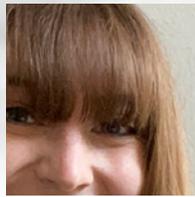
*Nancy H. Ruddle, Ph.D., is the John Rodman Paul Professor Emerita at the Yale School of Public Health.*



# VACCINE MOMENTS

Yale School of Public Health students share their personal stories about the moment they received the COVID-19 vaccine. It was an emotional and memorable experience for all and an opportunity to do their part in the ongoing battle against the pandemic.

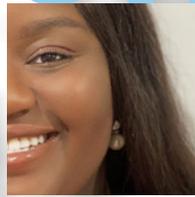
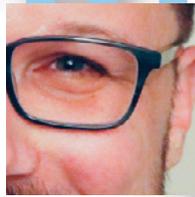
# LOVED ONES



# HUGS



# OPPORTUNITY



# CHERISH

# EMOTIONAL



## LEAH

My greatest vaccine moment was driving my 95-year old grandparents to the Lanman Center for their COVID-19 vaccine doses and knowing that it would soon be safe for me to hug them again. Being aware of the dangers the virus posed for the elderly, having the opportunity to help them secure vaccine appointments and being with them as they received their shots was an experience that I will cherish forever.

*Leah Puklin, Ph.D. student in Chronic Disease Epidemiology*



## JON ANDRE

I received my vaccine dose at Cedars-Sinai in May. I waited my turn because I knew it was important for vulnerable communities to have access to this lifesaving vaccine. When the first dose was in my arm, I reminisced about the year I spent alone and looked ahead at the possible future I would have with my loved ones. When the second dose was in my arm, I was cautiously relieved. This vaccine saves lives.

*Jon Andre Sabio Parrilla, M.P.H. student in Social and Behavioral Sciences*



## SIMILEOLUWA

My vaccine moment was at Walmart; I was so excited to finally have the opportunity to get the shot. The pharmacy staff was extremely kind and explained every step of the process, from the paperwork to the short-term side effects of each dose. I decided to get the vaccine because I wanted to protect myself as much as possible as well as protect those who are vulnerable and at risk like my dad.

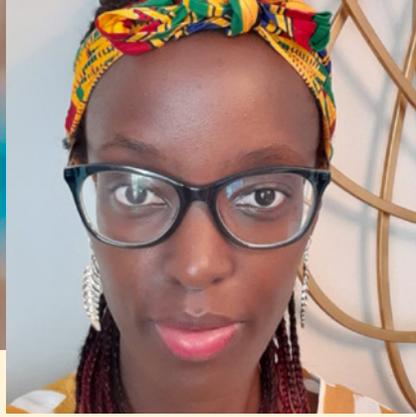
*Simileoluwa Falako, M.P.H. student in Social and Behavioral Sciences*



## PENGFEEI

I got two doses of the Pfizer vaccine in the Yale Health Vaccine Clinic by February this year. The whole process is well organized by the amazing medical team. Every step, from entering and signing up, to vaccinating and waiting for observation, was guided by friendly team members. Really appreciate their hard work! When I requested to take a photo to memorialize the wonderful moment, they even thanked me for being vaccinated. It was such a heartwarming experience.

*Pengfei Guo, Ph.D. student in Environmental Health Sciences*



## BARBARA

“Ouch!! That hurt,” I thought to myself as the needle discovered its path through my arm. I didn’t expect it to hurt. I had been watching the lovely grandmother before me smile through her shot while narrating how she missed her cat. I hid my true expression of pain and smiled. After all, I was fortunate; the queue behind me was full of people not sure there would be enough vaccine for them today.

*Barbara Odac, M.D., M.P.H. student in the Advanced Professional Program*



## DHARMI

As a doctor, I have always felt that prevention is more important than cure. This conviction was strengthened when the pandemic completely disheveled our way of living with no end in sight unless a vaccine was made. Hence the sense of relief my family and I felt when I administered the first dose of the vaccine to my *dadi* (paternal grandmother, 80 years old) was so overwhelming that the moment has been etched in my memory forever.

*Dharmi Desai, M.B.B.S., M.P.H. student in Health Policy*

# PRIVILEGE



## EHSAN

Going back home every day from my work at the hospital, my mind was filled with terrifying thoughts of what if I'm carrying the infection back home to my family. So I was waiting for the vaccine to reach Egypt and when it did I applied on the governmental website, received my first shot three days later and I was thinking that I really miss my parents' hugs, and maybe I can hug them soon.

*Ehsan Abualanain, M.P.H. student in the Advanced Professional Program*



## SYDNEY

After months of being a traveling EMT responding to the COVID-19 pandemic, I started work at the Florida Department of Health, where I've been the lead of COVID-19 Vaccine Logistics in my county for the past six months. My first dose was especially emotional: Not only did it represent hope that I'd soon be able to hug my grandparents, but I was vaccinated at one of our locations—a setting that I have put countless hours of work into helping create.

*Sydney Steel, M.P.H. student in Social and Behavioral Sciences*



## NOELLE

I received the Pfizer-BioNTech vaccine this past May at a Walgreens in Washington, D.C. As I sat down to receive my first dose, I spoke with the nurse and what followed was a sobering conversation about their medical career and my aspiring one in public health. Such a brief moment bred a connection that—while seemingly small and insignificant—really touched me in a way I had not expected.

*Noelle Serino, M.P.H. student in Social and Behavioral Sciences*

# CONNECTION

# HOPE



## NATALIE

I received the Pfizer/BioNTech vaccine at Walgreens so I would be less likely to be infected with the virus or serve as a vector of spread to both my immediate family members and community. The authorized vaccines are the key tool that will help bring an end to this devastating pandemic and have offered hope to the millions of Americans receiving vaccines each day and to those who will have the opportunity to roll up their sleeves and get vaccinated in the weeks ahead.

*Natalie Makableh, M.P.H. student in Epidemiology of Microbial Diseases*



## MICHAELA

I vividly remember arriving at the drive-thru clinic in my hometown in December. My first appointment for the Pfizer vaccine felt like I was making history, as I was given the opportunity to be among the first in my county to receive it. After having an aunt become severely ill from COVID-19, and having an uncle pass away from it, I was determined to do my part in stopping COVID-19's spread.

*MiChaela Barker, M.P.H. student in Health Care Management*



## KRISTOPHER

As a mental health practitioner, I received my vaccine early on. While I was grateful, I was more concerned about my father accessing the vaccine. Due to his age, he fell within a high-risk category so I limited regular contact with him during the pandemic. After receiving my vaccine, I felt relief. I felt relief because this allowed me to spend more time with my father without fear of unknowingly giving him COVID-19.

*Kristopher McLucas, L.C.S.W., M.P.H. student in the Advanced Professional Program*

# RELIEF



## OLIVIA

I received my first dose at the Nepean Sportsplex in Ottawa, Ontario. It was surreal to be where I had previously competed in countless swim meets as a teenager, now lined up to receive my shot alongside the most people I had seen in one place in over a year. As I left, I felt a huge weight lift from my shoulders. Thank you to the public health staff who have been working tirelessly!

*Olivia Canie, M.P.H. student in Health Policy and Management*



## MATTHEW

Waiting for my shot in the old shoe department of a closed retail (my area's vaccination center) was surreal. I would shop there with my parents as a child, memories that felt more distant than just the time passed. After my shot, I was awash in relief, which was quickly overcome by pride in our public health system. Finally hugging my parents and holding my 18-month-old nephew were my real "vaccine moments."

*Matthew McGarrity, student in the Executive MPH Program*



## YASHNA

I got my vaccine at my university hospital—I had the opportunity to receive it in February due to my internship. I'm so thankful I was able to get my vaccine early because it meant I could go home and visit my parents with far less stress than I had anticipated. My vaccine series was thankfully relatively painless. I experienced soreness only after the first dose, and a little sleepiness after my second.

*Yashna Nainani, M.P.H. student in Social and Behavioral Sciences*



## MICHAEL

Managing the vaccine clinic at the Shriners for Children Medical Center in Los Angeles was such an overwhelming experience. Seeing all staff come together to receive some of the first doses of the vaccine after such a difficult year was an emotional yet promising moment as we edged closer toward the end of the pandemic and were able to continue providing safer care to our patients. A fun fact is that I received my YSPH scholarship offer on the same day as my second dose!

*Michael Bayeh, M.P.H. student in the Advanced Professional Program*



## INGEBORG

I had always thought to myself that if someone offered me a COVID-19 vaccine right there and then, I would take it, and that is exactly what happened. I was conducting research in my local vaccination clinic when the director informed me they had angel shots that day. I accepted my dose with zero hesitation and with the utmost gratitude – being vaccinated is such a privilege!

*Ingeborg Hyde, M.P.H. student in Health Care Management*



## THOMAS

The day I received my first dose of the vaccine was the moment Connecticut became the first state to vaccinate all residents and staff in nursing homes. Soon after I was vaccinated, Gov. Ned Lamont was standing at the entrance to where I work, aptly named LiveWell. Staff were asked to finish the statement, “I got COVID-19 vaccinated because...” I wrote: “I care.” A simple answer that encompassed my feelings about family, others, my community and the world.

*Thomas Hayden, student in the online Executive MPH Program*

# HEARTWARMING

SCHOOL OF  
PUBLIC HEALTH*for* Humanity  
THE YALE CAMPAIGN

# YALE'S CAMPAIGN FOR HUMANITY SUPPORTS YSPH'S WORK FOR BETTER HEALTH

BY ALISON ROONEY AND KATHERINE INGRAM

This October, Yale University launched a capital campaign with the theme “For Humanity,” reflecting Yale’s dedication to the global importance and impact of the research and teaching that is taking place across campus. The Yale School of Public Health is positioned to be a leading partner in this campaign. “For Humanity” aligns with the school’s expertise in saving lives and improving health outcomes around the world.

The school has been and remains committed to growing its endowment by raising funds in support of scholarships, fellowships, professorships and research funds. This support is essential to the essence of our school and ensures that we can bring the best and brightest to campus to join our diverse community of excellence. The “For Humanity” campaign will support these ongoing priorities, advancing every aspect of the school’s work.

“THE ‘FOR HUMANITY’ CAMPAIGN IS AN UNPRECEDENTED OPPORTUNITY FOR YSPH TO GARNER THE SUPPORT THAT WILL ENHANCE ITS CONTRIBUTIONS AROUND THE GLOBE.”

Launching a capital campaign requires the university to establish a clear mission and vision that create a unifying path for success. The “For Humanity” campaign has defined four university priorities that are uniquely aligned with much of what we do well at YSPH: Science for Breakthroughs, Collaboration for Impact, Leaders for a Better World, and Arts and Humanities for Insight and Inspiration.



## SCIENCE FOR BREAKTHROUGHS



Research Scientist Anne Wyllie at work in the lab.

*We are accelerating Yale's leadership in science and engineering to spark discoveries that benefit millions. By fueling the discoveries of tomorrow, we can propel lifesaving advances and create a healthier and more sustainable future.*

YSPH is focused on the future. The school strives for improvements that can be implemented now to ensure improved health outcomes in communities at home and abroad. We are a leader in health informatics, biostatistics and epidemiology. The school's history is founded on the dedication to explore, analyze, model and offer solutions for the most complex health issues facing humanity.

Planetary solutions and data science are just two of the cornerstones of this work—YSPH experts and students gather and use data with the potential to reach and transform communities locally and globally. The Yale Center on Climate Change and Health is one of the only centers of its type in a school of public health. It seeks planetary solutions to support a world with a stable and safe climate in which human health and diverse ecosystems can thrive.



## COLLABORATION FOR IMPACT

*Today's greatest challenges call for innovative and cross-disciplinary solutions—the kind that arise from human connection. In an era of rapid change, we make progress through the sharing of ideas, the spark of inspiration and the understanding that arises when people welcome diverse perspectives. Yale combines a culture of collaboration with a commitment to people, ensuring that the insights of one field can rapidly drive breakthroughs in another.*



A virtual town hall with Dean Sten Vermund (center) and others.

Collaboration is the essence of public health practice and research and is one of the school's greatest strengths. YSPH faculty, students, research and programs are interwoven across most of Yale, with 18 YSPH-based centers or institutes and 28 university affiliations and partnerships. In addition, we offer more joint degree programs than any other professional school at the university, including a one-year M.P.H. degree for Yale undergraduates planning to pursue a public health career.

These collaborative partnerships call upon YSPH faculty and students to devise complex, interdisciplinary and intersectional solutions. One example is the Yale Institute for Global Health (YIGH), which fosters partnerships with experts from across campus and around the world to find solutions to problems that no individual faculty member, professional school or university could effectively tackle alone. The school plans to expand the reach and influence of YIGH's work. Another example is the Department of Social and Behavioral Sciences, which now offers dedicated courses on race and health justice in collaboration with the Law School.

# LEADERS FOR A BETTER WORLD



*For centuries, Yale graduates have written important chapters in the history of our nation and world. Today, we are proud to educate students who create, inspire and lead, contributing to every realm of human endeavor.*

YSPH graduates go on to lead and influence at all levels. This includes advising U.S. presidential administrations, lending essential perspectives to the World Health Organization, implementing preventive strategies for community health and fighting injustice with evidence-based policy. The comprehensive educational experiences of YSPH students prepare them to tackle today's most complex challenges, with profound and far-reaching implications. YSPH graduates will be on the front lines of the next pandemic, the climate crisis and many other public health events we all will face in the years ahead.



Misikir Wondaferahu Adnew addresses her fellow graduates at 2021 commencement.

# ARTS/HUMANITIES FOR INSIGHT & INSPIRATION



Kevin Zheng, M.P.H. '20, plays the violin.

*Yale creates and preserves knowledge that will benefit humanity. By nurturing creativity and seeking answers to new and timeless questions, we deepen understanding and illuminate the world and our place in it.*

With the help of the Schwarzman Center as well as the Yale schools of Drama, Music, Nursing, Medicine, Architecture and Management, YSPH launched an initiative in early 2019 – Humanities, Arts and Public Health Practice at Yale (HAPPY) – that combines humanities, the arts and public practice to improve health outcomes. This work matches cutting-edge research and partners with talented students, faculty and artists to encourage innovative approaches to community health through the arts.

# WHAT THE CAMPAIGN MEANS TO YSPH

In these challenging times, donor support of the Yale School of Public Health is more essential than ever. The school continues to search for funds that will help to grow its endowment—scholarships, professorships and research funds—and to free up school resources that support scholarships directly, enabling these resources to fund vital school priorities. The school has lofty goals for the future that can be accomplished only with robust support.

Founded in 1915 as one of the first two schools of public health in the country, YSPH continues its 100-plus years of fighting disease and improving health, and is dedicated to forging new ways to help society on a local, national and global scale. The school plans to expand its global impact by positioning YSPH as a national and world leader in preventing infectious disease; addressing social determinants of health and climate change and health (including the Yale Center on Climate Change and Health

at YSPH); leveraging data and molecular technologies to save lives through pandemic preparedness and health informatics (such as creating a Center for the Advancement of Pandemic Prevention); and expanding the influence of the Yale Institute for Global Health.

The “For Humanity” Campaign is an unprecedented opportunity for YSPH to garner the support that will enhance its contributions around the globe. The school’s founding principles are well fitted to the campaign’s four priorities.

This campaign invites the school’s alumni, friends and the community at large to join it on a journey to garner financial support to strengthen YSPH’s ability to improve human health for generations to come.

To learn more, visit [forhumanity.yale.edu/](http://forhumanity.yale.edu/) or contact Cornelia Evans, senior director of development and alumni affairs, [cornelia.evans@yale.edu](mailto:cornelia.evans@yale.edu).





ALL PHOTOS COURTESY OF DECHEN WANGMO

Dechen Wangmo (foreground, right) addresses a cadre of national volunteer health care workers preparing to assist with the pandemic in Bhutan.

# BHUTAN BLUNTS COVID-19

Alumna in top health position leads nation through pandemic.

BY MATTHEW KRISTOFFERSEN

Sandwiched among India, China and the Himalayan Mountains, Bhutan is a country where a virus like SARS-CoV-2 could not only take root but also blossom.

And yet, for all of the hundreds of thousands of people who live there, and after nearly a year and a half of the COVID-19 pandemic, the country's official count of those who have died from the disease is incredibly low: one.

It's a figure that shocks global health experts. But to Bhutan Health Minister Dechen Wangmo, M.P.H. '07, who has led the national COVID-19 response alongside King Jigme Khesar Namgyel Wangchuck, much of the country's success against the pandemic is the result of hard work, public solidarity and trust in the health system – along with years of close collaboration with members of the Yale School of Public Health.

“What we have achieved so far ... is a testament to the collective effort and solidarity of our public and the selfless and compassionate leadership of our King, who throughout this journey [has] touched [the] lives of every Bhutanese with love, kindness and support,” Wangmo said. “The interaction with [YSPH faculty] and fellow students along with having worked as international consultants in many countries all have greatly contributed to our systemic approach that was critical for planning and implementing our interventions to avert a major public health crisis.”

Wangmo's effort to improve the public health of Bhutan has earned international recognition. In May, she was elected president of the World Health Assembly, the decision-making body of the World Health Organization, as it entered its second year of pandemic response. Wangmo is the first YSPH graduate to occupy the prestigious role. “What I have learned at YSPH will continue to guide,” she wrote on Twitter after the announcement.

The relationship between Yale and Bhutan goes back more than a decade before the novel coronavirus appeared. As early as the mid-2000s, faculty and researchers were hard at work in Bhutan, bolstering the nation's health capacity and improving its research infrastructure.

With the help of the Bhutan Foundation and other organizations, Yale affiliates began making a difference, according to YSPH lecturer Mary Alice Lee, Ph.D. Before long, Bhutanese researchers could participate in

health research methods and writing workshops and could apply for funding for original research projects. The peer-reviewed *Bhutan Health Journal* began publication as well.

Wangmo has played a key part in this effort of collaboration between Yale School of Public Health and the only university of medical sciences in Bhutan—Khesar Gyalpo University of Medical Sciences of Bhutan. After graduating from YSPH in 2007 with a master's degree in public health with a focus on global health, Wangmo was an independent consultant for a variety of countries in Southeast Asia and the founder and executive director of the Bhutan Cancer Society. When the Druk Nyamrup Tshogpa, formerly the Social Democratic Party, began leading the Bhutanese government in 2018, she was selected as minister of health.



Dechen Wangmo (standing, center) participates in a community awareness program in the remote village in Lhuntse, in the eastern part of Bhutan.

“As I take on this sacred responsibility to serve my country, I am humbled and touched by the confidence and trust placed on me by the party and the people of my constituency,” she said at the time.

Wangmo traveled to medical facilities across the country and assessed health capabilities firsthand in an effort to improve health coverage in rural areas and to narrow the gap in health service delivery. She even developed the first-ever policy to accelerate maternal and child health services to provide income support and maternal and child health care across Bhutan.



Above: A meeting of the National Technical Advisory Group reviews the latest information. Dechen Wangmo is seated at the head of the table.

Top: Bhutan's COVID-19 workforce takes a break in its preparation for the pandemic.

“She understands the social dimensions of health and the role that good governance plays in ensuring equitable access to health care, from prevention to COVID-19 to end-of-life care,” said Lee. “Health Minister Dechen builds effective partnerships that improve health outcomes across Bhutan.”

YSPH Professor Kaveh Khoshnood, M.P.H. '89, Ph.D. '95, noted that part of Wangmo's efforts included creating a pandemic preparedness plan just weeks before the coronavirus emerged – a timely action that undoubtedly saved lives.

The surge of coronavirus cases in early 2020 nonetheless proved to be difficult to manage. Wangmo said that only a handful of experts in the country were able to work on a newly formed technical advisory group. Medical personnel and equipment were also scarce. She told *The Diplomat* magazine that Bhutan had only one intensive care doctor in the entire country. The models, she said, were daunting. “I said, my God, we really need to focus [on] prevention and non-pharmaceutical interventions,” Wangmo recalled.

That's where her training from YSPH came in.

“What I have contributed in the process of developing guidelines, formulating strategies, is a result of what I have learned during my education at Yale,” she said.

Khoshnood said Wangmo slept in a containment apartment for days at a time—leaving her young son at home—to deal with the early days of the pandemic.



The monarch dropped by, too, to give much-needed moral support. Their work paid off: Almost a year and a half later, the nation managed to sidestep major surges in COVID-19 cases and has administered the first dose of the vaccine to at least 94% of all eligible citizens, with the second dose rollout in the pipeline.

Last December, the King conferred on Wangmo the Royal Red Scarf—one of the country’s highest civilian honors — “in appreciation of the capable manner in which she performed her duties to safeguard the nation against COVID-19.”

“Her leadership skills, her really high level of engagement with the community, her [commitment] to believing in science and public health ... her humility, I think, are huge,” Khoshnood said. A major part of Bhutan’s success, he added, is the public’s overwhelming trust in government. Masks were not politicized, and neither were vaccines or social distancing. “Wangmo is well-respected. People really take her work seriously.”

Challenges remain in Bhutan. The delta variant’s spread is a cause for concern across the globe, and India’s ban on vaccine exports means that many of those who received

“WHAT I HAVE CONTRIBUTED IN THE PROCESS OF DEVELOPING GUIDELINES, FORMULATING STRATEGIES IS A RESULT OF WHAT I HAVE LEARNED DURING MY EDUCATION AT YALE.”

~Dechen Wangmo

the first dose of a vaccine may not get their second before the variant spreads. Wangmo has asked the international community for help, warning of a collapse of Bhutan’s health care system if the pandemic worsens.

Still, she said, the chance to serve her country during these times has been a blessing.

“For me personally, to be able to serve my country during this difficult time has truly been an honor and a lifetime opportunity that I will forever cherish,” she said. [YPH](#)

The Yale School of Public Health offers numerous services and ways to stay involved and informed to more than 6,500 alumni.



## ALUMNI SERVICES

**Lifelong email:** *YaleMail* is a service for alumni on the G Suite for Education platform, offering free, fully functional, Yale-branded Gmail accounts.

**YSPH career services:** The YSPH Office of Career Management is committed to providing continued assistance to alumni of YSPH—for free! This includes CareerBoard, a web-based tool that allows alumni to view an array of public health job postings.

**Yale Alumni Association:** Avail yourself of myriad alumni benefits and services, including:

- ▶ *Yale Career Network*—a database of all Yale alumni who are interested in networking with fellow alumni and current students. This network will allow you to search for and connect with fellow alumni to discuss career-based topics.
- ▶ *Yale Online Alumni Directory*—a searchable database of Yale alumni across the globe who have registered to be connected.
- ▶ *Access to JSTOR*—a digital archive with more than 1,000 academic journals, alumni rates for Payne Whitney Gym and borrowing privileges from Yale libraries. You can also access a list of Yale clubs.

**Distance learning:** Yale provides free online courses through Open Yale Courses, the university's free online education initiative. Over half a million visitors from 187 countries have immersed themselves in this extraordinary experience.

**Podcasts by Yale:** Yale's podcast collection has grown to over 2,500 podcasts and over 1,000 high-quality videos. All content is available free through the iTunes U platform.



## SOCIALIZE, SERVE & SUPPORT

Alumni are welcomed and encouraged to become an active part of the YSPH community. Below are some of the ways you can get started:

**Become a mentor:** The YSPH Mentor Program is a great way to give back by contributing to the professional development of the next generation of health care leaders. Recruitment for mentors happens by email each summer.

**Attend events and reunions:** The alumni office coordinates a series of activities and receptions for alumni including:

- ▶ American Council of Healthcare Executives reception (Chicago)
- ▶ Alumni Day (New Haven)
- ▶ Alumni Speaker Series (New Haven)
- ▶ American Public Health Association Reception and Annual Meeting
- ▶ New student welcome reception during orientation week (New Haven)
- ▶ Pop-up events—coming to a city near you

**Post a job or internship online:** Our students and your fellow alumni would make great colleagues! Contact the Office of Career Management for more information.

**Join the board:** The Association of Yale Alumni in Public Health (AYAPH) is governed by a board of directors. Graduates of the M.P.H., M.S. and doctoral programs are eligible to represent the social and professional interests of the alumni. With 30 members and 11 committees, the AYAPH board serves in an advisory capacity to the dean.

**Pay it forward and make a gift:** Give current and future students the help they need to become public health leaders of tomorrow. Support for scholarships is a concrete way to further the school's mission and to ensure that the best and brightest are able to attend Yale. To make a gift online, visit: [www.yale.edu/givesph](http://www.yale.edu/givesph).



## STAY INFORMED & CONNECTED

**Update your contact information:** The single most important thing you can do to remain involved and connected is to ensure that we have your most current contact information. You can update your information at any time on our website, <https://ysph.yale.edu/alumni/>.

**Join the YSPH alumni LinkedIn group:** The YSPH LinkedIn group is over 1,300 members strong and is open to all alumni and current students of YSPH. Reap the professional rewards of your YSPH degree and grow your Yale network!

**Connect with the Yale School of Public Health:** Social media (Facebook, Twitter, Instagram and YouTube) is where you'll find current YSPH news, lectures, tweets and alumni news.

**Read the digital edition of *Yale Public Health*:** Missed an edition? Prefer to read online? You can find all of our previous *Yale Public Health* editions on the school website for easy access email items for *Yale Public Health* promotions, awards, marriages and new additions — we love to brag about our alumni. We feature alumni in every issue of *Yale Public Health*. Send items and ideas to [ysph.alumni@yale.edu](mailto:ysph.alumni@yale.edu).

**Check out the @YSPH alumni e-newsletter:** Published three times a year, the e-newsletter keeps you up to date on your alumni association and provides news and information of interest.

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# Yale SCHOOL OF PUBLIC HEALTH



## ANNUAL GIVING DAILY IMPACT

“My time at YSPH has been absolutely phenomenal. I would not have been able to attend YSPH without your gift, and I am so incredibly grateful for the way that you have changed my life. Your gifts to the **YSPH Alumni Fund** really made a difference in allowing me to obtain an education at Yale and to be one step closer to making a difference in the lives of those who are in need.”

**[Yale.edu/giveSPH](https://Yale.edu/giveSPH)**

DAVID BAUGHAM, M.P.H. '20



**SUSAN ADISS**, M.P.H. '69, former commissioner of the Connecticut Department of Public Health and Addiction Services, was interviewed by BBC World News in March 2021 to discuss the new Centers for Disease Control and Prevention guidance for vaccinated Americans.



**GREGORY BELOK**, D.D.S., M.P.H. '74, announced that his son, Hal Michael Belok, D.D.S., has joined his multispecialty group dental practice in Manhattan, two blocks from the Yale Club, after completing his chief residency at Lincoln Hospital in the Bronx. The practice concentrates on evidence-based restorative and cosmetic dentistry for adults and children.

**MONICA BRASE**, Ed.D., M.P.H. '98, alternative education science teacher at Windsor (Connecticut) High School, was honored as educator of the year by the Windsor Board of Education in June 2021. During the school year, Brase had to be creative in finding new ways to engage and connect with students while dealing with the challenge of teaching virtually. She sometimes traveled to her students' homes or reached out to them over the phone to mentor them individually.



**PATRICK BYAM**, M.P.H. '08, is now the director of the Safe and Healthy Schools Branch at the Ministry of Education in the Canadian province of Ontario.



**JAVIER CEPEDA**, Ph.D., M.P.H. '10, has been appointed as a Bloomberg Assistant Professor of American Health in the Department of Epidemiology at the Johns

Hopkins Bloomberg School of Public Health. Cepeda is also the B. Frank and Kathleen Polk Assistant Professor in the Department of Epidemiology at the Bloomberg School.

His research interests include understanding how punitive drug policies can increase the risk of overdose, and HIV and hepatitis C virus transmission. His research also focuses on evaluating the facilitators and barriers to accessing harm reduction and treatment services among people who inject drugs and examining the trajectories of substance use, infectious disease and comorbidities among this population. Cepeda's work also involves informing policy to help make evidence-based decisions as they relate to reducing the harms and disparities in care among people who inject drugs.



**KIRSTY CLARK**, M.P.H. '16, has accepted a tenure-track assistant professor position in the Department of Medicine, Health and Society and Public Policy Studies at

Vanderbilt University. She is working toward mental health equity for stigmatized populations.



**CARA DONOVAN MITCHELL**, M.P.H. '18, joined Farm Fresh Rhode Island, the largest winter farmer's market in New England, in November 2020 as its Food

Access program director. She is responsible for the oversight of all Farm Fresh RI Farmers Market and Food Access programs. Farm Fresh RI programming includes efforts to increase the affordability and availability of fresh, local foods for all residents of Rhode Island.



**ALINA ENGELMAN**, Dr.P.H., M.P.H. '07, received tenure and promotion to associate professor of public health at California State University, East Bay. She also received

a campuswide Outstanding Researcher Award. An article about COVID-19 and food insecurity in the deaf community in *Public Health Reports* for which she was the lead author was tweeted by the Centers for Disease Control and Prevention as part of its daily credible health and safety updates.



**ALIYAR FOULADKHAH**, Ph.D., M.P.H. '14, and Mino Bagheri, a Harvard-trained nutritionist, were married in September 2020. It was a busy year for Fouladkhah, as he received tenure and promotion to associate professor at Tennessee State University. In addition, he held public health programs in Guatemala and South Africa.

**BYRON KENNEDY**, M.D., Ph.D., M.P.H. '01, medical director for the Connecticut Department of Correction, and two colleagues wrote a letter to the editor of the *New England Journal of Medicine* that was published in November 2020. The letter, "Risk Factors for SARS-CoV-2 in a Statewide Correctional System," explored the data on SARS-CoV-2 infection and outcomes in correctional facilities.

**LUIS MALDONADO-VASQUEZ**, M.P.H. '15, accepted a postdoctoral fellowship in October 2020 at the University of Washington's Fred Hutchinson Cancer Research Center in Seattle to publish findings related to diet and exercise among U.S. Hispanics/Latinos, focused more broadly on cancer prevention and survivorship.

**JOHN NDIKUM**, M.P.H. '18, has been busy consolidating much of his work for the upcoming publication of two books, *Intelligence of the Heart* and *Precision Living Breakthrough*. Another book, *Excellent While You*, was published in 2020.

**PATRICIA NEZ HENDERSON**, M.D., M.P.H. '94, was recently elected president of the Society for Research on Nicotine and Tobacco (SRNT), an international research organization whose primary goal is to promote the science of commercial tobacco and nicotine. She is the organization's first Indigenous president. Under the auspices of the Black Hills Center for American Indian Health, she has become one of the leading authorities on commercial tobacco research in Native American communities. Her work in this field has effectively focused on incorporating tribal values and customs of living in harmony as it pertains to smoke-free environment and the use of ceremonial tobacco with Western evidence-based protocols, technology and science.

# ALUMNI NEWS

**NIRMAL (NIM) PATEL**, M.D., M.P.H. '95, was named senior vice president of care transformation at TimelyMD. In this role, she focuses on population health, optimizing quality of care and tailoring measures of success for campuses. Patel has created first-of-its-kind telehealth solutions focused on primary care, dermatology and behavioral health, while using data to show success. She developed a unique approach to quality and value measurement for the largest telemedicine platform in the United States to facilitate improved outcomes.



**NATALIE (POSPOLITA) SILVERSTEIN**, M.P.H.

'96, published her first book, *Simple Acts: The Busy Family's Guide to Giving Back*, in 2019. Silverstein, the New York area coordinator

of Doing Good Together, a Minneapolis-based nonprofit, is a writer, speaker and consultant on the topics of family and youth service. Her second book, *Simple Acts: The Busy Teen's Guide to Giving Back*, will be published in early 2022.

**RYAN SAADI**, M.D., M.P.H. '95, chairman and CEO of Tevogen Bio, announced that the company has finalized the design of its state-of-the-art, eco-friendly headquarters in New Jersey. The 160,000-square-foot facility will serve as the hub for the company's research and development, manufacturing and distribution of its investigational T-cell therapies for COVID-19, other viral infections and oncology, and will bring nearly 1,800 life sciences jobs to New Jersey.

**MICHAEL S. SICLARI**, M.D., M.P.H. '78, participated in the Moderna vaccine trials at the Veterans Affairs Medical Center in Providence, Rhode Island, in February 2021. He was actively involved in the facility's response (in the emergency department, a COVID-19 zone), as well as at Community Health in Central Falls, the town that had Rhode Island's highest positive COVID-19 percentage, and testing the Rhode Island Disaster Medical Assistance Team. Once vaccines became available, he was involved in the state's vaccine rollout at one of the points of distribution. An interesting piece of history: Siclari was presented his Yale M.P.H. degree and Dartmouth Medical School degree by the same person, Robert McCollum, M.D.



**PAVITA SINGH**, M.P.H. '14, published her first poetry book in spring 2021: *To All the Magic in Me: A Collection of Love Letters to All of Life's Emotions*.

**JEREMY STEGLITZ**, Ph.D., M.P.H. '11, launched his own practice in November 2020: Jeremy Steglitz Psychotherapy LLC in Washington, D.C.

**PANAGIOTIS VAGENAS**, Ph.D., M.P.H. '11, started a new position as research development specialist at San Jose State University in June 2020.



**KIMBERLY VASQUEZ**, M.P.H. '15, joined the Yale School of Medicine as a multicenter project manager in January 2021.

**LEON F. VINCI**, D.H.A., M.P.H. '77, was presented the 2020 A. Clark Slaymaker Honor by the Virginia Environmental Health Association during its Fall Educational Conference for outstanding contributions to the environmental health profession and environmental health programs across the state. During this meeting, he was elected as a vice president of the VEHA. Vinci is also an ecoAmerica-designated world climate and health leader and a national climate ambassador with the National Environmental Health Association.

**MYRNA WEISSMAN**, Ph.D. '74, was awarded the 2020 Pardes Humanitarian Prize in Mental Health by the Brain and Behavior Research Foundation for her transformative work in the mental health care of disadvantaged people suffering from depression. Weissman is Diane Goldman Kemper Family Professor of Epidemiology in Psychiatry at the Vagelos College of Physicians and Surgeons and Mailman School of Public Health at Columbia University, and chief of the Division of Epidemiology at the New York State Psychiatric Institute. With Gerald Klerman, M.D., she developed interpersonal psychotherapy, which addresses depression associated with disruption of attachments due to grief, disputes, transitions or loneliness. Weissman also adapted IPT for African

and Muslim countries and donated the copyright to the World Health Organization. She actively contributes to Strong Minds, a humanitarian effort, providing IPT to more than 70,000 depressed, impoverished women in Uganda and Zambia. This effort has received a number of major international awards. Weissman also participates in PRIDE SSA, which is funded by the National Institute of Mental Health, to improve mental health services in Mozambique.

**TIARA C. WILLIE**, Ph.D. '18, was appointed as a Bloomberg Assistant Professor of American Health in the Department of Mental Health at the Johns Hopkins Bloomberg School of Public Health in September 2020. She is a social epidemiologist examining the etiology and health consequences of gender-based violence among populations experiencing, or at risk of, violence, both domestically and globally. Her research investigates determinants of victimization and perpetration at the individual, relationship, community and societal levels in order to develop primary interventions. She aims to better understand mechanisms linking victimization and poor mental, sexual and reproductive health.

**HAVE AN UPDATE?** Your classmates want to hear about you! Send your news (and photos) to [ysph.alumni@yale.edu](mailto:ysph.alumni@yale.edu)



# SCHOLARSHIP NAMED FOR ACCOMPLISHED ALUMNA

BY COLIN POITRAS

The new executive master's degree in public health (M.P.H.) scholarship at the Yale School of Public Health has been named in honor of Irene Trowell-Harris, a distinguished alumna known for her barrier-breaking accomplishments and generous support of education.

The \$10,000 scholarship is available to every person who enrolls in the new online Executive MPH program regardless of financial need. The program is designed for professionals interested in acquiring a strong public health education and hands-on leadership and management training. The inaugural class began July 2 with 39 students.

"The school is honored to name the scholarship after Dr. Trowell-Harris, one of our most distinguished alumni," said Martin Klein, Ph.D., M.P.H. '86, director of the program. "Her professional accomplishments have added to the health and well-being of millions, and her personal story of perseverance and commitment serves as an inspiration to our students, current and future."

Trowell-Harris, R.N., M.P.H. '73, Ed.D., was the first African American woman in the history of the U.S. Air National Guard to be promoted to brigadier general and subsequently, in 1998, to major general. She was also the first nurse and first woman to command an Air National Guard medical clinic when she was appointed commander of the 105th U.S. Air Force Clinic in Newburgh, New York, a position previously held by physicians.

During her 38 years of service in the U.S. Air Force and Air National Guard, Trowell-Harris received numerous commendations including the Air Force Distinguished Service Medal, Legion of Merit award, Meritorious Service Medal, National Defense Service Medal with service star and Armed Forces Expeditionary Medal.



Irene Trowell-Harris

A lifelong leader in health care for veterans, Trowell-Harris served two presidents as director of the Department of Veterans Affairs' Center for Women Veterans, which monitors the welfare of more than 1.9 million women who have served.

Trowell-Harris' journey as a trailblazing African American woman in the armed services is captured in her book, *Bridges: A Life Building and Crossing Them*.

She was one of 11 children who grew up on a South Carolina cotton farm that belonged to her grandfather, Jim Trowell, who had been enslaved. Trowell-Harris was the first member of her family to attend college, using \$61.25 in coins collected by her local church congregation to pay her initial tuition when she was admitted to a segregated nursing school.

## THE ONLINE EXECUTIVE MPH PROGRAM

She went on to become a flight nurse in the New York Air National Guard and served as a medical crew director during the Vietnam War era. Trowell-Harris decided to pursue a master's degree in public health administration at Yale in 1971 and continued her education at Columbia University, where she earned a health education doctorate.

Recognizing how the kindness of others helped further her own education, Trowell-Harris has paid it forward, establishing several funds to support the education and training of future nurses.

She said her commitment to supporting others is guided by a famous quote from Dr. Martin Luther King Jr.: "Life's most persistent and urgent question is, 'What are you doing for others?'"

Said Trowell-Harris: "My career has been defined by leadership, collaboration and mentoring coupled with giving back and paying it forward for current and future generations. Investment in education provides student benefits for a lifetime."

Trowell-Harris has been a longtime supporter of the Yale School of Public Health (YSPH) and the YSPH Alumni Fund. In 2016, she established the Irene Trowell-Harris Endowed Scholarship Fund at YSPH, which supports students enrolled in the school's joint degree program with the Yale School of Nursing. As a class agent for the Yale School of Public Health, Trowell-Harris inspires others to give so that more students can benefit from a YSPH education, regardless of their ability to pay.

She is a charter member of the Military Women's Memorial and the National Museum of African American History and Culture in Washington, D.C. She was honored with a Fellowship in the American Academy of Nursing in 2018. 

Designed for working health professionals, the online Executive MPH provides a broad foundation in public health, specialized instruction in areas critical to health promotion and disease prevention and a yearlong integrative capstone experience that enables students to apply what they have learned to a real-world public health problem.

Top faculty within the Yale School of Public Health and the Yale School of Medicine and from outside Yale serve as the program's instructors.

Most of the coursework is completed remotely three semesters a year—summer, fall and spring—over two years. The course also includes three five-day in-person intensive sessions on the Yale campus.



The program offers four tracks:

- Health Informatics
- Environmental Health Sciences
- Applied Analytical Methods and Epidemiology
- Critical Topics in Public Health

Program participants also have full access to the Yale School of Public Health's Career Management Center, which offers expert individual guidance and assistance for those seeking new jobs. Graduates become Yale School of Public Health alumni, joining an academic community of more than 6,400 alumni in all 50 states and 71 countries around the world.

Each online course consists of a one-hour pre-recorded lecture and one hour of real-time, evening class discussion each week. The curriculum is 16 credits and is built around four themes: management and leadership, core public health knowledge, specialization and integration.



“SEIZE THE OPPORTUNITIES TO MAKE A DIFFERENCE WHEN THE UNEXPECTED ARISES.”

~Anthony Fauci

Dr. Anthony Fauci addresses socially distanced Yale School of Public Health graduates via Livestream at Commencement.

## FAUCI URGES GRADUATES TO ‘MAKE A DIFFERENCE’ IN TROUBLED WORLD

As COVID-19 continued to rage, Dr. Anthony S. Fauci told the newest cohort of Yale School of Public Health graduates gathered in Amistad Park that the world needs them now more than ever.

“The challenges brought by the COVID-19 pandemic at home and abroad have brought into sharp focus the world’s need for the science and art of public health professionals,” the director of the National Institute of Allergy and Infectious Diseases said to the 186 students receiving their M.P.H. degrees as friends, family and guests watched online. Thirty-seven students earned M.S. degrees and 10 earned a Ph.D.

Over six decades of leadership at NIAID, Fauci has advised seven presidents on HIV/AIDS as well as many other domestic and global health issues and has become a leading government voice on the coronavirus. Fauci was recipient of YSPH’s Centennial C.-E. A. Winslow Award in 2015 in honor of his life’s work in combating domestic and global public health issues.

And from his livestreamed keynote address to the socially distanced group of students, Fauci had more choice advice for when technical difficulties arise.

“Expect the unexpected,” he said. “Seize the opportunities to make a difference when the unexpected arises.”

YSPH Dean Sten H. Vermund, who delivered his

commencement speech from the dais, told members of the graduating class that they were well equipped to meet the challenges of a post-coronavirus world – and to make sure that the new normal is equitable and fair.

“You have a skillset that the world desperately needs right now,” he said. “We all hope that you leave with pride, knowing that your studies in public health happened at a truly historic time of challenge for our nation and our globe.”

Vermund then highlighted the promising work of two of the YSPH graduates. Joanna Chen, M.P.H. in biostatistics, researches ways to accelerate the process of drug discovery using artificial intelligence and investigates new treatments for veterans with migraines, among other activities. She was honored as student marshal. Allison Bailey, M.P.H. in epidemiology of microbial diseases, who volunteers extensively for the New Haven community as a contact tracer and in other roles, served as the banner-bearer.

For graduates who spent a considerable portion of their studies remotely, their achievements and scholarship left quite an impression. “Engaging with you, our future public health leaders, learning about your accomplishments, plans and aspirations, gives me a tremendous sense of optimism for the future of our field,” Vermund said.

Graduate Misikir Wondaferahu Adnew underscored the importance of health equity in her address as the class speaker.

Adnew told her classmates of the challenges she had to overcome to succeed at YSPH, from dealing with imposter syndrome to being an international student. But she said the difficulty also gave her a chance to grow.

“Indeed, I was challenged, but in a good way,” she said. “I jumped on board the various great opportunities Yale had to offer and learned a lot.”



## 2021 STUDENT HONORS

### STUDENT AWARD FOR OUTSTANDING CONTRIBUTIONS IN DIVERSITY, EQUITY AND INCLUSION

Jad A. Elharake, Lakai Legg and Crystal Ruiz

### DEAN'S PRIZE FOR OUTSTANDING M.P.H. THESIS

Krzysztof Chwala. *Thesis title:* "Overseen and Overlooked: Knowledge Production and Care in Public Health Surveillance."

### WILBUR G. DOWNS, M.D., M.P.H., OUTSTANDING THESIS PRIZE IN INTERNATIONAL HEALTH

Matthew Benczkowski. *Thesis title:* "Assessing Changes in the Epidemiology of Cutaneous Leishmaniasis in Southwest Colombia Following the Peace Accord with Fuerzas Armadas Revolucionarias de Colombia (FARC)."

### HENRY J. (SAM) CHAUNCEY JR. INSPIRATION AWARD

Misikir Wondaferahu Adnew

### LOWELL LEVIN AWARD FOR EXCELLENCE IN GLOBAL HEALTH

Haley Anne Case

### TEACHING FELLOW AWARD

William Henry Eger



Top and middle: Members of the graduating class celebrate their accomplishments. Above: YSPH Professor Trace Kershaw

ALL PHOTOGRAPHS BY HAROLD SHAPIRO

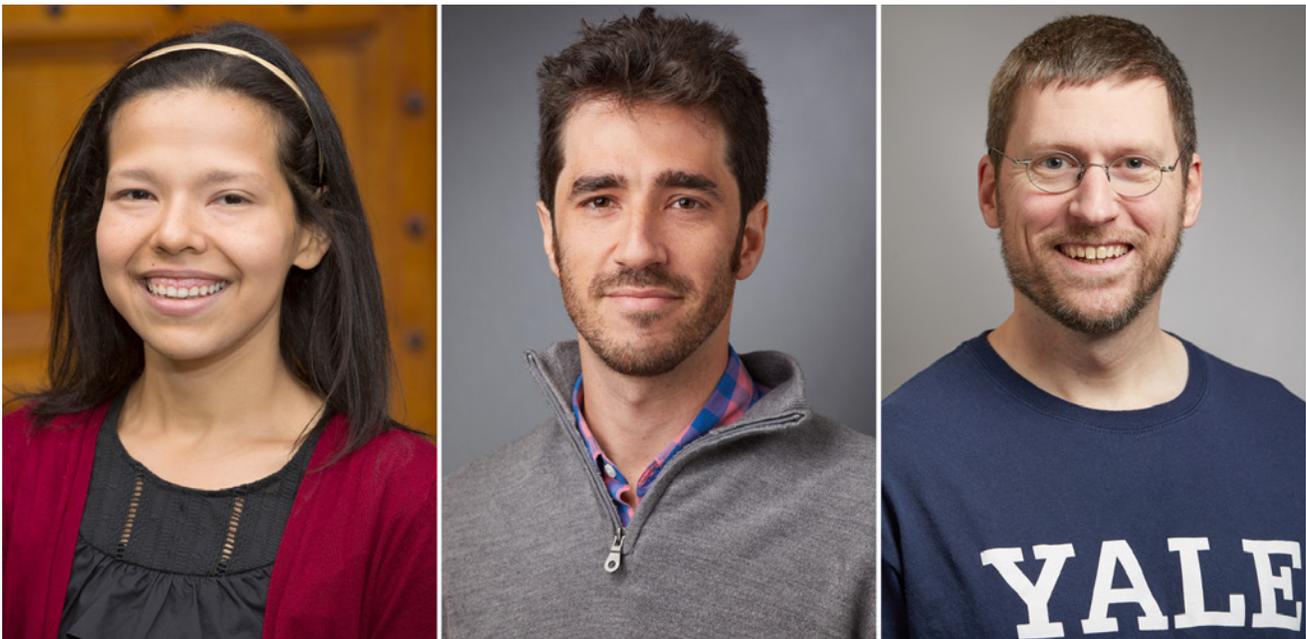
“ I HAVE LOVED SEEING THEM GROW AS EPIDEMIOLOGISTS.”

~Yasmmy Salinas

“ IT NEVER CEASES TO AMAZE ME WHAT OUR STUDENTS ARE CAPABLE OF ACHIEVING, EVEN IN THE MOST CHALLENGING OF CIRCUMSTANCES.”

~Jacob Wallace

## TOP EDUCATORS NAMED



Assistant Professor Yasmmy Salinas (left), Ph.D. '19, was nominated by students for the 2021 Distinguished Teaching Award. Students also jointly honored Assistant Professor Jacob Wallace (center), Ph.D., and Michael Winger, Ph.D., assistant clinical professor, with the Distinguished Student Mentor Award. All three said it was a great honor to be recognized by the students they teach.

“ I JUST LOVE GETTING EMAILS FROM MY YSPH FAMILY, SO WHEN I GET THEM, I'M GENUINELY EXCITED TO REACH BACK. HONESTLY, EMAILS FROM STUDENTS TEND TO BE THE HIGHLIGHT OF MY DAY.”

~Michael Winger

“OUR TEAM IS THRILLED TO WELCOME ELEVATE TO YSPH.”

~Susan Nappi

## ELEVATE LAB JOINS YSPH

The Elevate Policy Lab has joined the Yale School of Public Health’s Office of Public Health Practice, bringing expertise in addressing mental health as a strategy for improving the social and economic mobility of families living in poverty.

In its new home at YSPH, the lab will bring perspectives and expertise to public health practice in New Haven, particularly the recently launched Maternal and Child Health Promotion Track at YSPH for M.P.H. students. Elevate had previously been based at the Yale School of Medicine.

“Elevate’s mission is completely aligned with the goals of YSPH’s new track,” said Elevate Executive Director Hilary Hahn, Ed.M., M.P.H. “Our new home within the OPHP could not be a more perfect fit.”

Elevate will also work to expand the Mental Health Outreach for Mothers Partnership that was founded in 2011 in New Haven. MOMS is an evidence-based program that seeks to reduce depressive symptoms for overburdened and under-resourced mothers and female caregivers. The lab is expanding MOMS to new sites across the United States, with current partnerships in Vermont, Washington, D.C., New York City, and Bridgeport, Connecticut.

Additionally, Elevate is working to tackle health, economic and environmental challenges facing vulnerable populations to address the root causes of health disparities and improve outcomes. Working with Connecticut state Rep. Caroline Simmons, Elevate is seeking to advance this approach at the local, state and federal levels.

“Our team is thrilled to welcome Elevate to YSPH and excited to partner, specifically by sharing our experiences working with communities and community health workers to ensure equitable partnerships and crafting robust maternal and child health practice experiences for our students,” said Susan Nappi, M.P.H. ’01, OPHP’s executive director.



# 46 MILLION

ESTIMATED NUMBER OF AMERICAN ADULTS EXPERIENCING MENTAL ILLNESS.

## TRACK PROMOTING MATERNAL AND CHILD HEALTH LAUNCHED

An academic track that bolsters the health of mothers and their babies and children launched at the beginning of the 2021–22 academic year.

Three years in the making, the Maternal and Child Health Promotion Track will be available to all Yale School of Public Health students enrolled in the Master of Public Health program.

The program takes a multidisciplinary approach to implementing evidence-based practices to improve maternal and child health (MCH) outcomes. Students will be trained on the importance and application of implementation science to MCH promotion. They will also be required to complete three courses and an internship or practicum to gain applied experience in this area.

“We are very excited about the fact that we have just gotten approval for our brand-new Maternal and Child Health Promotion Track [MCHP], which, in many ways, is a response to popular demand from students and faculty members across departments,” said Professor Rafael Pérez-Escamilla, Ph.D., M.S., director of the new track as well as of YSPH’s Global Health Concentration and Office of Public Health Practice.

The track’s co-director, Donna Spiegelman, Sc.D., the Susan Dwight Bliss Professor of Biostatistics and the director of the Center for Methods in Implementation and Prevention Science, is equally enthusiastic. “I am thrilled to have the MCHP program join our portfolio of activities,” she said, “and I look forward to engaging students in



A mother and her baby in Uganda.

innovative training programs and designing and implementing new projects to close the gap in maternal and child health around the world.”

Spiegelman provided one glaring example of the inequities the track plans to address: Maternal mortality is perhaps the world’s greatest health inequity, with the death rate in childbirth in some sub-Saharan African countries around 100 times that in Northern Europe, she said.

“With rates so low among high-income countries, clearly maternal mortality is nearly fully preventable through interventions well known to us; these include the use of simple hygienic delivery practices, control of maternal hypertension through inexpensive generic medications, use of oxytocin to prevent excessive bleeding, and calcium supplementation in regions where dietary calcium intake is low,” Spiegelman said. “The problem is getting these low-cost and simple interventions adopted, contextually adapted and scaled up.”

# EVERGREEN PLANTED FOR PUBLIC HEALTH GIANT

Workers planted a blue atlas cedar, a tree known for its pyramidal form and silvery blue foliage that drapes from expansive branches, near the entrance of the Laboratory of Epidemiology and Public Health to honor Paul D. Cleary, Ph.D., former dean of the Yale School of Public Health (2006–17) and the Anna M.R. Lauder Professor of Public Health. Cleary retired as a professor June 30 but remains at the school as a part-time researcher. “I am deeply humbled by this gesture,” Cleary said. “This is a beautiful tree, and I look forward to watching its growth over the coming years as I continue my work at YSPH with amazing colleagues and support the growth of this incredible school.”

“THIS IS A BEAUTIFUL TREE, AND I LOOK FORWARD TO WATCHING ITS GROWTH OVER THE COMING YEARS AS I CONTINUE MY WORK AT YSPH WITH AMAZING COLLEAGUES AND SUPPORT THE GROWTH OF THIS INCREDIBLE SCHOOL.”

~Paul Cleary



## STIs TARGETED BY YSPH-LED GROUP

On any given day, the Centers for Disease Control and Prevention (CDC) estimates that 1 in 5 people in the United States have a sexually transmitted infection (STI). These preventable conditions are responsible for thousands of deaths and billions of dollars in medical costs. Notably, rates of three curable infections – syphilis, gonorrhea and chlamydia – have risen steadily over the past decade.

In a report from the National Academies of Sciences, Engineering and Medicine, top researchers on a committee chaired by Yale School of Public Health Dean Sten H. Vermund, generated recommendations aimed at reversing the trend.

The findings of the Committee on Prevention and Control of Sexually Transmitted Infections in the United States suggest that STIs can be best addressed through a multilayered approach that focuses on social and structural determinants of health, including racism, discrimination and poverty. In recommending a shift in government funding toward new and existing STI prevention programs, the committee also provides policy guidance and a framework for action to reverse these rising trends.

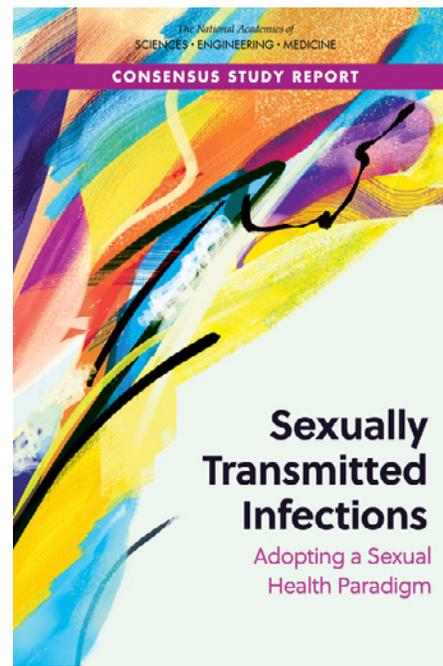
“The committee’s recommended changes are challenging; yet, it is possible to reduce the impact of STIs on society and take the bold actions recommended in this report to prevent and control STIs in the immediate future and long term,” the report states. “In turn, this can create a positive and comprehensive sexual health platform so the United States can return to the ultimate task of planning for the elimination of these serious health threats.”

The committee was charged by the CDC, through the National Association of County and City Health Officials, with investigating new ways to tackle growing STI rates. The 17 committee members held numerous listening sessions, workshops and, in 2020, virtual meetings to hone their recommendations. The result is a report focused on how the United States might reduce sexually transmitted infections.

The recommendations range from rethinking training curricula for U.S. health professionals to establishing new payment and coverage options for priority populations. The committee also found that the CDC’s Division of STD Prevention could more aggressively combat sexually transmitted infections by modernizing disease surveillance activities, improving treatment guidelines and establishing new funding requirements for local health departments.

These points are especially timely, the committee believed, because of COVID-19’s burden on public health.

“The COVID-19 pandemic has exposed weaknesses in public health preparedness due to weak infrastructure, an under-capacitated and under-resourced workforce, and limited surge capacity,” the committee said. “Because STIs are infectious diseases and the STI workforce has deep expertise of relevance to pandemic responses, strengthening STI infrastructure and expanding its workforce offer the dual benefits of achieving stronger STI control and better positions the nation for future public health threats.”



“ I AM HUMBLLED BY THE OPPORTUNITY TO SERVE IN THE ROLE OF CHAIR AND HOPEFULLY AM ABLE TO DO SO IN A WAY THAT ALLOWS US TO EXPAND OUR IMPACT EVEN FURTHER.”

~Jason Hockenberry



## ACCLAIMED RESEARCHER, ECONOMIST JOINS YSPH

A prominent researcher and health economist with wide-ranging research expertise has joined the Yale School of Public Health and become chair of its Department of Health Policy and Management.

Professor Jason Hockenberry, Ph.D., who spent the previous nine years at the Rollins School of Public Health at Emory University in Atlanta, said he looked forward to working with a “stellar cadre” of faculty in the department, and at Yale in general, who are leaders in the national conversations on health and health care policy. Hockenberry officially joined the school in late January.

Hockenberry described his own research interests as multifaceted and diverse. His work falls into three general areas:

- The role that providers play in the outcomes and efficiency of health care delivery. Examples of his research in this area include how the pace of work affects surgical outcomes and resources used to achieve those outcomes, whether physicians respond to new evidence on treatment effectiveness, and to what degree nurse staffing mixes affect a hospital’s quality of care.
- Mental health and substance use-related policy, and the spillover of these policies to other aspects of well-being. Examples of his research in this area include studies of the interplay between cannabis liberalization policies and the opioid epidemic and the role of financing and provider supply on treatment and non-health outcomes.

- Health care financing-related policies, particularly how they might affect vulnerable populations. Examples of his research in this area include studies examining whether the movement toward pay for performance or value-based purchasing schemes has a disproportionate negative effect on safety-net providers, and what this might mean for the patient populations they serve.

“I am excited to be joining a group of faculty in YSPH’s Department of Health Policy and Management who make such substantial contributions to public health policy and health care management research and practice, all while providing world-class educational experiences to the next generation of leaders,” Hockenberry said. “I am humbled by the opportunity to serve in the role of chair and hopefully am able to do so in a way that allows us to expand our impact even further.”

Dean Sten H. Vermund hailed Hockenberry’s arrival at the Yale School of Public Health and also praised Professor Mark Schlesinger, Ph.D., who served as the department’s acting chair for the past three years, for his “superb” service, and Professor Susan Busch, Ph.D., who directed the extensive search that led to Hockenberry’s being hired.

One of the issues that Hockenberry plans to work on is the opioid epidemic, which he sees as one of the defining health challenges of the past decade. While COVID-19 has taken center stage, one of the lasting challenges once the pandemic is brought under control is the longer-term residual effects it will have had on these existing public health challenges around substance misuse and abuse, its treatment, and related policy, he said.



## NEW FACULTY MEMBERS BRING EXPERTISE IN RACISM

The Yale School of Public Health is welcoming two new faculty members who bring strong expertise in racism and health.

Assistant Professor Ijeoma Opara (above, left), Ph.D., M.P.H., examines how sociocultural factors such as systemic racism influence substance use and sexual health among Black and Latinx youths. At Yale, she will use community participatory approaches to develop interventions that foster racial pride and empowerment, particularly for Black girls.

Opara's research has already received national recognition: In 2020, she became the first social worker to receive the NIH Director's Early Independence Award — and a \$1.84 million grant to continue her work over five years. Opara is also working to develop a course on Community-based Participatory Research for the Department of Social and Behavioral Sciences (SBS) and the U.S. Health Justice Concentration. She joined the school and SBS in July.

Chelsey Carter (above, right), a joint M.P.H.-Ph.D. candidate at Washington University in St. Louis, will start next year, also in the Social and Behavioral Sciences Department. She will bring extensive research experience in the intersection of race, class, gender and chronic disease. Her dissertation, rooted in decolonizing and Black feminist methodologies, used 24 months of ethnographic research in post-Ferguson St. Louis to examine how epistemological

“THE FOCUS ON RACISM AS A FUNDAMENTAL DETERMINANT OF HEALTH IS A TOP PRIORITY.”

~Trace Kershaw

biases around amyotrophic lateral sclerosis (ALS) are generated and sustained in scientific research, in public awareness campaigns and among people living with ALS.

Carter is spending the 2021–22 academic year as a Presidential Fellow at Princeton University, where she will develop a book project based on her dissertation and build anti-racism initiatives in the Center on Transnational Policing. At Yale, she will have a secondary appointment in the Department of Anthropology.

The new faculty are among the latest efforts by the Social and Behavioral Sciences' broad push to develop interdisciplinary solutions to racism and to promote health equity. The department launched its search for new faculty members to deepen its existing focus on social justice and structural determinants of health, as well as augment its new concentration on U.S. Health and Justice.

“We are ecstatic to have these two extraordinary scholars to join the SBS family and continue our mission to build SBS to be a leading force for social justice and health equity,” said Professor Trace Kershaw, Ph.D., SBS chair. “The focus on racism as a fundamental determinant of health is a top priority.”



## AWARDS & HONORS FALL 2021

**SERAP AKSOY**, Ph.D., interim department chair and professor in the Department of Epidemiology of Microbial Diseases, was among 120 new members elected to the National Academy of Sciences. Aksoy was among a record 59 women in this year's class.

**MICHELLE BELL**, Ph.D., the Mary E. Pinchot Professor of Environmental Health at the School of the Environment, was elected to the National Academy of Medicine, one of the highest honors in the fields of health and medicine. She was also named to the newly reinstated Clean Air Scientific Advisory Committee at the U.S. Environmental Protection Agency.

**XI CHEN**, Ph.D., associate professor in the Department of Public Health and Policy Management and associate professor at the Institution for Social and Policy Studies, was one of three scientists awarded the 2021 Kuznets Prize by the *Journal of Population Economics*. Their article, "Impacts of social and economic factors on the transmission of coronavirus disease 2019 (COVID-19) in China," was judged the best published by the journal in the previous year.

**DENISE ESSERMAN**, Ph.D., professor in the Department of Biostatistics, was appointed to a four-year term as a member of the board of directors of the Society for Clinical Trials.

**ABIGAIL FRIEDMAN**, Ph.D., associate professor in the Department of Health Policy and Management, was presented with an Early Career Investigator Award by the Yale School of Public Health.

**RALITZA GUEORGUIEVA**, Ph.D., senior research scientist in the Department of Biostatistics and director of Biostatistics in Psychiatry, was part of the research team in a scientific study that was named a leading research achievement in 2020 by the Brain and Behavior Research Foundation.

Four YSPH professors were among the newest group elected to the Connecticut Academy of Science and Engineering: **MELINDA IRWIN**, Ph.D., Susan Dwight Bliss Professor of Epidemiology in the Department of Chronic Disease Epidemiology, associate dean of research at the Yale School of Public Health, associate director (Population Sciences) at the Yale Cancer Center, and deputy director (Public Health) at the Yale Center for Clinical Investigation; **LINDA NICCOLAI**, Ph.D., professor in the Department of Epidemiology of Microbial Diseases, director of the HPV Vaccine Working Group at Yale and director of the Connecticut Emerging Infections Program at Yale; **HEPING ZHANG**, Ph.D., Susan Dwight Bliss Professor of Biostatistics in the Department of Biostatistics and professor in the Child Study Center; and **HONGYU ZHAO**, Ph.D., Ira V. Hiscock Professor of Biostatistics in the Department of Biostatistics.

**MELINDA IRWIN**, Ph.D., whose research is focused on the areas of energy balance and cancer prevention and prognosis, has been appointed the Susan Dwight Bliss Professor of Epidemiology.

**CAROLINE JOHNSON**, Ph.D., assistant professor in the Department of Epidemiology (Environmental Health Sciences), was awarded an American Cancer Society research scholar grant. She was also given the Career Enhancement Program Award by the National Cancer Institute (NCI)/Yale SPORE in Skin Cancer and the K12 Calabresi Immuno-Oncology Training Program Award by the NCI/Yale Cancer Center. In addition, she is a co-principal investigator on a team of Yale researchers that has received an \$8.5 million grant from the National Institutes of Health to study the important role of microbial metabolites in our microbiota—the trillions of bacterial cells that colonize human intestines.

**ALBERT I. KO**, M.D., an infectious disease physician and epidemiologist whose research focuses on the health consequences of rapid urbanization and social inequity, has been appointed the Raj and Indra Nooyi Professor of Public Health.

**TASSOS KYRIAKIDES**, Ph.D., associate research scientist in the Department of Biostatistics and director of the Cooperative Studies Program Coordinating Center at the Department of Veterans Affairs (West Haven, Connecticut), has been named to the National Institutes of Health Collaboratory, serving on an advisory panel on the future direction of clinical trials.

**JESSICA LEWIS**, Ph.D., associate research scientist in the Department of Chronic Disease Epidemiology, has been named to the editorial board

# AWARDS & HONORS (CONT'D)

of the *International Journal of Environmental Research and Public Health*. She is also deputy director of the Center for Community Engagement and Health Equity at the Yale Cancer Center, board member of the Dean's Advisory Council for LGBTQ+ Affairs at Yale University and co-founder of Expect With Me.

**JUDITH LICHTMAN**, M.P.H. '88, Ph.D. '96, whose research focuses on the epidemiology of stroke and heart disease, has been appointed the Susan Dwight Bliss Professor of Epidemiology.

**LINGRUI LIU**, Sc.D., associate research scientist in the Department of Health Policy and Management, has been named a Yale Scholar in Implementation Science, a National Institutes of Health (NIH)-funded K12 program within the Yale Center for Implementation Science at the Yale School of Medicine.

**SARAH LOWE**, Ph.D., assistant professor in the Department of Health Policy and Management, received the 2021 Robins/Guze Early Career Award from the American Psychopathological Association.

**JOAN MONIN**, Ph.D., associate professor in the Department of Social and Behavioral Sciences, was named a fellow at the Society of Experimental Social Psychology.

**MELINDA PETTIGREW**, Ph.D. '99, whose research focuses on the molecular epidemiology of respiratory tract infections and the growing public health threat of antibiotic resistance,

has been appointed the Anna M.R. Lauder Professor of Epidemiology.

**STEN H. VERMUND**, M.D., Ph.D., dean of the Yale School of Public Health, has been appointed to a five-year term on the NIH Fogarty International Center Advisory Board by its director, Dr. Roger Glass.

**ANNE WYLLIE**, Ph.D., research scientist in the Department of Epidemiology of Microbial Diseases, was presented with the COVID-19 Research Award by the Yale School of Public Health.

**YALE SCHOOL OF PUBLIC HEALTH** was given the New Haven Symphony Quartet Award for Innovation for helping arts organizations during the COVID-19 pandemic. The school was also presented with the 2021 Technology Innovation Award by the Greater New Haven Chamber of Commerce.

**HEPING ZHANG**, Ph.D., Susan Dwight Bliss Professor of Biostatistics in the Department of Biostatistics and professor in the Child Study Center, was selected to give the 2022 Neyman Lecture by the Institute of Mathematical Statistics. Zhang will give his lecture, one of the highest honors in statistical societies, at the IMS annual meeting in London next June.

**HONGYU ZHAO**, Ph.D., Ira V. Hiscock Professor of Biostatistics in the Department of Biostatistics, has been named lead investigator of the newly launched Biomedical Data Fellowship Program, a joint effort between Yale University and Boehringer Ingelheim.

## IN MEMORIAM

**BARBARA ABRAHAM**, M.P.H. '83, died on May 30, 2020, at her home in Trumbull, Connecticut, at the age of 76.

**CHRISTINA FRAZIER**, Ph.D. '77, of Saint Augustine, Florida, died on March 19, 2021, at the age of 73 after a long illness. She had a productive career in research and education at Southeast Missouri State University, where she was a tenured professor of biology for more than 35 years until her retirement in 2014. She was also an advocate for women's equality.

**BRUCE GOLDMAN**, M.P.H. '73, died of sepsis in September 2020, at Chestnut Hill Hospital in Philadelphia at the age of 70. He had a long career as an administrator at various hospitals in the New York, Philadelphia and Washington, D.C. areas, bringing better-quality health care to underserved communities. After retiring in 2014, he pursued entrepreneurial interests in the medicinal marijuana field, first founding AGRiMED, and then selling that company and founding Sativo Investors LLC.

**JOE BALES GRABER**, M.P.H. '45, died on May 30, 2020, in Annapolis, Maryland, at the age of 99. She worked two stints at the U.S. Public Health Service. She assisted with the development of the first field training program for the PHS Office of Malaria Control in War Areas (now the Communicable Disease Control Center). While with the PHS, which became part of the old Department of Health, Education and Welfare, she developed and promoted programs for the aging

at the National Institutes of Health; Office of the Secretary at HEW; and the PHS Division of Chronic Diseases. These efforts contributed to establishing the National Institute on Aging and the Administration on Aging. She also worked in the Drug Related Studies Program at the old Center for Health Services Research, where she focused on developing advanced training programs and delivery systems related to pharmacy. She was also director of health resources for the Indian Health Service.

**JOHN MICHAEL “MIKE” GRANVILLE**, M.P.H. '70, died of COVID-19 complications on February 4, 2021, at the age of 76. He worked at Hughes Aircraft in Arizona before starting his own business in Southern California.

**MARVIN LAVENHAR**, M.P.H. '59, Ph.D. '69.

**GEORGE P.A. NEWBY JR.**, M.P.H. '80, died on October 17, 2020, at the age of 64. He dedicated his professional life to “serving the least of these” in seeking accessible health care for all. After working in hospitals for several years, he changed his focus to community health. He moved to Spartanburg, South Carolina, to serve as CEO of ReGenesis Community Health Center. After receiving his doctorate, he entered academia and became an adjunct professor at the University of South Carolina Upstate.

**GREGORY PALADINO**, M.P.H. '84, of Bedminster, New Jersey, died on July 1, 2020, of lymphoma. He was 62.

After graduating from Yale, he started his career at Lederle Laboratories (now Pfizer) in pharmaceutical sales and became district sales manager for the North Atlantic region. From there, he moved into the medical education industry, working with pharmaceutical and biotech companies on health care practitioner educational programs.

**DAVID PEARSON**, Ph.D. '70, died on May 21, 2021, at the Whitney Center, Hamden, Connecticut, at the age of 86. During the Kennedy and Johnson administrations, he served in the U.S. Public Health Service in the old Department of Health, Education and Welfare. He was instrumental in establishing the government's first program associated with prepaid medical group practice plans and was associated with various programs, including Medicare, Medicaid, Regional Medical Programs, Comprehensive Health Planning and Mortgage Insurance for Group Practice Programs. For more than two decades, he was on the faculty of the Yale School of Medicine's Department of Epidemiology and Public Health, and he was associate dean for public health for more than a decade. In retirement, he served as professor of public health at Southern Connecticut State University.

**CATHERINE REBMANN**, M.P.H. '99, died on November 2, 2020, in her home in Atlanta. She was an epidemiologist at the Centers for Disease Control and Prevention.

**RUDOLPH V. SELLERS**, M.P.H. '66.

**JAN A.J. STOLWIJK**, Ph.D., emeritus professor of public health, died on February 17, 2021, at the age of 93. He was recruited to the John B. Pierce Laboratory in New Haven in 1957, where he studied human physiology, and rose to serve as associate director from 1974 to 1989. He moved next door to Yale, first as director of graduate studies, and then as chair of the Department of Epidemiology and Public Health from 1982–1989, and again as acting chair from 1994–1995. He retired as the Susan Dwight Bliss Professor Emeritus of Epidemiology and Public Health. His leadership and many contributions played key roles in Yale School of Public Health's development and growth.

**SHIRLEY J. TIRRELL**, M.P.H. '85, of Killingworth, Connecticut, died on May 19, 2021, at Artis Assisted Living and Memory Care of Branford at the age of 73. During her career, she worked with some of the most dangerous known pathogens. She helped maintain the WHO Reference Center for Arbovirology at Yale and trained scientists from around the world in laboratory procedures. She also helped set up a virology laboratory in Fairbanks, Alaska, for the Centers for Disease Control and Prevention and the Connecticut Agricultural Experiment Station in New Haven. Eleven of her scientific articles were published in medical journals, and her work was presented at several national and international medical conferences.

SEND OBITUARY NOTICES TO  
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## ELM CITY HEALTH

BY MAKAYLA DAWKINS



## AN ADVOCATE FOR DIGNITY AND HOUSING

**YSPH student researches local homelessness during pandemic with an eye toward helping those in need.**

While people around the world struggled with the upheaval caused by the COVID-19 pandemic, Yale School of Public Health student Leah Robinson made things a little better in the city of New Haven.

Robinson, a New Jersey native enrolled in the M.P.H. program, used her extensive experience working with those facing homelessness or housing insecurity to help residents of the Elm City overcome their situations in the midst of a long public health emergency.

“Public health is about preventing things before they happen,” she said. “This independent study responded to an immediate need for data. It wasn’t a project that could wait.”

Her inspiration for the independent study project with New Haven’s Columbus House — a nonprofit organization providing emergency housing and related support for individuals facing homelessness — stemmed from her previous experience working in the New York City Department of Homeless Services. Robinson worked on a number of projects related to homelessness and health and hoped to get involved in related research upon starting her M.P.H.

While taking EPH 507 (Social Justice and Health Equity), a class taught by Associate Professor Danya Keene, Ph.D., in the fall of 2020, Robinson was inspired by one of Keene’s research studies on informal housing arrangements. This led Robinson to work on a project where she conducted in-depth interviews with housing-insecure individuals living temporarily in hotels in the New Haven area to learn about the experience compared with their previous living situation. She wanted to examine the differential aspects of each environment and how they affected residents’ well-being, physical and mental health, and ability to move from their current living situation into permanent housing.

Robinson not only designed and conducted an entire qualitative study, but also produced an extensive report that is now being used by Columbus House to inform its

homeless assistance programs and advocacy work.

“I talked to people there about what it was like to move from a congregate shelter or unsheltered living situation into a hotel. There are so many barriers that people who are living in congregate shelters or on the street face in taking care of their health, maintaining privacy and security, and establishing a sense of stability. The hotels helped with that,” she said.

Through her research, Robinson found that all of the people she spoke with at the hotels were grateful for what seemed like luxuries: having a refrigerator or a place to store their possessions and keep them safe. Another aspect of the research that still resonates with her: the small things that made a big impact on someone’s quality of life. In hotels, for instance, the absence of inconveniences — such as having to leave the premises during the day — were the aspects that made a huge difference to their well-being.

Keene said Robinson rose to meet the need by designing and completing an entire research project in the span of one short semester and said her interviews captured the depth and nuance of a complicated situation.

“Not only did they speak to the benefits and remaining challenges of hotel housing, her participants’ perspectives and experiences offer valuable insights that can inform other aspects of housing and homelessness policy,” said Keene.

In addition to preparing a report for Columbus House, Robinson is completing an academic paper on her findings for submission to a journal.

After graduating next year, Robinson wants to continue working at the intersection of public health and housing. She might want to work for a government agency and further engage disadvantaged communities. She also hopes to continue research on factors affecting the availability of affordable housing.

“The study aimed to better understand the experiences of those who moved into the hotels from congregate shelter or unsheltered living situations during the pandemic to better inform future housing policy and advocacy,” she said.

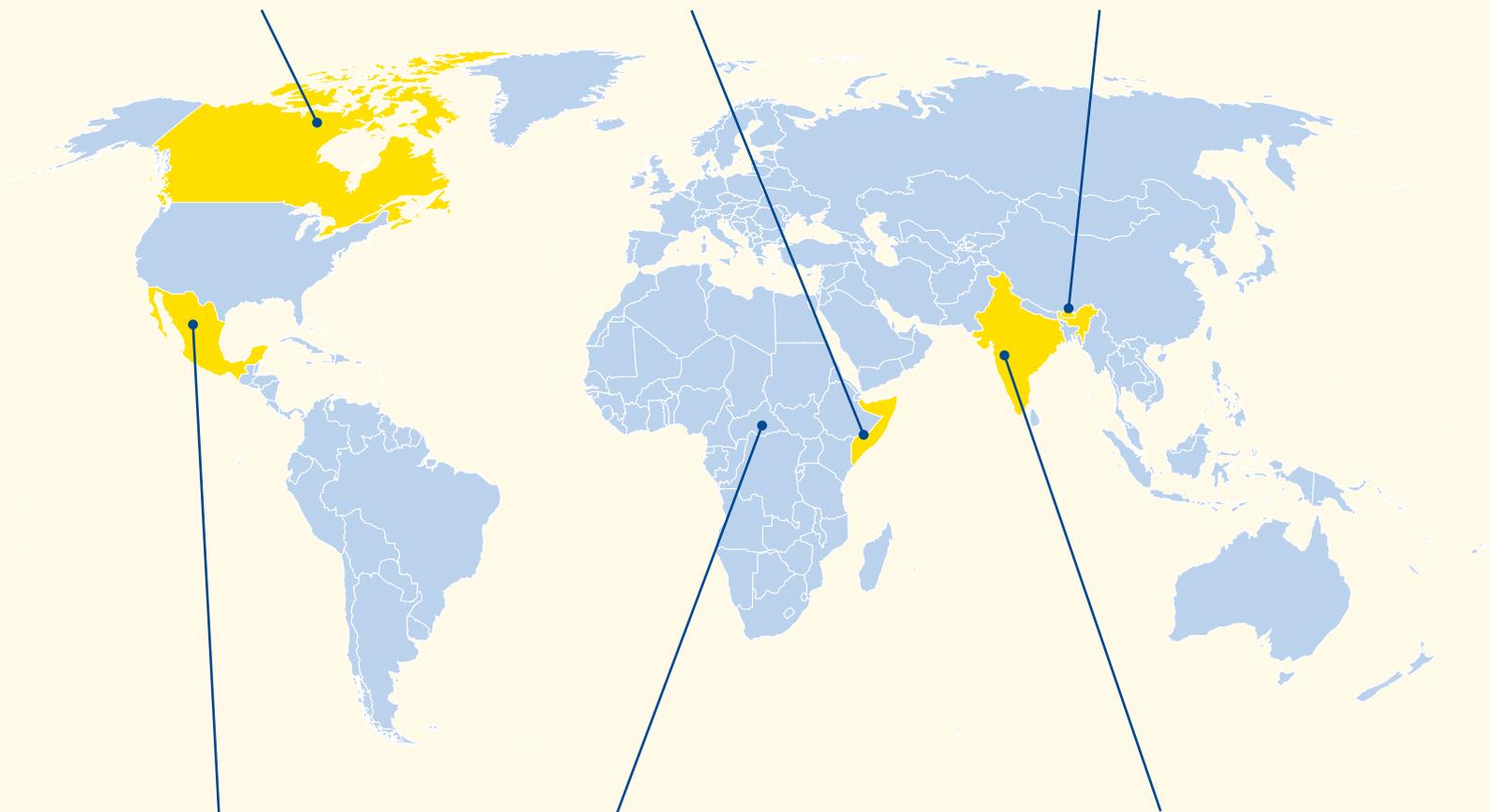
*Above:* Leah Robinson and Sage, a border collie, golden retriever mix, take a break during a hike. Robinson worked on a project in New Haven recently to better inform assistance programs for those struggling with homelessness.

## YSPH AROUND THE WORLD

**NUNAVUT** A YSPH doctoral candidate travels to sparsely populated northern Canada to study nutrition among Inuit communities.

**SOMALIA** A YSPH study finds that a lack of essential COVID-19 prevention and treatment services could be putting millions of internally displaced people at risk.

**BHUTAN** A YSPH alumna and health minister of Bhutan is elected president of the 74th World Health Assembly.



**MEXICO** A partnership between the Center for Methods Implementation and Prevention Science at YSPH and the National Institute of Public Health in Mexico leads to a new online science course.

**AFRICA** A team of YSPH researchers is contributing to scaling up surveillance efforts for drug-resistant malaria in a wide swath of Africa as the situation becomes increasingly serious.

**INDIA** An M.P.H. student who is also a health reporter writes a series of personal reports from Maharashtra about the toll of the pandemic in her homeland.

A sampling of the international public health work underway by the Yale School of Public Health.

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