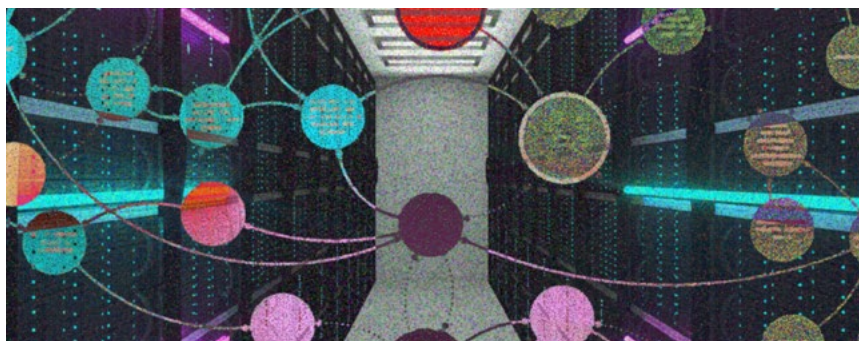
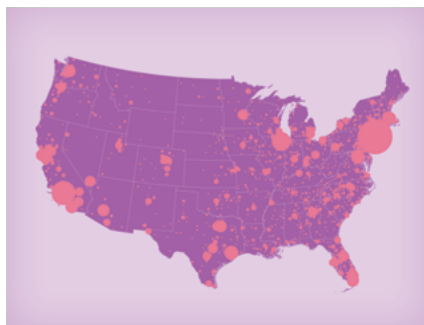
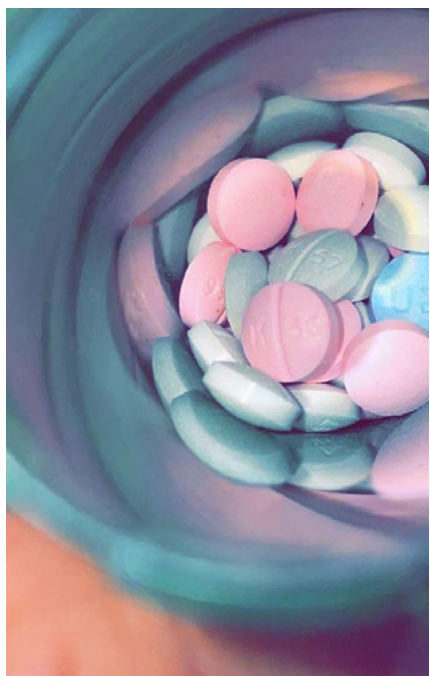


CITY HEALTH

SPRING 2021

COVERING
Student Voices
The Opioid Epidemic
Impact of the Pandemic

Student Guide
Policy & Inequality
Computer Modeling
AND MORE



Research and service in a pandemic year.

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Dean's Welcome

Dear colleagues,

I welcome you to the spring 2021 issue of *City Health* magazine. Our true colors emerge in a time of challenge, and this pandemic year has brought forth in our CUNY SPH family new reserves of resilience, innovation, and dedication to the health of populations.

I couldn't be prouder of our students, so many of whom unhesitatingly joined the battle against the impact of the pandemic to support their communities, patients, and peers, even as they faced new obstacles in their academic and personal lives. Read about some of their efforts in the articles on page 4 and page 19.

Our faculty brought their expertise in infectious disease, vaccine hesitancy, environmental science, and computational simulation modeling to bear in understanding and combating the Covid-19 virus, thereby helping to shape policy in New York City and nationally. And critical public health studies carried on, including our work in addressing opioid use disorder and uncovering the ways that well-meaning policies can drive or defeat inequality.

I hope you find this issue informative and engaging and look forward to sharing more about our school in our upcoming Annual Report, when we will have new findings from our international studies of vaccine policy and acceptance.

With my very best wishes,



Ayman El-Mohandes, MBBCh, MD, MPH

DEAN



CONTENTS

STORIES

- 4 Student Voices From the Pandemic
- 9 CUNY Scholars Take on the Opioid Epidemic
- 16 Moving Past 'Silver Bullet' Solutions in the Pandemic and Beyond
- 21 Students Create the *Guide to Surviving and Thriving at CUNY*
- 25 Policy Can Drive Inequality—It Can Also Redress It
- 29 How is the Pandemic Changing Us?

RESEARCH BRIEFS

- 33 Selected CUNY SPH research highlights from the past year

Student Voices From the Pandemic

IN THE MIDST OF THEIR GRADUATE STUDIES, MANY CUNY SPH STUDENTS PLAY CRITICAL ROLES IN THE PUBLIC HEALTH INFRASTRUCTURE OF OUR CITY AND REGION.

They are health department workers, nurses, doctors, administrators, researchers, educators, wellness directors, and laboratory technologists, to name a few.

Since the onset of the pandemic, these students have thrown themselves into the fight against the virus. And even more students leapt into action when the pandemic struck, as contact tracers, community engagement specialists, and volunteers in the vaccine effort.

The following is a small selection of the reflections they shared via a survey earlier this year.

Carly Luk 2021 GRADUATE

MPH IN HEALTH POLICY AND MANAGEMENT

“I work in clinical research for breast cancer, and the Covid-19 pandemic has been challenging for cancer patients who still need care. Cancer doesn’t stop for anything, even a pandemic! My team has implemented new guidelines to keep our patients safe, such as using telemedicine if possible. We’ve been advocating on behalf of our patients to allow the trial sponsors to grant additional flexibility given the pandemic, and we are working on trials to expand access, such as administering injections at home. As public health officials have warned, we do not want anyone to delay seeking the medical care that they need. It’s been challenging to manage treating cancer patients during a time like this, but I’m proud of how adaptable my team has been.”

“*It's been challenging to manage treating cancer patients during a time like this, but I'm proud of how adaptable my team has been.*”

— **CARLY LUK**, MPH in Health Policy and Management (2021 GRADUATE)

Alanna Cruz STUDENT

MS IN GLOBAL AND MIGRANT HEALTH POLICY

HIAS* Health Needs Assessment

“I developed and distributed a health needs survey to Spanish-speaking asylum seekers who were HIAS clients to assess medical and mental health needs as well as food security during the Covid-19 pandemic. I analyzed the results of these assessments and coordinated direct resources for these individuals, including rental assistance and utility payment support, information related to local food banks and services, and access to free/low-cost medical and mental health services.”

**HIAS provides vital services to refugees and asylum seekers around the world and advocates for their fundamental rights so they can rebuild their lives.*

Nadine Ulysse 2021 GRADUATE

MPH IN HEALTH POLICY AND MANAGEMENT

Child Life Specialist, New York Presbyterian Hospital

“I would assist families who had loved ones admitted to the hospital, providing them with information and supporting them after they learned of their loved one's death. Covid-19 was such a surreal experience. Here we are as compassionate professionals who dedicate our time to help people and now we are unable to provide the quality of care we would like and we had to play the role of family for all those admitted due to the restrictions. It was devastating to know that so many families had to say goodbye over the phone.”

Melissa Carreno STUDENT

MPH IN HEALTH POLICY AND MANAGEMENT

Urban Health Plan – Administrator

“I have done various admin work to make sure that Homeland Security keeps my staff and me with enough PPE supplies, especially while checking in and testing people from the community. I also make sure that the testers have enough test kits and report every morning to the state and homeland security on how much PPE we used, how many people were tested, how many are scheduled to be tested for the day and if there any critical needs that may prevent us from testing the community. We used to operate as a community health center and due to Covid we are now only doing testing for the people in the community.”

Dari Goldman MPH 2021 GRADUATE

MPH IN COMMUNITY HEALTH EDUCATION

Research project: Coronavirus and Pregnancy, with Associate Professor Diana Romero

“In order to reduce the effect of trauma and changes in access to healthcare from Covid-19 on pregnant women in New York, we must better understand the early impact of the pandemic and the related needs of this population. This evidence can then inform interventions on how to best serve this population in response to this unprecedented public health crisis.”

Kira Argenio 2021 GRADUATE

MPH IN EPIDEMIOLOGY AND BIostatISTICS

Research project: Together 5000 sub-study of LGBTQ experiences during the pandemic, with Professor Christian Grov

“Potential consequences of the pandemic for trans populations include reduced access to gender affirming care, isolation from protective communities and resources, and sheltering in place in an environment that is not accepting of their gender or sexual identity. For example, one study found that Covid-19 impeded access to hormone replacement therapy, post-operative care and mental health among trans and non-binary participants.”

“

Here we are as compassionate professionals who dedicate our time to help people and now we are unable to provide the quality of care we would like and we had to play the role of family for all those admitted due to the restrictions.

— **NADINE ULYSSE**, MPH in Health Policy and Management (2021 GRADUATE)

Michelle Rodriguez STUDENT

MS IN ENVIRONMENTAL, OCCUPATIONAL,
AND GEOSPATIAL HEALTH SCIENCES

NYC Health and Hospitals Public Health Advisor, Community Engagement Specialist

“I worked as part of NYC Health + Hospitals’ Covid-19 initiative, conducting calls and home visits to those who tested positive and close contacts of theirs, to assess their needs and help mitigate the spread of the virus. I was involved in community outreach to schools in preparation for in-person learning. I was also involved in efforts to distribute PPE (e.g. masks, hand sanitizer) to people of the NYC community while also collecting data on how many people used masks properly, improperly, or not at all to help understand the efforts of New Yorkers.

This experience allowed me to better understand the impact of Covid-19, especially in underserved, minority communities. While conducting fieldwork, it was clear that there was a sense of uncertainty and mistrust. This was also during the Black Lives Matter protests which only added to the mistrust. Coming from a minority background myself, I tried to showcase that I understood the systemic oppression they faced and understood their hesitation. Often times, people did not have anyone to go to or speak to, and I allowed myself to be an outlet for these people to express all of the built-up emotions. There were times where individuals did not have anyone to dial 911 for them or they were too afraid to seek medical attention, afraid they would be turned away by the healthcare system. Whenever necessary, I stepped in to provide the appropriate/relevant resources while ensuring them that I was there for them because I just wanted to see them get past this. Sometimes individuals I worked with would randomly call me just to say thank you. This experience was very rewarding and I appreciate all of the acceptance I received from my community.”

“

About a dozen hospitals in New York City have closed since I began my career 17 years ago. Most emergency rooms are overwhelmed and understaffed. We need to invest more in public health and better manage our health care systems.

— JOSEPH TANNUZZO, MPH in Health
Policy and Management (STUDENT)

Jennifer Carmona STUDENT

DPH IN HEALTH POLICY AND MANAGEMENT

Point of distribution site staff for the NYC Health Department

“Most of my work on Covid at the Health Department pertains to testing (I lead the testing task force in the Health Department’s incident command structure).”

“*Coming from a minority background myself, I tried to showcase that I understood the systemic oppression they faced and understood their hesitation.*

— MICHELLE RODRIGUEZ, MS in Environmental, Occupational,
and Geospatial Health Sciences (STUDENT)

“

*It's so easy
to get lost in
our passion
for caring for
those in need
as healthcare
workers.*

— **DARYLE CAMPBELL-BLACKSTOCK**,
PhD in Environmental and Planetary
Health Sciences (STUDENT)

“

*We are serving a large
immigrant population
that is mostly uninsured.
We see everyone regardless
of their ability to pay.*

— **SHARON JOSEPH**, DPH in
Epidemiology (2021 GRADUATE)

Shari Jardine STUDENT

PHD IN COMMUNITY HEALTH AND HEALTH POLICY

Hospital Administration at a field hospital in Staten Island
“While it has been extremely arduous and exhausting, I am grateful to have acquired a new set of skills that I have the opportunity to immediately apply.”

Joseph Tannuzzo STUDENT

MPH IN HEALTH POLICY AND MANAGEMENT

“As an ER Nurse, I am responsible for treating patients entering the emergency department and have seen countless cases of Covid-19. The patients mostly present with mild symptoms of the virus. Many people come in scared and confused about the virus. The elderly and those with serious comorbidities such as diabetes and COPD have been the majority of serious cases. These patients have often needed resuscitation and admission to intensive care units.

I have had two coworkers die from this virus. The virus has shown that hospitals and the health care system were not prepared for this pandemic. About a dozen hospitals in New York City have closed since I began my career 17 years ago. Most emergency rooms are overwhelmed and understaffed. We need to invest more in public health and better manage our health care systems.”

Daryle Campbell-Blackstock STUDENT

PHD IN ENVIRONMENTAL AND PLANETARY HEALTH SCIENCES

“As a Physician Assistant and Director of Clinical Transplant Operations, I work with a phenomenal team of clinicians, administrators to care for our extremely vulnerable/immunosuppressed patient population. Our team has also been redeployed to many non-transplant areas utilizing our skillset in treating complex patients.

It's so easy to get lost in our passion for caring for those in need as healthcare workers. Most of us joined this field because of this innate caregiving quality to help those in need. It is easy to lose track of our own health. It is essential to maintain our mental and physical health, and it has never been more critical as we battle this Covid-19 pandemic.”

Sharon Joseph 2021 GRADUATE

DPH IN EPIDEMIOLOGY

Open Door Family Medical Center, Associate Medical Director, Port Chester site and Director of Pediatrics

“I am a pediatrician engaged in testing patients and counseling them regarding their results. We are serving a large immigrant population that is mostly uninsured. We see everyone regardless of their ability to pay. Our services are an important resource in maintaining the health of the Port Chester community.”



CUNY Scholars Take on the Opioid Epidemic

TWENTY YEARS AFTER A GLUT OF PRESCRIPTION OPIOIDS FLOODED THE DRUG MARKET, KICKSTARTING AN EPIDEMIC THAT HAS GRIPPED MILLIONS OF AMERICANS, COMMUNITIES NATIONWIDE ARE STILL STRUGGLING TO RESPOND.

by *Andrea Kott*

A critical approach: Addressing the factors that both drive the epidemic and obstruct the implementation of proven interventions.

RESEARCHERS AT CUNY SPH say the struggle is less about developing evidence-based interventions to treat and prevent opioid use disorder (OUD) than about overcoming existing attitudinal and structural roadblocks to interventions, which have only been exacerbated by the coronavirus pandemic. To address this, they are studying the factors that are both driving the opioid epidemic and obstructing the adoption of proven interventions.

TRAJECTORY OF USE

Alice first used opioid painkillers when she was 17. By age 18, she was crushing and snorting them.

"It was very simple," the 25-year-old New York City woman recalled. "My stepfather had a massive back surgery but didn't like the way the painkillers made him feel, so they were just sitting around the house. He would fill his prescription and never take them and never seemed to notice they were missing. I just kind of ... I was taking them."

Among the millions of Americans living with OUD are many young adults who came of age at the dawn of the opioid epidemic, when doctors, encouraged by the effectiveness and over-abundance of prescription opioids (POs), began prescribing them liberally, said Research Associate Professor Honoria Guarino, PhD.

"Doctors were prescribing opioids for any kind of pain. They thought they were doing a good thing," Guarino said.

Ubiquitous in American households, opioids like OxyContin became easily accessible to teenagers, who used them recreationally, like marijuana, believing they were safe.

"The fact that the drugs were medically prescribed lent an aura of safety," Guarino said. "Young people started taking them without realizing they could become opioid dependent."

By studying OUD in New York City teens and young adults, Guarino and Associate Professor Pedro Mateu-Gelabert, PhD, also with the Institute for Implementation Science in Population Health (ISPH), have made important observations about the triggers and patterns of PO use. Many of

these observations come from their recent study of 539 prescription opioid or heroin users ages 18 to 29. The study found that in this population, opioid use typically began at approximately age 17, largely with immediate-release oxycodone (OxyContin) or hydrocodone, which users obtained for free from friends, relatives or household sources, and took socially, mostly to get high, satisfy curiosity, and party. At around age 19, on average, participants transitioned from POs to sniffing heroin, which they began injecting at around age 20. Less than a year after starting heroin, participants experienced their first overdoses; more than half reported multiple overdoses.

An earlier study that Guarino and Mateu-Gelabert conducted of 46 New York City young adult PO users ages 18 to 32 produced similar findings: most notably, a pattern of escalating PO use and dependence over time, eventually leading to injecting them or heroin, or both.

MULTIPLYING RISKS

Research shows that young, newly-initiated injection drug users have particularly high rates of injection-related risk behaviors, such as sharing syringes and other drug paraphernalia, which expose them, in turn, to even more risks—especially health risks—including hepatitis C virus (HCV).

HCV is an insidious, highly transmissible virus that spreads most commonly via shared needles or other drug injecting equipment and causes a liver infection that can become chronic and serious, leading to long-term health problems, or death. The Centers for Disease Control estimates that 2.4 million people in the United States are living with chronic HCV infection. A 2017 multi-state review of global HCV infection prevalence among injection drug users estimated that 38–68 percent are living with the virus. There is no HCV vaccine, although there are oral antiviral treatments that cure the virus within two to three months. Nevertheless, the best way to prevent HCV infection is to avoid injecting drugs and related behaviors.

Most participants in Mateu-Gelabert and Guarino's study, 30 percent of whom had HCV, did not know this. They reported having very little knowledge of the HCV and HIV-infection risks associated with sharing syringes and other injection paraphernalia. What's more, they reported having little access to information on the harm reduction practices—including education

about the dangers of street drugs, the risk of HCV, and the likelihood of unprotected sex with casual strangers—that can both prevent users from progressing to injecting drugs, and arm those who are already injecting with information about avoiding HCV transmission and accessing treatment. Many of the users in Mateu-Gelabert and Guarino's research had never accessed harm reduction or treatment; those who did had generally already begun injecting drugs.

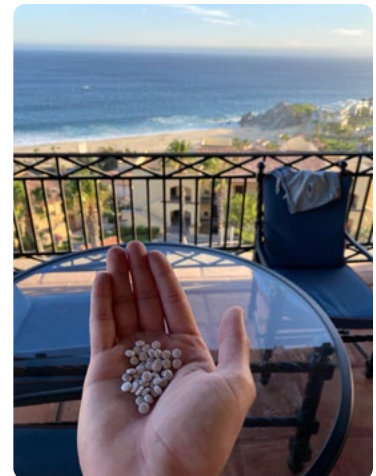
THE RISK OF BEING MIDDLE CLASS

In both studies, most participants were white and had middle class backgrounds; nearly 40 percent of participants in the first study had had some college. Besides being unacquainted with the dangers of street drug culture, most perceived themselves differently than 'junkies' who injected drugs.

"There is a misperception that people with OUD are homeless or uneducated, but OUD is very much a white middle class phenomenon," Mateu-Gelabert said. "These were young people who had greater access to recreational drugs, became dependent, and needed to take them every day. Being smart or in college or from a middle class

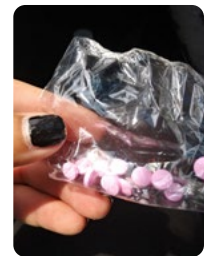


Professor Pedro Mateu-Gelabert, PhD, and Research Associate Professor Honoria Guarino, PhD.



THERE IS A MISPERCEPTION THAT PEOPLE WITH OUD ARE HOMELESS OR UNEDUCATED, BUT OUD IS VERY MUCH A WHITE MIDDLE CLASS PHENOMENON





OPIOID USERS UNITE ONLINE

An online forum—from which the images on this and the preceding page have been pulled—guides middle class prescription opioid users to differentiate between pharma pills and fake ones pressed on the street, which are more likely to contain fentanyl.

“Unlike HIV, HCV does not require shared needles to pass from one user to another. Merely sharing paraphernalia like the mixing dish, cookers, filters, or drug-diluting water is enough to transmit the virus.”

family is not protection from the opioid epidemic. In fact, it’s more of a risk factor.”

Indeed, being middle class was something of a barrier that discouraged users’ knowledge or use of harm reduction services, since the “junkie” behavior of injecting heroin was something they insisted they would never do. Yet, as government tried to stem the rising epidemic by tightening the flow of POs, and as the cost of usage climbed to \$80–\$100 per day, most did.

“Heroin was such a cheaper alternative,” said 25-year-old Alice, whose loss of a friend to a heroin overdose steered her away from the drug.

In 2015, the Centers for Disease Control cited PO misuse as the single greatest risk factor for heroin use.

“A heroin bag in New York City has been \$10 forever, which is relatively cheap compared to OxyContin, which is \$1/per milligram pill,” Mateu-Gelabert said. Thus, just one 60mg. or 80mg. pill, popular dosages among PO users, costs \$60–\$80. “If you have to take that pill everyday several times, it is hard to manage.”

Because participants in Mateu-Gelabert and Guarino’s research did not consider themselves “junkies” and generally could afford sterile syringes, they eschewed harm reduction services, like needle exchange programs.

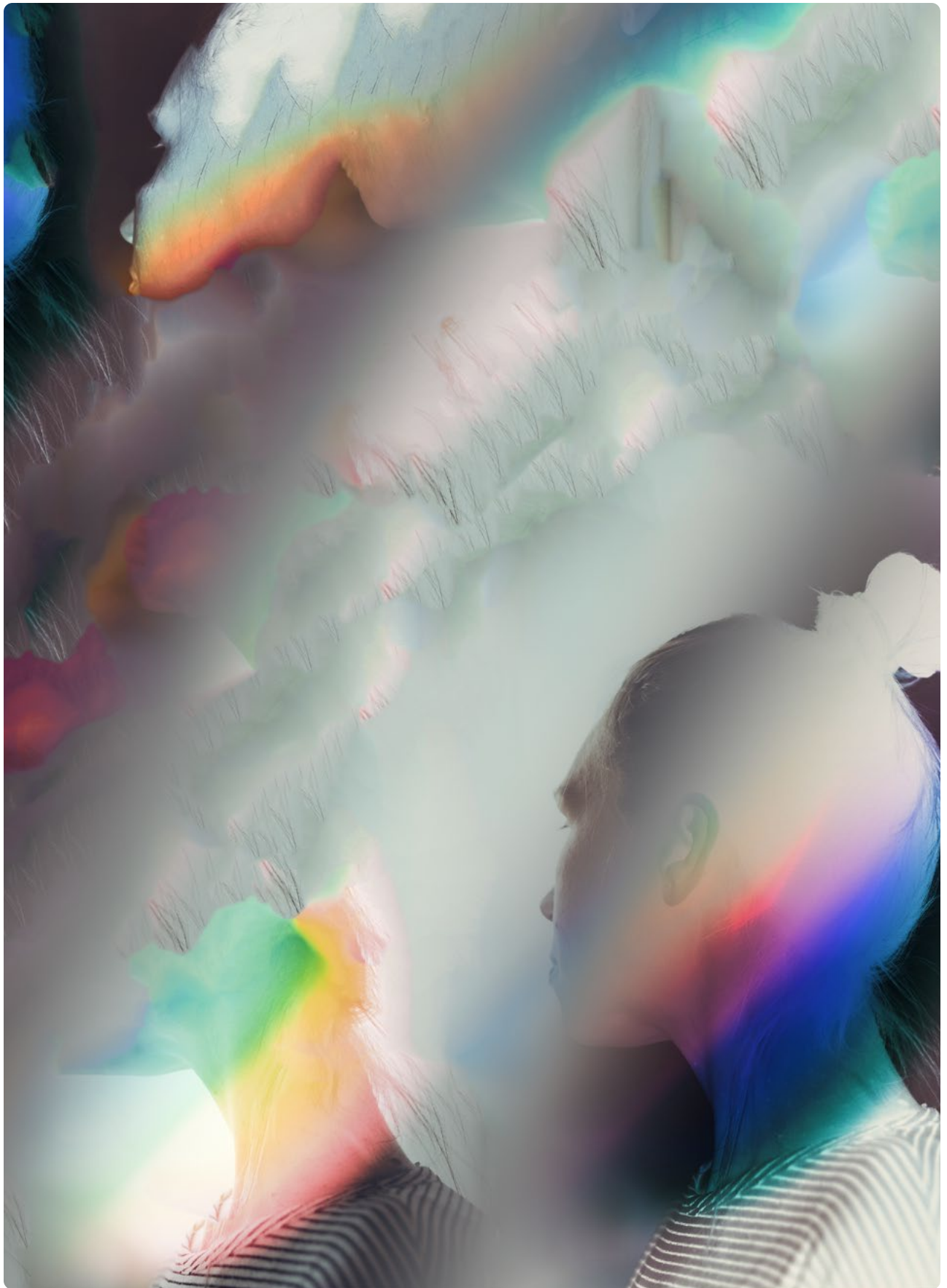
“They bought syringes in pharmacies, which was a problem because they were less likely to learn about the risk of sharing injection paraphernalia other than syringes,”

Mateu-Gelabert said. Many did not know where to find such services or that they even existed, he added.

Largely unaware of the risks of acquiring HIV or HCV, many participants also “selectively shared” syringes and other injection paraphernalia with friends and sexual partners who they saw as ‘trustworthy’ because they shared similar class backgrounds.

One such user, Linda, a White 31-year-old female, said, “People think, ‘I know this person from high school, his mom and dad are middle class, wealthy.’ They think that that person will not get Hep C or HIV, and say, ‘Do you have anything? No, then it’s okay for us to share needles.’”

But, as Mateu-Gelabert noted, “Unlike HIV, HCV does not require shared needles to pass from one user to another. Merely sharing paraphernalia like the mixing dish, cookers, filters, or drug-diluting water is enough to transmit the virus.” Diseases like HIV or HCV were not the only risks that participants faced. Substance use also increased their risk for unprotected sex and sexual violence. According to the 2017 National Youth Risk Behavior Survey, 29 percent of high school students are currently sexually active, and of these, 19 percent drank alcohol or used drugs before last sexual intercourse. Although alcohol is the most common substance associated with sexual violence, studies show that drugs also play a role. In one such study, college students reported that nearly half of rape cases involved drugs



FOR THEM, OPIOID USE WAS A RITE OF PASSAGE, PART OF THEIR TRANSITION TO ADULTHOOD, AND SOMETIMES, A COPING MECHANISM



or alcohol. In a separate study, participants who had experienced sexual violence in the past year were five times more likely than those who had not to misuse POs during this same time frame.

Yet, the young people who Mateu-Gelabert and Guarino studied did not anticipate HCV infection or sexual violence, let alone opioid dependency. For them, opioid use was a rite of passage, part of their transition to adulthood, and sometimes, a coping mechanism.

“Early or emerging adulthood is a very stressful time in our culture,” Guarino explained. “Opioids are great in the short term for treating stress and alleviating social anxiety.”

In the past year, Mateu-Gelabert and Guarino have observed an overall increase in serious depression, anxiety, tension and other pandemic-related phenomenon in their study populations during the current health crisis. They have yet to gather such data as it pertains specifically to young people’s emotional health and drug injection behavior, although national data show that in the general population there has been a significant increase in the number of opioid overdoses and overdoses to which emergency personnel have responded, as well as significant increases in alcohol and drug use. Other pandemic-related changes that have been widely reported include difficulties in accessing drug treatment (especially forms such as individual or group counseling) due to social distancing mandates, and high rates of relapse.

Meanwhile, Mateu-Gelabert and Guarino have heard young adult injection drug users credit opioids for enhancing their sexual pleasure or performance. Others said that POs gave them “the most incredible feeling ever,” or made them feel “the best I’ve ever felt in my life,” or “how I was meant to feel,” Guarino recounted.

“You can see how irresistible this must be. Why wouldn’t everyone want it? They had no knowledge that the pharmacology of OxyContin is the same as heroin.”

By her junior year of college, Alice was using opioids regularly. She managed, on her own, to gradually reduce her opioid use and finish college but continued using them sporadically, while three of her roommates transitioned to heroin.

STIGMA AND SHAME AS BARRIERS TO TREATMENT

In addition to critical education gaps about OUD, the risk of addiction and HCV, and the value of harm reduction programs for minimizing such risks, Mateu-Gelabert and Guarino’s research identified stigma and shame as pernicious barriers to OUD treatment.

“Drug use is not only illegal but also heavily moralized in this country,” Guarino said. “People who become dependent on opioids are seen as morally weak. They may feel the need to hide it from almost everyone they know except a small number of peers.”

Stigma and shame colored every aspect of users’ lives, often driving them to hide their behavior or worse, away from harm reduction services or treatment, Mateu-Gelabert said.

THE ‘NIMBY’—NOT IN MY BACKYARD—EFFECT

The stigma of OUD sometimes blinded parents as well as communities to children’s opioid problems, presenting another barrier to treatment.

“The insistence that ‘this is not happening in my community’ gets in the way of individual treatment, treatment in communities, and treatment funding,” Mateu-Gelabert said. Methadone programs or ‘substitution therapies’ that wean individuals away from opioids are a case in point.

“Often times people think of substitution therapy as switching from one bad drug to the other,” Mateu-Gelabert said. Moreover, a community may fear that a methadone clinic will undermine its safety.

“Everywhere you have a methadone clinic you have a community board that wants to get rid of that methadone clinic,” Guarino said.

What people don’t realize, Mateu-Gelabert said, is that methadone and other evidence-based medication-assisted therapies have proven positive outcomes. “It is important for parents to know that medication-assisted treatments with buprenorphine, methadone and naloxone (for reversing overdoses) are science-based and the best treatments we have.”

Barriers to medication-assisted treatment also exist in the health care system, which traditionally has required candidates to have long histories of drug dependence, and doctors to have a specific Federal waiver—which requires them to take an 8-hour certification course—to prescribe

An anti-methadone clinic sentiment is expressed by a large graphic banner across the top of a building in the Mayfair neighborhood in Philadelphia, PA.



buprenorphine for opioid dependence. Only specially licensed Opioid Treatment Programs (OTPs) or clinics, whose operations are heavily regulated at the Federal and state levels, can prescribe methadone for opioid dependence.

Yet, certification does not ensure that patients will seek a doctor's help.

"Many young people see their pediatrician until age 18," Mateu-Gelabert said. "It may be hard to talk about their struggle with OxyContin with the doctor they've seen since they were eight years old."

Jails, where people with OUD often land, have their own treatment barriers. "We need to tell district attorneys that we don't want our young people incarcerated, and that it's not okay to incarcerate someone without treatment. We need to divert them to drug treatment instead," Mateu-Gelabert said. More importantly, he stressed, "We need to find young people before they develop full-blown drug dependency or transition to injection drug use."

The pandemic—and resulting social distancing protocols—have presented additional barriers, such as needle exchange programs' reduced operating hours and limited open door policy.

"We have seen a significant increase in

the number of people who are re-using their own syringes, due to fewer numbers who can go to needle exchange programs," Mateu-Gelabert said.

Individuals have also experienced trouble accessing methadone clinics, which have been trying to address the problem by distributing greater supplies of methadone for at-home use—with mixed results—he noted.

NEED FOR EDUCATION & PREVENTION

Guarino and Mateu-Gelabert's research underscores the need to target communities, and especially vulnerable pre-adolescents, with culturally tailored, non-judgmental, and discreetly accessible education about OUD and stigmatization, addiction, and related health risks such as overdose and HCV, as well as harm-reduction and treatment options.

One such intervention, *Staying Safe*, is designed to reach young adult injection drug users who are neither HIV- nor HCV-positive. In its first phase, *Staying Safe* features four small, consecutive in-person groups in which users can learn basic harm reduction skills for protecting themselves against HIV, HCV, and overdose.

"We focus on avoiding crisis points that make young people more likely to share drug paraphernalia, and how to avoid these situations or at least be armed with sterile equipment," Guarino said.

The second phase of *Staying Safe* involves a mobile phone app designed to remind users about safety strategies, and to help them track their injection frequency, episodes of sharing syringes and secondary equipment, and of withdrawal, which increases risk of overdose.

A separate mobile intervention called *OnTrack*, which Guarino is developing with Michele Acosta, PhD, Principal Investigator at the National Development and Research Institutes, Inc., in New York City, provides facts about opioids, overdosing, tracking and usage, as well as cognitive and dialectical behavior therapy skills for avoiding or controlling opioid use.

"The goal is to help young people not become injectors," Guarino said. "They can use relaxation, breathing, or visualization to help them find other ways to manage intense emotions that don't involve opioid use."

Additionally, Mateu-Gelabert and Kristen Marks, MD, an associate professor of medicine in the Division of Infectious Diseases at Weill Cornell Medicine, are conducting an *Accessible Care Study*, which

will compare the effectiveness of accessible care with usual care in linking and engaging opioid users in drug treatment, and retaining them in care for hepatitis C, addiction, and HIV prevention. Unlike usual care, accessible care occurs in community-based locations where people can access services without fear of shame or stigma. It does not require users to control their drug intake and provides counseling only if requested.

Unexpectedly, Mateu-Gelabert and Kristen Marks have noticed a significant reduction in drug use among participants in the Accessible Care intervention, which they attribute to its positive impact.

"I'm happy to see that participants have been able to face Covid-19 without resorting to more drug use or drug injection," Mateu-Gelabert said, adding that drug use in the control group remained the same. To adapt to social distancing guidelines, the researchers make all follow-up interviews virtual, he added.

HEALING COMMUNITIES

Evidence-based interventions for opioid prevention and treatment exist, yet governments, communities, and health care are failing to work together to implement them on a population-wide basis, said Professor Terry TK Huang, PhD, MPH, MBA, chair of the Department of Health Policy and Management and director of the Center for Systems and Community Design. Huang is leading CUNY's participation as technical advisor to the National Institutes of Health's HEALing Communities Study, a multi-site trial designed to help communities overcome roadblocks to evidence-based OUD interventions across multiple settings including health care, behavioral health, and justice. The Columbia University School of Social Work is the study's principal investigator for HEALing Communities in New York State, while CUNY, New York University, Cornell University, and Montefiore Medical Center/Albert Einstein College of Medicine, and the University of Miami are co-investigators.

The study will target 67 communities in four states—New York, Kentucky, Ohio, and Massachusetts—with high rates of opioid overdose deaths, including 16 counties in New York State. Under Huang's direction, CUNY will use systems science to help communities create a coordinated, data-driven approach to planning and implementing a continuum of evidence-based interventions, including school and community based

“

Unlike usual care, accessible care occurs in community-based locations where people can access services without fear of shame or stigma.



MARKETING HEROIN

“Stamps” on the glassine packets used by heroin dealers attest to the provenance, strain, and purity of the contents.

CREDIT: PEDRO MATEU-GELABERT.

primary prevention, prescription drug monitoring programs, medication-assisted treatment, behavioral therapies, and recovery support services, while identifying roadblocks to implementing these interventions.

“The opioid problem is a complex issue, but the real problem is not clinical in nature,” said Huang, the CUNY site principle investigator. “The real problem is the human-organizational implementation challenges regarding adoption, reach, and coordination that are so difficult because they’re dependent on humans thinking outside the box, communicating with each other, and doing things that traditionally have not been part of their job description.”

Jails have not been charged with dispensing opioid medication, for example, even though OUD affects many incarcerated people.

“To get such a sector to adopt new practices and see themselves as being part of a broader public health system is a real implementation challenge,” Huang said. HEALing Communities will convene jails, community advisory boards, hospitals, health care providers, emergency medicine departments, and other stakeholders to forge the united front that an effective response requires, he explained. “If a whole society of stakeholders coordinates and collaborates, then they can more effectively drive down the rates of opioid overdose and death.”

Supporting stakeholders in this joint

effort calls for data. As part of its contribution to HEALing Communities, CUNY, under the guidance of Distinguished Professor Denis Nash, PhD, MPH, executive director of the ISPH, is developing an opioid overdose ‘dashboard’ that will compile existing data from numerous sources to display a real-time picture of each community’s opioid crisis.

“The study is about communities,” Nash said. “It takes a wide, inclusive view, recognizing that OUD, opioid overdose and related deaths are not something hospitals or governments will solve on their own. They are multi-sectorial and need the engagement of many different people and entities that are in positions to support the effort.”

CONCLUSION

So far, the opioid epidemic has presented an uphill challenge, overshadowing the strides of progressive cities like New York in promoting and providing access to harm reduction and treatment through methadone programs, free needle exchanges, and the distribution of naloxone, Mateu-Gelabert said. Still, he and his CUNY colleagues agree, much work remains to be done.

“We need to do better to reach young people and provide them with knowledge about HIV and HCV injection risk, and access to medication-assisted therapy,” he said.

The stigma and shame of OUD, and the misperception that drug dependency

happens everywhere but home must also end, Guarino added.

“Most drug users are not publicly visible, they’re actively hiding because they have to,” she said. “People don’t realize that drug users are right next to them all the time. They’re not the other. They’re us.”

Accepting this truth might be the first step toward overcoming barriers to proven interventions.

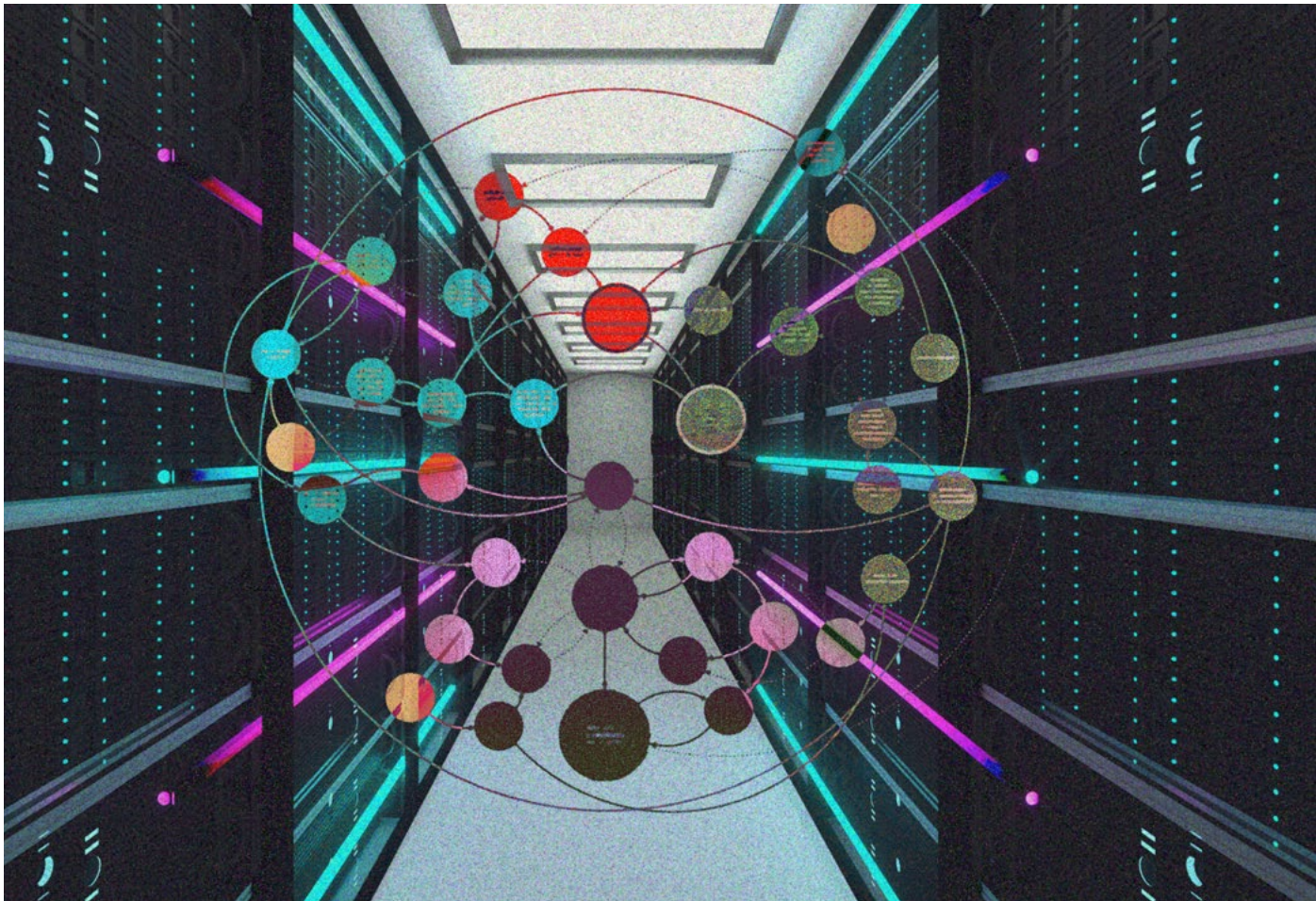
“Increasing the availability of drug treatment is within our power,” Mateu-Gelabert said. “The cost is relatively low. The cost of not acting is way too high because it’s killing our young people.”

PEOPLE DON'T
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Moving Past ‘Silver Bullet’ Solutions in the Pandemic and Beyond

DR. BRUCE Y. LEE ON HOW COMPUTER MODELING OF COMPLEX SYSTEMS
CAN HELP US RESPOND TO LARGE-SCALE PUBLIC HEALTH CRISES.

by *Elaine Meyer*



Systems mapping, computational simulation modeling, artificial intelligence (AI), and machine learning offer powerful ways to represent a wide range of scenarios that can't be easily observed or ethically tested, saving valuable time, money, and other resources.

BRUCE Y. LEE, MD, MBA, PROFESSOR OF HEALTH Policy and Management, executive director of Public Health Computational and Operations Research (PHICOR), and executive director of the Center for Advanced Technology and Communication in Health (CATCH), at CUNY SPH, has spent years advising governments how to navigate complex distribution and supply chains to carry out successful vaccination efforts, using computer simulation models. In December 2020, as the Covid-19 vaccination campaign began, he offered a warning.

“Don’t assume that current vaccine supply chains are sufficient to deliver Covid-19 vaccines,” Lee wrote in an Op-Ed for *STAT*. Decision makers, he advised, must anticipate factors like the size of vaccine packaging, the risk of “wastage” due to exposure to warm temperatures, and varying production schedules for the different vaccines.

“The assumption on their part is often that, once vaccines reach the market and

are paid for, vaccine delivery is the easy part and they can somehow magically appear in people’s arms and mouths,” he added.

His predictions now borne out, Lee says the hope that biotechnological innovation alone could end the pandemic is emblematic of society’s misguided approach to public health crises.

“There are so many examples in health where people ask ‘What’s the one magic bullet? What’s the one diet? What’s the one ingredient?’” he says. “There has been a lot of focus on trying to find one cause and one effect in health and healthcare. But most of these health issues are symptoms of broken systems.”

Lee’s research is devoted to helping government, nonprofits, and the private sector address the complexity of society and its systems in responding to public health crises, using computer simulations powered by mathematical formulae.

Over its 14 years, PHICOR has advised

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Our computer models can serve as virtual laboratories to help decision makers design and test different policies and interventions aimed to improve health and public health before trying them in real life

organizations including the U.S. Centers for Disease Control and Prevention (CDC), the National Institutes of Health (NIH), the Aspen Institute, the Bill and Melinda Gates Foundation, and UNICEF. They've used models to estimate the cost of childhood obesity to society and predict the effectiveness of a strategy to prevent antibiotic resistant disease in hospitals. Since the start of the pandemic, their studies have addressed some of its most complicated challenges, like the level of vaccine coverage needed for herd immunity and how many respirators hospitals should keep in stock.

"Covid-19 shows how broad the effects of a public health problem can be," Lee says. A virus that was spreading uncontrolled led to sports leagues having to shut down, businesses to change what they're doing, many people losing jobs and places going out of business, healthcare professionals being overwhelmed. It had reverberating effects around the entire society. It showed that it's all connected, it's exposing and magnifying a lot of the existing problems of our society."

The enormous impact demonstrates more than ever the importance of complex systems science in public health, notes Lee. "The pandemic exposed the weakness of single cause, single effect thinking," he says. "Through the entire pandemic, we've seen situations where there's a focus on one factor without understanding we need a combination of different strategies, a systems approach to tackle Covid-19."

THE CASE FOR MODELING IN PUBLIC HEALTH

Meteorology, air traffic control, and finance have long used computer models to predict weather patterns, airplane travel, and financial markets. Yet systems modeling is relatively new to public health, where most research uses methodology that identifies associations between single factors and a disease. Data is analyzed and abstracted to yield a result, like that coffee is linked to lower cardiovascular disease risk.

A complex systems approach, by contrast, uses data to simulate the workings of interrelated systems and model different scenarios.

"We model a system's complexity in order to address it," says Lee. For example, a model of the obesity epidemic could include data on a neighborhood's grocery stores and fast-food restaurants, access to bike paths and sidewalks, and the food advertising people are exposed to.

Lee compares this work to the popular video game Sims, where players design virtual lives and carry out actions like building a home, starting a family, or opening a business, seeing how it all plays out over time.

"We literally try to recreate what's going on," he says. "Our computer models can serve as virtual laboratories to help decision makers design and test different policies and interventions aimed to improve health and public health before trying them in real life."

Advances in computing technology and data storage over the last couple of decades has made this approach much easier, but Lee is still part of a relatively small group of public health scientists using these methodologies.

His interest in modeling dates to when, as a kid, he developed a computer program that simulated playing tennis on various court conditions. As a student at Harvard Medical School and during his internal medicine residency, he started to think about how medicine could benefit from computational methods.

He recalls trying to convince a group of cardiologists they could use models to decide where to locate cardiac catheterization labs. "The response was, 'We decide where to put cath labs, not some computer,'" he says.

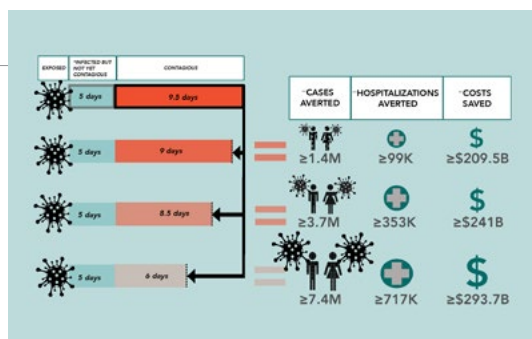
He went on to work at the drug consulting company Quintiles, developing models to evaluate pricing and design clinical trials for clients before moving to academic public health.

Though he became convinced computer models could help answer different questions in health and healthcare, others

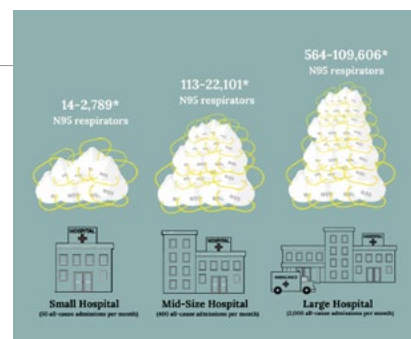


Masked pedestrians on a New York City street, May 12, 2021.

Infographics created by PHICOR to accompany findings published in *PLoS Computational Biology* and *Infection Control and Hospital Epidemiology*.



What is the Impact of Shortening the Contagious Period of Covid-19?



How Many N95 Respirators Will Hospitals Need to Avoid Shortages?

weren't so sure. "I was told many times, 'don't do this kind of work, you'll never be able to publish, you'll never be able to get grants,'" he recalls. He was advised instead to "pick a disease or pick a body part and do that." It's good to have people who do that, but you also need the people who cut across things. I felt many of these problems were interrelated."

Undeterred, Lee started PHICOR in 2007 at Pittsburgh University and later moved to the Johns Hopkins Bloomberg School of Public Health.

In the fall of 2019, PHICOR came to CUNY, where Lee also teaches systems science and computer methods to MPH and PhD students.

"When you talk about CUNY, it's the city," he says. "This university is so integrated with the population in New York. It's hard to think of a better place to do this work, because not only do you have access to all kinds of perspectives and people and resources, but whatever you do in New York has impact, because New York is almost like a microcosm of the world."



Professor Bruce Y. Lee

MODELING COVID-19

Modeling has been critical to efforts to control the Covid-19 pandemic. Last year, PHICOR developed a simulation of a vaccination campaign to figure out when social distancing could be relaxed. They found that in areas where Covid-19 coronavirus is actively spreading, 70 percent of the U.S. population would need to get a vaccine, with an 80 percent efficacy rate, publishing the study in the *American Journal of Preventive Medicine* in October. The *New York Times* adapted the AJPM model to produce an interactive tool on their website to demonstrate the factors that could lead to herd immunity.

In an Op-Ed in *The New York Times* written earlier this year, Lee encouraged everyone to get whatever vaccine is available to them. He referenced a study published in the *American Journal of Preventive Medicine* in 2020 where his team developed a computational model that simulated the entire U.S. population, the spread of Covid-19 coronavirus, subsequent outcomes of infection (e.g., symptoms, hospitalizations), vaccines with different efficacies and vaccination timings, and the associated costs along the way. The results showed that waiting for a vaccine with a higher efficacy would result in additional hospitalizations and costs over the course of the pandemic.

The team also found that reducing the virus's contagious period by just half a day could significantly curtail transmission, preventing up to 1.4 million cases and over 99,000 hospitalizations—even if only a quarter of people with symptoms are treated. The findings were published January 2021 in *PLoS Computational Biology*. An even greater number of cases would be averted if the contagious period were reduced further.

"What this study showed is that even if a treatment were to have seemingly not a huge effect, it can have a reverberating impact in terms of saving lives and preventing hospitalizations, because it's affecting

the transmission of the virus," said Lee. "The vaccine alone may not end the pandemic, so we have to continue to look for strategies that can be paired with the vaccine to help stem the spread of the virus."

At a time when healthcare systems are strained like never before, PHICOR has used modeling to provide guidance on the number of N95 respirators to stockpile, based on admission rates, which they published in January 2021 in *Infection Control and Hospital Epidemiology*. Such work will prove useful going forward, according to Michael Lin, MD, MPH, an infectious diseases physician and epidemiologist at Rush University Medical Center, who collaborated with Lee on the research. "Modeling the demand for N95 respirators can help policy makers estimate the regional and national stockpiles of respirators needed for future pandemics," he said.

Earlier in the pandemic, when some politicians advocated a quick reopening of the economy, PHICOR modeled medical expenditures and healthcare resource needs if the country took a "herd immunity approach" and 80% of the population were infected. The costs could amount to as much as \$1.25 trillion, they reported in *Health Affairs* in April, receiving coverage in *PBS* and *U.S. News & World Reports*.

"There was a lot of talk about the economic impact of social distancing and closing measures and not nearly as much talk of the impact of Covid-19 itself," says Lee. "We felt it was important for policy making to better understand what these extra costs are."

REFRAMING THE COSTS OF CHILDREN'S PHYSICAL INACTIVITY TO SPUR ACTION

While modeling is most commonly used for infectious disease, Lee's work shows it has broad application.

"His is one of the few groups that have used these techniques, particularly around children and physical activity and obesity,"

says Janet Fulton, PhD, Chief of the Physical Activity and Health Branch at the U.S. Centers for Disease Control and Prevention, who is on an advisory panel with Lee. “I think he brings, with his modeling expertise, a really unique perspective.”

PHICOR’s research team drew attention in 2017 with a study in *Health Affairs* that estimated kids’ low levels of physical activity would cost the United States \$2.8 trillion total in direct medical expenditures and lost productivity.

The team made this estimate by simulating America’s 31.7 million children between the ages of eight and 11 as they grew up, changing their body weight based on estimates of activity level and calorie intake. Currently, over two-thirds of kids in the U.S. seldom exercise. At that rate, 8.1 million children would be obese by 2020, PHICOR found. However, if half of children exercised for 25 minutes, three times per week, society would save \$21.9 billion in lifetime wages and medical bills. If all children exercised that much, the savings would be \$62.3 billion.

The study shows that framing public health crises in terms of financial costs helps draw attention to them, which complex systems modeling is well-positioned to do. “We saw that there was this gap in understanding what the cost savings for physical activity is,” says Marie Ferguson, MSPH, a project director who has worked with Lee for the last five years. “We know we need to get kids more active, that’s great. But policymakers really want to see how that affects their bottom line.”

The Aspen Institute’s Project Play, an initiative that works to promote youth physical activity through sports, and the Detroit-based Ralph C. Wilson Foundation, have successfully used PHICOR’s modeling to encourage investment in kids’ sports in the Great Lakes region.

“Bruce’s work is essential in our space because people need to see the benefits well beyond sports of more kids getting physically active,” says Tom Farrey, executive director of the Sports and Society Program at the Aspen Institute. “The CEO of Wilson Foundation puts those numbers front and center when he speaks to the business community about why they need to care about this work.”

REDUCING DRUG-RESISTANT INFECTION RATES IN HOSPITALS

In 2019, health centers in the Chicago-area asked PHICOR to help evaluate a

strategy to prevent the transmission of antibiotic-resistant infections called *carbapenem-resistant Enterobacteriaceae* (CRE) during patient stays, a rising challenge for healthcare systems. PHICOR’s model tested what level of healthcare system participation was needed to deploy a registry that tracks and alerts when patients with “superbug” infections are admitted.

The findings were promising: even if there was “modest” involvement of only 25 percent of the largest health facilities, CRE cases would decline by nearly three percent over three years. If all facilities participated, there would be a meaningful 12 percent reduction in new carriers and a nearly eight percent decrease in the prevalence of infection.

The results have helped support the Illinois XDRO (extensive drug-resistant organism) Registry, which has been accessed by a growing number of hospitals and nursing homes in the state, and a potential model for other state or national efforts.

NAVIGATING VACCINE DELIVERY, INCLUDING BY DRONE

Lee learned the importance of supply and distribution chains many years ago, when he was asked by a funder to study how to develop thermostable vaccines, which can survive temperature fluctuations during shipping and storage. After building models, Lee identified the more immediate problem.

“We started realizing a lot of these distribution systems are inadequate,” he says. What good was developing new vaccines, he wondered, if they couldn’t get where they needed to go?

PHICOR worked in 2014 with the West African nation of Benin on a vaccination campaign for rotavirus, which is responsible for the dehydration deaths of 215,000 children annually, mostly in low-income nations. The team created a model that simulated the journey of thousands of vaccines across the country, representing each refrigerator, vehicle, and vial involved in the distribution process and obstacles like transportation bottlenecks and waste from expired vials. With certain changes to the supply chain, PHICOR found Benin could save \$50,000 to \$90,000 annually and improve vaccination rates, reaching virtually all children.

The model led the government to modify its supply chain so vaccines wouldn’t travel through as many storage locations and vehicles to arrive at clinics. By 2019, after employing these strategies and a mass communications campaign, Benin has

rolled out the vaccine nationwide.

PHICOR has even tested the viability of using drones to transport vaccines over rough terrain in the nation of Mozambique. Distribution faces significant hurdles during the last leg of that country’s supply chain, from the district storage office to local clinics, as they are transported on motorbikes, rafts, bicycles, or even animals.

The group modeled how drones would fare in various, realistic scenarios—encountering bad rainfall and cyclones or wild animals, and even getting shot down out of fear they were part of a military operation—and compared the costs to the existing system. Used frequently enough, the model showed, drones could save anywhere between 20 to 50 percent of costs over land transport.

“It shows that new technology doesn’t have to be expensive,” Lee wrote in the MIT Technology Review.

COMMUNICATING IN A PANDEMIC AND BEYOND

Lee has written about his research and other public health news for outlets like *The New York Times*, *Time*, *The Guardian*, and a regular *Forbes* column.

He believes communication is an essential part of his work. “Science is like that tree in the forest. If it falls and no one hears it, then it doesn’t really make an impact. If scientists only circulate information amongst themselves, it doesn’t change society,” he says.

“He’s very good at taking complex, complicated ideas and distilling them down in a way that’s easy for everyone to understand,” says Sarah Bartsch, MPH, a project director who started working with Lee 10 years ago.

Covid-19 has magnified the challenge of evidence-based communication about health.

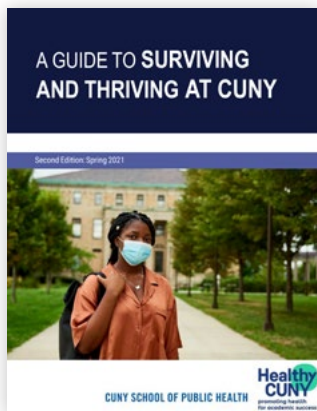
“We’ve seen many situations where people were actively trying to spread misinformation,” Lee says. “At the same time, we have a lot of evidence and knowledge behind how to handle pandemics, including the coronavirus. The big challenge is, how do you communicate scientific facts and scientific knowledge to all decision makers, policymakers and the general public, so they understand why things are being done, or what needs to be done?”

While Covid-19 has highlighted the challenge of making the case for complex responses to large-scale problems, it’s also shown there is no other good option, Lee says. “Once the pandemic ends and is no longer on the front pages every day, we can’t go back to how we were before, where we weren’t using enough systems approaches.”

Students Create the *Guide to Surviving and Thriving at CUNY*

INFORMED AND GALVANIZED BY THEIR OWN PANDEMIC EXPERIENCES, STUDENTS CRAFT A COMPREHENSIVE GUIDE TO HELP THEIR PEERS SURVIVE AND THRIVE IN A MOST CHALLENGING YEAR.

by Joseph Konig



By providing a one-stop guide, Healthy CUNY has made it easier for students to find the help they need.

THE SPRING OF 2020 IN NEW YORK CITY WAS surreal and nightmarish. Students and faculty raced to adapt to the new virtual reality while thousands of New Yorkers fell fatally ill and the city became the epicenter of one of the worst Covid-19 outbreaks in the world. Zoe Schacht-Levine, a second year CUNY SPH student, was struggling and she was certainly not the only one. Isolation was hard. The world was a suddenly scary place. Her classes gave her less joy as she became more withdrawn and reluctant to participate over Zoom. Then, as the city and state shut down, the income from her dog walking and coop cashier gigs dried up.

As spring turned to summer, things seemed like they were turning a corner. She started working as a contact tracer for New York City Health and Hospitals. And she had a summer internship lined up with Healthy CUNY, a university-wide initiative to reduce health problems that interfere with academic success. Schacht-Levine felt lucky to have a job with benefits, much less the opportunity to work in her field of study while aiding in the greater public health effort to combat the pandemic.

Then, she got Covid-19.

"There was no way I could have prepared and nothing I could have brought that would have prevented the emotional turmoil I would experience while isolating," Schacht-Levine would later write in *A Guide to Surviving and Thriving at CUNY*,

a comprehensive manual produced by Healthy CUNY to help students continue their academic pursuits while balancing both Covid-related and unrelated stressors and challenges. It was experiences like quarantining alone in a friend's empty apartment for two weeks that would inform Schacht-Levine's work as she participated in the crafting of the *Guide* last summer for when students would return for an entirely virtual fall semester.

"I was actually quarantining during the first couple meetings," Schacht-Levine says. As she spent two weeks recovering, Schacht-Levine doubled her telehealth sessions with her CUNY mental health counselor, a process she would go on to praise in the *Guide* and encourage other students to pursue. "Every day was a little bit better."

Schacht-Levine was one of seven students in the Healthy CUNY Covid-19 Work Group who, using a survey of 2,300 CUNY students conducted in April 2020, as well as their own research, crafted a guide for students, by students to help their peers survive (and thrive) in the fall semester. Like Schacht-Levine, her fellow students in the working group were drawing from their own lived experience as they worked to find resources and services that could address the struggles of their peers across the CUNY system.

"We realized that students communicating to other students would be much more



Some of the authors of the Guide. Left to right, top to bottom. Thania Pierre, Patti Lamberson, Nick Freudenberg, Erinn Bacchus, Christina Valeros, Tarisha Fleurmond, Nida Joseph, Zoe Schacht-Levine, and Rachel Knopp. Not shown: Heidi Jones, Meredith Manze, Vicky Ngo.

“

We realized that students communicating to other students would be much more powerful than people our age, looking like us would be.

powerful than people our age, looking like us would be,” says Nicholas Freudenberg, Distinguished Professor of Public Health and Director of Healthy CUNY. “I’ve been teaching at CUNY for more than 30 years and working with the Healthy CUNY Covid-19 team was one of the most exciting and interactive teaching and learning experiences I’ve had in all my years at CUNY.”

The result: a 99-page, one-stop guide with details and resources to handle any challenge students might face during, or after, the pandemic. Officially published in October and reworked with some updated information for the 2021 spring semester, *A Guide to Surviving and Thriving at CUNY* is split into seven sections tackling educational challenges, mental and physical health, food insecurity, housing, loss of income and employment, racism and discrimination, and individual and collective advocacy. The guide includes student testimonials from the survey and advice from the student writers, having lived through many of these issues themselves.

“A lot of us were going through things at the same time, in real time,” says Erinn Bacchus, a PhD student at CUNY SPH and a student member of the Healthy CUNY Covid-19 Work Group. “People were having issues with finding health care; people were having issues with mental health. People were having issues keeping up with their school year.”

The April survey was conducted by CUNY’s Office of Institutional Research with questions crafted by experts and professors to gauge the impact of Covid-19 on the existing problems Healthy CUNY had already been studying. In order to recruit a representative sample, the survey was sent to over 10,000 students across the system and received 2,282 responses, over 1,000 of which included detailed, written responses to open-ended questions.

“Once CUNY was closed in mid-March, and students were no longer coming to campus, we recognized that many of the problems that we had been studying before the pandemic were likely to become worse,” says Freudenberg. “We found that rates of anxiety, depression, and food insecurity had doubled since early 2018, when we had done a similar survey. And that’s what led us to high levels of alarm that we needed to do something quickly to help students address these problems. And not only did they have much higher levels of anxiety, depression, and food insecurity, but the systems that CUNY had in place to address those problems before the pandemic were mostly not relevant when people couldn’t come to campus.”

Over 80 percent of students who responded to the survey reported a loss of income, according to an article based on the survey data in the *Journal of Urban Health* published by Freudenberg, Healthy CUNY



Zoe Schacht-Levine



Erinn Bacchus



Professor Heidi Jones

BY ENCOURAGING STUDENTS TO BECOME ADVOCATES FOR THEMSELVES AND THEIR PEERS, THE GUIDE SUPPORTS THE ACTIVISM THAT HAS LONG MADE CUNY A NATIONAL MODEL FOR MEETING THE NEEDS OF ITS DIVERSE STUDENTS

”

Deputy Director Patricia Lamberson, and CUNY SPH professors Heidi Jones, Meredith Manze, and Victoria Ngo. More than half of students reported experiencing anxiety and depression and 49 percent reported an increased need for mental health services. Half of respondents also indicated they were worried about losing housing.

The student interns working with Healthy CUNY were tasked with translating this survey data into an actionable public health tool to help their fellow students get through a pandemic without an end in sight.

“It was disheartening, it was saddening, but it was also unsurprising,” says Bacchus of the survey data. “We found that a lot of our students were suffering. And I think that was expected, but we didn’t really know to what degree they were struggling and what exactly they were struggling with. The survey really helped guide our focus.”

Over the summer months, the Work Group would meet weekly as a whole and separately in smaller, topic-specific groups. They began to pull from the mountains of research, resources, and personal testimonials to construct *A Guide to Surviving and Thriving at CUNY* that would best address the problems they knew their peers were struggling with every day.

“At the end, after the guide came out, I asked ‘have you taken your own advice?’ And every single one of them was like ‘yeah, this part was really helpful’ or ‘I started working with a study group when I realized I was really isolated,’” says Professor Jones. “They were students also, so they were clearly experiencing the same issues as the students they were serving. It was really inspiring to work with them.”

Of course, the guide can only link students to existing information, services, and support. It can’t fill the gaps where needed services are lacking. Long before the pandemic, CUNY students struggled

with mental health, food insecurity, or finding affordable health care, living with the same challenges and disparities many New Yorkers do. But by providing a one-stop *Guide*, Healthy CUNY has made it easier for students to find the help they need. By encouraging students to become advocates for themselves and their peers, the *Guide* supports the activism that has long made CUNY a national model for meeting the needs of its diverse students.

Some of the students from the Healthy CUNY Covid-19 Work Group have graduated and are working in healthcare or health policy in New York City. Others are finishing their degrees and continue to work at Healthy CUNY on a new project analyzing data from a survey of CUNY students focused on health insurance. Though it’s a small operation, Freudenberg hopes that Healthy CUNY’s initiatives will be part of a growing public health infrastructure that can accurately and efficiently get urgent health information, referrals, and services to CUNY students, faculty, and staff.

“In my several decades of doing public health research, advocacy, and program development, I have come to believe that having a college degree is a very powerful protector of health, and a very powerful antidote against the health inequities associated with lower incomes and being Black, Hispanic, immigrant, and other groups,” says Freudenberg. “So CUNY plays a critically important role in the health and well-being of our students. We knew from our own studies and from other public health research that mental health, food security, and health care access problems make it harder for students to focus on school, stay in school, and graduate. Healthy CUNY seeks to clear these obstacles so more students can earn the degree that will provide a path to lifetime success, better health, and greater contributions to society.”

HELPING STUDENTS NAVIGATE EXISTING FOOD SECURITY RESOURCES AT CUNY

In addition to being the director of Healthy CUNY, Freudenberg is also the director of the CUNY Urban Food Policy Institute and, in January, the Institute secured a two-year, \$500,000 grant to launch a joint initiative of both entities: the Campaign for a Food Secure CUNY. Awarded by the Andrew W. Mellon Foundation, the grant will fund Freudenberg's campaign to harness and reinforce existing programs to combat food insecurity among CUNY students. The landmark contribution will bolster CUNY campus pantries and sponsor a drive to enroll CUNY students in the Supplemental Nutrition Assistance Program (SNAP). With recent federal and state expansions of SNAP, many more college students are now eligible, putting additional dollars for food in the pockets of recipients.

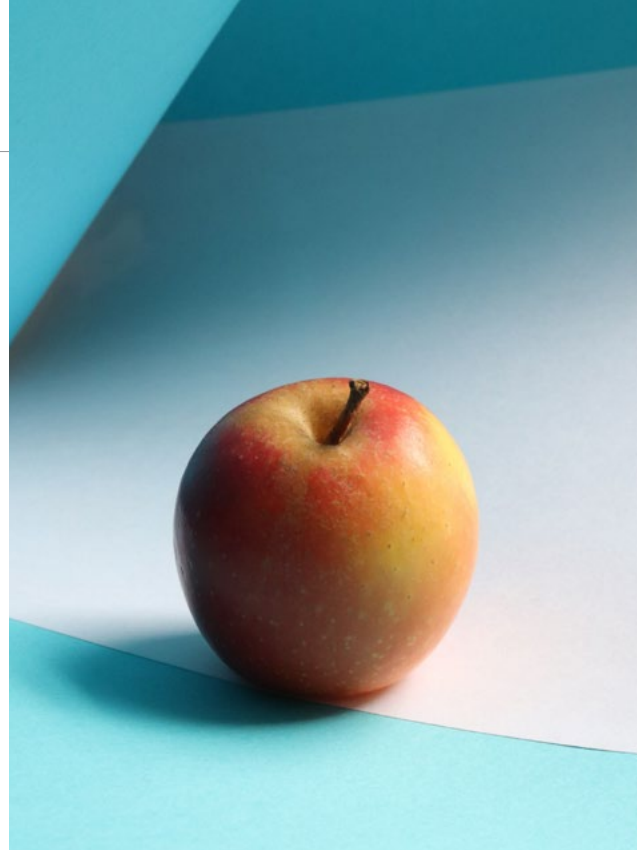
"The experience with the Mellon Foundation was unusual and wonderful. They called me up and said they were interested in supporting efforts to reduce food insecurity. Could you use some extra help? And I said yes," says Freudenberg. "Within three weeks, they sent us a check. It doesn't often happen that way and it was such a pleasure."

An essential piece of the Campaign for a Food Secure CUNY will be simply making students aware of existing food security resources CUNY already offers. Surveys conducted before and after the pandemic found many students simply don't know their campus already has these resources. A 2018 Healthy CUNY report on food security found that only 23 percent of CUNY Undergraduates had knowledge of on-campus food assistance services. The same survey found 15 percent assumed they were ineligible for assistance. While there are many steps that need to be taken, one simple goal Freudenberg has in the next year is for a link to food resources to be added to every course syllabus, next to the mandated inclusions of university policies and plagiarism warnings.

"We think it's an achievable goal for CUNY to eliminate food insecurity over the next several years," Freudenberg says. "And we're hoping to use the Mellon grant to build the infrastructure and the will and commitment to achieve that goal by coordinating and integrating and aligning the many existing efforts around food insecurity now in place at CUNY."

Even with generous and fortuitous grant funding, Healthy CUNY by itself will not be able to end food insecurity at CUNY. Part of the Campaign for a Food Secure CUNY will be about educating policymakers, from the City Council and the Mayor to the state legislature and the Governor, on the health, educational and economic benefits of ending food insecurity on college campuses.

"If more of our students can finish school, they will be more productive citizens, they will be more engaged in contributing to New York, in supporting the well-being of their families, and also in working and paying taxes," says Freudenberg. "Certainly in the richest city in the world, we can afford to end the need for our students to choose between going hungry and paying for tuition, books, and transit."



IF MORE OF OUR STUDENTS CAN FINISH SCHOOL, THEY WILL BE MORE PRODUCTIVE CITIZENS, THEY WILL BE MORE ENGAGED IN CONTRIBUTING TO NEW YORK, IN SUPPORTING THE WELL-BEING OF THEIR FAMILIES, AND ALSO IN WORKING AND PAYING TAXES ”



Nicholas Freudenberg, Distinguished Professor of Public Health and Director of Healthy CUNY

Policy Can Drive Inequality—It Can Also Redress It



Dr. Naomi Zewde

DR. NAOMI ZEWDE INVESTIGATES THE CONNECTIONS BETWEEN INSURANCE AND ECONOMIC INEQUALITY, AND HOW TO CHANGE A SYSTEM THAT HASN'T WORKED FOR MANY.

by *Elaine Meyer*

THE RACIAL RECKONING OF THE PAST YEAR has turned attention to how policies promote racial inequality in economic and health outcomes in the United States. This question is what drives Dr. Naomi Zewde, a health economist and assistant professor at CUNY SPH.

“I look at inequality, especially in wealth and insurance, and how public policies can reduce it,” says Dr. Zewde. In her research, she has found a strong correlation between lack of Medicaid coverage and housing eviction, shown why private Affordable Care Act (ACA) insurance plans are cost prohibitive for millions of consumers, and found that a policy of starting every American off with a trust-style investment could reduce historic wealth inequality.

While working on her doctoral dissertation in Health Policy and Administration and Economics at Pennsylvania State University, Dr. Zewde began looking into why so many fewer people than predicted had enrolled in private insurance plans under the Affordable Care Act. It had been assumed the Marketplace plans would be welcome to consumers who needed coverage. But after creating a model using the Medical Expenditure Panel Survey, which collects data on

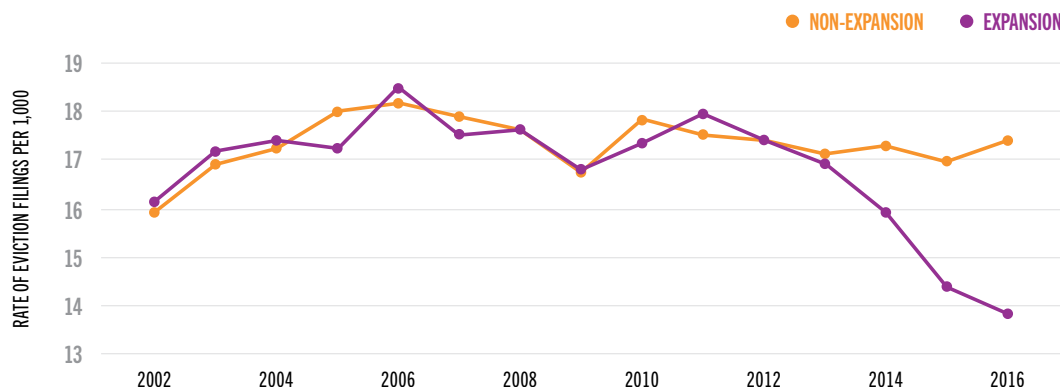
Americans’ medical bills, she discovered something different: For one in four Americans previously uninsured under the ACA, it’s less costly to go into bankruptcy for medical expenses than to pay for Marketplace plans, except in the most catastrophic situations.

That’s because, in addition to premiums, the Marketplace mostly offers high-deductible plans, requiring insured patients to pay healthcare costs out-of-pocket until they hit a certain amount—the median in 2016 was \$3,600—before the insurer covers the costs. The idea is that such plans protect wealth, because after hitting the deductible, patients are no longer on the hook for medical costs. But with over one-quarter of Americans \$400 away from financial hardship, there is little wealth to protect. The study results, published in the *Journal of Risk and Insurance*, point to the flawed design of insurance plans that are such a large share of the private market.

“You know that political party the Rent is Too Damn High? I think the takeaway is ‘the deductible is too damn high.’” says Dr. Zewde. “If it’s so high that it can’t provide any financial protection, that’s not good coverage. People want health insurance that gets them healthcare.”

Trends in Rate of Evictions per 1000 Renter-Occupied Households in Medicaid-Expansion and -Nonexpansion States: United States, 2002–2016

Zewde N, Eliason E, Allen H, Gross T. The Effects of the ACA Medicaid Expansion on Nationwide Home Evictions and Eviction-Court Initiations: United States, 2000–2016. *Am J Public Health*. 2019 Oct;109(10):1379–1383. doi: 10.2105/AJPH.2019.305230. Epub 2019 Aug 15. PMID: 31415189; PMCID: PMC6727289

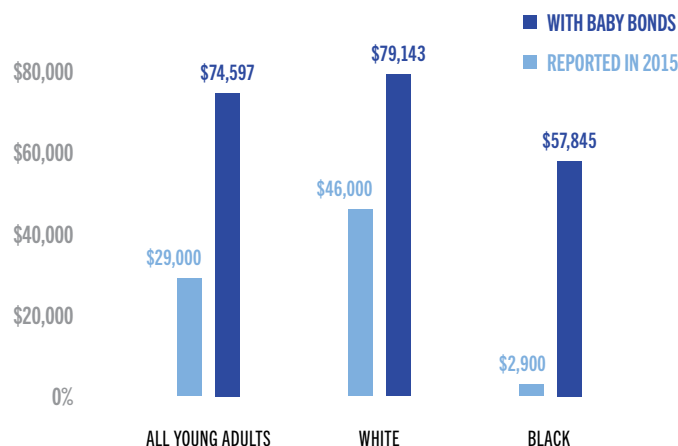


Share of population for whom bankruptcy less expensive than cost sharing with benchmark Affordable Care Act's (ACA) Marketplace insurance.

Zewde, N. Did Marketplace coverage really offer financial protection? Financial gains from the Affordable Care Act's private insurance policies among the previously uninsured. *Journal Risk and Insurance*. 2020; 1– 15. <https://doi.org/10.1111/jori.12325>



The percentage of nonelderly adults uninsured before the ACA for whom the deductible or out-of-pocket (OOP) maximum exceed the household's cost of filing for bankruptcy are shown. Sample drawn from 2010 to 2012 Medical Expenditure Panel Survey, data on Marketplace insurance policies from Center for Medicare and Medicaid Services public use files, 2016. Individuals' cost of bankruptcy calculated based on household income, assets, and state bankruptcy regulations.



Impact of baby bonds on median wealth of young adult households, by race.

Note: This figure presents estimates of median net worth among young adult households by race. The population includes young adults between ages 18 and 25 years in the 2015 wave of the Panel Study of Income Dynamics, whose families were represented in the survey at the time of their birth.

Zewde, N. Universal Baby Bonds Reduce Black-White Wealth Inequality, Progressively Raise Net Worth of All Young Adults. *Review of Black Political Economy*. 2019. <https://doi.org/10.1177/0034644619885321>

After discovering high-deductible health insurance's failure to protect wealth, Dr. Zewde became interested in a policy that could be successful at it. She learned about "Baby Bonds," an idea proposed by economists Darrick Hamilton and William Darity, Jr. which would give every newborn a trust that they could draw money from starting at age 18. The amount invested would range from \$500 to \$50,000 and be highest for households with the lowest net worth. It would cost \$80 billion, which is less than 10 percent of the yearly cost of Social Security.

To see how the policy would play out, Dr. Zewde ran a model using data from the Panel Study of Income Dynamics. She found it would significantly reduce the disparity in wealth between Black and white Americans, from 16 times greater to 1.4 times greater, or from \$46,000 for whites and \$2,900 for Blacks to \$79,143 compared to \$57,845, respectively, according to a paper she published in *The Review of*

Black Political Economy. A Baby Bonds bill is pending in the U.S. Senate, proposed by Senator Cory Booker, and attracting wide support from Democrats.

Says Dr. Zewde: "Baby Bonds does not make anyone a millionaire, but it does bring the bottom up a lot. It lifts everyone up, but it brings the bottom up more than it brings up the middle and the middle more than the top. It equalizes having a right to financial stability when you're starting out your life."

Dr. Zewde has also looked at how medical bills impact housing. As a postdoctoral fellow at Columbia, she joined colleagues to investigate rates of evictions in states that had chosen under the ACA to expand Medicaid against those that hadn't.

Using data from The Eviction Lab at Princeton University, the study, published in *American Journal of Public Health*, found that only states that hadn't expanded saw a rise in evictions. In fact, correlation between eviction and Medicaid expansion—which

gave coverage to millions more low-income adults in states that offered it—was so significant, the data showed differences based on when counties started expansion.

"What it tells me is that there are people out there who are choosing between medicine and rent," says Dr. Zewde. "Once you cover their medicine, they're better able to pay their rent."

Dr. Zewde was motivated to study inequality from an experience visiting Ethiopia, the country from where her parents emigrated. When the daughter of a farmer her family knew became sick, she struggled to get medical care because it was too expensive.

"I realized there was a pretty big difference in the kind of care that she could get, versus what I could get if something like that were to happen to me," she reflects.

Dr. Zewde joined the CUNY SPH Health Policy and Management department in 2019 and teaches health economics to master's and doctoral students. She was drawn to CUNY because of the school's affordability and the student body's representativeness of New York City.

As a researcher, she is directly invested in having an impact on policy. She is a fellow at the Roosevelt Institute, a progressive think tank. She is also working with the Economic Security Project and the New School's Center on Race and Political Economy on a study of guaranteed income that will be released in May. Currently, she is volunteering on the campaign for the New York Health Act, a bill for single-payer insurance in New York State that, after years of effort, has won the support of the majority of state lawmakers. She came to support the approach after continuously finding in her research that tax-financing is the only proposal that ensures that insurance is meaningfully affordable. And last year around the height of the Black Lives Matter movement, her Baby Bond study received significant media attention including in the *Atlantic*, the *Economist*, and the *Washington Post*.

"It's very fulfilling to be thinking and writing and coding at your desk and then have it reflected somewhere," says Dr. Zewde. "Especially for something good."



How is the Pandemic Changing Us?

A STUDY OF NEARLY 7,000 AMERICANS INVESTIGATES THE WIDE-RANGING IMPACT OF COVID-19 ON OUR LIVES.

by *Elaine Meyer*

SINCE APRIL 2020, A RESEARCH TEAM AT CUNY SPH has checked in regularly with nearly 7,000 people from all 50 U.S. states, the District of Columbia, Puerto Rico, and Guam, to find out exactly how Covid-19 is impacting their lives.

With \$3 million in emergency funding from the National Institutes of Health, the Communities, Households, and SARS-CoV-2 Epidemiology (CHASING) COVID Cohort study is one of just a small number of prospective cohort studies—an estimated 18 worldwide, three of them in the United States—investigating how a broad population is experiencing the pandemic over an extended period of time.

“A lot of studies that are being done around SARS-CoV-2 focus mainly on people infected, diagnosed, or hospitalized,” says study principal investigator Denis Nash, PhD, distinguished professor and founding executive director of the CUNY Institute for Implementation Science in Population Health (ISPH). “For our study, the only criteria are being 18 or over and living in U.S.”

ISPH has conducted longitudinal cohort studies for years, mostly looking at the uptake of HIV treatment and prevention therapies and strategies. They began to think

about potential research as New York City went into lockdown when they experienced a Covid-19 outbreak among members of their own team.

Concerned about the virus’ potential impact well beyond NYC, “We asked as we were all sitting at home in quarantine, what is it that we can uniquely contribute?” says Dr. Nash. “We launched as soon as anybody could reasonably design and launch a cohort study.”

“It was an opportunity to be a part of addressing something impacting the entire world in real-time,” says Sarah Kulkarni, MPH, associate director of ISPH. “At a time when so much had been taken away and everyone’s life changed overnight, it gave me a sense of purpose and feeling of making a contribution.”

Along with collecting antibody specimens from participants to determine whether they’ve had Covid-19, the study team routinely asks about everything from anxiety and depression; race/ethnicity, economic situation, and even what kind of dwelling people live in; whether during the pandemic they have taken an airplane, dined indoors, or not worn a mask, as well as how well they trust the vaccination process and preferences for Covid-19 testing.



ISPH associate director Sarah Kulkarni and executive director Denis Nash launched the project in April of 2020.

“

We're looking at how risk changes and evolves over time and how behaviors change that drive risk

By gathering such comprehensive information, the hope is that the CHASING COVID Cohort Study will not only illuminate the collective experience of this unprecedented time, but provide insights into many of the pandemic's most pressing questions: What behaviors put people most at risk of getting infected? Who is most at risk? How has the pandemic and related economic disruption impacted mental health? How closely are people adhering to public health guidelines? How trusted is the vaccination process? Do people who said they were hesitant to be vaccinated get vaccinated anyway?

“I hope that this study can help to document how the pandemic impacted multiple dimensions of the lives of people in this country,” says Dr. Nash. “Not only the infection but other outcomes—like the mental health toll on many people and communities, and the impact on employment, economic outcomes and life stressors like food and housing security—which we know are greatly affecting people's daily health and well-being.”

COVID-19'S UNEQUAL IMPACT

Like other studies, CHASING COVID's data highlights the racial disparities of the pandemic. The study has been testing patients for Covid-19 antibodies around every six months. In the first round of tests, between May and August, 3,280 people tested negative for antibodies. In the second round, between November 2020 and January 2021, 145 people became newly infected. Among them, Hispanic and Black participants were twice as likely to have become infected as non-Hispanic Whites.

The results also point to economic inequality of who's infected. Those who live in apartments with four or more people—which could indicate household overcrowding—were more likely to contract Covid-19 and be hospitalized than other groups.

“If you have four people in your house, but you live in a five-bedroom house, it might not be so bad, but if you have four people in your house and you live in a two-bedroom apartment, that could be different,” says Dr. Nash.

Living with children also put one at greater risk of hospitalization with Covid-19, which raises questions about whether children pass on the virus more than is believed.

“There has been in my view this kind of a magical thinking that somehow kids don't contribute to transmission,” says Dr. Nash.

“They do likely contribute to transmission—they may not contribute the same that adults do.”

It's possible to keep open schools and other places where children gather safely, as long as the potential risks are understood and precautions are taken, says Dr. Nash.

“Even if [transmission at schools] is low, it's not inconsistent with the idea that a child's infection at home where masks are likely not worn could result in a more severe outcome among the parents or other household members,” Dr. Nash says.

HOW RISKY ARE INDOOR DINING, AIRPLANES, AND MORE?

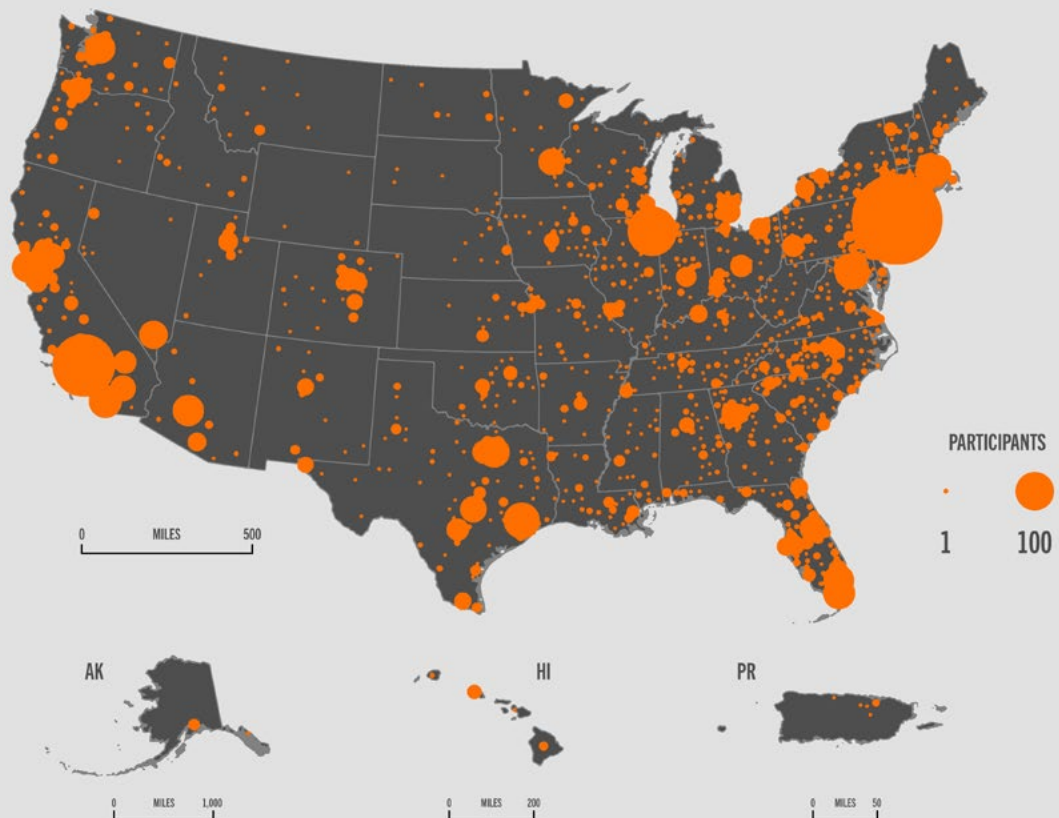
One of the universal challenges of Covid-19 has been navigating its grey areas—the behavior that isn't restricted, like grocery shopping or airplane travel, but that could still put us at risk of infection. CHASING COVID is uniquely positioned to illuminate this information because of its longitudinal design.

“We're looking at how risk changes and evolves over time and how behaviors change that drive risk,” he says. “We can compare something no other study in U.S. has so far, which is to look at what are risk factors of people going from being negative to positive over time.”

CHASING COVID is seeking to better understand risk through asking participants about their behaviors over the pandemic period. So far, the data shows that people who became infected are more likely to have engaged in either: dining indoors, visiting a place of worship, traveling by airplane, or wearing masks inconsistently—such as not always wearing them to the grocery store, or while visiting friends or family.

Even more troubling, of those who tested positive for the virus, only 31 percent reported isolating. These results don't necessarily mean people knowingly went out while infected, Dr. Nash says. They could have been asymptomatic, or not gotten a test until their illness passed.

What's troubling, he says, is when people don't know they're infected, they're more likely to spread the virus further. And this could point to why community spread has been so rampant in the U.S. Dr. Nash says these results show the problems with a government response that hasn't included enough testing and isolating, and points to where resources should be directed. “I think our data suggest that this virus is too quick and too quiet for community trans-



The **CHASING COVID Cohort study** enrolled 6,753 participants from across the United States, including Puerto Rico and Guam. The cohort represents a geographically and socio-demographically diverse sample of the adult US population: 15% of participants

were 60 years or older at enrollment, 33% are Black or Hispanic, and 45% are men. At least 15% of participants are frontline workers, either in healthcare or other essential employees such as police, first responders, people in food services or transportation.

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mission to be controlled by contact tracing. We need other strategies, and vaccination is a big one,” he says.

THE IMPORTANCE OF TESTING, EVEN AFTER VACCINATION

With the possibility that Covid-19 mutations could render vaccines at least temporarily ineffective, and until everyone can be vaccinated, testing will remain an important part of controlling the virus as society opens back up, according to Dr. Nash. This means making it as easy as possible for people to get tested, he says, and understanding what might hold them back.

“If people aren’t getting tested enough, it becomes an important public health question to ask: ‘How do we get people to test more?’”

His team used a market research survey method called a “discrete choice experi-

ment” to find out what testing option study participants would most likely seek out. Perhaps unsurprisingly, people preferred a less invasive collection of an oral collection over the more widely-performed deep swab of the nasopharynx. And there was an even stronger preference for the convenience of an at-home test over going into a medical facility.

Such rapid at-home tests are currently not widely available, but they’re cheap, and the hope is they can be scaled up.

“Now that we understand which attributes of all of the tests are most preferable, we can take what we learned about preferences and design a testing strategy that could get better uptake,” says Dr. Nash. “We’ve always thought the vaccine would be a game changer and of course it is. But while we’re waiting for it to be scaled up—and that will be for a while in many places

in the country and around the world—testing is probably the thing that can make the biggest difference in reducing risk.”

TRUST AND THE VACCINE PROCESS

Concern that Americans will choose not to get the vaccine has been one obstacle to herd immunity, given growing vaccine skepticism of recent decades, and mistrust from communities of color and other groups related to unethical research practices. But it’s not just historic vaccine wariness that experts are worried about. There’s also a concern that if the current vaccine process is seen as unfairly administered, that will also deter people from getting vaccinated.

To understand how big of a role this plays, CHASING COVID is asking participants whether they believe those eligible in their communities will be able to get a vaccine as soon as it’s available. They’re also asking if they believe those who are not eligible can jump the line. The researchers will look at associations between these answers and participants’ race, ethnicity, age, and whether they themselves have been vaccinated or plan to be.

“We’re trying to get a sense of the perceived equity of the vaccine rollout in different communities around the country, and how people perceive the rollout in their communities,” says Dr. Nash.

A LURKING MENTAL HEALTH CRISIS

CHASING COVID is validating a suspicion many health experts feared: the mental health effects of the pandemic are significant and may be long-lasting.

“We’re continuously checking in with our participants and asking them new questions as well as a number of things we ask routinely,” says Dr. Nash. “Those include whether there’s been a significant loss of income or employment in the household, or concerns about paying the rent or mortgage; and we routinely screen people for symptoms of anxiety and depression and alcohol use, substance use, food security, and domestic violence.”

In April 2020, 35 percent of participants reported moderate to severe anxiety symptoms, much greater than 20 percent anxiety rates in a representative pre-pandemic sample of U.S. adults. Anxiety levels were even higher in those who lost income due to Covid-19 or experienced symptoms of the virus, along with participants with a previous diagnosis of depression.

“It could reflect differences between our



If the current vaccine rollout is perceived as unfairly administered, that may deter people from getting vaccinated.

cohort and the U.S. population at large, but more likely it reflects what we’ve been going through over the past year,” Dr. Nash says.

THE LEGACY OF LONGITUDINAL STUDIES

Longitudinal studies like CHASING COVID are more costly and time-consuming than cross-sectional studies, which look at data collected at one point in time. Participants in longitudinal studies are enrolled for months if not years and regularly provide everything from bio-specimens to survey data. (As part of their participation, CHASING COVID cohort members receive free antibody tests, gift cards of \$10 for completing a 15-20 minute survey and \$20 for submitting blood spot specimens).

“I didn’t realize it back in the early days when I first said I would participate in the study, but as the pushback to Covid has happened and the deniers have had so much media time, it has been really important to me that scientists have as much good data to work with as possible,” says one participant, Betty M., who lives in Colorado, about her experience in the study.

Though costly, longitudinal studies, have a historic legacy of providing information that has led to dramatic improvements in societies’ public health.

Perhaps the most famous example is the long-running Framingham Heart Study, which, from tracking thousands of residents in a Massachusetts town over many

years, identified major risk factors of heart disease like cigarette smoking, being overweight, and high cholesterol. These findings made it possible to prevent cardiac events through lifestyle changes and medication, rather than in response to a heart attack or stroke, contributing to a dramatic decline in these events.

The study’s duration means that the researchers can adapt their survey to track how changing developments in the pandemic are impacting the cohort.

“The flexibility of being able to add questions is incredible,” says Kulkarni. “When we realized that long-haul Covid was happening, we quickly added questions and were able to identify over 150 long haulers in our cohort.”

With the virus expected to be a part of society for a long time, the findings from CHASING COVID will be relevant well after the pandemic is controlled.

Says Dr. Nash: “Hopefully this study can serve as an important touch point in taking stock for what we can still change, what we need to prioritize, and certainly for future pandemics—and we know there will be future pandemics.”



Research Briefs

Exploring therapeutic interventions for pancreatic cancer

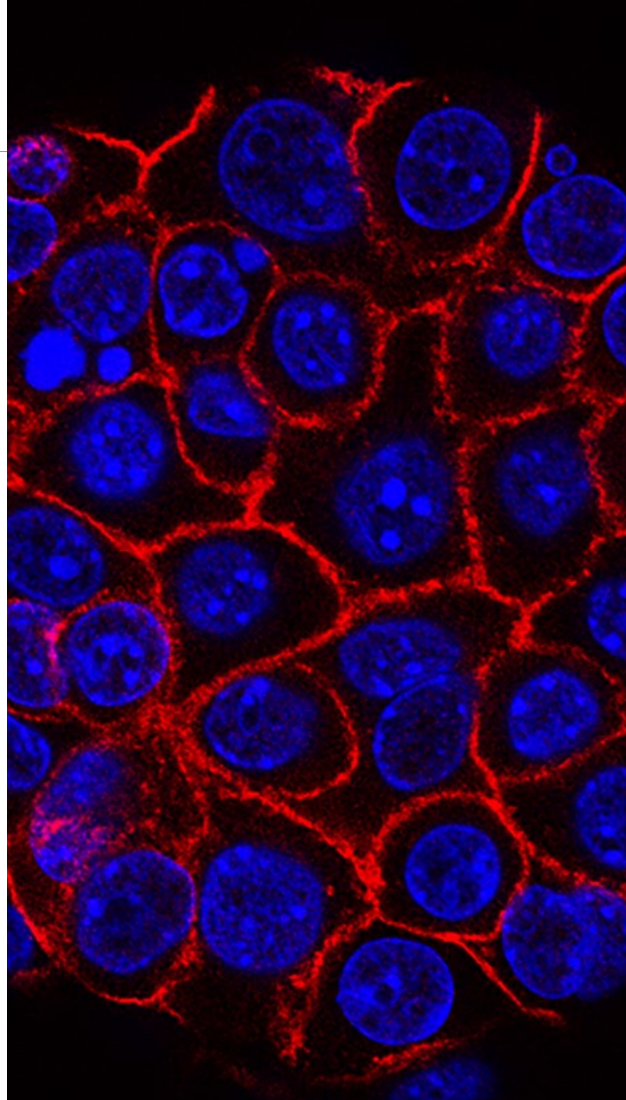
Pancreatic cancer is a devastating disease due to its often-late diagnosis and its unresponsiveness to current therapies. It is estimated that 57,600 new cases were diagnosed in 2020 in the U.S., with a dismal 10 percent five-year survival rate.

For a study published in *Current Development of Nutrition*, a research team led by CUNY SPH Associate Professor Dr. Ghada Soliman investigated the impact of the mechanistic Target of Rapamycin (mTOR) nutrient-sensitive pathway inhibition, and synergism with the antidiabetic drug, metformin on pancreatic cancer. The results showed that the combined treatment led to reduced pancreatic tumor burden, altered metabolic profile, and is better tolerated than the single-drug administration in an orthotopic pancreatic cancer model.

“Ultimately, this study can help us understand and gain insight into how mTOR controls nutrient metabolism and use such information to develop therapeutic interventions in the treatment of pancreatic diseases, type 2 diabetes, and the associated cardiometabolic complications,” Dr. Soliman says.

Soliman GA, Shukla SK, Eteko A, Gunda V, Steenson SM, Gautam N, Alnouti Y, Singh PK. The Synergistic Effect of an ATP-Competitive Inhibitor of mTOR and Metformin on Pancreatic Tumor Growth. *Curr Dev Nutr*. 2020 Aug 10;4(9):nzaa131. doi: 10.1093/cdn/nzaa131. PMID: 32908958; PMCID: PMC7467276.

This image shows pancreatic cancer cells (nuclei in blue) growing as a sphere encased in membranes (red).



Min Yu (Eli and Edythe Broad Center for Regenerative Medicine and Stem Cell Research at USC), USC Norris Comprehensive Cancer Center, Pancreatic Desmoplasia



CUNY SPH Distinguished Lecturer Scott C. Ratzan

CUNY SPH researchers outline adapted health communications principles for the Covid-19 pandemic

The Covid-19 pandemic has introduced unique challenges for public health practitioners and health communicators that warrant an expansion of existing health communication principles to take into consideration.

In an article for *Public Health Research & Practice*, CUNY SPH Distinguished Lecturer Scott C. Ratzan and colleagues outlined a checklist for the implementation of Covid-19 communication strategies to move from the acute phase of the pandemic to the “next normal.”

Ratzan and colleagues identified three general areas of capacity building for health communication during the pandemic: the need for communicators to be proactive and to take preventive actions at times; the importance of planning ahead while also acknowledging the unpredictability of the situation; and the call to focus on people.

“We are trying to advance public health with simple innovations to promote evidence-based approaches to stem the Covid-19 pandemic,” says Ratzan. “While we are pleased to publish and disseminate widely, we implore political leaders and governmental officials to adapt these checklists for a healthier populace and Covid-19 recovery.”

Ratzan SC, Sommariva S, Rauh L. Enhancing global health communication during a crisis: lessons from the COVID-19 pandemic. *Public Health Res Pract*. 2020;30(2):e3022010.



First Results for COVID-SCORE, a Tool to Evaluate Public Perception of Countries' Response to the Pandemic

Government response to the Covid-19 pandemic has varied considerably between countries. Although most governments implemented measures such as mobility restrictions, closure of businesses and schools, or shelter-at-home orders, the timing and approach have differed. Compliance with such measures can determine the course of a pandemic and depends on several factors

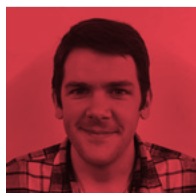
such as trust in government or the clarity of the information that government sources provide.

For a study published in *PLOS One*, CUNY SPH Senior Scholar Jeffrey Lazarus and colleagues developed the COVID-SCORE questionnaire, an easy and reliable tool to evaluate the public perception of governmental response to the Covid-19 pandemic. According to the first results obtained across

19 countries, the tool can help decision makers improve a country's response and track trends as the pandemic evolves.

"This tool is easy to implement and can guide researchers and authorities in designing measures to better control the pandemic," CUNY SPH Dean Ayman El-Mohandes said. In addition, it can be done at different moments to assess the response as the pandemic evolves.

Lazarus JV, Ratzan S, Palayew A, Billari FC, Binagwaho A, et al. (2020) COVID-SCORE: A global survey to assess public perceptions of government responses to COVID-19 (COVID-SCORE-10). *PLOS ONE* 15(10): e0240011



Associate Professor Levi Waldron, post-doctoral fellow Ludwig Geistlinger, post-doctoral fellow Sehyun Oh, research associate Lucas Schiffer, research associate Marcel Ramos.

CUNY ISPH study sheds new light on how ovarian cancer grows and evolves

In a paper published in *Cancer Research*, Associate Professor Levi Waldron, post-doctoral fellow Ludwig Geistlinger, and colleagues at the Institute for Implementation Science in Population Health (ISPH) at CUNY SPH provided new insights into how ovarian cancer grows and evolves within a person.

The paper is of basic scientific interest for its methodology and insights into the decades-long process of tumorigenesis, and of practical interest for the implications these insights have on the viability of subtype-targeted therapies. More than 20,000 women receive a new diagnosis of ovarian cancer each year in the United States, and approximately 14,000 die each year.

"Understanding how a heterogeneous tumor evolves prior to diagnosis is difficult because we can't directly observe that

evolution," says Professor Waldron. "But by observing tumors identified at different stages of that evolution, and through detailed investigation of tumor genomics and heterogeneity, we can still learn something about it."

A surprising outcome of the research is a dismissal of the idea of discrete transcriptome subtypes for this cancer, and replacement by a model of continuous tumor development that includes mixtures of subclones, accumulation of mutations, infiltration of immune and stromal cells in proportions correlated with tumor stage and tissue of origin, and evolution between properties previously associated with discrete subtypes.

Geistlinger L, Oh S, Ramos M, Schiffer L, LaRue RS, Henzler CM, Munro SA, Daughters C, Nelson AC, Winterhoff BJ, Chang Z, Talukdar S, Shetty M, Mullany SA, Morgan M, Parmigiani G, Birrer MJ, Qin L, Riestter M, Starr TK, and Waldron L. Multi-omic analysis of subtype evolution and heterogeneity in high-grade serous ovarian carcinoma. *Cancer Res* October 15 2020 (80) (20) 4335-4345; DOI: 10.1158/0008-5472.CAN-20-0521



Study disputes notion that people of color have “flawed” beliefs about pregnancy

Black and Latinx individuals are often the focus of efforts to “correct” perceived flawed beliefs about pregnancy in order to increase contraceptive use and reduce unintended pregnancies. In a study published in the journal *Ethnicity and Disease*, Assistant Professor Meredith Manze and Associate Professor Diana Romero sought to revisit the association between race, ethnicity, and beliefs about pregnancy.

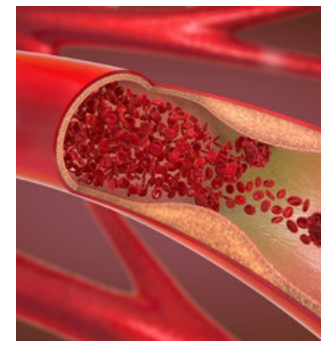
The researchers administered a web-based survey to 2,099 heterosexual men and women aged 21-44 years and analyzed a subset who were not currently pregnant to examine the association between race/ethnicity and beliefs about avoiding pregnancy: whether it can be prevented, that it is determined by fate/God or that it “just happens.”

Bivariate analyses revealed that, compared with Whites, those who identified as Black/

African American or Latinx were significantly more likely to believe that pregnancy was determined by fate/God, or a natural process, and less likely to report that it can be avoided. In the first regression model, these differences persisted. However, in the second model, being Black/African American or Latinx was not significantly associated with beliefs about avoiding pregnancy.

Latinx individuals do not hold strongly different beliefs than Whites,” says Manze. “Our findings suggest reconsideration of public health research that problematizes ‘unintended pregnancy’ and focuses on racial and ethnic minority group identity.”

Manze MG, Romero DR. Revisiting the Association between Race, Ethnicity, and Beliefs about Pregnancy. *Ethn Dis*. 2020;30(4):525-532; doi:10.18865/ed.30.4.525



Statins’ unique effectiveness in preventing heart disease

Statins, a class of drugs that lowers the level of cholesterol in the blood by reducing the production of cholesterol by the liver, are the first line of defense in preventing and treating cardiovascular disease. Statins appear to be more effective than other drugs targeting cholesterol at preventing death and possibly are more effective in men than women, but the reasons for any such differences are unclear.

In a study published in the journal *eLife*, CUNY SPH Professor Mary Schooling and team used Mendelian randomization, an observational study design that avoids confounding by taking advantage of the random allocation of genetic material at conception, to mimic the effects of statins.

Consistent with a long-standing hypothesis, the findings suggest that statins, unlike other major lipid modifiers such as PCSK9 inhibitors and ezetimibe, partially operate via testosterone in men specifically. This additional property of statins contributes to their overall superiority, because testosterone affects cardiovascular disease and to differences by sex, because testosterone levels are higher in men than women.

“Identifying why statins are uniquely effective provides new avenues for preventing cardiovascular disease, the leading cause of death in the United States,” says Professor Schooling.

Schooling CM, Zhao JV, Au Yeung SL, Leung GM. Investigating pleiotropic effects of statins on ischemic heart disease in the UK Biobank using Mendelian randomisation. *Elife*. 2020 Aug 25;9:e58567. doi: 10.7554/eLife.58567. PMID: 32838838; PMCID: PMC7449694.



Reckoning with the role of race and ethnicity in health research

In a paper published in the *New England Journal of Medicine*, a team of researchers led by Distinguished Professor Luisa N. Borrell contend that, while we know that race/ethnicity is correlated with genetic ancestry, which captures information about the likelihood of having genetic variants for many diseases, we must not fail to recognize that race/ethnicity also captures social exposures not captured by genetic ancestry.

“Race and ethnicity represent the biological embodiment of discrimination, socioeconomic position, access to healthcare, environmental exposures, and genetic variation, all of which are important for clinical decisions and outcomes,” Borrell explains.

The authors advise that researchers and clinicians should carefully weigh whether the inclusion of race and ethnicity is evi-

dence-based and results in improved and fairer decisions for clinical outcomes. Race/ethnicity should continue to be used in clinical and biomedical research until a better biological predictor or social risk score emerges, they say.

“The removal of race and ethnicity in medicine and biomedical research will likely increase or even create new health inequities, which we aim to address and ultimately eliminate in our society,” Borrell added.

Borrell LN, Elhawary JR, Fuentes-Afflick E, Witonsky J, Bhakta N, Wu AHB, Bibbins-Domingo K, Rodríguez-Santana JR, Lenoir MA, Gavin JR, Kittles RA, Zaitlen NA, Wilkes DS, Powe NR, Elad Ziv E, and Burchard EG. Race and Genetic Ancestry—A time for reckoning with racism. *N Engl J Med*. January 6, 2021, Vol 384 (1): DOI: 10.1056/NEJMms2029562



Distinguished Professor
Luisa N. Borrell

Study suggests waiting for a more effective vaccine means more hospitalizations

While the Pfizer/BioNTech and Moderna Covid-19 vaccines were around 90 percent efficacious in clinical trials, it is not known how effective these vaccines will be once they are rolled out into the general population.

In a study published in the *American Journal of Preventive Medicine*, Professor Bruce Y. Lee and his colleagues at Public Health Informatics, Computational, Operations Research (PHICOR) developed a computational model that simulated the entire U.S. population, the spread of Covid-19, subsequent outcomes of infection (e.g., symptoms, hospitalizations), the associated costs along the way, and vaccines with different efficacies and vaccination timings.

The model suggests that waiting for a vaccine with a higher efficacy would result in additional cases, hospitalizations, and costs over the course of the pandemic.

“This tells us that there are few situations in which it is worth passing on the first vaccine available to you in favor of a vaccine that becomes available later on, even if that vaccine has a substantially higher efficacy,” Lee says. “Results could help with the vaccine rollout and answer questions such as: is it better to administer a single dose to cover more people rather than the full 2-dose regimen to fewer people?”

Bartsch SM, O’Shea KJ, Wedlock PT, Strych U, Ferguson MC, Bottazzi ME, Randall SL, Siegmund SS, Cox SN, Hotez PJ, Lee BY. The Benefits of Vaccinating With the First Available COVID-19 Coronavirus Vaccine, *American Journal of Preventive Medicine*, 2021, ISSN 0749-3797



Top: PS 8 in Brooklyn Heights. Bottom: PS 139 in Harlem.

Transmission of Covid-19 in NYC schools is low, but classroom conditions can be improved

As fall 2020 began, schools around the U.S. reopened for in-person learning, having shuttered in the spring as the Covid-19 outbreak surged. But by September, the weekly average began to rise again, only a few days before students were slated to return to in-person learning on October 1.

To estimate the risk of SARS-CoV-2 transmission among students and teachers in New York City public schools, the largest school system in the U.S., a CUNY SPH team led by Assistant Professor Brian Pavilonis assessed 101 classrooms in 19 NYC schools using a modified Wells-Riley equation under steady-state conditions and varying exposure scenarios. They then used multivariable linear regression with GEE to identify school and classroom factors that impact transmission risk.

The researchers found the mean probability of transmission to be generally low, but it varied by scenario. Transmission rates were higher during the heating season and in newer buildings and lower in schools with mechanical ventilation.

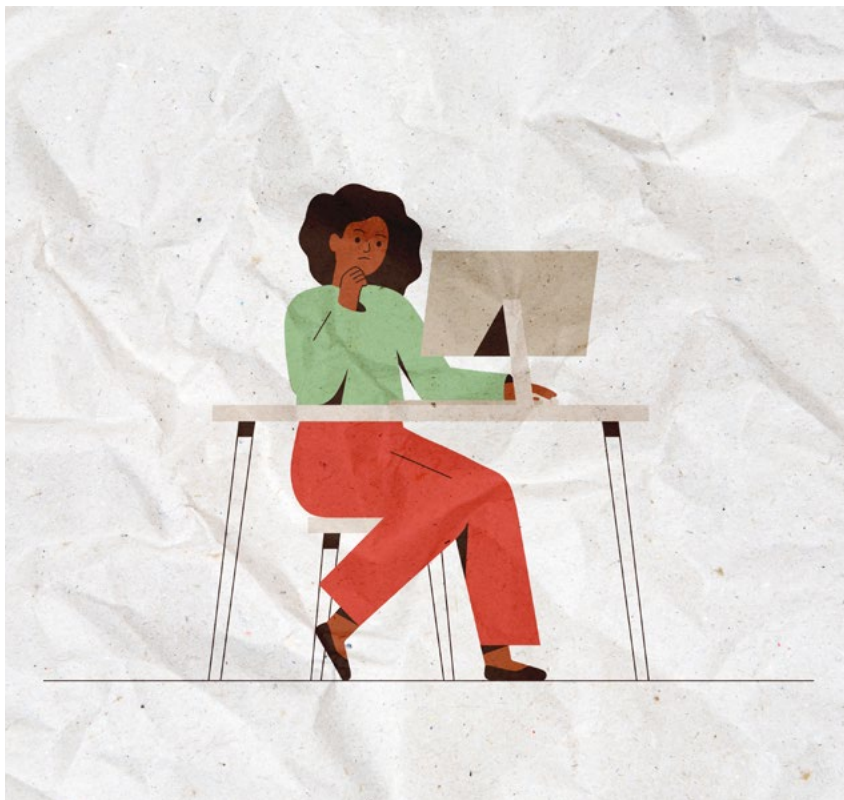
Surprisingly, schools located in older buildings and lower-income neighborhoods had lower transmission probabilities, likely due to the greater outdoor airflow associated with older, draftier buildings.

Despite the generally low risk of school-based transmission found in this study, Pavilonis and team warned that that risk would increase given the rising prevalence of SARS-CoV-2 at the time.

“Outdoor airflow rates, a key for limiting indoor transmission, were generally high in the classrooms surveyed in the study,” Pavilonis said. “In order to continue to safely implement in-person instruction, schools should try to keep windows open as much as possible, maintain physical distancing, and students and teacher should wear masks at all times.”

Pavilonis BA, Ierardi M, Levine L, Mirer F, Kelvin EA. Estimating aerosol transmission risk of SARS-CoV-2 in New York City public schools during reopening, *Environmental Research*, Volume 195, 2021, 110805, ISSN 0013-9351.





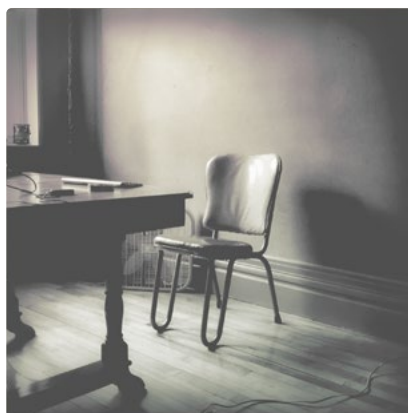
More funding needed to reduce the impact of client death on home care aides, agencies say

The work of home care aides, who provide care to older and disabled individuals in their homes, contributes immensely to the health of our society, and yet this work is vastly undervalued. The job also involves many hazards and sources of stress.

In an article in the *Journal of Applied Gerontology*, Associate Professor Emma Tsui and collaborators explored how home care agencies address one critical stressor for aides: client death.

Despite aides' frequent voicing of the emotional and financial stress of client death in research studies, Tsui and her colleagues found that agencies engaged primarily in a range of informal, reactive practices related to client death, with relatively few targeted and proactive efforts to support aides.

While agency leaders generally acknowledged a need for greater aide support, they pointed to a lack of sustainable home care financing and policy resources to fund this.



"We were impressed by how motivated most of the agency leaders in our study were to better support aides around client death, and yet they also felt so constrained by the way we as a society fund this labor," said Tsui.

In light of this, the researchers recommend increased funding to support wages, paid time off, and a range of supportive services.

Tsui EK, Franzosa E, Reckrey JM, LaMonica M, Cimarolli VR, Boerner K. Interventions to Reduce the Impact of Client Death on Home Care Aides: Employers' Perspectives. *Journal of Applied Gerontology*. February 2021.

Report: The Impact of the Covid-19 Pandemic on CUNY Students

A survey of the approximately 274,000 CUNY students published in the *Journal of Urban Health* found that the Covid-19 pandemic had taken a toll on their mental health and financial security.

The population-representative survey, conducted by a team of CUNY SPH faculty in collaboration with researchers at Healthy CUNY, found that more than half of CUNY students (54%) reported experiencing depression and/or anxiety in April 2020, at the height of the first wave of the Covid-19 pandemic. They also found high levels of financial instability and noted that food insecurity and housing worries were strong predictors of anxiety/depression in multivariable models.

"We found concerning levels of financial instability in our student body, with clear effects on CUNY students' mental health and well-being," said Associate Professor Heidi Jones. "Further, over a quarter of CUNY students reported anticipating graduating later than originally planned because of the pandemic. CUNY is known to be an important 'equalizer' in terms of the upward social mobility of many of its graduates, and increased time to graduation or drop-out could exacerbate existing inequities."

Fifty percent of CUNY students reported often or sometimes worrying about running out of food before being able to afford more, and 27% reported often or sometimes skipping a meal because they could not afford food. These estimates are considerably higher than reported in an earlier Healthy CUNY survey in 2018.

Jones HE, Manze M, Ngo V, Lamberson P, Freudenberg N. The impact of the COVID-19 pandemic on college students' health and financial stability in New York City: Findings from a population-based sample of City University of New York (CUNY) students. *Journal of Urban Health*. 2021.

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