# Carolina PUBLIC HEALTH

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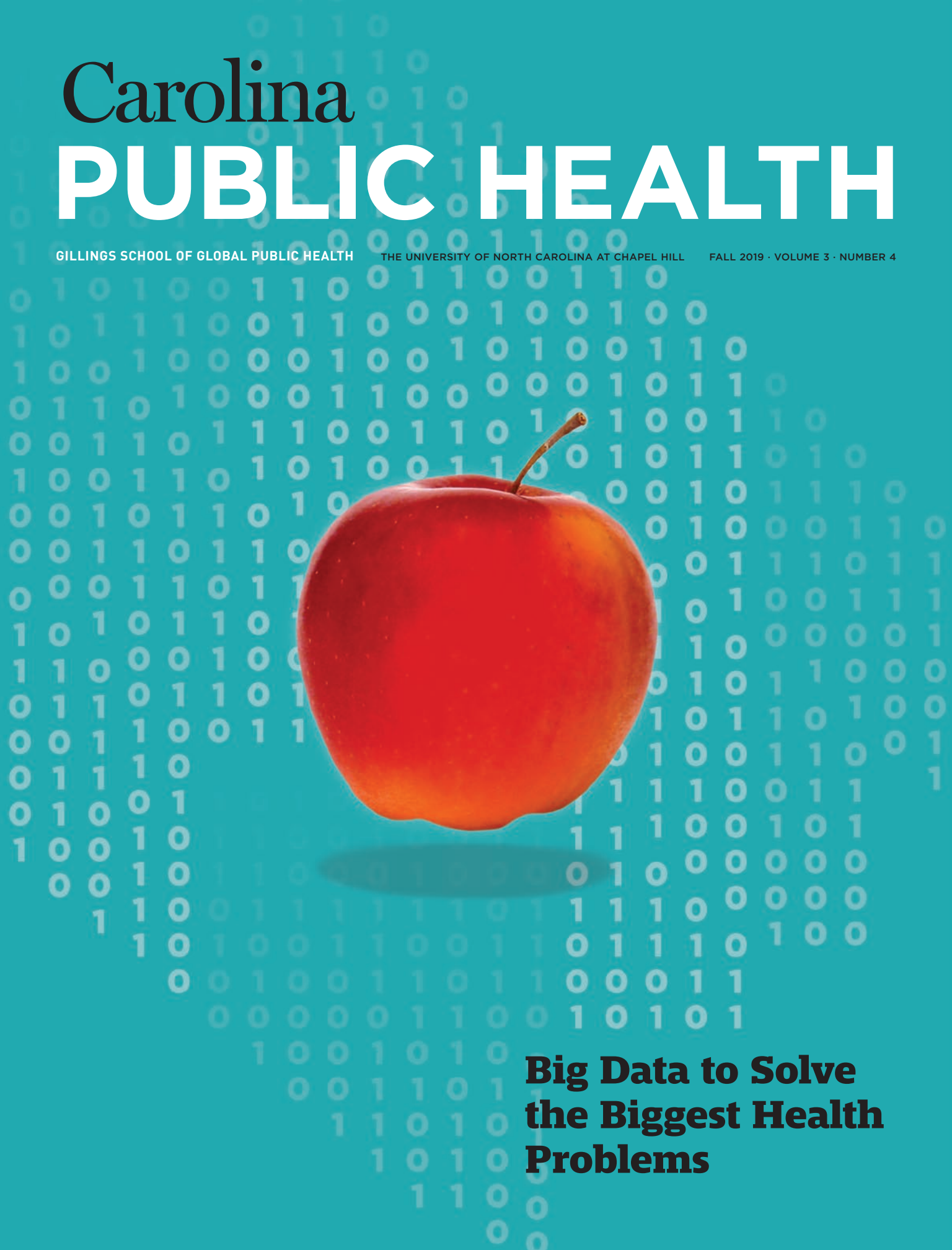

## Big Data to Solve the Biggest Health Problems

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# Table of Contents

# Dear Readers –

This issue of *Carolina Public Health* showcases our faculty's expertise in solving some of the biggest public health challenges of our day.

The stories address the now, the new and the next — where we are, especially in emerging fields like artificial intelligence and machine learning, and where we are going (for example, individualizing weight-loss strategies). It takes many minds, often from very different backgrounds, with complementary skills and training, to understand problems and find effective, sustainable solutions. At UNC, collaboration is in the soul of the place, and our faculty, staff and students benefit every day from being in such a rich milieu.

Research done in schools of public health matters. Sometimes it's a matter of life and death, for example, when epidemics threaten populations (think Ebola) or when opioid use increases in communities. Gillings researchers are driven to get results to people who will benefit. Many of the problems we face in public health are huge, potentially daunting and heretofore unsolved. Our faculty members and students seek to disentangle the apparently disconnected and discordant threads of evidence to create a coherent story that can be turned into interventions, methods and tools for improved public health.

The lives of people and the planet are affected by what we do in our school. It's personal. Someone's son or daughter may be the college student who dies from alcohol poisoning. Someone's father, mother, sibling or child may be the victim of an opioid overdose. They are people in our communities. They are us. The losses of opioid misuse, for example, are human, economic, community and societal. The work of faculty members and students in war-torn countries reminds us of the need to adapt strategies to context. As the fall semester began, Hurricane Dorian battered the Bahamas and our own Ocracoke Island, a brutal hammer shattering lives, livelihoods and communities. Climate

change will cause more of these horrific events. We must devote more of our research, practice and training to building resilience in the face of disasters.

Data are fundamental to public health solutions, and we have some of the strongest faculty anywhere when it comes to data. They are in biostatistics and in every department. They are experts in using large data sets to find patterns that lead to answers. Real-world evidence may sound folksy, but it takes a lot of data to find credible answers to important questions, such as how medications perform in the real world. We're on the leading edge of research and teaching in artificial intelligence and machine learning. These are the tools of the now and the future, and our students must acquire them to be effective.

## "At Gillings, we are challenged every day to improve the world, and we're on it!"

**Barbara K. Rimer, DrPH**
Dean, Gillings School of Global Public Health

Among the new is Aaron Salzberg, PhD, the Don and Jennifer Holzworth Distinguished Professor of environmental sciences and engineering, and director of The Water Institute at UNC. He came from the U.S. Department of State, where he led water initiatives and served under five different secretaries of state. He is building upon Jamie Bartram's excellent work but also taking The Water Institute in new directions, including water diplomacy. Water, one of the building blocks of life, essential for survival, is under threat all over the world and here at home. We are determined to do something about it. At Gillings, we are challenged every day to improve the world, and we're on it!

Thanks for your support,

**Barbara K. Rimer, DrPH**

# **From the Guest Editor,** Penny Gordon-Larsen

I am pleased to serve as the Guest Editor of *Carolina Public Health* on precision health featuring the breadth and depth of Gillings research that ranges from molecules to societies, from prevention to treatment, and across North Carolina and around the world.

**Penny Gordon-Larsen, PhD**

Penny Gordon-Larsen is a professor of nutrition and associate dean for research at the UNC Gillings School of Global Public Health. Her research focuses on susceptibility to obesity and its cardiometabolic consequences, especially issues related to ethnicity, equity, and development of obesity over the lifecycle.



*Pictured: staff scientist Kendra Gully and Dr. Ralph Baric*

Our faculty are tackling the world's biggest public health challenges of our day. Gillings faculty are true innovators who are forging new paths to create novel science in an effort to improve lives of people all over the world.

What is precision health? We define precision health as personalized prevention and treatment strategies tailored to each individual's own biological, social and environmental characteristics and targeted to each community's own resources, conditions and needs. The examples in this issue of *Carolina Public Health* showcase the breadth of precision health research at Gillings.

While precision health has garnered much recent attention, most of this attention has focused on treatment. Yet if we are to truly impact population health, then precision health must also focus on prevention. Gillings faculty have long used tailored approaches to address health problems, drawing attention to population context and individual differences in responses to interventions. Our strength in implementation science has guided our use of innovative methods to most efficiently and effectively incorporate evidence-based practices and policies into efforts to improve population health.

Translation is key — Gillings faculty turn observations from the laboratory, clinic and community into interventions and policies that improve the health of individuals and the public. This is achieved through collaborative team science that brings experts from different fields together to learn from each other and to generate the best methodological and statistical approaches that simultaneously address biological, social and environmental factors to solve pressing and complex public health problems. This is where the magic happens: Bringing experts together to talk science and share substantive and methodological expertise can lead to impressive discoveries and breakthroughs.

Unfortunately, much of the previous work in precision health has focused on narrow segments of the world's population. Gillings researchers seek to overcome this major limitation by collecting data in diverse populations and across a range of social and economic conditions across the world. Attention to diversity and inclusion is imperative: Without it, there is danger that findings may reinforce social, health, educational and economic inequities. That's why Gillings researchers have been working tirelessly to generate new knowledge that represents diversity in social, economic, and geographic perspectives. This is a hallmark of our work as the Gillings School of *Global* Public Health.

I arrived at Gillings more than two decades ago as a postdoctoral fellow. I marveled at its collegiality and how many doors were open across the school, enabling conversations among basic scientists, behavioral interventionists, policy researchers, biostatisticians and epidemiologists. That deeply engaging and collaborative environment continues today — and it fosters amazing opportunities to come together to solve the world's greatest problems.

# Using Big Data to Solve Big Public Health Problems

Gillings faculty thrive on tackling complex public health issues. We're Gillings. We're on it! Powerful technologies and innovative methods fuel their work, while UNC's uniquely collaborative environment empowers them to reach across disciplines for answers to some of the most pressing public health challenges of our time.

*Pictured: Joëlle Atere-Roberts, doctoral student, epidemiology*
*Daniel Malawsky, undergraduate student, biostatistics*

# Data Science Basics

**Causal Inference** is a set of new approaches to address the age-old problem of induction. The problem of induction is the problem of how to justifiably infer causal relationships from observations. For example, will HIV-related mortality differ under plan A, compared to plan B? A key aspect of modern causal inference is the use of potential, or counterfactual, outcomes, as well as observed factual outcomes.

**Machine Learning** is a set of analytical methods from computer science and statistics which analyze data to produce predictions and to support decisions (e.g., given all of my medical data, which therapy should my doctor choose for me).


**Stephen Cole, PhD**
Professor of Epidemiology

**Michael Kosorok, PhD**
W.R. Kenan, Jr. Distinguished Professor and Chair of Biostatistics

# **Using Data Science Methods** to Answer Big Health Questions

Successful data science hinges on the interplay between the questions that researchers want to ask, and the methods they use to find the answers. Researchers at the UNC Gillings School of Global Public Health are right in the middle of that intersection, working together to improve health and health-care outcomes locally and globally.

"We like to collaborate," says Michael Kosorok, PhD, W.R. Kenan, Jr. Distinguished Professor and chair of biostatistics. "We often team up with clinicians and other biomedical researchers who have problems they want to solve and figure out how to open doors to get those answers — and sometimes, the methods we choose can help refine those questions or change those goals. It's all in the interaction."

Data science approaches like causal inference and machine learning are used increasingly in precision health, which aims to provide personalized solutions to public health problems. Precision health works in three different stages of increasing complexity:

**Prediction**

Capturing information and characteristics of patients

**Causal Inference**

A what-if analysis that estimates what will happen if an action or treatment is changed

**Decision Support**

The development of computer algorithms to optimize actions or interventions to maximize health outcomes

"Think of those stages as what is, what might be, and how best to act to achieve our goals," said Stephen Cole, PhD, professor of epidemiology. "We want the algorithms we develop for precision health to account for both the individual and the context so we can figure out better prevention and treatment strategies."

Cole and Kosorok are working with Jeff Stringer, MD, professor of medicine, on the Limiting Adverse Birth Outcomes in Resource-Limited Settings (LABOR) study, a project funded by the Bill & Melinda Gates Foundation to evaluate 15,000 pregnant women in two or three developing countries.

The mothers in the LABOR study will wear patches on their abdomens — which are being developed specifically for this study — that will record oxygen saturation levels, heart rates and other real-time information about the women and their babies, since the patches are designed to discern signals from the baby and from the mother during the labor and birthing process. Researchers also will examine the mothers' medical records and structural information about the clinics themselves, such as the actions of staff and events over time.

Using all these data sources, researchers will develop new algorithms and precision medicine tools that will help doctors better assess an individual woman's risk of having adverse pregnancy outcomes or having a baby at risk for poor birth outcomes, and predict the health interventions they will likely need.

Though they teamed up for the LABOR study, Kosorok and Cole do not often get the opportunity to work together. Cole has focused much of his career on study designs about population health risks and infectious disease, while Kosorok's application of data science to health problems has centered primarily on cancer and diabetes.

One of Kosorok's recent priorities is using precision medicine to improve Type 1 diabetes treatments. He is working with Elizabeth Mayer-Davis, PhD, RD, the Cary C. Boshamer Distinguished Professor and chair of nutrition, and Eric B. Laber, PhD, professor of statistics at North Carolina State University, on artificial intelligence tools that allow researchers to analyze each patient and determine optimal treatments in real time. They've developed a mobile app prototype integrating an insulin pump, a glucose patch, and activity monitors to help diabetes patients manage their glucose levels.

For Cole, HIV and other infectious diseases has been at the heart of his work for several years. He's currently involved in optimizing HIV treatment and exploring treatment as prevention for HIV infections. Cole recently teamed with Ada Adimora, MD, MPH, professor of epidemiology at Gillings and Sarah Graham Kenan Distinguished Professor of medicine, and others to develop new methods to project the benefit of HIV treatment as prevention among U.S. women, where a randomized clinical trial seems infeasible.

> **"Humans are complex, but they are also precious, so we have to get it right."**
>
> **Michael Kosorok, PhD**
> W.R. Kenan, Jr. Distinguished Professor and Chair of Biostatistics

Despite their distinct research interests, Cole and Kosorok occasionally walk around campus to bounce research ideas off each other and engage in discussions about science, learning and life. Kosorok is an accomplished music composer who originally planned biostatistics as a backup career, while Cole is an avid student of philosophy and history who is driven by learning.

"Reading various scholars and works in the historical record gives me context for what I'm doing now," Cole says. "My project is to learn how to learn better."

One of their shared philosophies is that although they delve deeply into math, machine learning and methods, their work is human-focused. "Being in biomedicine and working with real patients causes us to be really careful with the methods we use," Kosorok says. "Humans are complex, but they are also precious, so we have to get it right."

# Finding Personalized Solutions for Obesity

**Penny Gordon-Larsen, PhD**
Associate Dean for Research and Professor of Nutrition

Obesity has become one of the nation's top health challenges, and there is no shortage of trendy diets and exercise routines promising successful results.

But most research indicates that putting two people on the same diet often yields dramatically different results: One will lose weight, while the other may not lose weight at all — in fact, sometimes they even gain a few pounds.

So why does the same nutrition plan work for some people and not for others? A transdisciplinary team of researchers at the UNC Gillings School of Global Public Health is working together to find out using a precision health approach. The Obesity Hub, an innovative team-based approach in the Gillings School involving more than two dozen faculty members from all parts of UNC campus, is using big data to study animals, people and populations to understand why different people can consume the same diets and have different weight gain patterns — and using data-driven strategies to transform behavioral weight loss.

Hub leader Penny Gordon-Larsen, PhD, associate dean for research and professor of nutrition, says most weight studies look at the average effects of weight interventions. Focusing instead on the tails (those most likely to gain or lose, for example) of the distribution rather than averages can highlight the most (and least) successful weight loss in individuals and answer key questions about weight loss.

"If you take the full data in any kind of weight intervention — for example, low fat, low carb, surgery — and look at the population, you see a normal curve where some people on that therapy actually gain weight and for some people it works beautifully, but most people are in the middle with very little weight loss," she says. "You want to figure out what it is about the person who is very successful on a particular treatment — whether it's their biology, their behavior, or other factors — and what it is about that intervention that produces a really good result for a specific person or type of person. If you can match the right therapy with the right person, then you will have good results."

Using several different study designs and analyzing thousands of data points, Hub researchers aim to delve into that variability to find out what factors predict success. A central hypothesis is that a genetic defect could lead to metabolic inefficiency, disrupting a person's ability to process energy from food and leading that person to gain weight instead of lose it.

Analyzing genetic, bacterial and molecular information from 10,000 individuals followed over 30 years, these same markers found in animal models, and behavioral data from people who volunteered for a weight-loss treatment, the researchers' goal is to find molecular and genetic signals that will help doctors personalize and tailor more effective therapies to people. Stephen Hursting, PhD, a professor of nutrition who is part of the team studying animals, says, "The exciting work is really in the translation of findings from animal to human."

In the clinic, mobile monitoring devices and behavioral strategies are being integrated to personalize interventions for people who want to lose weight. Initially, 40 patients will try out different dietary compositions and intervention strategies, while researchers glean real-time glucose, exercise, and sleep data and other information so they can adjust recommendations for each person as an individual.

"We do a series of experiments in the first few weeks to hone the right prescription, and then we follow that tailored prescription, adjusting as needed, to see if we can maximize successful weight loss," says Deborah Tate, PhD, professor of health behavior and nutrition. "Our goal is to get away from the one-size-fits-all approach that we've done historically — using identical diet and activity prescriptions and behavioral strategies across the board, even though it may not be the right approach for everyone."

**"We do a series of experiments in the first few weeks to hone the right prescription, and then we follow that tailored prescription, adjusting as needed, to see if we can maximize successful weight loss."**

**Deborah Tate, PhD**
Professor of Health Behavior and Nutrition

# The Obesity Hub Leadership Team

The Obesity Hub is an exciting collaboration of 32 scientists working to develop weight-loss treatment and prevention approaches that go far beyond the common "one-size-fits-all" approach. The team won a Creativity Hub award from the University last year to spur the kind of novel, collaborative science that helps keep UNC at the forefront of research and discovery. The hub has published two position papers, has nine grants in progress, three spin-off grants, and a grant from the NIH valued at more than $6 million.

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Professor of Nutrition and Director of UNC Nutrition Research Institute

**Health Behavior**
**Deborah Tate, PhD**
Professor of Health Behavior and Nutrition

USING BIG DATA TO SOLVE BIG PUBLIC HEALTH PROBLEMS

# **One Health** Links People and Environment

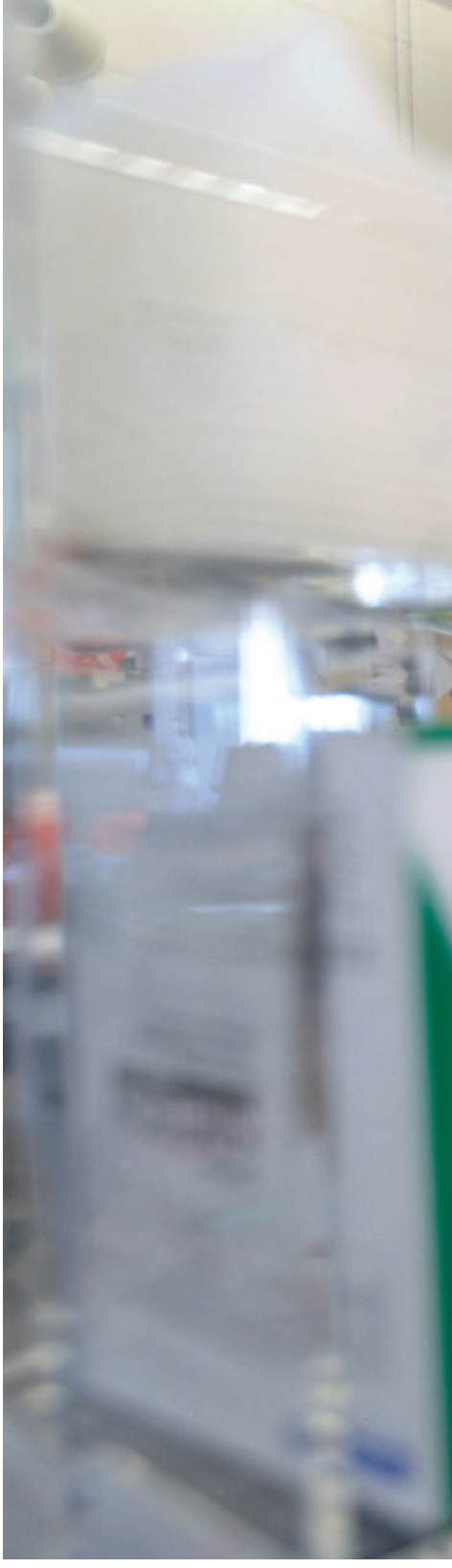
## The concept of One Health – the links between the health of people, animals and the environment – also connects UNC Gillings School of Global Public Health researchers working together to solve real-world environmental problems.

Interdisciplinary collaboration between chemists, biologists, epidemiologists and engineers is helping Will Vizuete, PhD, associate professor of environmental sciences and engineering, find ways to better understand the effects of the atmosphere's chemical makeup on air pollution toxicity and which populations are most affected.

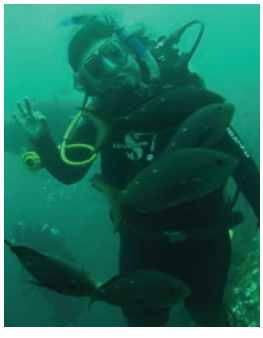
"Anything that's emitted into the air, like wildfires or automobile exhaust or power plant emissions, is harmful," says Vizuete, whose background as a chemical engineer has helped inform his work. "We don't know the extent of how that harm changes once it enters the atmosphere."

His approach includes using high-performance computers, developing new three-dimensional models to simulate the atmosphere, and testing air toxicity using living cells. The ultimate use of the data he generates is to influence policy changes and create more effective pollution controls.

Although air pollution affects everyone, children and older people are especially susceptible to air pollution mortality and morbidity, as are individuals of low socioeconomic status who may live near polluted areas. These issues also are important for low- and middle-income countries, where indoor cook stoves and coal burning are common.



*Pictured: John T. Szilagyi, postdoctoral researcher, environmental sciences and engineering*



**Jill Stewart, PhD**
Professor of Environmental Sciences and Engineering

**Will Vizuete, PhD**
Associate Professor of Environmental Sciences and Engineering

Examining how things like power plant or car emissions interact with the chemicals already in the atmosphere will shed light on the best ways to protect those who are most vulnerable, Vizuete says.

"Everyone is impacted by air pollution, but our exposure is far more complicated than what we knew before," Vizuete says. "What we're trying to investigate and highlight is: What are the true drivers of toxicity in the atmosphere that we haven't looked at yet that we need to look at down the line?"

> **"Unfortunately, a long history of social and environmental injustices has resulted in circumstances where poor and minority communities are disproportionately impacted by degraded environmental conditions."**
>
> **Jill Stewart, PhD**
> Professor of Environmental Sciences and Engineering

Jill Stewart, PhD, professor of environmental sciences and engineering, is exploring similar questions about water. Growing up on Chesapeake Bay, Stewart always has felt a connection to water. "Water is essential to life. People should be able to drink water, swim in water or fish from water without getting sick," says Stewart, whose contributions to beach-related epidemiological studies helped form the scientific basis for revising U.S. recreational water-quality criteria.

Stewart is working to better understand how environmental conditions can affect human health, and how humans themselves influence this process. Her goal is improving the health and well-being of those affected by poor environmental conditions such as waste products, industrial hazards, and flood-prone development. "Unfortunately, a long history of social and environmental injustices has resulted in circumstances where poor and minority communities are disproportionately impacted by degraded environmental conditions," she says.

Instead of culturing bacteria as they've done in the past, scientists now use molecular and genetic methods to measure pathogens and track contamination back to its original source. Stewart combines microbiology with geospatial and risk modeling to pinpoint when and where people are exposed to bacteria and to identify strategies to help prevent the exposures.

"It is a really exciting time to be an environmental microbiologist because the molecular biology tools we use keep advancing so quickly," Stewart says. "The data are giving us a much better understanding of the ecology of antibiotic-resistant bacteria and the role of the environment in the spread of resistance among humans, animals, and the environment."

In addition to working across disciplines in her own research, Stewart promotes collaboration as deputy director of the UNC Galápagos Initiative, where she leads campus research directors in identifying critical research questions, and as a member and co-teacher in the NC One Health Collaborative, which promotes dialogue about the interconnectedness of people, animals, and the environment.

"Collaborations are a really important part of the work I do," Stewart says. "Traditional, disciplinary approaches will not be effective in addressing the major environmental challenges facing our generation."

PROFILE

# Salzberg New Leader of The Water Institute

## A renowned international leader in global water policy, peace and security is the new director of The Water Institute at UNC.

Aaron Salzberg, PhD, the Don and Jennifer Holzworth Distinguished Professor, has joined the UNC Gillings School of Global Public Health in the Department of Environmental Sciences and Engineering. A long-established leader in water policy, Salzberg has been the lead water adviser to five secretaries of state, negotiated major international agreements, and created partnerships that strengthened the United States' and international community's capacity to address global water challenges.

Salzberg was the Department of State's first special coordinator of water and chief of the Water Division within the Bureau of Oceans and International Environmental and Scientific Affairs. During his tenure, U.S. development assistance for drinking water and sanitation increased more than tenfold in countries of significant need.

At UNC, Salzberg wants to change how the world works on water through scientific discovery, technical innovation and policy leadership. He plans to merge policy and practice to focus the Institute on real-world solutions to water and sanitation challenges.

"People must have access to sustainable supplies of water of the right quantity and quality to survive and thrive," Salzberg says. "Diarrheal diseases due to unsafe drinking water and poor sanitation are one of the leading causes of death in children worldwide — this is wholly preventable. What's more, without water, local livelihoods are lost and this becomes a source of migration and conflict and supports terrorist recruitment."

Salzberg succeeds Jamie Bartram, The Water Institute's first director, who retired in June. Bartram launched The Water Institute in 2010 to "provide global academic leadership for economically, environmentally, socially and technically sustainable management of water, sanitation and hygiene for equitable health and human development." The Institute is well-respected for policy-relevant research on drinking water, sanitation and hygiene (WaSH) and for facilitating international efforts to solve global WaSH issues.

**Aaron Salzberg, PhD**
Don and Jennifer Holzworth Distinguished Professor of Environmental Sciences and Engineering

**35**
Percent of NC population that relies on unregulated private wells for water (the 3rd most of any state)

**1,991**
Number of community water systems in NC

**$17B-$26B**
Estimated water and wastewater infrastructure needs for North Carolina over the next 20 years

# Driving Health Solutions for Under-represented Groups

Too often, the populations who are most burdened by or vulnerable to diseases are underrepresented in research studies and underserved in access to care. We're Gillings. We're on it! Equity is a core Gillings value, and our faculty work to find ways to better deploy health-care data and resources to help those who need them most.

DRIVING HEALTH SOLUTIONS FOR
UNDERREPRESENTED GROUPS

# **Big Data Improve Diversity** in Health Studies

**Kari North, PhD**
Professor of Epidemiology

## A key part of precision public health is understanding genetic susceptibility to disease, so that prevention and treatment efforts can be tailored to individuals who are most susceptible.

However, most genomics studies include data on populations of European descent. That makes it more difficult to understand how best to reduce chronic disease inequities among racial and ethnic groups. UNC Gillings School of Global Public Health faculty members are working to narrow this data gap. One of the strategies is to gain a better understanding of population groups that are more susceptible to chronic diseases yet are underrepresented in existing research.

Kari North, PhD, professor of epidemiology, analyzes multi-omics data to show how genomic underpinnings in diverse populations relate to health outcomes. She leads the UNC Department of Epidemiology's Cardiovascular Genetic Epidemiology Computational Laboratory, a collaborative, interdisciplinary research group focusing on family- and population-based genetic epidemiological research.

"We typically study European populations for things like heart disease, hypertension, and diabetes, but these populations are not the ones most burdened by those diseases," North says. "Our goal is to ensure that genetic advancements are equitable for all populations. We need more diversity in research across all race and ethnic groups to alleviate health disparities."

North and a team of researchers from institutions across the country recently analyzed health outcomes among nearly 50,000 racially and ethnically diverse populations and identified 65 new genetic associations — locations on a chromosome where genetic variants are found — many of which can be transferable to other groups that share components of genetic lineage, such as African ancestry, which can be found in African-Americans, Hispanics and Latinos.

One key finding from the group's work is the association between lower HbA1c levels — which often is used as a marker for glucose control — and the gene for sickle cell anemia. While this association had been reported in African-American populations, researchers found that the sickle cell variant also is important in some Hispanic/Latino populations. The gene can affect the reliability of glucose test results and could lead to the misdiagnosis of Type 2 diabetes.

Making sure genetic studies reflect more diverse populations will help doctors and researchers better understand the genetic nuances that can influence the course of diseases and the effectiveness of treatment and prevention strategies.

"Diversity is such an important part of the picture," says North, whose interest in health equity dates to her dissertation project on American Indians. "Precision medicine moving forward means you can personalize the treatment. But that can change based on what population you're in — the individual lives in the context of the population."

Since multi-omics involves the sequencing of vast amounts of biological data, a major challenge of working with multi-omics is figuring out how to integrate across big data, such as genomics, microbiomics, and metabolomics. North works with Danyu Lin, PhD, Dennis Gillings Distinguished Professor of biostatistics, who is a leader in statistical approaches to integrating these big data. "We've been laying the groundwork for these new approaches for some time," Lin says.

"Fortunately, the technology and software have advanced rapidly. I am very excited about the promises of these new approaches to integrate across multiple types of omics data."

North also uses multi-omics and integrative analysis to study obesity and other risk factors for chronic illnesses that disproportionately affect minority populations. Through genomics, identifying genetic variants linked to obesity is critical in developing targeted interventions to reduce the risk of obesity-related chronic illnesses such as hypertension, Type 2 diabetes, and heart disease. Metabolomics — the study of small molecules such as sugars, fatty acids, and lipids — helps researchers explore the molecular processes that can affect disease development and progression.

> **"Health equity, period, is the motivating factor of my work."**
>
> **Kari North, PhD**
> Professor of Epidemiology

"People who are obese are at much greater risk for cardiovascular risk factors across the board, but we don't understand the molecular mechanisms by which obesity causes downstream disease," North says. "What can the data tell us about why some populations are at increased risk of disease?"

In trying to get past correlation and look for causation, North and her team collaborate with Lin. "Everything I do is big data. We talk to Danyu about the problem, and he helps us operationalize those problems in terms of statistical algorithms," North says. "He's an amazing collaborator."

The spark behind North's data-driven search for answers is simple: "Health equity, period, is the motivating factor of my work," she says.

# **Using Big Data** to Solve Health Equity Puzzles

**Whitney Robinson, PhD**
Associate Professor of Epidemiology

Whitney Robinson, PhD, smiles when she talks about data. She is a social epidemiologist and associate professor at the UNC Gillings School of Global Public Health. In her research, she focuses on why rates of gynecologic treatment differ among groups of people. For instance, why do young African-American women, especially in the South, have such high rates of hysterectomy — a procedure in which a woman's uterus is removed?

"I'm looking into why young women get hysterectomies after being diagnosed with these really common gynecologic issues, like fibroids, endometriosis and painful periods. Hysterectomies are the second most commonly performed surgery among young and middle-aged women in the United States, but they've been understudied. My feeling is that this issue affects millions of women's ability to attend work, have a satisfying sex life and raise a family, and that's worth examining."

The health issues that can lead to a hysterectomy have a variety of other possible treatments, ranging from hormonal birth control to more minor surgeries. For Robinson, the concern is: Who has access to these cheaper, less invasive treatments?

"That's what we want to understand," she says. "When a young woman opts for a hysterectomy, is it because her doctor pushed for it? If so, did the provider push because it's an easily reimbursable procedure, or because their training highlighted it? Or, do minority women truly have more severe symptoms and clinical complexity? Maybe a woman chooses the more invasive treatment because she lives in a rural area and couldn't stomach the possibility of many return visits to her provider if the less invasive treatments didn't work. Or, maybe there's a cultural element that influenced her."

To understand this complex question, Robinson and her team are bringing together datasets from a nonprofit hospital system, the national census and a large registry of health professionals. Two years into a grant from the National Institute on Minority Health and Health Disparities, they are finally poised to analyze the immense amount of data they've collected and cleaned. Robinson is especially excited because the tens of thousands of data points include uninsured women.

"This is critical from a health equity lens," she explains. "Many of the women who receive hysterectomies are too young to qualify for Medicare and can't afford private insurance. Historically, data analyses have missed uninsured women of reproductive age, and they are a key population for this question."

Robinson also is excited because the sheer size of the dataset — representing more than 10,000 women — reveals patterns that weren't clear in earlier studies. For example, her team has already learned that, in North Carolina, young Native American women have even higher rates of hysterectomies than young African-American women.

The ultimate goal of this research is to inform action: Which public health interventions will advance women's care? If the hysterectomy differences are due to higher clinical need among minority women, then improving care will require developing new uterine-sparing treatments that are more effective for treating their symptoms. On the other hand, if young women receive different treatments due to their race, interventions should prioritize more unbiased delivery of existing treatment options.

"Hysterectomies can be life-changing," Robinson says. "For some women, they offer amazing relief from a host of symptoms. They also mean the end of a woman's ability to have biological children and they can bring immediate menopause. For a young woman, getting a hysterectomy is a big decision — we want it to be the most informed, equitable decision possible."

Robinson discusses other aspects of her research on AcaDames, the podcast that she co-hosts with Sarah Birken, PhD, assistant professor of health policy and management at the Gillings School. In each episode, they delve into the experience of being a woman in academia. The common thread between her research and this passion project, Robinson says, is her interest in women's health and well-being. As she puts it: "Whatever it takes to ensure women feel confident and are fully engaging in life."

DRIVING HEALTH SOLUTIONS FOR UNDERREPRESENTED GROUPS

# Assisting New Mothers in Emergencies

**Aunchalee Palmquist, PhD**
Assistant Professor of Maternal and Child Health

Breastfeeding and health equity have been key research interests for Aunchalee Palmquist, PhD, throughout her years of work in anthropology. It was a newspaper story about mothers who were turning to social media groups to find and share breastmilk, rather than buy or sell it, that inspired Palmquist, assistant professor of maternal and child health, to turn her anthropologist lens toward lactation and breastfeeding — an area of research that, until recent years, had received waning attention in her field.

"I wanted to get a better handle on why some mothers were struggling to make enough milk for their own babies, but others were pumping enough extra milk to feed two or three," she says. "I was also curious about how parents dealt with the risks and why they decided to feed their babies this way rather than using formula or pasteurized donor milk from a milk bank."

Palmquist enrolled in the Mary Rose Tully Training Initiative, the clinical lactation training program at the UNC Gillings School of Global Public Health, to prepare her to do more rigorous research on lactation and breastfeeding. After joining Gillings in 2017, Palmquist established a research agenda on infant feeding in emergencies: Emergencies create enormous challenges for infant nutrition. Palmquist's training in medical anthropology and clinical lactation prepared her to examine how aid organizations can support recommended nutritional interventions in humanitarian settings, like sharing breastfeeding, sharing breastmilk, and reducing the risks of formula feeding. She collaborated with Dilshad Jaff, MD, MPH, assistant adjunct professor of maternal and child health and formerly, program coordinator for the Gillings School's Research Innovation and Global Solutions office, on research to improve the quality of perinatal health services for displaced Yazidi families in Iraq.



*Image Source: United States Breastfeeding Committee*

Their work emphasizes the importance of including mental health support in any kind of health intervention for populations experiencing conflict and other crises. "We are trying to demonstrate that any trauma or mental health issues, especially among women, decreases breastfeeding rates and increases infections in children," said Jaff, who recently took a new job with the International Committee for the American Red Cross. A native of Iraq who worked as a medical doctor during the Iraq war, Jaff will retain his affiliation with Gillings.

Drawing on the knowledge they gained from their work in Iraq and Jaff's personal expertise as a physician during conflict, Palmquist and Jaff began working on ways to help vulnerable populations in North Carolina during emergencies.

> **"How do we help them before, during and after evacuation to protect them from the short- and long-term negative social, economic, and health impacts of natural disasters?"**
>
> **Aunchalee Palmquist, PhD**
> Assistant Professor of Maternal and Child Health

"In emergency situations, the needs of people who are pregnant, birthing, or caring for babies are not at the top of the list," Palmquist says. "We have to figure out how to provide more support to these people, who are at the greatest risk of neglect in emergencies. How do we help them before, during and after evacuation to protect them from the short- and long-term negative social, economic, and health impacts of natural disasters?"

After Hurricane Florence last year, Palmquist and others from the Carolina Global Breastfeeding Institute (CGBI) developed a resource kit for providers and patients in the hospitals the CGBI works with in North and South Carolina. It includes guides for health workers, frontline responders, shelter managers, and volunteers to help families with infants and young children (birth to age 2) in providing safe nutrition during emergencies.

In talking with providers and emergency response personnel across the state, Palmquist also stresses the importance of preparedness, which can provide a critical safety net for infants who are vulnerable to illness and food insecurity in emergency situations.

That means planning ahead and thinking through what families need to feed their babies when there isn't power or clean water, and when stores are closed. "Most parents may not have thought about how they might prepare formula with no access to clean water or a way to wash bottles," she says. "We have environmental disruptions year-round — flooding, snowstorms, hurricanes, power outages. It is so important to be prepared, particularly for families with young infants."

Data and technology could help connect families with information about emergency readiness and response, Palmquist says. Apps and mobile technology have great potential to use SMS messaging, real-time counseling, and other tools to link people with available resources and support — especially in cases where people are displaced by an emergency event.

Longer term, Palmquist's goals include building capacity from within historically marginalized communities in North Carolina to improve emergency response in ways that better meet the needs of maternal, child, and family health.

"North Carolina can set the precedent nationally for what good practice looks like," she says.

# Translating Science into Practice

Doing great public health research means putting study results to work. Whether examining molecular-level data or facilitating large-scale organizational changes, we're Gillings. We're on it! Gillings faculty go beyond the literature and the lab to make real changes in health-care practice and policies — and real differences for patients.

# **Putting Evidence-Based Practices** to Work

Implementation science is the study of methods to promote the adoption and integration of evidence-based practices, interventions and policies into routine health-care and public health settings. But it takes too long — 17 years on average — to put evidence-based research into practice. Even then, only half the evidence-based practices are widely used in clinical and community settings.

From creating personalized health interventions to helping large health-care organizations implement widespread changes, UNC Gillings School of Global Public Health researchers are working to bring about meaningful results for patients, providers and communities throughout North Carolina.

For Stephanie Wheeler, PhD, MPH, professor of health policy and management, those results hinge on using big data to identify key underserved populations or regions where evidence-based interventions should be adapted and implemented to improve health equity.

**Stephanie Wheeler, PhD, MPH**
Professor of Health Policy and Management

**Chris Shea, PhD**
Associate Professor of Health Policy and Management

In one series of studies, Wheeler and her colleagues linked insurance claims, cancer registry data, surveys and interviews to look for ways to address the financial strain of costly cancer treatments. They found that financial navigators — oncology support staff trained to support patients and reduce hardship related to treatment costs — were one effective solution: Patients at UNC's Cancer Hospital who worked with navigators reported lower levels of out-of-pocket cost burden and less worry about their finances.

The National Cancer Institute (NCI) has awarded Wheeler and Don Rosenstein, MD, professor of psychiatry and director of the Comprehensive Cancer Support Program, a five-year R01 grant to embed trained navigators in five rural oncology clinics across the state. "We've seen how this works at a large academic medical center," Wheeler says. "The next step is adapting and implementing it in rural clinics."

Wheeler has received another five-year R01 grant from the NCI to explore whether an evidence-based intervention to improve medication adherence — whether a patient continues to receive recommended treatment — among patients with chronic diseases like diabetes and cardiovascular disease can be adapted and used to improve endocrine therapy adherence in racially diverse breast cancer patients.

Wheeler and Katie Reeder-Hayes, MD, MBA, MSc, assistant professor of medicine, initially tested motivational interviewing, a counseling technique used in other health studies but not in cancer research, to see if it would help patients continue

their treatment. It did. Adherence was high among participants, and so was patients' confidence in sticking with their medication. The second NCI grant will scale-up the counseling intervention, adding a text messaging reminder, to be delivered remotely to more than 1,200 cancer survivors to understand how well it works in different settings and different sub-groups identified by race and age. This could revolutionize survivorship care for women who have had breast cancer and reduce inequities in health-care access and outcomes.

While Wheeler has focused on implementing innovative patient-focused interventions in medically underserved populations, Chris Shea, PhD, associate professor of health policy and management, studies implementation of organizational changes, many of which involve new technologies.

Shea has examined how technology has transformed health-care organizations over the years. This includes the adoption of electronic health records (EHRs), which increased about a decade ago with the introduction of the Centers for Medicare & Medicaid Services' Meaningful Use program. This program gives providers financial incentives to promote adoption of EHRs and other technology-based care tools. Shea's study of the UNC Health Care system's readiness to implement Meaningful Use in ambulatory settings suggests the need for different implementation strategies for various roles and sites within a health system.

For example, Shea found that physicians were less willing than nurses and physician assistants to change their own work practices to meet Meaningful Use requirements. They were also less confident in their clinic's ability to solve implementation problems. Additionally, practitioners in specialty clinics were more concerned than primary care practitioners about Meaningful Use activities diverting attention away from other important patient care activities.

In another study, Shea found that success in meeting the program's requirements was highest when efforts were led by quality improvement teams, which are teams of diverse clinic staff who are charged with carrying out improvement efforts for that practice. "It's important to integrate health technology implementation with quality improvement infrastructure and processes," he says, "to connect those changes to ongoing efforts within the practice that clinicians think are important."

> **"It's important to integrate health technology implementation with quality improvement infrastructure and processes."**
>
> **Chris Shea, PhD**
> Associate Professor of Health Policy and Management

EHR data have potential benefits beyond the patient encounter, such as assisting with health system planning and predictive analytics. Health systems also are trying to determine how much to invest in novel approaches, such as machine learning.

Although new technology is a driver of many organizational changes in health care, changes that are not tech-driven also can affect how clinicians and administrative staff share information and do their work, Shea says. "We're moving toward more information-oriented and technology-enabled health systems. It's important to keep in mind that this movement may not affect all stakeholders the same way. We can't lose sight of the implications for clinicians, patients and communities."

**Cancer treatment** is one of the most frequent causes of bankruptcy in the country, according to the President's Cancer Panel. In 2015, new cancer drugs ranged in price from $7,484 to $21,834 per patient per month.

# **Treatment Effects** in the Real World

At most medical appointments, doctors and nurses ask their patients a number of questions and enter the answers into a computer or tablet. What happens to all that information?

UNC Gillings School of Global Public Health researchers are using those data to generate real-world evidence to improve knowledge about how prescription drugs affect patients.

**Til Stürmer, PhD, MD, MPH**
Nancy A. Drever Distinguished Professor and Chair of Epidemiology

**Michele Jonsson Funk, PhD**
Associate Professor of Epidemiology and Director of the Center for Pharmacoepidemiology

Before new drugs reach the market, they must endure years of testing. But knowledge is limited about the benefits and harms of these treatments because of the small number of patients tested and how they are selected for trials. There also is a lack of information on long-term effects and potential interactions with other treatments.

## That means drugs are being approved, prescribed, and used without a complete picture of their safety and effectiveness in the real world.

Til Stürmer, PhD, MD, MPH, Nancy A. Dreyer Distinguished Professor and chair of epidemiology; Jennifer Lund, PhD, associate professor of epidemiology; and Michele Jonsson Funk, PhD, associate professor of epidemiology and director of the Center for Pharmacoepidemiology (the branch of science that studies the effects of drugs in large numbers of people), are working to change that through rigorous research using big data such as insurance claims and electronic medical records, which can provide information on millions of patients compared to the smaller clinical samples in drug trials.


# Opioid Use

Opioid abuse in North Carolina has reached epidemic levels: In 2017, more than five North Carolinians died each day from an unintentional opioid overdose. To reduce the supply of unused, misused and diverted opioid pills, in 2017 the state legislature enacted the Strengthen Opioid Misuse Prevention Act, or STOP Act. Among other provisions, the law limits the legal prescription of opioid pain medications to a five-day supply for acute injuries and a seven-day supply post-surgery. It does not restrict opioid prescriptions for chronic pain.

While many states have implemented prescribing limits based on the number of days supplied, Gillings graduate student Jessica Young used national insurance claims data to examine other dimensions of opioid prescribing, such as the number of pills dispensed, and overall dosage (morphine milligram equivalents [MME]) dispensed. Her results show that these dimensions can yield a different perspective on patient use. Notably, one out of every 10 patients receiving opioids for postoperative pain received over 500 MMEs, putting them at 21 percent higher risk of having long-term opioid use following surgery compared to those receiving a dosage under 500 MMEs.

“The law uses ‘day supply,’ but there are other ways to characterize people who might be getting more opioids than needed,” said Young’s adviser, Michele Jonsson Funk, PhD, associate professor of epidemiology and director of the Center for Pharmacoepidemiology.

Young has received a $142,967 dissertation award from the National Institute on Drug Abuse to support completion of her doctoral dissertation in the field of drug use research.

"These big, or real-world, data allow us to get timely answers to important clinical questions that cannot be answered quickly enough through any other means," Stürmer says. "Being able to use these data is a prerequisite for assessing the real-world benefit and harm of drugs."

For example, about 80 percent of pregnant women report nausea. When the generic version of Zofran, a drug developed to combat nausea in cancer patients, hit the market a few years ago, it was being prescribed to about 20 percent of pregnant women — despite inadequate data on its safety.

> **"Using big data to conduct robust research … is truly a team science effort."**
>
> **Michele Jonsson Funk, PhD**
> Associate Professor of Epidemiology and
> Director of the Center for Pharmacoepidemiology

Jonsson Funk and one of her graduate students, Elizabeth Suarez (who graduated in Fall 2019), analyzed de-identified health-care data and found that women using Zofran (or its generic form) during pregnancy did not have a higher risk of miscarriage, preterm birth, or gestational hypertensive disorders compared to women who used other drugs to treat their nausea.

"By using these big data, we can see the effects these treatments have on a diverse population of patients in the real world, not just the highly selected ones in the clinical trials," says Jonsson Funk, who has studied several women's health issues including medication use during pregnancy, pelvic floor disorder treatment, sex differences in statin benefits, and effects of diabetes medications on breast and endometrial cancer risk.

UNC is home to a uniquely rich resource: de-identified data from a nationwide 20 percent random sample — about 4.5 million individuals — of Medicare beneficiaries ages 65 years and older, including all medical encounters, procedures, and pharmacy-dispensed prescription drugs over time until the death of the beneficiary. Originally funded by a Gillings Innovation Laboratory, this dataset is now available to all UNC researchers.

The interdisciplinary diabetes working group led by Stürmer and Dr. John Buse, MD, PhD, chief of endocrinology at the School of Medicine, uses these big data to better understand the effects of various diabetes treatments. Stürmer also has used Medicare data for research on treatments after heart attacks, and on potentially inappropriate prescriptions that could put older patients at risk of adverse health outcomes.

"The introduction of Medicare drug plans (Part D) in 2006 was a game changer. UNC's epidemiology department was at the forefront of using these data," Stürmer says. "More recently, our ability to link multiple data sources, including insurance claims with clinical data from electronic health records, allows us to combine rich longitudinal records with clinical detail that was previously unavailable."

Addressing questions of drug safety and effectiveness is not just about putting the right data together — it's also about putting the right people together. Fortunately, the interdisciplinary environment at UNC is one that nurtures collaborations.

"We bring together pharmacoepidemiologists who understand the particular study designs that can increase the reliability of findings, clinicians who understand the condition so that the questions we ask are relevant, biostatisticians who ensure that our analytic tools are appropriate to the task, programmers who can efficiently manipulate terabytes of data, and patients who share which health outcomes are most important to them," Jonsson Funk says. "Using big data to conduct robust research and produce meaningful results is truly a team science effort."

# **Machine Learning Drives** Precision Cancer

A decades-long population study, recent advances in genomics and machine learning, and a culture of collaboration are helping UNC researchers work together to find ways to improve the prevention, diagnosis and treatment of breast cancer.

**Melissa Troester, PhD**
Professor of Epidemiology and Research Professor of Pathology and Laboratory Medicine

Melissa Troester, PhD, professor of epidemiology and research professor of pathology and laboratory medicine at the UNC Gillings School of Global Public Health, is the principal investigator on the Carolina Breast Cancer Study (CBCS), a study of breast cancer epidemiology and biology launched more than a quarter-century ago to understand why African-American women disproportionately die from breast cancer.

Since 1993, the study has gathered data on more than 8,000 women from 44 counties in North Carolina. Now in Phase 3 of the study, researchers are conducting a more detailed analysis on how people are interfacing with the health-care system — for example, what kind of therapy they receive and when and whether they have comorbidities, like diabetes or heart disease — and integrating that information with molecular data.

"CBCS has a long history of interdisciplinary science and national and international collaboration," says Andy Olshan, PhD, Barbara S. Hulka Distinguished Professor of epidemiology at Gillings and CBCS co-principal investigator. "For example, CBCS is collaborating with the National Cancer Institute and an international consortium to explore the genetics of breast cancer. CBCS has also partnered with two other studies to form the world's largest consortium to study the epidemiology of breast cancer among African-Americans."

The CBCS seeks to integrate advances in molecular genomics with population-based research. In particular, one recent advance — a National Cancer Institute initiative called The Cancer Genome Atlas project — has led to a clearer picture of tumor genetic variability. "This data is typically not available in large population-based studies and the CBCS seeks to help close this gap," Troester says.

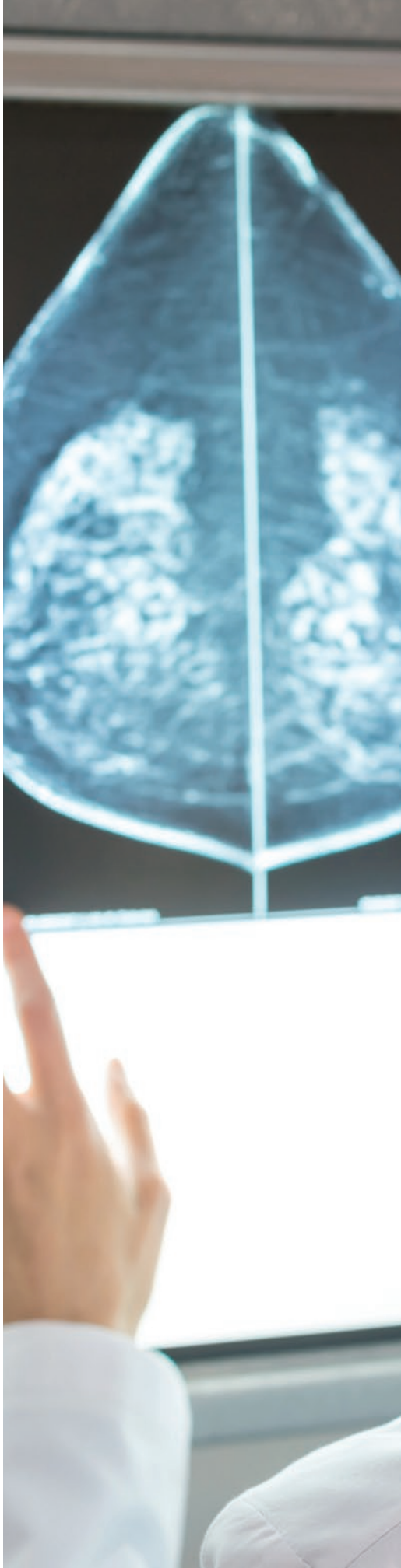
"We've learned that what happens clinically is determined by tumor biology," she says, "and as public health researchers we want to integrate this information with how people use and access health care."

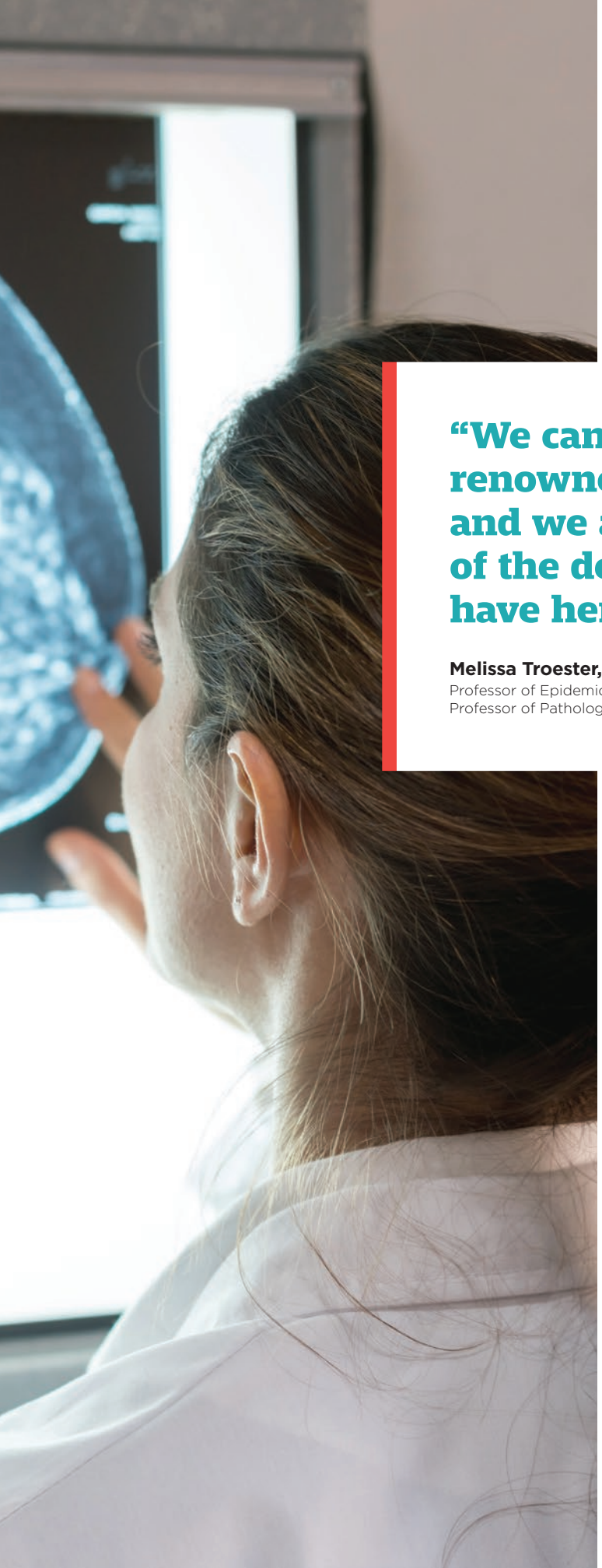
Working in collaborative teams across disciplines, Troester and her colleagues use several different methods and technologies to strengthen their understanding of cancer tumors. One area of focus is examining pathology data with "deep learning" — having computers use algorithms to look for unique features of tumor tissues that could help predict how the tumor might progress. Machine learning could identify features that scientists have missed so far, and may be able to standardize assessment of the tumors. For some features, like specific markers indicating tumor aggressiveness, pathologists may agree only 80 percent of the time on whether the tumor is high grade.

Transfer learning is another machine-learning approach that researchers hope to use to predict cancer progression risk so that doctors can select the best treatments and detect recurrence earlier and more rapidly so fewer people experience the worst cancer outcomes. Based on huge databases of images, computers can detect differences between different kinds of animals or objects (dogs and cats, or tables and chairs). Hoping to apply models trained initially on this kind of "computer vision" to tumor tissues, Troester and her collaborators — Marc Niethammer, PhD, professor of computer science; James Stephen Marron, PhD, the Amos Hawley Distinguished Professor of statistics and operations research; and Charles Perou, the May Goldman Shaw Distinguished Professor of molecular oncology — are feeding various images of different types of cancers into a machine learning algorithm.

The scientists aim to use machine learning to find image features that link to genetics to distinguish among different types of cancers, and use these images to predict survival by linking molecular data with the actual outcomes. Building models that have both molecular biomarker data and image data from the tumors might do a better job of predicting risk than models that use only one of these data types.

Microscopic images of tumors taken for biopsies have long been used to predict outcomes, using features like tumor grade or cellular differentiation. "Our hope with this project is that we can learn new image features if we ask computers to distinguish between tumors that are aggressive and those that are not," Troester says.





Deep learning also has the potential to integrate two different key types of data on breast cancer — mammograms and biopsy histology images, essentially two different photos of cancer, to help distinguish between aggressive and benign tumors, enabling doctors to better assess risk and supporting precision health both for prevention and treatment.

**"We can bring together nationally renowned experts in their fields, and we are really lucky in terms of the depth of collaborators we have here at Carolina."**

**Melissa Troester, PhD**
Professor of Epidemiology and Research
Professor of Pathology and Laboratory Medicine

One million women a year have biopsies. For most of them, results come back as benign, but there is a limit to how much additional information they get back. "We think we can do better and that patients deserve to have better information, especially after a biopsy that's a relatively invasive procedure," Troester says. "Extending what we've learned about tumors could have benefits on the prevention side as well as the treatment side."

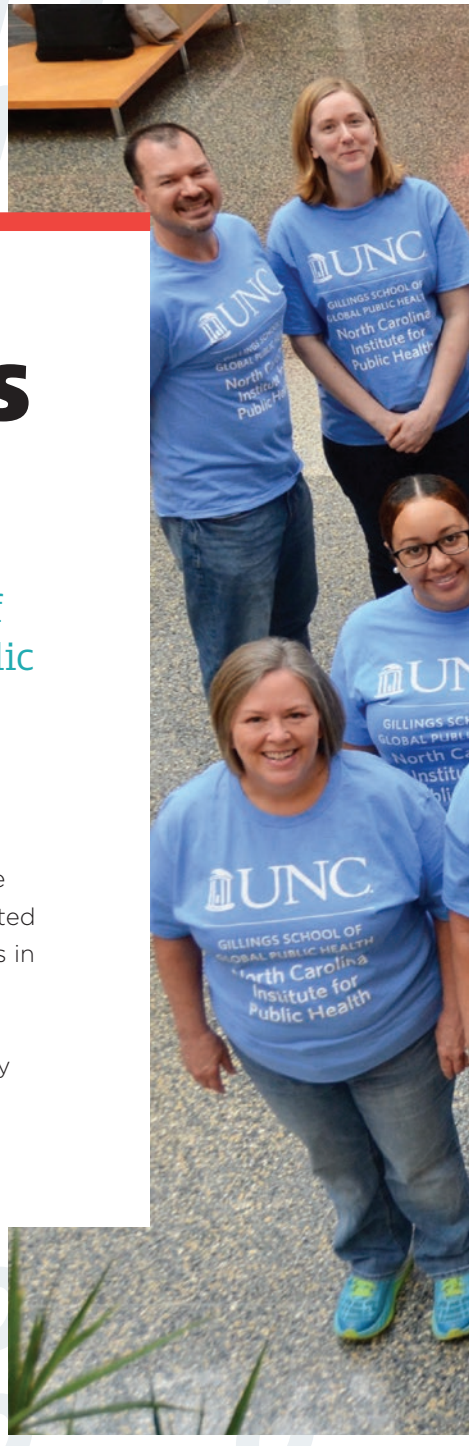
The CBCS is pursuing many different research directions and takes advantage of advances in a lot of areas — computer science, molecular profiling, social determinants, and health services — so it relies critically on working with investigators across disciplines and across multiple schools within UNC. Troester says, "We can bring together nationally renowned experts in their fields, and we are really lucky in terms of the depth of collaborators we have here at Carolina."

# School News and Awards

2019 marks the 20th anniversary of the North Carolina Institute of Public Health (NCIPH), the cornerstone of the Gillings School's outreach and practice efforts.

For the past two decades, NCIPH team members have trained the state's public health workforce and facilitated collaborative solutions to population health challenges in North Carolina and beyond.

In addition to celebrating this milestone, NCIPH recently welcomed Douglas W. Urland, MPA, as its new director.



## Douglas W. Urland, MPA

Urland has been a local health director in North Carolina since 1995, serving in Greene, Caldwell and Catawba counties. He also has worked as a facility director for Skill Creations, Inc., a company that provides services to individuals with intellectual and developmental disabilities; worked in case management with the U.S. Department of Justice's Federal Bureau of Prisons; worked in personnel management for the U.S. Department of Health and Human Services; and taught classes as an adjunct instructor at Lenoir-Rhyne University in Hickory, N.C.

The School News & Awards section highlights a few examples of many recent recognitions received by Gillings faculty, staff, students, and alumni.

# Students

## Case Competitions

**Aditi Borde**, a dual master's degree student in healthcare administration at the Gillings School and in business administration at the Kenan-Flagler School of Business, won first place at the Harvard Business School's Alliance for Health Management Case Competition in Cambridge, Mass.

An interdisciplinary team of students, including **Natalie Browne**, a master's of public health student, earned second place at the CLARION National Case Competition in Minneapolis.

## Scholarships and Fellowships

**Allie Atkeson, Adrienne Lloyd and Laura Ellen Powis** were among 19 recipients of the David A. Winston Health Policy Scholarship. Atkeson and Powis are both master's students in maternal and child health, and Lloyd is a master's student in health behavior.

**Nikki Behnke**, master's in environmental sciences and engineering alumna, is one of 106 students nationwide to receive a David L. Boren Fellowship for 2019.

**Kelly Page**, master's in healthcare administration student, received the first Judy Baar Topinka Foundation Scholarship for Health Policy from CAHME (the Commission on Accreditation of Healthcare Management Education).

**Violetta Saldanha**, a first-year master's student in healthcare administration, was awarded the HCA Corris Boyd Scholarship from the Association of University Programs in Health Administration (AUPHA) and HCA Healthcare.

**Busola Sanusi**, doctoral candidate in biostatistics, has the Biopharmaceutical Section Scholarship Award from the American Statistical Association (ASA).

**Denise St. Jean**, doctoral student in epidemiology, was selected as a Robert Wood Johnson Foundation (RWJF) Health Policy Research Scholar.

**Riley Vickers**, doctoral student in environmental engineering, is one of 31 environmental engineering students in the country to win a prestigious National Science Foundation (NSF) Graduate Research Fellowship in 2019.

## Recognitions

**Jessica Soldavini**, MPH, RD, LDN, doctoral student in nutrition, won the 2019 Rise Against Hunger World Hunger Leadership Award and was named an American Society for Nutrition (ASN) Science Policy Fellow.

**Melissa Stockton**, a doctoral student in epidemiology, has received a Fulbright United States Student Program award, announced by the U.S. Department of State and the J. William Fulbright Foreign Scholarship Board for the 2019-2020 academic year. She is working in Malawi to assess the validity of depression screening tools among patients beginning HIV care.

**Caitlin Williams**, doctoral student in maternal and child health, has been selected as a member of American Journal of Public Health's 2019 Student Think Tank.

# Faculty

## Appointments

**Ralph S. Baric**, PhD, was named William R. Kenan, Jr. Distinguished Professor of epidemiology. His appointment is one of seven Kenan professorships granted across the University.

**Mark Holmes**, PhD, professor of health policy and management and director of the Cecil G. Sheps Center for Health Services Research, was appointed to a four-year term on the National Advisory Committee on Rural Health and Human Services.

**Jonathan Oberlander**, PhD, professor of health policy and management, has been named editor of the Journal of Health Politics, Policy and Law (JHPPL), a bimonthly peer-reviewed publication that covers health policy and health law as they relate to politics.

**John Wiesman**, DrPH, Gillings alumnus and adjunct assistant professor in health policy and management, has been named co-chair of the Presidential Advisory Council on AIDS and received the Harriet Hylton Barr Distinguished Alumni Award.

## Awards

**Allison Aiello**, PhD, professor of epidemiology, and **Sherman James**, PhD, former professor of epidemiology at Gillings and currently the Susan B. King Emeritus Professor of Public Policy at Duke University, received awards from the Society for Epidemiologic Research for their outstanding achievements and contributions to the field.

**Amanda Holliday**, MS, assistant professor of nutrition, won the Academy of Nutrition and Dietetics' Outstanding Dietetics Educator Award.

**Michael R. Kosorok**, PhD, W.R. Kenan, Jr. Distinguished Professor and chair of biostatistics, received the American Statistical Association's Noether Senior Scholar Award, one of the ASA's most prestigious awards.

**Sheila Leatherman**, MSW, professor of health policy and management, received the Presidential Citation for Distinguished Service Award for her work to improve the quality of care for those in lower and middle-income countries.

**Elizabeth Mayer-Davis**, PhD, the Cary C. Boshamer Distinguished Professor of nutrition and medicine, and chair of the Department of Nutrition, received the American Diabetes Association (ADA) 2019 Kelly West Award for Outstanding Achievement in Epidemiology.

**Beth Moracco**, PhD, associate professor of health behavior, and **Karin Yeatts**, PhD, associate professor of epidemiology, received the Gillings School's Edward G. McGavran Award for Excellence in Teaching.

**Kari North**, PhD, professor of epidemiology, was honored by the Obesity Society with the 2018 Shiriki Kumanyika Diversity and Disparities Leadership Award.

**Herbert Peterson**, MD, FACOG, William R. Kenan Jr. Distinguished Professor of maternal and child health, was inducted as a Fellow Honoris Causa of the Royal College of Obstetricians and Gynaecologists (RCOG).

**Barry M. Popkin**, PhD, W.R. Kenan, Jr. Distinguished Professor of nutrition, received the Gillings School's John E. Larsh Jr. Award for Mentorship.

**Sara (Sally) Pritchard Herndon**, MPH, 1980 alumna and adjunct instructor in health behavior, received the 2019 Ronald H. Levine Legacy Award from the NC Department of Health and Human Services.

**Victor Schoenbach**, PhD, associate professor of epidemiology emeritus, was given the American College of Epidemiology's (ACE's) Abraham Lilienfeld Award.

**Pam Silberman**, JD, DrPH, professor of health policy and management and the director of the Executive Doctoral Program in Health Leadership, received the Lifetime Champion of Justice Award from the North Carolina Justice Center and the North Carolina Governor's Order of the Long Leaf Pine award.

**Kavita Singh Ongechi**, PhD, associate professor of maternal and child health, has been awarded the University's Philip and Ruth Hettleman Prize for Artistic and Scholarly Achievement by Young Faculty, one of the University's most prestigious acknowledgments of faculty excellence.

**Gary Rozier**, DDS, MPH, professor emeritus of health policy and management, received the North Carolina Oral Health Equity Champion Award.

**Jill Stewart**, PhD, associate professor of environmental sciences and engineering and deputy director of the Galápagos Initiative and the Center of Galápagos Studies, received the Bernard G. Greenberg Alumni Endowment Award.

**Jane Weintraub**, DDS, MPH, Alumni Distinguished Professor of dental ecology and adjunct professor of health policy and management, was named winner of the 2018 John W. Knutson Distinguished Service Award in Dental Public Health by the Oral Health Section of the American Public Health Association (APHA) and was selected as the first recipient of the R. Gary Rozier and Chester W. Douglass Distinguished Professorship in Dental Public Health.

**Steven Zeisel**, MD, PhD, Kenan Distinguished University Professor in nutrition and pediatrics, was presented the American Institute for Cancer Research's (AICR) Distinguished Service Award at the institute's annual meeting May 16 in Chapel Hill.

## Recognitions

**Cleo A. Samuel**, PhD, assistant professor of health policy and management, was chosen by the National Minority Quality Forum (NMQF) as one of 40 next-generation leaders in minority health under the age of 40.

**Jeffrey Simms**, MSPH, MDiv, assistant professor of health policy and management and director of student life and alumni relations for the health policy and management department, was selected as the Senior Health Services Executive of the Year by the National Association of Health Services Executives (NAHSE).

## Publications

**Environmental Science & Technology**, the flagship journal of the American Chemical Society (ACS), named an article by **Hans Paerl**, PhD, on "Mitigating the Expansion of Harmful Algal Blooms Across the Freshwater-to-Marine Continuum," as its feature article of 2018. Additionally, Environmental Science & Technology Letters selected a paper co-authored by **Jason Surratt**, PhD, and **Yue Zhang**, PhD — "Effect of the Aerosol-Phase State on Secondary Organic Aerosol Formation from the Reactive Uptake of Isoprene-Derived Epoxydiols (IEPOX)" — as one of the journal's five best papers of the past year.

**Clarivate Analytics** annually recognizes researchers who have multiple highly cited papers that rank in the top 1 percent of citations in their field — **8 Gillings members** were recognized in 2018.

**Linda Adair**, PhD, professor of nutrition;

**Ralph Baric**, PhD, W.R. Kenan, Jr. Distinguished Professor of epidemiology and of microbiology and immunology in the UNC School of Medicine;

**Noel Brewer**, PhD, professor of health behavior;

**Myron Cohen**, MD, professor of epidemiology, Yeargan-Bate Eminent Distinguished Professor of Medicine, Microbiology and Immunology in the UNC School of Medicine, director of the UNC Institute for Global Health and Infectious Diseases, and UNC-Chapel Hill associate vice chancellor for global health;

**Kelly Evenson**, PhD, professor of epidemiology;

**Hans Paerl**, PhD, professor of environmental sciences and engineering at the Gillings School and W.R. Kenan Jr. Distinguished Professor at the UNC Institute of Marine Sciences in Morehead City, N.C.;

**Barry Popkin**, PhD, W.R. Kenan Jr. Distinguished Professor of nutrition; and

**Jason Surratt**, PhD, professor of environmental sciences and engineering.

# Staff

**Sara Wajda**, MPA, assistant director of development on the advancement team at the UNC Gillings School of Global Public Health, has been named to the Association for Healthcare Philanthropy's (AHP) 2019 '40 Under 40' list.

# Alumni

Recent graduate **Rawan Ajeen**, double major in nutrition and psychology, received the fifth annual Susan M. McHale Award for Outstanding Psychological Research for several projects involving psychiatry, nutrition, and the design and interpretation of psychological research.

Bachelor of Science in Public Health graduates **Erin Danford** and **Abigail Gancz** are recipients of a Fulbright United States Student Program awards. Erin Danford will conduct a research project assessing public and private initiatives to recycle plastic waste in Freiburg, Germany, while Gancz has been awarded the UK-Partnership Award in the field of archaeology at Durham University in England.

**Corey Davis**, JD, MSPH, was selected as one of this year's "40 Under 40 in Public Health" for his work to advance equity-focused public health law, policy and practice.

**Michele R. Forman**, PhD, distinguished professor and head of Purdue University's Department of Nutrition Science, was honored by the American College of Epidemiology with a Special Award for Epidemiologic Research on Critical and Sensitive Windows for Health Across the Lifespan. She also received the H.A. Tyroler Distinguished Alumni Award in Epidemiology from the Gillings School.

**Fred Hargett**, BSBA, BSPH (HPM), MAC, and vice chair of the School's Public Health Foundation board, was selected by Becker's Healthcare as a "CFO to know" — one of 106 hospital and health system chief financial officers (CFOs) considered by the organization to be outstanding. He is executive vice president and CFO of Novant Health in Winston-Salem, N.C.

**Lauren McCullough**, PhD, who received a doctorate in epidemiology from Gillings in 2013 and is now a faculty member at Emory University, received a Society for Epidemiologic Research award for her outstanding achievements and contributions to the field.

**Lanakila "Ku" McMahan**, MPH, PhD, received a Distinguished Young Alumni Award from the UNC-Chapel Hill General Alumni Association for his work with Securing Water for Food: A Grand Challenge for Development in the United States Global Development Lab at USAID.

**Maya Nadimpalli**, PhD, a master's and doctoral alumna of the Gillings School's Department of Environmental Sciences and Engineering, was featured in *Nature* magazine's Career Q&A on her work to eradicate antibiotic resistance among children in developing nations.

**Anna Maria Siega-Riz**, PhD, an alumna of and former professor and associate dean at Gillings, was named dean of the University of Massachusetts Amherst's (UMass Amherst) School of Public Health and Health Sciences.

**Celette Sugg Skinner**, PhD, alumna and adjunct professor of health behavior and chair of the Gillings School's Public Health Foundation board, was appointed chair of the Department of Clinical Sciences at the University of Texas (UT) Southwestern Medical Center in Dallas.

**Dana Weston**, MHA, FACHE, was named a "Most Admired CEO of 2019" by the Triangle Business Journal. She is president and CEO of UNC Rockingham Health Care in Eden, N.C.

# Selected Grants

Gillings faculty received **$13 million from the Health Resources and Services Administration (HRSA)** to implement the Supporting Maternal Health Innovation Program to help states improve maternal health outcomes. Primary investigator Dorothy Cilenti, DrPH, associate professor of maternal and child health, and primary co-investigators Sarah Verbiest, DrPH, adjunct faculty in maternal and child health and associate professor in UNC's School of Social Work, and Alison Stuebe, MD, Distinguished Scholar in Infant and Young Child Feeding at the Gillings School and associate professor of obstetrics and gynecology at UNC's School of Medicine, will establish a premier national resource

center that will provide training, technical assistance and capacity-building to states. The resource center will leverage existing expertise in maternal and child health systems to reduce maternal death and severe illness through innovative, evidence-based strategies.

Penny Gordon-Larsen, PhD, professor of nutrition and associate dean for research and a multidisciplinary team of researchers, including Christy Avery, PhD, associate professor of epidemiology; Kari North, PhD, professor of epidemiology; and Susan Sumner, PhD; professor of nutrition, have received a **$6.2 million grant from the National Institutes of Health's National Heart, Lung and Blood Institute** to study how the body's metabolic processes influence obesity-related cardiovascular disease (CVD).

Researchers at the University of North Carolina at Chapel Hill, Stanford University and Washington University in St. Louis have received a **five-year, $11.6 million National Institutes of Health (NIH) grant** to study retail tobacco policies across the United States. Kurt Ribisl, Jo Anne Earp Distinguished Professor and chair of health behavior at Gillings and program leader for Cancer Prevention and Control at the UNC Lineberger Comprehensive Cancer Center, is one of the principal investigators. He and Shelley Golden, assistant professor of health behavior will co-lead a study mapping 275,000 tobacco retailers across the U.S. from 2000 to 2016 and exploring the relationship between the density of these retailers and tobacco-related illnesses, like cancer.

Gillings researchers are leading a $51.8 million grant award that is part of the **National Institutes of Health's Helping to End Addiction Long-term (HEAL) Initiative**, a research effort including 375 grant awards across 41 states that aims to improve treatments for chronic pain, curb the rates of opioid use disorder and overdose, and achieve long-term recovery from opioid addiction. Lisa LaVange, PhD, professor and associate chair of biostatistics, is principal investigator for the "Back Pain Consortium (BACPAC) Research Program Data Integration, Algorithm Development and Operations Management Center (DAC)," a translational, patient-centered effort to address the need for effective personalized therapies for chronic low back pain.

# School Honors

The Gillings School received the **2019 Health Professions Higher Education Excellence in Diversity (HEED) Award** from *INSIGHT Into Diversity* magazine for its outstanding commitment to and ongoing promotion of inclusive excellence. Gillings was one of only two schools of public health to win this award, and it is the first year any schools of public health have received this recognition.

Healthy Eating Research, a national program of The Robert Wood Johnson Foundation, finds that UNC's **NAPSACC** (Nutrition and Physical Activity Self-Assessment for Child Care) has the "best evidence for impact" on obesity prevention in young children. Developed by the UNC Center for Health Promotion and Disease Prevention housed at Gillings, NAPSACC is an evidence-based program with a proven track record of reducing childhood obesity risk by helping child care providers create environments that foster healthy eating and physical activity.

**US News & World Report rankings**: For the third consecutive year, Gillings was ranked the top public school of public health and tied for second, or ranked second, overall. Since these rankings first began in 1987, Gillings has been ranked among the top three schools of public health.

## In Memoriam

**John Joseph Baxter Anderson**, PhD, professor emeritus of nutrition, passed away August 21 at UNC Hospitals. He was 85. In 1972, he became an assistant professor of nutrition in the UNC School of Public Health, was promoted to professor in 1977 and held that position until his retirement in 2007. He became a professor emeritus upon his retirement and continued to work in his office almost daily. He never stopped writing, and he was working to complete a project for publication at the time of his death.

**Mario C. Battigelli**, MD, a former faculty member of the Department of Environmental Sciences and Engineering (ESE) at the UNC Gillings School of Global Public Health, passed away September 27. He was 91. Born in Florence, Italy, he accepted a joint faculty appointment at the UNC Schools of Public Health and Medicine in 1965. His career was characterized by a devotion to public health — particularly the environmental causes of occupational lung diseases. He worked all his life to defend and protect the sacredness of human labor, highlighting its physical, medical, ethical, psychological and spiritual dignity.

**Joan Cornoni Huntley**, PhD, former assistant professor of epidemiology at Gillings, died August 5 at North Carolina Memorial Hospital. She was 88. Huntley served as president of the UNC School of Public Health Alumni Association and vice president of the UNC School of Public Health Foundation. In 1999, she was awarded the H.A. Tyroler Distinguished Alumni Award in recognition of the substantial impact she had over her career in the field of epidemiology. Outside of work, Huntley was a world traveler and an avid collector of antiques and art.

# **Raising Awareness of** Alcohol Abuse Impacts

**Ann and Ron Wooten**

For UNC graduates Ann and Ron Wooten, alcohol abuse is a major public health concern that demands more attention from a society that encourages drinking as a source of entertainment and social activity.

The Wootens hope recruitment funds they provided to support a new faculty member at the UNC Gillings School of Global Public Health will raise awareness about the harmful effects of alcohol abuse.

An expert in regulating alcohol sales and distribution, Pamela Trangenstein, PhD, assistant professor of health behavior, joined Gillings in August. She studies structural determinants of alcohol use, focusing on high-risk settings like college campuses.

"I want to find out how we can move the needle on policies that prevent high-risk drinking and protect vulnerable populations," Trangenstein says, noting alcohol's links to injuries, hospital visits, car crashes, violent crime, sexual assaults, vandalism, public intoxication and infectious disease. "Alcohol is one of the leading causes of death but there are very few people studying it, so there are many opportunities to make a difference."

Trangenstein is conducting a national survey on college alcohol policies and plans to evaluate whether a new state law allowing alcohol sales on campus during college sports games has any public health ramifications.

"We were honored to provide recruitment funds to help bring Dr. Trangenstein to UNC for alcohol education and to further the communication about the detriment of alcohol abuse," says Ann Wooten, who as a sorority trustee has become deeply concerned about excessive alcohol use.

"We know the Gillings School of Global Public Health is a leader in the world," Ron Wooten says, "and we hope the focus it can put on alcohol misuse and the problems it creates will combat the misinformed encouragement of alcohol use."

> **"I want to find out how we can move the needle on policies that prevent high-risk drinking and protect vulnerable populations."**
>
> **Pamela Trangenstein, PhD**
> Assistant Professor of Health Behavior

# **Professorship Honors Longtime** Faculty Member Earp

**Jo Anne Earp, ScD**
Professor Emerita, Health Behavior

**Kurt Ribisl, PhD**
Jo Anne Earp Distinguished Professor of Health Behavior

A new endowed professorship in the UNC Gillings School of Global Public Health honors the legacy of Jo Anne Earp, ScD, one of the school's longest-serving faculty members and department chairs and a trailblazer for women in academia.

A nationally recognized health behavior researcher and educator, Earp is former chair of health behavior and professor emerita who mentored hundreds of students and faculty during her 45-year tenure. Fittingly, a professor she recruited to UNC, Kurt Ribisl, PhD, is the first Jo Anne Earp Distinguished Professor of health behavior.

Ribisl is chair of the Department of Health Behavior at Gillings and leads the cancer prevention and control program at UNC's Lineberger Comprehensive Cancer Center, which is headed by Earp's husband, H. Shelton ("Shelley") Earp, MD. Seeing Ribisl's potential to excel both in cancer and public health, the Earps recruited him together to UNC's faculty 20 years ago.

"I am proud to have been part of Gillings — it's the best public heath school in the country — and I spent 45 years growing the department into the best community health behavior department in the country," she says. "I have a strong interest in its continued success."

Best known for reducing the racial gap in breast cancer screening, diagnosis and treatment in eastern North Carolina, Earp also studied high-risk behaviors among persons with, or at risk for, STDs and AIDS. She created and taught UNC-Chapel Hill's first women's health class, developed the department's first course on social and behavioral research methods, and co-edited the first textbook on patient advocacy with Elizabeth French, MA, assistant dean for strategic initiatives, for her patient advocacy elective course.

"For me, it's about the people," says Earp, who won several awards from Gillings and the University for her mentoring and teaching. "I was a good researcher and did hard research. But at the end of the day, it's about the students, advisees, assistant professors and associate professors I mentored, and the people in the communities where I worked. They all gave me as much as I gave them."

**Alice Ammerman, DrPH**
Director, Center for Health Promotion and Disease Prevention; Mildred Kaufman Distinguished Professor of Nutrition

# Blue Cross Grant Supports Work to End Child Hunger

Almost 60 percent of North Carolina's public school students qualify for free or reduced-price (FRP) meals, many of whom depend on these federally funded meals for nutrition.

To help provide more healthy meals for children across the state, Blue Cross and Blue Shield of North Carolina (Blue Cross NC) will provide $500,000 over three years to No Kid Hungry North Carolina, a public-private coalition housed at the UNC Center for Health Promotion and Disease Prevention that leverages the many strengths of the UNC Gillings School's Department of Nutrition.

"We have long understood the important role of nutritious food to sustain a healthy life," says Alice Ammerman, DrPH, director of the Center for Health Promotion and Disease Prevention and Mildred Kaufman Distinguished Professor of Nutrition at Gillings. "This is particularly true for children and adolescents. It is crucial to support those who depend on federally funded meals served at school and in the community in order to thrive."

Gillings doctoral nutrition student Jessica Soldavini, MPH, RD, LDN, is No Kid Hungry NC's graduate research assistant. She leads evaluation and data analysis projects, created the organization's afterschool nutrition and cooking programs, and supervises a large team of volunteers and interns — many of whom are also Gillings students.

"Working with No Kid Hungry fits all my academic interests, which has enriched my experience at Gillings," says Soldavini, who received the 2019 Rise Against Hunger World Hunger Leadership Award for her work. "And I've applied the research and evaluation skills I've learned at Gillings to my work with No Kid Hungry. The opportunity to work directly in the field both on the research and programmatic side has really been valuable."

Over the next three school years, Blue Cross NC's partnership with the No Kid Hungry NC team will support innovative steps to increase participation in existing child nutrition programs and startup expenses to begin new ones.

"Blue Cross NC is committed to tackling childhood hunger in our state," says Cheryl Parquet, Blue Cross NC director of community and diversity engagement. "Every child should have access to nutritious food, and we're proud to support the school systems and community organizations that are on the front lines of the fight against food insecurity."

# **Alumni Create** Diversity Endowment

**Jessica Melton, MHA**
Chief Operating Officer, Sentara Norfolk General Hospital

**Doug Melton, PhD**
Head of Clinical and Customer Analytics, Cigna

In their day jobs, UNC Gillings graduates Doug and Jessica Melton are working to improve health in different ways: Jess as chief operating officer at Sentara Norfolk General Hospital and Doug as the head of Clinical and Customer Analytics at Cigna.

Through a new scholarship endowment they created in the Department of Health Policy and Management, they hope to provide future Gillings students, especially women and minorities, with the support to pursue similar opportunities in health-care leadership.

"We were impressed by the Department's inclusiveness and commitment to improving diversity and the health of vulnerable populations locally and globally," said Jess Melton, BSBIO '04, MHA '07, CERT '07.

Attending a conference, Jess learned about a study finding that as leadership levels of health-care administration increased, the diversity of those in leadership dropped sharply. Another study found that increasing "diversity in leadership and governance" could significantly improve health-care equity. These studies helped inspire the endowment's goal of advancing leadership opportunities for women and minorities.

It was this type of support that helped both Jess and Doug as undergraduates. They participated in the Research Education Support program, funded largely by the National Institute of Health and the National Science Foundation to support minority students working toward degrees in STEM-related fields.

The RES program first exposed Doug, (BA '04, PhD '10) to public health as an academic and career possibility. "Had I not been in that program, I would not be working in corporate health analytics," he says. "We worked full-time so we got paid to learn about science, and we had a lot of support and encouragement. We are doing this now because someone did it for us."

As part of RES, Jess did field work in eastern North Carolina with the late Dr. Steven Bennett Wing, associate professor of epidemiology. Then, her first day of graduate school, Hurricane Katrina hit. "It almost spoke to me: 'You love health care and you love planning and anticipating the health-care needs of vulnerable populations.' I knew health-care administration was the career for me," she says.

The couple — parents to 5-year-old twins — named their endowment the Melton Family Scholarship Endowment to honor Doug's father, the late Dr. Larry Douglas Melton, who dedicated substantial time and resources to promoting educational and professional development opportunities for minorities throughout North Carolina.

"We wanted to do something substantial to give back and further our commitment to improving health care," Jess says, "and create a lasting legacy for our family."

**Nicole Behnke**
MSPH 2019, Environmental Sciences and Engineering, David L. Boren Fellowship Recipient

# **Investing in** WaSH Solutions

After a successful career with the pharmaceutical company Novartis and now as owner and president of a pharmaceutical consulting firm, Ahuja Consulting, Satinder ("Sut") Ahuja, PhD, has one dominant interest: water.

"It's a major problem worldwide, including in advanced countries like the United States. Water is not present in unlimited quantities," Ahuja says. "Fresh water availability is much smaller, and we continuously pollute it in various ways."

Ahuja's interest in water began about 50 years ago during a United Nations aid trip to Senegal with Novartis. Since then, Ahuja has organized an American Chemical Society fact-finding mission and workshop to address arsenic contamination of water in Bangladesh; presented papers on water in Bangladesh, Europe and the United States; contributed to water symposia and conferences; and written 10 books on the subject.

Crediting his long-ago travel for sparking his own interest in water, last year Ahuja funded travel for a student practicum through The Water Institute to enable a student to gain international field experience and address water, sanitation and hygiene (WaSH) issues in a developing country.

Nicole Behnke, MSPH 2019, environmental sciences and engineering, received Ahuja's funding and traveled to Amman, Jordan, for her global practicum during the summer of 2018. She interned with World Vision International (WVI) and focused on WaSH issues related to Syrian children and families at the Azraq refugee camp, and worked on her thesis on WaSH and environmental health services for displaced populations.

"One great side effect of doing qualitative research is that you get all the insight you need to answer your research questions, but you also just learn a lot about the field itself," Behnke says.

Behnke has presented her results at the Water and Health Conference, submitted her work to the International Journal of Hygiene and Environmental Health, and finished her thesis. She was chosen as one of 106 students nationwide to receive a David L. Boren Fellowship for 2019, which will fund her study of Modern Standard Arabic at the Qasid Arabic Institute in Amman.

# **Q&A** with Amanda Gomez

**Amanda Gomez, MSPH**
PhD Student, Maternal and Child Health

Amanda Gomez is a second-year MSPH to PhD student in maternal and child health. She did her summer practicum at UNC Family Medicine at Chatham Hospital, where she helped the hospital plan for establishing an evidence-based maternity care unit to serve rural and low-resource patients. Although her practicum has ended, Amanda continues to work with UNC Family Medicine on this project. Construction on the facility will begin in January and its doors are scheduled to open in the fall of 2020.

## Why did you choose to work with Chatham Hospital?

I have always felt strongly about giving back to the community that has been my home in my academic and professional career, so I really wanted to do a local practicum that feeds back into this part of North Carolina. I also have a spot in my heart for rural communities. After college, I was a nonprofit domestic violence counselor covering three rural counties along the U.S.-Mexico border. It helped me realize how rural areas are so often forgotten. Getting in on this project early to help influence the decision-making process was also very attractive.

## What kind of projects did you do to help support those decisions?

I did a comprehensive literature review of maternity care in the United States and Canada, which both have issues with rural maternity care and closures of rural hospitals and birth facilities. Since decisions were still being made about goals and staffing models, I thought that if we could anticipate what challenges might occur, we could get ahead of them and make informed decisions or have contingency plans. My biggest takeaway was that the workforce makes or breaks women's experiences in these facilities. Family physicians and nurses in rural hospitals are overworked. They are understaffed and are rarely off call, and they can't pursue continuing education. There is lot of burnout and feelings of being pulled in different directions.

I proposed baseline employee interviews about anticipated challenges and strengths, how they would feel best supported in this work environment, what their continuing education needs are, and so on. The interviews could help us develop an employee wellness and education training plan. The idea is that having a healthy, competent, trained and educated workforce would help with employee retention and also, hopefully, have trickle-down effects that are good for patients and outcomes.

To evaluate the services once they're available, I made a "wish list" of maternal and child health indicators so we can see if the new facility moves the needle on any of these measures.

## What did it mean to be the recipient of the Siegel Student Support Award?

It made a huge difference. This project was not a paid role and I needed to have some source of income over the summer, but I was really dedicated to and attracted to this project. I was very fortunate to be selected and so grateful for the opportunity.

# **New Awards Fund** Honors Weinberger's Parents

**Francine and Harry Weinberger**
Parents of Morris Weinberger, PhD, Chair of the Department of Health Policy and Management

When Morris Weinberger was 11 years old, he watched his father serve food to a homeless man in the back of the family's Westchester, New York, luncheonette. Perplexed that the man was not asked to pay, Weinberger questioned his father, who replied, "I've been there. I know what it's like."

"My parents were Holocaust survivors who came here with nothing," says Weinberger, chair of the Department of Health Policy and Management and Vergil N. Slee Distinguished Professor of Healthcare Quality Management, "but despite their long work hours at the luncheonette, they always found time and ways to give back."

After his parents died, Weinberger and his wife, Jane, talked with their daughters about establishing a fund at the Gillings School to honor the memory of their grandparents, Francine and Harry.

"Our parents taught my wife and me about social justice when we were very young," Weinberger says, "and our own family has been involved with social action causes, such as homelessness and hunger, since our daughters were young. We decided to establish annual awards at the bachelor's, master's and doctoral levels to recognize health policy and management students who are active in social justice issues or with organizations that support the values of an inclusive society. Not for a second have I doubted that was the right thing to do."

The inaugural *Francine and Harry Weinberger Awards for Excellence* were presented in Spring 2018 to four Gillings students: Hiwot Ekuban and Samantha Farley (BSPH), Lauren Jordan (MPH), and Alecia Slade-Clary (PhD).

"In our school of public health, there is so much passion and commitment to social justice," Weinberger says, "and the awards committee was faced with the difficult task of selecting the winners. I had taught each of the students at some point and knew the depth of their dedication, leadership and their great potential for future impact."

For Weinberger, building an ever-widening student and alumni network is also key to nurturing successful careers.

"Relationships continue long after graduation," he says. "I hear from former students regularly, and they hear from me. I like to make connections and use the network, and our alumni are eager to pay it forward."

Weinberger feels fortunate to have worked on some interesting research projects over the years, but to him, mentoring and teaching are the most meaningful.

"That is why I'm still in the classroom," he says, "and will be until I retire."

# WHAT DOES A Gift TO THE UNC GILLINGS SCHOOL OF GLOBAL PUBLIC HEALTH DO?

**It prepares future public health leaders at Carolina** — and gives them the freedom to focus on the world's most pressing public health challenges rather than the burden of debt.

### GIVING IN ACTION

Together, gifts of every size from more than 2,000 alumni and friends last year helped provide more than 300 student scholarships and fellowships, as well as provide funding for hundreds of students to present at professional conferences and participate in internships and community-based practice collaborations.

**It accelerates groundbreaking research** — and helps our faculty transform evidence-based research into real-world practical solutions that help communities.

### GIVING IN ACTION

A recent report by the American Chemical Society indicated that 119,000 people in North Carolina are drinking well water with potentially toxic levels of arsenic, the 4th highest in the nation. Rebecca Fry, PhD, Carol Remmer Angle Distinguished Professor in Children's Environmental Health, is on it. After receiving calls from concerned members of local communities, Fry's lab, in collaboration with the UNC Superfund Research Program outreach team, began testing water samples for rural populations at risk for high-level contamination of toxic substances such as arsenic. For those individuals who were identified to have elevated levels of contaminants, the team used the philanthropic contributions supporting her professorship to provide readily available tap filters which remove impurities from the water making it once again safe to drink.

## A GIFT TO THE GILLINGS SCHOOL MAKES A World of Difference.

We are more than halfway through the University's most ambitious campaign yet, ***For All Kind: the Campaign for Carolina***. Already, gifts have helped us continue to educate the next generation of leaders, pioneer transformative research and implement practical solutions that help communities in all 100 North Carolina counties, the United States and around the world.

## WHAT WILL your GIFT DO?

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