CHW would like to thank the following donors for their generous gifts:

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- The Mary Anne Citrino ’81 P14 Fund for Distinguished Visitors in Leadership and Governance
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- The Decker Family Endowment Fund
- The Dorothy Cate and Thomas F. Frist Foundation
- The Yong G. Lee ’86 Summer Research and Internship Fund
- The Beth N. Rom-Rymer, Class of 1973, Global Health and Health Policy Fund
- The Edwin S. Shirley, III ’78 Research/Internship Fund
- The Spitzer Family Program Fund for U.S. Health Policy
- The Peggy and David Tanner ’80 Fund for the Center for Health and Wellbeing

CHW thanks and recognizes the time and efforts of its Advisory Council members:

- Robert Kasdin ’80 (Chair), Senior Vice President, Chief Financial Officer, and Chief Operating Officer, Johns Hopkins Medicine
- Galen Benshoof, MPA ’14, Director of Regulation and Policy Strategy, Minnesota Department of Commerce
- Ruth Berkelman ’73, Rollins Professor Emeritus, Rollins School of Public Health, Emory University
- Rima Cohen, MPA ’86, Executive Director, Health Innovators Fellowship Program, Aspen Institute
- Katherine Fritzsche, MPA ’14, Director of Research and Evaluation, Maine Department of Health and Human Services
- Emily King, MPA ’15, Deputy Director, Division of State Coverage Programs, Centers for Medicare & Medicaid Services
- Catherine Klema ’80, President, Nettleton Advisors LLC
- Patrick Linn, MPA ’16, Management Consultant, LMI Government Consulting
- Nancy J. Newman ’78, LeoDelle Jolley Chair of Ophthalmology at Emory University School of Medicine and Professor of Ophthalmology and Neurology. Director at the Section of Neuro-Ophthalmology, Emory Eye Center
- Anthony So, MPA ’86, Professor of the Practice at the Johns Hopkins Bloomberg School of Public Health, Founding Director of the Innovation + Design Enabling Access (IDEA) Initiative
- Jeffrey Sturchio ’73, Chairman, Rabin Martin
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After two years of having our lives upended, this has been a year of working through the Covid-19 crisis to regain some sense of normalcy. As we write, Princeton is moving from mandatory to optional indoor masking and testing is now monthly rather than weekly. We are grateful for this respite, and feel fortunate that we have been able to continue and even grow CHW’s programs despite difficult circumstances.

Faculty affiliates have done important work, whether it has been focused on the crisis or on other key health policy issues. For example, Janet Currie addressed a Congressional Committee on the harmful effects of economic disparities on children and, separately, briefed President Joe Biden on the benefits of lead remediation programs for children’s health and wellbeing. Ruha Benjamin has studied the converging issues of Covid-19 and police violence, while Noreen Goldman interrogated racial disparities in Covid death rates. Jessica Metcalfe has used Madagascar as a case study to assess how limited (Covid and other) vaccine doses should be deployed to minimize mortality in low- and middle-income countries. Alex Ploss has investigated intervention strategies for treating patients infected with hepatitis E virus. Dan Notterman has continued to lead Princeton’s on-campus Covid testing strategies, while Kate Ho has been working with Princeton to think about the design of health insurance benefits. There are many more examples.

Our remarkable faculty affiliates have continued to be honored for their work. For example, Keith Wailoo joined Dr. Anthony Fauci and others as a recipient of the 2021 Dan David prize for his historical work on health and medicine. Several affiliates have been elected to scholarly societies such as the Infectious Diseases Society of America (Ramanan Laxminarayan) and the American Academy of Arts and Sciences (Keith Wailoo). Anne Case was one of very few economists selected to be a 2021 Distinguished Fellow of the American Economic Association. See page 6 for a fuller listing of our affiliates’ awards and achievements.

Our program of faculty visitors and postdoctoral fellows, representing many disciplines, has become even more active and vibrant as we have been able to move back to in-person visits. Please see their profiles on pages 8-12.

The undergraduate Global Health and Health Policy (GHP) certificate program continued to be one of the most popular on campus. The program is transitioning to new leadership under Jessica Metcalf and Heather Howard—we are extremely grateful to Andrea Graham and Bryan Grenfell for facilitating this transition. GHP continues to attract and serve outstanding students. See the description of their published research and awards on pages 14-15. Our GHP senior thesis winners reflect an astonishing array of talent, from Isabelle Chandler (History) who wrote about the use of a SARS hospital in China for propaganda purposes; to Chitra Parikh (Architecture) who discussed the efficient use of space (including corridors) in hospital settings; to Jonathan Wang (MolBio) who examined treatment for opioid use disorder in the context of the pandemic.

While all of our GHP certificate students participate in CHW-sponsored summer internship and research opportunities, our Internships in Global Health serve all university students with interests in health policy. Although students were unable to travel internationally in the summer of 2021, we were able to offer over 65 internships with help from our internship partners and affiliates, many of them on-line. See pages 26-28 for some of the highlights of these opportunities in the students’ own words.

Our Master’s level Health and Health Policy (HHP) certificate program continued under the capable interim leadership of Bryan Grenfell. Responding to student suggestions, we held a career workshop featuring several Princeton alumni that focused on domestic health policy career paths. Continuing the popular policy workshop led by Heather Howard, several HHP students drafted a report for the state of North Carolina, focusing on ways to improve Medicaid’s approach to maternal health and sickle cell disease. HHP packs a great deal of impact into the Master’s students’ short time on campus—see the alumni reflections on page 22-23.

We continually work to improve our communications and outreach. Please visit us at chw.princeton.edu, and follow us on Facebook (@CHWPrinceton), Twitter (@PrincetonCHW) and Instagram (Princeton_CHW). We hope you are as excited about the return to campus as we are and look forward to crossing paths with you on campus!

Best regards,

Janet Currie
CHW Co-Director
Henry Putnam Professor of Economics & Public Affairs

Kate Ho
CHW Co-Director
Professor of Economics
The Center for Health and Wellbeing (CHW) fosters research and teaching on diverse aspects of health and wellbeing in both developed and developing countries. The Center’s goals are to understand the determinants of health and wellbeing; investigate the role of public policy in shaping the quality of people’s lives; and educate undergraduate and graduate students who aspire to careers in health and health policy.

In 2000, former Princeton Professor and current President of Brown University Christina Paxson founded CHW to create a home for interdisciplinary scholarly collaboration and education around topics in health at Princeton University. Today, CHW is a thriving and vibrant community with a tremendous capacity for health-focused research. The Center, led by Co-Directors Janet Currie and Kate Ho, and Associate Director Gilbert Collins, supports its associates and students through grants, certificate programs, mentorship and events.

Housed within the School of Public and International Affairs (SPIA), the Center offers two certificate programs: the undergraduate Global Health and Health Policy (GHP) certificate and the graduate Health and Health Policy (HHP) certificate.

Also under the CHW umbrella are the Program on U.S. Health Policy, which sponsors research and activities addressing aspects of domestic health care and health policy, and the State Health and Value Strategies Program, a Robert Wood Johnson Foundation-funded program assisting states with health reform implementation.
CHW affiliates are Princeton University faculty members and lecturers from diversified disciplines in the natural sciences, social sciences and humanities. Our affiliates teach health-focused courses, advise students in health-related research, and mentor students on internships and careers in global health.

NEW AFFILIATES IN 2021

Tod Hamilton  Sociology & Demography

Tod Hamilton is an associate professor in the Department of Sociology and a faculty associate of the Office of Population Research at Princeton University. His primary research interests lie in social stratification, immigration, and health. His research has been published in Demography, Annual Review of Sociology, Journal of Health and Social Behavior, Social Science and Medicine, and Social Science Research. Hamilton recently completed a book titled “Immigration and the Remaking of Black America” for the Russell Sage Foundation that documents how immigration trends since the early twentieth century have produced a diverse U.S. Black population. The book also offers a comprehensive methodological and theoretical framework for understanding the integration of black immigrants into the United States from the early twentieth century to the present. Of particular note, “Immigration and the Remaking of Black America” is the winner of the 2020 Otis Dudley Duncan Award for Outstanding Scholarship in Social Demography and received Honorable Mention for the 2020 Thomas and Znaniecki Award from the International Migration Section of the American Sociological Association.

Kelly Noonan  Economics

Kelly Noonan is a lecturer in the Department of Economics, where she serves as the director of Junior Independent Work. Her research primarily focuses on the impact of maternal and
child health on family resources. More specifically, her latest work investigates the effects of maternal depression and poor child health on a variety of outcomes, such as homelessness, parental relationship status, maternal and paternal labor supply, social capital, insurance status and food insecurity. Noonan’s research seeks to establish a causal link between health and family resources rather than the effect of resources on health.

Alyssa Sharkey  School of Public and International Affairs

Alyssa Sharkey is a lecturer in the School of Public and International Affairs and a senior health specialist of the Implementation Research and Delivery Science Unit in UNICEF’s Health Section in New York. Her current focus areas are on equity and immunization, implementation research to improve health programs, and gender-related barriers to health services. Her previous roles with UNICEF have been acting regional health advisor (South Asia), maternal and child health specialist (South Asia), and health specialist in Monitoring and Evaluation and Knowledge Management (New York). Over the past 25 years, Sharkey has worked as a health policy analyst, program officer, and policy researcher within a variety of academic, research and non-governmental settings both internationally and in the United States.

She has a master’s degree and Ph.D. from the Johns Hopkins School of Public Health, and a master’s degree from the University of Cape Town in South Africa.

2021 CHW AFFILIATES

Elizabeth Armstrong  Sociology and School of Public & International Affairs (SPIA)  Ruha Benjamin  African American Studies
João Biehl  Anthropology  Anne Case  Economics and SPIA  Jonathan Cohen  Psychology
Alin Coman  Psychology and SPIA  Dalton Conley  Sociology  Angela Creager  History  Janet Currie  Economics and SPIA
Angus Deaton  Economics and SPIA  Thomas Fujiwara  Economics  Noreen Goldman  Demography and SPIA
Andrea Graham  Ecology & Evolutionary Biology and SPIA  Bryan Grenfell  Ecology & Evolutionary Biology and SPIA
Katja Guenther  History  Tod Hamilton  Psychology and SPIA  Arun Hendi  Sociology and SPIA  Kate Ho  Economics
Heather Howard  SPIA  Yibin Kang  Molecular Biology  Ilyana Kuziemko  Economics  Ramanan Laxminarayan  Princeton Environmental Institute
Jessica Metcalf  Ecology & Evolutionary Biology and SPIA  Sanyu Mojola  Sociology  Yael Niv  Psychology and the Princeton neuroscience Institute
Kelly Noonan  Economics  Daniel Notterman  Molecular Biology  Alexander Ploss  Molecular Biology  Carolyn Rouse  Anthropology
Joan Ruderman  Princeton Environmental Institute  Matthew Salganik  Sociology  Eldar Shafir  Psychology and SPIA
Harold Shapiro  Economics and SPIA  Alyssa Sharkey  SPIA  David Silver  Economics and SPIA  Paul Starr  Sociology and SPIA
Keith Wailoo  History and SPIA
SAMPLING OF CHW AFFILIATE AWARDS & HONORS IN 2021

Ruha Benjamin has been recognized by NJBIZ for her work as founder and director of the Ida B. Wells Just Data Lab, which studies the intersection of scientific achievement, technology and medicine on one hand, and society, race and culture on the other.

Anne Case was named a 2021 Distinguished Fellow by the American Economic Association (AEA). The AEA Nominating Committee and voting members of the Executive Committee select up to four distinguished fellows each year. The award recognizes the lifetime research contributions of distinguished economists.

In addition, the National Institutes of Health (NIH) has awarded Case the 14th Matilda White Riley Behavioral and Social Sciences Honors. The award is given annually to an individual whose research has contributed to behavioral and social scientific knowledge and the application of such knowledge relevant to the mission of the NIH and Dr. White Riley’s vision.

Ramanan Laxminarayan has been named a Fellow by the Infectious Diseases Society of America, the nation’s leading infectious diseases professional society. The honor recognizes distinguished clinicians and scientists from the United States and around the world who have achieved professional excellence and provided significant service to the field of infectious diseases.

Alexander Ploss won first place in the 2021 Company and Pitch Presentation Competition held by BioNJ in conjunction with its 11th annual BioPartnering Conference. The award recognizes the work of Acurasset Therapeutics, a start-up spun out of Dr. Ploss’s lab at Princeton University, which is developing a novel approach to cure Hepatitis B virus (HBV). Ploss and his group have established a short list of candidate molecules that inhibit HBV replication.

Keith Wailoo joins Dr. Anthony Fauci and others as a recipient of the 2021 Dan David Prize, an award endowed by the Dan David Foundation and headquartered at Tel Aviv University. The honor recognizes Wailoo’s historical scholarship on health and medicine. Additionally, Wailoo has been elected to the American Academy of Arts and Sciences. He stands among more than 250 leaders in academia, the arts, business, government and public affairs elected in 2021.
Janet Currie Addresses Congressional Committee

Economic disparities affect the health, wellness, and success of children even before they are born. Expanding social welfare programs could help to break this cycle.

The U.S. House Select Committee on Economic Disparity and Fairness in Growth addressed this issue at its first hearing on July 29, 2021. Among the witnesses was CHW Co-Director Janet Currie, Henry Putnam Professor of Economics and Public Affairs, who has been studying the harmful effects of economic disparities on children for 30 years.

In her opening remarks, Currie noted that economic disparities are pervasive but also preventable. She explained how anxiety caused by economic disparities can affect a mother’s unborn child and emphasized that people of color are disproportionately and severely impacted by poor economic factors. “Infant mortality among Black infants remains more than twice as high as among White infants,” she said.

Furthermore, Currie noted that economic disparity has continuing impacts on children as they grow older, highlighting that disadvantaged children, particularly those of color, are less likely to have access to safe and healthy environments and a quality education.

On the bright side, Currie recognized efforts to mitigate the effects of economic disparities on children in the United States. She stressed the importance of maintaining those gains by expanding successful interventions and adopting new measures that would “give American children and families the benefits that families in competing nations now enjoy and would allow every child a chance to realize the American Dream.”

Source: Princeton School of Public and International Affairs
CHW’s Visiting Scholars Program invites researchers from other leading institutions to devote either an academic year or semester in residence at Princeton. They spend this time focused on research, discussion and scholarly collaborations concerning the determinants of physical, mental and emotional wellbeing along with the effect of public policy on health and wellness. Visiting researchers are specialists in a variety of health-related fields, including medicine, psychology, biology, epidemiology, economics, sociology and other social science disciplines.

### 2021 VISITING SCHOLARS

**Colleen Carey** Visiting Research Scholar

Colleen Carey’s work focuses on the U.S. health care industry. Her primary line of research examines government-managed markets for health insurance. A second line is focused on physician behavior, such as the role of financial relationships with drug firms or their response to demand shocks and price changes. She has written a number of papers examining the role of physicians in the U.S. opioid epidemic. Carey was previously a staff economist at the Council of Economic Advisers. She is visiting from Cornell University, where she is an assistant professor in the Department of Economics.

**Bahadir Dursun** Associate Research Scholar

Bahadir Dursun’s research focuses on health economics, the economics of education and labor economics with a special interest in human capital formation and its effects on health and labor markets, determinants of infant health, and the effects of
governmental policies on various aspects of individuals’ health and wellbeing. He has taught Principles of Microeconomics and Macroeconomics, Money Banking and Macroeconomic Activity, and Microeconomics for Public Policy at Louisiana State University and Princeton University. Dursun earned his Ph.D. in Economics from Louisiana State University and holds a B.S. degree in Business Administration and Finance from Marmara University.

Adrienne Lucas  Visiting Research Scholar

Adrienne Lucas is an associate professor of economics in the Lerner College of Business and Economics at the University of Delaware, a research associate of the National Bureau of Economic Research, an affiliate of the Abdul Latif Jameel Poverty Action Lab, a Non-Resident Fellow at the Center for Global Development, and a research network member of Innovations for Poverty Action. A development economist specializing in the economics of education and disease, her current research focuses on the importance of information in school choice decisions, using existing school system personnel and resources to increase student learning and external validity across contexts. She has published research on malaria, free primary education, HIV/AIDS, secondary school choice, the return to school quality, teacher incentives and improving early primary school literacy. Prior to joining the University of Delaware, Lucas was an assistant professor of economics at Wellesley College. She received her Ph.D. and A.M. in Economics from Brown University and her B.A. in Economics from Wesleyan University.

W. Bentley MacLeod  Visiting Fellow

W. Bentley MacLeod is the Sami Mnaymneh Professor of Economics, professor of international and public affairs, and an affiliated law faculty at Columbia University. He is a specialist in organizational economics and its application to problems in education, health and employment. Current projects include incentives and school choice, the economics of performance pay, and the economics of physician diagnostic choice. MacLeod’s recent publications in health include: “Diagnosis and Unnecessary Procedure Use: Evidence from C-sections” in the Journal of Labor Economics; “Understanding Doctor Decision Making: The Case of Depression Treatment” in Econometrica; and “Provider Practice Style and Patient Health Outcomes: The Case of Heart Attacks” in the Journal of Health Economics, all joint with Janet Currie.

In 2020, MacLeod served as the vice president of the American Law and Economics Association and currently serves as president (2021-2022). He is the past president of the Society of Institutional and Organizational Economics, a fellow of the Econometric Society since 2005, and a fellow of the Society of Labor Economists since 2012. MacLeod’s teaching career began with a two-year stint teaching mathematics and physics at Okundi Secondary School in Nigeria, an experience that led to his interest in economics. Between completing his Ph.D. and his current appointment at Columbia University, he taught at Queen’s University, Université de Montréal, Boston College, University of Southern California, California Institute of Technology and Princeton University. He has held one-year visiting positions at CORE in Belgium, Institute for Economic Analysis in Barcelona, the Russell Sage Foundation in New York City, the Institute for Advanced Studies in Princeton, N.J. and the California Institute of Technology. In addition, MacLeod served as program director for Personnel and Behavioral Economics for the IZA in Bonn from 2003 to 2007.

MacLeod holds a B.A. (with distinction) and an M.S. in Mathematics from Queen’s University, Kingston, Canada, and a Ph.D. in Economics from the University of British Columbia, Vancouver, Canada.

Maria Prados  Visiting Research Scholar

Maria Prados is an economist at the Center for Economic and Social Research at the University of Southern California. She received her Ph.D. in Economics from Columbia University, was a postdoctoral research scholar at the Schaeffer Center for Health Policy and Economics, and a RCMAR scholar for the Minority Aging Health Economics Research Center at USC.
Prados specializes in quantitative and applied economics, and her research interests concentrate on health, gender, labor economics, and household decisions. Recent research includes the gendered effects of the pandemic on labor market outcomes and the mental health of working parents, environmental influences on teenage obesity, the value of treatment for Alzheimer’s Disease, and the long-term effects of high quality early childhood education. Her research has been funded by the Michigan Disability and Retirement Research Center, the NIH, the Roybal Center for Health Policy Simulation, and the Roybal Center for Health Decision Making and Financial Independence in Old Age.

**Seth Richards-Shubik** Visiting Research Scholar

Seth Richards-Shubik is an associate professor of economics at Lehigh University. He earned his doctorate at the University of Pennsylvania, an MPA at Syracuse University, and an A.B. at Harvard University.

Before joining Lehigh’s faculty, Richards-Shubik served as an assistant professor of economics and public policy at the Heinz School of Public Policy and Management at Carnegie Mellon University. His research centers on health economics and applied econometrics, with specific interests in network models, medical service markets, and health inequality.

Richards-Shubik’s work has been published in journals such as Econometrica, the Review of Economics and Statistics, Quantitative Economics, the Journal of Health Economics, and the Journal of Human Resources.

**Gal Shoval** Visiting Research Scholar

Gal Shoval, M.D., has been serving for the past three years as the director of the Child and Adolescent Division in Geha Mental Health Center affiliated with Sackler Faculty of Medicine, Tel Aviv University. He is an expert in child and adolescent normative and pathological development and risk behaviors, such as psychoactive substance use and suicidal behavior, with an emphasis on early detection and prevention. An additional focus of his basic and clinical research is the potential use of cannabinoids to treat psychiatric disorders.

Dr. Shoval has held several key positions leading clinical and research projects on the Israeli national level, including suicide prevention among teen immigrants in boarding schools, enhancing accessibility of psychiatric services in schools, improving diagnosis of teen addiction, and ameliorating medication adherence among different age groups.

Together with his Princeton and New York University colleagues, he is the winner of a CRCNS grant supporting a five-year study on computational phenotyping of decision making in adolescent psychopathology, where the challenge of comprehensive age-normed neurocognitive evaluation is yet unmet.

**Emma Zang** Visiting Research Scholar

Emma Zang is an assistant professor of sociology at Yale University. She received her Ph.D. in Public Policy in 2019 and an M.A. in Economics in 2017, both from Duke University. As a demographer, her research interests lie at the intersection of health, family and inequality. Her work aims to improve the understanding of how early-life conditions affect later-life health outcomes, social stratification and health, and spillover effects within the household exploiting policy changes. She is also interested in developing and evaluating statistical methods to model trajectories and life transitions in order to better understand how demographic and socioeconomic inequalities shape the health and wellbeing of individuals from life course perspectives.

Zang’s work has appeared in journals such as the American Journal of Sociology, Demography, Journal of Marriage and Family, International Journal of Epidemiology, and JAMA Internal Medicine. Her research has been widely covered by major media outlets in the United States, China, South Korea, India, and Singapore.
August Gorman  Postdoctoral Research Associate

August Gorman’s work focuses on impairments to agency and its implications for theorizing in normative domains. A postdoctoral research associate in Values and Public Policy at CHW and the University Center for Human Values, they are currently exploring the theoretical grounding for, and societal impact of, different measures of wellbeing for people with mental health conditions. Gorman holds a Ph.D. in Philosophy from the University of Southern California and was previously a postdoctoral fellow at Georgetown’s Kennedy Institute of Ethics.

Arbel Griner  Postdoctoral Research Associate

Arbel Griner uses her multidisciplinary training in social medicine, anthropology and social studies of science and technology to produce a nuanced critical perspective of how ideas of pathology, normality and health are conceptualized in contemporary neuroscience and how these ideas are integrated into medicine, public health and ethical debates. She received her Ph.D. in Collective Health from the Institute for Social Medicine of the State University of Rio de Janeiro. In her dissertation, Griner scrutinized the claims of neuroscientific theories about biological affectivity and examined the ways in which they are appropriated by biomedical practices and bioethical regulation. She is now interested in looking more carefully into the use of biotechnology, more specifically pharmaceuticals, as treatment resources for so-called affective and gender-based pathologies in Brazil’s public health clinics.

Heidi Morefield  Postdoctoral Research Associate

Heidi Morefield’s teaching and research interests include the histories of technology, capitalism, public health and international development. Her first book, “Developing to Scale: Technology and the Making of Global Health,” examines the techno-centric structure of global health practice through the history of the concept of “appropriate technology.” Her work illustrates how questions of technological scale have fundamentally shaped global health practice today, focusing on how certain technologies have been defined as more or less “appropriate” for the global south based on assumptions about gender, race, culture and environment. Morefield’s work has been supported by the National Science Foundation, the National Library of Medicine/National Institutes of Health, the Ford Presidential..
Foundation, the Society for Historians of American Foreign Relations and the Rockefeller Archive Center. Her work has been published in Diplomatic History, The Washington Post and Circulating Now. She received her Ph.D. in History of Medicine from Johns Hopkins University in 2019.

Sebastián Ramírez  Postdoctoral Research Associate

Sebastián Ramírez’s research on internally displaced persons in his native Colombia explores the role of health care services in efforts to remake ideas of home and citizenship in the aftermath of violence. His dissertation elucidates how official networks of aid and restitution for victims of war are remade in the everyday efforts of the uprooted to claim their rights and remake their lives. He is starting a second project investigating how survivors of social cleansing campaigns forge mental health support networks through artistic projects commemorating the loss of family and friends. Ramírez received a B.A. from Queens College CUNY in Anthropology and Psychology and his Ph.D. in Anthropology from Princeton University.

Benjamin Rice  Postdoctoral Research Fellow

Benjamin Rice is a Presidential Postdoctoral Research Fellow in the Department of Ecology & Evolutionary Biology. He obtained a Ph.D. from the Department of Organismic and Evolutionary Biology at Harvard University focused on malaria ecology and evolution in Madagascar and a B.S. in Microbiology and Global Health from Arizona State University. His postdoctoral research centers on genomic and serological analysis of infectious disease across a wide diversity of community and ecosystem settings in Madagascar.

With others in the Department of Ecology & Evolutionary Biology, Rice’s research focuses on developing approaches to understand pathogen diversity and its determinants in resource-poor settings. Current research activities include efforts to understand how variation in commonly circulating viruses (including human coronaviruses) is shaped by interactions with immune responses and how burdens in vector-borne diseases (e.g., malaria) vary within and between coastal communities in Madagascar. In 2021, this involved combining field-based epidemiological studies with lab and theoretical approaches to, hopefully, better inform future disease control efforts.

Jonathan Zhang  Postdoctoral Research Associate

Jonathan Zhang is an empirical economist with research interests in health economics, public finance and applied microeconomics. Much of his research has focused on the opioid epidemic, specifically the long-term patient outcomes due to physician practice variation in prescribing. He obtained his Ph.D. in Economics from Stanford in 2020 and will be at Princeton University for one year before heading to McMaster University as an assistant professor in Economics.

Esmée Zwiers  Postdoctoral Research Associate

Esmée Zwiers is an applied microeconomist working mainly in the fields of labor economics, family economics and health economics. She is particularly interested in the influence of childhood circumstances in the child’s human capital formation, which was also the topic of her dissertation. Zwiers earned her Ph.D. in Economics from Erasmus University Rotterdam and the Tinbergen Institute. She also holds B.S. and M.S. degrees in Economics from Erasmus University Rotterdam.
GLOBAL HEALTH AND HEALTH POLICY CERTIFICATE

Spring 2021 Faculty Directors: Andrea Graham Professor of Ecology & Evolutionary Biology; and Jessica Metcalf Associate Professor of Ecology & Evolutionary Biology. Fall 2021 Faculty Directors: Heather Howard Professor of the Practice, School of Public and International Affairs (SPIA), and Director, State Health and Value Strategies (SHVS); and Bryan Grenfell Kathryn Briger and Sarah Fenton Professor of Ecology & Evolutionary Biology.

Introduced in 2008, the Global Health and Health Policy (GHP) certificate program has grown into one of the more popular undergraduate certificate programs on campus. The program puts global health under an interdisciplinary lens, emphasizing determinants, consequences and patterns of disease across societies; the role of medical technologies and interventions in health improvements; and the economic, political and social factors shaping domestic and global public health.

Passionate students are attracted to GHP’s close-knit campus community where, blending coursework and hands-on experience, issues in global health policy are brought to life by renowned faculty. The program currently enrolls students from 18 diverse departments including Molecular Biology, Anthropology, Ecology & Evolutionary Biology, the School of Public and International Affairs (SPIA), Neuroscience, History, Chemistry and Spanish and Portuguese, among others.

In order to complete the GHP certificate, students must complete two core courses and four GHP approved health-related electives; conduct an approved field-based or lab-based research project during the summer between their junior and senior year; and write a senior thesis in their department of concentration addressing or relating to global health and health policy in an interdisciplinary manner.

2021 GHP Students by Major

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<th>Percentage</th>
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<td>Natural Sciences</td>
<td>59%</td>
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<tr>
<td>Social Sciences</td>
<td>28%</td>
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<tr>
<td>Humanities</td>
<td>7%</td>
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<tr>
<td>Engineering</td>
<td>6%</td>
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Molecular Biology, Ecology & Evolutionary Biology, Neuroscience, Chemistry

Anthropology, Public & International Affairs, Psychology, Sociology, Politics

Sean Crites ‘22  Ecology & Evolutionary Biology

Crites co-authored a comparative analysis on the healthcare systems of the United States and Uganda, entitled “Health System Comparative Analysis: The United States and Uganda,” which was published in Intersect: The Stanford Journal of Science, Technology, and Society.

Arabella Dill-Macky ‘23  Chemical and Biological Engineering

Dill-Macky’s paper titled “The Role of Implicit Bias in Surgical Resident Evaluations” was published in the Journal of Surgical Education. Her paper presented findings of a retrospective database study investigating the presence of implicit bias against gender and racial minorities in surgical residency evaluations.

Chino Eke ‘22  Neuroscience

Eke was selected for a two-year Clinical Research Fellowship with the Divisions of Stroke, Neurocritical Care, Emergency Neurology & Department of Neurology at Yale University School of Medicine.

Cecilia Kim ‘23  Chemistry

Kim co-authored a paper entitled “Iron Overload Induced Oxidative Stress in Myelodysplastic Syndromes and Its Cellular Sequelae,” which was published in Critical Reviews in Oncology and Hematology. Additionally, she was invited to present a poster on “Ecotourism for Lemur Conservation and Poverty Alleviation in Madagascar” at the 2021 Student Conference on Conservation Science-New York. Furthermore, Kim was a Summer Undergraduate Research Fellow in Chemistry as part of The Charles H. Leach, II Summer Scholars Program and completed a Princeternship with the Swedish Medical Center and the Ben and Catherine Ivy Center for Advanced Brain Tumor Treatment.

Rachel Kulchar ‘23  Chemistry


Chirag Kumar ‘23  Chemistry

Kumar received the Smith-Newton Environmental Fellowship to research climate drivers of fungal pathogens with CHW affiliate Ramanan Laxminarayan, senior research scholar and lecturer at High Meadows Research Institute. Additionally, he presented work on vaccine-avertable...
Sandra Yang ’22 English

Yang was honored with the English Department’s Class of 1870 Junior Prize, awarded to the best student scholar(s) in English literature, for her junior independent work titled “Vying for the Present: Figures of the Past in Satoshi Kon’s Perfect Blue and Alfred Hitchcock’s Rebecca.”

Nathnael Mengistie ’22 SPIA

Mengistie was honored with the Daniel M. Sachs Class of 1960 Graduating Scholarship, which provides graduating seniors with the opportunity to study, work or travel abroad after graduation. He intends to use his Sachs Scholarship to pursue separate master’s degrees, one in international health and tropical medicine and one in evidence-based social intervention and policy evaluation. During his time at Oxford, he will conduct research on health financing reforms designed to expand the pharmaceutical manufacturing capabilities of African countries. Later, he plans to attend medical school.

Neenah Young ’22 Economics

Young was named a Leonard D. Schaeffer Fellow in Government Service, which exposes undergraduate students to government work and its impact through high-level internships with elected officials and agencies at federal, state, and local levels. The program offers the opportunity for participants to become engaged citizens and develop an informed view of government service and operations.

Vinh Ton ’22 Chemistry

Ton was awarded the 2021 William Foster Memorial Prize in Chemistry for demonstrating outstanding academic and research ability in chemistry and was inducted into Phi Beta Kappa.

GHP STUDENT REPRESENTATIVES

GHP benefits greatly from the contributions of student representatives who offer program feedback, support recruitment efforts and social media outreach, and provide valuable perspectives.

2021 SENIOR THESIS PRIZE

As a capstone experience, all GHP students complete a thesis or final paper centered on a global health theme. The GHP Senior Thesis Prize is awarded in recognition of the most outstanding theses written by students earning the certificate. Three awardees were selected in 2021:

Isabelle Chandler History

“The Spirit of Xiaotangshan”: An Investigation into the Chinese Communist Party and the Chinese People’s Liberation Army’s Use of the Xiaotangshan SARS Hospital as a Tool of Propaganda, 2003 – 2021”

Chitra Parikh Architecture

“Reclaiming the Corridor: Modulating Circulation and Air Transmission to Build Flexibility in Clinical Design”

Jonathan Wang Molecular Biology

“Examining Low-Barrier Buprenorphine Treatment during Covid-19 for Individuals Experiencing Housing Insecurity and Homelessness”

GHP CERTIFICATE COURSE HIGHLIGHTS

All GHP certificate students are required to take Critical Perspectives on Global Health and Health Policy and Epidemiology. Students also choose four electives from a pre-approved list. Below is a sampling of the 78 elective courses offered by 33 departments this year.

Agriculture, Human Diets and the Environment
Antibiotics: From Cradle to Grave
The Art & Archaeology of Plague
Art and Politics of Food
Beyond Tuskegee: Race and Human Subjects Research
Biomedical Ethics
Biotechnology
Born in the USA: Culture and Reproduction in Modern America
Brain Plasticity in Health and Disease
Disease Ecology, Economics, and Policy
Diseases in Children: Causes, Costs, and Choices
Economics of Food and Agriculture
Epigenetics in Neuroscience and Behavior
Food, Drugs and Society
Global Air Pollution
Health Psychology
Health Reform in the US: The Affordable Care Act’s Origins, Impact and Uncertain Future
History and the Body
Immune Systems: From Molecules to Populations
Inequities in Health
The Land Crisis for Food, Climate and Wildlife
Medicine and Society in China: Past and Present
Mind, Body, Culture: Clinical Psychology
Modern Genetics and Public Policy
Multispecies Worlding and Global Health Politics
Pandemics: Critical Perspectives on Emergence, Governance and Care
Public Health in Latin America
Race and Medicine
Seeing Health: Medicine, Literature, and the Visual Arts
Viruses: Strategy and Tactics
GHP HEALTH SCHOLARS PROGRAM

CHW Health Scholars, selected through a rigorous application process, receive two years of mentorship, opportunities and financial support. Health Scholars are advised by program faculty and assist in planning health policy seminars and lectures where they meet and interact with distinguished speakers in intimate settings. The students receive financial support to pursue health-related internships or independent research the summer before their senior year. Finally, they are expected to write health policy-related senior theses.

The Class of 2023 joins CHW’s returning scholars from the Class of 2022: Jacob Barber (SPIA), Abigail Drummond (Ecology & Evolutionary Biology), Matthew Lee (Medical Anthropology), Mayowa Oke (Neuroscience), Grace Simmons (Neuroscience), and Sandra Yang (English).

The six Class of 2023 Health Scholars are:

**Nannette Beckley**, a SPIA concentrator pursuing a GHP certificate, plans to analyze how various community engagement measures can decrease maternal mortality rates among Black women. Her research will focus on five to 10 different initiatives in predominantly Black communities across New Jersey, New York and Pennsylvania.

**Cecilia Kim**, a Chemistry concentrator pursuing a GHP certificate, plans to research one of the following topics: (1) increasing access to essential medicines and vaccines for improving child and maternal health in East Asia and the Pacific, or (2) addressing racial disparities in medicine use and access in the United States.

**Reed Leventis**, an Ecology & Evolutionary Biology concentrator pursuing a GHP certificate, plans to explore patterns of spillover in Australia, with a focus on farming practices that bring livestock and fruit bats into close contact. His research could prove helpful in preventing new viruses from infecting the human population with zoonotic disease.

**Aliha Mughal**, an Anthropology concentrator pursuing a GHP certificate, plans to examine how trauma experienced during the Cambodian genocide and the migration out of Cambodia to communities in the United States has affected Cambodian American health.

**Chloe Searchinger**, a SPIA concentrator pursuing a GHP certificate, plans to study the quality of life for children and young adults who have undergone corrective surgery for congenital heart defects in Uganda. She hopes this research will identify sociocultural determinants of health and points of intervention for improving this population’s quality of life.

**Sydnae Taylor**, an Anthropology concentrator pursuing a GHP certificate, plans to investigate how intercultural practices of care have or have not been integrated into the formal health care systems through ethnographic research. Her goal is to demonstrate how a holistic approach to care within diverse communities could effect positive change.
Ruchita Balasubramanian ’19 arrived at Princeton University with an eye toward medical school, but those plans changed completely during her sophomore year. “Mathematics and biology have always been a big part of my life, but I didn’t really know what I could do with those interests,” she said. “I thought that medicine was the only option for a career path, until I took a mathematical modeling course through the Department of Ecology & Evolutionary Biology and learned how mathematics could be used to understand the spread of infectious diseases and the influence of public health interventions. That really excited me.”

The discovery led the Molecular Biology concentrator to an internship at the International Vaccine Institute in Seoul, South Korea, where her work in the Epidemiology Unit exposed new possibilities. “I saw how basic scientific research at the intersection of biology and mathematics could help solve global health problems and impact communities all over the world,” she remarked. “I loved the idea that my work could have such a meaningful effect on people’s lives.”

After that experience, Balasubramanian decided to pursue a certificate in Global Health and Health Policy (GHP) through Princeton’s Center for Health and Wellbeing (CHW), which paved the way to additional research opportunities. Selected as a Class of 2019 Health Scholar, she received funding for her senior thesis exploring antimicrobial resistance (AMR) across India under the guidance of CHW affiliate Ramanan Laxminarayan, senior research scholar and lecturer at High Meadows Environmental Institute. The project not only established the foundation of a longstanding mentorship but also solidified a central interest for future research and graduate education.

Significantly, Balasubramanian’s thesis research illuminated a lack of AMR surveillance infrastructure in low and middle income countries. “Data simply doesn’t exist in these places, but we know that AMR must be an issue because of the high disease burden,” she explained. That finding, along with the encouragement of Gilbert Collins, director of Global Health Programs and associate director of CHW, motivated Balasubramanian to apply for a Fulbright fellowship, which she was awarded in 2019. In partnership with the Center for Disease Dynamics, Economics and Policy (CDDEP), and again under the direction of Laxminarayan, she explored the potential for using hospital sewage as a cost-effective form of AMR surveillance in developing countries. Although her field work in New Delhi, India was cut short by the Covid-19 pandemic, she continued working with CDDEP in the United States, constructing models to map the global burden of hospital-associated drug resistant infections.

In 2021, Balasubramanian earned a MPhil in Veterinary Science from University of Cambridge, where she learned novel quantitative methods for better understanding the drivers of AMR, and subsequently assumed the role of senior research assistant in the Infectious Disease Modeling Group at Johns Hopkins Bloomberg School of Public Health. In this capacity, she collaborates with the Centers for Disease Control and Prevention and other research bodies to investigate how preventative interventions can influence the spread of tuberculosis and HIV in various endemic settings.

“Ultimately, the goal is to guide effective policy,” she added. “It’s inspiring to see how academic research can influence the allocation of resources – in the United States and around the world – to help nations respond more effectively to pandemics and other public health issues.”

As the next step in her career, Balasubramanian plans on pursuing a Ph.D. in Epidemiology. “The Covid-19 pandemic has highlighted the importance of this kind of work and the ability to solve problems in real time. Who knows what other public health challenges we will face in the future?” she stated. “I think that antimicrobial resistance will be one of the biggest public health challenges of my generation, and I’m excited to be a part of any sort of action that helps to mitigate disease on a global scale.”

Her biggest piece of advice for current GHP students is to engage on campus. “Princeton has so many great resources. Take advantage of them. Talk to as many people as you can…professors, mentors, and peers. And keep an open mind,” she suggested. “By doing so, I was exposed to a field that I didn’t even know existed. I’m incredibly grateful for all of the opportunities I was given at Princeton and where they might lead.”
HEALTH & HEALTH POLICY CERTIFICATE

Interim Program Director: Bryan Grenfell  Kathryn Briger and Sarah Fenton Professor of Ecology & Evolutionary Biology and Public Affairs

Since 2003, CHW’s Health and Health Policy (HHP) certificate program has prepared graduate students for health-related careers in both the public and not-for-profit sectors. The program was developed as part of Princeton’s ongoing commitment to teaching and researching health and health policy. HHP leverages the best of what CHW and Princeton have to offer: world-class global and domestic health coursework; partnerships with faculty and thought leaders who are redefining the field; graduate research support; and connection to, and support of, a vibrant, multidisciplinary community through collaboration, conferences and events.

While most students who join the HHP program are MPA and MPP candidates from the School of Public and International Affairs, the certificate is open to all graduate-level students at Princeton. Future and current medical professionals who have completed the certificate cite the value of examining the drivers of health disparities not taught in medical school. Other alumni, such as Ph.D. scientists, say the program lends richness to their studies.

“2021 exposed and reinforced the critical role health policy, and health policy leaders, play in a well-functioning society,” said CHW Co-Director Janet Currie. “We are pleased to be playing such an important role in shaping and guiding current and future leaders at Princeton.”

HHP COURSE SPOTLIGHTS

The HHP curriculum is designed to offer graduate students insight into the contexts that create health disparities while exposing them to an interdisciplinary approach by which these issues can be addressed. All HHP students take two core courses: Epidemiology, and Public Policy Approaches to Health and Health Care. Certificate candidates also choose from a curated array of approved health-related electives, such as Poverty, Health and Inequality in the World; Social Determinants of Health; Culture, Controversy and Policy; Challenges in State and Local Health Policy; and Vaccination Policy and Epidemic Dynamics.

Spotlight: Epidemiology

Professor Noreen Goldman’s Epidemiology course combines a traditional public health course in epidemiological study design and analytic methods with a policy-oriented course on population health. As part of the curriculum, the course examines ways to synthesize results from huge numbers of studies and to assess contradictory findings. Since 2020, characteristics of the Covid-19 pandemic have been used to illustrate basic infectious disease concepts, to identify oversimplifications in conventional measures, and to underscore social inequalities in health outcomes.

In 2021, two guest lecturers contributed to the course:


- **Jason Schwartz**, associate professor in the Department of Health Policy and Management at the Yale School of Public Health, lectured on ethical issues in epidemiological research and vaccination policy.
Spotlight: Policy Workshop

HHP students clamor to take part in Professor Heather Howard’s yearly policy workshop. Workshop participants are tasked with solving real-life policy, operational and political challenges in implementing the coverage expansions, delivery system reforms and other innovations resulting from the Affordable Care Act (ACA). The workshop client is a state taking a unique approach to an element (or elements) of ACA implementation.

This year, participants researched and produced a report for the State of North Carolina on two health equity-focused policy areas: 1) assistance in designing Medicaid interventions to improve maternal health outcomes, and 2) assistance in designing new care and payment models for Sickle Cell Disease, leveraging the expertise present in North Carolina’s academic settings.

Many alumni cite this course as a pivotal experience, both in shaping their careers and in providing a tangible perspective on how the work they do can shape people’s lives.

HHP POLICY CAREERS

In 2021, the HHP program hosted a virtual career event featuring four Princeton alumni: Kamil Ali-Jackson ’81, co-founder, chief legal officer, chief compliance officer and secretary of the Board of the biopharmaceutical company Aclaris Therapeutics, Inc; Galen Benshoof, MPA ’14, director of regulation and policy strategy at the Minnesota Department of Commerce; Meghan O’Toole, MPA ’14, senior health and domestic policy advisor for Senator Brian Schatz (D-HI); and Alexandra Parma, MPA ’17, senior policy research associate at the First 5 Center for Children’s Policy.

Moderated by Professor Heather Howard, the event highlighted perspectives and advice from the panelists, who shared their pathways to health-focused policy careers and addressed a myriad of topics, from current roles and responsibilities, to challenges and opportunities at various levels of U.S. government, to health equity and other timely policy issues. Participants explained how Princeton supported their career journeys and how their unique interests and strengths have contributed to innovative practices and policies. The alumni also offered practical advice on what to expect in the workforce and how students can leverage their Princeton education and experiences to attain their career goals and advance public health.

Christine Zizzi MPA ’22, the 2021 HHP Student Representative, supports the graduate certificate program by providing feedback on course offerings, recruiting students, proposing and organizing events, and representing the program to stakeholders.
HHP STUDENT REFLECTIONS

Nash Mepukori, an MPA candidate at the Princeton School of Public and International Affairs (SPIA) pursuing a certificate in Health and Health Policy (HHP), has encountered social inequality from a young age. Raised in Kenya, she witnessed disparities among the country’s various regional and ethnic groups first-hand – even within her own family. She saw vast, consequential differences regarding nutrition, medical care and education, which left an indelible impression and established the foundation for a career in global health.

“My father is a member of the Maasai, who are pastoralists and one of the poorer ethnic groups, while my mom is Kikuyu, whose people tend to be farmers or entrepreneurs and are much better off economically,” she explained. Growing up, Mepukori noticed that relatives on her mother’s side had access to fresh fruits and vegetables, schooling, and quality hospitals, while those on the Maasai side had fewer options.

“I wondered how it could be that we all live in the same country but people have such different outcomes depending on where they are born,” she said. “That got me thinking about questions of inequity, fairness and justice.”

Her quest for answers continued as she attended the African Leadership Academy in Johannesburg, South Africa, where a rigorous academic curriculum was complemented with training in leadership, entrepreneurship and African studies. Notably, Mepukori was surrounded by other visionaries who were interested in building healthier, stronger communities and was exposed to new career opportunities. “People told me that I should become a doctor because I was good at math and science, but I wanted a career that would allow me to prevent people from falling sick in the first place,” she asserted. “As soon as I learned about the field of global health, I knew that was exactly what I wanted to do with my life.”

Mepukori advanced her studies in the United States, earning a B.A. in Global Health and International Comparative Studies from Duke University. During that time, she developed several research interests, including maternal health and female genital cutting (FGC). “I have always been troubled by female circumcision, a common practice in some African cultures, so I turned to research to study the effectiveness of various interventions,” she noted. In fact, her senior thesis evaluated a program aimed at replacing FGC with alternative rites of passage.

Armed with an undergraduate degree and a goal of addressing health challenges in developing countries, Mepukori began her career with Global Health Strategies, a consulting firm that leverages communications and advocacy to impact international health. She opened the company’s first office in Nairobi, Kenya, where she worked closely with health ministries, political leaders and other partners on various health projects. For nearly five years, she led initiatives focused on family planning, maternal and newborn health, immunization, primary health care and universal health coverage while honing her skills for becoming an effective health leader.

Those formative experiences affirmed Mepukori’s interest in health financing, policy and sustainability, bringing her to SPIA and the Center for Health and Wellbeing’s HHP certificate program.

“The professors and classes have been exceptional,” she remarked. “I took a course on vaccinations and epidemics with Professor Bryan Grenfell in the middle of a pandemic, which was fascinating, and a course on poverty and inequality with Professor Anne Case, helping me understand the quantitative side of health and health policy. This semester I’m learning about epidemiology, which will add yet another tool to my toolkit.”

“I wondered how it could be that we all live in the same country but people have such different outcomes depending on where they are born. That got me thinking about questions of inequity, fairness and justice.”
Mepukori has also enjoyed participating in the Global Health Program Colloquium Series and opportunities beyond the classroom. Last summer, for example, she completed an internship with The Global Fund to Fight AIDS, Tuberculosis and Malaria, which taught her more about fiscal accountability and building more resilient health systems.

Ultimately, Mepukori hopes to influence policy at the national level, ideally in her home country of Kenya. Not one to shy away from formidable ambitions, she has set her sights on leading its Ministry of Health.

“The Covid-19 pandemic has reminded us that there is so much work left to be done to achieve global solidarity... for vaccine equity and all aspects of health care,” she said. “We must strengthen health systems, especially in low- and middle-income countries, by scaling up universal health coverage and implementing other measures to improve outcomes for people in all communities.”

Mepukori speaking on the importance of education and youth empowerment in accelerating Africa’s growth in Nairobi, Kenya.

HHP ALUMNI REFLECTIONS

Galen Benshoof MPA ‘14 has built a career on the corner of health care and health policy. After earning an undergraduate degree in international relations and dabbling in other fields, the Minnesota native found his calling in Seattle, Washington, where he worked with labor unions, hospitals and colleges to build training programs – and pathways out of poverty – for disadvantaged health care workers. At the same time, in 2010, Benshoof witnessed the emergence of the Affordable Care Act (ACA), which transformed America’s health care landscape. The combined experiences were pivotal, enlightening his perspective on public health and wellbeing while inspiring a new ambition.

“I was engaged in workforce development from 9 to 5 and spent my evenings reading about the debate over the ACA and the problems it was trying to solve, which provided an incredibly rapid education about the U.S. health care system,” he noted. “The more I learned about Medicare, Medicaid and other elements, the more I realized that I was really jazzed about health policy and doing system-level work. I knew that graduate school was the best place for me to learn how the pieces fit together and to gain credibility in that space.”

With that in mind, his next stop was Princeton University’s School of Public and International Affairs, where he earned a Master in Public Affairs accompanied

“I loved the interdisciplinary aspect of the HHP certificate program, which blended economics, political science, epidemiology, and more to provide a uniquely rich experience.”
by a Certificate in Health and Health Policy (HHP) from the Center for Health and Wellbeing. Benshoof credits the HHP program with reshaping the trajectory of his career and laying the foundation for his current role as director of Regulation and Policy Strategy for Minnesota’s Department of Commerce.

“Princeton was beneficial in so many ways,” he stated. “I loved the interdisciplinary aspect of the HHP certificate program, which blended economics, political science, epidemiology, and more to provide a uniquely rich experience.” Benshoof appreciated the application of theory to practice, resulting in an immersive, experiential education and exposure to experts in a diverse range of health- and policy-related fields. “I was surrounded by unbelievably smart, engaging professors, many with backgrounds in state and federal government. This allowed me to go beyond the textbooks to see how theories played out in the real world and how policymaking affected real people,” he said.

Among the highlights was a Health Policy Workshop led by Heather Howard, professor of the practice and director of State Health & Value Strategies (SHVS). An integral part of the MPA program, the team-based workshop affords the opportunity for students to analyze complex policy issues, conduct field research, and ultimately provide recommendations to state officials. Benshoof’s project evaluated the merits of a state-based health insurance exchange in Illinois. Although the initiative was not adopted, the experience offered valuable context for his future endeavors.

At Princeton, Benshoof also developed a network of illustrious academics, practitioners, and mentors, which furthered his journey toward a career in domestic health policy. His participation in a CHW-sponsored brown bag lunch, for example, introduced him to Chiquita Brooks-LaSure, current administrator of the Centers for Medicare & Medicaid Services, who opened the door to a fellowship. As it turned out, the encounter not only led to a summer job in Washington, D.C. but a longstanding connection with one of the most influential people in U.S. health policy.

Furthermore, as an MPA candidate and later as senior program manager for SHVS, Benshoof acquired a deep understanding of state government. “Working with Heather Howard, who was incredibly generous with her time and wisdom, gave me a flavor for how states operate around the country and encouraged me to think about state health policy. She stoked my passion back then and continues to fire me up every time I talk to her,” he said.

After one year with SHVS, Benshoof landed in his home state of Minnesota, managing the state employee group health insurance program, and more recently assumed a broader role overseeing state regulation of private health insurance. Working at the state level has empowered him to drive systemic change with boots on the ground. “I have a full toolbox to tackle big policy challenges, such as health care quality, equity and costs, and being at the state level, I am able to hear about what people are experiencing and how these issues are affecting their day-to-day lives,” he remarked. “This enables me to act quickly and have real impact.”

Benshoof urges HHP and undergraduate students to make the most of their time at Princeton. “Get to know your professors, build those relationships, and take classes outside your comfort zone,” he noted. “Do something intentional each day, whether it’s simply asking a question or attending a seminar.”

He also has advice for those embarking upon their careers. “There are places where you could go to work and collaborate with a lot of other Princeton graduates or similarly credentialed professionals,” added Benshoof. “But there are also a lot of organizations and levels of government where your skills, education and experience offer a special opportunity to give back, enrich a community, and make an even bigger difference.”
Anika Buch ’24 (right) at work with her colleagues at Montefiore Medical Center in Bronx, New York.

INTERNERSHIP PROGRAMS

Remote internship

In-person internship
CHW sponsors a robust Internships in Global Health program, encouraging students to probe a myriad of health topics affecting the developed and developing world, from pediatric mental health to disparities in cancer care.

In 2021, CHW funded 25 global health internships and 42 research projects. Many domestic opportunities took place in person, but all international opportunities were remote due to pandemic-related travel restrictions.

Sampling of Host Sites

Rutgers Cancer Institute of New Jersey
New Brunswick, NJ

The Global Fund to Fight AIDS, Tuberculosis, and Malaria
Geneva, Switzerland

NYC Health + Hospitals, Special Pathogens Unit
New York City, New York

U.S. Agency for International Development
Washington, D.C.

Office of Former U.S. Senate Majority Leader Dr. William Frist
Nashville, Tennessee

Institute for Social Medicine, State University of Rio de Janeiro
Rio de Janeiro, Brazil
SUMMER INTERNSHIP HIGHLIGHTS: IN THEIR OWN WORDS

Through GHP’s many worldwide partnerships, students gain hands-on experience with leading global health researchers and practitioners. Whether supporting a collaborative, institutional study or conducting independent research, the students find these opportunities transformative and often life-changing. The following narratives highlight a few of their endeavors from the summer of 2021.

Cindy Cheng ’23 Neuroscience
Telethon Kids Institute

My remote internship with the Telethon Kids Institute, based in Perth, Australia, was an amazing experience that significantly improved my knowledge about children’s physical and mental growth.

My independent research investigated the effect of school suspensions and exclusions on the mental health and wellbeing of children and adolescents aged 6 to 18 years old amongst various communities in South Australia. I learned how exclusionary discipline for school children can prevent students from receiving educational opportunities and exacerbate pre-existing social, economic, and health inequities. In addition, there is evidence of a bi-directional relationship between education and health. While poor health results from lower educational attainment of the child’s parents, it also can cause educational setbacks and interfere with schooling. Thus, there is an ongoing cycle of a child’s physical and mental health affecting his or her performance and behavior in the classroom and vice versa.

I plan to develop and publish an academic manuscript summarizing my research, which deepens our understanding of how the current education system plays a role in children’s mental health and wellbeing and will be crucial in the reformation of school policies and practices to better the future of school children.

This incredible opportunity definitely had an impact on my future career goals, as I would like to now focus on poverty and pediatrics and what we can do to improve the mental health and wellbeing of children.

Sean Crites ’22 Ecology & Evolutionary Biology
Rutgers Cancer Institute of New Jersey, Center for Cancer Health Equity

In 2021, Black or African American individuals continue to have the highest death rate and shortest survival of any racial or ethnic group for most cancers. The primary objective of my summer research was to promote better cancer outcomes for this population by combating racial disparities in cancer care.

During my internship, I worked with CINJ on developing a website and chatbot to help reduce medical mistrust and help Black cancer patients and their families feel empowered to engage in shared decision making with their health care providers. The website provides additional information about innovative treatment options, joining clinical trials, and support group opportunities to help with the cancer journey.

As part of this project, I helped to recruit and interview a sample of Black cancer patients, relatives of Black cancer patients, and cancer care providers to obtain feedback about the website’s content and accessibility. I also supported the process of collecting data and the beginning of data analysis. This included using NVivo to qualitatively code the transcripts of each interview and arrange them according to themes, such as the website’s ability to address community concerns, aesthetic design, understandability, and functionality.

Through this project, I developed a greater understanding of human subject research and ways to impact vulnerable populations. Moreover, hearing testimonials from Black cancer patients and their families helped me better understand barriers to care and social determinants of health that will be vital for me to incorporate into my practice as I apply to medical schools and pursue a career as a physician.
Varun Devraj ’23  Molecular Biology  
Center for Disease Dynamics, Economics, and Policy

My primary research project with the Center for Disease Dynamics, Economics, and Policy (CDDEP) was a systematic literature review of the epidemiological burden of mucormycosis (an invasive fungal infection) across the globe.

Although this initially seemed to be a simple task that I thought would become boring quite quickly, I was surprised by how much reading the literature on the clinical presentations and underlying factors of mucormycosis would interest me. Over the course of eight weeks, I painstakingly went through every country in the world, reading all of the articles that passed my search criteria in PubMed to record data on the prevalence/incidence of mucormycosis and its predisposing factors among different segments of the population in various countries. Reading case reports of patients in developing countries who were afflicted with mucormycosis and noting the high percentage of cancer patients who develop this disease in U.S. hospitals underscored the importance of proper epidemiological data, reminding me of its role in informing policymakers and healthcare providers about the best treatments and mitigating actions to minimize the risks of this devastating fungal infection.

Weekly Zoom check-ins with my internship coordinator helped me to frame the work I was doing in the bigger picture, enabling me to see how I was contributing to the broader goal of the CDDEP: fighting misinformation on microbial diseases and their treatment, especially in underfunded countries around the world. This larger perspective definitely furthered my interest in the healthcare fields, especially in global health and health disparities, which I hope to one day address as a medical professional myself.

Katya Kopach ’22  Philosophy  
Princeton University, Research Assistant

Last summer, I performed research to support Peter Singer, Ira W. DeCamp Professor of Bioethics at the University Center for Human Values, and his colleague, Frances Kissling, who are co-authoring a book about the ethics of population growth in Sub-Saharan Africa as it pertains to maternal health, girls’ education, and a diverse range of related topics.

As a research assistant, I contributed to the database of research findings regarding these areas of interest while focusing on more qualitative materials to expand on existing data. I learned how to research on a professional level in a truly comprehensive way, which included locating new resources for the book, organizing existing resources, and even interviewing one of the potential sources for the final copy.

More specifically, I have realized the importance of synthesizing quantitative and qualitative information to create a complete profile of an issue – in this case, population growth in Sub-Saharan Africa. It is evident that these kinds of issues require researchers to look beyond raw data by focusing directly on the stories of the individuals involved, allowing them to form conclusions that accurately address the more abstract intricacies of the topic at hand.

While I didn’t face any particular challenges or ethical dilemmas, the nature of this research forced me to learn about a variety of sensitive subjects, such as female genital mutilation and extreme poverty, which will certainly inform my future work.

Given the success of this internship, I am confident that I want to pursue a career in advocacy with a focus on human rights, whether it be directly related to global health, law, or a similar field.
Matthew Lee ’22  Anthropology

Senior Thesis Research

Last summer, I conducted an independent senior thesis research project exploring the intersection between Asian American discrimination during Covid-19 and cultural barriers to healthcare. My primary research location was Oakland California’s Chinatown.

For this project, I used “Syndemic theory,” which stresses that systemic racism and one’s social environment exacerbate disease outcomes, to analyze participant narratives about discrimination from Covid-19, systemic racism, residential segregation, and their social-political environment. My methodology included using ethnographic observation and qualitative interviews to identify barriers to healthcare. I hypothesized that the rise of Covid-19 discrimination led to a greater turn toward community-based action to maintain racial solidarity.

My initial hypothesis was correct in that there was a greater rise in community-based action, but the qualitative interviews have suggested that Covid-19 discrimination is not the only reason for this: the growing support in the community is also due to economic downfall, language barriers, and crime. It seemed as if I would hear news of bank robberies in Chinatown twice a week, so I began to examine public safety and found that the community was wounded deeply by the dual pandemics of disease and fear. Yet I also was grateful to see healing, as nonprofits have increased funding and collaboration to serve the community and return its vibrancy.

Exploring the intersectionality of the pandemic in Oakland made me realize that I still want to widen my perspective on life before going to medical school. Health and life are inseparable. By understanding more about life, I will be able to provide care that is sensitive to one’s life story. I hope to take the next year or two to do a fellowship that allows me to continue research on health disparities.

Sofiya Yusina ’22  Neuroscience

Oxford University Clinical Research Unit

My summer research project explored the impact of Covid-19 on health care workers and vulnerable communities in Southeast Asia. The objective was to describe the workers’ lived experiences (i.e., work conditions and mental health outcomes) to inform and guide efforts to strengthen support for this population in Indonesia, Nepal and Vietnam as well as globally.

It was very fulfilling to make a tangible contribution to a research project that could have practical implications for policy guidelines. I helped to compile and analyze data from nearly 3,000 health-related workers. My R programming skills proved very useful. After creating a descriptive analysis report that visualized the characteristics of the participants as well as responses to all of the survey questions, I created a function that calculated depression, anxiety, and stress scores. Finally, I wrote a paper summarizing our findings, which I hope will be published.

The urgency of this research becomes apparent when interviewing people like Sunita, who delivers anti-retroviral medications to people living with HIV. With no transportation because of the lockdown, she is forced to walk for hours to deliver these vital medications. Furthermore, Sunita and her family are ostracized by their community because people fear that she contracted Covid-19 as a result of her job. Her experience demonstrates how Covid-19 has had a devastating impact on health care workers, particularly those who reported a deficit of personal protective equipment and inadequate support in their workplace.

The internship reinforced my interest in global health and health policy. I want to be involved in developing and advocating policies that support health care workers, especially during public health emergencies, to improve their overall mental health. These policies are also expected to lead to better patient outcomes because medical providers are better equipped to serve patients when there are strong support structures for them.
RESEARCH & ADVOCACY

CHW-FUNDED RESEARCH

The Center for Health and Wellbeing funds innovative and groundbreaking health-focused research in the natural sciences, social sciences and humanities. Both affiliates and graduate students are eligible to apply for funding. Following is a list of projects supported in 2021, with additional details about a few of these endeavors.

2021 CHW-Funded Affiliate Projects

“Designing Evidence-Based and Ethical Maternity Care during the Covid-19 Pandemic”
Principal Investigator: Elizabeth Armstrong Sociology and School of International & Public Affairs (SPIA)

“Viral Justice: How We Grow the World We Want”
Principal Investigator: Ruha Benjamin African American Studies

Principal Investigator: João Biehl Anthropology

“Investigating the Impact of Medicaid Disenrollment on Child Health”
Principal Investigator: Janet Currie Economics and SPIA

“Silent Burdens: The Need to Strengthen Surveillance in Resource Poor Settings” and “Optimizing Covid-19 Vaccination Distribution in Low Income Settings: Madagascar as a Case Study”
Principal Investigator: Jessica Metcalf Ecology & Evolutionary Biology and SPIA

“Treatment and Prevention of HCMV Infection by Telomerase Inhibition” and “Validation of Telomere Length Measurement as a Biomarker of Chronic Stress in a Model Organism”
Principal Investigator: Daniel Notterman Molecular Biology
“Development of Serological Assays (‘Antibody Tests’) to Quantify Anti-SARS-CoV2 Humoral Immunity,” “Characterization of Host Responses to Usutu Virus Infection across Different Vertebrate and Insect Species,” and “Combatting Fetal-Maternal Mortality Caused by Enterically Transmitted Viral Hepatitis”  
Principal Investigator: **Alexander Ploss** Molecular Biology

“Regulated Revenues and Firm Behavior: Evidence from a Medicare Overhaul”  
Principal Investigator: **David Silver** Economics and SPIA

“Living in Pandemic Times: The U.S. Epidemic Experience in Historical Perspective”  
Principal Investigator: **Keith Wailoo** History and SPIA

**Project Spotlights**

**“Viral Justice: How We Grow the World We Want”**  
Principal Investigator: **Ruha Benjamin** African American Studies

“Viral Justice” is born out of the twin plagues of Covid-19 and police violence—a double crisis that has since created a portal for humanity to rethink all that we have taken for granted about the social order and life on this planet. In chronicling these converging pandemics, this book maps and interrogates the many vectors through which racism gets under our skin and into our bloodstream. At its heart, the book explores the deadly ideologies that have infected this nation from its founding and the more recent contagion that has exposed these underlying social threats. It is about how antiblack racism wears people down.

**“Optimizing Covid-19 Vaccination Distribution in Low Income Settings: Madagascar as a Case Study”**  
Principal Investigator: **Jessica Metcalf** Ecology & Evolutionary Biology and SPIA

The public health opportunity presented by the development of vaccines that protect against SARS-CoV-2 is tremendous. Unfortunately, vaccine supply remains limited, and low and middle income countries like Madagascar have especially restricted access. This raises the urgent question of how limited vaccine doses should be deployed to minimize mortality in these settings. Spatial heterogeneity in demography, acceptability of vaccines, and the extent of spread of SARS-CoV-2 will define this. This research proposes a combination of surveys on vaccine access, integration of existing data on demography, and simulation of viral spread in the context of vaccination to help support decision-makers in Madagascar.

**“Combatting Fetal-Maternal Mortality Caused by Enterically Transmitted Viral Hepatitis”**  
Principal Investigator: **Alexander Ploss** Molecular Biology

Infection with hepatitis E virus (HEV) has presented a trenchant threat to global health and wellbeing for decades, with annual infections in the tens of millions. HEV infection poses a particularly deadly risk to pregnant women, with mortality rates of nearly 30%. To design effective, host-oriented therapeutics for HEV infection, researchers propose identifying host molecules used by HEV to enter susceptible cells; this strategy has proven greatly successful for other human hepatotropic viruses. Identification of host factors that are essential for the life cycle of this virus will highlight new, more effective intervention strategies for treating patients afflicted by this dreadful disease.
“Validation of Telomere Length Measurement as a Biomarker of Chronic Stress in a Model Organism”
Principal Investigator: Daniel Notterman  Molecular Biology

In this project, researchers seek to understand how chronic stress affects telomere length in mice because the finding is directly translatable into information about humans under stress. They will conduct experiments into two stages. In the first stage, they would like to optimize and validate a qPCR method to measure TL so that they can obtain repeatable and reproducible TL data from mouse tissues. In the second stage, they will perform an approved chronic restraint stress on mice, obtain tissues from stressed and control mice, and perform qPCR of TL on these tissues. This data will help researchers better understand the processes of cellular regeneration and cell death in the brains of chronically stressed mammals (including humans). Results will support an application to NICHD for subsequent funding.

“Living in Pandemic Times: The U.S. Epidemic Experience in Historical Perspective”
Principal Investigator: Keith Wailoo  History and SPIA

While every epidemic is unique in its mode of transmission, its epidemiology, and its social implications, some social patterns recur from one outbreak to another – in how vulnerable populations are afflicted, how scapegoating and stigma follow outbreaks, how debates become inflamed around closing or opening commerce, and how the political, economic, and personal questions are debated in the wake of outbreaks. This project investigates past experiences of epidemics in the U.S. – from polio to HIV/AIDS, and from cholera to influenza – in order to place our current debates about opening the economy, quarantine, social unrest, the quest for vaccines, the role of medicine, the wearing of masks, and the future of society into broad historical perspective. The project employs graduate and undergraduate students to assist with research into the specific experiences of people in pandemic times (as conveyed in books, memoirs, letters, published records, digital documents, and archival material). The project aims to support several published articles, video interviews with historians of epidemics, and ultimately the creation of a book on living in pandemic times.

2021 CHW-Funded Graduate Research Projects

“The Effects of Improved Public Healthcare on Patient and Informal Provider Outcomes”
Principal Investigator: Patrick Agte  Economics

“The Role of Mitochondrial Dynamics in the Formation of Aberrant Tau and its Effect on Chronic Traumatic Encephalopathy Neurodegeneration in Drosophila Melanogaster”
Principal Investigator: Nicole Katchur  Molecular Biology

“An Ethnographic Study of Rural Women’s Cooking Classes as a ‘Climate-Smart’ Intervention to Address Malnutrition in Mozambique” and “Chronic Futures: Metabolic Disease and Healthcare in Brazil”
Principal Investigator: Serena Stein  Anthropology

“Translational Regulation in Escherichia coli Under Nitric Oxide Stress”
Principal Investigator: Mike Wan  Chemical and Biological Engineering
PROGRAM ON U.S. HEALTH POLICY

Faculty Director: Janet Currie  Henry Putnam Professor of Economics and Public Affairs

CHW’s Program on U.S. Health Policy sponsors research and activities addressing aspects of domestic health care and health policy. The program supports innovative faculty and student research, conferences, policy forums and special issues in health policy journals. Since its inception in 2011, and after receiving a generous gift from Daniel Spitzer ’79 and Eliot Spitzer ’81, the program has funded more than 50 projects.

Active Faculty Projects

“Epidemiology of Antibiotic Use in U.S. Hospitals”
Principal Investigators: Simon Levin and Ramanan Laxminarayan  Princeton University

“Aging and Work: The Health Consequences”
Principal Investigators: W. Bentley MacLeod  Columbia University  and  Elliott Ash  ETH Zurich

Faculty Research Spotlight

“Epidemiology of Antibiotic Use in U.S. Hospitals”
Principal Investigators: Simon Levin and Ramanan Laxminarayan  Princeton University

Endemic antibiotic-resistant bacteria (ARB) in hospitals substantially increase risk to inpatient health and the costs of hospital stays, representing a major concern for both patients and health care providers. The overuse and misuse of antibiotics, combined with the growing challenges posed by antimicrobial-resistant organisms, have led to calls for better antimicrobial therapy during hospitalizations. Accordingly, this research significantly improves our understanding of antibiotic consumption in clinical settings in the United States. Among key findings, investigators concluded that subsidies incentivize hospitals' infection control spending and reduce the overall
prevalence of health care-associated infections. Additional work illustrated how individual incentives, risk perceptions, and social norms and group dynamics contribute to the societal and individual costs of vaccine underuse and antimicrobial overuse, while also identifying trends in invasive methicillin-resistant Staphylococcus aureus (MRSA) hospitalizations. The seed money for this project was useful in acquiring grants to further study appropriate use of antimicrobials in a One Health framework and how to encourage the better use of antimicrobials.

Active Graduate Projects

“Study of Patient and Physician Education and Communication Surrounding Intrauterine Devices (IUDs)”
Principal Investigator: Katie Donnelly Sociology

“How Does Sociality Shape Our Immune System?”
Principal Investigator: Alexander Downie Ecology & Evolutionary Biology

“How Will Climate Change Drive Plant Pathogen Evolution?”
Principal Investigator: Ian Miller Ecology & Evolutionary Biology

Principal Investigator: Chris Mills Economics

“Assessing the Effects of Incarceration on Medicare and Social Security Qualification”
Principal Investigator: Devin Rutan Sociology

“Risky Behaviors and Moral Judgments in a Politicized Pandemic”
Principal Investigators: Taylor Winfield and Janet Xu Sociology
Graduate Research Spotlight

“Study of Patient and Physician Education and Communication Surrounding Intrauterine Devices (IUDs)”
Principal Investigator: Katie Donnelly Sociology

This project explores medical and lay narratives surrounding intrauterine devices (IUDs), with the goal of understanding how medical facts are constructed, transmitted, and negotiated between actors. The work has important implications for U.S. and global health care and health policy because long-acting reversible contraception (LARC) is quickly becoming the favored choice among health care providers and women across the world. The use of IUD and other forms of LARC has increased dramatically in recent years, with a nearly fivefold increase between 2002 and 2012.

Many providers see IUDs as unequivocally beneficial devices, highlighting minimal side effects and high efficacy. Yet patients and reproductive justice activists raise counternarratives of IUDs as coercive and limiting patient autonomy. Furthermore, research has found that IUDs are more likely to be prescribed to low-income women and women of color, and that women often feel pressured to select this method of contraception or to keep the device in when they no longer wish to use it. While medical providers underscore that hormonal IUDs have localized effects on the body, women report systemic effects that are dismissed by their doctors. Such differences in orientation have led some women to self-remove IUDs when providers refuse to do so—and some women to avoid mainstream medical care entirely to avoid being pressured into choosing this form of contraception. Understanding the gap between medical and lay narratives surrounding IUDs is thus an important step in improving women’s health care and reproductive justice.

Through a multi-pronged, mixed-methods approach, the study investigates how medical optimism surrounding contraception persists in spite of a troubled history and contradictory evidence from women users. Its central focus is on narratives; in particular, understanding how various actors—industry representatives, physicians, and patients—develop and communicate stories about hormonal IUDs. It explores how certain forms of evidence become privileged over others in the development of contraceptive narratives and the implications this has for women’s bodies, particularly those of poor women and women of color.

Cultural sociologists have recognized the role of speech in coordinating social action. Scholars have argued that it is through narratives that we come to know, understand, and make sense of the world. In the context of this dissertation project, narratives play a central role because it is through narratives that actors develop beliefs and ultimately make decisions about birth control, decisions that have material effects on women’s bodies. This research delineates the contours of salient narratives surrounding IUDs (both dominant as well as alternative narratives), where they come from, how they are communicated, and how actors negotiate or reconcile discrepant narratives. It seeks to determine how race, gender, and class structure these narratives and the resulting implications for women’s health.

“How Does Sociality Shape Our Immune System?”
Principal Investigator: Alexander Downie Ecology & Evolutionary Biology

This project studies social behavior and immune defenses in re-wilded mice, with an eye toward understanding how our social context can shape our immune defenses. It is rooted in the insight that human immune defenses are strongly influenced by environment, including social environment. Research has identified direct ties between behavior and immune defenses. However, the importance of the social landscape for shaping immune defense, and how this might then affect disease spread, remains uncertain. Understanding this link may help us to understand the evolution of the immune system and why individuals differ in their immune responses.
The experiment, conducted as part of a larger collaboration with researchers at the National Institutes of Health and New York University, was launched in the summer of 2019 with re-wilded laboratory mice. All of the mice are housed in outdoor enclosures in groups at the Stony Ford Research Station, where they experience a natural climate, have greater space for activity, eat a more varied diet, and are exposed to many more environmental microbes, as compared to laboratory settings. Re-wilded mice differ substantially from laboratory mice in their immune phenotypes, microbiomes, and infection outcomes, and they are generally better models for natural and human immune phenotypes.

Researchers tracked mouse activity using RFID readers placed at different locations throughout each enclosure, including at feeding stations. At the end of the experiment, the mice were sacrificed to collect blood and tissue samples. Immune defenses were measured in two ways. The first was with simple assays of antibody concentration, looking at overall concentrations of IgG and IgM, as well as antibodies produced against self antigens (i.e. autoimmune antibodies) and natural antibodies that are broadly targeted. The second method used the more complex flow cytometry technique to characterize different immune cell quantities and cytokine expression assays to describe immune responses. These datasets allowed Downie to explore the effect of social context and activity on immune defense.

Although analysis is ongoing, partly due to delays in lab work from the Covid-19 pandemic, Downie has identified two results relevant to his original hypotheses. First, activity, as measured by the number of check-ins at RFID readers, does not correlate with any individual measure of immune defense: neither antibody concentration, immune cell abundances, nor cytokine expression. This holds true even when considering check-ins at non-feeders, which might be indicative of exploratory behavior that produces more microbial exposures and therefore necessitates more immune defenses. The tracking system can only provide a rough proxy for activity levels and exploratory behavior, and thus the result reflects an incomplete study. Or perhaps exploratory behavior does not significantly impact microbe exposure and therefore immune defenses.

The second result is that organisms that are more socially associated (more likely to appear together at a location) have more similar immune cell compositions. This does accord with Downie’s original hypothesis that immune phenotype should differ based on social behavior. He suspects three possible explanations. The first possibility is a simple, direct link between behavior and immunity, such that those individuals who are more social and form stronger connections have by nature similar immune defenses. Another explanation could be that specific microbes influential for immune phenotype are transmitted more between more connected individuals, creating more similar immune defenses. A third alternative is that diet impacted the immune defenses. Because of comprehensive sampling work, he will be able to explore and test each of these possibilities.

Regardless of the explanations, the results are intriguing and advance both the field of immunology and our understanding of disease ecology. They shed light on why humans might vary in their immune defenses and the importance of environment and our surroundings in susceptibility to disease. The findings might even have implications for how diseases spread through social groups or the impact of population density. Further analysis is forthcoming, relying on additional data from the 2019 experiment and an experiment in the summer of 2021, which will use the same RFID readers funded by this grant.
STATE HEALTH & VALUE STRATEGIES PROGRAM

Program Director:  Heather Howard  School of Public and International Affairs

With over $10 million in support from the Robert Wood Johnson Foundation, the State Health and Value Strategies (SVHS) program based at CHW is focused on assisting states with transforming their health care systems to be affordable, equitable and innovative. By connecting states with experts in the field, SHVS provides timely and meaningful technical support when states need it the most. The program assists states as they test and implement new innovations and facilitates the dissemination of successful models of reform.

In 2021, SHVS primarily assisted states in the following key domains: health equity, health care access, coverage, and affordability.

Health Equity: Highlights and Accomplishments

The Covid-19 pandemic exposed and exacerbated longstanding health inequities experienced by people of color, further mobilizing states to make health care more accessible and equitable and ultimately reducing disparities in health outcomes. SHVS programming supported states’ work in this area, both in their near-term efforts to identify and reduce disparities as well as in their pursuit of creating sustainable, equitable health infrastructure.

Health equity work in 2021 included:

Health equity language guide – SHVS experts created a useful guide to help state officials understand the language of health equity and center language around equity principles.

Health equity toolkit – SHVS is in the process of developing and piloting a two-part toolkit consisting of an Agency/Department Health Equity Assessment Tool and a Health Equity Impact Assessment for Policies. This resource will assist state health agencies in assessing their equity work, defining goals, and identifying strengths, weaknesses, opportunities and challenges related to meeting these goals.
Equitable vaccine distribution – SHVS promoted equitable Covid-19 vaccine distribution, allocation, and uptake through the following initiatives:

- SHVS experts partnered with the Rockefeller Foundation and Families USA to develop state options for more equitably distributing the vaccine, forming partnerships with community-based organizations, and reducing vaccine hesitancy among Black, Indigenous, and people of color. SHVS co-sponsored a state convening on the collaborative vaccine project in June to share findings and recommendations.

- Publications produced by SHVS outlined key barriers states face in their efforts to increase vaccination rates among Black, Indigenous, and people of color and highlighted strategies that states are pursuing in partnership with community-based organizations to address these challenges.

- SHVS experts created an interactive map showing vaccine administration breakdowns by age, gender, race, ethnicity, provider type, and level of geography based on state-reported data.

- SHVS produced a toolkit to help state officials identify Medicaid and CHIP policy changes that may be needed to comply with American Rescue Plan Act requirements for coverage of Covid-19 vaccines and treatment.

- SHVS technical experts developed and shared strategies for working with Medicaid Managed Care Organizations to increase Covid-19 vaccination rates.

Maternal health – SHVS continued its efforts to reduce disparities in birth outcomes. Initiatives focused on actions that state Medicaid agencies can take to expand access to coverage and also ways to leverage managed care programs or work directly with provider organizations to promote health equity and improve birth-related outcomes.

Maximizing the potential of telehealth care to improve equity – SHVS collaborated with states to identify potential barriers to access and effectiveness in telehealth care. An SHVS expert presented on the topic of telehealth and equity at a National Association of Insurance Commissioners (NAIC) meeting.

Integrating equity into managed care – SHVS helped states incorporate a focus on health equity into their requests for proposals and model contracts for the reprocurement of managed care.

Health equity and commercial insurance – SHVS worked with a state health insurance exchange to create a social justice and health equity subcommittee of its board and to identify strategies for promoting health equity.

Race and Ethnicity Data Collection – The collection and reporting of race, ethnicity, disability and language (RELD) data continues to be critical to understanding the impact of health programs and their performance in promoting health equity. In 2021, SHVS expanded upon its RELD work by including sexual orientation and gender identity (SOGI) data and, in July, representatives from federal agencies joined a session of this state-led workgroup. Other notable RELD initiatives include:

- SHVS experts’ work on Medicaid race, ethnicity and language data collection contributed to a drafted “principles for data collection” document that is under consideration by the National Association of Insurance Commissioners’ Special Committee on Race and Insurance.

- SHVS helped a state substantially increase rates of response to its race and ethnicity questions on Medicaid and state health marketplace applications.
The American Rescue Plan Act (ARPA), enacted on March 11, 2021 in response to the Covid-19 crisis, includes myriad health care coverage provisions. Although these provisions are temporary, they have potential for lasting impact. Based on states’ needs, SHVS developed strategies for leveraging available, short-term funding to drive system-level change in the delivery of health care.

Related programming included:

- A new affinity group focused on American Rescue Plan Funding Prioritization, which held two convenings to discuss equitable and sustainable uses of ARPA dollars
- A series of webinars and briefs that provided states with: 1) an overview of the private insurance and Marketplace coverage provisions in the legislation, 2) a review of key Medicaid provisions and state/local relief funding included in the Covid-19 relief package, and 3) key questions to consider, thoughts on audience segmentation, initial messaging and potential outreach tactics to communicate the ARPA’s affordability provisions to consumers
- A webinar and brief on the ARPA’s state option to provide communities with mobile crisis intervention services
- A brief on ARPA’s new state option to extend continuous coverage for one-year postpartum, offering the opportunity to potentially improve health outcomes for mothers and their babies
- Publications on policymaking considerations related to the premium tax credit expansion and uncertainty about future federal action
- An analysis of the ARPA matching rate provision and assessment of its fiscal impact for states that have not yet expanded Medicaid
- A brief providing an overview of COBRA and mini-COBRA, major elements of the ARPA COBRA Assistance Program, and considerations for state policymakers related to the program
- A toolkit outlining the start and end dates for key ARPA health care provisions to help states plan for implementation and future policymaking
- A brief detailing ARPA’s federal medical assistance percentage (FMAP) increase provision for home and community-based services, requirements for states receiving the enhanced federal funding, and considerations and next steps for state policymakers

### End of Medicaid Continuous Coverage Requirements: Highlights and Accomplishments

Medicaid enrollment has increased by over 10 million (or 15%) nationally since the outbreak of the Covid-19 pandemic, as the safety net program provided health insurance coverage to those who lost their jobs and health insurance. In recognition of the strain on state budgets from increased enrollment, Congress provided states with enhanced Medicaid funding and imposed a “continuous coverage requirement,” which prevents states from cutting eligibility or disenrolling people during the public health emergency. At some point in 2022, that continuous coverage requirement will end and states will begin redetermining Medicaid eligibility. This could result in widespread disenrollments and jeopardize health care access for millions of low-income individuals, with a high likelihood of disproportionately impacting people of color.
SHVS developed several resources to help state officials prepare for this transition and minimize coverage disruptions, including:

- An SHVS toolkit (comprised of Medicaid and Marketplace products and programming) to assist with planning and transition
- A landing page on the SHVS website for easy access to a curated set of resources related to the end of Medicaid continuous coverage
- A virtual roundtable, hosted by SHVS, focused on State-based Marketplaces-Medicaid coordination strategies, opportunities and challenges related to enrollment, communication and outreach
- Publications addressing information technology (IT) challenges related to address changes, postal delays and housing displacements
- A toolkit highlighting opportunities for leveraging managed care plans to support the unwinding Medicaid continuous coverage requirement
- A webinar and brief reviewing state Medicaid/CHIP agency data and IT system “table stakes”— strategies for ensuring that eligible enrollees maintain access to affordable health coverage

Other SHVS Initiatives

Open enrollment – With uncertainty in the trajectory of the Covid-19 pandemic and medical costs trending upward, the 2022 open enrollment period brought challenges to states. SHVS work focused on key messaging and outreach strategies that state-based marketplaces could employ to conduct outreach, provide enrollment assistance, and clearly communicate health coverage options to consumers.

Health coverage for immigrants – SHVS has been working to expand affordable health coverage for immigrant population. In 2021, the program produced the first in a planned series of briefs on supporting health equity and affordable coverage, using state or local-only funds, for populations who may not qualify for subsidized health insurance under the ACA or other public programs due to immigration status. In addition, SHVS hosted a webinar sharing strategies to help states resettling Afghan evacuees facilitate their health coverage enrollment; as a companion to the webinar, SHVS created a customizable flyer for states, translated into commonly-used Afghan languages of Dari and Pashto, to share health coverage information with evacuees in the process of re-settling.

Promoting interagency partnerships – SHVS provided technical assistance to support a state’s efforts to incentivize literacy and attainment of grade-level reading skills among children enrolled in Medicaid. This work examined the role Medicaid can play in supporting children’s outcomes and how the agency might collaborate with the state’s Department of Education to improve school performance.

Public option – SHVS hosted a two-part virtual roundtable on public option and opportunities. The group discussed recent changes in the state and federal policy environment, updates on state legislative and study activities, the potential for federal Section 1332 State Innovation Waiver flexibility under a new Administration, and complementary and alternative policy tools related to public options.

No Surprises Act – SHVS launched a new affinity group for states on the topic of The No Surprises Act with Balance Billing Laws. The group explored implementation issues associated with the new federal law prohibiting balance billing under group health plans and group and individual health insurance coverage.
SHVS Leadership: Highlights and Accomplishments

SHVS Director Heather Howard and her team, in collaboration with Princeton students and alumni, continued to drive transformational change in the U.S. health system through leadership, service and advocacy.

2021 activities included:

- Howard and Marissa Korn MPA ’21 co-authored an opinion piece in The Star-Ledger to commemorate the 11th anniversary of the Affordable Care Act (ACA), asserting that the ACA can be a tool to advance health equity, whether by expanding Medicaid in the remaining 12 states or incentivizing other programs.

- A member of the New Jersey Policy Perspective’s Board of Trustees, Howard participated in a press conference announcing the think tank’s “Blueprint to Secure a Just Recovery.” The document offers concrete proposals for New Jersey to recover from the crisis in an equitable way and introduces the State of Opportunity Index, a new interactive tool that provides an intersectional view on key factors contributing to health and wellbeing in the Garden State.

- Howard participated in a policy-focused podcast hosted by Dan Gorenstein, formerly of NPR’s Marketplace. In the April episode of Tradeoffs, she shared how and why states are leading the push for a public health insurance option.

- Howard continued to serve as co-editor of the Journal of Health Politics, Policy and Law’s Special Section on Tracking Health Reform, for which she helps identify emerging trends in health reform and solicits and edits journal submissions for publication.

- Howard and Carson Clay ’19 (a SPIA concentrator who received a certificate in Global Health and Health Policy) co-authored “Marilyn Tavenner: From Crashing Patients to Crashing Websites,” a case study on the leadership of the former administrator of the Centers for Medicare and Medicaid Services during the rollout of the Affordable Care Act. The piece was published in Junctures in Women’s Leadership: Healthcare and Public Health, Rutgers University Press, 2021.

- Howard collaborated with Rutgers University and Princeton University on a project, “ScreenNJ,” aimed at providing assistance to NJ Medicaid on colorectal and lung cancer screenings missed during the pandemic.

- The Congressional Budget Office cited a SHVS resource on health insurance assessments in an April 2021 report on a federal public option and the individual market.
• Howard and the SHVS team assisted the University of Pennsylvania in the planning of its March 2021 Health Insurance Exchange conference. Howard moderated a session on state thinking regarding ARPA implementation and how states are addressing Covid-19 special enrollment periods.

• Members of the SHVS team participated in a forum hosted by the GWU Milken Institute School of Public Health: “Advancing Equity and Alignment During Implementation of the American Rescue Plan Act: A Conversation.”

• Howard participated in a roundtable for the CUNY “Building Trust in COVID-19 Vaccine and Health Systems” project, discussing preliminary findings from a series of interviews with Covid-19 vaccine-hesitant participants, their implications for building trustworthy institutions and infrastructure, and implementing policy and systems-level change.

• Howard participated in a meeting with Grantmakers in Health regarding assistance for states as they plan for the end of the public health emergency and what it means for health insurance coverage.

• Howard participated in a webinar for GIH members on “Engaging State Foundations on Unwinding Post-PHE.”

• As part of a SPIA Graduate Policy Workshop class, 10 MPA students researched and produced a report for the State of North Carolina on two health equity-focused policy areas: 1) assistance in designing Medicaid interventions to improve maternal health outcomes, and 2) assistance in designing new care and payment models for Sickle Cell Disease, leveraging the expertise present in North Carolina’s academic settings.

HEATHER HOWARD PROMOTED TO PROFESSOR OF THE PRACTICE

In 2021, Heather Howard was among the first faculty members at Princeton University to be named Professor of the Practice. The new title recognizes long-serving lecturers who have achieved outstanding accomplishments in the field or in teaching and pedagogy. In addition to her roles as co-director of the Center for Health and Wellbeing’s Global Health Program and director of State Health and Value Strategies, Howard served as New Jersey’s Commissioner of Health and Senior Services from 2008 to 2010.
Despite continued challenges and disruptions of the pandemic, CHW hosted many domestic and international health events in 2021 for the benefit of the Princeton community and the general public.

CHW SEMINAR SERIES

CHW hosts engaging seminars on global health and development research topics led by researchers from Princeton and beyond.

In 2021, CHW seminars included the following:

- **Successful Interventions at Scale: The Importance of Managers**  
  Speaker: Adrienne Lucas, Professor of Economics, University of Delaware  
  *Co-sponsored with the Industrial Relations Section*

- **Measuring Quality Effects in Equilibrium**  
  Speaker: Seth Richards-Shubik, Associate Professor of Economics, Lehigh University

- **Cancelled Care and Downstream Health: Evidence from the Covid-19 Shutdowns**  
  Speaker: Kosali Simon, Herman B. Wells Endowed Professor and Associate Vice Provost for Health Sciences, Indiana University

- **Are All Managed Care Plans Created Equal? Evidence from Random Plan Assignment in Medicaid**  
  Speaker: Michael Geruso, Associate Professor of Economics, University of Texas at Austin

Dr. Christina Tan ’92 from the New Jersey Department of Health lectures about governmental public health activities and initiatives regarding vaccinations.
Financing Vaccine Development for Global Health Security  
Speakers: Andrew Lo, Charles E. and Susan T. Harris Professor, Professor of Finance, and Director of the Laboratory for Financial Engineering at the MIT Sloan School of Management  
*Co-sponsored with the Bendheim Center for Finance*

Parental Labor Outcomes and Mental Health during the Schooling and Childcare Crisis of the Covid-19 Pandemic  
Speaker: Maria Prados, Economist, University of Southern California

The Equilibrium Effects of Improved Public Primary Healthcare: Evidence from the Health and Wellness Centers in India  
Speaker: Patrick Agte, Ph.D. candidate, Department of Economics, Princeton University

The Great Divide: Education, Despair and Death  
Speakers: Anne Case, Alexander Stewart 1886 Professor of Economics and Public Affairs, Emeritus, Princeton University; Angus Deaton, Dwight D. Eisenhower Professor of Economics and International Affairs, Emeritus, Princeton University and 2015 Nobel Prize Laureate in Economic Sciences  
*Co-sponsored with the Research Program in Development Studies*

The Post-War Baby Boom Did Not Make Up for the Pre-War Baby Bust: Evidence from Lifecycle Fertility  
Speaker: Esmée Zwiers, CHW Postdoctoral Research Associate, Princeton University

Spillover Effects of Medicare Policy on Medicaid: Evidence from the Nursing Home Industry  
Speaker: Adriana Corredor-Waldron, CHW Postdoctoral Research Associate, Princeton University

**GHP COLLOQUIUM SERIES**

One of the most anticipated series offered at CHW is the Global Health Program Colloquium Series, where students, faculty, researchers and the general public can hear about innovative approaches to current global health issues.

The Colloquium topics in 2021 included:

**Getting Wrecked: Harm Reduction, Substance Use and the Covid-19 Pandemic**  
Speaker: Kimberly Sue, Medical Director of the Harm Reduction Coalition

**Chemical Heroes: Pharmacological Supersoldiers in the U.S. Military**  
Speaker: Andrew Bickford, Assistant Professor, Georgetown University

**Fighting Death While Saving Lives: The Experiences of a Medical Doctor in Aleppo, Syria**  
Speaker: Dr. Farida, Ob/Gyn and member of the Syrian Board of Medical Specialties

**Pandemic and Social Inequalities: Challenges for Global Health**  
Speaker: Dr. Nísia Trindade Lima, President of Fiocruz, Brazil

**Governmental Public Health Perspectives on Vaccination**  
Speaker: Dr. Christina Tan ’92, State Epidemiologist, New Jersey Department of Health
OTHER EVENTS

Vaccines and Public Health in Brazil: Politics vs. Science

Co-sponsored by the Brazil LAB, the Institute for Health Policy Studies, the Program in Latin American Studies, the Department of Spanish and Portuguese, the Department of Anthropology, and CHW

Speakers:
Margareth Dalcolmo, National School of Public Health of Brazil’s Oswaldo Cruz Foundation (Fiocruz);
Paulo Chapchap, Director of the premier Hospital Sírio-Libanés in São Paulo;
Arminio Fraga ’85, founding partner of Gávea Investimentos

Covid-19 Webinar Series:
Fiscal, Monetary, and Health Policy Responses and Implications for the Economic Outlook

Co-sponsored by the Griswold Center for Economic Policy Studies, A Second Opinion Podcast, and CHW

Speakers:
Alan Blinder, Gordon S. Rentschler Memorial Professor of Economics and Public Affairs;
William Dudley, former president of the Federal Reserve Bank of New York;
Jessica Metcalf, Associate Professor of Ecology, Evolutionary Biology and Public Affairs;

Moderator: Senator William Frist, M.D., former U.S. Senate majority leader

Natural Disasters and Elective Medical Services:
The Consequences of Forgone Health Care

Co-sponsored by the Center for Policy Research on Energy and the Environment, High Meadows Environmental Institute, and CHW

Speaker: Tatyana Deryugina, Associate Professor of Finance, University of Illinois
EVENT HIGHLIGHTS

“The Great Divide: Education, Despair and Death”

This seminar, hosted by CHW and the Research Program in Development Studies, addressed the rising prevalence of pain, despair, and suicide among Americans without a four-year college degree. Anne Case, Alexander Stewart 1886 Professor of Economics and Public Affairs, Emeritus, Princeton University, and Angus Deaton, Dwight D. Eisenhower Professor of Economics and International Affairs, Emeritus, Princeton University, and 2015 Nobel Prize Laureate in Economic Sciences, discussed “the politics of despair.” They also presented research demonstrating that excess mortality from Covid-19 has not increased the ratio of all-cause mortality rates for those without and with a four-year degree, but has instead replicated the pre-existing mortality ratio.

“Governmental Public Health Perspectives on Vaccination”

Dr. Christina Tan ’92, State Epidemiologist, New Jersey Department of Health, presented a compelling lecture about governmental public health activities and initiatives regarding vaccinations. Dr. Tan provided a general overview of national efforts, including collection and monitoring of vaccine-associated data, publicly sponsored vaccination programs, and vaccine mandates. She also shared examples, specific to New Jersey, that illustrated how state health departments have responded to vaccine-preventable disease outbreaks and how states have launched data-driven vaccination campaigns.
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That’s when I feel most alive, when I’m helping people.

– Dr. Paul E. Farmer

Physician, anthropologist, thought leader in global health, and powerful advocate for health equity 1959-2022