



Center for Health Incentives
& Behavioral Economics



Penn

ANNUAL REPORT

2019-2020
12TH EDITION

2020 will be a year we never forget. In addition to the devastating impact of the COVID-19 pandemic, the United States is also facing a long-overdue reckoning of its current and historical treatment of Black Americans.

Our team at the Center for Health Incentives & Behavioral Economics (CHIBE) recognizes the need for self-reflection, education, and enduring work toward building and sustaining an anti-racist culture within our ranks. In addition, recognizing our institutional power and collective talents and resources, we are reflecting on how to use our research to remake the status quo and improve population health,

especially among the Black Americans who have suffered from racist policies and systems. We can do more and we can do better — and we will.

We also recognize COVID-19's societal health and economic impacts this year. We are proud that our faculty has worked hard to respond, creating numerous programs locally and nationally, generating scholarship, and providing thought leadership to guide the pandemic response worldwide. On pages 10 and 11 of this report, you will see some of the ways in which our faculty and staff have contributed, through the creation of models to support COVID-19 patient care, through the development of public health prevention initiatives, in providing guidance to health systems, and in educating the public through media and social media communications.

Meanwhile, CHIBE teams continue to apply behavioral economic strategies to encourage healthy food choices, reduce cardiovascular

disease risk, increase exercise, and other important population health challenges. Our global health work, led by CHIBE Associate Directors Harsha Thirumurthy, PhD, and Alison Bутtenheim, PhD, MBA, received significant funding from the Bill & Melinda Gates Foundation to leverage behavioral insights to help end the world's largest HIV epidemic in South Africa (see pages 8-9). In all of our work, we seek opportunities to advance the science of behavior change to improve health, particularly for populations and communities most impacted by systemic racism and social injustice.

We thank you for your continued support, interest, and contributions.

Sincerely,

KEVIN VOLPP, MD, PHD
Director, CHIBE

**Founders President's
Distinguished Professor,
Perelman School of Medicine
and the Wharton School,
University of Pennsylvania**



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ABOUT OUR CENTER

Drawing on the expertise of faculty from across the University of Pennsylvania and beyond, the Center for Health Incentives and Behavioral Economics (CHIBE) conducts behavioral economics research aimed at reducing the burden of disease from major public health problems. We focus on preventing disease and on improving health. Originally founded within the University's Leonard Davis Institute of Health Economics, our mission is to use behavioral economics to generate knowledge and develop interventions that lead to better health and higher value health care.

As one of just two original NIH-funded Centers in Behavioral Economics and Health in the United States, CHIBE has **three primary goals:**

To engage private and public sector partners to develop and test scalable and cost-effective applications

To advance the science, knowledge, and application of behavioral economic interventions

To train the next generation of leaders in the field

The Center has successfully conducted many observational studies and randomized trials utilizing principles of behavioral economics to improve health in a wide variety of clinical, employer, and health plan contexts that have resulted in programs benefitting tens of millions of patients nationally.



HEALTHY BEHAVIORS



Our investigators conduct research to understand the behavioral factors that influence food choice, medication adherence, physical activity, and smoking cessation, among other behaviors.

HEALTH POLICY & FINANCING



Our researchers examine the impact of policy initiatives and shifts in health incentives on patient, clinician, and health system outcomes through a mixture of observational studies and experimental work.



OUR FOUR PILLARS OF RESEARCH



HEALTH CARE DELIVERY



CHIBE explores innovative behavioral economic solutions to improve health outcomes while reducing costs through the transformation of health care delivery.

DIGITAL HEALTH & WEARABLES



Our team applies principles of behavioral economics to connected health through interventions that leverage CHIBE's Way to Health software platform, as well as wearable fitness trackers and apps.

12 YEARS SINCE
CHIBE FIRST
STARTED

4,000+

TWITTER FOLLOWERS

1,800+

SUBSCRIBERS TO
OUR HEALTHY NUDGE
NEWSLETTER

102 AFFILIATED
FACULTY

CHIBE AT A GLANCE

335

2020 CHIBE-AUTHORED
PUBLICATIONS TO DATE*

**From 1/1/2020 to 6/30/2020*

177 H-INDEX FOR
CHIBE-AUTHORED
ARTICLES

596

2019 CHIBE-AUTHORED
PUBLICATIONS

1,846

2019 CITATIONS



Top Tweets from
@PennCHIBE

"I'm proud of having published, in 1987, what may have been the first paper in what has become a burgeoning line of inquiry focusing on belief-based utility." Read this Q&A with George Loewenstein: <https://www.moneyonthemind.org/post/interview-with-george-loewenstein>

CHIBE's @abuttenheim & @hthirumurthy are leading a team that has proposed to use behavioral insights to end the world's largest #HIV epidemic. Watch a video about their project & learn more about the @macfound #100andchange competition here: <https://chibe.upenn.edu/chibeblog/chibe-upenn-researchers-seek-to-combat-hiv-in-south-africa-using-behavioral-insights/>

In California, statewide legislative and educational interventions were associated with a decrease in the yearly rates of kindergartners without up-to-date vaccination status. @JAMA_current <https://jamanetwork.com/journals/jama/fullarticle/2737172>





Top CHIBE Blog Posts

**CHIBE to establish first-of-its-kind
HIV 'nudge unit' in South Africa**

**COVID-19: How CHIBE is making
a difference**

**4th Annual Population Health
Science Research Workshop**

MEDIA

FREAKONOMICS

**How to save \$32 million
in one hour**

November 2019

BBC

**How 'emergency reserves'
can help you stick to
your goals**

October 2019

The Philadelphia Inquirer

**Why group exercise is
so effective: the psychology
behind working out
with others**

November 2019

npr

**Good medical care can
suffer late in the day**

February 2020

Forbes

**Can texting patients who are
scheduled for colonoscopy
reduce 'no-shows'?**

August 2019

HUFFPOST

**This is why the U.S. is failing
to tackle childhood obesity**

September 2019

npr

**Fresh starts, guilty pleasures,
and other pro tips for
sticking to good habits**

August 2019

PUBLICATIONS

**Estimating the Effect of Calorie
Menu Labeling on Calories
Purchased in a Large Restaurant
Franchise in the Southern United
States: Quasi-Experimental**

Study. Joshua Petimar, Fang Zhang,
Lauren P Cleveland, Denise Simon,
Steven L Gortmaker, Michele Polacsek,
Sara N Bleich, Eric B Rimm, Christina A
Roberto, Jason P Block. *BMJ*.

**Effectiveness of Behaviorally
Designed Gamification
Interventions With Social
Incentives for Increasing Physical
Activity Among Overweight and
Obese Adults Across the United
States.**

Mitesh S. Patel, Dylan S. Small,
Joseph D. Harrison, Michael P. Fortunato,
Ai Leen Oon, Charles A. L. Rareshide,
Gregory Reh, Gregory Schwartz, James
Guszcza, David Steier, Pameljit Kalra,
Victoria Hilbert. *JAMA Internal Medicine*.

**Associations of Statewide
Legislative and Administrative
Interventions With Vaccination
Status Among Kindergartners
in California.**

S. Cassandra Pingali,
Paul L. Delamater, Alison M. Bittenheim,
Daniel A. Salmon, Nicola P. Klein,
Saad B. Omer. *JAMA*.

**Addressing Bias in Artificial
Intelligence in Health Care.**

Ravi B. Parikh, Stephanie Teeple,
Amol S. Navathe. *JAMA*.

**Moving Toward Evidence-
Based Policy: The Value of
Randomization for Program and
Policy Implementation.**

Atheendar
S. Venkataramani, Kristen Underhill,
Kevin G. Volpp. *JAMA*.

"I am working with CHOP researchers on an experiment to determine the effectiveness of behavioral feedback plus economic incentives to promote treatment adherence among a large, diverse population of adolescents and young adults with kidney transplant or spina bifida."

- Jingsan Zhu, MS, MBA

"We conducted a series of experiments testing how to increase the likelihood that people donate to charities."

- Eric VanEpps, PhD

"Via field, lab, and historical data, we found that the effectiveness of sugary drink taxes can be boosted by making it highly salient on price tags."

- Leslie John, PhD, MSc

"We conducted a randomized experiment using financial incentives to improve sleep habits and academic performance among college students."

- Osea Giuntella, PhD

"I developed and conducted usability testing on an intervention that used behavioral economics approaches and was designed to decrease the use of opioid prescription medication among patients presenting to the emergency department for acute back and kidney pain."

- Marilyn Schapira, MD, MPH

WHAT ARE CHIBE MEMBERS WORKING ON?

"This year, we ran two large-scale laboratory experiments contrasting the effects of 15 different behavioral interventions on choice."

- **Sudeep Bhatia, PhD**



"We conducted two experiments — one in the lab and one in the field — and found that individuals undervalued and underutilized planning and reminder tools."

- **Judd Kessler, PhD**

"This year, we designed a randomized clinical trial that uses gamification to encourage patients with peripheral artery disease to walk."

- **Alexander Fanaroff, MD, MHS**

"I conducted a first-of-its-kind randomized trial of behavioral nudges to improve mobility in postoperative elderly patients after major oncologic surgery. We also established a nudge unit in the Pennsylvania Urologic Regional Collaborative with the goals of decreasing opioid prescriptions and unnecessary scans for patients with prostate cancer."

- **Daniel Lee, MD, MS**

"We are conducting a novel real-time incentives trial to encourage eating more fruits and vegetables, among low-income Philadelphia residents and their children."

- **Karen Glanz, PhD, MPH**

"In a large project with Penn's Behavior Change for Good, we studied which small interventions are most effective for encouraging different subpopulations of people to go to their gym and exercise."

- **Lyle Ungar, PhD**

"I worked to better understand how mistakes in understanding matching procedures affect the assignments that arise. Applications range from the assignments of medical residents to hospitals, students to schools, and work visas to immigrants."

- **Alex Rees-Jones, PhD**

"We conducted a randomized trial of behavioral nudges to improve enrollment in critical care trials."

- **Katherine Courtright, MD, MSHP, and Scott Halpern, MD, PhD, MBE**

FY 2020 IMPACT



MACARTHUR FOUNDATION 100&CHANGE COMPETITION

A project spearheaded by CHIBE Associate Directors Alison Buttenheim, PhD, MBA, and Harsha Thirumurthy, PhD, was chosen as the University of Pennsylvania's single nominated application for the MacArthur Foundation's 100&Change grant, a competition for a \$100 million grant to fund a single proposal that promises real and measurable progress in solving a critical problem of our time.

Their project addresses "last mile" problems that hinder efforts to end South Africa's HIV epidemic by implementing proven behavioral interventions that will increase utilization of existing HIV services and shut down HIV transmission - a radical approach to ensuring that existing biomedical solutions and health resources are effective. The project leverages existing partnerships with the University of Witwatersrand and Discovery, the largest private insurer in South Africa. Their project advanced through several rounds of the competition to be one of the Top 100 worldwide in the competition.

WW ROUNDTABLE AND POPULATION HEALTH SCIENCE RESEARCH WORKSHOP

CHIBE and Penn's Behavior Change for Good Initiative (led by CHIBE affiliates Katy Milkman, PhD, and Angela Duckworth, PhD, MA, MSc) hosted a roundtable that was sponsored by WW and was designed to form new collaborations and spark new ideas on how to create healthy habits and lasting behavior change. This event (pictured here below) brought researchers from the University of Pennsylvania, University of Chicago, Carnegie Mellon, Harvard, UNC, and UCLA to discuss the psychology of sustained behavior change, modifications to environments to create sustained changes in behavior, and policies to support healthy habits.

In addition, CHIBE and the Leonard Davis Institute of Health Economics hosted the 4th annual Population Health Science Research Workshop at the University of Pennsylvania. Atheendar Venkataramani, PhD, MD, MPhil, a CHIBE-affiliated faculty member, was one of the three lead organizers of the workshop. This event brought together around 70 scholars (from close to 30 universities and three organizations) from the fields of economics, epidemiology, demography, sociology, and related disciplines to discuss topics related to population health, structural racism, global health, the origins of the rising working age mortality in the United States, and the nexus of health and economic opportunity.



ROYBAL CENTER RENEWAL

The National Institute on Aging (NIA) awarded 5 years of funding for Roybal Centers to teams led by CHIBE Director Kevin Volpp, MD, PhD, and Scott Halpern, MD, PhD, MBE, Director of the Palliative and Advanced Illness Research (PAIR) Center. The NIA's Division of Behavioral and Social Research currently supports 13 Roybal Centers nationally, and the University of Pennsylvania is the only institution to be awarded two of them. The goal of the Roybal Center program, according to the NIA, is to leverage behavioral and social research findings to improve the lives of older adults as well as to help institutions adapt to societal aging. CHIBE has successfully competed for Roybal Center funding since 2009 and has enjoyed a close collaboration with Carnegie Mellon University (CMU) with pilot projects both at Penn and CMU. Dr. Halpern's new center is called the Penn Roybal Center on Palliative Care in Dementia.



FIRST-OF-ITS-KIND HIV NUDGE UNIT IN SOUTH AFRICA

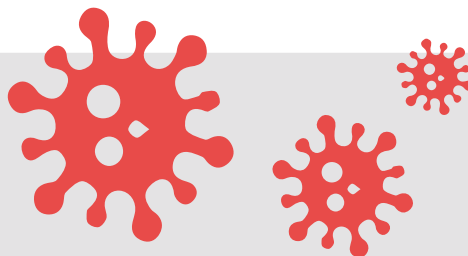
CHIBE Associate Directors Harsha Thirumurthy, PhD, and Alison Buttenheim, PhD, MBA, received a grant from the Bill & Melinda Gates Foundation this year to establish a first-of-its-kind nudge unit focused on HIV prevention in South Africa. With support from the Bill & Melinda Gates Foundation, CHIBE along with the Health Economics and Epidemiology Office (HE²RO) of the University of Witwatersrand (Wits) launched Indlela: Behavioural Insights for Better Health. (*"Indlela" means "the way" or "the path" in Zulu.*) Drs. Thirumurthy and Buttenheim will co-lead this three-year initiative with their colleagues at HE²RO. The unit will focus on building capacity to expand the use of behavioral economics within HIV prevention and treatment programs in South Africa and strengthening the ability of health service delivery providers and researchers to develop and test contextually appropriate interventions that are informed by behavioral science principles.



BEHAVIORAL ECONOMICS IN MEDPAC

CHIBE Associate Director of Provider Payment Amol Navathe, MD, PhD, completed his first year as Commissioner of the Medicare Payment Advisory Commission (MedPAC). The Commission is the primary advisory group for Congress on Medicare payment and this year examined policies and provided recommendations on core issues, including prescription drug coverage benefits and program design of new value-based payment models. The importance of behavioral economic insights was reflected in Commissioner discussion in public meetings and continues to influence the latest program design recommendations. CHIBE External Advisory Board member Karen DeSalvo, MD, MPH, is also a MedPAC Commissioner.

OUR RESPONSE TO COVID-19



Below is a sampling of some of the work led by our faculty in response to COVID-19. For more on the publications and extensive media coverage of our work, please check out our website at chibe.upenn.edu/covid19.

Projects

A Penn team led by Roy Rosin, MBA, and Kevin Volpp, MD, PhD, in close collaboration with Vindell Washington, MD, and CHIBE External Advisory Board member Vivian Lee, MD, PhD, MBA, from Verily, plus a team from Google created a **symptom triage tracker and chatbot to help answer common questions related to COVID-19**. This chatbot helped offload call volume from Penn Medicine's phone lines to unburden clinicians and shorten wait times for patients, while also making it faster and easier to find answers for patients seeking accurate information. Google made this chatbot available to health systems worldwide and offered it in 23 languages.



As part of their work with the nudge unit they launched in South Africa (Indlela: Behavioural Insights for Better Health), Harsha Thirumurthy, PhD, and Alison Bутtenheim, PhD, MBA, worked with a team to develop **tipsheets for low-and middle-income country governments and communities as they navigate the COVID-19 pandemic**. These three tipsheets offered guidance on behavioral interventions and nudges to support HIV care continuity, and behavioral science tips for physical distancing and COVID-19 communications.

Carolyn Cannuscio, ScD; Kevin Volpp, MD, PhD; David Asch, MD, MBA; Roy Rosin, MBA; Mohan Balachandran, MA, MS; Rachel Feuerstein-Simon, MPA, MPH; Joelle Friedman, MPA; and Erica Dixon, PhD, worked closely with teams from the Penn Medicine Innovation Center, Corporate and University IS, and the University Wellness Office to **stand up digital tools to reduce COVID-19 risk on the Penn campus including PennOpen Pass**. In addition, the team led the effort to **develop contact tracing capacity** at Penn/Penn Medicine that complemented efforts by the City of Philadelphia and State of Pennsylvania to use a combination of manual and digital strategies. The team worked with the State of Pennsylvania on efforts to increase uptake of digital risk-reduction tools.

Christina Roberto, PhD, and the PEACH Lab launched a new study funded by Bloomberg Philanthropies to improve our understanding of **how COVID-19 impacts food distribution and access across the charitable food system and food security among low-income households**. The goal of this work is to identify barriers to connecting people with safe and nutritious food and to generate systems-level and individual-level solutions to address critical nutrition-related needs during the pandemic.

Gretchen Chapman, PhD, Julie Downs, PhD, and Stephen Broomell, PhD, worked on a NSF-funded project on **"how uncertainty about risk and conflicting messages affect preventive behaviors against COVID-19."**

CHIBE's Heather Schofield, PhD, worked with Marianne Bertrand, PhD, and Rebecca Dizon-Ross, PhD, both professors at Chicago Booth, and Kaushik Krishnan, PhD, LL.M., of CMIE, to form a collaboration with a large survey firm **surveying 170,000 households across India each quarter and examined the economic impacts of the disease**. They looked at how incomes have changed since the epidemic began, how households are able to cope with their current economic circumstances, and how this varies across demographics.



The Way to Health team implemented **20 COVID-19 centered programs** within two months with the goal of providing support to patients in their homes to reduce the need for hospitalization. Through the successful establishment of remote monitoring programs such as COVID Watch and its iterations (such as Pregnancy Watch, Cancer COVID Watch, and COVID Pulse), which provided support for more than 4,500 patients, the Way to Health team was able to **help preserve hospital capacity for sicker patients.**

In addition to **taking care of patients with COVID-19** in his role as a hospitalist physician, Atheendar Venkataramani, MD, PhD, is leading a research project on the impact of the COVID-19-related economic downturns on household debt and is collaborating closely with teams examining **the impacts of socioeconomic status on social distancing, the consequences of social distancing on domestic violence, the relationship between unionization and COVID-19 outbreaks in nursing homes, and the impacts of COVID-19-era state and federal economic policies on health and economic outcomes.**

MEDIA



Business and science are pointing in the same direction



What are the rules of social distancing? We asked an expert

The Philadelphia Inquirer
Why are so many Black Americans dying of COVID-19?



Protesters should demand coronavirus safety and a reopened economy. We can have both

The New York Times
The way we ration ventilators is biased

THE WALL STREET JOURNAL
Operation COVID airlift would be medevac in reverse

THE CONVERSATION
Hand-washing and distancing don't have tangible benefits - so keeping up these protective behaviors for months will be tricky

PUBLICATIONS

Optimizing and Implementing Contact Tracing through Behavioral Economics. Rinad S. Beidas, Alison M. Buttenheim, Rachel Feuerstein-Simon, Austin S. Kilaru, David A. Asch, Kevin G. Volpp, Hannah G. Lawman, Carolyn C. Cannuscio. *NEJM Catalyst*.

Cognitive Bias and Public Health Policy During the COVID-19 Pandemic. Scott D. Halpern, Robert D. Truog, Franklin G. Miller. *JAMA*.

Political Partisanship Influences Behavioral Responses to Governors' Recommendations for COVID-19 Prevention in the United States. Guy Grossman, Soojong Kim, Jonah Rexer, Harsha Thirumurthy. *SSRN*.

Opening Hospitals to More Patients During the COVID-19 Pandemic—Making It Safe and Making It Feel Safe. David Asch. *JAMA Internal Medicine*.

Mitigating the Impacts of the COVID-19 Pandemic Response on At-Risk Children. Charlene Wong, David Ming, Gary Maslow, Elizabeth J. Gifford. *Pediatrics*.

SIGNATURE PROGRAMS

PENN ROYBAL CENTER

In 2009, CHIBE Director Kevin Volpp, MD, PhD, collaborated with George Loewenstein, PhD, at Carnegie Mellon University and successfully competed for NIH funding to establish the Penn CMU Roybal Center on Behavioral Economics and Health (now the Penn Roybal Center on Behavioral Economics and Health). This program was supported by a P30 center grant from the National Institute on Aging to conduct translational research in older populations. When created, CHIBE was one of 13 Roybal Centers in the United States – and 1 of 2 focused on behavioral economics and health. Since our founding, our center has specialized in research and dissemination strategies that foster the translation of behavioral economic theories to improve health behaviors and health care delivery to prevent premature aging. Over the years, the Penn Roybal Center has distributed over \$1 million in pilot funding for projects testing interventions aimed at reducing health risk among middle-aged and elderly Americans at high risk for premature morbidity and mortality. This year, we funded two pilot projects using (1) social connectedness to increase physical activity among residents at a retirement community and (2) gamification and social incentives to enhance participation in cardiac rehabilitation. Each year, our center holds a Roybal Retreat for the CHIBE faculty, trainees, and staff. In FY 2020, we held our Roybal Retreat at the Hershey Hotel, with 117 faculty, trainees, and staff participating.



PENN NIMH ALACRITY P50 CENTER

The National Institutes of Mental Health (NIMH) Advanced Laboratories for Accelerating the Reach and Impact of Treatments for Youth and Adults with Mental Illness (ALACRITY) supports an ALACRITY P50 Center at Penn to facilitate the rapid development, testing, and refinement of novel and integrative approaches that combine behavioral economics and implementation science to tackle important problems in mental health. Three principal investigators lead the center: Rinad Beidas, PhD, David Mandell, ScD, and Alison Buttenheim, PhD, MBA. The Penn ALACRITY Center,

a partnership between CHIBE and the Penn Center for Mental Health, was the first of two such centers to be funded nationally. In addition to specific research projects, the center supports the development of novel statistical methods and study designs to increase our knowledge of what contributes to successful implementation of evidence-based mental health treatments and tests ways to leverage this knowledge to increase the quality of mental health care and outcomes.



PENN MEDICINE NUDGE UNIT

Launched with support from CHIBE and the Penn Medicine Center for Health Care Innovation, the Penn Medicine Nudge Unit is the world's first behavioral design team embedded within the operations of a health system. The team's mission is to leverage insights from behavioral economics and psychology to design and test approaches to steer medical decision-making and daily health behaviors toward higher value and improved patient outcomes. Since

launching in 2016, the team has worked on more than 50 projects including nudging clinicians, nudging patients, predicting decision-making and health behaviors, and behavioral phenotyping. Many of these projects have been scaled either throughout Penn Medicine or implemented in other health systems. In 2018, the team launched the annual Nudges in Health Care Symposium, which has brought more than 30 health systems from around the world to the

University of Pennsylvania campus to share insights and advance the field. The Nudge Unit's work has been published in leading medical journals including *NEJM*, *JAMA*, and the *Annals of Internal Medicine*. It has been featured in a wide range of media outlets including the *New York Times*, *Wall Street Journal*, *Economist*, *Harvard Business Review*, and *Freakonomics*.

SIGNATURE PROGRAMS

CLINICAL TRANSLATIONAL SCIENCE PILOT AWARD PROGRAM

The Institute for Translational Medicine and Therapeutics (ITMAT) through the University of Pennsylvania Clinical Translation and Science Award Community and Collaboration Core, co-led by Drs. Karen Glanz and Kevin Volpp, supports CHIBE's Clinical Translational Science Pilot Award Program. As part of this program, CHIBE solicited proposals for pilot projects addressing 1) increasing enrollment in clinical trials and 2) improvement of health outcomes or health behavior through the use of connected health interventions. We were able to provide use of the Penn Way to Health software platform free to applicants through funding support from ITMAT, in addition to a gift from the Otto Haas Charitable Trust. The awarded teams were comprised of investigators from the Perelman School of Medicine, the Wharton School, and the Children's Hospital of Philadelphia, with each of the teams including at least one inter-school collaboration.



THE FIELDS PROGRAM

Directed by Scott Halpern, MD, PhD, MBE, the Fostering Improvement in End-of-Life Decision Science (FIELDS) program is the world's first program dedicated to using principles of behavioral economics to understand and improve upon the end-of-life decisions made by patients, caregivers, and clinicians. It sits jointly within the PAIR Center and CHIBE. The mechanistic insights into end-of-life decision making generated by the FIELDS Program often provide the "basic science" upon which scalable interventions tested by the PAIR Center are built.



BEHAVIORAL SCIENCE AND HEALTH ANNUAL SYMPOSIUM

This year marked CHIBE's ninth annual Behavioral Science and Health Symposium. Over 75 leading academics came to the Penn campus to discuss cutting-edge research in health-applied behavioral economics and goals for advancing the field forward. Speakers have included many of the most influential and leading figures in the field nationally and internationally. This year, we welcomed Betsy Levy Paluck, PhD, and David Cutler, PhD, as our keynote speakers.



WAY TO HEALTH

Way to Health is an integrated, cloud-based platform that blends behavioral science with scalable digital technology to conduct randomized controlled trials of healthy behavior interventions and strategic telehealth programs. Operated as a partnership between CHIBE and the Penn Medicine Center for Health Care Innovation, the platform provides both out-of-the-box remote monitoring and engagement solutions as well as tools for developing and deploying new interventions. To date, the platform has supported over 181 projects that focus on a wide range of clinical areas including monitoring blood pressure, medication adherence, blood sugar, weight loss, physical activity, safe driving, smoking cessation, preeclampsia, sleep, and symptom monitoring. During FY 2020, the Way to Health team supported various projects including 44 research projects and 57 clinical programs doubling our total patients from the last three years to over 27,000 participants within the University of Pennsylvania Health System and across the United States. The platform is being used by faculty from more than 30 universities around the country.

PSYCHOLOGY OF EATING AND CONSUMER HEALTH (PEACH) LAB

The mission of the **Psychology of Eating and Consumer Health** lab (PEACH lab) is to identify and evaluate innovative policies and interventions to promote healthy eating habits and prevent nutrition-related chronic diseases. The lab focuses on studying relationships between the social and commercial determinants of health and evaluating policies that will lead to structural changes to support healthy eating habits, particularly among low-income and racial and ethnic minority groups most impacted by diet-related diseases. This past year, the PEACH lab continued building an evidence base showing that sweetened beverage taxes are one of the most effective policy approaches to improve dietary habits. In collaboration with the Philadelphia Department of Public Health and colleagues at Harvard, our new *Health Affairs* paper out in July 2020 shows that the Philadelphia sweetened beverage tax led to a 38% reduction in purchases of taxed beverages at small independent stores. This extends their prior research published in *JAMA* in 2019, which found that the Philadelphia tax led to a 38% decline in taxed beverage sales at large, chain retailers. Dr. Christina Roberto, the lab's director, also published an article in the *American Psychologist* arguing that a deep understanding of psychology and behavioral economics should make us realize that we need policies and interventions that will change the structural and commercial determinants of health if we really want to improve population health in equitable ways.






SIGNATURE PROGRAM SPOTLIGHT



Behavioral Science and Analytics For Injury Reduction (BeSAFIR) Lab



Sending a text while driving. Getting behind the wheel while intoxicated. Overprescribing opioids. Misusing opioids.

Many patients who arrive at the emergency department for an unintentional injury or overdose made an impulsive decision that led to their injury just prior to arrival. Clinicians can also unknowingly harm patients by exposing them to treatments with downstream risks such as ordering excessive amounts of prescription opioids.

The Behavioral Science & Analytics For Injury Reduction (BeSAFIR) Lab was created to expand the CHIBE team's work on common decision errors such as status quo bias, present bias, loss aversion, and regret aversion to focus on impulsive behavior leading to acute injury with the goal of discovering new, effective ways to prevent injuries and optimize outcomes once they happen. M. Kit Delgado, MD, MS, Assistant Professor of Emergency Medicine and Epidemiology, practicing trauma center emergency physician, and CHIBE affiliated faculty member, leads the BeSAFIR Lab. The lab has two ongoing pragmatic trials funded by the U.S. Department of Transportation on smartphone-based interventions

to reduce texting and drinking while driving and to increase seat belt use in auto-insurer and emergency department populations.

In collaboration with the Penn Medicine Nudge Unit, the BeSAFIR team was the first to show that changing default opioid pill amounts in electronic medical record (EMR) prescription orders has a significant impact on what is prescribed—findings that have now been replicated in several studies. More recently, in a study published in the *Journal of General Internal Medicine*, Dr. Delgado and his coauthors found that a health system active choice EMR alert providing orders compliant with 5-day or less supply of

The lab's current projects aim to respond to the opioid crisis, prevent motor vehicle crashes, and use large existing datasets to understand the epidemiology of injury and improve emergency and trauma care.

opioids can influence prescriber behavior. After implementing this health record alert or "nudge," Penn Medicine practices in New Jersey saw around a 22% drop in opioid dose per new prescription (~10 pills/prescription) compared with practices in Pennsylvania, without any increases in refills, telephone encounters, or revisits for uncontrolled pain.

Dr. Delgado's current project to "right size" opioid prescribing in the Penn Medicine health system, funded by the FDA, focuses on innovative methods for collecting patient-centered data on opioid consumption by using the Way to Health system to collect data on pain control and pill consumption

AFTER THIS NUDGE,
NJ PRACTICES SAW

22% DROP

IN OPIOID DOSE PER
NEW PRESCRIPTION

after surgery using text messaging, and using this data to tailor opioid prescription quantities in the EHR. This collects real-time data as part of routine care for patients undergoing orthopedic, spine, and urologic surgery and is expanding throughout Penn Medicine. To date, the program has collected data on over 3,000 patients. By using patient consumption data, surgeons can better understand how many pills patients actually need for a given procedure. This has recently been used to create "smart default" grouping procedures by expected opioid pill need with accompanying procedure specific

EMR ordersets that have lower default prescription amounts.

Dr. Delgado was also recently appointed to the National Academies of Sciences, Engineering, and Medicine's Evidence-Based Clinical Practice Guidelines for Prescribing Opioids for Acute Pain Committee and is a co-leader of the Penn Medicine Opioid Task Force. An increasing focus of BeSAFIR's work has been to connect patients with opioid addiction treated in the emergency department (ED) to addiction treatment with bridge prescriptions for buprenorphine, a medication that stabilizes opioid withdrawal and cravings and markedly reduces mortality. The team's recent publication in *JAMA Network Open* showed that even among privately insured patients in the U.S., only 17% of ED opioid overdose patients get any substance use treatment in 90 days after an overdose, and Black individuals are half as likely to get treatment as Caucasian individuals. With new funding from the CDC, the BeSAFIR team is testing EMR nudges to increase recognition and treatment of opioid addiction in the ED.

"The emergency department is a critical point for time-sensitive intervention to break the cycle of risky, impulsive behaviors and getting patients onto behavioral treatments that will keep them safer in the long run," Dr. Delgado said.



MEDIA

The Philadelphia Inquirer

Even with private insurance, Black overdose patients are half as likely as whites to get addiction treatment, Penn study finds

FREAKONOMICS

The opioid tragedy, part 1: "We've addicted an entire generation"

HealthData
Management

EMR alerts aid compliance with state law limiting opioid prescribing

AWARDS AND RECOGNITION



Risa Lavizzo-Mourey, MD, MBA

Steven E. Weinberger Award for Physician Executives/Leaders

American College of Physicians

Richard and Barbara Hansen Leadership Award

University of Iowa School of Public Health



Scott Halpern, MD, PhD

Named Inaugural Chair Holder of John M. Eisenberg Professorship in Medicine

University of Pennsylvania

Arthur K. Asbury Outstanding Faculty Mentor Award

Penn Medicine



Peter Reese, MD, MSCE

2020 Innovation Award

American Society of Transplantation



Pamela Shaw, PhD

Fellow

American Statistical Association

BEST PAPER AWARDS

Paper of the Year



American Journal of Public Health

AJPH: "Economic Vulnerability Among US Female Health Care Workers: Potential Impact of a \$15-per-Hour Minimum Wage"

Kathryn E.W. Himmelstein and
Atheendar S. Venkataramani

26th Annual Health Care Research Award Finalist



The National Institute for Health Care Management Foundation

JAMA: "Association Between the Implementation of a Population-Based Primary Care Payment System and Achievement of Quality Measures in Hawaii"

Amol S. Navathe, Ezekiel J. Emanuel, Amelia Bond, Kristin Linn, Kristen Caldarella, Andrea Troxel, Jingsan Zhu, Lin Yang, Shireen E. Matloubieh, Elizabeth Drye, Susannah Bernheim, Emily Oshima Lee, Mark Mugiishi, Kimberly Takata Endo, Justin Yoshimoto, Isaac Yuen, Sheryl Okamura, Michael Stollar, Jeffrey Tom, Michael Gold, Kevin G. Volpp



2020 Top Doctors
AL DÍA

Carmen Guerra, MD, MSCE



**Joseph E. Johnson
Leadership Award**
American College of Physicians

Ravi Parikh, MD, MPP



**Awarded Tenure, Named
Inaugural Holder of Mitchell
J. Blutt and Margo Krody
Blutt Presidential Associate
Professor of Health Policy**
University of Pennsylvania

Christina Roberto, PhD



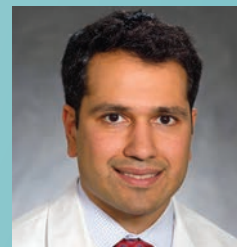
**Quality and Practice
Innovation Award**
Society of General Internal Medicine
**BX Award for Outstanding
Practitioner**
Behavioural Insights Team

Mitesh Patel, MD, MBA, MS



Distinguished Career Award
AcademyHealth

David Asch, MD, MBA



**Annual Young
Investigator Award**
National Comprehensive Cancer
Network Foundation

Shivan Mehta, MD, MBA, MSHP

**Best Advance
of 2019 in
Cognitive
Neurology/
Dementia**



NeurologyToday

JAMA Neurology: "Attitudes
Toward Physician-Assisted Death
of Individuals Who Learn They
Have an Alzheimer's Disease
Biomarker"

Emily Largent, Mélanie Terrasse,
Kristin Harkins, Dominic Sisti,
Pamela Sankar, and Jason Karlawish

**Publication of
the Year Award**



AcademyHealth

NEJM: "Patient Safety Outcomes
Under Flexible and Standard
Resident Duty-Hour Rules"

Jeffrey H. Silber, Lisa M. Bellini, Judy A.
Shea, Sanjay V. Desai, David F. Dinges,
Mathias Basner, Orit Even-Shoshan,
Alexander S. Hill, Lauren L. Hochman,
Joel T. Katz, Richard N. Ross, David
M. Shade, Dylan S. Small, Alice L.
Sternberg, James Tonascia, Kevin G.
Volpp, David A. Asch

CENTER LEADERSHIP



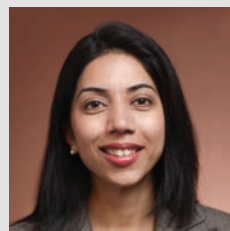
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Director



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Way to Health



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**Jalpa Doshi,
PhD**
Associate Director



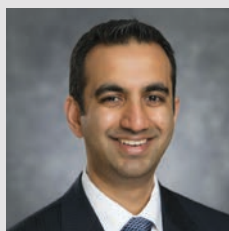
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MPA**
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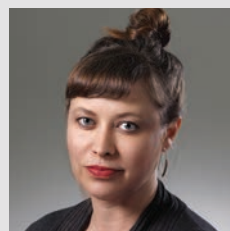
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Director, Roybal Pilot
Program



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MD, PhD**
Associate Director



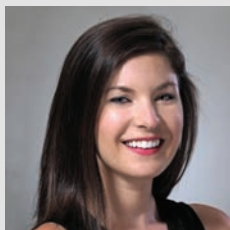
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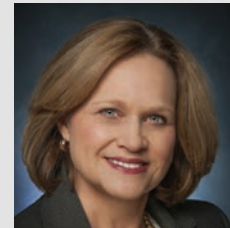
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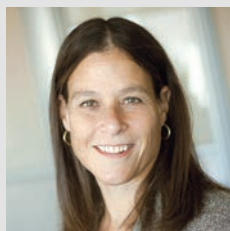


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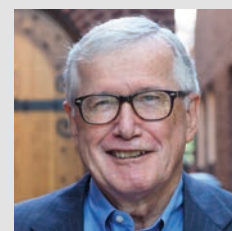
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Nursing School, Wharton



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MD**
Chair, Department of
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School of Medicine



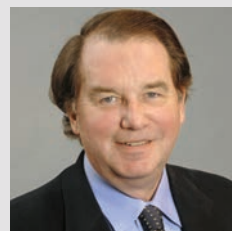
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Perelman School
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MD, PhD**
Executive Director,
Leonard Davis Institute
of Health Economics

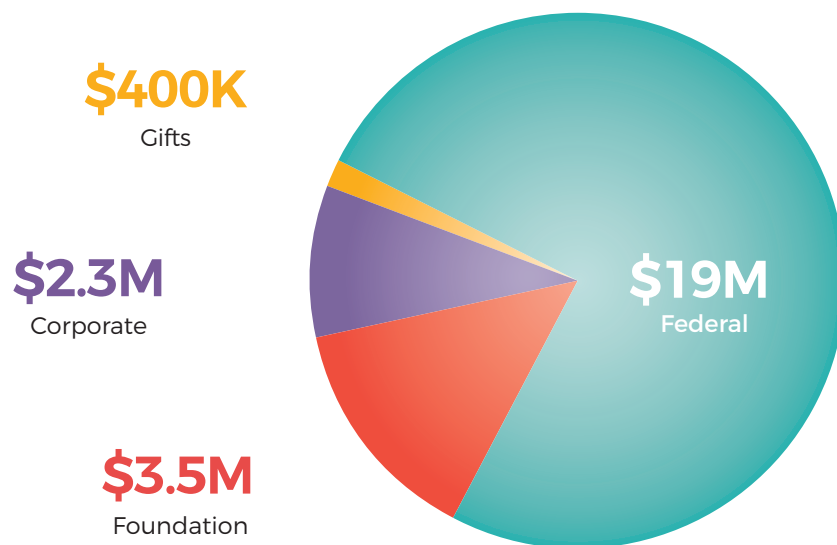


**Sankey Williams,
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and the Wharton
School

FUNDING PORTFOLIO

CHIBE receives project-specific funding from foundation, corporate, and federal sponsors. Diversification of our portfolio has been a strategic priority over the past several years, and we have been successful in securing funding from several commercial entities and foundations. In addition, CHIBE receives support from the University of Pennsylvania Health System and the Perelman School of Medicine that has enabled us to make strategic investments, strengthen our infrastructure, and support junior faculty and trainees. We are also grateful to the Otto Haas Charitable Trust, whose gifts allow us to continue strengthening the infrastructure of Way to Health, making it more accessible to junior faculty and trainees by increasing the ease of use and reducing the cost. Generous support from the Haas Foundation has also allowed us to continue to contribute to CHIBE's permanent endowment fund. In addition, we received a generous 6-figure gift from an anonymous donor for a Director's innovation fund for the support of high priority, quick-turnaround initiatives.

\$135 M
TOTAL AWARD FOR
FY20 ACTIVE PROJECTS



THE DISTRIBUTION FOR
FY20 GRANT ACTIVITY
IS AS FOLLOWS

OUR PARTNERS





Stay up to date on our work year round
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through our monthly **Healthy Nudge** newsletter,
or on our **Twitter** account **@PennCHIBE**.

