



FY 2017-18

# ANNUAL REPORT

TENTH ANNIVERSARY EDITION

Since CHIBE's inception in 2008, we have worked to push the boundaries of the field of behavioral economics and health forward. Our work has spanned the creation of the Way to Health platform, facilitating the testing of behavioral interventions, and successfully competing to become the first NIMH P50 Center on behavioral economics, mental health, and implementation science. As we reach the tenth year since our founding, new partnerships are increasing our impact while longer-standing programs continue to expand their reach. I am grateful to the dedicated faculty, staff and partners that have made the past ten years of fantastic growth possible. I invite you to take a look back at CHIBE's history and major milestones on pages 10-13 of this report.

Over the years, it has been gratifying to see rigorous academic studies conducted by CHIBE investigators inform CVS and GE employee benefit design, result in the creation of a new Humana health plan, influence the design of new prescription refill programs from both CVS Health and Humana, and directly contribute to the roll-out of a new provider payment system in the state of Hawaii in collaboration with BCBS of Hawaii. Across Penn Medicine, our research has improved patient care and saved millions of dollars annually through the implementation of new electronic health record default settings. During FY 2018, CHIBE's research impacted health policy at the city, state and federal level. I invite you to learn more about the impact of the research being conducted by our faculty, staff, and trainees as you read through this report.

This year saw the rapid evolution of the Penn Medicine Nudge Unit, a program recently launched by CHIBE and the Penn Medicine Center for Health Care Innovation. Penn's is the first Nudge Unit embedded within a health system worldwide and already has more than 30 active projects.

Several talented new faculty members joined our Center this year, and we are excited by the continued active involvement of faculty from across the University of Pennsylvania as well as academic affiliates from around the country. We were also appreciative of the energy and talent of 18 interns that assisted with a variety of projects at CHIBE this summer.

Thank you for your support and contributions over the past ten years. I look forward to working together to increase our collective impact in the years ahead.

# DR. KEVIN VOLPP

Director, **Center for Health Incentives & Behavioral Economics (CHIBE)**  
Founders President's Distinguished Professor, **Perelman School of Medicine and the Wharton School**  
Health Policy Division Chief, **Department of Medical Ethics & Health Policy, Perelman School of Medicine**



## TABLE OF CONTENTS

ABOUT THE CENTER	4	HEALTH CARE DELIVERY	20
CENTER LEADERSHIP	5	DIGITAL HEALTH	22
FACULTY AFFILIATIONS	8	HEALTH POLICY AND FINANCING	24
AWARDS AND RECOGNITION	9	IMPACT	26
CHIBE TURNS TEN	10	FUNDING PORTFOLIO	28
SIGNATURE PROGRAMS	14	PARTNERS	29
HEALTHY BEHAVIORS	18	FUTURE DIRECTIONS	30





ABOUT  
**OUR CENTER**

Drawing on the expertise of faculty from across the University of Pennsylvania, the Center for Health Incentives and Behavioral Economics (CHIBE) conducts behavioral economics research aimed at reducing the disease burden from major public health problems. 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 advance the science, knowledge, and application of behavioral economic interventions
- To train the next generation of leaders in the field
- To engage private and public sector partners to develop and test scalable and cost-effective applications

The Center has successfully conducted many observational studies and randomized trials testing principles of behavioral economics in a wide variety of clinical, employer, and health plan contexts involving millions of patients nationally.



CENTER  
**LEADERSHIP**



**Kevin Volpp, MD, PhD**  
*Director*



**George Loewenstein, PhD**  
*Director, Roybal Pilot Program*



**Joelle Friedman, MPA**  
*Managing Director*



**Jingsan Zhu, MS, MBA**  
*Assistant Director, Data Analytics*



**Amol Navathe, MD, PhD**  
*Associate Director*



**Alison Buttenheim, PhD, MBA**  
*Associate Director*



**Jalpa Doshi, PhD**  
*Director of Value-based Insurance Design Initiatives*



**Harsha Thirumurthy, PhD**  
*Associate Director*



**Scott Halpern, MD, PhD, MBE**  
*Director, FIELDS Program*



**Mitesh Patel, MD, MBA, MS**  
*Director, Penn Medicine Nudge Unit*



**Christina Roberto, PhD**  
*Director, PEACH Lab*



**Laurie Norton, MA**  
*Assistant Director for Research Operations*



**Melissa Ostroff, BA**  
*Communications Manager*



# EXTERNAL

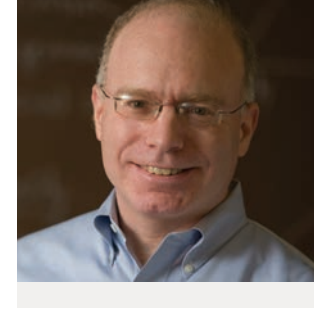
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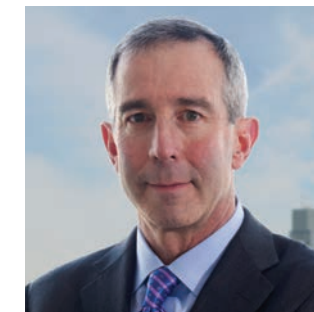
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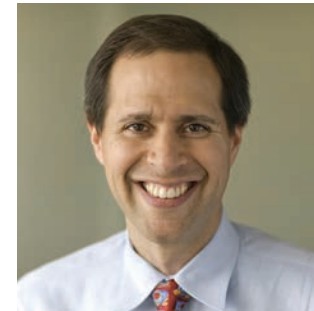
**Deneen Vojta, MD**  
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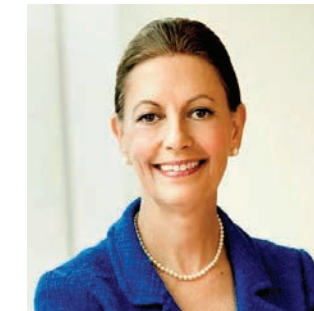
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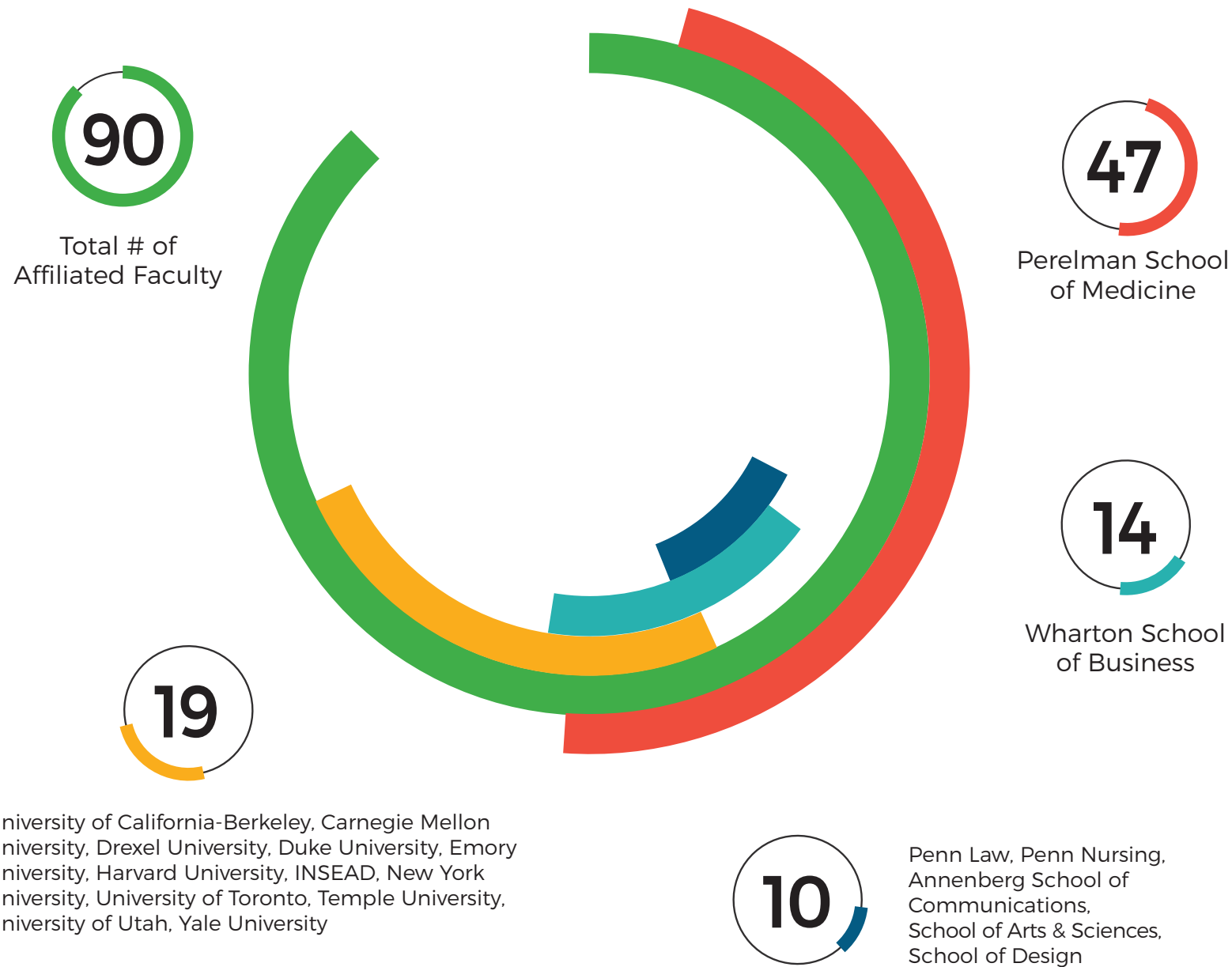
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# INTERNAL

## ADVISORY BOARD

# FACULTY

## AFFILIATIONS



# AWARDS

## AND RECOGNITION



**2017 Samuel Martin Health Evaluation Sciences Research Award**

University of Pennsylvania

Jalpa Doshi, PhD

**Elected to 2018 Board of Directors,**

International Society For Pharmacoeconomics and Outcomes Research

Jalpa Doshi, PhD



**2018 Alice S. Hersh New Investigator Award**

AcademyHealth

Mitesh Patel, MD, MBA, MS

**2018 Outstanding Junior Investigator of the Year Award**

Society of General Internal Medicine

Mitesh Patel, MD, MBA, MS



**2018 Early Career Achievement Award**

American Thoracic Society Clinical Problems Assembly

Joanna Hart, MD, MSHP



**2018 Best Paper of the Year**

Behavioral Science and Policy Association

Saurabh Bhargava, PhD, Justin Sydnor, PhD and George Loewenstein, PhD





## CHIBE TURNS TEN OUR MILESTONES

**2008**

CHIBE was founded with seed money from the Leonard Davis Institute of Health Economics and the Perelman School of Medicine's Department of Medicine

**2009**

Became 1 of 2 NIH Centers on Behavioral Economics and Health as a Roybal Center on Translation Research on Aging through partnership with Carnegie Mellon University  
Creation of Way to Health platform with NIH RC2 Grant

**2010**

First annual Roybal Retreat

**2011**

First annual CHIBE National Behavioral Economics & Health Symposium  
Robert Wood Johnson Foundation Behavioral Economics and Health Pioneer Portfolio Pilot Program

**2012**

Creation of Fostering Improvement in End-of-Life Decision (FIELDS) Program

Launch of one of the largest and most geographically diverse clinical trials in CHIBE's history, the Heartstrong study, which enrolled 1509 participants from 5 large US insurers in 45 states.

**2013**

Awarded funding for first CDC Prevention Research Center in Philadelphia

**2014**

Formed partnership with Penn Institute for Translational Medicine and Therapeutics to provide pilot awards for community and connected health initiatives as part of Penn's NIH CTSA Award

**2015**

Creation of Penn Medicine Nudge Unit in partnership with Penn Medicine Center for Health Care Innovation

**2016**

Successfully competed to become the first NIMH P50 Center on behavioral economics, mental health, and implementation science

**2017**

# 10 YEARS BY NUMBERS

## 10 YEARS OF IMPACT

 **152,000**  
EMPLOYEES

Our research on financial incentives for smoking cessation led to a benefit design innovation adopted by GE for all 152,000 employees in the United States in **2010**.

 **10 million**  
CVS HEALTH  
MEMBERS

In **2012**, CVS Health implemented an automatic refill program based on our research across much of their business nationally and by CVS estimates, this intervention has influenced medication adherence for more than 10 million CVS Health members.

**700**  
GOOD  
REASONS

As a result of our randomized trial of four financial incentive programs for smoking cessation, CVS launched a new benefit design innovation for more than 200,000 US employees called “700 Good Reasons” in **2015**.

**10** PERCENTAGE POINTS

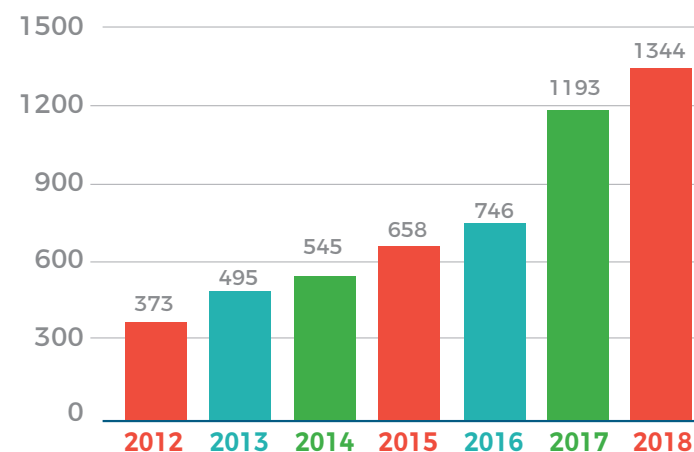
Based on the success of our **2016** study, in which a synchronized prescription refill program increased medication adherence by an average of about ten percentage points among less adherent members, Humana has implemented a refill synchronization program for their members.



**98%** GENERIC PRESCRIPTION RATE

Within Penn Medicine, we changed the default electronic health record (EHR) choice from brand-name prescriptions to generics in a number of practices and found the percentage of generics prescribed increased overnight from about 75% to 98%, saving millions of dollars annually.

## NEWSLETTER SUBSCRIBER GROWTH



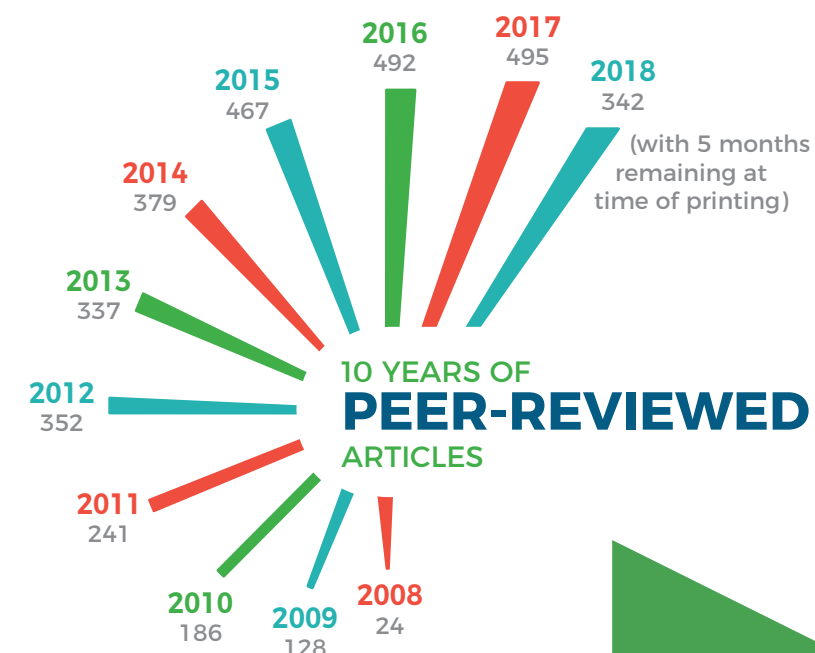
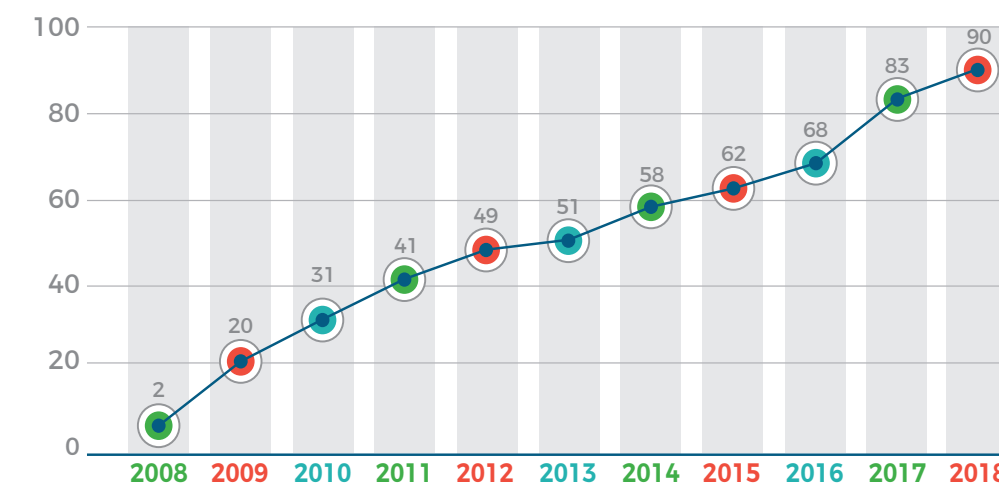
 **1 OUT OF 7**  
CATEGORIES

Insights from our research were translated into practice in **2013** through the launch of Humana Simplicity, a copayment-only plan in which all health services are grouped into 1 of 7 categories.

## 10 NEWS STORIES

- TIME** “THE YEAR IN HEALTH 2009 – I IS FOR INCENTIVE”  
*Time Magazine, 2009*
- The New York Times** “FOR FORGETFUL, CASH HELPS THE MEDICINE GO DOWN”  
*The New York Times, 2010*
- Los Angeles Times** “STUDY SAYS: FINANCIAL REWARD+ COMPETITION=MORE WEIGHT LOSS”  
*Los Angeles Times, 2013*
- The New York Times** “HOW TO KEEP YOUR RESOLUTIONS”  
*The New York Times, 2014*
- The Guardian** “WANT TO QUIT SMOKING? PENALTIES MORE EFFECTIVE THAN REWARDS, NEW STUDY FINDS”  
*The Guardian, 2015*
- The Washington Post** “THE MISTAKE YOU’RE MAKING WITH YOUR FITBIT”  
*The Washington Post, 2016*
- The Philadelphia Inquirer** “MAKING END-OF-LIFE CARE MORE SCIENTIFIC”  
*The Philadelphia Inquirer, 2016*
- The New York Times** “HOW BEHAVIORAL ECONOMICS CAN PRODUCE BETTER HEALTH CARE”  
*The New York Times, 2017*
- The Philadelphia Inquirer** “AS ADDICTION CRISIS GROWS, PENN ‘NUDGES’ DOCTORS TO LIMIT OPIOID PRESCRIPTIONS”  
*The Philadelphia Inquirer, 2018*
- The Economist** “HOSPITALS ARE LEARNING FROM INDUSTRY HOW TO CUT MEDICAL ERRORS”  
*The Economist, 2018*

## FACULTY GROWTH





# SIGNATURE PROGRAMS



## PENN ROYBAL CENTER

In 2009, CHIBE's Director, Dr. Kevin Volpp, collaborated with Dr. George Loewenstein at Carnegie Mellon University and successfully competed for NIH funding to establish the Penn Roybal Center on Behavioral Economics and Health. This program is supported by a P30 center grant from the National Institute on Aging to conduct translational research in older populations. One of 13 Roybal Centers in the United States – and 1 of 2 focused on behavioral economics and health – our center specializes in research and dissemination strategies that foster the translation of behavioral economic theories to improve health behaviors and health care delivery in older adults.

Over the years, the Penn Roybal Center has distributed roughly \$1 million in pilot funding for projects testing interventions aimed at middle-aged and elderly Americans at high risk for premature morbidity and mortality. This year, we funded four pilot projects on topics including how to foster better sleep habits and increase physical activity, approaches to improve screening for liver cancer, and interventions to decrease sodium intake among patients with cirrhosis.

Each year, our center holds a Roybal Retreat, attracting approximately 100 CHIBE faculty, trainees, and staff. In FY 2018, we held our largest-ever Roybal Retreat in the Poconos, with 112 faculty, trainees, and staff participating.

## PENN NIMH ALACRITY P50 CENTER

The NIMH (National Institutes of Mental Health) Advanced Laboratories for Accelerating the Reach and Impact of Treatments for Youth and Adults with Mental Illness (ALACRITY) is supporting an ALACRITY Center at Penn to facilitate the rapid development, testing, and refinement of novel and integrative approaches for (1) optimizing the effectiveness of treatments for and prevention of mental disorders; and (2) organizing and delivering mental health services in community settings.

The Penn ALACRITY Center, a partnership between CHIBE and the Penn Center for Mental Health Policy & Services Research, is one of two Centers in the nation combining principles of behavioral economics and implementation science to improve mental health service delivery. In addition to specific research projects, the center will support 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 test ways to leverage this knowledge to increase the quality of mental health care and outcomes.



## WAY TO HEALTH

Way to Health is an integrated, cloud-based platform that automates many of the research functions necessary for conducting 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 is an efficient, scalable, and low-cost way to test behavioral interventions and can be deployed anywhere in the United States. To date, the platform has supported over 100 projects that focus on a wide range of clinical areas including monitoring blood pressure, medication adherence, weight loss, monitoring of blood sugar, weight, physical activity, safe driving, smoking cessation, preeclampsia, and sleep.

During FY 2018, the Way to Health team supported 51 projects including 39 research projects and 12 clinical pilots projected to engage over 40,000 participants within the University of Pennsylvania Health System and across the United States. With support from the Otto Haas Charitable Trust, the Way to Health team continues to work on adding more capabilities to address the needs of the patient, participant, research and clinical communities.

## CLINICAL TRANSLATION AND SCIENCE AWARD PROGRAM

The Institute for Translational Medicine and Therapeutics (ITMAT), part of the UPENN Clinical Translation and Science Award Community and Collaboration Core, supports CHIBE's Clinical Translation and 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. CHIBE awarded sixteen projects totaling \$727,571 in funding across both pilot programs this fiscal year. We were able to provide Way to Health 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.



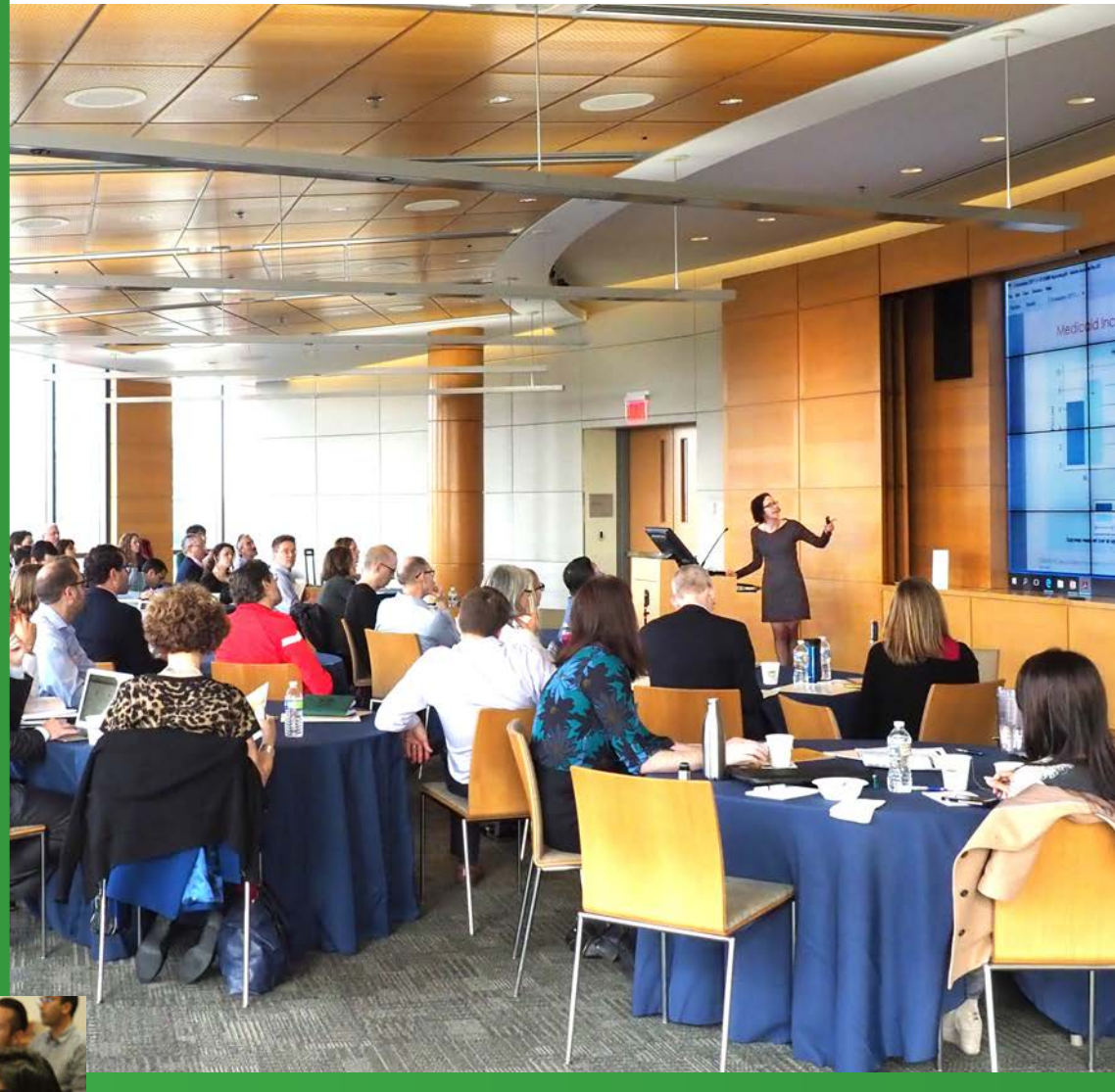


# SIGNATURE PROGRAMS

## THE FIELDS PROGRAM

Directed by Dr. Scott Halpern, the FIELDS Program is the world's first research program dedicated to using principles of behavioral economics to understand and improve upon the end-of-life decisions made by patients, caregivers, and clinicians. A core program of CHIBE and the newly formed Palliative and Advanced Illness Research (PAIR) Center, FIELDS was established in 2012 with development funding from the Otto Haas Charitable Trust.

FIELDS investigators are currently conducting more than 20 studies ranging from small pilot projects, to mixed methods research, and multi-year pragmatic trials within large health systems. In FY 2018, FIELDS investigators received several early and mid-career development awards from NIH and published more than 30 articles in high-impact journals, including the systematic review "Approximately One in Three US Adults Completes Any Type of Advance Directive for End-of-Life Care" which was one of the top ten most shared Health Affairs articles in 2017.



## BEHAVIORAL ECONOMICS AND HEALTH ANNUAL SYMPOSIUM

This year marked CHIBE's seventh annual Behavioral Economics and Health Symposium. Over 90 leading academics came to the Penn campus to discuss cutting-edge research in health-applied behavioral economics and goals for advancing the field forward. Keynote speakers have included many of the most influential and leading figures in the field.



## PSYCHOLOGY OF EATING AND CONSUMER HEALTH (PEACH) LAB

Directed by Dr. Christina Roberto, The Psychology of Eating and Consumer Health (PEACH) lab's mission is to understand and alter the environmental forces that promote unhealthy eating habits. The lab was established in 2012 and evaluates policies and interventions that can prevent nutrition-related chronic diseases and promote the health of our planet and the people who live on it. The PEACH Lab is committed to working with decision makers and influencers to ask important, creative, and timely research questions that can provide policymakers and institutions with science-based guidance. The Lab's research also extends to mental health and wellbeing, with a special emphasis on eating disorders. In FY 18, the PEACH Lab received two NIH R01s and had 19 papers published or in press. Covered in major news outlets, the Lab's research directly informed a new sodium warning label law in Philadelphia.

## PENN MEDICINE NUDGE UNIT

Launched with support from CHIBE and the Penn Medicine Center for Health Care Innovation in 2016, the Penn Medicine Nudge Unit is the world's first clinical health system based Nudge Unit. The group leverages insights from behavioral economics to design, test and scale interventions that steer clinicians and patients toward better decisions to improve health care delivery and outcomes. Within two years after launch, the Penn Medicine Nudge Unit has more than thirty active studies including randomized trials testing defaults and social comparison to reduce opioid prescribing, active choice and peer comparisons for statin prescribing, and social incentives to increase patient mobility and reduce harms of hospitalization.



## FY 2018 PUBLICATION HIGHLIGHTS

Dai H, Mao D, Volpp KG, Pearce HE, Relish MJ, Lawnicki VF, Milkman KL. **THE EFFECT OF INTERACTIVE REMINDERS ON MEDICATION ADHERENCE: A RANDOMIZED TRIAL.** Prev Med. 2017.

Doshi JA, Li P, Huo H, Pettit AR, Armstrong KA. **ASSOCIATION OF PATIENT OUT-OF-POCKET COSTS WITH PRESCRIPTION ABANDONMENT AND DELAY IN FILLS OF NOVEL ORAL ANTICANCER AGENTS.** J Clin Oncol. 2017.

Halpern SD, Harhay MO, Saulsgiver K, Brophy C, Troxel AB, Volpp KG. **A PRAGMATIC TRIAL OF E-CIGARETTES, INCENTIVES, AND DRUGS FOR SMOKING CESSATION.** N Engl J Med. 2018.

Kessler JB, Troxel AB, Asch DA, Mehta SJ, Marcus N, Lim R, Zhu J, Shrank W, Brennan T, Volpp KG. **PARTNERS AND ALERTS IN MEDICATION ADHERENCE: A RANDOMIZED CLINICAL TRIAL.** J Gen Intern Med. 2018.

Wong CA, Miller VA, Murphy K, Small D, Ford CA, Willi SM, Feingold J, Morris A, Ha YP, Zhu J, Wang W, Patel MS. **EFFECT OF FINANCIAL INCENTIVES ON GLUCOSE MONITORING ADHERENCE AND GLYCEMIC CONTROL AMONG ADOLESCENTS AND YOUNG ADULTS WITH TYPE 1 DIABETES: A RANDOMIZED CLINICAL TRIAL.** JAMA Pediatr. 2017.

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



## NEW PROJECTS

### FY 2018 NEW PROJECT HIGHLIGHTS

#### STEP UP

Principal Investigators: *Katherine Milkman, PhD and Angela Duckworth, PhD, MA, MSc*

Funder: *University of Pennsylvania & Chan Zuckerberg Initiative*

StepUp is a habit building, science-based workout program developed by the Behavior Change for Good Initiative, in partnership with 24 Hour Fitness, which involves 23 studies designed by many of the leading behavioral scientists nationally. The program runs for 28 days and involves rewards, customized texts, and other content designed to identify what works best for creating lasting gym habits.

#### NUDGING ADOLESCENTS TOWARD SAFER FOOD ALLERGY MANAGEMENT

Principal Investigators: *Carolyn Cannuscio, ScD*

Funder: *National Institute of Child Health and Human Development*

The objective of this project is to develop and test behavioral interventions to encourage safer food allergy management among adolescents. The primary outcome is consistency of epinephrine-carrying, measured using cell phone photographs at randomly-timed check-ins. This study will be among the first to longitudinally track normative food allergy management practices and one of the first to test behavior change strategies.

#### INTERVENTIONS TO REDUCE ALCOHOL USE AND INCREASE ADHERENCE TO TB PREVENTIVE THERAPY AMONG HIV/TB CO-INFECTED DRINKERS

Principal Investigators: *Harsha Thirumurthy, PhD and Judith Hahn, PhD, MA*

Funder: *National Institutes of Health*

Heavy alcohol use is common among HIV-infected persons, and is also a risk factor for tuberculosis (TB), the leading cause of death in those living with HIV in sub-Saharan Africa. Because combining alcohol and the anti-TB therapy isoniazid (INH) can be toxic to the liver, heavy alcohol users are not offered INH, despite evidence that it prevents TB and death in persons with HIV. To address this challenge, this study will test economic incentives to promote both reduced alcohol use and INH medication adherence among HIV-infected adult heavy drinkers at clinics in southwestern Uganda.

### — FY 2018 NEWS HIGHLIGHTS —

*Los Angeles Times*

**"SMOKE SIGNALS: CASH, NOT ELECTRONIC CIGARETTES, HELP GET SMOKERS TO QUIT"**

*Los Angeles Times, May 2018*

*Harvard Business Review*

**"THE BEST FLU PREVENTION MIGHT BE BEHAVIORAL ECONOMICS"**

*Harvard Business Review, April 2018*

*The New York Times*

**"HOW TO MAKE (AND KEEP) A NEW YEAR'S RESOLUTION"**

*The New York Times, January 2018*

*The Philadelphia Inquirer*

**"SODIUM CONTENT NEEDS TO BE ON THE MENU AT PHILLY RESTAURANTS. HERE'S WHY."**

*The Philadelphia Inquirer, January 2018*

*The Washington Post*

**"THEY OFFERED TO PAY PEOPLE TO GO TO THE GYM. GUESS WHAT HAPPENED?"**

*The Washington Post, August 2017*





## FY 2018 PUBLICATION HIGHLIGHTS

Choi K, Gitelman Y, Asch DA. **SUBSCRIBING TO YOUR PATIENTS - REIMAGINING THE FUTURE OF ELECTRONIC HEALTH RECORDS.** N Engl J Med. 2018;378(21):1960-1962.

Delgado MK, Shofer FS, Patel MS, Halpern S, Edwards C, Meisel ZF. **ASSOCIATION BETWEEN ELECTRONIC MEDICAL RECORD IMPLEMENTATION OF DEFAULT OPIOID PRESCRIPTION QUANTITIES AND PRESCRIBING BEHAVIOR IN TWO EMERGENCY DEPARTMENTS.** J Gen Intern Med. 2018.

Halpern SD. **USING DEFAULT OPTIONS AND OTHER NUDGES TO IMPROVE CRITICAL CARE.** Crit Care Med. 2018;46(3):460-464.

Kerlin MP, Halpern SD. **CHANGING INTENSIVISTS' BEHAVIORS: A CHALLENGE IN NEED OF NEW SOLUTIONS.** Am J Respir Crit Care Med. 2017;196(1):2-4.

Patel MS, Volpp KG, Asch DA. **NUDGE UNITS TO IMPROVE THE DELIVERY OF HEALTH CARE.** N Engl J Med. 2018;378(3):214-216.

Our researchers explore innovative behavioral economic solutions to improve health outcomes while reducing costs through the transformation of health care delivery.



## NEW PROJECTS

### FY 2018 NEW PROJECT HIGHLIGHTS

#### CONNECTED HEALTH AND THE OPIOID CRISIS: BEHAVIORAL ECONOMIC APPROACHES TO INCREASE NALOXONE UPTAKE

**Principal Investigators:** Carolyn Cannuscio, ScD and Alison Buttenheim, PhD, MBA

**Funder:** CTSA UL1TR000003 from the National Center for Advancing Translational Science

This project's overarching goal is to develop and test novel evidence-based interventions to increase naloxone uptake, a keystone to prevention of opioid-related mortality. The team's approach will be informed by behavioral economics and the principles of community-engaged research. Proposed interventions will be conducted in concert with ongoing Overdose Awareness and Reversal trainings led by the team in partnership with the Philadelphia Department of Public Health and the Free Library of Philadelphia.

#### USING DEFAULT OPTIONS TO DECREASE OPIOID PRESCRIBING DURATIONS

**Principal Investigators:** Mitesh Patel, MD, MBA, MS, Amol Navathe, MD, PhD and Kit Delgado, MD, MS

**Funder:** Donaghue Foundation

The objective of this study is to conduct a pragmatic randomized, controlled trial to evaluate the effect of two scalable behavioral economics approaches to reduce physician opioid prescribing at 58 emergency department and urgent care sites within Sutter Health System. Investigators will compare the individual and combined impact of instituting an electronic health record default option for the number of pills per opioid prescription, and providing monthly social comparison feedback to physicians on opioid prescribing patterns.

#### THE ROLE OF BEHAVIORAL ECONOMIC INTERVENTIONS TO PROMOTE UTILIZATION OF LUNG PROTECTIVE VENTILATION

**Principal Investigator:** Meeta Kerlin, MD, MSCE

**Funder:** ATS Foundation

The goal of this research is to develop implementation strategies to improve the utilization of lung protective ventilation (LPV) and the outcomes of patients who undergo mechanical ventilation. Through semi-structured interviews with clinicians, investigators will assess the perceived benefits and burdens of different electronic health record-based strategies grounded in behavioral economic theory. These findings will provide preliminary data to inform a future pragmatic trial of how such strategies may increase LPV utilization among all mechanically ventilated patients.

### — FY 2018 NEWS HIGHLIGHTS —



"REHAB AFTER HEART ATTACK: HOW HOSPITALS CAN MAKE SURE IT HAPPENS"

*The Philadelphia Inquirer, March 2018*



"AS ADDICTION CRISIS GROWS, PENN 'NUDGES' DOCTORS TO LIMIT OPIOID PRESCRIPTIONS"

*The Philadelphia Inquirer, January 2018*



"HOW TO REDUCE PRIMARY CARE DOCTORS' WORKLOADS WHILE IMPROVING CARE"

*Harvard Business Review, November 2017*



"END-OF-LIFE DECISIONS CAN BE DIFFICULT. THIS DOCTOR THINKS 'NUDGES' CAN HELP"

*STAT, September 2017*



"TWO OUT OF THREE U.S. ADULTS HAVE NOT COMPLETED AN ADVANCE DIRECTIVE"

*NPR, July 2017*

### FY 2018 PUBLICATION HIGHLIGHTS

Asch DA, Volpp KG. **REIMAGINING HALFWAY TECHNOLOGIES WITH BEHAVIORAL SCIENCE.** Ann Intern Med. 2017;167(7):505-506.

Delgado MK, Mcdonald CC, Winston FK, Halpern SD, Bottenheim AM, Setubal C, Huang Y, Saulsgiver KA, Lee YC. **ATTITUDES ON TECHNOLOGICAL, SOCIAL, AND BEHAVIORAL ECONOMIC STRATEGIES TO REDUCE CELLPHONE USE WHILE DRIVING IN TEENS.** Traffic Inj Prev. 2018;:1-23.

Kangovi S, Asch DA. **BEHAVIORAL PHENOTYPING IN HEALTH PROMOTION: EMBRACING OR AVOIDING FAILURE.** JAMA. 2018.

Mehta SJ, Asch DA. **DOES USING AN IPAD MAKE AN INTERVENTION INNOVATIVE?** Ann Intern Med. 2018;168(8):592-593.

Patel MS, Benjamin EJ, Volpp KG, Fox CS, Small DS, Massaro JM, Lee JJ, Hilbert V, Valentino M, Taylor DH, Manders ES, Mutalik K, Zhu J, Wang W, Murabito JM. **EFFECT OF A GAME-BASED INTERVENTION DESIGNED TO ENHANCE SOCIAL INCENTIVES TO INCREASE PHYSICAL ACTIVITY AMONG FAMILIES: THE BE FIT RANDOMIZED CLINICAL TRIAL.** JAMA Intern Med. 2017.

Researchers at CHIBE apply 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.



## NEW PROJECTS

### FY 2018 NEW PROJECT HIGHLIGHTS

#### COMPARING SOCIAL VS. FINANCIAL GAMIFICATION TO INCREASE PHYSICAL ACTIVITY AMONG VETERANS

**Principal Investigator:** *Mitesh Patel, MD, MBA, MS*

**Funder:** *U.S. Department of Veterans Affairs*

This project is a 20-week clinical trial among overweight and obese veterans to test a gamification intervention designed to enhance social incentives, both with and without financial incentives, through the use of wearable devices.

#### COMPARATIVE EFFECTIVENESS OF ALTERNATIVE SMARTPHONE-BASED NUDGES TO REDUCE CELLPHONE USE WHILE DRIVING

**Principal Investigator:** *Kit Delgado, MD, MS*

**Funder:** *U.S. Department of Transportation Federal Highway Administration*

The goal of this cooperative agreement is to conduct randomized controlled trials with interventions guided by insights from behavioral economics to reduce risky cellphone use while driving via usage-based auto insurance programs and employer fleet management programs.

#### CONNECTED HEALTH TO DECREASE OPIOID USE IN PATIENTS WITH CHRONIC PAIN

**Principal Investigators:** *Peggy Compton, PhD, RN, FAAN and Manik Chhabra, MD*

**Funder:** *CTSA UL1TR000003 from the National Center for Advancing Translational Science*

The Corporal Michael Cresenz VA Medical Center recently created a pain-focused patient-centered primary care program (P-PACT) to decrease opioid use and improve functional outcomes in high-risk veterans with chronic pain. This pilot study will evaluate if connected health technology and behavioral incentives applied in the P-PACT setting can appreciably increase participation in activities that promote mobility, and subsequently reduce pain severity and opioid use.

### — FY 2018 NEWS HIGHLIGHTS —

**abc NEWS** "COLD, HARD CASH AND A FITNESS DEVICE COULD HELP MOTIVATE PEOPLE TO EXERCISE: STUDY"  
*ABC News, June 2018*

**The Philadelphia Inquirer** "HOW TO STOP TEENS FROM TEXTING WHILE DRIVING? TRY MONEY."  
*The Philadelphia Inquirer, April 2018*

**WIRED** "SCIENCE SAYS FITNESS TRACKERS DON'T WORK. WEAR ONE ANYWAY"  
*Wired, December 2017*

**REUTERS** "FITNESS TRACKER GAMES MAY HELP FAMILIES GET MORE EXERCISE"  
*Reuters, September 2017*

**The Philadelphia Inquirer** "CAN A \$55 WATER BOTTLE PREVENT KIDNEY STONES? PENN AND CHOP AIM TO FIND OUT."  
*The Philadelphia Inquirer, September 2017*



## FY 2018 PUBLICATION HIGHLIGHTS

Beidas RS, Becker-haimes EM, Adams DR, Skriner L, Stewart RE, Wolk CB, Buttenheim AM, Williams NJ, Inacker P, Richey E, Marcus SC. **FEASIBILITY AND ACCEPTABILITY OF TWO INCENTIVE-BASED IMPLEMENTATION STRATEGIES FOR MENTAL HEALTH THERAPISTS IMPLEMENTING COGNITIVE-BEHAVIORAL THERAPY: A PILOT STUDY TO INFORM A RANDOMIZED CONTROLLED TRIAL.** Implement Sci. 2017;12(1):148.

Doshi JA, Li P, Pettit AR, Dougherty JS, Flint A, Ladage VP. **REDUCING OUT-OF-POCKET COST BARRIERS TO SPECIALTY DRUG USE UNDER MEDICARE PART D: ADDRESSING THE PROBLEM OF “TOO MUCH TOO SOON”.** Am J Manag Care. 2017;23(3 Suppl):S39-S45.

Liao JM, Schapira MS, Navathe AS, Mitra N, Weissman A, Asch DA. **THE EFFECT OF EMPHASIZING PATIENT, SOCIETAL, AND INSTITUTIONAL HARMS OF INAPPROPRIATE ANTIBIOTIC PRESCRIBING ON PHYSICIAN SUPPORT OF FINANCIAL PENALTIES: A RANDOMIZED TRIAL.** Ann Intern Med. 2017

Navathe AS, Liao JM, Shah Y, Lyon Z, Chatterjee P, Polsky D, Emanuel EJ. **CHARACTERISTICS OF HOSPITALS EARNING SAVINGS IN THE FIRST YEAR OF MANDATORY BUNDLED PAYMENT FOR HIP AND KNEE SURGERY.** JAMA. 2018;319(9):930-932.

Pryor K, Volpp K. **DEPLOYMENT OF PREVENTIVE INTERVENTIONS - TIME FOR A PARADIGM SHIFT.** N Engl J Med. 2018;378(19):1761-1763.

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



## NEW PROJECTS

### FY 2018 NEW PROJECT HIGHLIGHTS

#### COMMUNICATING THE HEALTH RISKS OF SUGAR-SWEETENED BEVERAGES

Principal Investigator: *Christina Roberto, PhD*

Funder: *National Institute on Aging*

This study aims to test the effect of repeated exposure to warning labels on kilocalories purchased over time among older adults and to demonstrate the feasibility of a novel, online store research protocol that can be used to ship participants' actual purchases.

#### ADHERENCE TO ORAL ANTICANCER AGENTS: BENCHMARKING, LANDSCAPE ASSESSMENT, AND INTERVENTION DESIGN

Principal Investigator: *Jalpa Doshi, PhD*

Funder: *Humana*

This project aims to estimate adherence to oral anticancer agents in a national cohort of Medicare beneficiaries; provide consultation on the design, analysis and interpretation of a survey on this topic among Humana members; and develop a next-generation intervention to improve adherence to oral anticancer agents among Humana members.

#### BUNDLED PAYMENTS NATIONAL SURVEY

Principal Investigator: *Amol Navathe, MD, PhD*

Funder: *American Hospital Association*

The Bundled Payments National Survey, funded by the Health Research and Educational Trust, is a web-based survey of organizational leaders at American Hospital Association (AHA) member hospitals participating in bundled payment contracts. The purpose of the survey is to understand organizational capacity, strategy, and attitudes related to implementation of bundled payment programs. The survey is designed by Penn investigators with input from AHA collaborators. The AHA will administer the survey to their member hospitals and collect data, which will then be shared with Penn investigators for analysis.

### — FY 2018 NEWS HIGHLIGHTS —

Health Affairs Blog “BALANCING AFFORDABILITY AND ACCESS: LESSONS FROM NEW CHOLESTEROL-LOWERING DRUGS”  
*Health Affairs Blog, June 2018*

The Philadelphia Inquirer “HIGH OUT-OF-POCKET COSTS MAY PLACE ORAL CANCER MEDICATIONS OUT OF REACH”  
*The Philadelphia Inquirer, December 2017*

The New York Times “KEPT IN THE DARK ABOUT DOCTORS, BUT HAVING TO PICK A HEALTH PLAN”  
*The New York Times, November 2017*

Modern Healthcare “BUNDLED-PAYMENT JOINT REPLACEMENT PROGRAMS WINNING OVER SURGEONS”  
*Modern Healthcare, October 2017*

GOVERNING “THE VACCINE-EXEMPTION CHALLENGE”  
*Governing, July 2017*



# FY 2018 IMPACT

CHIBE faculty worked with the Governor's office in Kentucky providing background information on the likely impact of raising tobacco taxes on health outcomes. Following the provision of this information, Kentucky tobacco taxes were raised from \$.60 to \$1.10 in 2018.



Kit Delgado, MD, MS, an affiliated faculty member, was appointed to the National Academies of Sciences, Engineering, and Medicine Committee on Accelerating Progress to Reduce Alcohol-Impaired Driving Fatalities. The Committee released a 2018 report, "Getting to Zero Alcohol-Impaired Driving Fatalities: A Comprehensive Approach to a Persistent Problem," that included recommendations leveraging Delgado's expertise in behavioral science.

CHIBE co-sponsored a number of policy-driven conferences this year, including the Behavioral Science and Policy Association's 4th Annual Conference and the Snowbird Health Summit; CHIBE's Director, Kevin Volpp, MD, PhD, co-organized the National Academies of Sciences, Engineering and Medicine's Workshop on Behavioral Economics and the Promotion of Health Among Aging Populations.

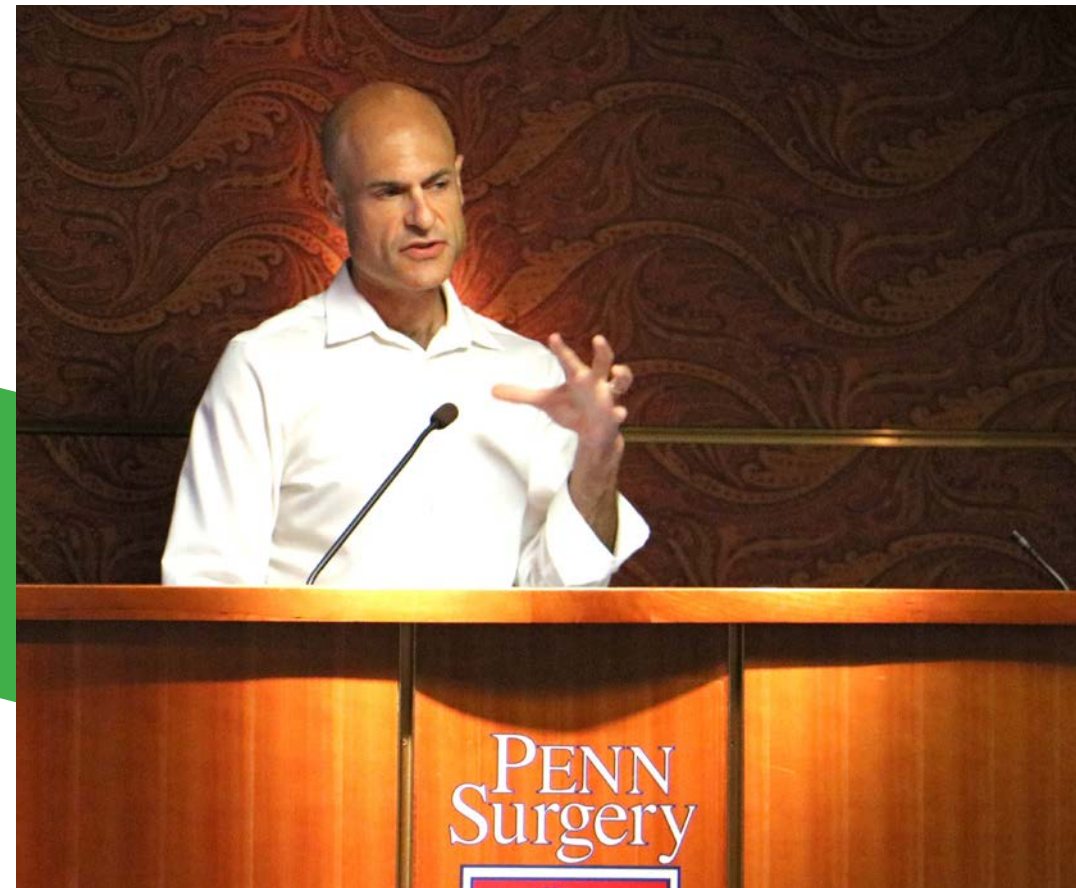
Delgado also presented his CHIBE-funded pilot study on lowering default opioid prescription quantities in the electronic health record at an FDA-sponsored conference on safe use and appropriate prescribing of prescription opioids in February 2018. This work was cited in a landscape analysis following the conference.

## RESEARCH THAT DRIVES ACTION

Associate Director Harsha Thirumurthy, PhD was appointed to the WHO Guidelines Development Group on medical male circumcision for HIV prevention and the WHO Steering Group on enhancing uptake of HIV and AIDS interventions and services for adult men.

In 2018, Philadelphia became the second city after New York to pass a law requiring chain restaurants to display a warning label next to menu items with more than a day's worth of sodium. The design of Philadelphia's sodium warning label was directly informed by Dr. Christina Roberto's work.

The Leonard Davis Institute of Health Economics developed a policy brief on a CHIBE study finding no significant impact of e-cigarettes on smoking cessation. The brief was disseminated to FDA leadership and the U.S. Center for Tobacco Products during a time when the FDA is having important conversations on the regulation of e-cigarettes.



The Familial Hypercholesterolemia Foundation references a study from Jalpa Doshi, PhD in discussions with payers on best practices for addressing prior authorization policy barriers to access to a class of cholesterol-lowering medications called PCSK9 inhibitors.



# FUNDING

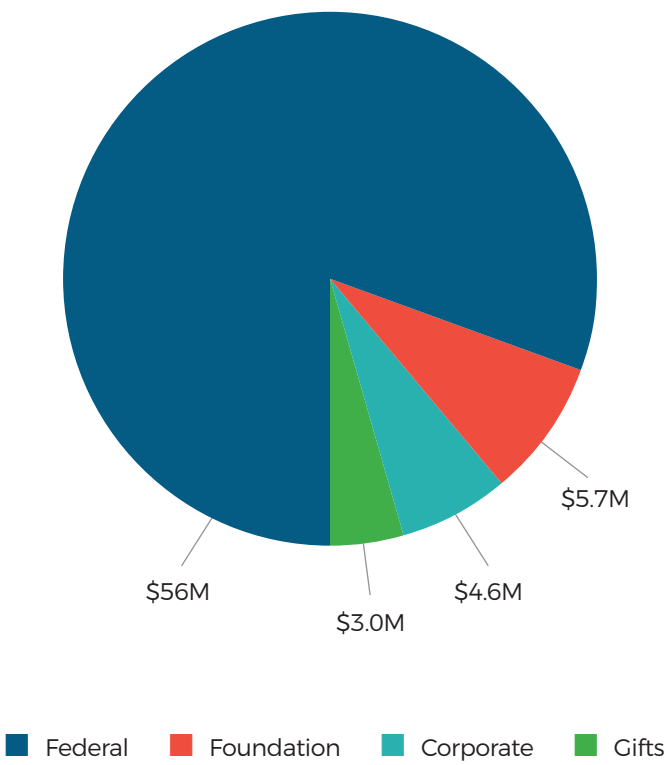
## PORTFOLIO

CHIBE currently receives almost \$70M in 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 were also fortunate to receive two gifts from the Otto Haas Charitable Trust. The Otto Haas Charitable Trust gift has enabled us to strengthen 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.

CHIBE was the recipient of generous support from the following sponsors this year: Advocate Health Care, American Hospital Association, Anthem Blue Cross and Blue Shield, ATS Foundation, Biogen, Bloomberg Philanthropies, CareMore, Centers for Disease Control and Prevention, Cigna, Commonwealth Fund, Commonwealth of Pennsylvania, Commonwealth of Kentucky, Deloitte, Donaghue Foundation, Doris Duke Charitable Foundation, U.S. Department of Transportation, Eunice Kennedy Shriver National Institute of Child Health and Human Development, Evidation Health, Greenwall Foundation, Otto Haas Charitable Trust, Hawaii Medical Services Association, Humana, National Investment Center for Seniors Housing and Care, National Cancer Institute, National Heart, Lung and Blood Institute, National Institute on Aging, National Institutes of Health, National Institute of Mental Health, Oscar Health, Regeneron, U.S. Veterans Affairs Health Services Research and Development Service, and Weight Watchers.

Our current distribution of funding is as follows:




# OUR

## PARTNERS



# FUTURE DIRECTIONS



In the coming year, CHIBE will continue to build on considerable progress being made in behavioral economics and health. We are excited by the energy and enthusiasm of existing faculty and staff, and the many strong partnerships we have with collaborating organizations who share our goals of improving health and health care. A talented junior faculty member who runs the PEACH lab focused on behavioral economics and food choice, Christina Roberto, PhD will be joining our steering committee in the coming year. Our External Advisory Board was strengthened further by the additions of Sally Welborn, who formerly oversaw employee benefits at Walmart, and Deneen Vojta, EVP for Research and Development at United Healthcare.

We will continue to improve the Way to Health platform to move towards a more modular self-service design and accelerate efforts to support pilot tests of clinical deployment among Penn Medicine patients. In addition, we have decided to allow investigators at other universities to use Way to Health in support of their research to accelerate progress in behavioral economics and health more broadly and to facilitate use of Way to Health as a national academic platform standard.

We thank all of our collaborators for your efforts to support CHIBE faculty, trainees, and staff in the creation of new knowledge on how to most effectively use behavioral economic strategies to further improve the health of populations. We look forward to working further with you to make resources spent on health and health services as impactful as possible.







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& Behavioral Economics

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