TOMORROW DEMANDS TODAY
THE RAND CORPORATION IS A RESEARCH ORGANIZATION THAT DEVELOPS SOLUTIONS TO PUBLIC POLICY CHALLENGES TO HELP MAKE COMMUNITIES THROUGHOUT THE WORLD SAFER AND MORE SECURE, HEALTHIER AND MORE PROSPEROUS.
At the beginning of 2020—before the COVID-19 pandemic changed the lives of people throughout the world, before the killing of George Floyd led to several months of sustained protest and civil unrest throughout the United States and abroad, before an unprecedented and ultimately violent 2020 U.S. presidential election and transition was fully underway—RAND launched its most ambitious fundraising campaign to date.

The turmoil notwithstanding, RAND not only pushed forward; we provided indispensable support to global policymakers on these and numerous other fronts. Moreover, these crises underscore the need for policy solutions in a world riddled with mistrust and an outright assault on truth. Tomorrow Demands Today: The Campaign for RAND is guided by RAND’s mission—to help improve policy and decisionmaking through research and analysis—and focused on five priorities.
Countering truth decay
“Truth decay” is the term we use to describe the diminishing role of facts and analysis in public life. As a nonpartisan institution that seeks to advance the public good through research and analysis, RAND is the only research institution that has already invested in an initiative to counter this grave, existential threat.

Rethinking and retooling institutions
RAND aims to design a revitalized set of institutions to promote security, stability, and prosperity for the decades to come.

Strengthening and safeguarding communities
In confronting such problems as social and economic inequity, climate change, and global health, RAND understands the need to solve these problems where people are already experiencing them firsthand—in local communities. By working at the front lines of need, RAND can pilot and refine practical tools and approaches that others can deploy right away.

Leading a new era of problem-solving
The Pardee RAND Graduate School is an engine of new ideas and talent, is a vital platform for new tools and strategies, and deeply expands RAND’s capacity to bring about positive change.

Ensuring agility
Researchers must be prepared to address not only society’s most challenging problems but also the emerging problems that arise and need immediate attention. This fifth priority was put to the test starting in March: Millions of dollars that RAND had already raised allowed our researchers to meet the urgent analytic needs of the COVID-19 pandemic rapidly and respond with agility to new research opportunities and evolving research priorities.

This annual report spotlights select research on critical topics we tackled in 2020: detecting online disinformation; deterring cyberattacks; countering violent extremism; strengthening critical health care systems; building back better through strategic and robust postdisaster recovery planning; improving law enforcement strategies for addressing homelessness; promoting civic development among students; and so much more. It also speaks to RAND’s collective push for impact, and how philanthropic dollars are helping to make individuals, families, and communities throughout the world safer and more secure, healthier and more prosperous.

As always, we thank the clients, grantmakers, and donors who support our vision, make our work possible, and help us meet tomorrow’s demands today.
RESEARCH AND ANALYSIS

Each year, clients and grantmakers around the world turn to RAND for empirical, nonpartisan, and objective research and analysis, bringing us their most vexing and complex public policy challenges. RAND researchers pursue innovative solutions across a wide range of policy areas, including:

- Children, Families, and Communities
- Cyber and Data Sciences
- Education and Literacy
- Energy and Environment
- Health, Health Care, and Aging
- Homeland Security and Public Safety
- Infrastructure and Transportation
- International Affairs
- Law and Business
- National Security and Terrorism
- Science and Technology
- Workers and the Workplace

On the following pages, we share research highlights from 2020. These projects demonstrate an approach to problem-solving that is founded on rigor and dedicated to advancing the public good.
AN EFFECTIVE APPROACH TO LEARNING FOR CHILDREN AND PARENTS

For nearly 60 years, a learning center in Pasadena, California, has worked to uplift some of the most disadvantaged families in its community, parents and children alike. Its story adds to a growing body of evidence that programs like these can make a real and lasting difference, researchers found.

The Families Forward Learning Center provides free care and education to infants, toddlers, and preschoolers who are mostly living below the poverty line and learning English as a second language. It also provides parenting and English classes to their mothers, among other supports.

The center asked RAND to assess its impact. In interviews, most of the mothers said their English had improved; so had their self-confidence and their ability to advocate for their children in school. Almost all said they were now more involved in their children’s education, helping them with homework and reading to them.

The researchers also found that children who went through the program before kindergarten outperformed their peers on standardized tests in the third grade. The differences in their scores were “large and meaningful,” the researchers wrote—enough to make up some of the persistent gap in test scores between white and Latinx students.

It’s possible that parents who enrolled in the program would have been more engaged in their children’s education anyway. But the findings are in line with other studies that have shown promising results from such two-generation programs. Done well, parents and children both seem to benefit when learning becomes a family affair.

Learn more at www.rand.org/t/RRA358-1

In addition to the potential to improve children’s learning, we found that mothers benefited from English and parenting lessons, social and emotional supports, and increased engagement in their children’s education.

JILL S. CANNON
senior policy researcher
INTEGRATING CAREGIVERS INTO THE HEALTH CARE TEAM

Tens of millions of Americans rely on family or friends to take care of them, to help them eat or bathe, to make sure they’re keeping up with their medicines. Yet health care providers too often overlook those caregivers as the front-line partners they could be.

Fixing that could improve the quality of life of people living with chronic diseases or disabilities, and their caregivers. RAND researchers interviewed health care providers, insurance representatives, and caregiver advocates to find out what it would take to give caregivers a greater voice in patient care.

They found that hospitals and other health providers often fail to identify family caregivers as members of the health care team. Doctors don’t always have the time, or the insurance billing coverage, to engage with caregivers. And caregivers can find themselves overwhelmed with information, trying to make sense of what one interviewee described as “health speak.”

Health care providers should consider adding a field to patient records to identify any potential caregivers, to make that a standard part of patient intake. They should also invest in support programs for caregivers and expand access to care coordinators. Insurance companies are already moving toward payment models that value quality of care over quantity of procedures. That alone could encourage better integration of caregivers into formal health care teams.

Family caregivers are often better placed than any doctor or nurse to monitor the health needs of a loved one, moment by moment. The analysis, funded by Seniorlink and a gift from a member of the RAND Health Advisory Board, noted that their role will only become more important as the American population ages.

Learn more at www.rand.org/t/RRA105-1

Family caregivers too often are treated as secondary members of the care team, with little direct access to formal health care providers. We hope our research helps start a conversation about ways to better integrate them into the health care team.

ESTHER M. FRIEDMAN
behavioral and social scientist
DIVERTING PEOPLE WITH MENTAL HEALTH NEEDS FROM JAIL

The Los Angeles County jail system doubles as the largest psychiatric hospital in the United States. On any given day, more than a third of the people there are in mental health housing units or taking psychotropic drugs—nearly 5,000 people in all.

Los Angeles, like hundreds of communities nationwide, has pledged to do more to keep people with serious mental illnesses from cycling in and out of jail. As a first step in its “care first, jail last” strategy, the county’s Office of Diversion and Reentry asked researchers to determine how many inmates could be diverted into supportive housing or community treatment programs.

Researchers analyzed the criminal and clinical records of hundreds of jail inmates. They ruled out any who were facing serious felony charges or had serious crimes on their records. Then they looked for evidence of serious mental illness: a diagnosis, a prescription for psychotropic medication, or behaviors or symptoms that would point toward mental health problems.

They concluded that at least 61 percent of the people in the jail’s mental health population at the time would be appropriate candidates for diversion. Put another way: More than 3,000 people in the jail could be better served elsewhere.

That’s an “ideal world” scenario, the researchers noted—one in which the county has the treatment capacity to meet their mental health needs outside of the jail. It doesn’t, and so the research findings give county leaders a goalpost as they scale up community treatment programs. Just three courtrooms currently handle hundreds of diversion hearings, for example; the county needs more than that if it wants to divert thousands.

The Los Angeles Board of Supervisors cited the project when it voted to close one of the oldest and most dilapidated jails in the system. The money spent on keeping up the Men’s Central Jail, they concluded, would be better spent building up community care options and moving toward that goalpost.
CYBER AND DATA SCIENCES
COMMUNICATIONS IN THE QUANTUM COMPUTING AGE

Future computers may be able to crack the encryption codes that protect private communications on the internet, from personal emails to business transactions. The United States has the time and the technology to meet the threat, RAND researchers found, but it must act now. Some organizations are already incurring risk.

The computers in question are known as quantum computers. To understand what’s different about them, imagine that computers today process information in a sequential, black-and-white way. In that analogy, quantum computers can think in black, white, and every shade of gray in between, simultaneously. That will allow them to solve problems in seconds that a conventional computer would need years to work through.

For example: the mathematical key codes that encrypt information on the internet. Experts polled by the researchers thought quantum computers could threaten that encryption by the mid-2030s. That would render existing encryption codes obsolete, making anything encrypted today, from online banking information to national security secrets, retroactively vulnerable in the future.

New, more-secure forms of encryption are under development. The federal government can advance that work by establishing encryption standards and encouraging businesses to adopt them as soon as possible, the researchers wrote.

The government also should raise awareness of the risk. As part of this project, the researchers surveyed hundreds of online consumers. They found low levels of concern for cybersecurity in general, much less possible cyber vulnerabilities in the future.

Congress appears to be taking the threat seriously. Members on both sides of the aisle have called for a comprehensive assessment of the risk from quantum computing, the progress of new encryption methods, and any funding shortfalls that could hinder that work. The need for such an assessment was one of the report’s key recommendations.

Learn more at www.rand.org/t/RR3102

This is a significant, urgent security issue, and the consequences of failing to act to solve it would be devastating.

MICHAEL J.D. VERMEER
physical scientist

FUNDING FOR THIS RESEARCH WAS PROVIDED BY GIFTS FROM RAND SUPPORTERS AND INCOME FROM OPERATIONS.
USING COMPUTERS TO HELP HOSPITALS LEARN FROM PATIENT COMMENTS

As they work to improve the patient experience, some health care providers have started asking for descriptive reviews of their services using a set of standardized questions. What went well? What do you wish had gone differently? How did you and your provider get along?

The answers can help guide hospitals to better care, from a patient’s perspective—if administrators have the time to organize and read them. To help, researchers trained computers to process patient comments and look for actionable information that could guide hospitals to improve.

That can be a deceptively difficult task. There’s nothing standard about a written comment; it’s a mini-story, told in the patient’s own words—what computer programmers call natural language. Extracting meaning from it requires advanced machine-learning algorithms and, typically, high-performance computers.

Instead, the researchers used ordinary laptops to demonstrate what health care providers might achieve without large investments in computing resources. They were able to train the computers to pull out themes that appeared frequently in the comments, such as doctor–patient communication.

The computers struggled with less-common themes, such as negative statements about a doctor’s emotional rapport. It’s possible that they would perform better with more training data, which would give the computer more exposure to infrequent but important themes like that. Further investments in computational infrastructure—such as cloud computing services or high-performance workstations—might also enable them to use more advanced algorithms.

The computers were not so reliable that they could process patient comments on their own. But the researchers showed that, with sufficiently sophisticated algorithms, they could help health care providers sort and prioritize comments for human review. That could provide a cost-effective way to learn from patient experiences.

The research was conducted as part of the Consumer Assessment of Healthcare Providers and Systems program, a research initiative of the Agency for Healthcare Research and Quality within the U.S. Department of Health and Human Services.

Learn more at www.rand.org/t/RRA628-1

The value of patient narratives is matched by the challenge of organizing, analyzing, and generating actionable insights from them. Even with limited training data, RAND’s models contained useful insights that could help hospitals better understand, and respond to, patient experiences.

OSONDE A. OSOBA
senior information scientist
codirector, RAND Center for Scalable Computing and Analysis
Russian internet trolls worked the far-right and -left margins of American politics in the runup to recent elections. Their words, researchers found, gave them away.

The researchers, with RAND and RAND Europe, trained sophisticated computer algorithms to recognize the linguistic tics of known Russian troll accounts. Then they fed nearly 2 million new tweets into the computers. They were able to pick out the trolls, and the online communities they were targeting, nearly 75 percent of the time.

The trolls tried to incite left-wing audiences with “outrage stories” of police brutality or social injustice, and appeals to immediate action with words like “right now” or “this moment.” They leaned on liberals’ concerns about fascism and racism.

On the right, the trolls pushed a narrative of perceived threats, with references to terrorism or destruction, and warnings about “the way we live.” They depicted a United States under attack from outsiders, especially illegal immigrants and Islamic terrorists.

In short, the trolls imitated the most divisive and confrontational elements of the far-left and far-right wings of American politics. RAND’s project, sponsored by the UK Ministry of Defence and based on tweets from the 2016 election, shows that it’s possible to detect them in real time by using computers to search for word patterns. The researchers plan to use the same methods to hunt for trolls in the online discourse over Brexit.

Their approach could be used in the future to spotlight attempts at misinformation or manipulation as they come across the screen. It also could alert online communities to be careful and move slowly when there are trolls in their midst.

Learn more at www.rand.org/t/RRA519-1

Social media is being weaponized throughout the world. Our method can help make that visible to members of targeted publics.

WILLIAM MARCELLINO
senior behavioral scientist
Other surveys have found that as many as half of American adults struggled to discern what was real from what was rumor during the pandemic. Against that backdrop, the survey results point to an opportunity for schools to better prepare today’s students to become the informed electorate of tomorrow. They should provide clear guidance about the importance of media literacy, and the expectation that students will graduate knowing not to accept every purported “fact” as truth.

Learn more at www.rand.org/t/RRA112-2

Nearly 90 percent of the secondary school teachers in a RAND survey described the media habits of their students as unhealthy. Almost all said students routinely make false claims in class based on bad information from unreliable sources.

Taken together, those findings suggest schools could do more to prepare their students for the cacophonous media environment we live in. Being able to detect bias and separate fact from fiction are not just important life skills. They’re also a necessary response to what RAND has called “truth decay”—the diminishing role of facts and analysis in American public life.

Researchers asked hundreds of social studies teachers for their front-line observations of how students use media and how schools can help them become better media consumers. More than 80 percent of the middle and high school teachers said they emphasize media literacy skills in their teaching. So did more than 60 percent of the elementary school teachers, who typically teach across all subjects.

Most of the teachers said learning to critically evaluate information for credibility and bias is a crucial citizenship skill. But it’s one that students struggle with, especially when that information is online. Around three-quarters of the secondary school teachers, and about a third of the elementary school teachers, said students’ limited ability to evaluate online information was a moderate or major problem in their classrooms.

IMPROVING STUDENTS’ MEDIA LITERACY SKILLS

We’re entering this pivotal moment where heightened use of media is happening at the same time there’s growing distrust of government and other institutions. So there’s a growing need for schools to focus on media literacy and civic development.

JULIA H. KAUFMAN
senior policy researcher

FUNDING FOR THIS RESEARCH WAS PROVIDED BY GIFTS FROM RAND SUPPORTERS AND INCOME FROM OPERATIONS.
LESSONS FROM PROGRAMS IMPLEMENTING SOCIAL AND EMOTIONAL LEARNING

Between the reading, writing, and arithmetic, schools have started making a point of teaching students to understand and manage their emotions, to pursue positive goals, to play well with others. It’s called social and emotional learning, and RAND researchers are studying what happens when communities make it a priority inside and outside of school.

Their research is part of a six-year project funded by The Wallace Foundation. Its purpose is to link schools with after-school activities, so they can work together to improve students’ social and emotional development. Researchers interviewed hundreds of school and program leaders and instructors, and surveyed thousands more, to see how such a coordinated approach can work.

They found that the six communities funded by the foundation jumped into the project with ambitious plans for new activities and new partnerships. But they often ran into time constraints and confusion over program goals. Only one of the communities fully accomplished all that it wanted to in the first year.

With feedback from the researchers, they adjusted in subsequent years in ways that could smooth the path for other communities. They defined what “social and emotional learning” would mean for them, how they would incorporate it into school and out-of-school activities, and what success would look like. They hired managers to oversee the program, provided better training for teachers, and did more to communicate expectations and provide guidance.

The project provides the most comprehensive look to date at how communities can make social and emotional learning a part of the school day and beyond. Researchers are continuing to follow the six communities to see whether, and how, students benefit.

Learn more at www.rand.org/t/RRA379-1

Social and emotional learning has become ubiquitous in schools and out-of-school time programs across the United States in recent years. Our report provides some much-needed details and lessons about what it takes to implement it effectively.

HEATHER L. SCHWARTZ
senior policy researcher
director, Pre-K to 12
Educational Systems Program
EDUCATION AND LITERACY
Puerto Rico’s water sector was already underfunded and overburdened when back-to-back hurricanes, Irma and Maria, hit the island in 2017. Millions of residents lost drinking water; sewage treatment plants were forced offline; and a major dam threatened to give out.

The Federal Emergency Management Agency (FEMA), a component of the U.S. Department of Homeland Security, asked researchers to assess the damage and recommend a path toward recovery. Working with local and federal officials, they identified nearly $34 billion in projects to repair—and reshape—Puerto Rico’s water sector.

Those include an overhaul of the pipes and plants that deliver the island’s drinking water; improvements to its wastewater treatment plants; and urgent repairs to its dams and levees. The slate of projects would address Puerto Rico’s immediate needs but also make its water sector safer, more reliable, and more resilient for the long term. Researchers described it as transformational.

The government of Puerto Rico agreed, and adopted the full project list as its plan for the recovery. To cover the costs, researchers identified potential funding sources for each of the 30 projects and courses of action on the list. Most would come from FEMA or other federal agencies, hazard-mitigation grants, and insurance payments for hurricane damage.
POWER PLANTS IN THE AGE OF CLIMATE CHANGE

American power plants need to prepare for the extreme conditions they will encounter with a changing climate. Otherwise, researchers found, they could struggle to maintain production by mid-century.

The researchers modeled thousands of future climate scenarios to see how power plants would perform under different conditions. Their project, a collaborative effort with researchers at three universities and RAND, was funded by the National Science Foundation and the National Oceanic and Atmospheric Administration in the United States.

Power plants use coal or natural gas to heat water into steam, which then pushes the turbines that generate electricity. Some plants only use the water once. Others cool the water down to reuse it, often by circulating it through open air cooling towers; or, less often, by running it under huge fans.

Climate change could slow that process by raising the air temperature and humidity, researchers found. That would reduce how much energy a plant can generate, likely on the same hot days when demand would be high. Plants that use cooling towers will be especially vulnerable east of the Rocky Mountains, where humidity will be highest. Plants that use cooling fans will struggle more in parts of the dry-heat Southwest, where temperatures will be higher.

But the researchers found that well-designed plants with effective cooling systems should be able to weather shifts in climate, at least for the next few decades. Their findings underscore the critical importance of considering climate change as older plants reach the ends of their useful lives and need to be replaced. Engineers need to allow for a much wider range of operating conditions, and a new definition of what peak temperatures could mean.

Learn more at www.rand.org/t/EP68308

Climate change is unlikely to threaten the generating capacity or efficiency of power plants in most locations, so long as their cooling systems are designed adequately. That really is going to drive the degree of climate change impact that we see in the power supply.

KELLY KLIMA
engineer
HEALTH, HEALTH CARE, AND AGING
HELP FOR HOSPITAL AND CRITICAL CARE SYSTEMS DURING THE PANDEMIC

As COVID-19 exploded into a global pandemic, RAND researchers raced to develop a tool to help hospitals prepare for the worst, and to stretch their space, staff, and supplies when it came. They gave themselves 21 days to get it done.

Working with the American College of Emergency Physicians, the researchers surveyed hundreds of front-line clinicians about the challenges they were facing: shortages of testing kits, protective masks, isolation rooms. Then the researchers convened two conference-call roundtables with emergency doctors and preparedness experts to strategize how to create more critical care capacity in the nation’s hospitals.

The tool they created looks like a spreadsheet. Hospitals, health systems, and even entire regions can input their own numbers—beds, doctors, ventilators, nurses—to see how many patients they can treat. From there, they can model increasingly drastic changes they could make to accommodate more patients if they get hit with a surge.

They could, for example, convert operating rooms to intensive-care suites, or call in anesthesiologists to help with critical care. As the assumptions change, the tool identifies any bottlenecks that form downstream. If they bring in more doctors and nurses, for example, but don’t have enough ventilators, then that becomes the limiting factor that determines how many patients they can accept.

The tool went live on the 21st day. It was the first piece of research RAND published in response to the pandemic; it came out in early April 2020, before some states had even issued stay-at-home orders. The tool, with an accompanying report, was downloaded from RAND’s website thousands of times in the first few weeks. The American Hospital Association recommended it as a resource for its members as COVID case counts soared.

You need three things to predict a hospital’s critical care capacity: space, staff, and stuff. It’s not enough to have just one or two; you need all three for every patient you’re going to take care of. I knew from my own experience that, at the epicenter of a surge, that would be one of the biggest challenges, and one area where we could help.

MAHSHID ABIR
senior physician policy researcher

Learn more at www.rand.org/t/RRA164-1

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MAINTAINING CLINICAL PROFICIENCY OF ARMY MEDICAL PERSONNEL DURING PEACETIME

U.S. Army doctors and nurses serve two distinct missions. At home, they provide day-to-day medical care for soldiers, their families, and retirees. In theater, they might race to save lives from combat injuries more grievous than anything they would see at a domestic trauma center, let alone at the hospital or clinic at their home base.

The Army asked RAND Arroyo Center to examine how it can better maintain the combat readiness of its medical personnel, especially as the United States draws down its forces in Iraq and Afghanistan. Researchers interviewed dozens of Army doctors, surgeons, physician assistants, and nurse practitioners, many of whom reported gaps in their readiness.

Few Army doctors get the practice and experience they need to keep up their trauma skills, with only one Army hospital in the United States designated as a Level I trauma center. Many practice specialty care in garrison, and are not accustomed to providing the general sick-call care they would need to provide to soldiers in the field.

The Army provides training sessions for medical providers who are about to deploy, but RAND found that most surgeons and other physicians deploy without taking them. Because deployments can happen with little notice, the Army should consider expanding that training and making it routine, not just something doctors do right before they deploy.

It also should increase ways to get its providers more hands-on experience at domestic trauma centers, such as through training partnerships. The researchers also recommended that the Army build a system to better track the training and experience of its medical providers, a step toward readiness that the Army has since taken.

Learn more at www.rand.org/t/RR2543

As operating tempo decreases and time goes on, experienced providers will leave the service and be replaced with newer providers without wartime experience. The Army needs to ensure they are ready to care for the most critically injured trauma patients on day one of their deployments.

EDWARD W. CHAN
senior operations researcher
ADAPTING TO LIFE-LIMITING ILLNESS

As they near the end of life, people with terminal illnesses must navigate the loss of their physical health and ability, but also the loss of who they were and the roles they played when they were healthy.

Their loved ones also have to absorb those losses, but existing clinical models have not looked deeply at how those relationships evolve and endure. That’s an important gap to fill, because clinicians might be missing opportunities to help patients and their loved ones face those progressive losses together.

Researchers from RAND and several medical schools started looking at how end-of-life patients and their spouses, caregivers, or other life partners adapt to loss as a team. They had already developed a model to help individual patients move through stages of adjustment; now they expanded its focus from “I” to “we.”

Their new model starts with comprehension, a shared understanding of what is to come, how it will impact each person differently, and how it will redefine the relationship. Next comes creative adaptation, as roles change and both members of the relationship learn to live with the new realities. Finally, reintegration, as they incorporate those changes into their daily lives and reimagine what the relationship can be in the time they have left.

The steps are well marked, so clinicians can identify where each person is on the journey. That also gives them entry points to intervene. They can help one or both move toward acceptance of end-of-life losses, both physical and emotional, and a healthy adjustment to what is still possible. They can, in the end, help both members of the team find new meaning in their closest relationship.

Each person adjusts to end-of-life losses both individually and in context of his or her closest relationships. Our model shows how people can adjust and move forward by incorporating such losses into their newly adapted relationships.

SANGEETA C. AHLUWALIA
senior policy researcher

Learn more at www.rand.org/t/EP68209
HOMELAND SECURITY AND PUBLIC SAFETY
THE CYBER THREAT FROM DRONES

Drones are fast becoming a critical cybersecurity risk—as potential targets of attack, or potential tools. RAND researchers studying the threat for the U.S. Department of Homeland Security (DHS) warned that cyber defenses are not ready for hacker drones.

In one experiment, for example, scientists flew a drone close enough to the smart light bulbs in an Israeli office building to tap into their network. The drone was able to take control and make the lights blink SOS in Morse code.

A more powerful drone could fly over a city block, scan it for vulnerable Wi-Fi networks, and use them to launch an untraceable cyberattack across many systems and networks. As drones become cheaper, more available, and more autonomous, an attack like that would be hard to detect, much less deflect.

That’s one side of the threat. The other is drone as target. Security consultants have shown that they can take remote control of even professional-grade drones, such as those used by law enforcement. And DHS has limited options for stopping a rogue drone. American law treats drones as equivalent to manned aircraft in some cases, so they cannot always be intercepted or overridden.

The dual nature of the drone risk has not gotten enough attention, the researchers concluded. DHS should establish security standards and engage with drone manufacturers to make sure they are mitigating any vulnerabilities in their systems. At the same time, it should ensure its own networks are secure enough to fend off any drone-initiated cyberattack.

It should also consider putting its own drones into the air around sensitive locations, the researchers wrote. Those “guard dog” drones could chase away drones acting under malicious control—or drones attempting to assert malicious control themselves.

Learn more at www.rand.org/t/RR2972

Cyberattacks on drones could undermine critical law enforcement or data collection missions. But, in the hands of adversaries, drones themselves could serve as cyber weapons to deliver malicious content or even physical attacks.

KATHARINA LEY BEST
operations researcher

FUNDING FOR THIS PROJECT WAS MADE POSSIBLE BY INCOME FROM THE OPERATION OF THE RAND HOMELAND SECURITY RESEARCH DIVISION.
American police need better policies and partnerships to address a problem that has become theirs by default: homelessness. Many departments don’t even have a working definition of what homelessness means, much less data on what works to get people off the streets.

Researchers from RAND and the Police Executive Research Forum convened a workshop to explore how police could better protect and serve people experiencing homelessness. Their work was part of a multiyear collaboration sponsored by the National Institute of Justice (NIJ)—the research, development, and evaluation agency of the U.S. Department of Justice—to identify technical and policy options to improve criminal justice.

The officers and experts at the workshop noted that police have become first-call responders to the nation’s homeless problem. Yet they are not well-equipped to address the underlying needs of people experiencing homelessness, beyond giving them a ride to a clinic or to jail.

Workshop participants identified 40 strategies that would make the police response more effective. Among the top-ranked ideas: Develop best practices for clearing encampments; explore ways to fund social-service partnerships; and identify any gaps in the local behavioral health system. Police also need a consistent definition of homelessness as a first step toward gathering better data and staying ahead of any trends.

The NIJ, acting on those findings, plans to fund a two-year, $1.5 million assessment of existing law enforcement and community programs to respond to homelessness.

Police can’t do it alone. They need to collaborate with other government agencies, social service providers, and community leaders to keep people experiencing homelessness from cycling in and out of the criminal justice system. To be effective, they also need to work more closely with advocates and people who know what homelessness is from their own lived experience.

Learn more at www.rand.org/t/RRA108-6
INFRASTRUCTURE AND TRANSPORTATION
A NEW TOOL TO ANALYZE AIR TRAVEL INVOLVING PASSENGERS INFECTED WITH COVID-19

As the coronavirus began its worldwide sprint to pandemic status, the numbers coming out of China seemed manageably low. On a single day in mid-January 2020, for example, the Chinese government reported a total caseload of just over 500 infections.

Air travel data and some basic arithmetic suggest it was off by around 3,700 percent.

RAND researchers paired coronavirus case numbers with detailed travel information to track the spread of coronavirus infections around the world. Their model uses the rate of confirmed infections in a country to estimate how many international travelers from that country may have carried the coronavirus with them. The project was sponsored by the Office of the Secretary of Defense and the U.S. Air Force.

In the early days of the pandemic, for example, China’s official numbers suggested a daily average of around one active case for every 8.2 million residents. Far fewer than 8.2 million Chinese people flew to Japan, Thailand, South Korea, the United States, and Taiwan during that time period, so the number of cases exported from China should have been less than one. Yet every one of those countries traced new infections to Chinese travelers.

The odds of that happening if the infection rate in China were really so low is around one in 1.3 million. To even those odds, researchers calculated that China must have had around 18,700 infected people by January 22, some of them still flying. The total number it reported that day: 503.

RAND’s COVID-19 Air Traffic Visualization tool also showed that outbreaks in the Persian Gulf likely started with travelers from outside of the region—not with Iran, as had been thought. Separately, it showed that countries with low infection numbers, such as South Korea, could still pose a significant risk if they had high numbers of international travelers.

As the United States and the world manage their reopenings, insights like that can help policymakers weigh the risks—and take steps to prevent another surge of infections from taking flight.

Learn more at www.rand.org/t/RRA248-1

Given air travel data and reported infection rates, our tool can be used to estimate future patterns of COVID-19 transmission. Policymakers, analysts, and others can estimate the impact of travel-related policy interventions, such as restricting air travel from various countries.

Russell Hanson
research software engineer
The two approaches are not an either/or decision. The military should pursue a mix of both to protect one of its most important outside-the-fence resources. As it becomes more automated and complex itself, ensuring ready access to electric power will only become more critical to its mission.

Learn more at www.rand.org/t/RR3187

As it becomes more automated and complex, the U.S. power grid also becomes more vulnerable to cyberattack. That presents a significant risk to one of its major customers, the U.S. military.

Most of the electricity used on domestic bases comes from the same commercial supply that powers everyone else. RAND developed a framework to help the military consider ways to deter an attack, even though it neither owns nor operates the power system it relies on.

The military’s first option is to strengthen the grid against a potential attack. That could mean investing in backup generators or pushing for tougher regulations—anything that reduces the odds that an attack will succeed. Those investments would also improve the grid’s reliability in the face of such non-cyber threats as climate change and aging infrastructure.

Its second option is to make clear that any attack on the grid will not go unpunished. International law and existing cyber norms are not clear on how a nation can retaliate for a cyberattack. Clearing up that uncertainty and establishing clear guidance on when and how the United States would respond to an attack on the grid would provide stronger deterrence. But the ability to identify where an attack came from, and who is responsible, remains a key challenge that the military needs to invest in solving.
VACCINE NATIONALISM

The world economy will continue to lose billions of dollars every month until the lowest-income countries are able to vaccinate their people against COVID-19. By some estimates, that might not be until well into 2022.

Researchers developed an economic model of world trade to explore the potential costs of “vaccine nationalism.” That’s when wealthy nations like the United States or United Kingdom corner the market on vaccines, striking deals directly with vaccine makers, hoarding supplies, and leaving poorer countries out.

But the world economy is so hyperconnected that it will not fully recover until every country is able to bring the virus under control. The researchers looked at what a “my nation first” approach would mean to five sectors that have been hit especially hard by COVID-19 precautions: hospitality, recreation, retail and wholesale, transportation, and health.

The global loss to those sectors alone could exceed $150 billion a year until vaccines reach the world’s poorest countries. Wealthy countries would take a direct economic hit from the continued slowdown in economic demand and from supply-chain disruptions. The United States, for example, would lose between $6 billion and $30 billion a year. The United Kingdom would lose as much as $10 billion a year, and the European Union would lose up to $78 billion.

That makes a strong business case for wealthier nations to help expand the reach of the vaccines. By one estimate, it would cost around $25 billion to procure and deliver vaccines to the poorest countries. At that rate, every dollar invested in the effort would save between $1.90 and $12.60 for the world economy.

Learn more at www.rand.org/t/RRA769-1

Timing is an important factor here. As long as poorer countries do not have access to the vaccines, the potential economic costs to the world economy—and to wealthier countries individually—will continue to rise.

MARCO HAFNER
senior economist

FUNDING FOR THIS PROJECT WAS MADE POSSIBLE BY THE INDEPENDENT RESEARCH AND DEVELOPMENT PROVISIONS OF RAND’S CONTRACTS FOR THE OPERATION OF ITS U.S. DEPARTMENT OF DEFENSE FEDERALLY FUNDED RESEARCH AND DEVELOPMENT CENTERS.
U.S.–CHINA COMPETITION FOR INFLUENCE IN THE INDO-PACIFIC

Six countries in southeast Asia could help tilt the balance of power between the United States and China. RAND researchers developed a framework for the U.S. Air Force to better assess how those countries view the United States, China, and the competition between them.

Its key measure is influence—diplomatic, military, and economic. The researchers interviewed scores of government officials and experts to see which side is winning the struggle for hearts and minds in each of the six countries: Indonesia, Malaysia, the Philippines, Singapore, Thailand, and Vietnam.

They found that those countries generally consider the United States to be the dominant military power in the region, and most prefer its vision of a free and open Indo-Pacific. All but Thailand view China as a military threat—but all of them also see more economic opportunity from China. And China, for one, believes economic influence is the “center of gravity” in its competition with the United States.

The framework shows that the United States has more overall influence than China in Singapore and the Philippines. It has less in Malaysia and Vietnam. It has more to gain in Indonesia, and more to lose in Thailand.

The Air Force should consider increasing its engagement and security cooperation with countries in the region, especially those leaning toward China. It also should work more closely with Japan, Australia, and India, three regional powers that the study found all align strongly with the United States. But it also should avoid any actions that could be seen as forcing the six countries into its corner. Caught in the middle of a great-power competition, none of them is eager to pick sides.

Learn more at www.rand.org/t/RR4412

The United States has more shared interests with countries in the region, but China has more capability and willingness to incentivize or punish countries to align with its interests.

Bonny Lin
political scientist
A possible portfolio could balance the dismantling of Yongbyon with an agreement from the United States and South Korea to scale back military exercises. It could also include some infrastructure aid and sanctions relief as further inducements to North Korea, as well as the opening of informal communications channels and cultural exchanges. The format, trading specific action for specific action, with verification at every step, would help build trust along the way.

The process would involve other countries from the start, especially China and South Korea, to build up the international support that previous efforts have lacked. It also would involve internal stakeholders who could make or break any deal, such as U.S. congressional leaders or North Korean elites.

There are few, if any, win–win solutions in international diplomacy. But it should be possible to craft win–win portfolios, even between the United States and North Korea. After 20 years of stalemate, that might be enough to get negotiations moving again.

Learn more at www.rand.org/t/RRA432-1
SHOCKS IN THE U.S. ECONOMY

The world financial crisis of 2008 provided a multitrillion-dollar lesson in what happens when banks that are too big to fail, fail. Few policymakers stopped to ask whether companies in other sectors might pose the same kind of systemic risk to the economy.

RAND researchers thought they might. They developed a computer program to search hundreds of thousands of corporate filings and map the connections between firms in a way no one ever had. When they were finished, they had a model of the economy that looked like a cloud of interconnected dots on a page, with a very dense center.

Most of the companies had only a handful of critical connections. But those at the center of the cloud had hundreds. A shock to one of those companies would ripple outward to its customers and suppliers, and then to their customers and suppliers, spreading through the economy like a contagion.

To test that, the researchers simulated a 1-percent shock to each of the top 1,000 companies by revenue, roughly equivalent to the disruption a major storm might cause. They found that a 1-percent hit to Amazon would cost the U.S. economy $77 billion as it spread. A similar disruption at Comcast would cause $65 billion in total losses. If anything, those companies have only grown larger and more central to the economy during the pandemic.

Banks and other financial institutions did appear at the center of the dot cloud. But so did tech and telecommunication companies, retailers, and insurance carriers. A shock to internet service providers would have an especially disproportionate impact as major companies lost their websites.

The results suggest the old definition of what counts as too big to fail isn’t broad enough anymore. Economists and policymakers need to start looking at companies that are not just too big, but too connected.

FUNDING FOR THIS RESEARCH WAS PROVIDED BY GIFTS FROM RAND SUPPORTERS AND INCOME FROM OPERATIONS.
OPIOID LITIGATION AND PUBLIC HEALTH

Opioid suppliers, like tobacco companies and the makers of lead paint before them, face a courtroom reckoning for the devastating consequences of the products they sold. Their liability could run into the tens of billions of dollars.

The courts are often considered an imperfect last resort when policy and regulation have failed. Opioid litigation shows the courts can help achieve three important objectives for public health, even before the gavel falls: compensation, deterrence, and accountability.

Thousands of local, state, and tribal governments have filed suit, seeking at least some restitution for the damage opioids did to their communities. Their lawsuits have brought to light evidence of corporate malfeasance and a massive failure of regulation. The litigation has influenced several companies to shift from mass marketing opioids to developing new products that cannot be abused so easily.

Most of the companies have not admitted responsibility for the opioid crisis. But the courtroom headlines alone have helped hold them accountable in public opinion. The litigation also has prompted increased government scrutiny and regulation, which can deter harmful company practices going forward.

A global settlement of the opioid lawsuits should build on the lessons learned in courtroom battles over tobacco, lead paint, and asbestos. It could require companies to invest in developing new, less-addictive therapies, and to earmark money for addiction treatment and overdose-reversing drugs. It also should require a clear admission of fault from the opioid companies if they broke the law, and transparent reporting of court records and settlement terms.

No settlement or judgment can address the full scope of loss caused by the opioid epidemic. But, if wielded effectively, the litigation can supply the funds and corporate reforms needed to help abate it.

This analysis was supported by the National Center for Advancing Translational Sciences of the National Institutes of Health and the Centers for Disease Control and Prevention, both part of the U.S. Public Health Service.

Prominent litigation campaigns related to tobacco use, food consumption, lead paint and asbestos exposure, and firearms have met with mixed success. Opioid litigation represents the latest surge in public health litigation. It does hold the potential to help ameliorate some, though certainly not all, opioid-related harms.
NATIONAL SECURITY AND TERRORISM
MILITARY APPLICATIONS AND IMPLICATIONS OF BRAIN–COMPUTER INTERFACES

The U.S. military has started to put real research funding into the idea that future fighters may be able to engage machines with their minds. It may sound less like science than fiction, but researchers found the technological challenges might not be the biggest obstacles to making it happen.

Scientists have already developed electrodes that can read brain signals and translate them into commands for a drone in flight. Amputees have used brain–computer interfaces to control a mouse point with their minds.

In the future, that kind of technology could enable soldiers to communicate directly with surveillance drones or to control battlefield robots without using their hands. Computer implants could allow them to take in more information than their five senses provide, or to communicate with their team members without saying a word.

To test what that might look like, RAND researchers invited experts—including neuroscientists and combat veterans—to play a tabletop wargame. The players were given a scenario—clearing a building, surviving an ambush—and asked to think through what human–computer capabilities they would want on the ground.

Their technological wish lists included computer-enhanced information processing, improved physical performance, and direct mind control of drones and other machines. But all of those came with some big asterisks.

Players questioned whether brain signals could be jammed or intercepted in the blur of war. They worried that decisions made at computer speed could outrun moral and ethical considerations. And they doubted that future enlistees would consent to link their brains to computers unless the technology had been tried, tested, and adopted in the civilian world first.

Those concerns should guide the development of brain–computer technologies going forward. The risks are significant, but they have not received enough attention. The military and other funders should make sure the need is driving the demand for such technology, and not the other way around.

FUNDING FOR THIS RESEARCH WAS PROVIDED BY GIFTS FROM RAND SUPPORTERS, INCOME FROM OPERATIONS, AND THE GENEROUS CONTRIBUTIONS OF THE RAND CENTER FOR GLOBAL RISK AND SECURITY ADVISORY BOARD.
A SOCIAL MEDIA CAMPAIGN TO COUNTER VIOLENT EXTREMISM

Extremist groups have become expert at using social media to spread their messages of hate and violence. RAND researchers tracked hundreds of young Facebook users in Indonesia to better understand how anti-extremism campaigns are fighting back online.

Similar campaigns on the radio in Africa have succeeded in turning people away from violent extremism. But no major studies had rigorously tested whether online messages could have the same impact on attitudes and behaviors.

The Global Engagement Center at the U.S. Department of State asked researchers to assess an online campaign it was funding in Indonesia. The campaign’s purpose was to appeal to the silent majority of young Indonesians who oppose intolerance and bigotry. It sought to amplify their voices with two hashtags: #AkuTamanmu (“I am your friend”) and #CapekLakSih (“Aren’t you tired” of online hate and division).

Researchers recruited more than 1,500 young people on Facebook to participate. They assigned half to view campaign images and videos in an online survey. The other half, the control group, saw ordinary retail or entertainment ads and public-service announcements.

Those who saw the hashtag posts were able to identify the intended messages of diversity and peace. They also rated the content highly. But the researchers found no clear changes in their attitudes, except for a troubling shift in favor of segregated communities. They did find a small but significant improvement in attitudes against violence among more rural users, those outside Java.

It’s possible the online messages put people on the defensive by raising uncomfortable issues and forcing them to question their beliefs. It will be important to guard against that “boomerang effect,” the researchers wrote, as groups take the fight against violent extremism online.

Learn more at www.rand.org/t/RRA233-1

ELIZABETH BODINE-BARON
senior information scientist

It is critical to develop strategies and efforts to reduce the lure of extremism, in Indonesia and elsewhere. Among other threats, there are concerns that the Islamic State will seek to increase operations in Southeast Asia to compensate for its losses in the Middle East.
A new generation of personal technology is increasingly connecting human health—and even, in some cases, human bodies—to the internet. There are dangers here, of course, as RAND researchers found when they explored the emerging “Internet of Bodies.” But they also highlighted the life-changing, life-saving potential of devices that know us inside and out.

Their project included any devices that collect health or biometric information or alter human function in some way. To make the list, a device also needed to transmit information over the internet, on its own or through another device like a cell phone.

That definition encompasses fitness trackers, electronic hospital records, even some employee badges—but also brain implants, artificial pancreases, and smart stents that can monitor themselves for blood clots.

All of those devices tracking our health and behavior will provide a treasure trove of new data about what keeps people healthy and what makes them sick. That will advance our understanding of long-term population health and point the way toward more-effective public health interventions.

But realizing those benefits will require managing the clear risks that such technology presents. Any device can be hacked, for example; and devices that live with us could create new threats to privacy and security. Yet the researchers found only a patchwork of regulations and consumer protections that might govern the Internet of Bodies and avert its potential harms.

Congress should consider establishing some national ground rules for data transparency and privacy, the researchers concluded. Consumers need to be more aware that their devices might be collecting and transmitting personal information. And manufacturers need to build in security from the very start—and figure out how to patch vulnerabilities in a device that might already be in someone’s body.

Learn more at www.rand.org/t/RR3226

These technologies are just going to keep growing in popularity. We need to get ahead of the policy issues and make sure we get the balance between potential risks and benefits right.

MARY LEE
mathematician
RAND Center for Global Risk and Security Fellow

FUNDING FOR THIS PROJECT WAS PROVIDED BY JACQUES DUBOIS, WHOSE GENEROUS GIFT ESTABLISHED THE INAUGURAL RAND CENTER FOR GLOBAL RISK AND SECURITY FELLOWSHIP.
They found that a computer trained on the real images could identify a Humvee with precision of close to 80 percent. One trained on the game images couldn’t identify a real Humvee at all. But a computer trained on both performed the best, with small but statistically meaningful improvements over the real images alone. The results suggest that artificial images could help improve the performance of target recognition computers, especially in situations where real images are limited. Existing systems need tens of thousands of images to learn to recognize a single object, each of them labeled by hand. And that kind of data just isn’t available for many military targets.

The computers in the experiment were still not reliable enough to be used in a real-world setting. But they could provide a virtual second set of eyes, to help human analysts find targets as fleeting as a Humvee in the desert.

Learn more at www.rand.org/t/RRA683-1
FUNDING FOR THIS PROJECT WAS MADE POSSIBLE BY THE INDEPENDENT RESEARCH AND DEVELOPMENT PROVISIONS OF RAND’S CONTRACTS FOR THE OPERATION OF ITS U.S. DEPARTMENT OF DEFENSE FEDERALLY FUNDED RESEARCH AND DEVELOPMENT CENTERS.
WORKERS AND THE WORKPLACE
BARRIERS TO EMPLOYMENT FOR EGYPTIAN WOMEN

Egypt has an opportunity to expand and modernize its economy—not with trade deals or new industries, but with better working conditions for its women. Only around 20 percent of working-age women in Egypt participate in the labor force, researchers found. Those who do face high unemployment rates, harassment, and weak enforcement of labor laws meant to ensure they get fair pay and treatment. As a result, the most populous country in the Arab world is leaving behind a significant part of its potential workforce.

That's despite growing numbers of Egyptian women with college degrees. They tend to study education, health, and public administration, preparing for government jobs where they can expect more protections and better working conditions. But those jobs have become much harder to find, and the private sector has not made up the difference.

Women also are expected to handle child care and most household chores, a “second shift” that adds up to an average of 31 hours of extra work a week. Married women face restrictions on obtaining a passport or traveling outside of the home.

Those limits on women in the workforce are likely to seriously impede Egypt’s progress, the researchers concluded. The country needs to better enforce labor laws, crack down on workplace harassment, and address a persistent wage gap. It should also look for ways to improve its overall business environment, to create more opportunities in the private sector.

The researchers also recommended a series of public service announcements to promote equal opportunity and advocate for women in the workplace. It’s not women who need to hear those messages; it’s the men with whom they’d be working.

Learn more at www.rand.org/t/RR2868

Egypt has invested in expanding access to education; yet Egyptian society is not fully reaping the rewards of those investments. That’s because Egypt has not provided the major beneficiaries of that expanded access the opportunity to fully contribute to the country’s growth and development.

LOUAY CONSTANT
senior policy researcher

FUNDING FOR THIS RESEARCH WAS PROVIDED BY THE GENEROUS CONTRIBUTIONS OF THE RAND CENTER FOR MIDDLE EAST PUBLIC POLICY ADVISORY BOARD.
9 TO 5, AND NIGHTS AND WEEKENDS

Millions of American workers need more than one job to pay the rent and keep the lights on. Yet existing labor statistics provide an incomplete picture of who they are, what they do, and how they get by.

Researchers used an expanded definition of multiple-job workers to take a closer look. They included regular wage earners, but also people who own a side business, take a temporary contract job, moonlight, or work an occasional gig. To focus on the most vulnerable households, they narrowed their scope to working adults without a college degree.

They found that nearly 4 percent of those adults consistently work a second job, and around 14 percent occasionally do. That’s much higher than existing census estimates, which put the total number at around 5 percent.

Those who consistently worked a second job tended to be older, white, more educated, and better able to pay their bills. Those who strung together occasional side jobs were more likely to say they struggle to afford their rent and utility bills. Around 20 percent said they had been unable to cover their monthly expenses.

The researchers estimated that the poverty rate was 10.4 percent for all households, but 8.6 percent for those with a multiple-job worker. When they excluded those secondary earnings from income totals, they found that many of the multiple-job workers slid below the poverty line.

The results suggest that working a side job is an effective strategy for low-income workers and their families to stay out of poverty. But the analysis did not look at the costs of working more than one job, such as stress, absence from children, and relationship strains. Policymakers should consider child care subsidies, overtime and minimum wage requirements, and unemployment insurance to help those workers on and off the job.

Learn more at www.rand.org/t/EP68282

Understanding who these households are and whether these strategies serve to lift them out of poverty is key to improving practice and policy for economically vulnerable families.

KATHRYN A. EDWARDS economist
THE 2020 COHORT

With 33 members, the 2020 cohort is the largest class of new students in the school’s history, the first to be admitted to the school’s three new academic streams and enter the fully redesigned program. The new streams are Research, Analysis, and Design; Community-Partnered Policy and Action; and Technology Applications and Implications.

Although they arrived in September, they connected earlier through online discussions of the Dean’s Summer Reading List and joined in virtual town halls. The result was an incoming cohort that had more interaction prior to arriving than any prior cohort. In a message to the school, Dean Susan Marquis said of the new cohort, “They applied and were admitted at the very start of 2020, and since then have been together through the onset of the COVID-19 pandemic, nationwide protests calling for social justice and racial equity, record-setting hurricanes and fires, and one of the most contentious presidential elections in U.S. history. The 2020 cohort is one for the ages.”

The school worked with RAND leadership to develop safety protocols for in-person classes and support its operations during the pandemic.

We are fortunate that the home to our program is in RAND’s headquarters building, which in addition to being beautiful has a significant amount of outdoor space with very few people on-site because of the pandemic. And we’ve been able to draw on the scientific expertise within RAND to ensure safe practices in compliance with guidance and directives from local and state governments.

SUSAN MARQUIS
Frank and Marcia Carlucci Dean, Pardee RAND Graduate School
Vice President, Innovation, RAND Corporation
They previously worked with, among others, the Florida Department of Health, NASA, the U.S. Army Veterinary Corps, the Robert Wood Johnson Foundation, and the United Nations Development Programme. Their colleges and universities include Brown University, Caltech, Emory University, Florida A&M University, Macalester College, the University of Houston, and Vellore Institute of Technology.
The Research, Analysis, and Design stream is for students who are curious about why policies succeed and fail, and they constantly look for new ways to understand the world around them. They are driven to improve policy design through systematic evaluations of policy instruments and carefully designed experiments, and they want to become sophisticated users and developers of analytic tools.

The courses and activities in this stream teach students a diverse set of modeling and analytic methods, as well as best practices in policy analysis and design. Students will acquire a better understanding of the systemic and dynamic nature of complex policy challenges while conducting cutting-edge research and data analysis.
Community-Partnered Policy and Action

What does it take to make real and sustainable change in local communities? That is the focus of the new Community-Partnered Policy and Action stream, which prepares students to work on policy problems in diverse community settings and with a variety of stakeholders.

Students entering this stream look to turn policymaking on its head by emphasizing community-generated and community-prioritized policies and actions that address local issues of greatest importance to the community. They build on Pardee RAND’s strong foundation in policy analysis, ethics, communication, and social justice and racial equity, developing strong qualitative and quantitative skills. Students then combine these rigorous research methods and their understanding of localized contexts as they partner with communities to design, implement, and evaluate policies. These partnerships arise through work on RAND research projects, but also through newly developed community externships. The extensive field experience they receive enables them to further refine the skills they developed in classrooms.

Technology Applications and Implications

Although technological advancements continue to increase in size, scope, and impact on society, many policy processes and analytic approaches remain rooted in 20th-century models and capabilities.

The Technology Applications and Implications stream redefines next-generation policy analysis and action. It is designed to enable and empower policy students to engage in technology explorations, experimentation, and development applied to public policy problems and solutions.

The Tech stream complements and interacts with the other streams in a variety of ways, such as workshops, residencies, hackathons, research projects, courses, and OJT. It also embraces the cross-cutting themes of ethics, communication, social justice, and racial equity; experimentation in the stream to directly address or include aspects of one or more themes is strongly encouraged.
LEADERSHIP GIFTS

Two multimillion-dollar gifts were made in 2020 as part of RAND’s Tomorrow Demands Today fundraising campaign, a critical priority of which is to catalyze a new era of problem solving through the Pardee RAND Graduate School.

Pardee Commons Housing Community

Thanks to the generosity of Frederick S. Pardee, the school is establishing a new student housing community. Pardee, a former RAND researcher and longtime supporter of the school who currently serves as a member of the Pardee RAND Board of Governors, has gifted two apartment buildings valued at $10 million.

The buildings, which will be called Pardee Commons, are located in the Brentwood neighborhood of Los Angeles, approximately three miles from the graduate school.

“We know that learning does not stop when students leave the classroom. A dedicated shared space to foster connections and provide mutual support, and a safe and supportive environment for students and their families will enable our students to enjoy each other and thrive in our program,” said Dean Marquis.

With this new gift, Pardee has contributed nearly $27 million to the Pardee RAND Graduate School and $5 million to RAND. His long history of support includes a $5 million donation to RAND in 2001 to create the RAND Frederick S. Pardee Center for Longer Range Global Policy and the Future Human Condition. In 2003, he made a $10 million contribution to the graduate school’s endowment, and the school was renamed in his honor. In 2012, he donated $3.6 million to support the school’s endowment and establish the Pardee Initiative for Global Human Progress. In 2018, he built on his earlier gift and pledged $3 million to continue to support the Global Human Progress initiative and the globalization of the redesigned Pardee RAND.

Students who join the Pardee RAND Graduate School community are passionate about confronting the world’s largest and most urgent challenges. My hope is that a student housing option will help relieve the burden of finding and affording housing in Los Angeles so that students and their families can focus on building relationships with each other and making the world a better place.
A Family Legacy

The campaign also received a $10 million gift from the family of former Secretary of Defense Frank C. Carlucci—a combination of current and planned giving—that will endow scholarships, support the dean’s priorities, and provide a title to the role of Pardee RAND dean. Frank Carlucci, who passed away in 2018, served on the RAND Board of Trustees for nearly 25 years.

Frank Carlucci had a long career as a senior-level government official, serving under Presidents Nixon, Ford, Carter, and Reagan. He joined RAND’s Board of Trustees in 1983, stepping down in 1986 after Reagan appointed him national security advisor and, in 1987, secretary of defense. He rejoined the board in 1989 and served almost without break until 2007, when he became trustee emeritus. Carlucci was a founding member of the advisory board of the RAND Center for Middle East Public Policy, which he cochaired with Zbigniew Brzezinski, President Carter’s national security advisor.

This gift will also provide financial aid for students and create an endowed fellowship that will offer dissertation support to students.

In addition to Frank’s longtime service as a RAND trustee, his daughter, Kristin, served as a researcher at RAND and RAND Europe and her husband, Joshua, is a Pardee RAND graduate.

Prior to this gift, Marcia and Frank Carlucci contributed more than $2 million in scholarship support to the school.

RAND has greatly benefited from Frank Carlucci’s vast experience and from the incredible generosity he and his wife, Marcia, have shown our organization over the years as advisors and philanthropists. We are deeply honored that the Carlucci name will be linked to the Pardee RAND deanship and extremely thankful for Marcia’s commitment to support our graduate school and its students for years to come.

MICHAEL D. RICH
President and Chief Executive Officer, RAND Corporation
Advancing Racial Equity Policy

Against the backdrop of a pandemic that was already inflicting disproportionate physical and economic pain on communities of color, and an overdue reckoning with America’s long history of systemic inequity and structural racism,

RAND launched the RAND Center to Advance Racial Equity Policy. With funding from philanthropic contributions, the center will support a growing portfolio of innovative, high-impact racial equity research and analysis at RAND.

“We must examine where inequities intersect across systems and groups, represent voices that are too often left out of leadership on these topics, and integrate the structural contexts in which policies have been developed and applied sometimes with unintended consequences,” said Anita Chandra, vice president and director of RAND Social and Economic Well-Being.

The center will usher in a new phase of research and action that goes deeper into the policies that underlie systemic racism and what it will take to build future systems and policies that advance racial equity. The center’s blueprint was developed with the input of RAND staff, and the center is part of a larger commitment to advance diversity, equity, and inclusion in the organization’s operations and external engagement.
Philanthropic support gave RAND the agility to support effective policy amid the whirlwind of change and challenges that was the year 2020. It funded the creation of a tool to help hospitals brace for a surge of COVID patients and explored the changing nature of telecommuting.

It also allowed researchers to pair health and economic data to help states weigh the trade-offs of different physical-distancing restrictions. The tool they built showed what would happen to coronavirus caseloads and to economic indicators as states tightened or loosened their restrictions.

A series of surveys funded with donor support showed the pandemic’s unequal impact on American families. By May 2020, the surveys showed, nearly a third of all households were having trouble paying their bills. The number was closer to 40 percent for Black households, and 50 percent for Hispanic households.

More than two-thirds of teachers in high-poverty schools said at least some of their students were having trouble getting online for class. And in schools with widespread access problems like that, only 6 percent of teachers said all or nearly all of their students were finishing their assignments.

With intensive-care wards filling with patients, researchers developed a checklist to guide hospitals if they had to allocate scarce but life-saving resources, like ventilators. To avoid decisions like that, researchers also proposed creating a centralized pool of supplies as an emergency backstop. Hospitals in “cool spots” could send their supplies to hospitals in “hot spots,” knowing they could draw from the centralized stockpile if they got hit by an unexpected surge of patients themselves.

Donor support also allowed researchers to investigate the needs of small business owners and the needs of parents. It allowed researchers to create a privacy scorecard to help consumers weigh the pros and cons of COVID-related mobile apps. And, as the 2020 election approached, it allowed them to look at how each state planned to ensure a safe and fair vote.

The work continues. Among the legacies of 2020 at RAND was the creation of a donor-funded Rapid Research Response Fund. It will continue to support quick-turn research at RAND and the Pardee RAND Graduate School—through the recovery, into the next normal, and during future times of great uncertainty, when the need for fact-based analysis is now.
Truth Decay

In a year in which Americans continued to disagree about basic facts and to express deep distrust in civil institutions, researchers advanced their examination and search for solutions to counter what RAND has described as “truth decay”—the diminishing role of facts and analysis in American public life. Countering truth decay is one of the top priorities of the Tomorrow Demands Today fundraising campaign. And in 2020, with unrestricted donor support, RAND explored topics such as fighting disinformation online, civic development in the era of truth decay, and drivers of institutional trust and distrust. RAND also conducted a deep dive into the November elections—exploring voter expectations about election integrity and election safety during a pandemic.

In a suite of studies focused on civic education, researchers collected and analyzed the first nationally representative data on how public schools promote the civic development of their students. Researchers found that most social studies teachers in American public schools do not feel well prepared to support the civic development of their students. Many cited pressure to cover other subjects, like reading or math, as an obstacle. Most described civic development as important, but fewer said it was an “absolutely essential priority.” More than 10 percent of the teachers said the materials they get from their districts are factually inaccurate or culturally inappropriate. And most of the teachers—and especially teachers of color and those in schools with high levels of poverty—said they need more support and better materials.

In an election year like 2020, that was an especially important finding. A growing body of research has linked civics education with real-world civic outcomes, like voting. The election laid bare the consequences of declining trust in American institutions like Congress and the media. Researchers have been tracking that decline in trust to understand its implications for truth decay. An initial project, from before the 2020 campaigns got underway, showed not just a lack of trust in American institutions, but active distrust.

The researchers identified five key drivers of trust in institutions: competence, integrity, performance, accuracy, and informational relevance. The results provided new evidence for how institutions lose the trust of the people they serve—and how they can earn it back as a step toward fighting truth decay.
Complementary and Integrative Health

The RAND Center for Collaborative Research in Complementary and Integrative Health was established through a gift from the National Board of Chiropractic Examiners. A first-of-its-kind effort, the center is intended to bolster research expertise and participation at colleges that train practitioners in complementary and integrative health.

Although research in chiropractic, naturopathic, acupuncture, and other complementary health fields is at an all-time high, in terms of both funding and the number of studies being funded, little of this research is occurring at complementary and integrative health colleges. Many of these colleges have seen their research programs retrench or fail to launch in recent years as researchers and research dollars for this form of health care have migrated to large research universities.

“The center presents an opportunity to close the gap between complementary and integrative health practitioner training and research,” said Patricia Herman, a senior behavioral scientist at RAND who coleads the center with senior health policy researcher Ian Coulter. “Our effort will support these colleges so that they can keep their researchers and get back into the research game.”

The RAND center will give complementary and integrative health institutions the collective scale to compete, involve their future practitioners in research, and help shape the research agenda in complementary and integrative health.
Supporting Veterans and Military Families

A gift from the Epstein Family Foundation is launching the RAND Epstein Family Veterans Policy Research Institute. The institute will be dedicated to generating creative strategies and interventions to address issues facing veterans and military families, including housing, health, and mental health care needs.

The new institute will help build on RAND’s history of research on veterans’ issues. RAND research has helped bring posttraumatic stress disorder and other “invisible wounds of war” out of the shadows. It has helped get military caregivers the support they need. And it has shown how the American health care system too often fails veterans, especially those in suicidal distress.

Analysis of U.S. Grand Strategy

The RAND Center for Analysis of U.S. Grand Strategy developed options for future U.S. grand strategy—the country’s road map for how it uses all instruments of national power to achieve security and promote its vital interests.

America’s current grand strategy—referred to by different groups as liberal internationalism, liberal hegemony, or primacy—is relatively well understood. Yet its central assumptions have not been fully articulated or tested. The center will test the assumptions and arguments of current and proposed grand strategies and consider how they might cope with technological change, shifts in the balance of power, and other global trends.
Housing, Homelessness, and Sustaining a Middle Class

As communities throughout the country grappled with the effects of a global pandemic and economic downturn, a gift from the Lowy family enabled RAND to launch two new research centers: one aimed at tackling housing and homelessness in Los Angeles and the other focused on building new pathways to revive and sustain an American middle class.

The core research agenda of the RAND Center on Housing and Homelessness in Los Angeles will include analysis to better understand the needs of people experiencing homelessness in Los Angeles and the challenges of addressing affordable housing solutions in one of the most expensive housing markets in the nation. Led by RAND researchers Sarah Hunter and Jason Ward, RAND will work to align incentives among stakeholders, including people experiencing homelessness, community members, service providers, housing developers, and policymakers. Researchers will explore broad questions concerning the supply and demand for housing and services, including examining the disproportionate impacts on communities of color and the varied needs of subpopulations such as veterans, as well as zoning and regulation reform options that can speed up housing development.

Researchers will also investigate ways to address the effects of COVID-19 on the housing and homelessness landscape.

The RAND Lowy Family Middle-Class Pathways Center will focus on ways to create and support middle-class employment in the face of rapidly changing labor market conditions. Led by RAND researchers Jeffrey Wenger and Melanie Zaber, RAND experts will examine the forces of technology and automation, outsourcing and trade, and COVID-19’s effects on the middle-class workforce. Researchers will explore impediments to starting and growing a business and will work on removing barriers that limit business success. Researchers will also reimagine and rework current education and skill development systems, with the goals of advancing equity and preparing workers for career pathways that offer more Americans resilience and upward mobility. Through pilot tests, and in collaboration with educators, businesses, and support organizations, RAND will identify what works, and for whom, to create an integrated system of supports that can help workers reach and maintain in the middle class.

The centers will work to outline effective solutions for developing a resilient and upwardly mobile American workforce and combating homelessness in communities throughout the country.
PROFILES IN GIVING

The individuals and organizations that have made RAND a philanthropic priority share our commitment to quality and objectivity. Our supporters have partnered with RAND to help us pursue visionary ideas, develop evidence-based solutions to acute policy challenges, and create positive change throughout the world.

Countering Truth Decay

Joel Mogy has seen “truth decay”—the diminishing role of facts and analysis in public life—spreading through the financial world. An investment counselor and the founder of Joel R. Mogy Investment Counsel, Inc., he sees it as an existential threat to the United States, metastasizing in financial scandals and lurking at the root of geopolitical crises. But it was a challenge from his rabbi, Sharon Brous, that convinced him to take action. Don’t sleep through life and then wake up one day and ask yourself what the heck just happened, she told him. Get out there and do something.

Mogy, a RAND supporter for more than 20 years, established the Joel and Joanne Mogy Truth Decay Fellowship to support research on truth decay, civics, and democracy. “This was a way I could act on my value system,” Mogy said. “I’m making an investment to ensure we fix what we have.”

He selected RAND, he said, because of its independence, integrity, and commitment to this issue. He hopes the fellowship allows a researcher to not just focus on the causes and consequences of truth decay, but to work across fields to identify potential solutions.
I gave this gift to support young people who want to come to RAND and make a difference.

SOLEDAD O’BRIEN

Investing in Education to Change Lives

“I can’t overstate just how important it is to have people around you who believe in you and value you and push you to do things and cheer you on,” said award-winning journalist Soledad O’Brien, a longtime supporter and member of the RAND Board of Trustees and the Pardee RAND Graduate School Board of Governors. “I gave this gift to support young people who want to come to RAND and make a difference.”

Her gift established the Edward and Estela O’Brien Inclusion, Diversity, and Equity Award. Named after her late parents who inspired her, the gift provides full-tuition scholarships annually to entering Pardee RAND graduate students. The scholarship is intended first and foremost for students who are underrepresented in the student body population, have overcome such obstacles as socioeconomic or educational disadvantage, or are the first generation in their family to attend college or pursue an advanced degree.

“When you invest in education, you change people’s lives,” O’Brien said. “You change their lives, certainly, but you also have the opportunity to change lives in every community that they touch.” You can, she said, start to build a pipeline—to bring people from diverse backgrounds into positions where they can apply their life experiences to some of the toughest issues we face. Getting more voices into the conversation starts with education, she said.
A Legacy of Advancing Health Care Research

It was the impression made by a colleague that inspired longtime RAND supporter John J. Rydzewski to make an estate gift that will benefit students at the Pardee RAND Graduate School. The colleague—a highly analytical, insightful, and socially committed individual—happens to be a Pardee RAND graduate.

“RAND’s objective health policy research and analysis has the power to be transformative,” said Rydzewski, a health care executive and chair of the RAND Health Advisory Board. “Observing firsthand the impactful career of a Pardee RAND graduate brought the recognition that I had a unique opportunity: I could use my giving to improve health and quality of life—issues I’m dedicated to advancing—while also supporting a new generation of health policy experts.”

Rydzewski’s gift will provide funding for student dissertations on health-related topics, helping to catalyze policy research on some of the most challenging issues. His gift also makes him a member of the RAND Legacy Society, which recognizes those who have made a planned gift to benefit RAND or Pardee RAND. “I’m honored that my RAND legacy will now include supporting Pardee RAND students and helping them use their graduate education to further innovative health policy research and enhance people’s lives.”

A Commitment to Social and Economic Justice

Before committing to a cause or an organization, Frank Clark asks himself one question: Will it have an impact that outlasts me? He serves as chair of both the RAND Social and Economic Policy Advisory Board and the National Collaborative on Gun Violence Research because he believes that RAND research can make a difference. “This is a place where you think, You’re getting something done,” he said.

Clark, a guiding force in the leadership circles of Chicago, got his start in the mailroom of the local electric company, Commonwealth Edison. Over the next 40 years, he worked his way up the ranks while also attending night school to earn his college and law degrees. By the time he became the company’s first Black president in 2001, ComEd was one of the largest utilities in the country. He retired in 2012 as the chairman and CEO and has built a second career out of giving back.

His most recent pledge will support RAND Social and Economic Well-Being. “It boils down to trying to make a difference in life and leaving this world a better place than you found it when you entered it,” he said. “The research I see at RAND will not just benefit Chicago, or Illinois, but people throughout the United States and, I think, throughout the world.”
Improving the Lives of Veterans

Daniel J. Epstein has made a career out of thinking big. An engineer by training and a solver of problems, he’s partnered with RAND to advance solutions to the challenges facing veterans and military families. A recent gift through the Epstein Family Foundation will launch a new RAND institute dedicated to research on issues concerning veterans, including housing, health and mental health care, employment, and education.

“Over the years, I think there’s been a failure to recognize and appreciate the sacrifices veterans have made for the country,” Epstein said. “When I considered providing support, I identified veterans and their needs and decided to try to be helpful in that regard.”

Epstein, who served in the Army after high school, has made previous contributions to support initiatives for veterans. At RAND, he provided funding for a research effort with the University of Southern California to understand what life is really like for veterans experiencing homelessness, and what could help get them into permanent housing. He also helped fund “Veterans in America,” a podcast series about RAND research on veterans’ issues. “RAND has an expertise that a lot of other institutions don’t have. When there are challenges that need studying and need thoughtful solutions, RAND’s capabilities are really unequaled,” he said.

Promoting International Understanding

Ann Kerr-Adams has dedicated her career to fostering collaboration among people of different nations—starting with students. As the longtime coordinator of the Visiting Fulbright Scholar Enrichment Program at UCLA, and facilitator of the class “Perceptions of the United States Abroad,” she works to promote international understanding through education. A California native who has studied, lived, and worked in the Middle East, she also models these principles through her philanthropy.

Kerr-Adams, a member of the RAND Center for Middle East Public Policy Advisory Board and a dedicated supporter, made a gift to establish the Kerr Family Scholarship at the Pardee RAND Graduate School. The scholarship, which provides students with full-tuition support for the first year of study, is intended to help Pardee RAND recruit students from the greater Middle East and North Africa region.

“The experiences I’ve had, and relationships I’ve maintained with friends and colleagues throughout the world, have no doubt shaped who I am,” Kerr-Adams said. “It’s an honor to help create opportunities for students to learn from each other; share their perspectives; and use their research, education, and knowledge to catalyze positive change and global goodwill.”

It’s an honor to help create opportunities for students to learn from each other; share their perspectives; and use their research, education, and knowledge to catalyze positive change and global goodwill.

ANN KERR-ADAMS
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CONGRESSIONAL OUTREACH
COVID-19 brought swift changes to how and where RAND engaged with Congress—transforming overnight an environment fundamentally built on relationships forged through in-person visits and hallway encounters. Despite the challenges of shifting to an all-virtual environment, RAND continued to engage extensively with policymakers on both sides of the aisle via online platforms in nearly 240 meetings and 16 expert testimonies to help inform legislation addressing the United States’ greatest challenges.

Much of this work centered on helping policymakers understand and address the COVID-19 pandemic. RAND experts testified about how to improve the Strategic National Stockpile, provided an assessment of federal preparedness during the early stages of the pandemic, and shared insights about how to support small- and medium-sized businesses. RAND experts also shared growing knowledge about the utilization of telehealth during the pandemic, helped legislators understand the potential need for enhanced state and local funding, discussed conducting safe and secure elections, explained trade-offs of vaccine supply and distribution approaches, and illustrated options for designing a pandemic risk insurance program.

Beyond the pandemic, our experts supported the work of the Future of Defense Task Force—a bipartisan task force charged with creating a road map for the national security community for the next 30 to 50 years; testified on the importance of allies and partners; and informed provisions in the National Defense Authorization Act on space launch vehicles, artificial intelligence, and diversity and equity in the military. We continued to help inform responses to the opioid crisis, the high cost of health care, climate resilience, and the need for better-integrated workforce development and employment systems.

In addition, 2020 brought an exciting opportunity for a RAND researcher to directly shape new evidence-based legislation aimed at stemming the tide of veteran suicide. With generous philanthropic support, the Congressional Fellowship Program—a first of its kind for RAND—enabled a senior researcher to work alongside U.S. congressional committee staff to help improve understanding between policy research and policymaking in real time. The RAND fellow drew on a portfolio of prior RAND analysis to inform the Veterans Comprehensive Prevention, Access to Care, and Treatment (COMPACT) Act of 2020, which became law in December.
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  National Institute of Standards and Technology
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Department of Defense
  Defense Centers of Excellence
  Defense Health Agency
  Defense Security Cooperation Agency
  Defense Threat Reduction Agency
  Department of the Air Force
  Department of the Army
  Medical Research Acquisition Activity
  Department of the Navy
  Marine Corps
  Joint Staff
  Missile Defense Agency
  Office of the Secretary of Defense
    Office of the Director, Cost Assessment and Program Evaluation
    Office of Net Assessment
    Under Secretary of Defense for Acquisition and Sustainment
    Under Secretary of Defense for Personnel and Readiness
    Under Secretary of Defense for Policy
  Under Secretary of Defense for Research and Engineering
    Defense Advanced Research Projects Agency
    Unified Combatant Commands
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    Institute of Education Sciences
  Department of Energy
    Lawrence Livermore National Laboratory
  Department of Health and Human Services
    Administration for Children and Families
    Agency for Healthcare Research and Quality
    Centers for Disease Control and Prevention
    Centers for Medicare and Medicaid Services
    Health Resources and Services Administration
  National Institutes of Health
    Eunice Kennedy Shriver National Institute of Child Health and Human Development
    National Cancer Institute
    National Center for Advancing Translational Sciences
    National Center for Complementary and Integrative Health
    National Heart, Lung, and Blood Institute
  National Institute on Aging
  National Institute on Alcohol Abuse and Alcoholism
  National Institute of Allergy and Infectious Diseases
  National Institute of Dental and Craniofacial Research
  National Institute of Diabetes and Digestive and Kidney Diseases
  National Institute on Drug Abuse
  National Institute of Environmental Health Sciences
  National Institute of Mental Health
  National Institute on Minority Health and Health Disparities
  National Institute of Nursing Research
  Department of Homeland Security
    Countering Weapons of Mass Destruction Office
  Cybersecurity and Infrastructure Security Agency
  DHS Headquarters
  Federal Emergency Management Agency
  Management Directorate
  Office for Civil Rights and Civil Liberties
  Science and Technology Directorate
  U.S. Coast Guard
  U.S. Customs and Border Protection
  U.S. Immigration and Customs Enforcement
  U.S. Secret Service
  Department of the Interior
    Bureau of Reclamation
  Department of Justice
    COPS Office (Office of Community Oriented Policing Services)
    National Institute of Justice
    Office of Justice Programs
  Department of State
    Bureau of International Security and Nonproliferation
    Bureau of Political-Military Affairs
    Bureau of Population, Refugees, and Migration
    Global Engagement Center
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  Office of the Director of National Intelligence
    Intelligence Community
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  United States Postal Service
  Western Hemisphere Drug Policy Commission

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Department of the Army
  Medical Research Acquisition Activity
  National Institutes of Health
    Eunice Kennedy Shriver National Institute of Child Health and Human Development
    National Cancer Institute
    National Center for Advancing Translational Sciences
    National Center for Complementary and Integrative Health
    National Heart, Lung, and Blood Institute
  National Institute on Aging
  National Institute on Alcohol Abuse and Alcoholism
  National Institute of Allergy and Infectious Diseases
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    Bureau of Reclamation
  Department of Justice
    COPS Office (Office of Community Oriented Policing Services)
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  Department of State
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    Bureau of Political-Military Affairs
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  National Science Foundation
  Office of the Director of National Intelligence
    Intelligence Community
    Performance Accountability Council
  Securities and Exchange Commission
  United States Postal Service
  Western Hemisphere Drug Policy Commission


**U.S. State and Local Governments**

- Commonwealth of Massachusetts
  - Clean Energy Center
- Commonwealth of Pennsylvania
  - County of Allegheny
  - Pittsburgh Public Schools
- Commonwealth of Virginia
  - Office of the Attorney General
  - Virginia Department of Emergency Management
- State of Arizona
  - Pima County
- State of California
  - CalPERS
  - Covered California
  - Department of Health Care Services
  - Department of Industrial Relations
  - Department of Social Services
  - Government Operations Agency
  - Governor's Office of Emergency Services
  - Los Angeles County
    - City of Los Angeles
    - Mayor's Office
    - City of Santa Monica
    - First 5 LA
    - Los Angeles Community College District
    - Office of Diversion and Reentry
    - Probation Department
    - The Metropolitan Water District of Southern California
    - San Bernardino Valley Municipal Water District
- State of Colorado
  - Denver Water
  - Department of Human Services
  - Department of Natural Resources
    - Colorado Water Conservation Board
  - Department of Public Safety
  - Colorado State Patrol
- State of Delaware
- State of Illinois
  - City of Chicago
- State of Louisiana
  - City of New Orleans
  - Department of Education
- State of Maryland
  - Prince George's County
- State of Michigan
  - Michigan Indigent Defense Commission
- State of New York
  - Department of Health
  - District Attorney of New York County
  - NYC Opportunity
- State of South Carolina
  - State Fiscal Accountability Authority, Procurement Services
- State of Utah
  - Utah Indigent Defense Commission

**Non-U.S. Governments, Agencies, and Ministries**

- Commonwealth of Australia
  - Department of Defence
  - Department of Finance
  - National Health and Medical Research Council
- European Union
  - European Anti-Fraud Office
  - European Border and Coast Guard Agency
  - European Centre for Disease Prevention and Control
  - European Commission
    - Directorate-General for Employment, Social Affairs and Inclusion
    - Directorate-General for Health and Food Safety
    - Directorate-General for Justice and Consumers
    - Directorate-General for Migration and Home Affairs
    - Directorate-General for Trade
  - European Defence Agency
  - European Institute for Gender Equality
  - European Parliament
- Federal Republic of Germany
  - Federal Foreign Office
- Government of Canada
  - Department of National Defence
  - Public Services and Procurement Canada
- Government of Japan
- Government of Norway
  - Ministry of Foreign Affairs
- Iraq
  - Kurdistan Regional Government
- Kingdom of Saudi Arabia
- The Netherlands
  - Research and Documentation Centre
- Republic of China
  - Taipei Economic and Cultural Office
- Republic of Korea
  - Korea Institute for Health and Social Affairs
  - Korean Consulate General in Los Angeles
- State of Qatar
  - Qatar Fund for Development
- United Arab Emirates
  - Embassy of the United Arab Emirates
- United Kingdom
  - Defence Science and Technology Laboratory
  - Department for Environment, Food, and Rural Affairs
  - Department of Health and Social Care
  - Department for Transport
  - Development, Concepts, and Doctrine Centre
  - Economic and Social Research Council
  - Home Office
  - Ministry of Defence
  - National Institute for Health Research
International Organizations

BasicNeeds
NATO
Organisation for Economic Co-operation and Development (OECD)
Pan American Health Organization
Sasakawa Peace Foundation
United Nations Development Programme
World Bank

Colleges and Universities

Boston University
Bowling Green State University
Brandeis University
Brown University
California State University, Dominguez Hills
Carnegie Mellon University
Columbia University
  Columbia University Medical Center
Florida International University
The George Washington University
Georgetown University
Harvard University
  Brigham and Women’s Hospital
  President and Fellows of Harvard College
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Iowa State University
Johns Hopkins University
Makerere University School of Public Health
Massachusetts Institute of Technology
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New York University
  Northwestern University
  Oregon Health & Science University
  Pennsylvania State University
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  University of Washington
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  Vanderbilt University
  Western Michigan University
  Yakima Valley College
  Yale University
  Zhejiang University

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AARP Foundation
Aetna Foundation
Baton Rouge Area Foundation
Benevolentia Foundation
BHP Foundation
George W. Bush Foundation
Cancer Research UK
Una Chapman Cox Foundation
DICK’S Sporting Goods Foundation
Education Endowment Foundation
Eirha
Thomas B. Fordham Foundation
Greater Rochester Health Foundation
Harmon Family Foundation
The Health Foundation

Other Nonprofit Organizations

Health Strategies of New Hampshire
KnowledgeWorks
Laughing Gull Foundation
MacArthur Foundation
PhRMA Foundation
Propel Schools Foundation
Qatar Foundation
The Rippel Foundation
Bernard van Leer Foundation
The Water Research Foundation
Wellcome

Professional Associations

American Academy of Hospice and Palliative Medicine
American Academy of Physician Assistants
American Association of Neuromuscular and Electrodiagnostic Medicine
American Medical Association
American Orthotic and Prosthetic Association
Pennsylvania Association of Nurse Anesthetists

3 Rivers Wet Weather
AAA
AARP
AcademyHealth
AccessCircles
Advanced Robotics for Manufacturing Institute
Allegheny Health Network
AMBS Research and Education Foundation
American Association for Justice
American Enterprise Institute
American Institutes for Research
Ascendium Education Group
Association of Public Health Laboratories
Baycrest
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$349M in revenue
FY2020, net of subcontracts and RAND-initiated research

Office of the U.S. Secretary of Defense and other national security agencies $64.5M

U.S. Air Force $46.7M

U.S. Army $35.9M

$46M U.S. Department of Homeland Security

$2.4M Other

$4.7M Private sector

$12.7M Philanthropic contributions

$17.6M Foundations

$9.4M Other nonprofit organizations

$1.3M Universities

$13M Non-U.S. government agencies and international nongovernmental organizations

$8.5M State and local government agencies

$17.9M Other federal agencies

$68.4M U.S. Department of Health and Human Services and related agencies

Staff development, information technology, and other administration 14%

Facilities 9%

Fundraising 1%

76% Research and analysis

$4.7M Philanthropic contributions

$68.4M U.S. Department of Health and Human Services and related agencies

$8.5M State and local government agencies

$13M Non-U.S. government agencies and international nongovernmental organizations

$1.3M Universities

$12.7M Philanthropic contributions

$4.7M Private sector

$2.4M Other

$46M U.S. Department of Homeland Security

$46.7M U.S. Air Force

$35.9M U.S. Army

$64.5M Office of the U.S. Secretary of Defense and other national security agencies
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