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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.

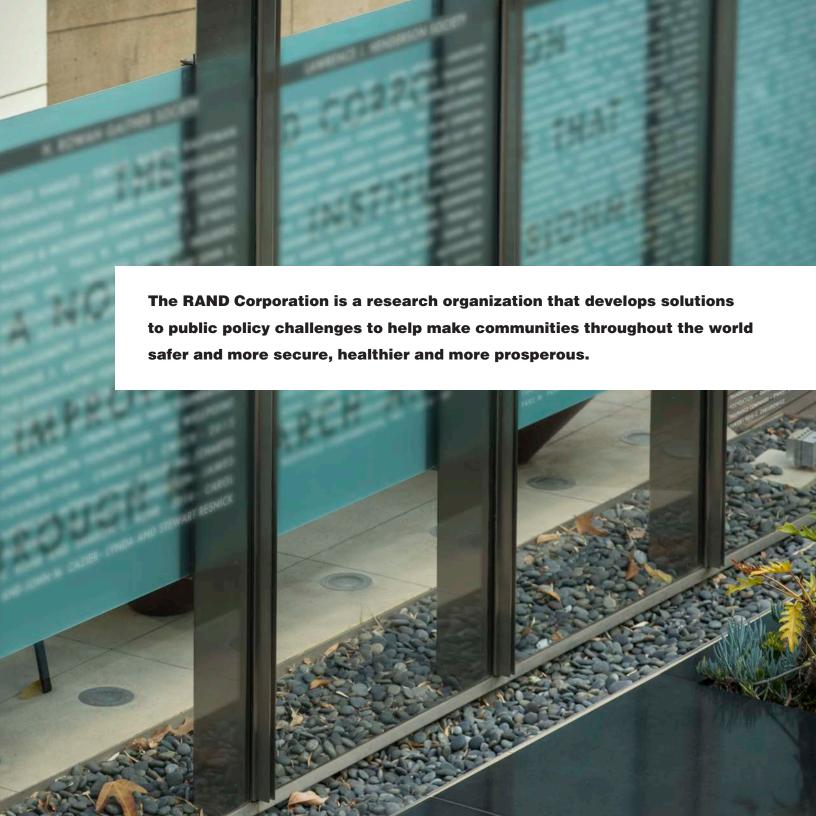
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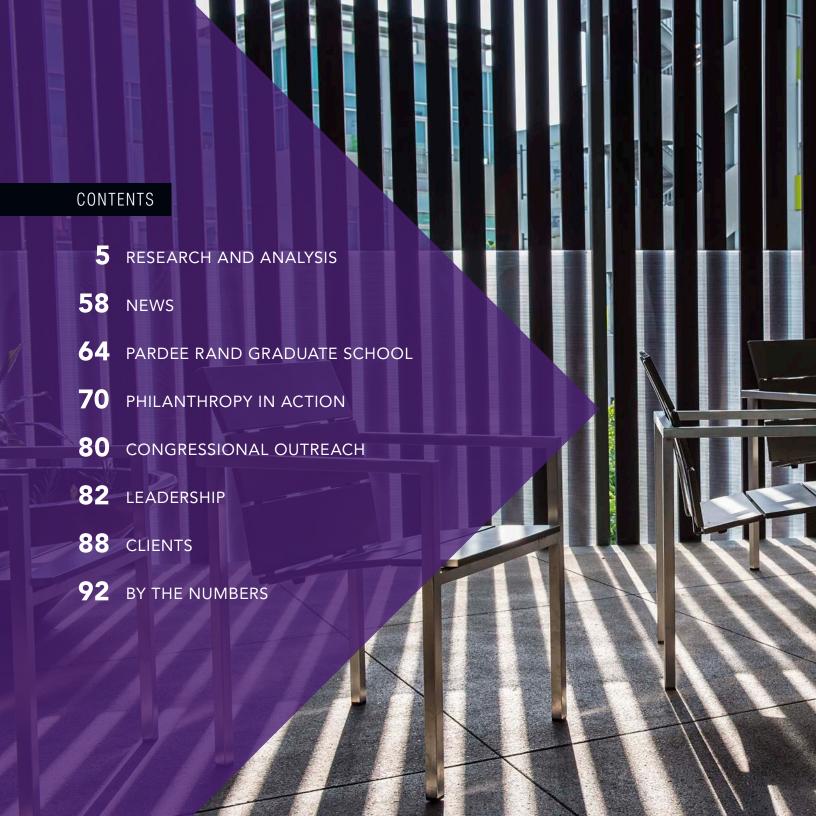
Ensuring agility. Researchers must be prepared to address not only society's most challenging problems but also the emerging problems that arise and need immediate attention.

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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 2021. These projects demonstrate an approach to problem-solving that is founded on rigor and dedicated to advancing the public good.



Stillbirths and Newborn Deaths Increased in Nigeria During the Pandemic

Researchers working with pregnant women in Nigeria began to see an alarming surge in early infant deaths as COVID-19 spread. Their findings suggest the true toll of the pandemic has been much worse than official death statistics show

The researchers were in Nigeria to study whether small payments to expectant mothers could improve child outcomes. They were still enrolling tens of thousands of women in four Nigerian states when COVID exploded into a global pandemic.

That chance of timing allowed them to monitor the pandemic's effects on birth outcomes in almost real time. Infant mortality rates had been flat in the months leading up to the first cases of COVID in Nigeria. Then they arced upward. Within months, the researchers found, stillbirths increased by 22 percent, and newborn deaths increased by 23 percent.

At those rates, some 13,000 more infants died between April and November 2020 because of the pandemic. just in those four states in Nigeria.

The researchers don't know how many women in their study came down with COVID. But they found another possible explanation for the higher mortality rates. Health care workers in the early months of the pandemic were less likely to perform physical exams, and some refused to treat anyone with a cough or other possible COVID symptoms. Women also may have waited longer to seek care to avoid infection.

The project, done in partnership with researchers and clinicians from Nigeria, was sponsored by the Eunice Kennedy Shriver National Institute of Child Health and Human Development. It called for a global effort to support women and front-line health workers in lowand middle-income countries as the pandemic drags on. Otherwise, researchers warned, years of hard-won improvements in infant survival rates could be lost.



Learn more at www.rand.org/t/EP68756



Our findings suggest that the mortality effects of COVID-19 may be vastly underestimated. A death resulting from the effects of the pandemic is just as much a death as one directly caused by the virus.

EDWARD OKEKE

SENIOR POLICY RESEARCHER • RAND PROFESSOR • PARDEE RAND GRADUATE SCHOOL

Helping Incarcerated Parents and Their Families

Some 2.7 million children in the United States have a parent serving time in prison. Research suggests they will suffer the consequences for the rest of their lives: lower academic achievement, social and emotional

Funding for this research was provided by gifts from RAND supporters and income from operations.

problems, and a much higher risk of being incarcerated themselves.

Yet no nationwide study has ever looked at the breadth of programming offered by prison facilities to help parents on the inside. Researchers at

RAND developed a survey to determine what programs are available and how such programs can best serve incarcerated parents and their children.

They piloted the survey in five states—Indiana, Iowa, Kentucky, Montana, and Vermont—each of which has a high percentage of children with an incarcerated parent. Each also reflects the sharp national disparity in Black and White incarceration rates

The researchers found that 80 percent of the prison facilities in those five states offer at least one parenting

program. Most focus on improving parent-child relationships or improving parenting skills. Prison administrators considered almost all of them to be successful, most often because of the interest and motivation of the parents involved.

But the survey found opportunities to improve. Most of the programs used materials developed for parents outside of prison—materials that might not meet the needs of those inside. Many of the programs also made limited efforts to provide culturally responsive support, a glaring oversight given the disproportionate number of Black and Hispanic parents in prison. And few of the programs provided any kind of follow-up support or continuing services after a parent had gone home.

The researchers are now planning to scale up the survey to bring in all 50 states. That will allow them to start to compare what different states do to support incarcerated parents and which approaches appear to be the most promising for parents and children.



Learn more at www.rand.org/t/RRA1412-1



This isn't just "Let's understand what programs are out there." This is also understanding how they are trying to mitigate the negative effects of policy on people of color. It's encouraging that we are now, explicitly, being attentive to really focusing on applying that kind of racial equity lens to the work that we do.

DIONNE BARNES-PROBY

SOCIAL POLICY RESEARCHER • RAND PROFESSOR • PARDEE RAND GRADUATE SCHOOL



Citizen Science for Disasters

From Flint, Michigan, to Fukushima, Japan, ordinary people have used the tools of science to make their communities safer, stronger, and more resilient. RAND researchers published a do-it-yourself guide to walk more citizen scientists through the steps of a successful project.

The field of citizen science has taken off in the past 15 years with the introduction of smartphones and social media. Community members with no formal scientific training have provided on-the-ground data and expertise on everything from chemical pollution to climate change to COVID-19 outbreaks. Citizen scientists in Flint were among the first to raise concerns about lead in the water. In Fukushima, citizen scientists used homemade radiation detectors to monitor the fallout from one of the worst nuclear disasters in history.

Researchers interviewed dozens of scientists. community leaders, and policymakers for the guide. They also surveyed nearly 300 health departments

to create a companion guide to help local health officers engage with citizen scientists in their communities. The Centers for Disease Control and Prevention, an agency in the U.S. Public Health Service, sponsored the project.

The guide for would-be citizen scientists provides worksheets, tips to find funding and volunteers, and case studies of what successful projects have accomplished. The researchers described their intended audience as "ordinary people organized through science and engineering to help disaster relief and recovery."

Those kinds of partnerships can often accomplish more than just collecting new data or answering new questions. They can help bring a community together, build its resilience, and give voice to people who might not otherwise be heard. At a time of deep mistrust, they can also give people an inside look at how science and research really work.



Learn more at www.rand.org/t/tla175-1 and www.rand.org/t/tla175-2



Community citizen science efforts often get started because people see gaps in how the government is responding to a disaster, or they mistrust the data and research coming out of big institutions. One huge benefit of citizen science is just getting people engaged in research and understanding how these tools and techniques work.

RAMYA CHARI POLICY RESEARCHER





Royal Australian Navy Investments in Robotics and Autonomous Systems

To understand why the Royal Australian Navy might want to invest in autonomous ships and systems, just look at a map. Its operations cover an area reaching from the Indian Ocean to the Pacific, with China pressing in from the north.

Robots and other artificially intelligent systems are especially well suited to the challenges that Australia faces, researchers with RAND Australia found. They can operate without rest for long periods of time, over enormous distances, without putting human sailors at risk. But getting them into the water in sufficient numbers and configurations will require the Navy itself to become much more agile.

The Navy's newly formed directorate on robotics, autonomous systems, and artificial intelligence asked RAND Australia to think through what technology will look like in 2040 and what missions it could perform. Researchers analyzed technological forecasts, interviewed military and industry experts, and

convened workshops to examine the challenges and potential solutions the Navy should consider.

By 2040, they concluded, artificially intelligent computers will be pervasive, able to control fleets of uncrewed air and sea vehicles. Navy crew members might never have to leave shore.

But to get there, the Navy will have to invest in new and experimental technologies. It also needs to find new ways to control and communicate with autonomous systems at the speed at which they will operate. And it needs to start planning now for a future workforce that is able to operate in a digital environment as well as a maritime one.

Australia plans to spend AU\$75 billion over the next decade to modernize its Navy, with an eye toward countering China. As RAND Australia found, its future will be shaped not just by new submarines and patrol boats but by how well it can get ahead of the coming wave of advanced robotics and computer intelligence.



Learn more at www.rand.org/t/RRA929-1



Our conclusions and recommendations provided the foundation upon which the Royal Australian Navy can design its strategic road map for robotics, autonomous systems, and artificial intelligence.

PETER DORTMANS

RESEARCHER • RAND AUSTRALIA

Commercial and Military Applications and Timelines for Quantum Technology

At scales so small that a sheet of paper would look like a continent, the usual rules of physics don't always apply. Engineers are just beginning to harness the potential power of that quantum world, hinting at future technologies far beyond anything possible today.

The U.S. Department of Defense asked RAND to assess when, where, and how those technologies might become viable for widespread use. Researchers found that some quantum applications could move out of the testing lab within a few years; but the real gamechangers are likely still at least a decade away.

China has emerged as a world leader in using quantum particles to encrypt communications. Anyone who intercepts a message encrypted that way would leave a telltale mark in the particle stream. A few years ago, China used particles beamed from a satellite to encrypt a 75-minute teleconference.

The United States has focused instead on developing quantum sensors. Those are so precise that they could detect minute variations in the Earth's magnetic field. A submarine, for example, could follow those variations without needing satellite-based GPS. Cameras could use quantum sensors to pick up imperceptible variations in light, allowing them to see through smoke or clouds.

The United States is also leading the development of quantum computers. Those use quantum mechanics to perform certain calculations exponentially faster than existing computers can. Google has reported using a quantum computer to solve a problem in minutes that would have taken a traditional supercomputer 10,000 years. A fully realized quantum computer could threaten every encryption code on the internet.

But getting enough quantum particles to behave in a predictable way to make that happen is enormously difficult. For all the hype around quantum computers, researchers found, the most immediate application of quantum technology will more likely be in support of an American-made sensor or a Chinese teleconference.



Learn more at www.rand.org/t/RRA1482-4



Every subfield of quantum technology potentially has major implications for national security. But the most useful military applications still lie many years away.

EDWARD PARKER

PHYSICAL SCIENTIST





Educating Undocumented and Asylum-Seeking Schoolkids in the United States

More than half a million undocumented and asylumseeking children came through the southwest U.S. border in recent years. School systems nationwide lack the staff, the services, and the financial support they need to serve those new students

RAND researchers used data from the U.S. Department of Homeland Security and other sources to provide the first estimates of how many children came across the border and where they went. Their models include children who were detained at the border or who turned themselves in to seek asylum.

The researchers found that around 575,000 undocumented and asylum-seeking children arrived from El Salvador, Guatemala, Honduras, and Mexico between October 2016 and September 2019. They estimated that most were still in the United States. their immigration status unresolved, in 2020 and most had enrolled in public K-12 schools.

By law, all children in the United States are entitled to a public education, regardless of their immigration status. The researchers found that seven states would have needed to hire at least 1,000 new teachers to accommodate the new arrivals while

maintaining the student-teacher ratios in their classrooms. Those include the border states of California, Texas, and Florida, as well as Marvland. New Jersey, New York, and Virginia.

Funding for this research was provided by gifts from RAND supporters and income from operations.

But the models suggest most U.S. school districts have enrolled at least some undocumented or asylum-seeking children. Those new students often don't speak English. Many have experienced trauma or shock. lack basic necessities at home. and test far below grade level for their age.

Schools need more teacher training, better instructional materials, and more flexible funding to support those new students, researchers concluded. Federal policymakers need to better track data on children coming across the border to anticipate surges of new students—and to ensure schools have the support they need.



Learn more at www.rand.org/t/RRA1326-1



Unless school systems, funding policies, and training for teachers change—and quickly—we are setting up schools to fail.

SHELLY CULBERTSON

SENIOR POLICY RESEARCHER

Supporting Students with Disabilities

Students with disabilities need more support than they're getting in U.S. schools. That's not a message from concerned parents but from the principals of those very schools.

RAND researchers asked nearly 1,700 secondary school principals whether they had the training, guidance, and staff to meet the needs of students with disabilities. Only one-quarter said they had "completely sufficient" support. Nearly 80 percent said their school could do a better job of helping students with disabilities.

The numbers were even more concerning in schools with high percentages of students of color. Principals in those schools were around 10 percentage points more likely than principals in majority-White schools to say they need more district support, materials, and staff expertise.

Those same principals were also more likely to have higher percentages of students identified as disabled

in their schools. Past studies have shown that students. of color are disproportionately labeled as disabled, for reasons that could range from testing biases to educational inequities to different behavior expectations. The challenges facing those students could be exacerbated by their principals having less support in general.

RAND's findings point to an opportunity for federal and state education agencies to provide more support for schools to help them better serve students with disabilities. Such support could be especially important for schools serving high percentages of students of color.

The project, funded by the Bill & Melinda Gates Foundation, drew from RAND's American Educator Panels. Researchers created the panels, with nationally representative samples of teachers and school leaders, to provide on-the-ground insights into questions of education policy and practice.



Learn more at www.rand.org/t/RR2575z13



Our results suggest that district, state, and federal policymakers striving to improve outcomes for students with disabilities should examine the supports provided to school principals.

CHRISTOPHER YOUNG

SENIOR POLICY ANALYST





Lessons from the 2021 Texas Power Crisis

Electric grids, water systems, and even the internet face a unique kind of risk that doesn't get enough attention until something goes really wrong. Four days in Texas demonstrate the dangers of such complacency.

Winter storms in February 2021 started a cascade of disasters that left millions without water, heat, or power in freezing temperatures. Hundreds died. RAND researchers analyzing the events leading up to the blackouts found that the nature of the Texas grid obscured an inherent weakness.

The grid seemed so reliable during normal operations that people trusted it would always heat their homes and power their pumps. In reality, the Texas grid is a network of 147 generation, transmission, and distribution companies that have to work together seamlessly to keep the power flowing.

As temperatures plummeted, oil wells and wind turbines froze just as demand for electricity spiked. The resulting power outages shut down compressor stations that supply natural gas, which could have

been used to get power stations back online. Energy speculators seized on the supply crash and drove the price of gas 20 times higher.

The blackouts show what can happen when people depend on networks that seem reliable—but aren't reliable enough under stress. That also describes some water systems, commercial supply chains, and the

internet. They may seem like single entities, but they're really hugely complicated networks of individual actors, none of whom are responsible for the whole.

John and Carol Cazier Initiative for Energy and Environmental Sustainability, established in 2014 at the Pardee RAND Graduate School through a generous gift from John M. Cazier.

This research was funded by the

Making such networks resilient requires more than just hardening their physical infrastructure; it

requires tightening the social and organizational connections that hold them together. Regulation can help, but it can also create its own interdependencies. What's needed is a better understanding of what makes networks highly reliable—physically and organizationally—and what incentives and investments can help. The challenge, as Texas learned, is building reliable networks out of unreliable parts.



Learn more at www.rand.org/t/EP68740



The 2021 blackouts provide a case study of how a growing dependence on large technological systems creates a specific kind of disaster risk: sudden interruption of lifesustaining critical infrastructure.

AARON CLARK-GINSBERG

BEHAVIORAL AND SOCIAL SCIENTIST • RAND
PROFESSOR • PARDEE RAND GRADUATE SCHOOL

Reducing Risks and Impacts of Future Oil Spills

A new U.S. Coast Guard research center, developed with help from RAND, will soon be built on the shores of Lake Superior to confront an understudied threat to the Great Lakes: oil.

The science of responding to, and recovering from, an oil spill is well established—in saltwater. But the Great Lakes represent the largest surface body of freshwater in the world. That changes the dynamics of spill response; for one thing, oil sinks faster in freshwater. Parts of the Great Lakes also spend months every year under ice, further complicating any spill response.

The commandant of the Coast Guard warned federal lawmakers in 2017 that significant gaps in knowledge could hinder his agency's response to a spill on the Great Lakes. In response, Congress authorized the creation of a National Center of Expertise. The Coast Guard turned to RAND to clarify how the center could best accomplish its mission, and where.

Researchers interviewed experts and emergency responders throughout the region. They mapped oil pipelines and shipping transit points, as well as colleges and universities that could give the new center an academic base.

The researchers cautioned that the center risks getting pulled in too many directions, especially in its early years. It should focus on coordinating research to close gaps in knowledge about freshwater oil spills. But it should also help translate that research into better equipment, more-effective trainings, and new operating protocols for front-line responders.

The researchers identified Sault Ste. Marie in Michigan as a promising site for the new center. The Coast Guard agreed and announced plans in late 2021 to move forward with \$4.5 million in federal funds to build the center there. Officials described it as a critical step toward protecting the "economic engine and ecological treasure" that are the Great Lakes.



Learn more at www.rand.org/t/RRA1222-1



This is an opportunity to make meaningful, long-term improvements in the readiness of the Great Lakes region. There is no such dedicated organization in the nation with this specialized focus.

ANNA JEAN WIRTH

OPERATIONS RESEARCHER





COVID-19 Vaccine Confidence and Mistrust in Black Communities

The American health care system needs to do more to build back trust with Black communities. That became deadly clear when vaccines against COVID-19 started to become available.

More than one-third of the Black Americans in a RAND survey said they would not get the shot. One-quarter more said they weren't sure. Most of the 207 survey respondents said they didn't trust the health care system to treat Black people fairly, didn't trust the government to tell the truth about COVID, and were concerned the vaccines would be harmful.

In follow-up interviews, some respondents who said they would not get vaccinated suggested that publichealth campaigns featuring trusted community members or Black doctors might sway them. They also suggested community forums, online events, or a 24-hour national hotline to address concerns about vaccine effectiveness, safety, and side effects.

Public health agencies need to reach out to their own communities to better answer why people

are not getting vaccinated, researchers wrote, which could include mistrust as well as issues with accessing vaccination sites. They also need to identify local community members who could serve as trusted sources

of information about the vaccines, and identify trusted and convenient settings for vaccinations. They should encourage anyone who gets the shot to tell their friends and families. RAND's survey found that people were more likely to get vaccinated if they thought it was important to those around them.

Funding for this research was provided by gifts from RAND supporters and income from operations.

But the researchers, working with an advisory panel of Black community leaders, also cautioned that improving vaccination rates cannot only be about improving vaccination rates. Health care organizations need to make a genuine effort to earn back the trust of Black Americans. They could start by acknowledging that mistrust is a survival instinct for many—a rational response to historic and lived experiences of racism and discrimination. That alone might not convince someone to get a shot, but it could open the conversation.



Learn more at www.rand.org/t/RRA1110-1



It's understandable that people who have been discriminated against would put their guard up. Any intervention needs to acknowledge that root cause of mistrust as a first step.

LAURA BOGART

SENIOR BEHAVIORAL SCIENTIST • RAND PROFESSOR • PARDEE RAND GRADUATE SCHOOL

Homelessness Among Veterans in Los Angeles

Thousands of military veterans sleep in their cars, in temporary shelters, or in makeshift camps on any given night in America. Researchers went to the streets of Los Angeles to better understand the daily barriers they face.

The researchers, from RAND and the University of Southern California, followed 26 homeless veterans for one year to obtain information about their housing, mental and physical health, and service experiences. The Daniel Epstein Family Foundation sponsored the project.

A majority of the veterans had received an honorable discharge from the military. More than half had lived on the streets for three years or more. And finding a permanent place to live was, for many of them, a top life goal.

But in their monthly check-ins with the researchers, success stories were hard to come by. Housing programs were full. Outreach workers were stretched

thin and often didn't have the resources to help. Many of the veterans had become so disillusioned that they had resigned themselves to staying on the streets.

Only three had found permanent housing by the end of the year. Fourteen more made it into temporary, transitional programs—five of them in hotels opened to people experiencing homelessness during the COVID-19 pandemic. Nine of the veterans never had stable housing for more than a week or two.

The U.S. Department of Veterans Affairs (VA) and other service providers should greatly expand their outreach to veterans experiencing homelessness to help connect them to what housing is available, the researchers concluded. The VA also should continue its efforts to house more veterans on its sprawling campus in West Los Angeles.

It's a myth that people experiencing homelessness don't want to be housed, the researchers wrote. Too often, it's the programs that should be helping them that don't meet them where they are.



Learn more at www.rand.org/t/RRA1320-1



When veterans became stably housed, their mental health, qualify of life, and social support improved, and they reduced their use of costly services, such as emergency room visits and hospital stays.

SARAH HUNTER

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Gray-Market Use for Aging and Dementia Care

As more Americans age into needing long-term care. an informal market of home care workers has grown up to help them. Those workers—often unscreened, sometimes untrained—represent an important but hidden facet of American health care

Nearly one-third of the people in a RAND survey who arranged care for themselves or a loved one had turned to that "gray market" of caregivers. Researchers use that term to describe caregivers who find paid work outside a regulated agency. That could include neighbors, friends, agency caregivers working extra hours on the side, or just people who answer an online help-wanted ad.

People who hired from the gray market were much more likely to be retired or unemployed, living on a limited income. That likely reflects the high cost of agency care. People in rural areas—especially those who needed specialized help for someone with dementia were five times more likely to use the gray market than people in urban areas.

RAND's findings suggest the gray market could help close gaps in access to care and provide a lessexpensive, more-flexible alternative to formal agencies. As such, it needs more study to ensure it's a safe and effective option. Clinicians who work with older adults or people with dementia should also consider gray-market caregivers as potential members of their patients' care teams.

That will only become more essential as the American population ages. The demand for home health and personal care aides is projected to grow by 34 percent by 2029, much faster than other occupations.

The National Institute on Minority Health and Health Disparities sponsored RAND's survey. Researchers drew participants from the RAND American Life Panel, a standing sample of more than 6,000 American adults who answer periodic surveys about important policy issues.



Learn more at www.rand.org/n210621



Gray-market providers may offer greater affordability and more-flexible hours of care than regulated providers. But without agency oversight, the quality of care they provide is unknown.

REGINA SHIH

SENIOR POLICY RESEARCHER DIRECTOR, SOCIAL AND BEHAVIORAL POLICY PROGRAM • RAND SOCIAL AND ECONOMIC WELL-BEING





Extremist Activity in the U.S. Military

The U.S. military depends on the "calm and prudent judgment" of commanders to root out extremism within the ranks. It has tightened its prohibitions on extremist activity following high-profile incidents involving service members, including the 2021 Capitol riot. But deterring such activity still falls mostly to individual commanders.

RAND researchers developed a four-part framework to help commanders take more-effective action against extremism. In doing so, they found several areas where the military could further strengthen its posture. The Office of the Secretary of Defense sponsored the project.

The framework's first step is defining the problem. The Pentagon has issued directives establishing what activities are prohibited. But each service branch defines extremism slightly differently.

Commanders next should make better use of existing programs to prevent service members from sliding into extremism. They could work with chaplains and mental health counselors, for example, to put more focus on watching for warning signs and intervening early.

They also need to do more to detect when a service member is moving into active participation in an extremist group. That could involve working more closely with law enforcement. It also should involve using machine learning to look for trends in online recruiting and participation in extremist groups, using de-identified data to protect privacy.

That would help with the fourth step of the framework: measuring extremist activities and using those data to refine anti-extremism interventions. Here, the military should widen its lens, countering extremism not just among service members, but also among military families, contractors, and others within the military community.

Service members and others have a right to free expression, the researchers cautioned. Possessing extremist literature, for example, is not necessarily prohibited. The challenge for commanders is knowing when such signs may suggest a future policy violation. A community-based approach, leveraging existing support programs, can help commanders and their subordinates head off problems before they escalate.



Learn more at www.rand.org/t/PEA1447-1



Extremism is a symptom of broader social and political headwinds within society. Military leaders need to confront these headwinds to preserve the effectiveness and readiness of the U.S. military.

MAREK POSARD

BEHAVIORAL AND SOCIAL SCIENTIST • RAND PROFESSOR • PARDEE RAND GRADUATE SCHOOL

The Rise of Anti-Asian Attacks in the United States

For a population group of more than 23 million people, Asian Americans have been historically under-studied and misunderstood, stereotyped as either model minorities or perpetual foreigners. That became

Funding for this research was provided by gifts from RAND supporters and income from operations.

a weapon against them amid the fear and politics of COVID-19.

One in four Asian American adults has experienced an assault, verbal harassment, or other hate incident, polls show. Researchers at RAND

interviewed leaders from 20 organizations that serve Asian American and Pacific Islander communities to learn how they're responding and what they need.

They heard widespread fear about the rise in hate incidents, and concern about the emotional well-being of older community members in particular. But they also heard a new resolve to push back, to make sure Asian American and Pacific Islander communities are seen and heard.

But that very phrase, "Asian American and Pacific Islander," too often gets in the way. It presents

a one-dimensional view of people who, in reality, represent 19 different Asian and Pacific Islander origin groups. Without breaking it down—differentiating Chinese Americans from native Hawaiians, for example there is no way for researchers or policymakers to really understand those communities.

More-granular data would help address health, education, socioeconomic, and environmental disparities that have persisted for decades. Such data would also help improve public understanding of Asian American and Pacific Islander communities and could lead to more authentic representation in the media.

Those communities should build alliances with other racial and ethnic groups to present a united front against hate and discrimination. They also should work with policymakers and local institutions like law enforcement to ensure crimes against them get reported and recorded. It's telling, the researchers concluded, that nobody really knows how bad the pandemic surge of anti-Asian hate has been, because the data just aren't good enough.



Learn more at www.rand.org/t/RRA1594-1



We hope this is the first step toward establishing relationships with community partners and launching research programs in collaboration with them.

LU DONG

BEHAVIORAL AND SOCIAL SCIENTIST





Natural Hazards and the Readiness of U.S. Military Bases

Heavy winds, wildfires, and rising seas could threaten dozens of U.S. Department of the Air Force (DAF) bases in the coming years. A RAND analysis showed where the risks are highest and identified strategies that could help mitigate them.

The department has historically relied on individual bases to assess their own hazard risks and respond. But heading into a future of unprecedented climate uncertainty, it also needs to take more of a big-picture view to prioritize its investments and protect its overall operations.

Researchers mapped active-duty DAF bases and then overlaid data on known and projected risks from natural hazards. They found that ten coastal bases are at risk from sea-level rise. Around 30 bases are in high-wind zones. Few bases face a high danger of wildfire, but the researchers cautioned that a fire even in the vicinity of a base could cut its power supply.

The DAF should improve its flood-hazard maps and update its building standards to ensure its bases are ready for extreme weather. It also should work with the communities where it has bases to keep the power on and the roads clear when disaster hits. Natural hazards don't stop at base perimeters, the researchers noted, and neither should planning efforts.

More generally, the department cannot afford to take a base-by-base approach to building resilience. It needs to make decisions on where and how to invest to protect its overall operations, and those decisions can only be made well with the entire DAF enterprise in view. RAND's analysis, commissioned by the department's Deputy Chief of Staff for Logistics. Engineering, and Force Protection, provides a first look at that bigger picture to help the DAF prepare for an uncertain future.



Learn more at www.rand.org/t/RRA523-1



The growing influence of climate change warrants proactive measures that put installations in a better position to handle extreme future events.

ANU NARAYANAN

SENIOR ENGINEER



European Strategic Autonomy

Russia's invasion of Ukraine in February 2022 underscored the need for a stronger and more capable Europe to stand as a pillar of the NATO alliance. Researchers from RAND and RAND Europe had already been looking at what that would require and what it would mean for Europe, NATO, and the United States.

European leaders had called for "strategic autonomy" in the years leading up to the invasion. The term was never well defined, but it was generally used to describe a Europe better able to determine where and how to act, with or without partners, in matters of defense and security. RAND and RAND Europe found it would make the European Union a more credible and reliable partner, reduce its reliance on the U.S., and present a united front to adversaries like Russia

But experts the researchers consulted on both sides of the Atlantic warned that Europe risks going too far, or not far enough. They saw a truly autonomous Europe a Europe that "goes its own way"—as harmful to the interests of all sides. They also warned that Europe could stumble on its own divisions, becoming weaker and more reliant on the U.S. and NATO.

Instead, the experts largely agreed that Europe should focus on building up its military capabilities and investing more in its defense to become a stronger partner in NATO. It needs to develop a coherent plan to pull together member countries that have very different conceptions about defense and security. It also needs to tighten its

post-Brexit bonds with the United Kingdom on matters of defense

The United States can help by taking a public and proactive stand in support of Europe's efforts to strengthen its own strategic autonomy.

Funding for this research 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.

European leaders also need

to clarify what they mean when they talk about strategic autonomy. As a concept, it could offer a unifying principle around which to rally the countries of Europe, to take up greater responsibilities for their own defense and security.



Learn more at www.rand.org/t/RRA1319-1



Following the Russian invasion of Ukraine, the EU is being compelled to reflect even more seriously on what kind of defense and security actor it wants to be. This should include practical steps toward achieving strategic autonomy in defense that complements and strengthens NATO.

LUCIA RETTER

RESEARCH LEADER • RAND EUROPE

Stabilizing Great-Power Rivalries

As competition intensifies among the world's major powers, the United States needs to consider how to prevent international rivalries from tipping into open conflict. RAND researchers turned to the historical record for insight.

They found that stable rivalries—those that don't end in war—have two conditions. First, both sides must accept some baseline elements of the international status quo, such as respect for each other's borders. Second, they must take steps to build what the researchers called "resilient equilibrium," so that the relationship swings back to center after any momentary shock or crisis.

From there, the researchers built a framework of political, contextual, and perceptual factors that can destabilize a rivalry and push it into conflict. They found that most of those factors were working against stability in the United States' rivalry with Russia, for example even before Russia's unprovoked aggression against Ukraine. Both sides regarded the other as inflexibly hostile and committed to its downfall

Many of those same signs point in the wrong direction in the rivalry with China as well. Each side seems increasingly willing to confront the other, and domestic politics in both have hardened. An arms race also seems to be taking shape.

The United States has options to stabilize such rivalries as they intensify. It should work to avoid any misperceptions of its actions or intents and push for greater transparency on all sides. The U.S. also should develop formal agreements and other rules of the road with rival countries to help further brace their relationships.

The Office of the Deputy Chief of Staff of the U.S. Army commissioned the study. The Army can best serve the nation's interests, researchers wrote, by always thinking in terms of stabilizing rivalries, not just providing the military capabilities to threaten rivals.



Learn more at www.rand.org/t/RRA456-1



The U.S. Army, like the other services and the broader defense establishment, will increasingly have to think in terms of stability as it works to help the United States manage this challenging new era of competition.

MICHAEL J. MAZARR SENIOR POLITICAL SCIENTIST





Racial Disparities in Misdemeanor Speeding Convictions

Black drivers who were stopped for speeding in Virginia were nearly twice as likely to be convicted of a misdemeanor as White drivers whose speed would have justified the same criminal charge. The findings, from a first-of-its-kind RAND project, underscore the need for more-equitable enforcement mechanisms and court procedures.

Researchers scraped Virginia court records for data on hundreds of thousands of speeding citations issued between 2007 and 2015. They then identified people who were speeding within the range at which law enforcement officers could charge them with reckless driving, a misdemeanor. At the time of the project, that meant anyone going 20-plus miles per hour above the speed limit—or more than 80 miles per hour at any speed limit.

The researchers found that law enforcement officers were much more likely to let White drivers off with a simple infraction. Around 63 percent of the White drivers who could have been charged with reckless driving received an infraction instead; only around 47 percent of Black drivers did.

When the misdemeanor cases arrived in court, twothirds of the Black drivers were convicted. Just over half of the White drivers were. That was mostly because the White drivers were more likely to attend their court hearings in person and to bring a lawyer.

Traffic tickets don't often require court attendance, the researchers noted, so many drivers might not realize they have a court date unless the officer who pulls them over

Funding for this research was provided by gifts from RAND supporters and income from operations.

explains it. Even then, there may be racial differences in motorists' ability to attend court and retain a lawyer.

To combat disparities at the law enforcement stage, Virginia and other states should consider moving to automated speed enforcement, using cameras to cite or charge all drivers equally. At the court stage, automated text messages could remind drivers of upcoming court hearings. Courts also could develop online platforms for ticketed drivers to submit information, which would reduce the need to appear in person.



Learn more at www.rand.org/t/RRA1317-1



We went into great depth to understand the sources of these racial disparities in conviction rates because policies cannot be successful at reducing disparities unless they address the root causes of those disparities.

SHAMENA ANWAR

ECONOMIST

Legal Mechanisms to Manage the Geopolitical Risks of Geoengineering

Technologies that could block the sun's rays or siphon huge amounts of carbon from the air are not that far

Funding for this project was provided by the generous contributions of the RAND Center for Global Risk and Security Advisory Board. out of reach, a RAND analysis found. They could provide an emergency brake if other efforts to stop global warming fail.

Yet the international community has not built any real consensus around

such basic questions as when such technologies would ever be used, how, or by whom, researchers found.

It would only take one country—watching its crops shrivel or its water run dry—deciding to take a chance to set a global climate experiment in motion. The effects could get out of hand quickly. When Mount Pinatubo erupted in 1991, the gas and dust particles it blasted into the atmosphere cooled global temperatures by around half a degree Celsius, proof that it could be done. But that then shifted the jet stream, giving northern Europe an unusually warm winter while the Middle Fast froze

Even carbon-removal technologies, often seen as necessary to avoid the worst outcomes of climate change, have drawbacks that could pit one country against another. They could disrupt ecosystems and require vast amounts of water and energy.

No single governing body is overseeing the development of geoengineering technologies on a global scale. Existing laws and treaties could provide some guidance; the United Nations Convention on the Law of the Sea, for example, could prevent any effort that would alter the oceans. But no international agreements or enforcement mechanisms directly address geoengineering.

That's a blind spot that the international community should address now, while the potential risks are still theoretical, the researchers wrote. The possibility that geoengineering might work means the pressure to use it will only rise with global temperatures.



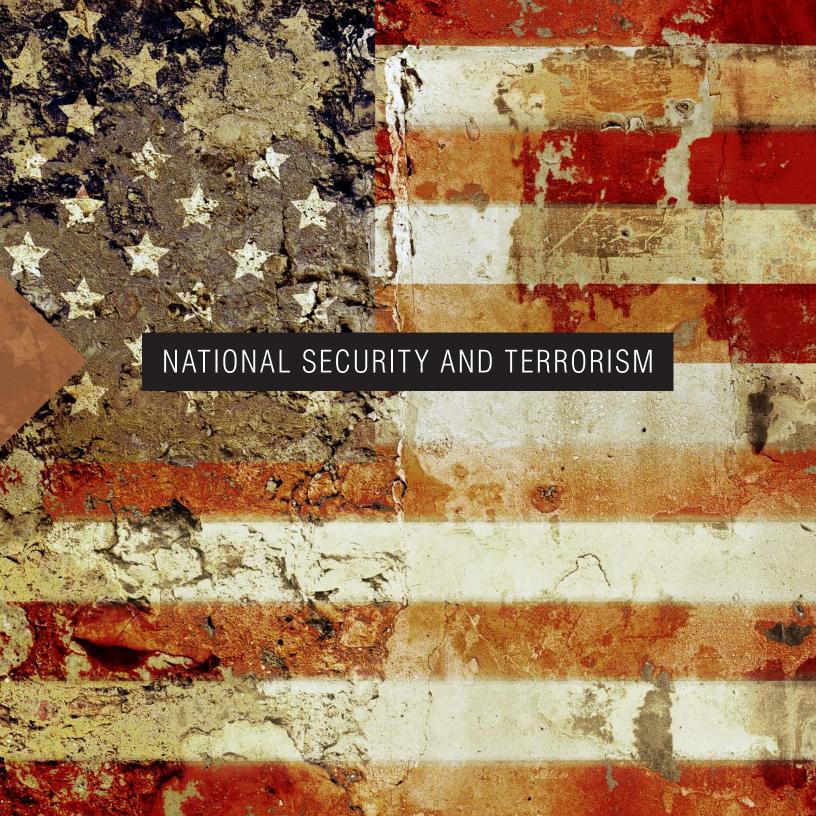
Learn more at www.rand.org/t/PEA1133-1



You can see how this could lead to conflict if you have two countries with different interests. But there's really no road map for how to deal with problems as these technologies mature.

MICHELLE GRISÉ

POLICY RESEARCHER



Understanding and Preventing Violent Extremism

Top law enforcement officials have warned that violent extremism—especially violent White extremism—has become the greatest domestic threat facing the United States. Yet research on how to fight it has too often failed to engage the people who might know best: those who have lived that life and left it behind.

RAND researchers partnered with anti-extremism groups to change that. They interviewed 24 former extremists, their friends and family members about what brought them in and what got them out. The National Institute of Justice—the research, development, and evaluation agency of the U.S. Department of Justice—sponsored the project.

Most of the interviewees had once been members of White supremacist groups like the Ku Klux Klan, although the researchers also interviewed several former Islamic extremists. As a group, the interviewees tended to struggle with social isolation and financial instability, and saw themselves as victimized, marginalized, or stigmatized.

More than half struggled with behavioral health issues, such as addiction, but the line from there to extremism was not direct. Instead, those problems had often cut them off from other opportunities, such as jobs or military service, fueling their sense of marginalization.

Confrontational interventions—friends, family members, or authorities trying to push them out of extremism rarely worked. Instead, many said they decided to leave their extremist group after a meaningful encounter with someone they had been taught to hate, such as a person of another race or religion. Others said they just burned out or grew disillusioned.

The interviews provide some direction as the United States turns to confront the extremist threat within. It should borrow a page from public health, the researchers wrote—looking for patterns in who is susceptible, what risk factors they share, and what help they need. It should focus money and resources on preventing extremism early, as if it were a virus or addiction, rather than responding only when it becomes a crisis.



Learn more at www.rand.org/t/RRA1071-1



It was amazing how transformative human contact and kindness could be. So many trajectories out of extremism involved unexpected exposure to diversity mixed with kindness.

RYAN ANDREW BROWN

SENIOR BEHAVIORAL AND SOCIAL SCIENTIST • RAND PROFESSOR • PARDEE RAND GRADUATE SCHOOL

U.S. Military Intervention Decisions

When should the United States intervene in a foreign war or crisis? RAND researchers analyzed 60 years of armed conflicts to help the U.S. Army better anticipate when a military response will be most effective and when restraint is the better path.

They found that U.S. military interventions have achieved their political objectives roughly 60 percent of the time since the end of World War II. But they also found some evidence that the U.S. may have overintervened at times. And historically, choosing to sit out a conflict or crisis was more likely to advance U.S. interests than to harm them, though there were clear exceptions.

The researchers identified a set of questions that the U.S. needs to answer before it decides to intervene. What is the balance of power between the belligerents, and can a plausibly sized U.S. intervention make a difference? Are there any other countries that could

enter the conflict to counter the U.S.? Could the conflict escalate, drawing the U.S. into a more-dangerous confrontation? And would a U.S. intervention be seen as legitimate by the international community?

Intervening early often has high risks and rewards. It may help the U.S. achieve time-sensitive objectives, but it also forgoes the chance to wait for more favorable conditions. Likewise, larger interventions can be more effective than smaller ones for combat—but in other circumstances, they risk escalating the conflict or triggering a backlash.

RAND's study, commissioned by the Office of the Deputy Chief of Staff of the U.S. Army, provides a framework for weighing the trade-offs of intervening or not intervening. That framework depends on good intelligence and careful analysis to ensure the U.S. can fully answer those key questions before it makes a go/no-go decision.



Learn more at www.rand.org/t/RR4293



Although military interventions can be very effective at advancing U.S. interests in some contexts and situations, they could have the opposite effect in other contexts, creating long-term entanglements and increasing economic and strategic costs without realizing U.S. objectives. Our framework can be used to rigorously consider those trade-offs.

BRYAN FREDERICK

SENIOR POLITICAL SCIENTIST





Measuring the Value of Invention

For 25 years, the Lemelson-MIT Prize was the Academy Award for inventors, a \$500,000 honor for those whose work benefited society and improved lives and communities. Just 26 inventors ever won. Prize administrators asked RAND to calculate the social and economic value those 26 inventors helped create.

The results show that getting more people from more backgrounds excited about inventing could be a very smart investment.

Researchers reviewed corporate filings, patent applications, and scientific journal articles. They found that the 26 prize winners had gone on to start more than 140 companies to develop and market their inventions. Those that reported their financial data had more than \$54 billion in total revenue in 2019. They employed around 40,000 people.

The 26 inventors also held more than 3.800 total patents. Their portfolios included the balloon catheter, the computer mouse, the spam-filtering reCAPTCHA test, and the entire field of recombinant

DNA technology. But their creative impact went far beyond that. The researchers found more than 40,000 subsequent patents that built on their ideas and cited them as precedent.

The analysis also provides some idea of what America may have lost by not encouraging more women, minorities, and people from lower-income families to become inventors. Previous studies have estimated that America would have four times as many inventors if those "lost Einsteins" had the support and role models they needed.

The findings point to a need for more programs and regulatory policies that support the development of inventions and inventors, researchers wrote.

The Lemelson-MIT Program and the Lemelson Foundation awarded their final \$500,000 prize in 2019. They have since pivoted to focus on building up the next generation of innovators. They sponsored RAND's analysis to help them inspire young inventors of all backgrounds to follow their own ideas.



Learn more at www.rand.org/t/RRA838-1



If you want to maximize the benefits to society, you need everybody to have a chance to be the best inventor they can be. There's a whole pool of people we're missing out on because they're not being engaged.

BENJAMIN MILLER

ECONOMIST • RAND PROFESSOR • PARDEE RAND GRADUATE SCHOOL

Machine Learning-Assisted Command and Control

The U.S. Air Force is preparing for a future in which the sheer volume of data and speed of operations could overwhelm human decisionmaking. It will need to invest in artificially intelligent computer systems to keep upbut that's not a one-size-fits-all solution.

Artificial intelligence—or Al—can describe a wide range of computer capabilities. Choosing the right system to meet a specific need should be like fitting a key to a lock, RAND researchers cautioned. They developed a framework to help the Air Force specify what it needs from AI, and what capabilities can best fit that lock

The framework provides a menu of command-andcontrol challenges ("operational risks," "operational tempo") alongside a menu of potential AI capabilities ("data efficiency," "optimality," "learning"). Working with a panel of 50 experts, the researchers ranked the importance of each capability for each challenge.

A computer entrusted with high-risk decisions, for example, needs to be sound in its decisionmaking, robust in its performance, tested and validated to make sure it will be reliable even in unfamiliar circumstances. Less-risky functions, like scanning through a surveillance feed, may put more of a premium on speed and efficiency instead.

Al developers often use games of strategy, like chess, to develop and test their systems. RAND's framework underscores how misleading those tests can be. For all the operational tempo of Tetris or guesswork of bridge. games have well-defined rules that an AI system can master and exploit. The Air Force needs to develop better tests that simulate the complexity and uncertainty of real-world command-and-control situations. researchers wrote.

The Information Directorate of the Air Force Research Laboratory sponsored the project. It is using RAND's framework to develop AI and command-and-control requirements for Air Combat Command.



Learn more at www.rand.org/t/RRA263-1



Command-and-control processes exemplify wicked problems. Understanding the capabilities and limitations of existing Al systems will allow the Air Force to identify those that are suitable for addressing them.

MATTHEW WALSH

BEHAVIORAL AND SOCIAL SCIENTIST





Chronic Stress Among Public School Teachers

Teachers left their jobs during the pandemic for many of the same reasons they left before the pandemic. a RAND survey found: long hours, low pay, and the overall stress of teaching. Those are problems that won't go away even if COVID-19 vanishes tomorrow.

Researchers asked nearly 1,000 former public school teachers what made them resign, retire early, or take an unpaid leave of absence. The teachers were split between those who left before COVID shut down schools in March 2020 and those who left in the months after.

Fewer than half of the teachers who guit post-COVID cited the pandemic as their main reason. Some said the challenges of remote instruction or inadequate safety plans played a role in their decision. Older teachers, especially, said they worried about the health risks of staying in the classroom. Younger teachers cited their own child care responsibilities at home.

But the most common reason that teachers cited for leaving—"The stress and disappointment of teaching weren't worth it"—was the same for those who left before and during the pandemic. That undercurrent of discontent could put additional strain on schools in a post-pandemic world.

The pandemic could open a policy window through which to reconsider the job responsibilities of a typical public school teacher, researchers wrote. Districts should work with their teachers to address classroom stress as they plan for the future.

The survey, funded by the Chan Zuckerberg Initiative, did find one reason for optimism. Nearly two-thirds of the teachers who left because of the pandemic said they would consider coming back once students and staff members are vaccinated



Learn more at www.rand.org/t/RRA1121-2



Teachers face long work hours, lack of flexibility in their schedules, poor work climates for some, and low pay for what the job demands. These persistent, structural problems will outlast the pandemic unless there are changes to the teaching profession.

MELISSA KAY DILIBERTI

ASSISTANT POLICY RESEARCHER • RAND DOCTORAL CANDIDATE • PARDEE RAND GRADUATE SCHOOL

Women and Racial or Ethnic Minorities in the U.S. Coast Guard

The U.S. Coast Guard needs to strengthen every rung of its career ladder to help more underrepresented minorities—its term for women and racial or ethnic minorities—reach the upper ranks. That will require years of sustained effort, a RAND analysis found.

More than one-quarter of the Coast Guard's seaman recruits, the lowest rank, are racial or ethnic minorities; 14 percent are women. Their numbers fall as rank increases. Just four flag officers are racial or ethnic minorities; six are women.

The Coast Guard's Office of Diversity and Inclusion asked RAND to identify barriers that underrepresented minorities face at every step of their careers. Researchers reviewed administrative data, interviewed Coast Guard leaders and experts, and surveyed all active-duty members. They also convened focus groups to hear directly from underrepresented minority members.

They found that change needs to start with recruitment, with more outreach to underrepresented communities and recruiting goals based on population benchmarks. Once in uniform, minority service members were underrepresented in operational and command positions, the researchers found. They also reported difficulty finding mentors who looked like them, and found it "tough to crack the code" on what it takes to get ahead. Women and Black members also had lower retention rates, further limiting the diversity pool of potential senior leaders.

The researchers provided 40 recommendations to help the Coast Guard remedy "systemic challenges across all stages of the career life-cycle." Those included the creation of a reorganized Office of Diversity, Equity, and Inclusion to monitor the Coast Guard's progress going forward. The Coast Guard promotes its senior leaders from within, the researchers noted—which means improving its diversity numbers at the top requires starting at the bottom.



Learn more at www.rand.org/t/RRA362-2



There is no silver bullet or quick-win solution to improve the representation of underrepresented minority groups in the Coast Guard so that it reflects the nation it serves. Instead, our recommendations will enable the Coast Guard to make systemic shifts for enduring change.

NELSON LIM

SENIOR SOCIAL SCIENTIST • RAND
DIRECTOR, WORKFORCE, DEVELOPMENT, AND HEALTH
PROGRAM • RAND PROJECT AIR FORCE
PROFESSOR • PARDEE RAND GRADUATE SCHOOL



Enlistment Waiver Policies in the U.S. Army

Recruits who join the U.S. Army with waivers for such disqualifying marks as past marijuana use or depression perform no worse, overall, than other soldiers. The Army could tighten its policy on waivers, a RAND analysis found—but, for the most part, the policy works.

Waivers are often portrayed in the media as free passes handed out by an Army desperate to fill its ranks with anyone it can get. But to earn a waiver, recruits have to convince the Army that they're a good bet to succeed despite whatever checked box has held them up. That means more scrutiny, not less.

The Office of the Assistant Secretary of the Army for Manpower and Reserve Affairs asked RAND to investigate how waivered recruits perform once in uniform. Researchers looked at personnel data from every recruit who joined the regular Army between 2001 and 2012.

Around 15 percent needed some kind of waiver to get in, most often for health reasons. As a group, they were not across-the-board riskier than other recruits. By one key measure, reenlistment, they performed almost exactly the same.

When waivered recruits did get into trouble, it was often because of what they had been waivered for in the first place. Recruits who came in with a misdemeanor history of marijuana possession, for example, were somewhat more likely to go out on a drug charge. But those same recruits tended to perform better than average in other areas, often balancing out the negatives.

The Army could be more deliberate about using waivers to bring in recruits with the highest chances to succeed, such as those who are older or better educated. But the researchers concluded the Army has generally made good use of waivers to bring in well-qualified recruits who otherwise could not join.



Learn more at www.rand.org/t/RR4431



This is really an open area for more thinking about the military's approach to people with these issues in their backgrounds. It's gratifying that we can now start bringing to bear some analysis on a topic that needs much more investigation.

BETH ASCH SENIOR ECONOMIST



NEWS

A Lifetime of Leadership

RAND president and CEO **Michael Rich** announced he will retire in 2022 following a search for his successor. Rich became RAND's fifth president in 2011. He began his RAND career as a summer intern in 1975 and went on to hold several senior leadership positions.

Since Rich became president, one of his primary goals has been to have RAND deliver research and analysis that make an ever-greater impact, leading directly to improvements in policy and decisionmaking. During his tenure, RAND has seen annual revenues grow from \$250 million to more than \$350 million; seen the value of RAND's Long-Term Investment Fund increase from \$178 million to more than \$318 million: raised more than \$200 million in philanthropic gifts as part of the Tomorrow Demands Today fundraising campaign; and tackled such policy challenges as health care costs, international security, the COVID-19 pandemic, and gun policy in America. He has helped define truth decay the diminishing role of facts and analysis in public life—and made countering truth decay a top research priority at RAND.

"There's no perfect time to leave a job you care so much about. But I've always wanted the next president of RAND to have the benefit of entering the role at a time of organizational strength and opportunity. That certainly characterizes RAND now."

Rich was instrumental in the creation of the RAND National Defense Research Institute, a federally funded research and development center that provides research and analysis to the Office of the Secretary of Defense, the Joint Staff, the Combatant



I've always wanted the next president of RAND to have the benefit of entering the role at a time of organizational strength and opportunity. That certainly characterizes RAND now.

Commands, the Navy, the Marine Corps, the defense agencies, and the intelligence community. He also helped lead RAND's diversification and expansion into international markets, including Europe, the Middle East, and Australia. He co-led the development of RAND's headquarters building in Santa Monica, California, which was awarded the U.S. Green Building Council's Gold Leadership in Energy and Environmental Design (LEED) certification for the environmentally responsible design in 2006.

Throughout his career, Rich has been an enthusiastic supporter of the Pardee RAND Graduate School, where he has taught and advised graduate students and chaired numerous committees.

New Leaders

Nancy Staudt joined as the Frank and Marcia Carlucci Dean at the Pardee RAND Graduate School and vice president, Innovation at RAND in October 2021. Staudt previously served as the dean and Howard and Caroline Cayne Distinguished Professor at the School of Law at Washington University in St. Louis, where she raised more than \$100 million to increase scholarships for students, extend the school's clinical and experiential programming, and expand the number of named professorships. She is lauded for her efforts to advance diversity and promote a more-inclusive campus environment at Washington University. She coedited *The Crisis of Race in Higher Education*, a collection of writings devoted to the issue of access, bias, and opportunity in university settings, and helped launch a statewide task force on racial justice. Prior to Washington University, Staudt was vice dean for faculty and academic affairs at the Gould School of Law at the University of Southern California and was the inaugural holder of the Edward G. Lewis Chair in Law and Public Policy. She also served as the founding codirector of USC's Schwarzenegger Institute of State and Global Policy.





Longtime defense analyst and aerospace engineer **James S. Chow** became vice president and director of RAND Project AIR FORCE. Chow had most recently served as director of RAND Project AIR FORCE's Force Modernization and Employment Program. He served in various leadership roles at RAND for more than two decades. From 2017 to 2020, Chow also served as the chair of the Air Force Scientific Advisory Board, a federal advisory committee chartered by the Secretary of Defense that consists of civilian experts appointed to provide independent advice and recommendations to the Secretary of the Air Force and the Secretary of Defense on scientific and technical matters relating to the Air Force mission. As a researcher, Chow's expertise spans a wide range of issues, from aircraft and weapons-related force planning to detailed modeling and simulation of aircraft and air defense interactions. Additionally, he has served as a research department leader at RAND, responsible for the recruiting, hiring, and professional development of research staff.

New Leaders

K. Jack Riley became vice president of the RAND Homeland Security Research Division and director of the Homeland Security Operational Analysis Center, a federally funded research and development center (FFRDC) that RAND operates for the U.S. Department of Homeland Security. Riley most recently directed the RAND National Security Research Division, home to another FFRDC—the RAND National Defense Research Institute. Riley worked as a senior civil servant at the U.S. Department of Justice, where he focused on crime, immigration reform, drug epidemiology, and domestic terrorism. He is a member of the Pacific Council on International Policy and a board member at the National Defense University Foundation. A supporter of educating the next generation of national security professionals, Riley has guest lectured at the University of Michigan's Ford School on the role of policy analysis in national security and given a commencement address at the University of Pennsylvania's Department of Criminology.





Michelle Woods joined RAND as a senior defense researcher and associate director of the RAND Homeland Security Research Division. She most recently served as the homeland security program director at the National Governors Association (NGA) Center for Best Practices, where she managed a range of homeland and national security policy issues, including counter- and domestic terrorism, emerging threats, and emergency response and public health preparedness. Prior to NGA, Woods served as director for homeland security for the U.S. Senate Committee on Homeland Security and Governmental Affairs, where she led major policy initiatives, including the effort to reauthorize the U.S. Department of Homeland Security and the establishment of the Countering Weapons of Mass Destruction Office and Cybersecurity and Infrastructure Security Agency. Woods also worked at the U.S. Government Accountability Office and, before that, as special assistant to the Secretary of the Commonwealth of Kentucky, where she was the director of civics literacy and voter education initiatives.

Rhianna C. Rogers is the inaugural director of the RAND Center to Advance Racial Equity Policy. She is an expert on cultural and ethnic studies, intercultural competencies and diversity education, cultural mediation, and virtual exchange programmatic development and implementation. Her approach centers on participatory action research and community engagement processes. She was most recently an associate professor of interdisciplinary studies and coordinator of the Global Indigenous Knowledge program at State University of New York, Empire State College. At SUNY, Rogers was the Ernest Boyer Presidential Fellow at the Rockefeller Institute of Government and a SUNY Center for Online Teaching Excellence Fellow. She was also a Stevens Initiative Visiting Professor of Anthropology at the American University of Technology in Kaslik, Lebanon. Rogers has developed several successful initiatives on diversity, equity, and inclusion, including the Buffalo Project, a grant-funded and award-winning action-based diversity program focused on the development of culturally inclusive programming and upskilling populations to inform solution-making efforts in college and community environments.





Andrew Dowse, retired air vice-marshal and former director of defense research at Edith Cowan University, has been appointed director of RAND Australia. He becomes the first Australian to lead RAND Australia, which was established in 2014. According to Michael Rich, "Dowse joins RAND at a critical time for research and policy analysis in Australia. As the country navigates economic recovery, a continuing pandemic, increasing national disasters, cyber threats, and more, it is robust research and analysis that can help solve complex policy problems and develop strategies for national resilience." Dowse is engaging with the Australian government to support national and regional priorities. His most recent work for RAND Australia has been to provide research support to the Sovereign Guided Weapons Enterprise. RAND Australia's local research talent is augmented with world-class experts from across RAND's global presence.

New Leaders



Krishna Kumar became vice president, International—a position in which he will oversee RAND's non-U.S. business strategy, business development efforts, and outreach to achieve policy impact and build RAND's profile. This includes overseeing RAND's two non-U.S. subsidiaries—RAND Europe and RAND Australia—as well as International Programs. Kumar holds the Distinguished Chair in International Economic Policy; and, at Pardee RAND, he teaches economic development and directs the Pardee Initiative for Global Human Progress. His project work has addressed opportunities for Syrian refugees, labor markets in Bangladesh, and key economic indicators and data systems of the Kurdistan Region–Iraq. He has conducted a randomized control trial evaluation of an agricultural training program in China, evaluated the socioeconomic impact on the working poor of moving into permanent housing in India, and studied the role of economic and social policies in Mexico's development.

Some of the best things that RAND could do would be in the area of youth employment. In places like Bangladesh, India, and Jordan, there is a huge youth population. These people will be in the labor force for another 40 to 50 years. What policies will help these countries reap the demographic dividend and avert a demographic disaster?

KRISHNA KUMAR

New Trustees



Physician, educator, and scientist **Raynard Kington**, head of school at Phillips Academy, Andover, joined the RAND Board of Trustees in February 2021. Kington became the 16th head of school at Andover in July 2020 after serving for ten years as the president of Grinnell College. Prior to Grinnell, Kington served in the public sector as the deputy director and acting director at the National Institutes of Health and as a division director at the Centers for Disease Control and Prevention. Earlier in his career, he also was a senior scientist at RAND and an assistant professor of medicine at UCLA. He was elected to the Institute of Medicine (now the National Academy of Medicine) in 2006. As a researcher, Kington has focused on the social determinants of health and on diversity in the biomedical sciences.

Author, philosopher, and political economist **Francis Fukuyama** returned to the RAND Board of Trustees in November 2021. He first served on the board from 2008 to 2015. Fukuyama, whose book *The End of History and the Last Man* was awarded a Los Angeles Times Book Prize and has appeared in more than 20 foreign editions, is currently a senior fellow at Stanford University's Freeman Spogli Institute for International Studies and director of Stanford's Ford Dorsey Master's in International Policy. Fukuyama was a member of RAND's Political Science Department during parts of the 1970s, '80s, and '90s and is currently a member of the Pardee RAND Graduate School Board of Governors. Fukuyama was previously a professor at the Paul H. Nitze School of Advanced International Studies at Johns Hopkins University and at the



School of Public Policy at George Mason University. He has also held influential roles in the public sector, serving as a member of the President's Council on Bioethics under President George W. Bush and as a member of the Policy Planning Staff of the U.S. Department of State.



Janet Napolitano was elected to the RAND Board of Trustees in June 2021. She was the first woman to serve as secretary of homeland security and led the nation's efforts to protect against terrorist attacks, respond to natural disasters, and build domestic resiliency. Under her leadership, the department made critical enhancements to aviation security, expanded programs to help identify foreign threats, and worked to create a humane enforcement system for immigration, including the Deferred Action for Childhood Arrivals (DACA) initiative. Napolitano was elected governor of Arizona in 2002 after serving as the state's attorney general and U.S. attorney for the district of Arizona. In her years as governor, she championed educational initiatives and bolstered the state's rainy-day fund, economic development, and tourism. She served

as the president of the University of California system for seven years, and is founder and faculty director of the Center for Security in Politics at the Goldman School of Public Policy at the University of California, Berkeley. While leading the UC system, she helped create the University Climate Change Coalition, a group of 18 leading North American research universities and systems working to help local communities achieve their climate goals.

PARDEE RAND GRADUATE SCHOOL

The Student Body

Each year, approximately two dozen new doctoral students enroll in the Pardee RAND Graduate School. They come from around the world and from the most diverse of educational backgrounds.

Their academic credentials are very strong, but the admissions committee doesn't just go by the numbers. The committee looks for creativity and the ability to think about issues in new ways. Pardee RAND seeks students with a combination of passion and discipline—the passion to change the world for the better and the discipline to carry forth the new research and analysis that will be needed to do so.

Pardee RAND was excited to welcome Cohort '21 (shown here). They range in age from 22 to 51, and 76 percent of them arrived already having advanced degrees. Forty-four percent of the cohort are women, and 24 percent were first-generation college students (64 percent are first-generation grad students).

As a whole, our student body hails from 20 countries.





























PARDEE RAND GRADUATE SCHOOL

Pardee RAND Welcomes New Dean



Nancy Staudt joined as the Frank and Marcia Carlucci Dean at the Pardee RAND Graduate School and vice president, Innovation at RAND in October 2021.

Staudt is a nationally recognized scholar in tax, tax policy, and empirical legal studies, having authored or coauthored numerous books and articles published in leading journals and American university presses. She also helped launch a statewide Task Force on Racial Justice to promote justice and equity in Missouri.

Staudt is dedicated to helping Pardee RAND students graduate with little or no debt through the conferring of generous scholarships and research fellowships that cover tuition and living expenses.

Staudt earned her Ph.D. in public policy from the Harris School of Public Policy at the University of Chicago, her J.D. from the University of Minnesota, and her B.A. from the Ohio State University.

Staudt emerged from a strong field of candidates who have been successful in different roles spanning policy, academia, communications, and executive leadership. Her experience in academic administration, her commitment to student learning and success, her record of involvement in civic activities, and her demonstrated alignment with RAND's mission and core values will enable her to continue to deepen the excellence of Pardee RAND and champion innovation at RAND.



PARDEE RAND GRADUATE SCHOOL

New Endowed Scholarship

Donors including James B. Lovelace, chair of the Pardee RAND Graduate School Board of Governors, and other longtime board members have contributed to a \$1 million scholarship endowment established in honor of former dean Susan L. Marquis. The scholarship will support future Pardee RAND students and pays tribute to Marquis's leadership.

The gift was announced by president and CEO Michael Rich and Lovelace following the June 2021 meeting of the Pardee RAND board, the last such gathering led by Marquis under her 13-year tenure.

"It's the Board of Governors as a group who are building this fund, our way of saying thanks and helping future students remember her achievements." said Lovelace.

Marquis's tenure at Pardee RAND was defined by a transformation of the nation's largest and oldest public policy Ph.D. program—the establishment and implementation of a new model for public policy graduate education that is designed for our radically changing world.



Pardee RAND Joins the Volcker Alliance Developing a high-quality pipeline for careers in public service remains an enormous challenge, according to Sandy Buchan, executive director of Career Services and cochair of the Los Angeles-based Volcker

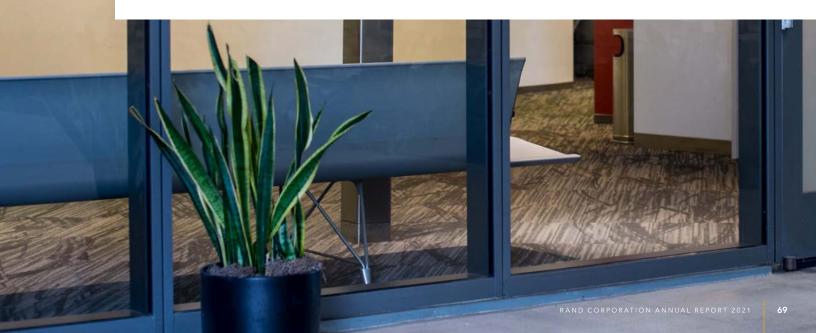
Alliance for Public Service.

Pardee RAND was invited to join the Volcker Alliance Government-to-University (G2U) Initiative, which aspires to convene government and university leaders and strengthen government's ability to attract top talent. At the core of the G2U Initiative is a network of local, state, and federal government leaders working with key faculty and administrators from colleges and universities; these regional networks will engage with nonprofit, civic, and private-sector leaders to strengthen the partnership.

In short, the Volcker Alliance fosters a "network of networks" to facilitate the rapid exchange of ideas and best practices and provide engagement opportunities with national organizations allied with G2U aims.

In 2021, Pardee RAND led a Volcker Alliance grant-based study on addressing barriers to talent and diversity in the Los Angeles region. The Southern California Association of Governments, the regional lead for the Volcker Alliance, joined this research effort with a generous donation to the grant.

The Volcker Alliance is a nonprofit founded by the late Paul A. Volcker, the former chairman of the Federal Reserve who became a strong national advocate for public service. Volcker was a generous supporter of RAND and Pardee RAND and served on the RAND Board of Trustees from 1993 to 2000.



PHILANTHROPY IN ACTION

With funding from donors and grantmakers, RAND has reached a significant milestone in the Tomorrow Demands Today campaign we are now more than halfway toward our goal of raising \$400 million. RAND is using campaign gifts and grants to directly support our people and our purpose—to help individuals, families, and communities throughout the world be safer and more secure, healthier and more prosperous. The individuals and organizations who have made RAND a philanthropic priority share our vision that tomorrow demands action today.



Advancing Research to Improve Veterans' Lives

RAND has a long history of research to improve the lives of those who have served in the U.S. military, including landmark research on military caregivers. The 2014 RAND Military Caregivers Study, commissioned by the **Elizabeth Dole Foundation**, was the first comprehensive, evidence-based national study of military and veteran caregivers. The two-year study examined caregiver needs, as well as gaps in services and recommendations for supporting these "hidden heroes."



In continued partnership with the Elizabeth Dole Foundation, a new campaign grant

of almost \$2 million will launch the next chapter of research on America's hidden heroes. The follow-up study commissioned by the foundation will explore where America's hidden heroes still need more support.

"Our first study with RAND was so profound and instructive that it enabled us to launch a movement behind our military caregivers," said Steve Schwab, CEO of the Elizabeth Dole Foundation. "This second generation of research is going to tell us more about the military caregivers and care recipients who are historically underserved by current resources, so we can ensure they have the support they need and deserve."

The research will be housed in the RAND Epstein Family Veterans Policy Research Institute, which was launched with a \$10 million campaign gift by RAND supporters Daniel and Phyllis Epstein, through the Epstein Family Foundation. The new study will measure how demographics, including geographic location, race, and gender, affect caregiving, with the goal of using the data to design more-sophisticated and customized caregiver solutions and make critical inroads with underserved populations.

"We know these findings will become a clarion call to the nation, and we look forward to working with RAND," Schwab said.

PHILANTHROPY IN ACTION

Alumni Give Back



"Pardee RAND shaped me as a person and a professional," said **Evan Bloom**, a 2014 graduate who is now director of Product Innovation at Netflix for Consumer Messaging and Growth Algorithms. "I'm grateful for my Pardee RAND experience and want to pay it forward. Donating to Pardee RAND is a way to both support important research and help students access an unmatched public policy education."

The RAND Alumni Impact Fund, an annual giving vehicle, helps RAND researchers extend the reach of significant and timely projects. Donor contributions to the fund are pooled and each year directed to help researchers raise the visibility of research and widely share findings and recommendations. Since the initiative was launched in 2014, more than \$100,000 has been raised each year to support the fund.

Supporting Drug Policy Innovation

A seven-figure campaign gift from engineer and inventor **Jack McCauley** is supporting drug policy research at RAND. The gift established the McCauley Chair in Drug Policy Innovation to help develop and promote actionable solutions to stem the tide of drug overdoses and addiction. The inaugural chairholder is Beau Kilmer (pictured), a senior policy researcher and director of the RAND Drug Policy Research Center whose research lies at the intersection of public health and public safety.

"For three decades, the RAND Drug Policy Research Center has helped decisionmakers address issues involving alcohol and other drugs, bringing an objective and data-driven perspective to an often emotional and fractious policy arena," Kilmer said. "Now is the time for new solutions, and Jack's gift is empowering RAND to contemplate and rigorously evaluate innovative ways to reduce drug overdose deaths and other drug-related harms."

The McCauley gift has supported RAND's work to help reduce drug problems in San Francisco and complete RAND's forthcoming volume on America's opioid ecosystem—the most comprehensive analysis written about the crisis and how to address it. The gift also launched RAND's new initiative on the future of technology and drug policy.

In announcing the gift, McCauley said, "I know my gift will help researchers explore new strategies for improving the lives of those who need the most help."

In early 2020, as COVID-19 was spreading across the globe, RAND was able to quickly initiate a number of research projects to help arm communities, institutions, and individuals with the analysis needed to respond to the crisis. RAND's rapid research response was mobilized with the help of unrestricted gifts from supporters, including annual gifts made to the RAND President's Fund.

"As RAND alumni, Ann and I support the President's Fund because we trust RAND's leaders to direct our gifts to the areas or initiatives that are of the highest priority," said Ken Horn, currently an adjunct senior engineer at RAND. **Ann and Ken Horn** each spent more than four decades working at the organization; they met and married while at RAND.



"Ann and I believe in RAND's mission and are committed to giving back to an organization that has given us so much," Horn said. In addition to supporting the President's Fund, they have donated to the RAND Alumni Impact Fund and are part of the RAND Legacy Society, a group of donors who have included RAND in their estate plans.

Contributions to the President's Fund—as well as to other discretionary funds—provide RAND and the Pardee RAND Graduate School with a financial foundation. The funding helps RAND address critical needs as they arise, and to prepare for future demands. Pardee RAND relies on these flexible donor dollars to fund school initiatives and support students. The graduate school provides full tuition scholarships to all first-year students and partial tuition scholarships for the second year of study.

"RAND is made up of the most talented individuals who are dedicated to using research to help improve people's lives. For me, giving to RAND annually is a way to honor RAND's people and their contributions to RAND and the world," said **Marcia Bird**, whose history of giving includes support for the RAND Alumni Impact Fund and the President's Fund.

Bird's donations are in memory of Kevin N. Lewis, who was a senior defense analyst at RAND and faculty member at Pardee RAND until his death in 2008. She also chose to commemorate Lewis's 30-year RAND career with a gift to name his favorite lunch spot in the courtyard at RAND's Santa Monica headquarters campus.

Kevin Lewis: A prolific author with a brilliant mind and an uncommon ability to weave together historical lessons and strategic thought.

30 years at RAND: 1978-2008

The consistent and collective support of loyal donors increases RAND's agility—a priority of the Tomorrow Demands Today campaign. It provides the organization with the flexibility to act on fast-breaking priorities and signals the trust placed in RAND to best use resources to help solve the most complex policy challenges.

PHILANTHROPY IN ACTION

Countering Truth Decay

The COVID-19 pandemic provided rich ground for misinformation. RAND researchers uncovered efforts by Russia and China to use the pandemic to manipulate American public opinion. They also found that schools could be an important line of defense, if educators did more to teach students the skills they need to be careful consumers of media.

Both lines of research were part of RAND's ongoing search for solutions to what it has described as "truth decay," the diminishing role of facts and analysis in public life. Countering truth decay is one of the top priorities of RAND's Tomorrow Demands Today fundraising campaign. In 2021, unrestricted donor funds allowed researchers to engage with the especially virulent strains of truth decay that emerged with COVID-19.



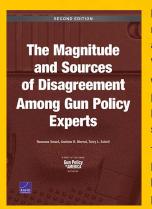
They found that Russia- and China-associated outlets spread disinformation on social media sites and other platforms during the pandemic, targeting U.S. audiences. Both groups advanced conspiracy theories early in the pandemic that COVID-19 was an American-made virus. They later shifted to focus on perceived U.S. failures in responding to the virus.

The research also underscored the need to equip American students with the knowledge and skills to navigate an increasingly chaotic media landscape. A RAND survey of hundreds of public school teachers found that just over 40 percent integrate media literacy into their lesson plans. Teachers at majority-White, low-poverty schools were more likely to integrate media literacy with their everyday classes than teachers at majority-Black and -Hispanic schools or schools with students who experienced higher rates of poverty. The findings emphasize the need for more-equitable approaches to media literacy instruction.

Many of the teachers in RAND's survey said they don't get enough guidance on how to promote media literacy. In response, researchers developed a framework to help schools implement media literacy efforts. It provides a step-by-step guide, from identifying instructional materials to measuring the impact on student learning.

Such tools can help ensure students have the complex skills they need to navigate today's information-saturated world—and to protect themselves from truth decay.

Gun Policy in America



More than 120 people die by gunfire on an average day in America. Yet the research that could help answer such basic questions as why and what to do about it is surprisingly thin. For years now, researchers at RAND have been working to fill that vacuum.

With philanthropic support, researchers in 2021 identified what could be the basis for a consensus path forward in the debate over gun policy in America. Regardless of where they stood on the issue, experts RAND surveyed were not so dissimilar in what they thought gun policies should be trying to accomplish.

Those who favored tougher restrictions and those who favored fewer restrictions both thought the top priority for gun policy should be preventing firearm homicides. Both groups ranked preventing firearm suicides and protecting privacy rights as the next-highest priorities.

They disagreed sharply in assessing what effect different policies would have toward those goals. One side thought establishing gun-free zones would be an effective way to prevent firearm homicides, for example. The other side thought gun-free zones would only invite more homicides.

The researchers found occasional policies that had at least some support from both sides. Those include child-access prevention laws and requiring anyone prohibited from owning guns to surrender any they already have. Both sides also largely supported the idea of committing resources to prosecute anyone who cannot legally own a gun but falsifies paperwork or otherwise tries to acquire one anyway.

RAND's research suggests that what separates the two sides is often a question of fact, not ideology. Do gun-free zones cause homicides to rise or fall? Do reductions in firearm suicides bring down total suicides? Those are questions that more data and better research could start to answer.

The Gun Policy in America initiative was launched in 2016 by Michael Rich, using unrestricted philanthropic contributions to RAND and income from operations.

Since June 2018, the initiative has been supported by a grant from Arnold Ventures.

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PHILANTHROPY IN ACTION



Honoring Legacy at RAND

RAND hosted a special gathering in November 2021 for supporters of the RAND Legacy Society, a group of donors who have made planned gifts to benefit RAND, the Pardee RAND Graduate School, or both. The event featured a presentation by RAND archivist Cara McCormick, who treated guests to a walk-through of RAND's history. Longtime donor Marcia Carlucci, a RAND Legacy Society supporter, spoke about her family's connection to RAND and the motivation behind their philanthropic support for the organization, which includes the endowed Frank and Marcia Carlucci Dean position at Pardee RAND.



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City of Santa Monica

First 5 LA

Probation Department

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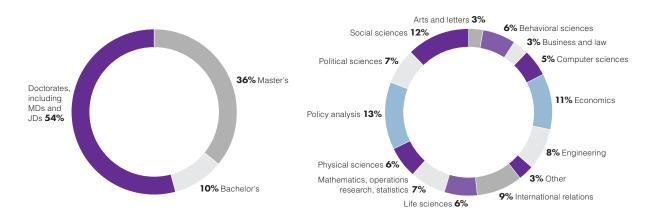
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