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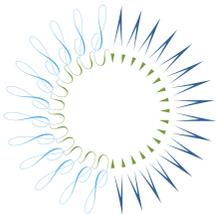
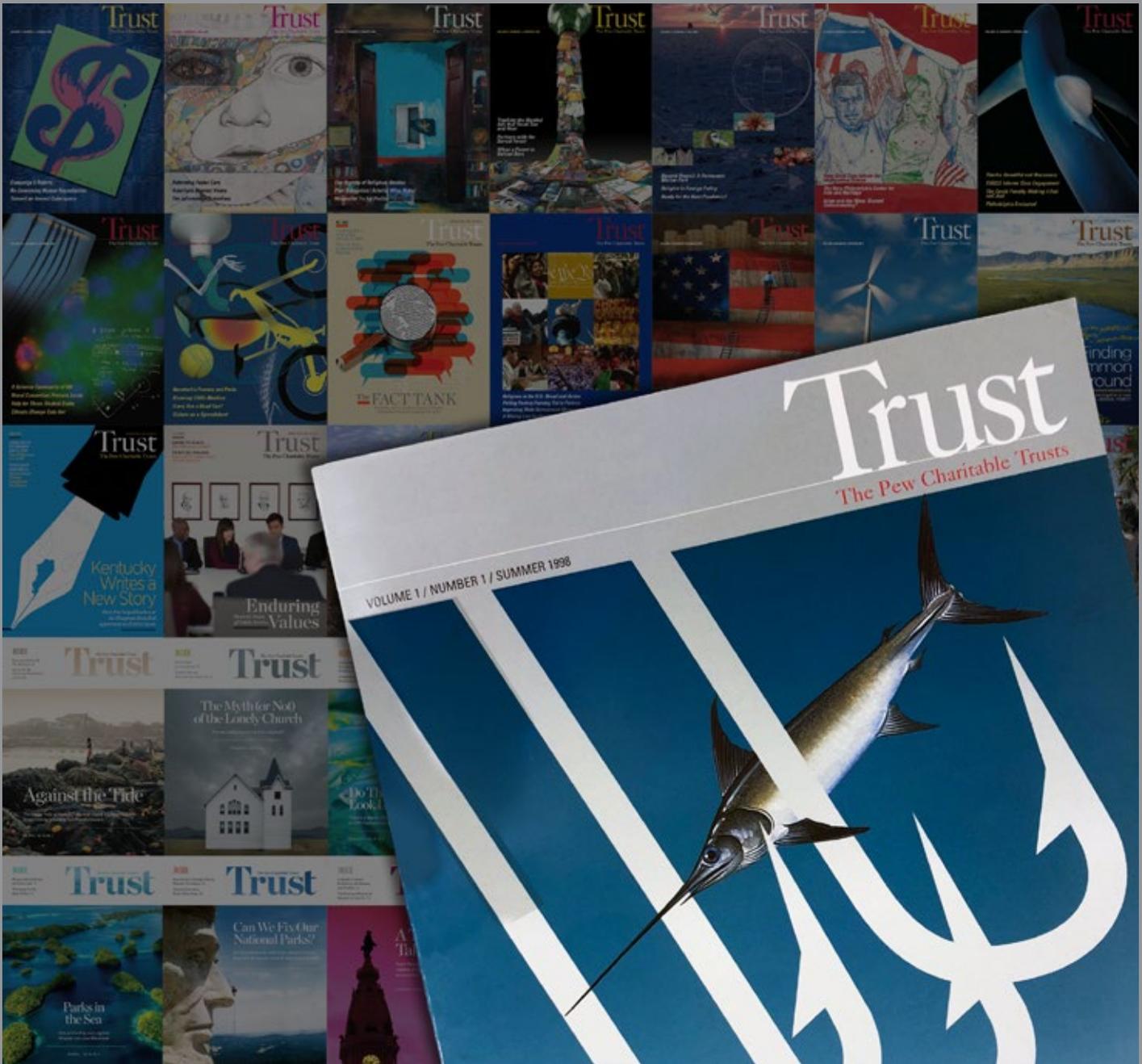
Trust

The Race to Vacuum the Ocean Floor

As miners are poised to drill the seabed and scoop up a treasure trove of minerals, science should guide the way.

Summer 2018 | Vol. 20, No. 3





TIME CAPSULE

Twenty years ago, with a Summer 1998 edition, The Pew Charitable Trusts published *Trust* magazine for the first time. In that inaugural issue, Pew President and CEO Rebecca W. Rimel wrote, “We are launching this new communications effort to reflect the work of the Trusts. That work is to help provide tools for a more engaged, enlightened, involved public—a public that is prepared to deal with policy issues current and anticipated. ... *Trust* will highlight the timely, important problems that the Trusts want to help solve. It will feature real people making a real difference.” Two decades later, Pew remains committed to those goals—and so does *Trust*.

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Cover illustration by Ned Drummond/The Pew Charitable Trusts

How Knowledge Fortifies Democracy



Open and robust debate is essential to American democracy and the bridge to a more perfect union. But the starting point for any discussion—and especially the search for common ground—must be an acknowledgment that facts are discernible and reliable. Indeed, our Founding Fathers recognized this when forming our fledgling nation, seeing the pursuit of truth as essential to our democracy. James Madison declared that “knowledge will forever govern ignorance; and a people who mean to be their own governors must arm themselves with the power which knowledge gives.” Thomas Jefferson put it more simply: “Light and liberty go together.”

Pew’s founders shared this vision, believing it necessary to arm the public with the facts—and then to trust the people to deploy that knowledge wisely. This commitment to informing the public and strengthening democracy has thus been part of our mission since our founding 70 years ago.

In its earliest days, Pew supported places of knowledge—colleges and universities, libraries, seminaries, and research organizations. More recently, we have expanded our reach and sought new ways to share the facts we learn in our research and policy work, harnessing the power of video, the internet, and social media to reach broader audiences.

The magazine you have in your hands—or on your screen—began two decades ago, and this edition of *Trust* marks the 20th anniversary of that first issue.

Trust has enabled us to report on Pew’s nonpartisan research, global policy work, and strategic partnerships, and to profile people and organizations that are using the power of knowledge to solve problems, serve their communities, and advance civic life.

In this issue, we take a close-up look at Pew’s elections work, which has been based on the Founding Fathers’ premise that an informed citizenry is the bedrock of democracy. In 2008, Pew determined there was no standardized, reliable, nationwide source for basic information voters need to cast their ballots. This research led to the Voting Information Project—Pew’s partnership with major technology companies that allows voters to use their computers and mobile devices to quickly access critical election data, including where and when to vote. In the 2016 election, Americans searched the project’s site more than 123 million times.

In its earliest days, Pew supported places of knowledge—colleges and universities, libraries, seminaries, and research organizations. More recently, we have expanded our reach and sought new ways to share the facts we learn in our research and policy work, harnessing the power of video, the internet, and social media to reach broader audiences.

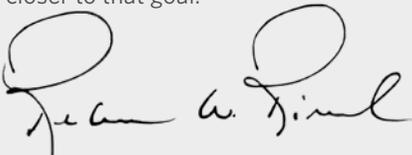
Pew also helped create the Electronic Registration Information Center, which developed a sophisticated matching tool that states can use to maintain accurate voter rolls. Since 2012, ERIC, as it has become known, has identified more than 8 million voters who moved but didn’t update their records and more than 145,000 duplicate records. Today, 22 states and the District of Columbia are members of ERIC, each helping to strengthen American democracy by removing voters who should no longer be on the rolls—and encouraging millions of others to register and let their voices be heard at the ballot box.

Pew’s expansion beyond America’s shores is also part of our 70-year history. Today, the ocean floor, with its rich mineral deposits, is on the cusp of a gold rush.

Pew is collaborating with the International Seabed Authority to ensure that strong, science-based rules are adopted to balance well-regulated mining with the important task of protecting biodiversity in the deep ocean. You can read more in our cover story, including how the discovery in Japan's seabed of a very large deposit of rare earth minerals, used in everything from smartphones to battery-operated cars, could affect the global economy.

This issue also covers the Pew Research Center's recent study of migration patterns from sub-Saharan Africa. The number of migrants from eight of these countries grew by 50 percent or more between 2010 and 2017. And the share of sub-Saharan migrants living in European Union countries—along with Switzerland and Norway—rose from 11 percent of the population in 1990 to 17 percent in 2017. In the United States, the share increased from 2 percent to 6 percent. What accounts for this mass migration to Europe and the U.S.? The report noted that there were multiple factors at play, including struggling economies in many African nations. But it also found that the chance to escape political instability and conflict motivated many to leave their homes.

This wish for freedom is truly universal. But with liberty comes the responsibility for each of us to seek "the power which knowledge gives." We hope this issue of *Trust*—like those that preceded it—brings our readers closer to that goal.



Rebecca W. Rimel, *President and CEO*

Trust

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THE BIG PICTURE

In Massachusetts, shad swim upstream in the Connecticut River on their annual spring run. The fish, which spend much of their lives in salty ocean water off the East Coast but each year migrate to freshwater rivers to spawn, gained a place in history by helping feed George Washington's troops during the Revolutionary War—earning the nickname the “founding fish.” Today, their annual run attracts eagles, ospreys, and striped bass, as well as eager anglers—and despite efforts to remove dams and restore river habitat, their numbers remain low along the Atlantic coast. At sea, shad are frequently caught by industrial-scale trawlers with football-field size nets that target other fish such as mackerel or sea herring. Pew is working with U.S. fishery managers to restore shad and other forage species so they can fulfill their essential roles in the ecosystem—and not just be left to history.





Pedestrians stroll at dusk across the Benjamin Franklin Bridge, heading into Philadelphia. *Jumping Rocks/ UIG/Getty Images*

Philadelphia's Annual Report Card

BY CAROL KAUFMANN

As much as at any time in recent history, the key gauges of Philadelphia's overall well-being fall into two distinct categories: economic indicators that are mostly positive—and social measures that are not.

First, the good news: Philadelphia's economy is headed in the right direction. According to the latest "State of the City" report—a yearly snapshot of the metropolis's vital signs from Pew's Philadelphia research initiative—the main economic indicators are positive.

The city had more jobs in 2017 than at any time since 1991. For the second year in a row, the city's job market outperformed the national average. And the unemployment rate, while still higher than the national average, also continued to drop, from 6.8 to 6.2 percent.

There was promising news in the real estate market, too. Home sales rose for the sixth consecutive year, the highest they've been since the end of the 2007 housing boom, with 20,818 sales recorded.

Residential building permits also increased. After two years of decline, the city of Philadelphia issued building permits to construct 3,389 residential units.

Changes in demographics may help explain, at least in part, the housing demand. For the 11th straight year, the city's population has increased, adding 6 percent—92,153 people—since 2006. The city's immigrant population continues to rise as well, with about 15 percent of 2017 residents born outside the United States, the highest percentage since 1940.

But while the economy is doing well and the shifting demographics are changing the look and feel of the city, the social indicators reveal a more sobering picture.

Even with the rise in employment and jobs, 26 percent of residents live in poverty, the highest among the nation's 10 most populous cities. Nearly half of the city's 400,000 poor residents are considered to be in deep

poverty, which means that one adult with two children lives on less than \$10,000 a year. "The poverty rate has remained stubbornly high and very difficult to move, even with jobs going up," says Larry Eichel, director of the Philadelphia research initiative. "And that is very hard to explain."

A total of 1,217 residents died of drug overdoses in 2017, nearly doubling the number of deaths just three years ago. Most were related to opioid misuse. By comparison, another epidemic, AIDS, claimed 935 lives in Philadelphia at its peak in the mid-'90s. The homicide rate has also crept up. More than 300 people were killed in 2017, the most since 2012, marking an increase of 14 percent in a single year.

"We're seeing a pretty clear pattern," Eichel says of this year's report. "We've got a growing economy, changing demographics, and worrisome social trends."

Expanded Dental Care Is Coming to Arizona

Nearly two-thirds of Arizona's population lives in what the U.S. Health Resources and Services Administration calls a dental desert, with nearly 5 million residents unable to easily access routine and preventive dental care, such as filling a cavity or cleaning teeth. But that may be changing.

In May, Arizona joined a growing number of states in authorizing dental therapists. These professionals, akin to physician assistants, provide routine prevention and treatment services and work in a range of settings where a dentist may not be available. Working under the supervision of a dentist, they treat patients in public clinics, community health centers, nursing homes, and schools, and can even set up temporary facilities to visit people who can't get to a dental office because it's too far away or they lack insurance and simply can't afford it.

Arizona Governor Doug Ducey (R) signed a measure that received strong bipartisan support from state lawmakers. "This bill will greatly increase much-needed access to dental care for citizens across the state of Arizona," says John Grant, who directs Pew's dental campaign.

With Arizona, seven states now authorize using dental therapists in some capacity. The therapists are commonly employed by private practices in Minnesota, where some dentists who participate in Medicaid can stretch their reimbursement rates further by employing dental



The Arizona flag flies outside the State Capitol in Phoenix.
iStockphoto

therapists, who receive a substantially lower salary.

More than 63 million people in the United States live in areas with dentist shortages, and more than 70 million children and adults who rely on Medicaid have difficulty getting care. A dozen more states are considering incorporating the dental therapist profession in some capacity, and Pew is working to increase their numbers.

—Carol Kaufmann

Families Struggle With Rising Rents

In 2016, nearly 43 million households lived in rental housing, up 9.3 million since 2004 and the largest rise since 1970, according to the Harvard Joint Center for Housing Studies. Baby boomers, who drove that earlier rental boom when they were coming of age, are behind the recent spike as well.

Since the 2007–09 downturn, many families have struggled to save for a down payment on a house or have lacked strong enough credit to meet the stricter underwriting standards that Congress put in place.

But writing a monthly rent check has also become difficult for many families. Greater demand for rental housing and a limited supply have driven rents to historic highs. These steep rent increases have outpaced household earnings, meaning that after paying rent, many families must cut back in other areas.

Indeed, the proportion of households with a “rent burden,” defined as spending 30 percent or more of their pretax income on rent, has risen substantially.

A Pew report released in April found that in 2015, 38 percent of all renter households fell into this category, up about 19 percent since 2001. The share that were severely rent burdened—spending half or more of their monthly income on rent—increased by 42 percent in this period, to 17 percent. Compared with other renters and homeowners, rent-burdened households have higher eviction rates, increased financial fragility, and wider use of social safety net programs.

More African-American families are rent burdened than white ones—46 percent compared with 34 percent—and the gap between the share of white and African-American households experiencing a severe rent burden widened dramatically between 2001 and 2015, up 66 percent. Households headed by those 65 or older are also more likely to be rent burdened than those with younger household heads.

“The growing number of households struggling to pay rent suggests that a rising share of Americans may be experiencing serious financial fragility,” says Travis Plunkett, senior director of Pew’s family economic security portfolio.

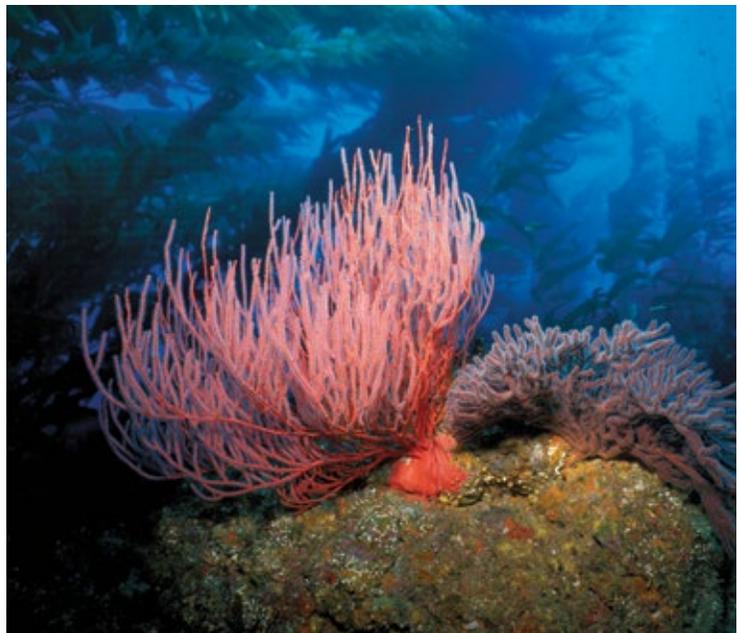
—Anne Usher

New Protections for the Pacific Seafloor

Bottom trawling will soon be prohibited in about 140,000 square miles of water off the U.S. West Coast, an area roughly twice the size of Washington state. Long practiced in the Pacific Ocean, the fishing method is one of the most destructive to seafloor habitat.

Bottom-trawl vessels use large nets that can badly damage sensitive habitat, including rocky areas, as they are dragged across the ocean floor. Ending bottom trawling will protect some 16,000 square miles of seafloor habitat in a region called the Southern California Bight, as well as many other areas off central and northern California, Oregon, and Washington. Like the California Bight, these areas are known for their array of corals, sponges, and rocky reefs, which provide shelter and feeding and breeding grounds for commercially important fish such as rockfish and sablefish. The Pacific Fishery Management Council voted for the new protections in April after years of effort by scientists and conservation organizations, including Pew, and tens of thousands of letters of support from the public.

—Anne Usher



Red gorgonian coral thrives deep in the Pacific Ocean, in a soon-to-be-protected area known as the Southern California Bight.

Mark Conlin/Getty Images



As more Americans spend their life online, a majority are resistant to U.S. government actions to limit misinformation on the web.
Jeffrey Greenberg/UiG/Getty Images

Americans Prefer Online Freedoms to Government Restrictions

Widespread concerns about misinformation online have created a tension in the United States between taking steps to restrict its dissemination—including possible government regulation—and protecting the long-held belief in the freedom to access and publish it. A recent survey by the Pew Research Center found that the majority of Americans are resistant to U.S. government action to limit those freedoms but are more open to technology companies doing so.

When asked to make a choice—between government officials taking steps that restrict false news online in ways that could also limit Americans’ rights to publish and access information, or protecting those freedoms even if it means false information might be published—Americans fall firmly on the side of protecting freedom. Nearly 6 in 10 (58 percent) say they prefer to protect the public’s freedom to access and publish information online, including on social media, despite the possibility of false reports. Roughly 4 in 10 (39 percent) disagree, preferring that the government take steps to restrict false news even if it limits freedoms to publish and access information.

But when the same question is posed about technology companies taking those steps, the balance changes. More U.S. adults (56 percent) favor technology companies taking measures to restrict false information, even if it limits the public’s freedom to access and publish material. By comparison, 42 percent prefer to protect those freedoms rather than have tech companies take action, even if it means that some misinformation is published online.

The resistance to U.S. government action cuts across

nearly all demographic groups studied, with strong sentiments among young Americans, the college educated, men, and both Democrats and Republicans. Adults with a high school degree or less and those 50 and older are the exceptions and are about evenly divided between preferring government action and ensuring the protection of information freedoms.

Additionally, most demographic groups express more support for action by tech companies than by the U.S. government, but the degree of support varies across groups. Specifically, Democrats express more support than Republicans for technology companies acting, even if it brings some broader limits to freedom to publish. Americans 50 and older are also more supportive of action by tech companies than are younger adults.

Republicans and Democrats are about equally resistant to U.S. government involvement to restrict false news and information online, even if it means limiting people’s freedom to access and publish information. But a majority of Democrats and Democratic-leaning independents favor steps by technology companies, while Republicans and Republican-leaning independents are about equally split on that proposal.

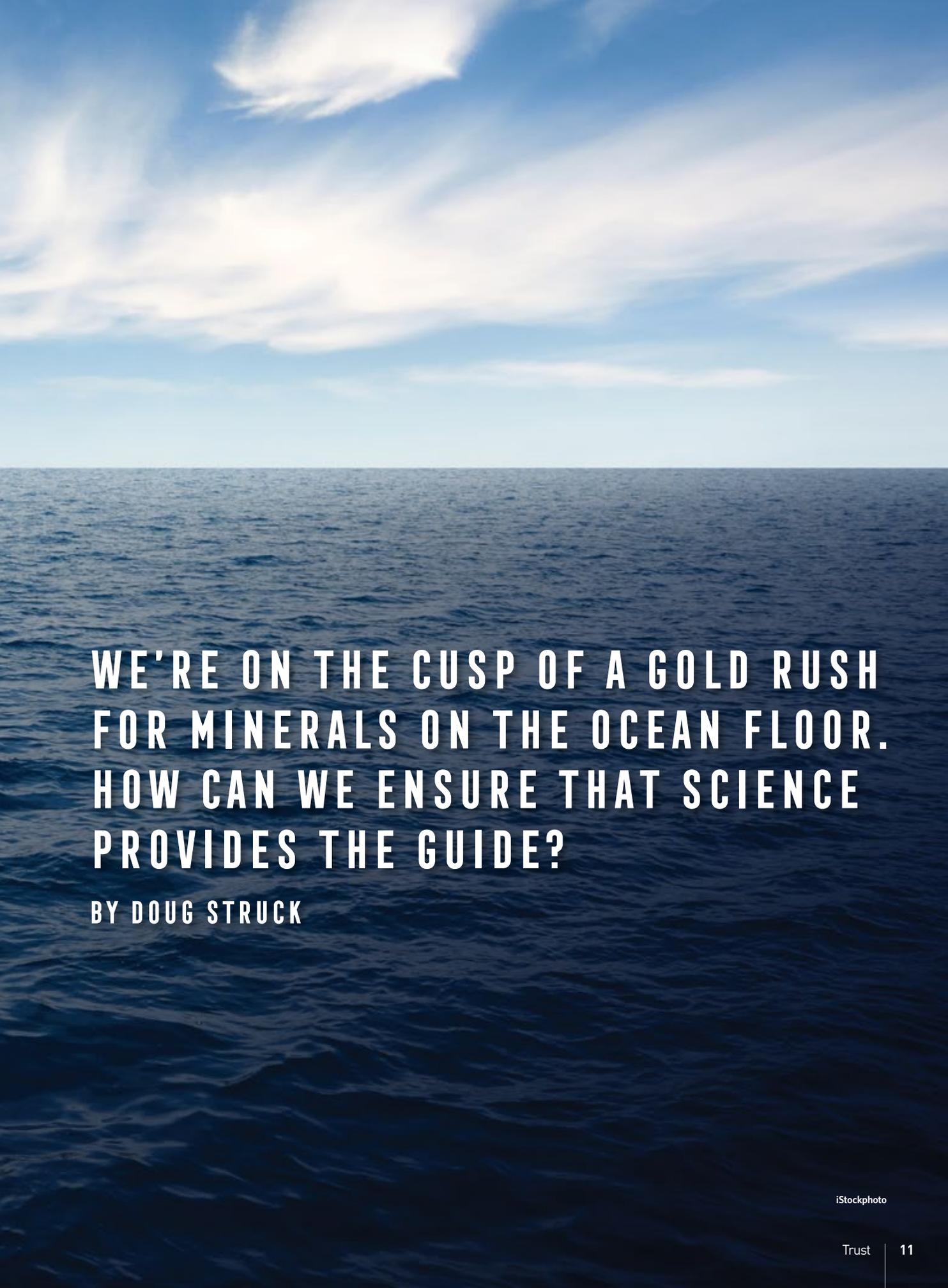
Majorities of both parties agree that people’s freedom to access and publish information online is a priority over having the government curtail false information in a way that could limit those freedoms—60 percent of Republicans and Republican leaners say this, as do 57 percent of Democrats and Democratic leaners. But a majority of Democrats (60 percent) favor action by technology companies to restrict misinformation, even if it includes broader information limits online, while Republicans are about equally divided—48 percent prefer tech companies acting, while 50 percent favor protecting online freedoms.

—Carol Kaufmann



TREASURES OF THE

DEEP



**WE'RE ON THE CUSP OF A GOLD RUSH
FOR MINERALS ON THE OCEAN FLOOR.
HOW CAN WE ENSURE THAT SCIENCE
PROVIDES THE GUIDE?**

BY DOUG STRUCK

Thomas Peacock springs up in his sun-filled office at the Massachusetts Institute of Technology and lays a baseball-sized rock on the table. It is coal-black, pocked with bumps like those on a rash. For millennia, it lay on the bottom of the Pacific Ocean, growing less than a half-inch every million years in water now 3 miles deep.

"This," says Peacock, an associate professor of mechanical engineering, "has the potential for being a whole new industry."

Mineral-rich rocks like the one on Peacock's table have certainly gotten the attention of miners and shipbuilders, diplomats, and scientists. They flocked to conference halls in London, Norway, and Jamaica this year, all drawn by the prospect of riches at the bottom of the sea.

It has the whiff, as a technical magazine put it, of a "new gold rush" in the air.

Some of these prizes are ancient lures—gold, silver, copper. Some are staples of an industrial age—nickel, manganese, cobalt, lithium. And some with sci-fi names—like dysprosium, europium, and yttrium—are rare earth elements essential to modern technology.

For eons, the minerals have been hoarded by the sea, guarded by tons of water, intense pressure, frigid temperatures, and total darkness. But now, says Lisa Levin, a professor at Scripps Institution of

Oceanography in La Jolla, California, "we're bringing new technologies to the deep waters that enable us to go in and get whatever resources we need more efficiently and economically"—tools such as submarines that can scour the depths, cameras that bring vivid arc-lit scenes from the deep onto computer screens above the surface, and crawling robots with vacuums and claws that can scoop and suck the bottom.

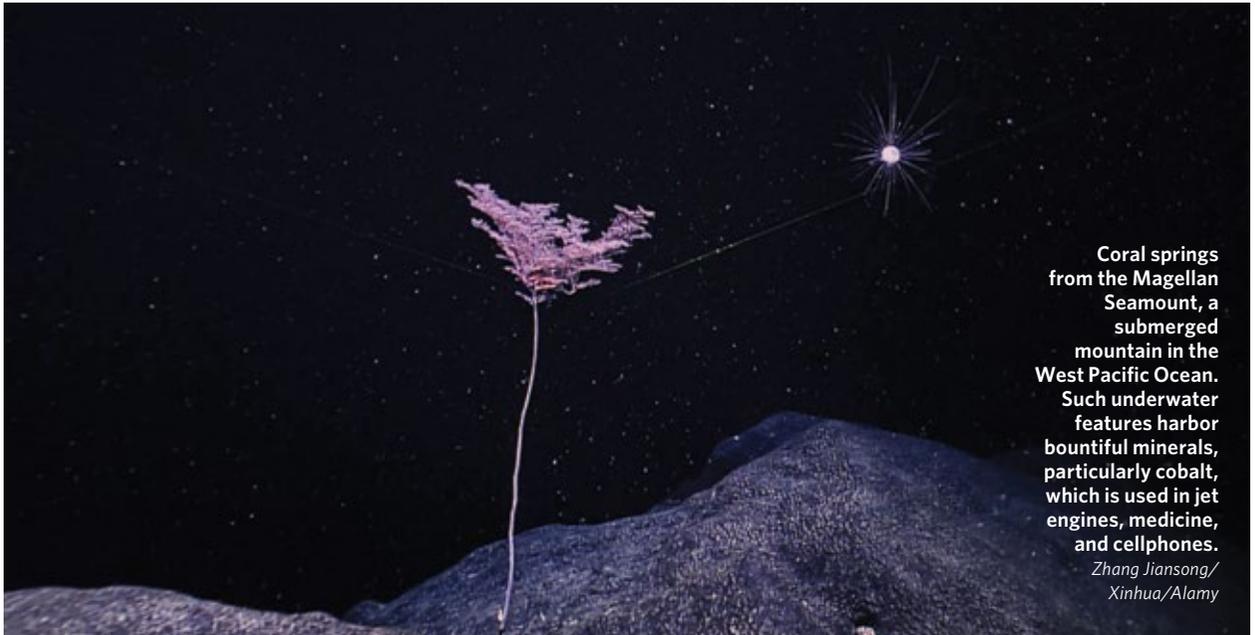
Companies, and countries from China to the Cook Islands, are eager to start. Last year, Japan maneuvered a robot to mine zinc a mile deep in its waters off Okinawa. A Canadian company is poised to explore the seabed off Papua New Guinea. But the big prize is in the unclaimed deep sea. The International Seabed Authority (ISA) has approved 29 exploration contracts in international waters, and more are pending. It is busily writing rules for commercial mining; miners expect to move after the rules are finished in the next two years or so.

"Many hundreds of millions of dollars are being invested around the world," says Duncan Currie, a New Zealand lawyer and member of the Deep Sea Conservation Coalition, a group of about 70 environmental organizations. "There is no doubt companies see money that can be made."

But before mining begins on a commercial scale, Pew and other groups are urging the seabed authority to ensure that science plays a role in the guidelines for

Deep in the Pacific Ocean, blasts of minerals resemble plumes of smoke. Cold seawater trickles through cracks in the Earth's crust, boils when it meets magma, and explodes through chimney-like structures called "black smokers" in hydrothermal sea vent communities. These fragile ecosystems contain a variety of coveted minerals used in everyday products—and attract a variety of sea life found nowhere else on Earth. *L. Fremer*





Coral springs from the Magellan Seamount, a submerged mountain in the West Pacific Ocean. Such underwater features harbor bountiful minerals, particularly cobalt, which is used in jet engines, medicine, and cellphones.
*Zhang Jiansong/
Xinhua/Alamy*

the underwater work to protect ocean life and mitigate environmental damage.

“We are extremely fortunate to have this opportunity. To write the rulebook to govern an extractive activity before it begins would be a first in human history,” says Conn Nugent, who directs Pew’s seabed mining project. But it’s important to act quickly and keep pace with the burgeoning demand.

“We’re only beginning to understand what’s on the bottom of the ocean,” says Nugent. As the would-be miners roll out seabed charts and plot mining grids, “the scientists are working hard to keep one step ahead. But time is short and the data are limited. Which is why the regulations have to be precautionary. And why setting aside large no-mining areas is the price to pay for our ignorance.”

The growth in demand for what lies at the sea bottom is fed by growth of the world’s population and rising economies, and aggravated by dwindling deposits on land.

“There’s a couple of billion people trying to get into the middle class. It’s requiring a vast amount of new metals,” says James Hein, a veteran geologist who has been studying undersea minerals for 42 years for the U.S. Geological Survey in Santa Cruz, California. “All their new homes need metals, not only in the building itself, but in all the things you put into a home.”

Many of the high-grade seams on land have been dug out, and prospectors must go deeper or to more remote places. Added to that is a surge in demand for metals for high technology, and—counterintuitively—for so-called “clean” energy.

“Green tech, moving from hydrocarbons to renewable resources, is requiring a vast amount of rare metals. For some of the green technologies, there is not enough to

go around” on land, says Hein. “But there is tons of it in the oceans.”

Wind turbines, for example, evoke the vision of a clean, pollution-free future. But the wind-nudged turbine blades make electricity by turning powerful magnets made of rare metals. A typical 2-megawatt turbine has about 900 pounds of neodymium and dysprosium, which make magnets hundreds of times more powerful than steel magnets. The turbine also contains 6 tons of copper.

Rare metals are used in hybrid car batteries, high-efficiency lighting, maglev trains (which float on a guideway using magnetic propulsion), electric scooters, earbud speakers, smart bombs, and super-bright LED screens. A Toyota Prius motor contains more than two pounds of neodymium, and more is scattered about the car, from its speakers to electric windows. Rare metals coat fluorescent bulbs and help MRIs see your body tissues.

The 16 or 17 rare earth elements (scientists argue over scandium and yttrium) are not really very rare, but are distributed so thinly and often in such remote conditions that they were once called “unobtainiums.” They frequently are found mixed with radioactive thorium and uranium, and must be crushed, washed, dissolved in acid and cooked multiple times to separate them from tons of ore and other metals in what Ana de Bettencourt-Dias, a chemistry professor who studies the elements at the University of Nevada, Reno, calls “a very complicated and environmentally dirty process.”

China produces most of the world’s supply of rare earth metals, and in 2010, when it reduced exports to keep more of the materials for its own manufacturing, “there was widespread panic,” de Bettencourt-Dias says.

The alarm brought calls for more recycling, more mines, more study of alternative materials, but the world remains tethered to the Chinese supply.

China “supplied about 90 percent of the world’s market with [only] 23 percent of its rare earth resources,” says Liu Feng, secretary-general of the China Ocean Mineral Resources R&D Association. He says a 2012 government study showed that “China had paid a huge price for it. Serious ecological damage occurred ... vegetation deterioration, soil erosion and acidification, and even crops extinction. Upgrading the mining process is urgent.”

Indeed, he noted in an email from Beijing, that is one reason China also is pursuing deep-sea mining claims, and

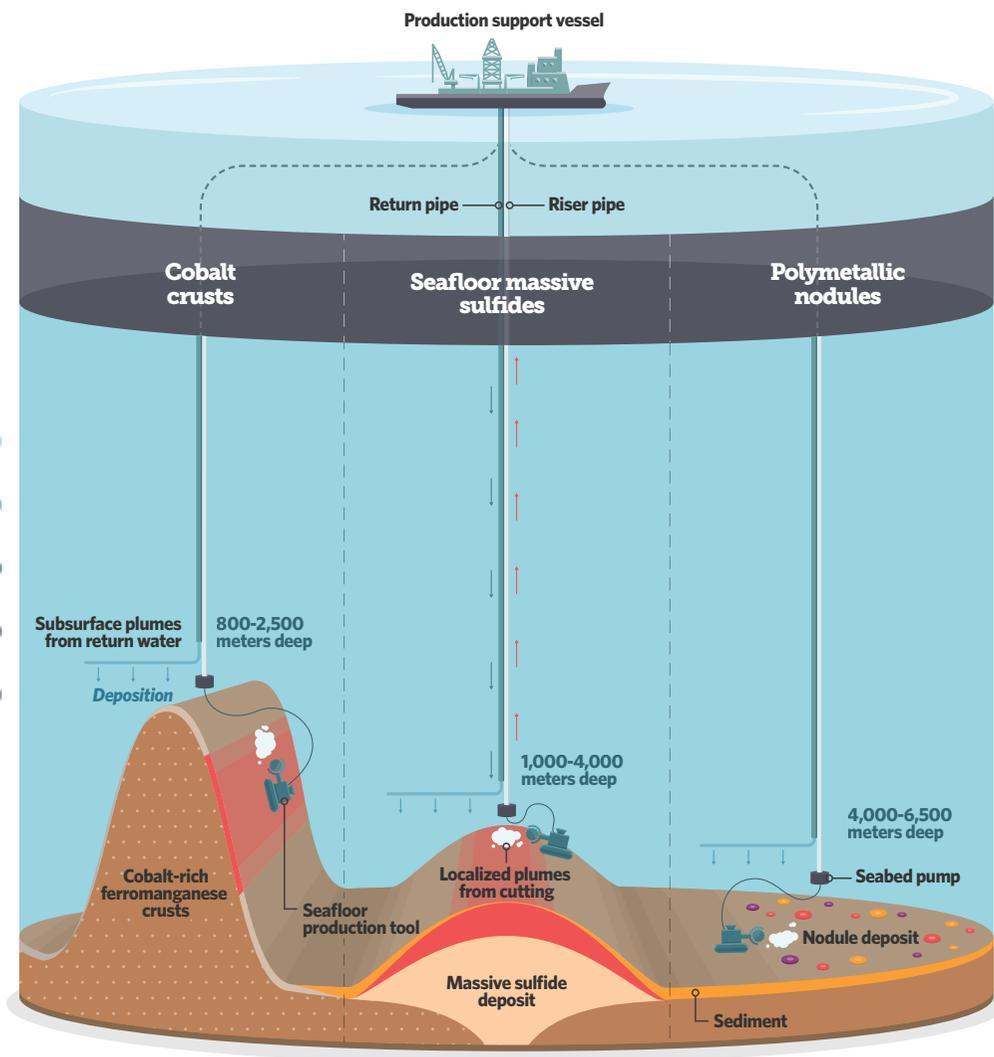
hopes to test mining equipment at 1,000 meters in 2021.

Despite its own roaring metal mines, China needs rare-earth and basic metals to feed development for its huge population, Liu says. China’s per-capita consumption is “well below the world average,” he says. “China is now the world’s largest importer of main metals.”

Modern technology demands a wide array of metals, both rare and common. A computer contains gold, silver, and copper in hard drives and circuit boards, uses silicone for its components, aluminum for its heatsinks, and platinum for high-end graphics cards.

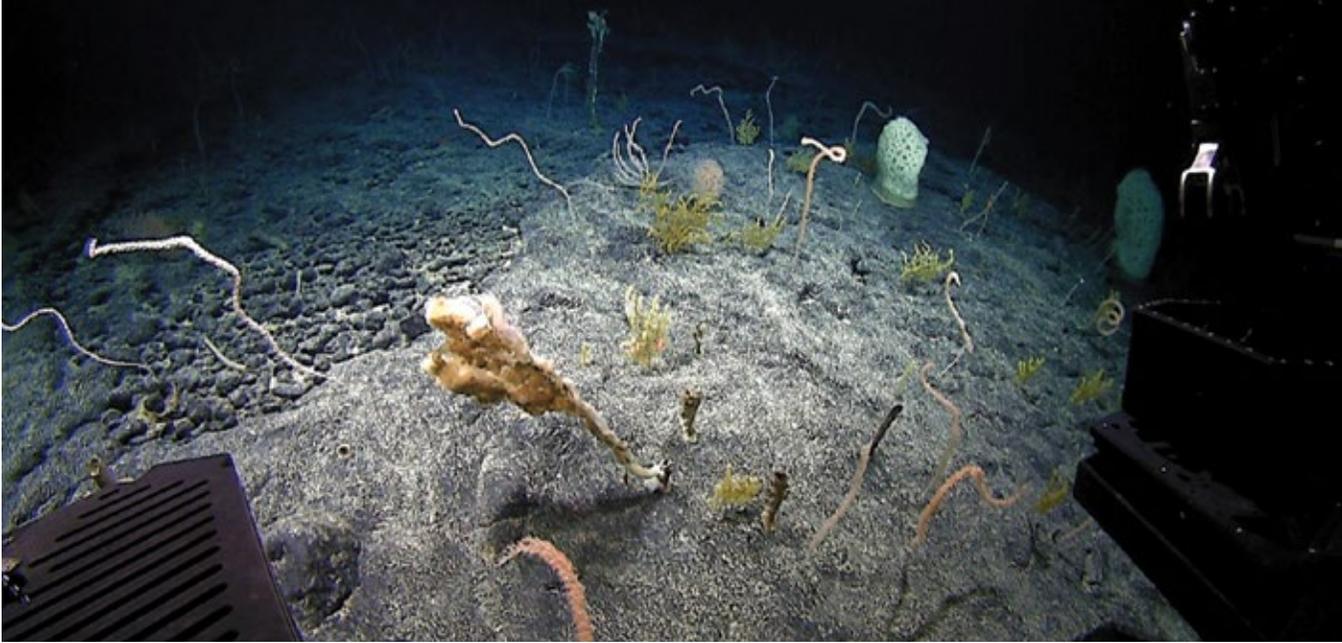
But many worry a rush to the seabed for these materials will present huge risks to still-unknown and

TYPES OF DEEP-SEA MINERAL DEPOSITS



Source: New Zealand Environment Guide

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A coral and sponge ecosystem on a seamount in the Hawaiian archipelago is full of commercially valuable minerals used in common household items high in demand. But extracting the minerals is difficult—and potentially dangerous to the life in the deep sea.

National Oceanic and Atmospheric Administration Office of Ocean Exploration and Research

fragile ecosystems, such as hydrothermal vents—fissures in the earth’s crust deep underwater that exhale superheated water boiled by the planet’s inner magma, often erupting in plumes black with dissolved minerals.

These vents were unknown until Feb. 15, 1977, when geologist Jack Corliss, aboard the submersible research vessel Alvin 1.5 miles deep in the Pacific Ocean, called to the surface. “Isn’t the deep ocean supposed to be like a desert?” he asked. “There’s all these animals down here.”

The discovery amazed scientists who had long believed that life requires energy from sunlight. Instead, clustered around the vents in the darkness of the depths were unexplored worlds of organisms. This “chemical synthesis” likely predates photosynthesis, and is perhaps the original nursery of life.

Cindy Van Dover, a deep-sea biologist from the Duke University Marine Laboratory, has seen the vents during more than 100 deep dives on the Alvin.

“It’s pretty amazing,” says Van Dover. On her first dive, in 1985 near the Galapagos Rift, she saw “thickets of giant red tubeworms, very colorful and beautiful. Giant clams, mussels, anemones. It’s like an oasis.” She later dove on the mid-Atlantic mountain ridge, where active vents called “black smokers” erupt along the tectonic borders. There, she found “just a phenomenal amount of wildlife. It was fascinating to watch. I wish I could take a holiday—no work—and just park and have a picnic and watch the black smokers. Those places are primordial, alien.”

Van Dover and other scientists have discovered galleries of new species, weird creatures with bioluminescence, translucent octopi, furry yeti crabs that farm bacterial food among the hair of their claws,

shrimp with eyes on their backs.

“These animals and microbes have evolved under an amazing array of extreme conditions, so I think there are all sorts of problems these organisms could help humans solve,” says Scripps’ Levin, who founded the Deep-Ocean Stewardship Initiative, a scientific advisory group on marine threats. These life forms could offer “almost endless benefits. New medicines, antibiotics, anti-inflammatories, bio-materials, bio-inspiration.

“We need to view the ocean as an amazing pot of genetic resources.”

And that pot of resources is abundant: When the minerals in these roiling vents hit cold water, they settle to the seabed in deposits estimated to be thicker and richer than most found on land. But scooping them from the seabed must be done carefully.

Pew and others are pushing for rules that protect these strange and alien communities, such as limiting mining to vents that have gone dormant where the surrounding life has moved on.

And there are potentially rich mining sites other than vents. The crust at the tops and sides of sea mountains also are rich in minerals, especially cobalt, a highly priced metal used in applications from jet engines to human medicine to cellphone batteries.

The ISA has issued five exploration contracts for cobalt-rich ferromanganese seamount crusts, including four contracts in the West Pacific Ocean with Japan, China, South Korea, and Russia; and one contract in the South Atlantic Ocean with Brazil. Miners envision machines that might traverse the rugged underwater mountains, scrape off the crusts—some 72 million years old—and pump the ore to ships above. The underwater terrain would be daunting, the mining techniques

challenging, and excavating the large mountainsides would likely be highly destructive and devastating to the coral and deep-sea communities living on the seamounts, say observers.

Much easier to reach are rocks—technically “nodules” to geologists—like the one on Peacock’s desk at MIT. They typically contain portions of copper, cobalt, nickel, and manganese, and some have entwined traces of valuable rare earth elements. The British research vessel HMS Challenger, which explored the seas in the oceanic equivalent of the first moon walk, brought up some manganese nodules in a dredge net in 1873. But harvesting them from the ocean floor then was impossible on a large scale.

A century passed. In the 1960s and 1970s, the price of some metals skyrocketed, and big companies began to dream of ways of seizing the nodules from below. The U.S. Patent and Trademark Office became a repository of exotic plans for deep-sea mining machines.

In fact, the enthusiasm for mining provided cover for an audacious Cold War espionage scheme. When a nuclear-armed Soviet submarine mysteriously sank in the Pacific in 1968, the CIA collaborated with eccentric billionaire Howard Hughes to try to secretly recover it by building a huge hoist ship, the Glomar Explorer, under the guise of deep-sea mining. According to the CIA’s official account, the sub broke apart as it was lifted. The agency has never said if it recovered the nuclear missiles.

The mining zeal of that era largely washed away as the world price of metals dropped and new discoveries on land met demand. But now, interest is renewed.

One of the first places deep-sea mining could actually start is a swath stretching 4,500 miles from Hawaii to

Mexico, as wide as the continental United States. It’s called the Clarion-Clipperton fracture zone, and on the plain between mountains created by Earth’s tectonic rifts sit billions of manganese nodules, growing at a microscopic pace as chemicals from the seawater lock onto their bumps. The rocks wouldn’t be mined so much as scooped up.

“As an engineering proposition, taking potato-sized rocks from an abyssal plain looks to be a lot less complicated than peeling off the skin of a seamount or maneuvering through hydrothermal zones,” says Pew’s Nugent. “And I think you’ll find a consensus among the scientists that the vastness of the plain provides a more comfortable margin of error than the crowded ecosystems of seamounts and vent zones. On the other hand, the nodules on the abyssal plains can only regenerate over hundreds of million years. So you have to write conservation insurance policies tailored to regional particularities. And when in doubt, rope off giant no-mining areas.”

Indeed, proponents of deep-sea mining say it may well be better for the planet to collect minerals from the seafloor rather than puncture the earth on land.

Land mining can leave “giant open pits, massive waste dumps, great big huge mounds of tailings,” says Michael Johnston, CEO of Nautilus Minerals, which from its operations headquarters in Australia hopes to mine copper and gold off Papua New Guinea.

He says as the world moves from fossil fuels to technologies like electric cars, “some of the key elements—nickel and cobalt in particular—are more common on the seafloor than the land.

“If for whatever reason we don’t get it up, somebody else will,” Johnston says. “It’s going to happen. There’s no doubt about it.”



In the deep ocean (from left), rich ecosystems of hydrothermal vents, mineral-laden crusts on seamounts, and polymetallic nodules sitting on the seafloor contain elements necessary for powering commodities such as laptops, cell phones, electric cars, and batteries. Even “green energy” wind turbines use strong magnets made from rare metals found in abundance in the lowest layer of the sea.

(From left): NOAA; NOAA Office of Ocean Exploration and Research; Cook Islands Seabed Minerals Authority, Cook Islands Government

Undersea mining “might have a smaller ecological footprint than, say, a copper mine in the Democratic Republic of Congo,” Nugent acknowledges. But, he notes, we don’t know for sure. “It’s not proven at all, and the more the scientists examine the abyss, they find the abyss is not so abysmal. It teems with life.”

Machines built for Nautilus and other companies are giants, much like big construction land movers. Nautilus has magnetically mapped copper seams, and its machines would chew into the ore with whirling blades fitted with steel shark-like teeth. The material would be sucked up a 12-inch pipe to a surface vessel, then dumped into barges to be processed ashore. The cold sea water would be returned to the bottom by smaller pipes.

UK Seabed Resources Ltd., a subsidiary of Lockheed Martin UK, has rights to explore two plots in the Pacific for nodules, and would pluck them from the seabed floor with a machine that operates like a farm combine, sending the rocks up a conveyer to the surface.

“I think there is a broad misapprehension of the scale of actual seabed mining,” says Christopher Williams, managing director of UK Seabed Resources. Although the company’s undersea plots are nearly 29,000 square miles each, he says the actual mining will be done on a comparatively small patch of the huge ocean floor.

“We do want to find an environmentally responsible way to do it,” Williams says. “Reputationally, ethically, morally, it’s important to get it right.”

Still, the heavy machinery, crisscrossing its areas in grids directed from robotic submersibles, would compact the seafloor and likely kill much that is under its treads. German researchers dragged a sled over the seabed 3 miles down nearly 30 years ago, and when rechecked in 2015, the tracks looked perfectly fresh.

Pew is pushing for “precautionary” rules from the ISA that would be based on good science, good monitoring, and tough enforcement of the rules. Pew also is pushing for set-asides, by having the International Seabed Authority designate large areas that would be off-limits to mining to protect ocean life.

“The larger the better,” Nugent says. “We want really big ecologically important areas roped off from mining forever.”

The ISA was formed in 1994 under the United Nations Convention on the Law of the Sea, which requires the agency to both manage the international seabed for the benefit of humanity and to avoid significant damage of the marine environment. (As one of the few countries that has not ratified the 1982 U.N. Convention on the Law of the Sea, the United States has only observer status at the ISA.)

And, at least until the shovels hit the ocean floor, many of the 168 members of the ISA say they agree with that balance. “Right now,” says Nugent, “the atmosphere seems auspicious.”

The small staff of the ISA—about three dozen employees based in Jamaica—is credited by environmental groups and mining companies alike with having good intentions, but the Legal and Technical Commission that reviews each contract meets in secret to protect contractors’ proprietary plans.

Last year, a contract allowing Poland to explore 3,900 square miles in the mid-Atlantic was approved before the ISA membership realized the area was adjacent to an active area of stunning 200-foot chimney vents called “Lost City,” on the list of possible United Nations World Heritage Sites.

**“WE’RE ONLY
BEGINNING TO
UNDERSTAND WHAT’S
ON THE BOTTOM OF
THE OCEAN.”** -CONN NUGENT

Pew is urging more transparency, with full disclosure of the facts and plans before mining contracts are approved. The information released to the ISA members on each contract “is simply inadequate,” says Winnie Roberts, who works with Nugent on Pew’s seabed mining project. “As these contracts start ramping up and move toward actual mining, that has got to change.”

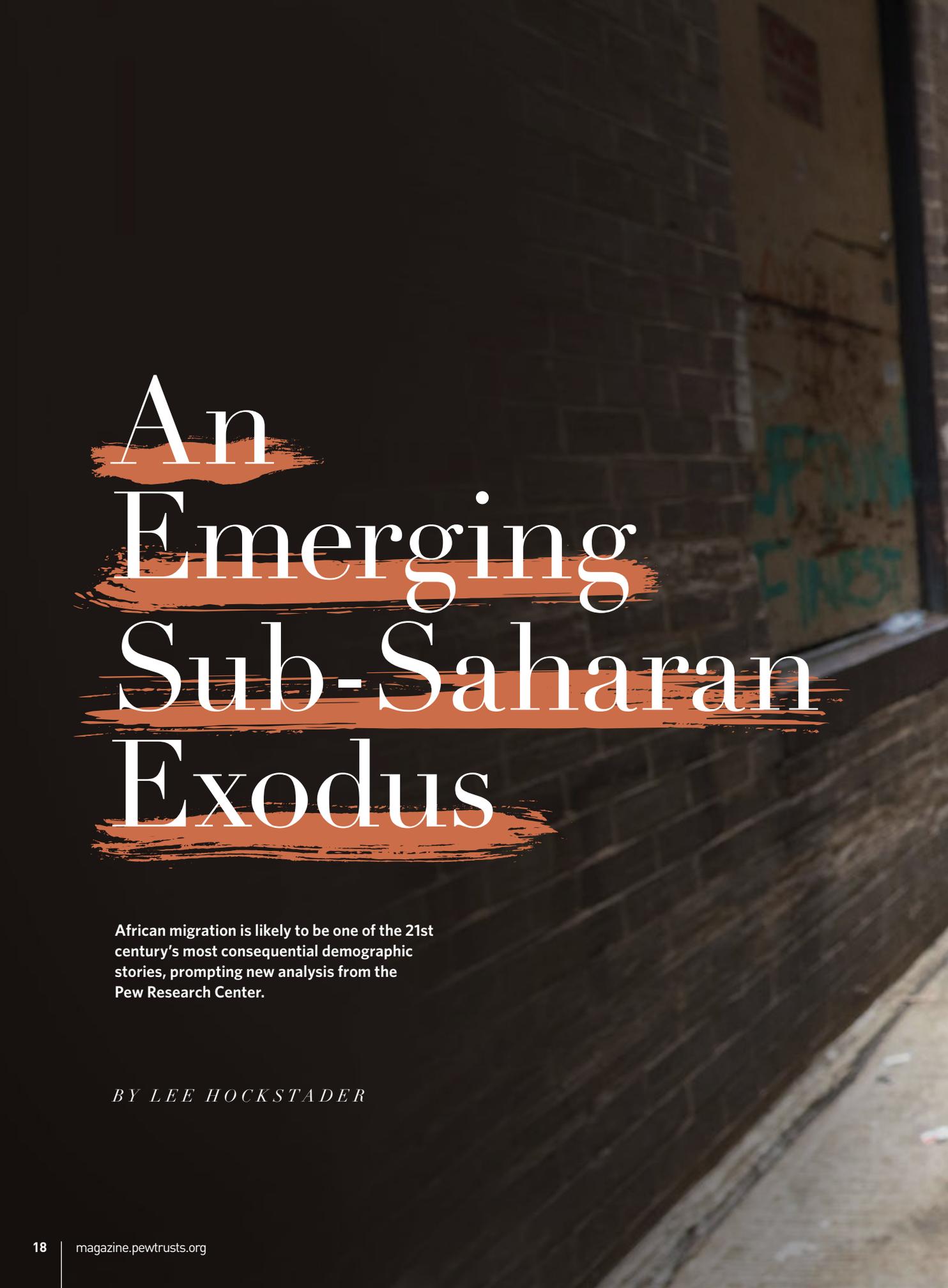
Transparency is not easy when it comes to the deep sea, says Currie of the Deep Sea Conservation Coalition. That’s true in the regulatory scheme—and in monitoring the mining itself: “We’re talking about areas [3,000] to 4,000 meters deep. A good deal of damage could be caused, and nobody would know.”

Van Dover, the veteran of more than 100 deep-sea dives in the Alvin, says caution is needed.

“I’m not trying to say we should have no mining in the sea,” she says. But “if we break it, I don’t know how we fix it.”



Doug Struck is a senior journalist in residence at Emerson College, where he teaches and reports on the environment.



An Emerging Sub-Saharan Exodus

African migration is likely to be one of the 21st century's most consequential demographic stories, prompting new analysis from the Pew Research Center.

BY LEE HOCKSTADER



Nurse and filmmaker
Ledet Muleta
immigrated to the
United States from
Ethiopia 12 years
ago. Migrants like
her who are leaving
sub-Saharan Africa
for the U.S. or Europe
are changing the
world's demographic
composition—and
challenging the
social and political
dynamics of the West.
Today, Muleta lives in
Northern Virginia.
Hilina Abebe

“

Africa is poised to become a major source of migrants internally and across the world.

”

Corinna Kern/laif/Redux

The staggering international migrant flows of the mid-2010s—in Europe, hundreds of thousands of Syrian refugees pouring through Turkey into Greece; in the United States, Central American families streaming over the Southwestern border to seek asylum—dominated headlines at the time.

But the ongoing press of migrants from another continent, Africa, may hold the greatest potential to transform the developed world’s long-term demographics, and pose the most profound challenges to policymakers and society for decades to come.

In Europe, as in the United States, the proliferation of African street vendors and restaurants, African mosques and churches, and African students and caregivers has continued and accelerated—a tectonic population movement whose scope and impact are projected

to grow exponentially in coming decades, reshaping social and political dynamics on three continents.

Driven by conflict, instability, economic despair, and, above all, a massive demographic bulge of young people facing dim prospects at home and seeking an outlet for their energies and ambitions, African migration has accelerated at a dizzying pace since 2000.

“Africa is poised to become a major source of migrants internally and across the world,” says Mark Hugo Lopez, director of global migration and demography research at the Pew Research Center. “The scale is different than Mexican migration, but the motives—the economic reasons and the predominance of youth in the population—was a major part of the story of Mexican migration, and perhaps also a principal driver for African migration.”



While the number of sub-Saharan African immigrants living in the United States and Europe remains dwarfed by Latino migrants in the United States, the growth in the African populations on both continents, and in the flow of people, has been enormous. At the same time, Africa's burgeoning under-30 population and the center's survey research, show growing numbers there who want—and intend—to leave home.

Those numbers, and projections of quickening African migration, have impelled a series of Pew Research Center reports casting a spotlight on that story. Together the reports provide documentary evidence of a migration boom that is remaking the racial, ethnic, and cultural identities of receiving countries.

At least a million sub-Saharan African asylum-seekers, resettled refugees, students, and others arrived in the European Union, along with Norway and Switzerland, between 2010 and 2017, peaking with nearly 200,000 first-time asylum applicants in 2016, according to Pew's analysis.

The inflow, which appears to have waned somewhat in the past year, has been accompanied by reports of

desperate migrants being exploited by human traffickers, sold as slaves in Libya, clinging to flimsy rubber dinghies, and drowning by the thousands in the Mediterranean Sea.

Noting the gulf between rich EU countries with stagnant labor supplies and poor African ones with mushrooming numbers of young people, Gordon Hanson and Craig McIntosh, professors at the University of California, San Diego, likened Europe's current immigration dynamic to that of the United States three decades ago, when unauthorized immigration from Mexico surged. "Is the Mediterranean the New Rio Grande?" they asked in a 2016 paper for the American Economic Association's *Journal of Economic Perspectives*.



Andreas Pein/laif/Redux

Above: Alam Godin (in yellow), 21, waits to renew his visa at the Population and Immigration Authority office in Bnei Brak, Israel, in February. Godin fled Sudan with his family as a boy to escape war. Israel has an estimated 35,000 to 39,000 asylum seekers; most of the African migrants come from Eritrea and Sudan.

Left: Second grader Christabel Yeboah, a refugee from Ghana, in her classroom in Mecklenburg, Germany.

In the United States, about 400,000 migrants arrived from sub-Saharan Africa between 2010 and 2016, the most recent year for which figures are available. In a country where African migrants were all but invisible a few decades ago—in 1970, just 80,000 or so lived in the United States—their presence now in Texas, New York, California, New Jersey, Massachusetts, Maryland, and Virginia is striking; more than 100,000 live in each of those states. And in Minnesota, which has a sizable Somali-born community, about a fifth of the state’s roughly

457,000 immigrants are from Africa. As recently as 1990, the number of African migrants there was negligible. Nigeria, Ghana, South Africa, and Kenya are among the principal countries of origin for sub-Saharan African migrants to Europe and the United States. Nearly 1.6 million sub-Saharan-born Africans lived in the United States in 2017—an increase of 325,000 since 2010. Most are part of an overall black immigrant population (including those from Jamaica, Haiti, and elsewhere) that numbers about 4.2 million, a fivefold increase since 1980.

A Pew Research Center report published in April, which used data from the 2015 American Community Survey as well as European sources, found that sub-Saharan migrants in the United States were more educated than those who resettled in continental Europe. (In part, that appears to reflect the fact that about a quarter of those migrants enter the United States through the diversity lottery program, eligibility for which requires at least a high school diploma.) In the United States, as well as the United Kingdom, sub-Saharan immigrants were more likely



to have had some college education than the native-born population, the report found.

The higher levels of education among sub-Saharan African migrants— 69 percent of whom have some college education, relative to native-born Americans, 63 percent of whom do—was a striking finding for Monica Anderson, who co-wrote the report with fellow Pew researcher Phillip Connor. “That’s a fact that people in the United States may not know about these migrants,” she says.

The report also found that more than 90 percent of working-age

sub-Saharan migrants in the U.S. and U.K. were employed, a significantly greater share than those who lived in top destination countries in continental Europe—specifically, in France, Italy, and Portugal, whose overall employment rates are also lower than in the United States. (Together, those five countries were home to more than half of sub-Saharan migrants outside of sub-Saharan Africa in 2015, according to a U.N. estimate.)

Language could be a key factor: As a 2018 Pew Research Center report notes, United Nations “data from

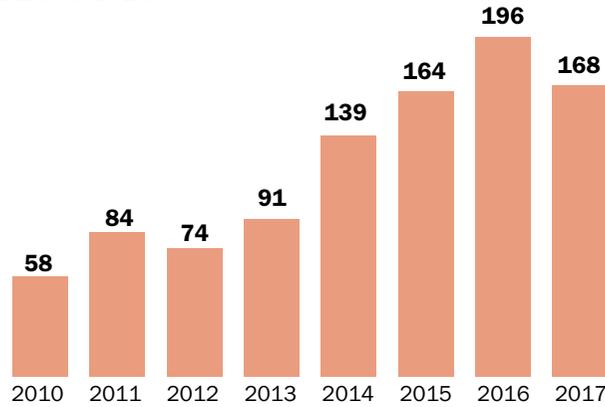
2015 show that most of the sub-Saharan immigrant populations in the U.S. and U.K. come from countries where English is spoken. In fact, English is the language of importance in six of the 10 biggest source countries for sub-Saharan African immigrants in the U.S. and the U.K.: Nigeria, Ghana, Kenya, South Africa, Zimbabwe, and Tanzania.”

Yet the sub-Saharan Africans crossing the Atlantic and Mediterranean are a minority of the continent’s migrants; more than two-thirds have moved to other sub-Saharan nations. though



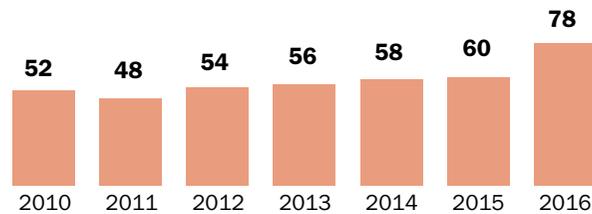
Asylum applicants to Europe from Sub-Saharan Africa

IN THOUSANDS



Lawful permanent residents and refugee arrivals to U.S. from Sub-Saharan Africa

IN THOUSANDS



PEW RESEARCH CENTER

Denver Mayor Michael Hancock (at left) greets high school senior Yonis Noor, a Somali, on March 21, the city’s proclaimed Immigration Day of Action. The event showcased the city’s diversity and the contributions people from other countries make to the community. *Andy Cross/The Denver Post/Getty Images*

Silhouetted against an evening sky, migrants saved from a Mediterranean Sea crossing arrive in southern Italy in October 2016. That was the deadliest year for African refugees crossing the Mediterranean into Europe. Yara Nardi/
*Italian Red Cross/AFP/
Getty Images*



sometimes not by choice. Refugees in sub-Saharan Africa, in many cases escaping conflict and political upheaval in one nation by fleeing to another, increased by about 2.3 million between 2010 and 2016; another 9 million sub-Saharans were displaced inside their own countries in that time.

The upheaval in Africa has tended to concentrate people, and misery, in coastal areas from which migrants hope to eventually make their way to Europe. Somewhere between 400,000 and a million sub-Saharans are believed to be waylaid in Libya, the main jumping-off point for Italy in recent years. There, human rights groups and journalists have documented appalling abuses and exploitation that sub-Saharan Africans have suffered at the hands of traffickers and others, including the sale of some migrants as slaves.

The perils faced by those migrants, as well as those who risk drowning on their way to Europe, underscore the powerful forces—especially poverty and meager prospects—making them so intent on leaving home. And the Pew Research Center's 2017 Global Attitudes Survey suggests that the surging tide of African migration to Europe and the United States in recent years could be a portent of more migration to come.

In the survey, about three-quarters of Ghanaians and Nigerians—and more than half of Kenyans and South Africans—said they would move to

another country given the means and chance to do so. In Ghana, Nigeria, and Senegal, whose combined population is about 230 million, well over a third of those surveyed said they not only want to leave but plan on doing so in the next five years. Many of them dream of moving to Europe or the United States, where success stories of previous migrants, magnified by social media, nourish the aspirations of Africans living in countries where job markets have not kept abreast of fast-growing populations. Demographic projections suggest that the number of Africans eager to leave—which is mirrored in few other regions of the world, according to Gallup polls—is likely to grow.

According to the United Nations, the percentage of the world's babies born in Africa is forecast to reach 32 percent in the decade and a half between 2015 and 2030, up from 27 percent between 2000 and 2015, while the share in virtually every other continent is projected to decline or remain largely unchanged. By 2030, Africa is expected to have about a quarter of the world's under-30 population. By the 2040s, the only countries in the world with high rates of population growth are projected to be in sub-Saharan Africa and parts of the Mideast. And by 2050, the United Nations projects that a quarter of the people on Earth will be African.

That poses poor prospects for countries like Nigeria, Africa's most

populous with nearly 200 million people, where some 60 percent of the population is considered poor, a quarter are unemployed, and 70 percent of the population is under 30 years old, according to a 2016 report by the U.N.'s Economic Commission for Africa.

Africans "are not sitting at home waiting for things to get better," says Reuben Brigety, a former U.S. ambassador to the African Union who is now dean of the Elliott School of International Affairs at The George Washington University. "In Africa, the biggest concern of leaders isn't al-Qaida. It's the restlessness of their youth populations, which they have no means to absorb."

They often don't find a welcome mat. In the United States, President Donald Trump has sought to scrap the diversity visa lottery program, which was designed to admit immigrants from under-represented countries and has been a conduit for tens of thousands of Africans who enter the U.S. legally every year.

And the response in Europe to the flood of asylum-seekers, refugees, and other migrants from Africa has been more aggressive, with some countries moving to fortify their borders, sometimes in coordination with African authorities. Italy has struck a deal with Libya's militias and coast guard to impede Africans hoping to make the treacherous Mediterranean crossing. Spain has spent millions



In the United States, as well as the United Kingdom, sub-Saharan immigrants were more likely to have had some college education than the native-born population.



of euros beefing up barriers around Melilla and Ceuta, Spanish enclaves surrounded by Morocco on Africa's northern coast, that have been rushed by African migrants hoping to breach walls and barbed wire fencing in order to reach European-controlled soil. In April, *The New York Times* reported that EU countries are working with authorities in Sudan, including some officials notorious for abuses and killings in Darfur, to stem the flow of Sudanese migrants to Europe.

Along with Syrian and other Middle Eastern immigrants, African migrants to Europe have helped generate a backlash in the form of rising nativism and anti-immigration nationalist political parties in Austria, Bulgaria, the Czech Republic, Germany, Hungary, Italy, Poland, the United Kingdom, and

elsewhere. The resulting tensions—opposition to immigration played a key role in 2016's Brexit vote—have exacerbated divisions among European Union countries.

In light of the trends in African migration and the political and social responses to it, the Pew Research Center plans to assess the effect of migration on origin and destination countries as well as examine the importance of technology in helping people to migrate. Lopez, who leads the project, is interested in the analogies between Mexican migration a few decades ago and African migration now. "Migrants in France who've moved there from Senegal, that connection echoes the Mexico-U.S. story" of well-worn migration routes across the southwestern border to Los Angeles,

Chicago, and the Midwest, he says.

Adds former ambassador Brigety: "If anybody asked you 10 years ago what you thought would be the existential threat to the EU, someone would have said demographic deficit, or fiscal or monetary policy, or the threat of Russia. No one would have said it would be inward migration from African and Syrian refugees. But that's what it is. That's the principal reason this issue is top of the world's radar."

Lee Hockstader, a longtime foreign correspondent for The Washington Post, is a member of the paper's editorial board.



**HOW
HELPING
VOTERS
IMPROVES
ELECTIONS**



OVER THE PAST DECADE, PEW AND ITS MANY PARTNERS HAS HELPED MAKE BALLOT INFORMATION MORE ACCESSIBLE, IMPROVED THE ACCURACY OF REGISTRATION ROLLS, AND ENSURED THAT MILITARY MEMBERS' VOTES FROM OVERSEAS ARE COUNTED.

By Carol Kaufmann

As Americans prepare to vote this November in elections around the country, a vast majority will have little problem finding much of the information they need. With a smartphone or access to a computer, they can easily search online and find their polling location and a list of who and what is on the ballot just by entering their home address. They also might see an invitation to learn how to get to their polling place when posting an update on Facebook—just as millions did right before the general election in November 2016.

This easily accessible information was made possible by the Voting Information Project (VIP), a partnership created in 2008 among state election officials, Google, and Pew. “When we launched VIP, our goal was that every American would be able to use simple technology to find out voting information,” says Doug Chapin, who directs the Program for Excellence in Election Administration at the University of Minnesota and helped found the project while at Pew. “And today, they can.”



A 2012 PEW REPORT FOCUSED ON INEFFICIENT AND INACCURATE VOTER REGISTRATION PROCESSES, WHICH ARE NOT EVIDENCE OF FRAUD AT POLLING PLACES.



Helping voters to find election information quickly and easily was just one of the results after Pew—believing effective election systems are fundamental to democracy—began to collect data on essential aspects of the voting process 14 years ago. The goal was to understand what was working—and what was not—in the voting process.

The research produced alarming results. Forty-four states were not providing usable voting information, such as polling locations and ballot information—even on their own election websites. In addition, half of the states did not provide adequate time for military and other overseas voters to cast ballots. On the administrative side, more than 1 in 8 voter registration records were out of date: Nearly 3 million deceased people were still on voter rolls, and more than 2 million

votes were lost in 2008 due to registration issues. Much of this had gone unnoticed because no one measured how well states ran elections.

With help from state election officials and partners in the field, Pew began to create initiatives that would help improve the election process. And now as Pew prepares to exit the election field, many of those same partners are helping ensure the sustainability of these efforts.



WHAT'S ON THE BALLOT?

Research showed that there was no standardized reliable nationwide source where voters could learn basic information about where and when to vote, and what was on the ballot. Pew, state election officials, and Google formed the Voting Information Project, and created an open-format tool to make election data available and accessible across a range of technology platforms from social media to search engines.

Beginning with the 2010 midterm elections, voters began to access information using the tool. And in the recent 2016 federal election, Facebook, LinkedIn, Etsy, Instagram, Mozilla, AOL, Twitter, AT&T, Foursquare, and many other technology companies placed the voting tool in online locations Americans visit every day. By the time the polls closed on Election Day in 2016, users had accessed voting information using the VIP tool more than 123 million times.

This year, VIP is expanding its support of federal, state, and local elections, providing polling place locations and ballot information to potential voters in more than 100 elections in at least 46 states and the District of Columbia. “VIP’s success in putting voting information people need in places they can find it—even if they weren’t necessarily looking for it—is a worthy legacy of Pew’s investment in the effort,” says Chapin. Now, that legacy will continue under the leadership of Democracy Works, as Pew turns over the reins of ownership and management of the Voting Information Project this summer. Democracy Works is a nonpartisan, nonprofit organization dedicated to the idea that voting should fit the way Americans live, and has worked in various capacities on VIP since 2013.

“Democracy Works is all about building technology to help voters and election officials, and VIP fits really well into that mission,” says Maria Bianchi, the new director of VIP. “We’re excited to build on all the good work done so far by increasing the number of participating states, expanding the variety of data, and distributing the ballot data more widely.”

MORE THAN 2 MILLION VOTES WERE LOST IN 2008 DUE TO REGISTRATION ISSUES. AND A 2012 REPORT FOUND THAT AT LEAST 51 MILLION ELIGIBLE U.S. CITIZENS WERE NOT REGISTERED.



HOW DO SERVICE MEMBERS ABROAD CAST A BALLOT?

Around the time VIP began, Pew also turned an eye to military and other Americans living overseas. According to the federal Election Assistance Commission, only one-third of the estimated 1 million ballots distributed to military and overseas voters in 2006 were cast or counted. Subsequent Pew research resulted in the report “No Time to Vote: Challenges Facing America’s Overseas Military Voters.” The first detailed public analysis of the subject, the 2009 report revealed that 16 states and the District of Columbia did not provide enough time for overseas voters to cast ballots. Three other states barely provided time for voters to meet the voting deadlines, and six states provided enough time only if voters completed their absentee ballots by fax or email—which raised concerns about access to technology and ballot security.

The report attracted the attention of lawmakers on Capitol Hill and spurred passage of the federal Military and Overseas Voter Empowerment Act in 2009. Eleven states with the highest numbers of military voters enacted related legislation to remove impediments to voting for American military personnel and citizens overseas, making their absentee voting more uniform, convenient, secure, and efficient.



WHO’S ELIGIBLE TO VOTE?

Pew also focused on who was registered to vote—and how. A 2012 report, “Inaccurate, Costly, and Inefficient: Evidence That America’s Voter Registration System Needs an Upgrade,” found that voter rolls largely were still based on paper forms reflecting 19th-century methods and had not kept pace with new technology and a mobile society. The report focused on inefficient and inaccurate voter registration processes, which are not evidence of fraud at polling places, and it found that

1 out of 8 records—some 24 million—were either no longer valid or significantly inaccurate. The research also discovered that at least 51 million eligible U.S. citizens were not registered—nearly one-fourth of the eligible population.

The report encouraged state officials to work together in a bipartisan fashion to share voter registration data in order to achieve greater accuracy, increase savings, and improve the process. In one example of the report’s influence, only two states offered online voter registration in 2008, but a decade later residents in 37 states and the District of Columbia can go online to register, check, and update their voter record.



Today, many voters use their cell phones to easily access election information such as who is on the ballot and where to vote.

Pew also helped to create the Electronic Registration Information Center (ERIC), a partnership that began with seven states in 2012 and today counts 22 states and the District of Columbia—covering more than 80 million eligible American voters. ERIC uses a sophisticated and secure data-matching tool to help states compare official data on eligible voters—such as voter and motor vehicle registrations, U.S. Postal Service addresses, and Social Security death records—to keep voter rolls more complete and up to date. Since its founding, ERIC states have identified numerous voter records that are likely to require an update or cancellation, including some 8 million voters who moved but haven't updated their records; more than 145,000 duplicate records; and more than 200,000 deceased people still on the rolls. Additionally, by cross-referencing state voter rolls against other official data, such as motor vehicle records, ERIC member states identified—and contacted—more than 26 million individuals who had proved their identity but hadn't registered to vote.

"We'll grow," predicts Shane Hamlin, ERIC's executive director and the former director of elections in Washington state, one of the seven founding members. "Even though we're six years old, I still think of us as a young organization. We're recruiting more member states while still meeting our mission of, in part, maintaining and enhancing security and protection of our data."



HOW DOES YOUR STATE RATE?

How well does each state run an election? In 2013, working with the Massachusetts Institute of Technology, Pew unveiled the Elections Performance Index (EPI) to help answer the question. The index, the only objective and nonpartisan ranking of the performance of state election systems, has since become the gold standard for evaluating all 50 states and the District of Columbia, with policymakers citing it as a catalyst for driving changes that improve elections in their states.

The EPI uses 17 key indicators such as wait time at polls, turnout, and the availability of voting lookup tools to measure how well a state performed on Election Day. The index can then be used to compare a state's performance over time and assess the impact of any reforms the state might enact.

For example, the EPI determined that from 2008 to 2014, states slowly improved at administering federal elections, according to Charles Stewart III, an MIT political science professor, founder of the MIT Election Data and Science Lab, and a key partner in designing the index. And results from the most recent federal elections will be revealed soon. "It definitely looks like



ONLY TWO STATES OFFERED ONLINE VOTER REGISTRATION IN 2008, BUT A DECADE LATER RESIDENTS IN 37 STATES AND THE DISTRICT OF COLUMBIA CAN GO ONLINE TO REGISTER.



performance continued to inch up in 2016 overall," says Stewart. "The items that are showing the biggest improvements pertain to putting information online. It's now rare for a state not to have registration and ballot information online; in 2008, most states were just getting online."

Beginning in 2018, the EPI will be housed at MIT under the direction of Stewart, who says he intends to expand the index to eventually include examinations of local elections as well. (Several states have begun, with Pew's assistance, to develop tools to analyze election performance at the county and municipal levels.)

"The index will undoubtedly change, by including more indicators and fine-tuning the indicators we're using. Right now, we're working on indicators that would tap into election security," he says. "That's a hard nut to crack, but given concerns that have been expressed over the years, it's really necessary."

When Pew first got involved in voting issues more than a decade ago, it applied its standard policy approach: deep research and analysis with a focus on measurable results. "Given the millions of voters who have accessed ballot information now available to them and the scores of military men and women whose votes are now counted more efficiently, we see those results," says Pew Executive Vice President and Chief Program Officer Susan Urahn. "What is less precisely measured, but is just as sure an advance, is how this improves our nation's democracy. It shows that nonpartisan, data-based measures are possible—and essential for the good of us all."

Carol Kaufmann is a staff writer for Trust.

The States' Social Experiment With Retirement Savings

BY SUSAN K. URAHN

Several states are undertaking what amounts to a significant social experiment, one that leaders and policymakers in other states will want to watch closely.

Concerned about private-sector employees' lack of retirement savings and the potential impact on poverty levels, and subsequently on state budgets, legislators in nine states—California, Connecticut, Illinois, Maryland, Massachusetts, New Jersey, Oregon, Vermont, and Washington—have enacted programs designed to remedy both problems.

They have good reason. Unlike most government employees, more than 30 million of the nation's private-sector workers—about a third of the workforce—lack access to a retirement savings plan through their jobs. While some of these employees may have other savings vehicles, such as individual retirement accounts (IRAs), research by The Pew Charitable Trusts has shown that only 28 percent of those without access to an employer-provided plan have any retirement savings at all.

More recent research illustrates the concern and cost that inadequate retirement savings pose for states. In January, the Pennsylvania Treasury released an independent study that quantified the fiscal and economic costs to the state of insufficient savings: Public-assistance costs due to inadequate retirement savings reached an estimated \$702 million in 2015, while tax revenue shrank by about \$70 million. The study projected that Pennsylvania's net assistance costs will grow to \$1.1 billion by 2030, by which point the cumulative 15-year cost could top \$14 billion.

The fiscal issues Pennsylvania faces from inadequate retirement savings are by no means unique. In 2016, lawmakers in more than half of the states introduced legislation to create state-sponsored retirement savings plans for employees who lack access to one at work. Nine are underway. California, Connecticut, Illinois, Maryland, and Oregon are launching automatic-enrollment IRAs, state-facilitated programs administered by private financial firms with plan participants bearing the program cost. New Jersey and Washington state have created online marketplaces—state-managed websites listing plans administered by private firms that meet minimum standards. Massachusetts and Vermont have opted for a multiple-employer plan, which is a state-developed group

401(k) available to eligible employers (the Massachusetts plan is limited to small nonprofits).

California's Secure Choice auto-IRA program, CalSavers, aims to have a pilot in place by year's end and ultimately to cover 285,000 employers with more than 6 million employees. Oregon, the first state to launch a state-sponsored auto-IRA program for the private sector, completed its first wave of enrollments in late 2017. Once the program is fully implemented, the state hopes to provide retirement-plan access to nearly 800,000 workers at more than 64,000 businesses.

The plans do have some possible risks: How would a statewide program affect small employers? Would savings in a state plan be offset by increases in credit-card and other debt among low- to moderate-income households? And how these state-sponsored plans relate to federal pension law remains somewhat unclear.

Pew's research shows that the biggest hurdles for businesses when it comes to offering retirement savings plans are the financial costs and organizational resources needed to launch them. The findings suggest that if states could minimize administrative and financial burdens on employers, the business community would react positively, especially employers who do not offer savings plans now.

Workers themselves have cited their lack of knowledge about retirement plans as a roadblock to saving, with many also unsure about how much they need to be able to retire comfortably. It's clear, however, that plan participation can make a difference in financial behavior beyond the mere act of saving. In addition to adding to their nest eggs, research shows, employees saving through a workplace plan are more likely to engage in formalized retirement planning and to seek out online tools and calculators rather than simply "guesstimating" their retirement needs.

As the experiment with these plans continues, much is at stake—both in terms of states' budgets and their residents' financial well-being in retirement.

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*Susan K. Urahn is executive vice president and chief program officer for The Pew Charitable Trusts. A version of this article appeared online in *Governing* on April 11, 2018.*

America's Changing Electorate

A Pew Research Center survey highlights a wide gender gap and growing education divide in voters' party identification.

BY CHARLES BABINGTON

Political chatter may be changing faster in college dorms—or alumni events—than anywhere else in America. When George W. Bush was elected president, college-educated voters clearly favored the Republican Party, while voters who never attended college leaned Democratic. Today, those groups have swapped loyalties.

It's part of a remarkable shift that has made the Republican and Democratic electorates less alike demographically than at any time in the past quarter century.

Democratic voters have become notably younger, less white, less religious, less rural, and more educated. Two decades ago, white voters without a four-year degree accounted for more than half (56 percent) of all Democratic voters. Now they account for only one-third.

The Republican electorate hasn't changed as dramatically over this time. But compared to the Democrats, the GOP relies more heavily on older, rural white voters, and especially those who never attended college.

These are among the findings from a Pew Research Center study released in March that interviewed more than 10,000 registered voters in 2017. It also draws on tens of thousands of interviews conducted in previous years.

The study paints a portrait of two political parties growing further apart demographically. A generation ago, Republican and Democratic voters looked more similar in terms of gender, age, and education level.

Although the survey finds some groups—notably young, college-educated women—clearly shifting toward the Democrats, many voters still show little affinity for either major party. In the 2017 interviews, 37 percent of registered voters identified as independents, 33 percent as Democrats, and 26 percent as Republicans.

When the partisan leanings of independents are taken into account, however, exactly half of all voters identify as Democrats or lean Democratic, and 42 percent identify as Republicans or lean Republican. The Democratic advantage is the largest since 2009.

Republicans note that they still control the House, Senate, White House, and most state governments. And they have extended their support among voters

without college degrees, who far outnumber those with college diplomas.

"The research shows a picture of two very different parties—and parties that are very different now from what they were 20 years ago," says Carroll Doherty, the Pew Research Center's director of political research.

Only a decade ago, for instance, more Democrats identified their views as "moderate" as opposed to "liberal." Now the reverse is true, with 46 percent of Democrats describing their views as "liberal," 37 percent as "moderate," and 15 percent as "conservative." Republicans remain heavily "conservative" in outlook (68 percent).

Today more than in recent decades, Doherty says, the Republican and Democratic parties "are made up of very different kinds of people."

A widening gap among the college-educated

In 1994, 39 percent of voters with a four-year college degree (and no postgraduate experience) identified with or leaned toward the Democratic Party, and 54 percent associated with the GOP. In 2017, those figures were reversed.

One-third of registered voters now have a four-year college degree. The much larger group of voters without a four-year degree is more evenly divided in partisan affiliation, but voters with no college experience have been moving toward the GOP. Nearly half (47 percent) identify or lean Republican, up from 42 percent in 2014.

"College graduates have become more politically liberal over the years," Doherty says. Their increased identification with the Democratic Party is helping to pull it to the left.

Persistent gender and racial gaps

Women's preference for the Democratic Party is not new, but it's growing. Today, 56 percent of female voters identify as Democrats or lean Democratic. That's 4 percentage points higher than in 2015, and it marks one of the highest levels since 1992.

Meanwhile, 37 percent of women affiliate with or lean toward the Republican Party.

Men's political loyalties haven't changed much since 2014. Nearly half (48 percent) identify or lean Republican, while 44 percent identify or lean Democratic.

The partisan racial divide in America remains fairly static. About half of white voters (51 percent) identify or lean Republican, while 43 percent identify or lean Democratic. These figures are little changed from recent years.

Non-Hispanic whites remain the largest group of registered voters by far, at 69 percent, but their share keeps falling. They made up 83 percent of the electorate in 1997.

African-American voters remain overwhelmingly Democratic, with 84 percent identifying with or leaning to that party. African-Americans continue to make up about 11 percent of the electorate.

Hispanic voters align with the Democrats by more than 2 to 1 (63 percent Democratic, 28 percent Republican). Asian-American voters have a similar divide.

The increase in Hispanic voters has slowed, standing at about 10 percent of the U.S. electorate for the past decade. In 1997, they made up 4 percent.

Asian-Americans, who made up a tiny share of voters 20 years ago, now constitute 2 percent.

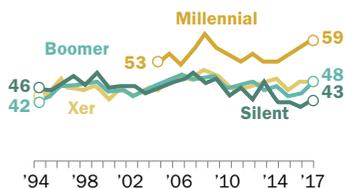
Five percent of voters describe their race as "other."

Millennials tilt more Democratic

Millennial voters are more likely than older generations to affiliate with the Democratic Party. Nearly 6 in 10 Millennials (59 percent) identify as Democrats or lean Democratic. So do about half of Gen Xers and Baby Boomers (48 percent each) and 43 percent of voters in the Silent Generation. (Millennials were born from 1981 to 1996; Gen Xers from 1965 to 1980; Boomers from 1946 to 1964; and the Silent Generation from 1928 to 1945.)

A growing majority of Millennial women (70 percent) affiliate with the Democratic Party or lean Democratic. That's

Percentage of registered voters who identify as Democrats or lean Democratic by generation



Pew Research Center

markedly higher than the 56 percent from just four years ago.

About half of Millennial men (49 percent) align with the Democratic Party, little changed in recent years.

Rutgers University political scientist Ross K. Baker says Millennial women's growing affiliation

with Democrats won't necessarily change election outcomes. Many women—especially those without college degrees—continue to feel alienated from what they view as a liberal establishment, he says, and they may provide enough votes for Republicans to win elections, as Donald Trump did over Hillary Clinton in 2016.

"The receptivity of women to the politics of grievance is considerable," Baker says. "Grievance is a strong incentive to voting."

White evangelical Protestants are reliably Republican

The Republican Party's advantage among white evangelical Protestants continues to grow: 77 percent of these voters identify or lean Republican, compared with 18 percent Democratic.

White mainline Protestant voters are more politically divided. A little over half (53 percent) identify or lean Republican; 41 percent identify or lean Democratic.

Black Protestant voters remain solidly Democratic in their partisan loyalties (87 percent).

Overall, Catholic voters are about evenly split between the two major parties. But white Catholics and Hispanic Catholics diverge politically.

White Catholic voters now are more Republican (54 percent) than Democratic (40 percent). Hispanic Catholics, who represent a growing share of the U.S. Catholic population, are substantially more Democratic in orientation (64 percent Democratic, 27 percent Republican).

Mormon voters remain solidly Republican (72 percent).

By about 2 to 1, Jewish voters continue to identify or lean Democratic.

The religiously unaffiliated, a growing share of the U.S. population, have moved steadily toward the Democratic Party. Today, 68 percent identify or lean Democratic. Religiously unaffiliated adults account for about one-third of all Democratic voters, but only about one-eighth of Republicans.

Democrats' urban edge grows

The Democrats' advantage among urban voters has grown. Today, twice as many urban voters identify or lean Democratic (62 percent) as identify or lean Republican.

Overall, voters in suburban counties are about evenly divided (47 percent Democratic, 45 percent Republican), little changed over the last two decades.

Rural voters have trended more Republican over the past several years. From 1999 to 2009, rural voters were about equally divided in their partisan leanings. Today, the GOP holds a 16-percentage-point advantage.

Baker warns against assuming that changes in party-identity statistics automatically lead to changed election results. A millennial woman happy with her career might prefer Democrats, but it won't matter if she doesn't vote.

"Broad demographic trends as expressed in poll numbers don't translate well into likelihood of voting," Baker says.

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Charles Babington, who covered national politics for The Washington Post and the Associated Press, last wrote for Trust about Pew's research on American families' financial security.

Stateline, an initiative of The Pew Charitable Trusts, is a team of veteran journalists who report and analyze trends in state policy with a focus on fiscal and economic issues, health care, demographics, and the business of government. More stories are available at pewtrusts.org/stateline.

Ezra Bailey/Getty Images

Why This State Thinks Engineers Can Save Pedestrians' Lives

BY SCOTT RODD

In August 2017, Alexis Dale moved from San Diego to South Florida to attend Florida International University, trading one coastal paradise for another.

Two months later, while crossing an eight-lane road near campus at 3 a.m., she was struck by a car and thrown to the side of the road. Paramedics pronounced her dead at the scene.

Friends and family knew Dale as one of a kind—an ambitious young woman who was eager to pursue a degree in information technology and who loved her dog, Bella. But Dale was one of hundreds of pedestrians who died in Florida that year.

The number of pedestrians killed on U.S. roadways is up—by a lot. Nearly 6,000 pedestrians were killed in 2016, up from 4,100 in 2009 and the highest toll since 1990, according to the Governors Highway Safety Association. The number of deaths held steady

between 2016 and 2017—but that was cold comfort.

“It leveled off at a 25-year high,” said GHSA’s executive director, Jonathan Adkins. “It’s nothing to celebrate.”

The problem is increasingly concentrated in certain states—and Florida is one of them. Between 2009 and 2016, pedestrian deaths in the state rose by 40 percent, to 652 from 466. To improve safety, Florida officials increasingly are placing their faith in engineers.

In analyzing trouble spots, the state transportation department now uses mapping software that can identify risk factors such as construction sites, which can divert pedestrian traffic to unsafe routes; land-use patterns, which can then dictate the location of signaled crosswalks; and lighting, which affects visibility.

In April, several of these factors tracked by the agency played a role in a pedestrian fatality in Putnam County. Around 9:30 p.m., a pickup truck struck a

man crossing State Road 20 at an intersection with no crosswalk. The state road has minimal lighting, and the Florida Highway Patrol noted visibility was low at the time of the crash. The nearest crosswalk on the high-speed state road was about a mile away.

“Engineering is a proven way to improve safety outcomes,” said Richard Retting, general manager of the firm Sam Schwartz Engineering and author of the pedestrian fatality report released by the Governors Highway Safety Association. “Florida has some of the best professional planners and engineers working on solving these pedestrian safety problems.”

Safety through engineering?

There is no single cause of the national spike in fatalities, but there are clear patterns.

For example, alcohol consumption by drivers and pedestrians has contributed to about half of pedestrian deaths in recent years, according to federal data.

Another factor is distraction. In 2016, an estimated 562 pedestrians and bicyclists were killed in “distraction-affected” traffic accidents, according to the National Highway Traffic Safety Administration. “Distracted walking” injuries resulting from cellphone use by pedestrians increased by more than a third between 2010 and 2014.

To help address its rising pedestrian fatality rate, Florida is relying on the engineers who design and build roadways and walkways.

“We just have to make sure we identify the right problem for them to solve,” said DeWayne Carver, manager of the state Department of Transportation’s Complete Streets program.

For many years, the department instructed engineers to design roads to handle as much traffic as possible, according to Carver. In recent years, however, it has directed them to prioritize pedestrian safety.

Some of the changes have been subtle, such as changing the standard lane width on state roads, which had long been 12 feet. Florida narrowed its standard lane width to 11 feet, and to 10 feet in some urban areas.

“Research has shown that narrower roads are more effective for traffic management and safety,” Carver said.

Roads with narrower lanes had lower fatality rates, despite many cities assuming wider lanes are safer, according to an analysis of roadways in cities around the world by the World Resources Institute.

In Florida, Carver said, “If you need a wider lane, you can still ask for it—but you need to show why you need it.”

“Flip-flop” parking, on-street parking that alternates from one side of the road to the other on different blocks, can also improve safety by keeping drivers alert, Carver said. He cites Centre Street in Fernandina Beach, a coastal town near the Georgia border, as a successful example. On Centre Street, stretches of parking spaces

alternate from one side to both sides of the street, punctuated by red brick crosswalks.

“It does a great job of using parking to create a chicane effect and keep traffic speeds low,” Carver said.

Engineers are also encouraged to employ “terminated vistas,” in which a large structure is located at the end of a roadway within view of the driver, to “send a message to the driver that they need to be driving slower.”

FIU pedestrian bridge

The year before Alexis Dale died, construction had started on a nearby pedestrian bridge spanning the busy roadway near Florida International University.

Nine months from its completion, the 950-ton bridge collapsed, and the concrete rubble crushed drivers and workers, killing six.

The scope of the project was ambitious: Connecting the FIU campus with the nearby town of Sweetwater, the bridge was designed to serve as a floating public space, with benches, tables, viewing platforms, and Wi-Fi.

The bridge was a multifaceted effort: Tallahassee-based FIGG Bridge Engineers designed the bridge, Miami-based Munilla Construction Management was responsible for construction, and the state Department of Transportation provided oversight.

The project reflected the state’s “progressive” engineering strategy, said Retting, the author of the highway safety report.

But the project was not the first of its kind. The engineers behind the pedestrian bridge at FIU used a method called “accelerated bridge construction.” The ABC method is intended to minimize construction time and traffic delays by completing much of the construction off-site and assembling the prefabricated bridge components in a shorter time span.

The ABC method has been implemented in states across the country—one member of the American Society of Civil Engineers estimates that 5 to 10 percent of U.S. bridges are now built using the ABC method. In 2011, Massachusetts replaced 14 bridges in just 10 weeks using the ABC method.

But Retting does not believe the collapse of the FIU pedestrian bridge will dissuade engineers in Florida—or around the country—from pursuing these kinds of ambitious and innovative projects to solve pedestrian safety issues.

“There can be setbacks with progressive infrastructure” projects, Retting said. “But I think setbacks like this are specific to individual projects. This was a one-off.”

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Scott Rodd is a contributor to Stateline.

The Shark Attack That Has Helped Save Sharks

Survivors have become some of the most effective advocates for the world's sharks.



BY DEBBIE SALAMONE

I was wading 50 feet off the Florida beach in waist-deep water, lulled by the waves and relaxed by the sight of my friend body surfing to shore, when a shark clamped on my right ankle.

Screaming, “It’s got me, it’s got me!” I kicked wildly. But the shark only bit down harder. I could feel other fish slithering between my legs and told myself, “Don’t seem like prey. Fight!”

After the first piercing bite, all I could feel was the pressure of the shark’s jaws tightening on me. I couldn’t see my attacker in the dark, breaking waves, but I imagined the predator eating my foot and was scared it would pull me under and drag me out to sea. As my blood flowed into the water, I feared it would attract more sharks. I kept shouting and kicking.

And then suddenly, after only seconds, the shark let go.

I pushed through the waves, stumbling toward shore; as the water grew shallower, it became harder for me to stay upright. I collapsed and crawled toward the beach. My friend sprinted over, scooping me up and carrying me to dry sand. The surf was stained red.

It was then that I had the courage to look down, and saw that my life had changed forever. My Achilles tendon was severed, my heel shredded. I figured that my hobby as an amateur competitive ballroom dancer was over.

A nurse who had been enjoying the beach came running. She wrapped my foot in my green- and white-striped beach towel and held it high to slow the bleeding. Despite a looming thunderstorm that shot lightning across the sky, she stayed with me and held my hand until an ambulance arrived.

After three days in the hospital, I returned home. My glittery ballroom gowns hung in the closet. My high-heeled satin dance shoes sat perched on the shelf.

As I looked at them, I felt betrayed. I had spent years of my professional career as an environmental journalist—and this injury was my reward? The outdoors now seemed dangerous, not beautiful. As weeks passed, I found myself preferring pavement to beaches. I vowed to feast on shark steaks on the anniversary of my attack.

But even as I questioned my lifelong passion for the environment and my work for it as a journalist, I also found myself wondering if my attack had been a test: Was I truly committed to conservation? Could I reignite my love for the sea? The only way to know was to decide if I could forgive the shark that attacked me—and, more importantly, actually go to work on sharks’ behalf.

It took some time, but I came to realize that what happened in the waters on that August day in 2004 had to be less about me and more about sharks. They are under siege in the world. Tens of millions are killed each year, and their demise has severe consequences for the ocean ecosystem.

So I abandoned my plans for a shark dinner, became an environmental editor at my newspaper, and earned a master’s degree in environmental sciences and policy from Johns Hopkins University. In 2009, I joined Pew as a shark advocate and founded Shark Attack Survivors for Shark Conservation—which has since become an international group of some of the world’s worst-injured survivors who have become effective advocates for sharks.

The survivors have helped people understand that sharks have more to fear from humans than we do from them. While about 80 people are bitten by a shark each year, at least 63 million and as many as 273 million sharks are killed annually in commercial fisheries. About half of all shark species are threatened or nearly threatened with extinction, and research has shown alarming ecosystem imbalances in some places where shark populations have declined.

Shark finning had been a major cause of shark deaths, and Shark Attack Survivors for Shark Conservation worked with Pew to encourage



Debbie Salamone still has trepidations about wading too far offshore in the Canaveral National Seashore, but has spent the time since her 2004 attack rallying other survivors to become advocates for shark conservation.

Edward Linsmier/The Pew Charitable Trusts

policymakers to close loopholes in the nation's shark finning ban. The group also urged the United Nations to protect threatened and near-threatened shark species.

And the survivors have spoken in favor of shark sanctuaries, where commercial shark fishing is banned. Pew has helped governments set up 17 sanctuaries around the world that span 7.5 million square miles—an area larger than South America. From Palau to The Bahamas, shark sanctuaries have not only proved to be good for the environment but also are paying economic dividends. A study published last year showed that sharks and rays contributed \$114 million to the Bahamian economy in 2014 alone.

Survivors have helped people understand that sharks have more to fear from humans than we do from them.

The survivors also have supported Pew's efforts to encourage international trade safeguards for more shark species. In 2009, when Pew's sharks work began, only three species had protection. Today, an additional 20 shark and ray species have safeguards through the Convention on International Trade in Endangered Species of Wild Fauna and Flora—the world's premier wildlife conservation treaty.

To help countries implement these regulations, Pew and a group of shark scientists produced shark fin identification guides and quick-reference posters for officials working at docks and ports throughout the world. Pew also helped provide shark identification

training workshops to more than 60 governments in dozens of locations around the globe, including Hong Kong, where officials have stiffened penalties and increased enforcement of illegal shark fin trading.

Numerous governments cite a lack of scientific evidence to justify not having basic management rules for shark populations or comprehensive restrictions on the global fin trade. So in 2017, a Pew and Roe Foundation-funded study used genetic testing to analyze samples from more than 4,000 fins obtained in retail markets in Hong Kong, the global hub of the shark fin trade. The study identified nearly 80 different species and species groups of sharks, rays, and chimaeras, including endangered ones. Pew is hopeful that governments can use the new data to enact strong protections for any species that enters the global fin trade.

I returned to dancing briefly but eventually had to pack up my gowns and heels. Today I live mostly in sneakers. I'm stiff in the morning, hobbling around a bit until my daily foot exercises get me moving.

I'm one of the lucky ones in our survivors group. Others contend with prosthetic legs or arms, turning a walk up the steps or the ironing of a shirt into a struggle. Yet we take comfort in knowing the good that has come from our injuries. I've never questioned my life's purpose again—and each of us in our group has his or her own individual story to tell.

But together, our story is so much bigger—and it's made a real difference for the world's sharks.



Debbie Salamone is a Florida-based communications officer for Pew.

New Routing Measures Will Mean Safer Shipping in the Arctic

The International Maritime Organization has for the first time adopted a system of two-way routes for ships sailing between the Pacific and Arctic oceans and three Areas to be Avoided (ATBAs) to protect sensitive marine habitat. The routes through the Bering Strait and Bering Sea were jointly proposed by the U.S. and Russia, and a U.S. Coast Guard Port Access Route Study also recommended areas for vessels to avoid during transit. Pew recently spoke with retired Vice Admiral Roger Rufe, whose distinguished career included service as the former commander of the Coast Guard's 17th District in Alaska, to learn how these new measures came to be and how this guidance can help protect the region's ecosystems and communities.



What is a Port Access Route Study?

Under the Port and Waterways Safety Act, the Coast Guard is responsible for designating safe access routes for vessels proceeding

to and from U.S. ports. Before making a designation, the Coast Guard conducts a Port Access Route Study—in coordination with interested stakeholders—to determine if there is a need and to reconcile any proposed routes with other waterway uses.

Why did the Coast Guard conduct such a study for the Bering Strait region?

Continued retreat of summer sea ice in the Arctic has led to an increase in shipping traffic through the Bering Strait, a relatively narrow chokepoint between Russia and Alaska. All vessels transiting between the Arctic and Pacific must pass through the strait, so the Coast Guard became concerned about an increased risk of groundings and collisions with potential loss of life, oil spills, and impacts on the Arctic ecosystem and indigenous communities in Alaska. These threats are especially challenging in the Arctic due to the remoteness of the region, long distances from response resources, lack of infrastructure, and difficult, often rapidly changing weather conditions.

What did the Coast Guard recommend?

The Coast Guard recommended a system of two-way routes approaching and transiting the

Bering Strait. While the vast majority of Arctic waters rely on outdated maritime charts, the recommended routes were recently surveyed and shown to provide adequate water depths and to be free of hazards. Also recommended were several Areas to Be Avoided (ATBAs), places that are hazardous or hold important ecological or cultural value. For example, the waters around St. Lawrence Island are culturally significant and important for wildlife like seabirds, walrus, and seals, so the ATBA recommendation will work to minimize disturbances. These two measures—the routes and ATBAs—complement each other, because vessels may have to divert from the route due to ice or for other safety concerns, and ATBAs help reinforce where not to go.

The recommendations apply to vessels 400 gross tons and larger. Basically, that's larger than a tugboat, so it applies to bigger ships. This helps small-boat users and subsistence hunters by keeping the larger ships on a predictable course.

How will the recommendations be enforced?

Based on the Port Access Route Study's recommendations, the Coast Guard submitted a joint routing proposal, in cooperation with Russia, and a separate proposal for three ATBAs in U.S. waters to the International Maritime Organization—the United Nations organization that creates and maintains international regulations for ships—to promote broad awareness and acceptance of the measures throughout the international maritime community. Member states adopted these measures in May 2018, and the U.S. and Russia will continue discussions for a transboundary ATBA in the Bering Strait.

The Areas to Be Avoided and routes are recommendations and are voluntary. That said, ships will want to abide by them because they reflect the safest



- Area to be avoided
- Two-way route
- Coastal communities

options, and prudent mariners will typically look for the least risky route. It is also important to note that even when voluntary, safety measures like ATBAs have a very high compliance rate among commercial vessel operators.

Does increased Arctic ship traffic raise other concerns that weren't covered by the recommendations?

Yes, but this is a good first step. Communities have raised concerns that still need to be addressed, including additional impacts from transiting vessels that may be

harmful to fish, wildlife, and coastal communities, such as waste discharges and ship strikes; the need for better communications, weather forecasting, and updated maritime charts; and better oil spill response capacity. And while the Bering Strait Port Access Route Study addressed the area of greatest risk, the Coast Guard should look at doing a similar review starting where this study leaves off, in the southern Chukchi Sea, to address the risks in the U.S. Arctic Ocean from the north coast of Alaska to the border with Canada.

Using Evidence to Achieve Results

The Results First Initiative, a partnership between the John D. and Catherine T. MacArthur Foundation and Pew, helps state and local governments assess their programs—and spend taxpayer dollars more wisely.

BY DEMETRA AOSPOROS



The Justice Advisory Council in Cook County, Illinois—home to Chicago and the MacArthur Foundation's headquarters—is using Results First to help inventory its offerings. *Raymond Boyd/Getty Images*

Like many states, Colorado offers programs that help prepare at-risk children to do well in school. Two home visitation programs targeting preschoolers, Healthy Steps and Home Instruction for Parents of Preschool Youngsters, have operated since the 1990s, aiming to identify and address developmental issues and provide parents with tools—from activities they can do with their kids to new educational resources—to prime their children for success in school and life.

Although parents had long raved about the difference these programs made for their families, state policymakers sought tangible proof of the benefits and wanted to know whether they also resulted in other types of payoffs down the road. For example, could they help avoid some future public assistance and prison costs? Did the programs inspire kids to stay in school until graduation and help increase their potential earnings? To find out, in 2014 the state conducted a sophisticated cost-benefit computer analysis on the programs. It was designed to assess how effectively state programs are working, and where they are expected to pay dividends. Colorado discovered that it was generating a significant return on its investment: Healthy Steps was delivering \$2.60 in future savings for every dollar spent, and Home Instruction for Parents was producing \$6.10.

The analysis was undertaken through the Pew-MacArthur Results First Initiative, which has worked with

Colorado and numerous other states since the program's 2011 launch. Created through a partnership between the John D. and Catherine T. MacArthur Foundation and Pew, Results First unites the two organizations' shared goal of helping state and local governments better serve citizens. The project introduces evidence and outcomes into the social policy debate, helping to focus attention on programs that have been proved to work well and identifying those that may be losing money, with the goal of helping policymakers deliver needed services in a fiscally responsible way.

After just seven years, the approach is being embraced by policymakers across the country. Results First initially targeted state policy, hoping to eventually work with 25 states. It has exceeded that goal, having worked with 27. And for the past four years, the program has also branched out to work with counties, beginning in California.

"Evidence-based decision-making has gained traction. Many states and counties are using it to make budget, staffing, and structural decisions; it is changing the way they do their work," says Valerie Chang, managing director of programs at MacArthur.

The hope is that this data-grounded approach not only will improve programs but also will instill public confidence in policymaking and help to strengthen democracy. "Results First aligned with both organizations' interest in a well-functioning public

sector and in using evidence to support better decision-making around fiscal choices,” she says.

Washington state has long been a leader with this approach, attracting Pew and MacArthur’s attention a decade ago. The Washington State Institute for Public Policy developed a model to pinpoint—in dollars and cents terms—the costs and benefits of specific policy options, which led to an evidence-based method for policymaking in the state, fostered bipartisanship, and saved taxpayers more than a billion dollars. Pew and MacArthur worked with the institute to adapt its cost-benefit model and then developed the Results First three-step approach to evidence-based policymaking as a tool for working with other states.

Another tool that Results First has developed is the Clearinghouse Database, a repository of programmatic research that allows policymakers to search by topic—such as child welfare or social policy—to discover quickly the effectiveness of specific programs as rated by eight national clearinghouses. The database can serve as a point of comparison and a model for creating programs that pay off.

After the passage of California’s landmark Public Safety Realignment Act, which shifted responsibility for the management and care of thousands of incarcerated individuals from state to local control, Results First began working with four California counties—Fresno, Kern, Santa Barbara, and Santa Cruz. The project assisted the counties in cataloging programs, assessing their effectiveness, and comparing current and alternative options based on their expected returns and their impact on key outcomes such as a reduction in recidivism, helping officials determine where to best infuse dollars for the greatest impact.

“The county expansion started in 2013. We had to make some modifications to see if a state-based initiative could work in counties, and it did. In many cases, it’s actually been a more streamlined process for county leaders to take the results generated and take action on the most effective programs, since they tend to be closer to the decision-making process than states,” says Pew’s Sara Dube, who directs Results First.

The nation’s 3,007 counties invest more than \$550 billion annually to deliver essential front-line services such as health care and police protection to communities. But they often have fewer staff members and resources than states to evaluate and examine the research on the programs they fund. Results First has now worked with 10 counties—from Salt Lake County, Utah, where it helped identify what more could be done about problem behaviors in youth, to Montgomery County, Maryland, where it provided a systemic look at the long-term benefits of mentoring youth.

Included in that tally is Cook County, Illinois, the second-most populous county in the nation and home to MacArthur’s headquarters in Chicago, where Results First

has helped to inventory programs so that the county’s Justice Advisory Council can better understand the value of investing in evidence-based programming. The council now plans to seek evidence-based criteria in upcoming requests for proposals.

More counties may be on the horizon as well. Results First is partnering with the California State Association of Counties to train county staff on evidence-based approaches. Additionally, it is working with the National Association of Counties to co-write a report about evidence-based policymaking tailored to counties.

Results First builds on an enduring relationship between MacArthur and Pew, which have long shared common values and which both recently observed milestones as well, with MacArthur celebrating its 40th anniversary and Pew its 70th. When Pew made the change from private foundation to public charity, the collaboration with its former foundation colleagues continued, none more so than with the MacArthur Foundation.

Since 1990, the two organizations have worked on initiatives to improve the administration of elections; end illegal fishing, which is affecting fish stocks around the globe; assess how much states were spending on health care for their employees; and explore how families are supporting aging populations in the U.S., Germany, and Italy, among others.

“The MacArthur Foundation has been a tremendous partner, resulting in terrific collaborations that, like Results First, have improved the delivery of services and made a real fiscal difference in the states,” says Susan K. Urahn, Pew’s executive vice president and chief program officer. “We look forward to our continued work with them in the future.”

In Chang’s assessment, Results First has achieved many of its goals, not least of which was instilling evidence-based policymaking as a bedrock approach for state and local governments. “There has been a fondness for talking about evidence-based policymaking,” she says. “The fact that you actually have these jurisdictions making a commitment and putting funds into it wherever the effort lives—government offices, legislative offices, county offices—shows that there are many ways that states and counties are making this approach a key part of how they make decisions when budgeting. And Pew’s deep engagement in states and expertise with fiscal work made it the perfect partner for this project.”

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For information about philanthropic partnerships at Pew, please contact Senior Vice President Sally O’Brien at 202-540-6525 or at sobrien@pewtrusts.org.

Demetra Aposporos is senior editor of Trust.

Pew experts explore innovative ideas on the most critical subjects facing our world.

Americans' complicated feelings about social media in an era of privacy concerns

BY LEE RAINIE

Amid public concerns over Cambridge Analytica's use of Facebook data and a subsequent movement to encourage users to abandon Facebook, there is a renewed focus on how social media companies collect personal information and make it available to marketers.

The Pew Research Center has studied the spread and impact of social media since 2005, when just 5 percent of American adults used the platforms. The trends tracked by our data tell a complex story that is full of conflicting pressures. On one hand, the rapid growth of the platforms is testimony to their appeal to online Americans. On the other, this widespread use has been accompanied by rising user concerns about privacy and social media firms' capacity to protect their data.

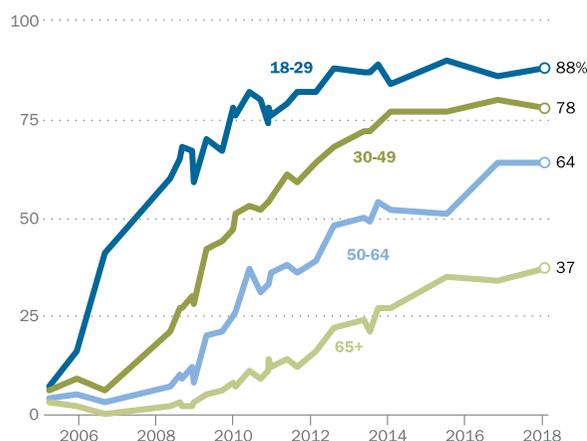
All this adds up to a mixed picture about how Americans feel about social media. Here are some of the dynamics.

People like and use social media for several reasons

About 7 in 10 American adults (69 percent) now report they use some kind of social media platform (not

Social media use has grown dramatically

% of U.S. adults who say they use social media sites, by age



Source: Pew Research Center

including YouTube)—a nearly fourteenfold increase since the Pew Research Center first started asking about the phenomenon. The growth has come across all demographic groups and includes 37 percent of those ages 65 and older.

The center's polls have found over the years that people use social media for important social interactions like staying in touch with friends and family and reconnecting with old acquaintances. Teenagers are especially likely to report that social media are important to their friendships and, at times, their romantic relationships.

Beyond that, we have documented how social media play a role in the way people participate in civic and political activities, launch and sustain protests, get and share health information, gather scientific information, engage in family matters, perform job-related activities and get news. Indeed, social media is now just as common a pathway to news for people as going directly to a news organization website or app.

Our research has not established a causal relationship between people's use of social media and their well-being. But in a 2011 report, we noted modest associations between people's social media use and higher levels of trust, larger numbers of close friends, greater amounts of social support, and higher levels of civic participation.

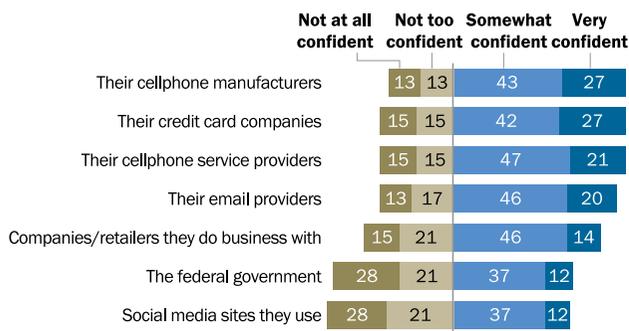
People worry about privacy and the use of their personal information

While there is evidence that social media works in some important ways for people, Pew Research Center studies have shown that people are anxious about all the personal information that is collected and shared and the security of their data.

Overall, a 2014 survey found that 91 percent of Americans "agree" or "strongly agree" that people have lost control over how personal information is collected and used by all kinds of entities. Some 80 percent of social media users said they were concerned about advertisers and businesses accessing the data they share on social media

Roughly half of Americans do not trust the federal government or social media sites to protect their data

% of U.S. adults/tech users who are _____ in the ability of the following institutions to protect their data



Source: Pew Research Center

platforms, and 64 percent said the government should do more to regulate advertisers.

Another survey last year found that just 9 percent of social media users were “very confident” that social media companies would protect their data. About half of users were not at all or not too confident their data were in safe hands.

Moreover, people struggle to understand the nature and scope of the data collected about them. Just 9 percent believe they have “a lot of control” over the information that is collected about them, even as the vast majority (74 percent) say it is very important to them to be in control of who can get information about them.

Six in 10 Americans (61 percent) have said they would like to do more to protect their privacy. Additionally, two-thirds have said current laws are not good enough in protecting people’s privacy, and 64 percent support more regulation of advertisers.

Some privacy advocates hope that the European Union’s General Data Protection Regulation, which went into effect on May 25, will give users—even Americans—greater protections about what data tech firms can collect, how the data can be used, and how consumers can be given more opportunities to see what is happening with their information.

People’s issues with the social media experience go beyond privacy

In addition to the concerns about privacy and social media platforms uncovered in our surveys, related research shows that just 5 percent of social media users trust the information that comes to them via the platforms “a lot.”

Moreover, social media users can be turned off by what happens on social media. For instance, social media sites are frequently cited as places where people are harassed. Near the end of the 2016 election campaign, 37 percent of social media users said they were worn out by the political content they encountered, and large shares said social media interactions with those opposed to their views were stressful and frustrating. Large shares

also said that social media interactions related to politics were less respectful, less conclusive, less civil, and less informative than offline interactions.

A considerable number of social media users said they simply ignored political arguments when they broke out in their feeds. Others went steps further by blocking or unfriending those who offended or bugged them.

Why do people leave or stay on social media platforms?

The paradox is that people use social media platforms even as they express great concern about the privacy implications of doing so—and the social woes they encounter. The center’s most recent survey about social media found that 59 percent of users said it would not be difficult to give up these sites, yet the share saying these sites would be hard to give up grew 12 percentage points from early 2014.

Some of the answers about why people stay on social media could tie to our findings about how people adjust their behavior on the sites and online, depending on personal and political circumstances. For instance, in a 2012 report we found that 61 percent of Facebook users said they had taken a break from using the platform. Among the reasons people cited were that they were too busy to use the platform, they lost interest, they thought it was a waste of time and that it was filled with too much drama, gossip or conflict.

In other words, participation on the sites for many people is not an all-or-nothing proposition.

People pursue strategies to try to avoid problems on social media and the internet overall. Fully 86 percent of internet users said in 2012 they had taken steps to try to be anonymous online. “Hiding from advertisers” was relatively high on the list.

Many social media users fine-tune their behavior to try to make things less challenging or unsettling on the sites, including changing their privacy settings and restricting access to their profiles. Still, 48 percent of social media users reported in a 2012 survey they have difficulty managing their privacy controls.

After National Security Agency contractor Edward Snowden disclosed details about government surveillance programs starting in 2013, 30 percent of adults said they took steps to hide or shield their information and 22 percent reported they had changed their online behavior in order to minimize detection.

One other argument that some experts make in Pew Research Center canvassings about the future is that people often find it hard to disconnect because so much of modern life takes place on social media. These experts believe that unplugging is hard because social media and other technology affordances make life convenient and because the platforms offer a very efficient, compelling way for users to stay connected to the people and organizations that matter to them.

Lee Rainie directs internet and technology research at the Pew Research Center.

RETURN ON INVESTMENT

*The Pew Charitable Trusts applies a rigorous, analytical approach to **improve public policy, inform the public, and invigorate civic life**, as these recent accomplishments illustrate.*

IMPROVING PUBLIC POLICY



Pronghorn traipse through the Bridger-Teton National Forest during their fall migration to southern Wyoming. The largest terrestrial migration in the contiguous 48 states, the pronghorn path is more than 100 miles each way. Pronghorns give birth in Jackson Hole and Grand Teton National Park in the summer but can't survive the area's winter weather, so they go south to avoid the snow. Joe Riis

Federal agencies to use migration science

In February, Secretary of the Interior Ryan Zinke took an important step in advancing science-informed policy by issuing a secretarial order, "Improving Habitat Quality in Western Big Game Winter Range and Migration Corridors." The policy directs federal agencies to conserve migration routes and crucial

winter habitat for big game and ensures that migration science is considered in federal land use plans. Pew has been working with scientists, state agencies, and the Bureau of Land Management to disseminate the data and geographic information system tools that enable wildlife managers to document corridors.

Disaster preparedness investment reaches new levels

This spring, Congress significantly increased funding for two Federal Emergency Management Agency programs critical to communities seeking to reduce flood risk and enhance preparedness. Pre-disaster mitigation was funded at \$249 million, an increase of more than three times the average annual amount over the past 15 years, and flood risk mapping received \$262.5 million, an \$85 million increase from fiscal year 2017. In addition, to support communities affected by 2017's damaging hurricanes, President Donald Trump signed legislation in February that dedicates a large portion of the Department of Housing and Urban Development's (HUD) money to pre-disaster mitigation. Of the \$28 billion allocated to HUD, \$12 billion must be dedicated to mitigation projects aimed at reducing flood risk, such as buyouts of flood-prone properties, elevation of structures, and improved stormwater drainage. Research shows that every \$1 invested in mitigation saves society \$6 in reconstruction costs. Pew and its partners have worked since 2015 to encourage increased federal funding to better prepare communities for flooding.

A Midwestern response to the opioid crisis

Indiana lawmakers approved legislation in March that will reduce the inappropriate prescribing of opioids and ensure patients' access to an opioid use disorder treatment program that is less than an hour's drive away from their home. Pew provided technical assistance to state policymakers.

Also in March, the Wisconsin Legislature passed a package of bills that included Pew's recommendations on improving access to high-quality substance use disorder treatment. The legislation aims to increase the number of licensed substance use disorder counselors and improve training in medication-assisted therapy for Wisconsin medical residency programs. In January, Wisconsin's opioid task force had unanimously adopted all of the policy recommendations developed with Pew's technical assistance. Governor Scott Walker (R) also previously issued executive orders focused on initiating reforms that will enable providers to take care of more patients; facilitating health care coverage for people leaving the criminal justice system so they can access treatment more quickly; and developing a comprehensive resource that patients and physicians can use to determine which treatment providers are accepting new patients and how best to access care.

Samoa announces world's 17th shark sanctuary

Samoaan Prime Minister Tuilaepa Aiono Sailele Malielegaoi announced March 1 the creation of an approximately 50,000-square-mile shark sanctuary, which bans commercial fishing and possession, trade, and sale of all sharks and shark products throughout the Pacific island nation's exclusive economic zone. The announcement followed a two-day, Pew-supported workshop in Apia, Samoa's capital, where 40 national enforcement officials were trained to implement and enforce the sanctuary regulations. Pew's global shark conservation campaign conducted village consultations and placed newspaper ads and radio and television public service announcements to ensure that the public is aware of the new regulations, and will continue the outreach. The sanctuary is the result of a three-year effort by Pew and its partners.

Public safety laws adopted in 5 states

Five states passed justice reform laws this spring with technical assistance from Pew and its partners:

- In April, the Tennessee Legislature adopted changes to its juvenile justice system that encourage that youths be placed in evidence-based programs in the community rather than in residential facilities, and expand funding to promote more uniform access to programming for youths in communities across the state.
- Also in April, Oklahoma Governor Mary Fallin (R) signed a package of seven criminal justice reform bills that change the way the state approaches property theft and drug sentencing, habitual offenders, parole eligibility, and mandatory minimums. The state's prison population was projected to grow 25 percent by 2026 at an estimated cost of \$1.9 billion over 10 years to build and operate 9,000 new prison beds. The reforms are expected to avert the need for nearly 4,900 of those beds and about two-thirds of the projected prison population growth.
- Mississippi Governor Phil Bryant (R) signed legislation in March that retroactively expands parole eligibility for a group of nonviolent offenders, promotes successful re-entry, and prohibits jailing people because they cannot afford to pay fees or fines. Another provision creates a "safety valve" option that allows judges to exercise discretion in applying mandatory minimum sentences for certain offenders.
- In April, Massachusetts Governor Charlie Baker (R) signed criminal justice reforms, which made multiple changes to sentencing laws and policies that govern the credits that inmates can earn toward release.
- Then-Missouri Governor Eric Greitens (R) in May signed reforms into law that will enhance behavioral health assessment and treatment of people on probation and parole, and improve the parole decision-making process.

Evaluation results in tax incentives

Indiana Governor Eric Holcomb (R) signed a bill in March that will sunset the state's long-standing enterprise zone program in 2023. Begun in 1983, the program aimed to help revitalize distressed communities by offering tax credits to businesses that locate, invest, or hire employees within a designated area. A 2016 evaluation from the state's Legislative Services Agency found that the program produced weak results, while costing tens of millions of dollars in recent years. In 2014, with assistance from Pew, the state passed legislation requiring regular evaluation of its tax incentives and later strengthened its legislation with Pew's support.

The Maine Legislature also approved major reforms this spring to two of the state's largest economic development tax incentives. One of the changes fixed a flaw that allowed out-of-state companies to receive tax credits without investing in Maine businesses. The reforms to the programs implement recommendations from the Office of Program Evaluation and Government Accountability. Pew worked with lawmakers to establish Maine's evaluation process in 2015 and has provided assistance to the state evaluation office.

Plan aims to boost ocean health

The South Atlantic Fishery Management Council, which oversees offshore fishing from North Carolina to East Florida, adopted a plan this spring that includes Pew-recommended policies to consider the effects of warming waters and the population of prey species in setting fishing limits. The plan, the only one of its kind in the southeastern United States, embraces a comprehensive approach to setting fishing rules that will contribute to a healthy ecosystem—one that supports marine life, fishing, jobs, recreation, and coastal economies for future generations.

Utah passes budget stress test

On March 19, Utah Governor Gary Herbert (R) signed a bill into law that establishes a long-term budgeting and budget stress-testing process. The law will give policymakers additional tools to manage revenue fluctuations and detect early warning signs of potential budget imbalances, a major emphasis of Pew's state fiscal health project. Before the bill's development, Pew provided technical assistance to the Office of the Legislative Fiscal Analyst. The bill was sponsored by Representative Brad Wilson (R) and Senator Kevin T. Van Tassell (R).

INFORMING THE PUBLIC



Views on U.S.-German relations

The Pew Research Center published a report in February examining public opinion in the United States and Germany on the relationship between the two countries, based on surveys conducted in each. The report finds that while roughly 2 in 3 Americans characterize relations as good, 56 percent of Germans take the opposite view. The findings were presented during an event at the center attended by European diplomats, Washington-based foreign correspondents, and representatives from organizations focused on European affairs.

The German flag waves in the capital city of Berlin. According to a new poll, a majority of Germans have a different view of the relationship between their country and the U.S. than do many Americans. Florian Gaertner/Photothek/Getty Images

Generational differences

In March, the Pew Research Center released a report examining generational differences in Americans' political views, finding that millennials and Gen Xers stand apart from Baby Boomers and the Silent Generation in their opinions on issues ranging from immigration and race to foreign policy and the scope of government. Millennials also have a distinct, and increasingly liberal, outlook on many issues. The report was accompanied by a blog post from center President Michael Dimock on the center's definition of the various generations and was widely covered, with references to the center as arbiter of definitions about the generations.

The country has room for improvement, Americans say

The Pew Research Center released a report of Americans' views on the strengths and weaknesses of key aspects of American democracy and the U.S. political system in April. It found that Americans generally agree on the ideals and values that are important for democracy, but they often see the country falling well short of living up to these ideals. The report, part of a larger centerwide exploration of trust, facts, and democracy, was released with a quiz to test users' civic knowledge.

INVIGORATING CIVIC LIFE



Melanie Julian portrays a Union Army nurse in “Lydie Breeze Trilogy Part I: Cold Harbor” performed at the EgoPo Classic Theater in Philadelphia. Written by playwright John Guare, the trilogy chronicles a group of 19th century characters attempting to create a utopian society. *Dave Sarrafian*

Notable performances supported by Pew Center for Arts & Heritage

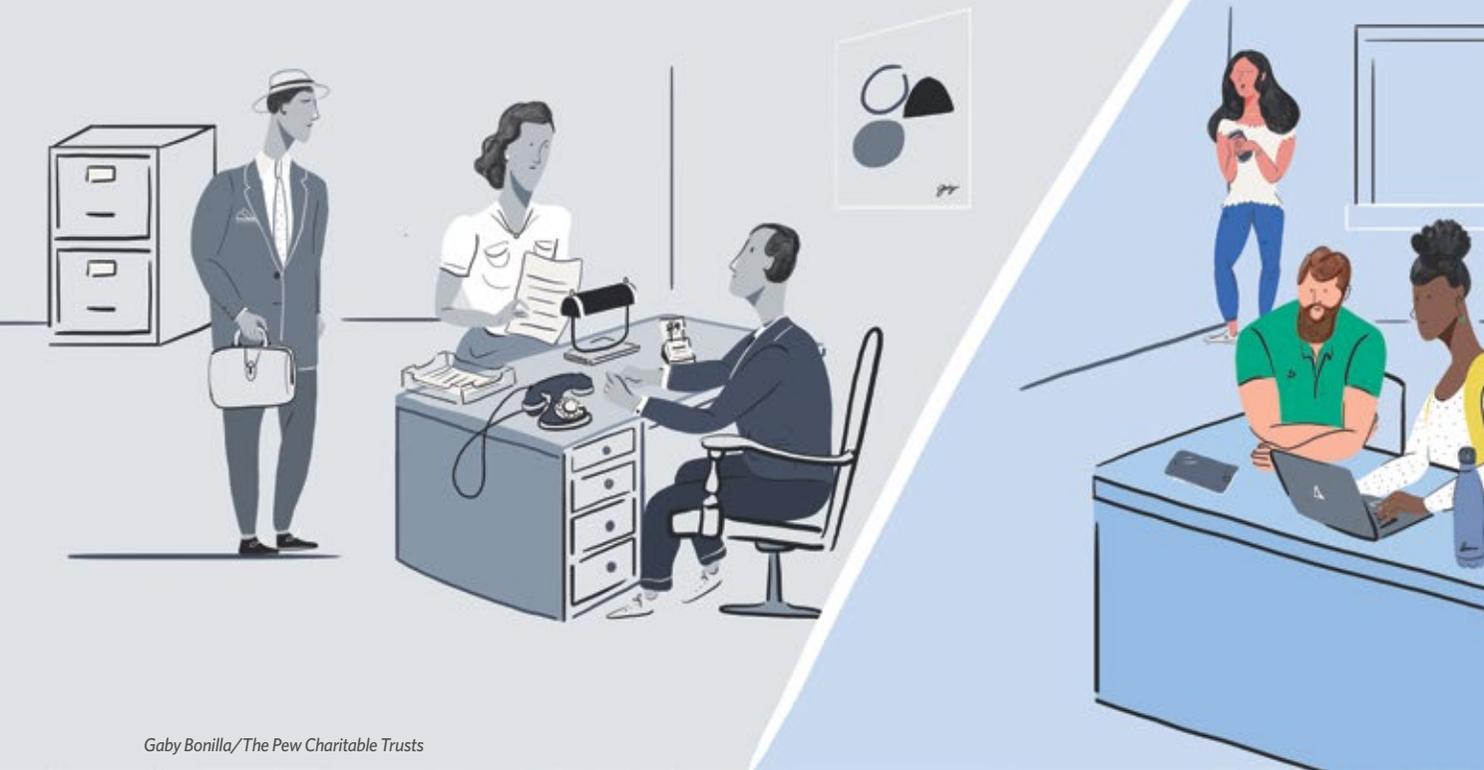
“Lydie Breeze Trilogy” by Tony Award-winning playwright John Guare continued performances in April, presented by EgoPo Classic Theater in Philadelphia. For the first time, audiences had the opportunity to experience the three-play cycle—set between the Civil War and the birth of 20th-century industrialism—as the single theatrical experience Guare intended it to be. Reviews in *The Philadelphia Inquirer* noted the “excellent cast” and “imaginative direction” that help this allegory of America come to life on stage.

- The Philadelphia premiere of rock icon and American composer Frank Zappa’s “The Yellow Shark” was presented in April by Orchestra 2001. The 17-movement, 75-minute piece will be performed

on the 25th anniversary of the composition’s album release and of Zappa’s death. In advance of the premiere, Orchestra 2001 explored Zappa’s artistic links to contemporary classical composers such as Edgard Varèse, Pierre Boulez, Igor Stravinsky, and Anton Webern.

- A center-supported project that premiered in Philadelphia is now touring nationally. Commissioned by the Association for Public Art, “Fireflies” was created by renowned Chinese artist Cai Guo-Qiang to mark the centennial of the Benjamin Franklin Parkway in the fall of 2017. In April, the work made its way to Baltimore for the third annual Light City, a festival of light, music, and innovation.

ENDNOTE



Gaby Bonilla/The Pew Charitable Trusts

How Millennials Today Compare With Their Grandparents 50 Years Ago

The past five decades have seen large shifts in U.S. society and culture. Americans, especially Millennials, have become more detached from major institutions such as political parties, religion, the military, and marriage. At the same time, the racial and ethnic makeup of the country has changed, college attainment has spiked, and women have increased their participation in the nation's workforce.

A Pew Research Center analysis finds several distinctive ways that Millennials stand out when compared with the Silent Generation.

01 Today's Millennials are much better educated than the Silent Generation.

Only 9 percent of Silent Generation women had completed at least four years of college when they were young. By comparison, Millennial women are four times (36 percent) as likely as their Silent predecessors to have at least a bachelor's degree at the same age. Millennial men are also better educated than earlier generations of young men. Nearly 3 in 10 (29 percent) have at least a bachelor's degree, compared with 15 percent of their young Silent counterparts. These higher levels of educational attainment at ages 21 to 36 suggest that Millennials—especially Millennial women—are on track to be our most educated generation by the time they complete their educational journeys.

02 A greater share of Millennial women have a bachelor's degree than their male counterparts—a reversal from the Silent Generation.

In the past half-century, growing shares of men and women have earned a bachelor's degree. However, women have made bigger gains. Among Millennials ages 21 to 36 in 2017, women are 7 percentage points more likely than men to have finished at least a bachelor's degree (36 percent versus 29 percent). Back when Silents were ages 21 to 36, women were 6 points less likely than men to have finished at least four years of college education. Gen Xers were the first generation of women to outpace men in educational attainment, with a 3-percentage-point advantage among women. The Baby Boom generation was the most recent in which men were better educated than women.



03 Young women today are more likely to be working than Silent Generation women were during their young adult years.

In 1965, when Silent women were young, only 40 percent were employed. Today, 71 percent of young Millennial women work. This shift to more women in the workplace occurred as early as 1985, when Boomers were young. Then, nearly 7 in 10 young Boomer women (66 percent) were employed.

04 Millennials are more than three times as likely to have never married as Silents were when they were young.

About 6 in 10 Millennials (57 percent) have never been married, reflecting broader societal shifts toward marriage later in life.

In 1965, the typical American woman first married at age 21 and the typical man wed at 23. By 2017, it was 27 for women and 29.5 for men. When members of the Silent Generation were the same age as Millennials are now, just 17 percent had never been married. Still, about two-thirds of never-married Millennials (65 percent) say they would like to get married someday.

05 Millennials are much more likely to be racial or ethnic minorities than were members of the Silent Generation.

Large-scale immigration from Asia and Latin America, the rise of racial intermarriage, and differences in fertility patterns across racial and ethnic groups have contributed to Millennials being more racially and ethnically diverse than prior generations. In 2017, fewer than 6 in 10 Millennials (56 percent) were non-Hispanic whites, compared with more than 8 in 10 Silents (84 percent) in 1965. The share who are Hispanic is five times as large among Millennials as among Silents (21 percent versus 4 percent), and the share who are Asian has also increased. The share who are black has remained roughly the same.

06 Young Silent men were more than 10 times as likely to be veterans than Millennial men are today.

Only 4 percent of Millennial men are veterans, compared with 47 percent of Silent men, many of whom came of age during the Korean War and its aftermath. The number of young men serving in the active-duty military has decreased drastically since it became all-volunteer in 1973,

which is reflected in the decreased share who are veterans since then. Comparable historical data for veteran status by generation is not available for women, but the number of women serving in the active-duty military has risen in recent decades.

07 Greater shares of Millennials live in metropolitan areas than Silents or Boomers did when they were young.

In 1965, when members of the Silent Generation were young, two-thirds (67 percent) lived in a metropolitan area, while one-third (33 percent) lived in non-metropolitan areas. A similar share of Baby Boomers (68 percent) lived in metro areas when they were young. Younger generations are residing in metropolitan areas at higher rates. More than 8 in 10 Gen Xers (84 percent) lived in metropolitan areas when they were young, and about 9 in 10 Millennials (88 percent) live in metro areas today.

The generations defined



Silent
born 1928-45, ages 72-89



Boomers
born 1946-64, ages 53-71



Generation X
born 1965-80, ages 37-52



Millennials
born 1981-96, ages 21-36

Generation age in 2017



Philadelphia had more jobs in 2017 than at any time since 1991. For the second year in a row, the city's job market outperformed the national average.

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