

INSIDE

The Promise of Electronic
Health Records 18

Outback Visionaries 24

The Pew Charitable Trusts Trust

A demographic shift is underway, driven
by women who decide that delaying
motherhood is

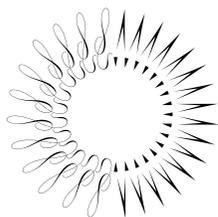
Worth the Wait

Spring 2018 | Vol. 20, No. 2





Time & Life Pictures/Getty Images



TIME CAPSULE

The Pew Memorial Foundation was incorporated on Feb. 6, 1948, by two sons and two daughters of Sun Oil Co. founder Joseph N. Pew and his wife, Mary Anderson Pew. The first grant was to the American Red Cross for \$30,000—when adjusted for inflation, it would be approximately \$300,000 today. Other recipients that year included the Institute for Cancer Research, now part of the Fox Chase Cancer Center; and Grove City College. Over the next seven decades, the foundation would evolve into The Pew Charitable Trusts. But constant from that time to now have been the guiding principles of innovation, entrepreneurship, and excellence in Pew's pursuit of advancing the public good.

CONTENTS

-
- 2 **Notes From the President:** A Lively, Constructive Discontent
- 4 **The Big Picture:** How to Catch a Swordfish
- 6 **Noteworthy:** Gains for Sharks; More Parents Living With Adult Children; Tennessee Leverages Data to Install Change; Consumers Struggle With Bank Overdrafts; In Philadelphia, Job Shifts Drive Poverty
-

- 10 **More Moms**
They're waiting longer, but more women are having children.
By Carol Kaufmann

- 18 **The Puzzle—and the Promise—of Electronic Health Records**
Computerized patient information can revolutionize health care, but some puzzles need to be solved first.
By Rob Waters

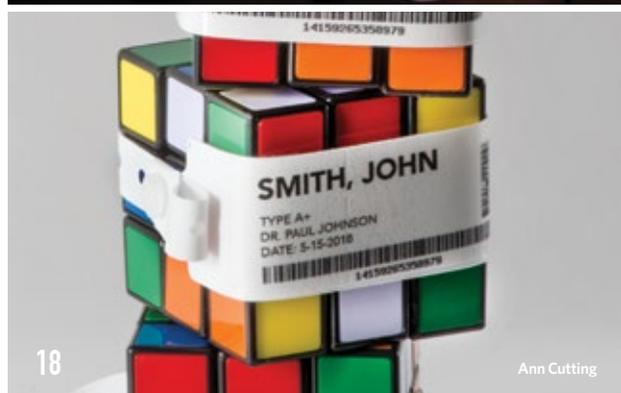
- 24 **Outback Visionaries**
Ecotourism in Australia's Outback helps protect the plants, wildlife, and landscapes that visitors come to see.
By Daniel Lewis
-

- 32 **News:** Social Media Use in 2018: Are Changes Coming?
- 34 **Q & A:** A Conversation With Jennifer Kidwell
- 36 **Dispatch:** Threatened Coral Holds Medical Promise
- 39 **Talking Point:** Dental Therapists Prove Cost-Efficient in Rural Areas
- 40 **Stateline:** Variable Speed Limits: Worth the Investment?



10

Jackie Molloy



18

Ann Cutting

- 42 **Pew Partners:** Knight Foundation and Pew share an interest in informing the public
- 44 **On the Record:** To Fight Illegal Fishing, Authorities Tighten Many Nets at Once
- 46 **Lessons Learned:** Pew's Contribution to Food Safety
- 48 **Return on Investment:** Pew Improves Policy, Informs the Public, and Invigorates Civic Life
- 52 **End Note:** Islam's Losses—and Gains—in the U.S.

Cover photograph by Kyle Monk

A Lively, Constructive Discontent



Although 2018 marks the 70th anniversary of The Pew Charitable Trusts, allowing us to celebrate the milestones we've achieved over the past seven decades, Pew's founders did not spend much time gazing in the rearview mirror. Joseph Newton Pew Jr. explained their forward-looking approach when he said in 1957: "Let us function with a lively, constructive discontent with things as they are and strive for an illimitable future, first for new discoveries and, secondly, making those discoveries obsolescent as we proceed toward our ultimate destiny."

All four of the founders—J.N., J. Howard, Mary Ethel, and Mabel Pew—were flexible, adaptable, innovative, and optimistic—and they designed the Trusts to be the same. This unique vision has allowed Pew to grow and change, evolving from a small family charity to a global independent nonprofit. We honor the past but we focus on the future, often taking on challenges that others might ignore or fail to recognize.

This issue of *Trust* takes a close-up look at how a "constructive discontent with things as they are" is leading to new and important changes in health care, conservation, demographic research, and communications.

Almost every hospital and health care system in the United States, for example, has moved from handwritten, frequently illegible, and sometimes inaccurate doctor's notes to electronic health records. That was a big step in the right direction. But two challenges remain: interoperability and safety. The

many different electronic records systems in diverse settings can have a hard time communicating with one another, which means that patients can still be identified incorrectly. In this issue you'll read about how problems with electronic health records are leading to new collaborations and research to develop solutions—from biometrics to smartphone-based data—that will give clinicians immediate information about a patient's identity, medical history, and medications while improving the safety, quality, and accessibility of our health care.

Sometimes constructive discontent can be found in unexpected places, including the Arkaroola Wilderness Sanctuary in the remote Australian Outback. Reg Sprigg had tried for years to get the government to turn the 235-square-mile former sheep station into a national park. When that didn't come to fruition, Sprigg and his wife, Griselda, bought the vast geological wonderland in 1967, and began managing Arkaroola for wildlife preservation and conservation. His children, Marg and Doug, have become contemporary Outback champions, picking up where their father left off, re-establishing native flora and fauna, and turning the sanctuary into a carefully managed destination for ecotourism that promotes conservation, education, and research.

We honor the past but we focus on the future, often taking on challenges that others might ignore or fail to recognize.

Bringing people to Arkaroola—whose geology dates back 1.6 billion years—for activities such as hiking, stargazing, and even painting helps this threatened land. As you'll read in this issue, wise stewardship of the Outback requires people, and Pew is working with residents like Marg and Doug to build a sustainable future by expanding its economy while preserving its natural beauty.

Having a lively discontent almost defines what it means to be young. We see this in literature—from Huck Finn to Hermione Granger—and in life. And we see it again in the way young people are using social media. In a recent survey by the Pew Research Center that is reported on in this issue, nearly 90 percent of young adults ages 18 to 29 use social media. But, the survey

suggests, there is a move away from older platforms such as Facebook and Twitter. Seventy-eight percent of 18- to 24-year-olds—a record high—is now on the photo- and video-sharing platform Snapchat, while only 54 percent of the slightly older 25- to 29-year-old cohort use it.

As Aaron Smith, associate director of research at the center, notes, “Young people tend to be the first adopters of lots of different technologies,” which both awes and terrifies their parents. In our cover story, we take a look at today’s moms—many of whom have waited until their 30s and 40s to have children—and the effects on family life and career advancement this change is likely to create in years to come.

No doubt today’s unique challenges—and even terms such as interoperability, ecotourism, and social media—would have puzzled members of the Pew family and their contemporaries back in 1948. But they would be enormously pleased that the process of discovery, innovation, and reinvention they encouraged is fully embraced in the institution they founded and in our culture and communities 70 years later.



Rebecca W. Rimel, *President and CEO*

Trust

Spring 2018 | Vol. 20, No. 2

Board of Directors

Henry P. Becton Jr.
Robert H. Campbell
Susan W. Catherwood
Aristides W. Georgantas
Mary Graham
Christopher Jones
James S. Pew
J. Howard Pew II
Joseph N. Pew V
Mary Catharine Pew, M.D.
R. Anderson Pew
Sandy Ford Pew
Rebecca W. Rimel
Doris Pew Scott

President and CEO

Rebecca W. Rimel

Senior Vice President For Communications

Melissa Skolfield

Senior Director, Editorial

Bernard Ohanian

Editor

Daniel LeDuc

Senior Editor

Demetra Aposporos

Creative Director

Dan Benderly

Art Director/Designer

Richard Friend

Photo Editor

Bronwen Latimer

Staff Writers

John Briley, Howard Lavine

Editorial Assistant

Eric Wrona

One Commerce Square
2005 Market Street, Suite 2800
Philadelphia, PA 19103-7077

901 E Street NW, 10th Floor
Washington, DC 20004-2037

The Grove
248A Marylebone Road
London NW1 6JZ

pewtrusts.org



THE BIG PICTURE

A swordfish takes the bait and is reeled in from deep water to a fishing boat off the coast of San Diego. The fishermen use lines attached to deep-set buoy gear, which targets swordfish that feed in cold water 800 to 1,200 feet below the surface. Fishermen keep a close eye on the floating buoys; if one rises or sinks, they know to pull up their catch, and quickly release other nonmarketable species, something not possible if they used indiscriminate large-mesh drift gillnets. Pew supports fishermen who use the buoy method, which minimizes harm to whales, sea turtles, and other marine life.





New regulations in Hong Kong will increase penalties for the illegal trade of products derived from a protected species, aiming to reduce sights like these shark fins drying on a rooftop. *Shawn Heinrichs*

Gains for Sharks

BY JOHN BRILEY

Many of the world's shark populations are threatened or endangered, with some driven toward extinction by heavy fishing. But recent progress on conservation efforts is raising the hopes that these animals could have a healthy future.

In January, policymakers in Hong Kong—a bustling market for a huge range of illegal wildlife products and long the center of the global trade in shark fins—voted overwhelmingly to increase the penalties for anyone convicted of illegally selling or buying products derived from any species listed on the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

For the past four years, Pew has been working closely with Hong Kong's Agriculture, Fisheries, and Conservation Department to hold workshops on how to identify fins and best enforce CITES listings for

sharks. As a result, the department has confiscated over 8,800 pounds of shark fins since 2014.

Although Hong Kong still has some work to do—an estimated 50 percent of the global shark fin trade passes through its ports—the move by the city's legislative council raises the maximum sentence for illegal trade in listed species from two years to 10 and increases maximum fines from \$6,400 to \$1.3 million.

At least 63 million and as many as 273 million sharks are killed every year, many solely for their fins, which are primarily used to make shark fin soup. Sharks are essential in the marine food web, and a growing body of research shows alarming imbalance in ecosystems where shark populations have declined.

Nearly 5,600 miles to the east of Hong Kong, the South Pacific island nation of Samoa in March designated

its 49,421-square-mile (128,000-square-kilometer) exclusive economic zone as the world's 17th shark sanctuary. The decision bans commercial shark fishing in the country's waters, which are prime habitat for nearly 30 species of sharks and rays, and outlaws the possession, trade, and sale of any shark products, including fins. It also prohibits fishing gear typically used to target sharks, such as wire leaders.

The announcement came at the start of the two-day Pacific Shark Ministerial Symposium in Apia, Samoa's capital, which was co-hosted by the Samoan government, the Secretariat of the Pacific Regional Environment Programme, Pew, and Paul G. Allen Philanthropies.

Momentum to protect sharks began in the region in 2009, when Palau designated its waters safe for

sharks, and continued to build through 2015, when the Micronesia Regional Shark Sanctuary was created. The first-of-its kind sanctuary covers a swath of ocean larger than the European Union and includes the waters of Palau, the Marshall Islands, the Federated States of Micronesia, and Kiribati. In 2016, regional governments supported CITES listings for silky sharks, thresher sharks, and mobula rays. Last year, Samoa also led the push at the Convention on the Conservation of Migratory Species of Wild Animals conference in Manila, the Philippines, to safeguard blue sharks, a highly migratory species.

"As Pacific Ocean stewards," says Samoan Prime Minister Tuilaepa Aiono Sailele Malielegaoi, "it is our duty to protect sharks, and by doing this we are also protecting the livelihoods of our people."

More Parents Living With Adult Children

Increasingly, American adults are sharing a home with other adults without any romantic involvement. This arrangement—"doubling up" or shared living—gained attention in the wake of the Great Recession. Nearly a decade later, the practice has continued to grow.

While the rise in shared living during and immediately after the recession was largely a result of millennials moving back in with their parents, the longer-term increase has been partially driven by the reverse: parents moving in with their children.

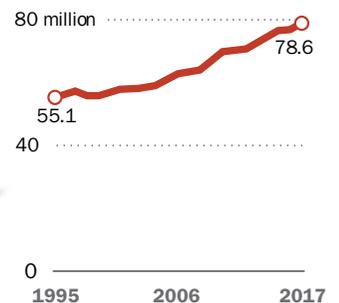
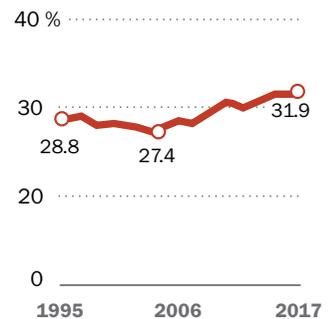
In 2017, nearly 79 million adults (31.9 percent of the adult population) lived in a shared household—that is, a household with at least one "extra adult" who is not the household head, a spouse, or unmarried partner, or an 18- to 24-year-old student. In 1995, the earliest year with comparable data, 55 million adults (28.8 percent) lived in such a household. In 2004, at the peak of homeownership and before the onset of the foreclosure crisis, 27.4 percent of adults shared a household.

A shared household is defined differently than a multigenerational household (although the two can overlap), as shared households can include unrelated adults and adult siblings. More adults live in shared households than multigenerational ones: In 2016, 64 million Americans (including children) resided in multigenerational households.

The nearly 79 million adults living in a shared household include about 25 million adults who own or rent the home. While they don't qualify the household as a "shared household," an additional 10 million adults are the spouse or unmarried partner of the head of the household. Another 40 million, or 16 percent of all adults,

Nearly 1 in 3 adults in the U.S. are 'doubled up' in housing

Percentage of adults living in a shared household



Source: Pew Research Center



are the "extra adult." This portion of people living in someone else's household is up from 14 percent in 1995.

Adults who live in someone else's household typically live with a relative. Today, 14 percent of adults living in someone else's household are a parent of the household's head, up from 7 percent in 1995. Some 47 percent of extra adults today are adult children living in their mom and/or dad's home, down from 52 percent in 1995. Other examples of extra adults are a sibling living in the home of a brother or sister, or a roommate.

—Demetra Aposporos

Tennessee Leverages Data to Install Change

During his seven years in office, Tennessee Governor Bill Haslam (R) has been busy. His administration has created jobs, strengthened the state's rainy day fund, decreased its debt, and driven gains in school test scores—accomplishments the two-term governor attributes to data-driven decision-making.

In February, Gov. Haslam spoke at Pew's Washington office about using evidence-based policies to help strengthen his state's fiscal position, maintain a balanced budget, and make smart investments with taxpayer dollars—and noted that other governors should also use data to make policy decisions.

Pew has collaborated with six governors, including Gov. Haslam, to use data as the foundation for fiscally sound policies with broad public appeal by identifying and sharing the best practices for collecting, managing, and analyzing data on tax incentives. This has helped

states use the most effective strategies to improve their economic development investments.

Gov. Haslam focused much of his talk on education, noting that during his tenure, the state has raised education standards to increase accountability and tied teacher evaluations to student outcomes. He added that companies looking to relocate are primarily concerned about finding the right employees, and that he believes a better-educated workforce will attract more businesses to Tennessee and help bridge the long-standing divide between the state's rural and urban residents—both challenges in many other states. "One of the reasons K-12 education matters is that most folks need postsecondary education a lot more than they used to," he said.

To raise the state's educational profile, in 2014 Gov. Haslam's administration launched Drive to 55, an initiative designed to increase the number of Tennesseans with a postsecondary degree or credential to 55 percent by 2025. The governor said the state is on track to achieve the goal two years ahead of schedule.
—Carol Kaufmann

Tennessee Governor Bill Haslam responds to a question during an appearance at Pew's Washington offices in February.

Lee Gillenwater/The Pew Charitable Trusts



Consumers Struggle With Bank Overdrafts

Overdraft programs—which allow point-of-sale purchases and ATM withdrawals to go through, for a fee, when customers' accounts lack the requested funds—are often marketed as a service banks provide to cover occasional budgeting errors. But the programs are not well-understood by consumers and often fail to meet their needs.

The Consumer Financial Protection Bureau requires that banks receive affirmative consent (that customers opt in) before charging fees for overdraft coverage for ATM withdrawals and one-time debit payments, the most common types of transactions. Opting in greatly affects how much a customer pays in fees, and most of the largest U.S. banks typically charge about \$35 per overdraft. (Consumers who do not opt in can still be charged overdraft fees for checks, certain electronic transactions, and recurring debit card transactions such as automatic membership renewals.)

To better understand the financial realities of consumers who use overdraft—how they think about and employ it, and what services they need to better manage their accounts—Pew conducted a survey of overdrafters: people who had overdrawn their account at least once in the past year and had been assessed a fee. The research found that most overdrafters do not know they have the right to avoid fees, and that some use overdraft as a form of credit, even though such transactions are not regulated like other consumer credit.

7 in 10 overdrafters do not know they can have debit card purchases declined for free



Source: The Pew Charitable Trusts

The study found that nearly 3 in 4 overdrafters don't understand they have the right to have transactions for which they have insufficient funds declined without a fee and that 1 in 3 people treat overdraft as a way to borrow small amounts of money. It also found that most overdrafters face significant financial stress, with many lacking adequate access to safe and affordable credit products.

Pew's research shows that these consumers could benefit from access to safe, small installment loans with lower costs, affordable payments, and more time to repay. Without such loans, many consumers will continue to use expensive overdraft programs—as well as high-cost nonbank credit, such as payday loans—to cover their expenses.

—Daniel LeDuc

In Philadelphia, Job Shifts Drive Poverty

Over the past 40 years in the Philadelphia region, the types of jobs available—and their locations—have shifted as the city's poverty rate has increased, according to a recent Pew report.

In 1970, industrial production and other blue-collar occupations comprised the largest share of the city's jobs. By 2016, the number of Philadelphians working such jobs had fallen by more than half—while the city's poverty rate grew by more than 10 percentage points. In 2016 dollars, median annual earnings for male Philadelphians over age 16 were also down, dropping from \$48,460 in 1970 to \$36,210 today, while earnings for women increased from \$26,420 in 1970 to \$31,505 today.

During the same period, the number of Philadelphians in management and professional jobs grew by 85 percent.

According to the U.S. Bureau of Labor Statistics, most of these jobs require a bachelor's degree or higher, which

87 percent of the city's poor residents lack. The service sector—which includes food preparation—grew by 56 percent over the same time frame, and most of this work does not require advanced education. The pay is also relatively low: The 10 sales and service job categories in the region with the most employees all had median annual earnings below \$29,250 in May 2016.

"The movement of jobs from the city to the suburbs coincides with the growth in poverty in the city," says Larry Eichel, who directs Pew's Philadelphia research initiative. The number of jobs in Philadelphia has declined substantially since 1970, although it has increased somewhat in recent years. At the same time, total employment has more than doubled in the seven suburban Pennsylvania and New Jersey counties closest to the city. That combination—fewer jobs in the city and more in the suburbs studied—has made it harder for many city residents to find work, Eichel says. In addition, overall job growth in the region has been slow compared with the nation as a whole.

—Demetra Aposporos

MORE MOMS

They're waiting longer, but more women are having children—and a Pew Research Center analysis finds family size is growing, too.

BY CAROL KAUFMANN

A little before 3:30 each school day afternoon, Julie Hayes Misarti stands ready outside of St. John of the Cross Parish School in suburban Chicago. At the sound of the bell, her son, Aidan 7, and daughter, Francesca, 10, fly out the doors among the scores of children and into their mom's arms.

She hurries them into the car. The first stop is The Village Club in their small town of Western Springs, Illinois (pop. 13,391), where she volunteers as president and treasurer. She's attempting to reinvigorate the club as a go-to center for families and is getting the place ready for a party she's organizing the next evening. From there, she checks on the family's home, under restoration after a boiler malfunction (Misarti, her husband Gabe, Francesca, and Aidan are living in a nearby apartment in the meantime.) Then, Misarti drops Francesca at a playdate in the next town over, and zips to Costco to buy

drinks and treats for the club's party. All this is broken up by a pit stop for Olive, the family's 5-year-old Shih Tzu Yorkie, in a nearby park.

Misarti sips her ever-present large Starbucks coffee, which could stand a refill. "I wouldn't trade it," the 49-year-old says of her life. "But I do miss working."

Julie Misarti is used to being busy: In her 20s and 30s she was on a fast career path. She worked in the wealth management group of a large Chicago bank and was regularly on the road meeting with clients in San Francisco and Silicon Valley while also organizing charity events and treating herself to trips to Ireland, France, and Spain.

"I got so much traveling and freedom out of my system," says Misarti, who had her daughter at age 38. And she also had been in the business world long enough to develop the experience and connections to help ensure that if she decided to work again, she could.



Julie Hayes Misarti became a mother at age 38. Though she misses her professional career, she says she wouldn't trade it for being a mom to Aidan, 7 (pictured), and daughter Francesca, 10.
Kyle Monk for The Pew Charitable Trusts



Five-month-old L.J. clings to his mother, Cara Lemieux, as she prepares his bath. Lemieux gave birth to her son at age 40 and is one of the growing number of never-married women ages 40-44 who are mothers. Jackie Molloy for The Pew Charitable Trusts

Women like Misarti, who are having children later in life, are helping drive an increase in motherhood in the United States, the Pew Research Center reported earlier this year. After analyzing U.S. Census Bureau data of women at the end of their childbearing years, researchers found the share of women who have given birth was higher in 2016 (86 percent) than it was a decade earlier (80 percent), a notable development since childlessness began to rise in the mid-1970s. “It’s amazing,” says Gretchen Livingston, an expert on demography and family at the Pew Research Center who wrote the report, “how fast societal trends are changing.”

Not only did the researchers determine that women are more likely to be mothers than they were

a decade ago, but they’re having more children, too. Overall, women in the U.S. have 2.07 children during their lives on average—up from 1.86 in 2006, the lowest number on record. That’s despite the fact that annual birthrates in the years since the Great Recession have been in decline; the center’s analysis looked cumulatively at childbearing during a woman’s lifetime over a period of about 30 years.

Delays in childbearing are particularly noteworthy, Livingston says, when compared to the past. In the mid-1990s, just over half of women had become moms by age 24. Today, the median age for having the first child is 26.

“It used to be the norm to have one baby in the early 20s,” says Livingston. Partly influenced by the drop in teenagers having children,

now only 39 percent of women at the end of their childbearing years had their first child by 24.

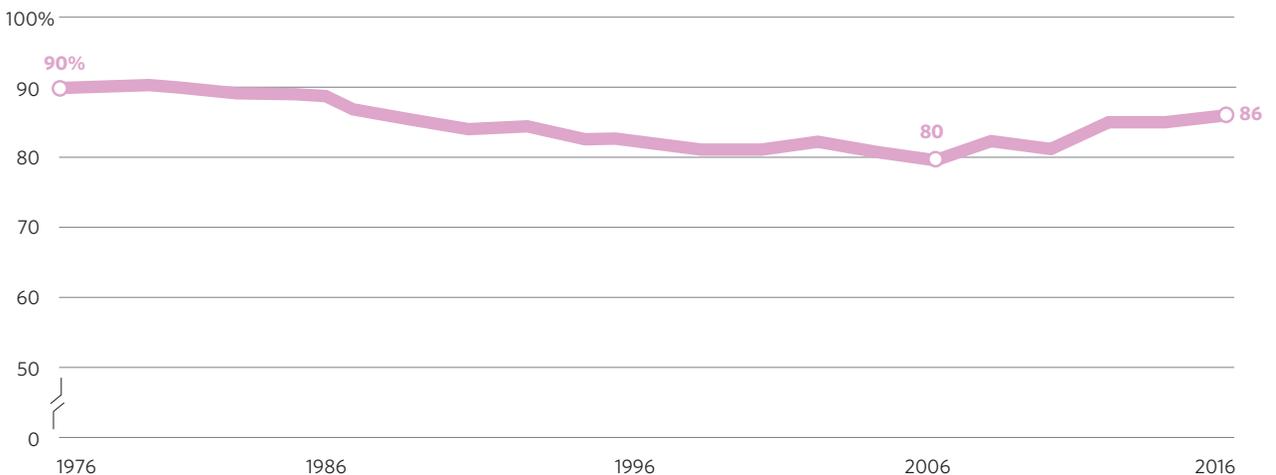
Women working longer, having college degrees, and seeking more advanced degrees all combine to influence the uptick in age of motherhood. “This trend is driven in part by more highly educated women having babies,” says Livingston. “Now, women are more involved with their careers, and these careers are more demanding.”

Renee Robertson of Crestview Hills, Kentucky, says she wanted “maturity, stability, and professional launch” before becoming a mother. She was 29 and 33 when she had her two daughters, now 16 and 20. After each maternity leave, Robertson returned to work and received promotions. Now a 26-year veteran of Toyota, she’s a



AFTER DECADES OF DECLINE, MOTHERHOOD IS TICKING UP

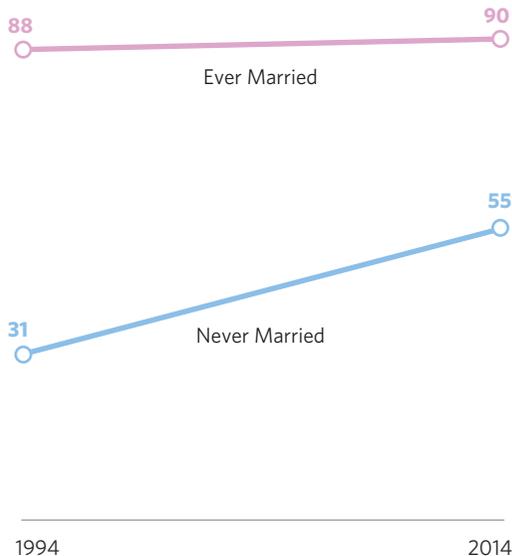
Percentage of women ages 40 to 44 who have ever given birth





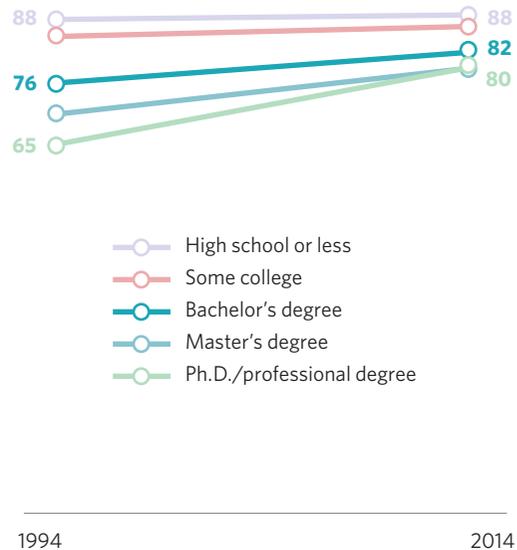
MORE THAN HALF OF NEVER-MARRIED WOMEN AGES 40 TO 44 ARE MOTHERS

Percentage of _____ women ages 40 to 44 who have ever given birth



THE EDUCATIONAL GAP IN MOTHERHOOD IS SHRINKING

Percentage of _____ women ages 40 to 44 who have ever given birth



general manager at the company's largest manufacturing plant. "I always wanted to know that I could support myself and my girls on my own," Robertson says. "I strive to be a role model for my daughters."

Julie McCord in Seattle also values what her work and life experiences have given her. Over two decades, she earned a master's degree, freelanced for media outlets, and worked for global nonprofit organizations, which included a three-month stint in Africa working with gorillas. Married at 38, she had her children at 40 and 41, and now is taking time off from her career to care for them.

"I'm glad I had the opportunities I had," McCord says. "I had advanced enough in my career so leaving it wasn't as hard. Waiting longer [to have children] also meant much more financial independence. We were able to save money so I had the

option of not working." She plans to go back to work full-time when the children, now ages 1 and 2, are older.

Stephanie Coontz, the director of public education at the Council on Contemporary Families, has written seven books about family life and marriage, including *The Way We Never Were: American Families and the Nostalgia Trap*. She notes that helpful fathers may be a contributing factor in the uptick in motherhood. European researchers have found that "when men pitch in after the birth of a first child, mom is more likely to have a second one," she says. "Educated men have really upped their participation in child care."

Coontz, who teaches history and family studies at Evergreen State College in Olympia, Washington, also says that women having children at older ages is associated with better outcomes for kids, and "may well be related to an increase

in the possibilities for women, especially educated professionals, to combine work and parenthood." She says that greater access to family leave for professional women and a greater feeling of entitlement to have children, "even if you're in a high-powered career," has influenced the uptick in motherhood. She says that in the 1970s and '80s, professional women who were mothers were really hesitant to have a second or third child for fear their career would be derailed.

In fact, one of the standout findings in the Pew report was the significant increase in motherhood among highly educated women in their early 40s. Eighty percent of U.S. women with a doctorate or professional degree have given birth, compared to 65 percent in the mid-1990s. That's a marked change, says Coontz.



Cara Lemieux logs back on to work after her daughter, Ellie (pictured), goes to sleep and before her infant son, L.J., wakes up for his midnight feeding. Lemieux works full-time as a communication strategist and teaches a graduate class at a university near their Connecticut home. “We are getting a little bit better as a culture with allowing flexible work environments to make it possible to be a great parent and great employee,” she says. Jackie Molloy for *The Pew Charitable Trusts*

But motherhood, particularly for women who have advanced education, can also impose professional limits. Blythe Houck, an attorney in Powell, Ohio, spent much of her 20s working around the clock on environmental projects, and after law school, dove into the time-consuming role of an associate for a law firm. Now with three boys, ages 12, 10, and 7, the 47-year-old mother acknowledges she can’t devote the same kind of steely-eyed

focus to her current job—leading a nonpartisan group that works on health care policy—amid her primary caretaking responsibilities, PTA meetings, making dinner, and driving to sports practices and Cub Scout meetings, especially while her husband is traveling.

“For my job, I could spend 24/7 puzzling on strategies and writing out concepts, but it’s not possible,” she says. “I need a lot of uninterrupted thinking time.

Professionally, it’s frustrating. At the same time, I love having my three guys. They’re my world.”

The world for many of today’s mothers doesn’t involve husbands at all. The dramatic growth in the number of never married women was one of the report’s most striking findings, according to Livingston. Fifteen percent of all women in their early 40s have never married and more than half of them have given birth to at least one child. That’s



*AFTER TWO DECADES ON A FAST
CAREER PATH, JULIE MISARTI NOW
SPENDS HER DAYS RUNNING
A DIFFERENT RACE.*

a dramatic jump from the mid-'90s when about a third of never-married women in their early 40s had given birth.

The increase in births among never-married women probably stems from several factors, says Coontz. "New social tolerance and economic options certainly make it easier for women to raise a child on their own," she says. She also suspects that at least some of the women are cohabitating with the father of the child. Marriage is not dead, she says, but it "no longer organizes most people's major life transitions and decisions—and it certainly can't serve as shorthand for figuring out who has caregiving obligations."

Cara Lemieux had her first child at age 30; she was single and the pregnancy unplanned. But after working "to rebrand the single mom in my head and in the world

around me," she realized she loved motherhood. Seven years later, she decided to do it again, and once more she's doing it on her own.

Today, she lives with daughter Ellie, 7, and son L.J., 7 months, near the Connecticut town where she grew up and in the same school district as her nieces and nephews. She gave up a demanding career in television and now works from home as a communication strategist for a digital agency that is "pretty progressive and accepting of family stuff," she says. "We're getting a little bit better as a culture, with flexible work environments that make it possible for any parent to be a great parent and a great employee."

And Lemieux says that while she'd like to find companionship, marriage isn't a priority for her. "I don't want a child with someone who I don't want to spend the rest of my life with."

Michelle Wolcott, 47, prefers motherhood that way, too. An orthopedic surgeon at the University of Colorado in Denver, she is also a single parent of two children, now 5 and 7. "It was solely my decision," she says. "I didn't want anyone else involved."

She finds being the sole parent has advantages. "I have the control—from naming them, to what schools they attend, to any major decisions about their lives." In addition to family and friends she can consult, Wolcott has a unique support system. Her kids share the same donor father—as do about 15 other children across the country, now united along with their mothers in a donor siblings group called "diblings."

The kids, who Wolcott says resemble each other, know they're related and see each other at reunions. The moms, like Wolcott, are working professionals. Kids who are conceived through donors,



Kyle Monk for The Pew Charitable Trusts

by definition, have a small family, but Wolcott says her kids have “a much bigger family, full of half siblings and all sorts of aunts and uncles.”

Delaying motherhood also just “makes plain sense,” says Wolcott, who waited until her medical school loans were paid off before applying for a donor. “We delay personal stuff. The career needs time and focus,” she says.

Of course, as women have children when they’re older, they’re also more likely to experience another demand on their time while raising kids—caring for aging parents. Although the Pew report didn’t deal with this aspect of older motherhood, it’s certainly on the minds of many moms.

Joy Wagner of Alexandria, Virginia, who had her first son at 31 and her fourth at age 42—and has always worked full time—has her hands full. “Now that I’m almost

53, my energy level is zapped for eternity,” she says.

And to add to her busy life, she and her sister are also caring for her parents, ages 91 and 92, who live in Massachusetts. In between taking her sons to basketball games, music lessons, and Wednesday night religion classes, Wagner helps determine what kind of care her parents need and travels north when they become ill or need serious assistance. She feels “guilty about not doing as much as my sister, but because I have young kids and a full-time job, I’m limited in what I can do,” she says.

But while they may be short on time and energy, Wagner and other women like her aren’t limited in opportunity. The rise in women’s labor force participation, educational attainment, and postponement of marriage—trends the Pew Research Center

has covered extensively over the years—all have likely contributed to a forgoing of motherhood, for some, and a delay for others.

“It’s so striking that we’ve seen an uptick in women becoming moms,” says Livingston. “There has been much talk about a ‘baby bust’ in the media. That’s based on snapshots of birth data from points in time—which are influenced by economic shocks like the Great Recession and women delaying motherhood because of them.” But what this research has shown, she says, is that over their lifetimes, women are now more likely to become mothers than they were a decade ago.

==

Carol Kaufmann is a Trust staff writer.

The Puzzle—



and the Promise—



of Electronic



Health Records



Computerized patient information can revolutionize healthcare, but the revolution won't come without first solving some big concerns.



BY ROB WATERS





When 67-year-old Maureen Kelly, complaining of abdominal pain, was wheeled into the emergency room of Beth Israel Deaconess Medical Center in Boston in the winter of 2015, the medical staff immediately typed her name, date of birth, and address into a terminal connected to the hospital's electronic health record system—and to the state health information exchange, which aggregates information on patients throughout Massachusetts.

Doctors soon thought they knew why Kelly was weak and confused: The computerized records showed she was diabetic and had only one kidney. They feared she was suffering from diabetic complications or had renal disease, which is often linked to diabetes.

They considered giving her insulin to keep her blood sugar from spiking. But as they read her records, they became confused themselves. Notes from one recent medical visit suggested that Kelly wasn't diabetic, and another notation mentioned that *both* her kidneys were unremarkable and functioning normally. (Some details of the case, related by hospital officials and including the patient's exact name, have been changed for her privacy.)



A hospital district in Houston has found 2,488 records for patients named Maria Garcia—and 231 of them shared the same birthday.

As the ER doctors kept scrolling through the records, they realized something else: The system included records for five Maureen Kellys, all with the same birthdate and living in the same ZIP code, a largely Irish-American neighborhood in South Boston.

The Beth Israel staff members later reported that they had no idea what information in the electronic records system was correct for the Maureen Kelly in their emergency room—or how many of the electronic system's five Maureen Kellys with the same birthdate might actually be the same person with duplicate records. So the team fell back on the most fundamental lesson of medical training: the Hippocratic injunction to first do no harm. They treated her based on her symptoms, and on lab tests they ordered.

Fortunately, Maureen Kelly recovered. But hers was far from an isolated case. In the past decade, electronic records have become the norm in medical facilities around the nation, but there has been no national system to ensure that an individual record matches an individual patient. Birthdates often help but are far from guarantees: A hospital district in Houston has found 2,488 records for patients named Maria Garcia—and 231 of them shared the same birthday.

And sometimes it's not mismatched records that cause problems and lead to safety concerns, but how medical providers interact with electronic systems. For example, a 16-year-old patient in California was inadvertently given 38 times the appropriate amount of an antibiotic. The physician didn't realize that the default setting in the system automatically adjusted the dosage based on the patient's weight. As a result of the massive overdose, the patient suffered a near-fatal grand mal seizure.

Another safety threat can come from "alert fatigue." Electronic records send automatic alerts that pop up on the computer screen, warning of potentially dangerous drug interactions or drug allergies. This feature has saved lives. But in some cases, these warnings are repetitive and pop up so often that doctors reflexively dismiss them from the screen. As a result, they may unintentionally ignore new and important warnings, endangering patients.



In the past decade, nearly every hospital and health system in the country has made the shift from old-fashioned handwritten charts and scrawled, frequently illegible prescription orders to electronic health records and medication orders placed through computers.

Overall, this shift has dramatically improved the safety of most patients—but it also created a new source of error that poses its own set of risks, says Jacob Reider, former acting national coordinator of health information technology for the U.S. Department of Health and Human Services. The new record systems virtually eliminated certain kinds of errors, he says, such as giving patients drugs they are allergic to, or dispensing the wrong drug because a pharmacist misread a handwritten prescription.

"Health information technology has significantly enhanced the safety of humans whose information is stored in this system," Reider says. "We are much safer because of this change. But the technology also introduced new safety hazards, and we have to learn how to mitigate them."

The effort to manage these risks and to help the health care industry realize the full potential of electronic health records has emerged as a key public health concern. Pew's health information technology project is working with partners in industry and



Doctors Raj Ratwani (left) and Terry Fairbanks of MedStar’s National Center for Human Factors in Healthcare study how people interact with health care technology, and found that many electronic records systems were implemented too quickly. They’re now working with Pew and the American Medical Association to improve safety. *Charlie Archambault for The Pew Charitable Trusts*

government to address these challenges by focusing on two key issues: helping different electronic systems communicate about the same patient, and reducing the likelihood of harm.

“The transition from paper to electronic health records has definitely improved patient care. We certainly don’t want to go back to the age of paper, but the transition hasn’t come without serious challenges,” says Ben Moscovitch, who directs Pew’s work to improve electronic health records. “We have to get policymakers to continue to focus on electronic records, and industry and hospitals and doctors need to come together to make these systems more efficient and safer for everyone.”



Although some health care systems, including Beth Israel Deaconess, began developing electronic record systems nearly 40 years ago, the widespread transition from paper records to electronic ones was accelerated by the federal Health Information Technology for Economic and Clinical Health (HITECH) Act in 2009. The law called for Medicaid and Medicare programs to offer premiums to participating health providers for switching to electronic records—and then, as time passed, to impose penalties for those who didn’t.

“The incentives were significant and the disincentives

were extraordinary,” says Reider. “And that’s why 97 percent of hospitals now use electronic health records.”

In hindsight, says Terry Fairbanks, founding director of the National Center for Human Factors in Healthcare at the MedStar Institute for Innovation in Washington, “the adoption of electronic health records happened too quickly.” Hospitals began using the new systems before they’d been optimized and tested—and without putting in place systems and procedures to ensure patient safety, says Fairbanks, whose organization is working on a joint project with Pew and the American Medical Association to improve safety.

Mistakes can arise from a combination of factors: how systems are designed, how they are customized when installed in a hospital, and how doctors and nurses use the technology. This can lead, for example, to errors such as a drug being ordered for the wrong patient, or the wrong dosage being administered.

Safety can also be influenced by what’s not in an electronic record. Christopher Lehmann, professor of pediatrics and biomedical informatics at Vanderbilt University School of Medicine, says a useful record will provide a pediatrician with child growth charts, guides for prescribing medication doses based on a child’s weight, and automated systems for tracking well-child visits and immunizations. Lehmann has surveyed pediatricians to learn about their use of electronic records, and he’s not impressed.

“We discovered that a majority were using [electronic records], but [the records] didn’t have pediatric functionality,” Lehmann says. In 2012, only 8 percent of electronic records had this kind of capacity, and by 2016 that number was still under 20 percent, he says. “That’s not good.”

Pew is working with the Children’s Hospital Association and others to encourage better criteria for electronic records for children.

Pew also is working with the MedStar Human Factors Center—which studies how humans interact with health care technology—with an eye toward improving quality, efficiency, and safety. In 2012 and 2013, Fairbanks, co-director Raj Ratwani, and other staff members visited 11 companies that make electronic health record systems to observe as they developed and tested their products. The work, funded by the federal office that oversees health information technology, was “a big eye-opener,” Ratwani says.

In other industries—such as aviation and medical devices—developers of technology understand the need to assess usability by having the people who will actually work with a product take part in testing it, alongside safety engineers, Ratwani says.

Yet about a third of the electronic health record companies his team visited didn’t do that. It’s not just a matter of bringing the right people to a conference room to discuss their needs, or having them preview a system, Ratwani says, because “people are not able to technically articulate what their cognitive needs are.” The best way to understand how people and systems will function together, he says, is to study and observe them using the system in real-life scenarios. It’s also important to involve safety experts from outside the health care industry for a broader perspective when testing systems.

Pew; the ECRI Institute, a patient safety nonprofit located outside Philadelphia; the Bipartisan Policy Center, a nonpartisan think tank; and the Alliance for Quality Improvement and Patient Safety, a coalition of organizations aimed at reducing patient harm, are proposing a voluntary, private sector, national health information technology group to study safety issues and develop solutions for the use of IT in the health care sector.

The group would bring together health care providers, health IT companies, safety experts, and patient safety groups to gather data about risks, make recommendations for solving them, and distribute information on safety tools and best practices.



The safety problems associated with electronic health records are in part a function of how new they are, says Ronni Solomon, executive vice president and general counsel for the ECRI Institute. “Any technology has risks,” she says, “especially a technology that rolls out quickly and is embraced broadly.”

She and other observers compare what’s happening to the early years of the aviation industry, when it grew with little government oversight, and safety concerns were rampant. Flight safety has improved steadily since, thanks to advances in technology, training, and understanding of the human factors involved in accidents. Led by the Federal Aviation Administration, the airline industry created a culture of safety in which even the smallest safety issue on a flight is investigated in a timely way to ensure that it doesn’t happen again. Last year, not a single airline passenger died in a jet crash anywhere in the world.

Acknowledging error when it occurs is critical and actually welcomed by the electronic medical records industry, says Stephanie Zaremba, government affairs director at Athenahealth, a Massachusetts-based developer of electronic health records. “Shame-and-blame culture isn’t conducive to learning from mistakes,” she says. “Humans will make errors. The important thing is to learn from mistakes that get made.”

To encourage companies that make electronic health record systems to report problems, the 21st Century Cures Act—which became law in December 2016—protects reports of events submitted to patient safety organizations from disclosure in lawsuits. However, the federal government has not yet indicated how it will implement this new law.

This should lead to greater sharing of information, says Zaremba. “Providers want to know immediately



Universal use of electronic health records should enable doctors anywhere to quickly access accurate information about patients no matter where they live.

if there's a glitch," she says, "but as [an electronic records] developer, you also want to know as soon as it's discovered by a provider."



Ideally, the universal use of electronic health records should enable doctors anywhere to quickly access accurate information about patients no matter where they live. But the many different systems currently in use in the U.S. don't all speak to each other: They aren't, in the jargon of the tech industry, interoperable.

Although the industry is dominated by several big companies, there are literally hundreds of electronic health record systems on the market, each with its own design. Companies sometimes charge for sharing information between systems.

Of course, even when systems can talk to each other, it's important that they're talking about the right patient. The U.S. lacks a standardized way of identifying patients in electronic health records; in fact, legislation that was passed decades ago amid privacy concerns bars the federal government from spending money to develop a patient ID number. Many health care organizations use Social Security numbers, which leaves many patients—and privacy groups—uneasy, because the numbers link to so much personal financial information.

Pew is collaborating with the Beth Israel Deaconess chief information officer, John Halamka, as well as the Rand Corp. and other groups that are exploring other voluntary methods to identify patients and better match their records.

For example, some airports are now using fingerprint or iris scanners at security lines. The same technology could serve as a unique identifier in health care—but only if there is agreement on what to scan and how to share the information in a secure way. Halamka is now piloting this approach in South Africa in an effort to ensure that the records of HIV test results and treatments link to the correct patients.

The challenge there is that "name, gender, and date of birth doesn't work very well when you've got a highly mobile workforce," he says. "So we implemented iris scanning. Every time you have a lab test, we attach your iris scan to that lab result. If you show up at any clinic in the country, you get your irises scanned. Then we can say, 'Oh, here are all the lab tests associated with those irises.'"

Pew is also exploring another approach: having patients more directly involved in making sure their records are correctly matched. Pew's work with Rand is evaluating several voluntary options, including new patient ID numbers, establishment of a single storage place for all records, and use of smartphone technology. In January, for example, Apple unveiled a feature that it says will make "accessing secure medical records from



Even when systems can talk to each other, it's important that they're talking about the right patient.

an iPhone as simple for a patient as checking email." Other companies are likely to follow suit.

Regardless of how the process unfolds, everyone involved in the field agrees: Electronic health records hold enormous potential for medical care, but significant challenges remain before this technological advancement can reach its full potential.

"Electronic health records can help usher in a future in which doctors can make better decisions more rapidly and provide the best possible care to patients," Moscovitch says. "But making sure the technology can actually meet its potential to share data and maximize patient safety will take collaboration among the developers of these systems, hospitals, clinicians, and government. It's important that we get this right to save lives and improve care."



Rob Waters, who covered science and biotechnology for Bloomberg News, last wrote for Trust about Pew's work to address the national opioid crisis.

The village where tourists stay at Arkaroola Wilderness Sanctuary glows at dusk, surrounded by otherworldly terrain that scientists have deemed the closest thing on Earth to Mars. For some 50 years, Arkaroola has pioneered Outback ecotourism.

OUTBACK VISION

Australia's Outback—the country's vast, wild, beautiful heartland—is one of the few large-scale natural regions left on Earth. An area of stark contrasts, alternately lush and inhospitable, it supports people, jobs, and economies as well as a rich and biodiverse landscape filled with some of the world's most unusual plants and animals.

Today, though, it is under threat. Across much of the Outback, there are fewer people managing the land than at any time in world history, which is causing problems such as the uncontrolled spread of feral

animals, noxious weeds, and wildfires. This land needs people. It has been home to Indigenous Australians for more than 50,000 years; they have shaped and nurtured the landscape, and had their identity and culture shaped by it in return.

Pew works to conserve this critical region of the world and recently issued a report, *My Country, Our Outback*, that celebrates the relationship of people with the land by profiling those who live and work in the Outback, and are attempting to carry it safely into the future.



THIRD IN A SERIES

By Daniel Lewis | Photography by Kerry Trapnell

ARIES





At Nooldoonooldoona Waterhole, where Arkaroola Creek kinks deep through the ancient rocks of the Flinders Ranges, a group of artists is intensely studying the landscape.

Armed with sketchbooks and easels, pencils and paints, they're struggling to do justice to the area's incredible colors, shapes, spirit, and antiquity. These artists are deep within a postcard-like view of the Outback, complete with iconic vegetation and wildlife and a mountainous geology like nowhere else on Earth.

They've come to Arkaroola Wilderness Sanctuary from far and wide for a seven-day plein air painting retreat, paying \$2,500 each for the experience. They're loving their creative Outback adventure.

These artists are painting the perfect picture of Outback ecotourism; the experience they are paying for helps to protect the very landscape they are enjoying. They're also sketching a picture of what the future Outback could look like: a place that's beautiful and biodiverse; a place of research and education; and a place that's environmentally, economically, and culturally sustainable.

Arkaroola is a sprawling, 235-square-mile former sheep station (ranch) in South Australia,

375 miles north of Adelaide, that for nearly 50 years has been a privately owned pioneer of Outback ecotourism.

The sanctuary's modest tourist village has 50 motel rooms with hot showers, as well as powered van sites and backpacker accommodations. There's a little general store and a service station, the Native Pine Restaurant for ordering tasty kangaroo kebabs, and the Pick & Shovel Bar for a cold beer.

Arkaroola has something for everyone: students pursuing a career in science, retirees on their bucket-list holiday, four-wheel drivers, campers, hikers, mountain bikers, geologists, botanists, birdwatchers, astronomers, photographers, and seekers of solitude.

Most importantly, there are the hands-on owners, siblings Marg and Doug Sprigg—a dynamic and hospitable duo in their early 60s who are the soul of Arkaroola and keep their late father Reg Sprigg's dream alive.

Reg Sprigg and his wife, Griselda, bought Arkaroola in 1967 after the years he spent urging politicians to turn it into a national park came to nothing. Sprigg quickly set about managing Arkaroola for wildlife preservation and conservation, and re-establishing native flora and fauna.

A GEOLOGIC PARADISE

Arkaroola's hot springs are a natural feature that makes geologists salivate. The sanctuary has the world's only known hot springs created by rainwater warmed as it passes down a fault line through radioactively heated rocks. And that has NASA interested, because bacteria manage to live in this incredibly hostile environment.

Arkaroola's geological wonders are so unusual that its landscape is the closest match on Earth to Mars. It's been identified as a prime site for Mars-related research because of the diversity of its geology and landforms, and the range of potential habitats of astrobiological interest.

Arkaroola features an incredible 122 mineral types across four main groups: precious, ore, radioactive, and rock-forming minerals. There are igneous rocks, metamorphic rocks, sedimentary rocks, and breccia rocks. It has rocks from the Permian, Cretaceous, and Tertiary periods. The oldest date back 1.6 billion years, which means Arkaroola houses geology that covers 40 percent of the Earth's history.

This extraordinary geodiversity in turn underpins a rich flora and fauna including endemic and threatened

species. The weird-looking spidery wattle and slender bell fruit are two rare plant species the Spriggs monitor for scientific purposes. The precious yellow-footed rock wallaby, jewelled gecko, and Flinders Ranges short-tailed grasswren are also part of the sanctuary's native menagerie.

When it comes to Arkaroola's human inhabitants, Doug Sprigg is an Outback Renaissance man, as comfortable welding as he is guiding guests through the jewels of the night sky with a telescope.

From the moment he picks guests up in the bus to transport them to his Cessna for a scenic flight, Sprigg—an experienced pilot—enthusiastically holds forth about geology, plants, animals, history, weather, the neighbors, and more.

He points out fault lines, tilted seabeds, landmasses crashing together and being torn apart. He shows them Lake Frome, a vast body of glaring white salt and water used to calibrate satellite imagery equipment. And the dog fence (built in the 1880s to keep dingoes out of Southeast Australia)—at somewhere between 3,300 and 3,450 miles, is the longest man-made fence in the world. Once the plane is aloft, Sprigg's commentary is as rich and stimulating as the landscape he is flying over.

Left: Siblings Marg and Doug Sprigg, co-owners of Arkaroola, work to preserve it, sustaining a family legacy. Their father, Reg, purchased the 235-square-mile former sheep ranch in 1967 after his efforts to have the government declare it a national park failed. Below: Artists endeavor to capture the unique landscape during a week-long painting retreat.



Arkaroola employs about 30 full-time workers during its peak period in spring, when it can host several hundred guests a day. For over 45 years, the Spriggs have had a policy of employing local Aboriginal people, and one of Marg Sprigg's great hopes is that Aboriginal people will play a much bigger part in Outback ecotourism in the future.

Arkaroola has been showered with tourism awards over the years, and about 90 percent of its business is from word of mouth or repeat customers.

Marg is acutely aware of the constant balancing act between letting people have the freedom to get around the property and do as much as they can versus the risk such access poses to the fragile Outback environment.

"The biggest challenge for Arkaroola is the fact that you're trying to encourage people to come here, but the minute you have people in the equation, you're having an impact," Sprigg explains. "Managing those impacts is really the crux of the matter. You want them to enjoy but not damage."

GENERATIONS OF CONSERVATION

Sprigg is also passionate about keeping alive her father's vision of Arkaroola as a place of conservation, education, and research. She loves the visits from celebrated academics as well as schoolchildren who are getting their first exposure to practical science. "We get kids who were going to drop out of school and instead have gone on to have careers in science after a visit to Arkaroola," she says.

Keeping the property, with its dozens of miles of trails, accessible and safe for tourists requires constant maintenance, and the war against weeds and feral animals is never ending.

Because Arkaroola was a sheep station for only 30 years, its native vegetation was not as badly degraded as on many other Outback properties. Reg Sprigg also had the foresight to limit the majority of tourism and vehicular access to only a portion of the property.

"The minute you get people in cars, you get weeds," Marg Sprigg says. Any vehicles about to venture into Arkaroola's most pristine places must first be put up on a hoist and blasted with a high-pressure air hose to eradicate any stowaway seeds.

Arkaroola's weed and feral animal control measures, coupled with strict controls over the impact of tourism, allow its native vegetation to flourish to the extent that it's now regarded as the most intact in the Flinders Ranges.

A new management plan for Arkaroola formalizes Reg Sprigg's intention to keep all but hikers out of the sanctuary's wildest area, the mountainous Mawson

Plateau, which is a wilderness of national significance and probably supports endemic species as yet unknown to science.

From the Acacia Ridge summit, the beauty of the panorama is interrupted by half a dozen black feral goats standing out starkly against the red rocks of a nearby outcrop. Miners introduced domestic goats to the Flinders Ranges for meat and milk in the 1850s. Some goats quickly ran wild and have been destroying native vegetation, fouling waterholes, compacting the soils with their hooves, and outcompeting native animals for food,



water, and shelter ever since. It's a familiar story that continues to be played out across almost a third of the continent; Australia's feral goat population is estimated to be at least 2.6 million.

Boundary fences don't stop goats, so Arkaroola also became a pioneering advocate of the need for regional goat management, which has helped bring their numbers down. The Spriggs now rate feral animal control as one of

their triumphs, but constant vigilance is required to stay on top of things.

The Spriggs built the property's original walking trail network and have skillfully maintained it for many years with volunteers from South Australia's Walking Trails Support Group. But track maintenance is hard work. The group's members are now in their 70s and 80s, so new help will be needed soon.

Left: Doug Sprigg fuels his plane before piloting an aerial tour. Below: Arkaroola's rocky ridges harbor extraordinary geologic diversity, including 122 types of minerals and rocks from the Permian, Cretaceous, and Tertiary periods; the oldest date back 1.6 billion years. "We get kids who were going to drop out of school and instead have gone on to have careers in science after a visit to Arkaroola," says Marg Sprigg.





Grass trees flourish across Arkaroola's range. The plant's prominent dark seed spikes reach for the sky after its fragrant white flowers have disappeared—accentuating an unusual landscape that attracts all manner of visitors, from hikers, mountain bikers, and photographers to geologists, astronomers, and botanists.

The property's water supply is a constant concern. Mount Elva Dam was built in the 1980s but has filled only a few times.

Arkaroola relies on rainwater captured from rooftops and underground water, but the underground supply is poor, requiring rare floods to get recharged. Every bathroom in the tourist village bears a notice begging people to be water-wise, because of many years of below-average rainfall.

Despite being a ferociously hot place for much of the year, Arkaroola asks visitors not to swim in its beautiful waterholes. These consist mostly of salty water that comes from underground, but on top sits a thin layer of fresh water that native wildlife relies on.

One big, cooling splash into a waterhole by a tourist is all it takes to destroy that drinking source, so the Spriggs encourage everyone to use the village swimming pool instead.

SAFEGUARDING THE FUTURE

In the village's Native Pine Restaurant, young backpackers with exotic accents wear tops that read, "Ark Up! No mine in Arkaroola. We did it!" They hark back to Arkaroola's overcoming probably its greatest threat: being dug up.

A mining company illegally dumped radioactive waste near Arkaroola's Mount Gee in 2008 while exploring the area for uranium, and a big fight ensued



to head off the company's bid to establish a uranium mine inside the sanctuary. It ended with the South Australian government passing special legislation safeguarding the property from any future mining, the Arkaroola Protection Act 2012.

It was a victory made possible by a noisy coalition that included the Spriggs, The Wilderness Society, grassroots Arkaroola devotees, members of the local Indigenous community, and eminent scientists from around the world. That's how Arkaroola became South Australia's first legally protected wilderness sanctuary.

The Spriggs are by no means anti-mining—when Reg Sprigg was South Australia's state geologist, he led widespread mining surveys throughout the state and was instrumental in setting up an oil and gas company. But as Marg Sprigg says, "Some places are too important to mine, and Arkaroola is one of them."

The legislation that protects Arkaroola also comes with requirements for its owners. The Spriggs are obliged to keep doing what they have always done: manage the property to foster conservation, research, tourism, and education. And that all costs money.

It's \$50,000 a year for a contractor to grade the roads. Another \$50,000 is spent on environmental protection and monitoring, and at least that much goes into supporting Arkaroola's role as a

center for scientific research and education.

The Spriggs would love to manage their land in an even more environmentally friendly manner if they had more resources—using solar panels and batteries or geothermal energy from hot rocks instead of burning diesel to generate electricity, installing a system to recycle wastewater and effluent instead of using evaporation ponds.

To make sure there's money for that to happen, the Spriggs have established the Arkaroola Education and Research Foundation. It has an independent board of high-profile people and aims to raise and allocate funds in line with the Spriggs' philosophy, regardless of what the future may bring in tourism or government spending.

Arkaroola's most iconic resident is the yellow-footed rock wallaby, a delicate and nimble marsupial with beautifully colored fur. Reg Sprigg loved rocks, but he loved yellow-footed rock wallabies too. They were a symbol of precious biodiversity to him.



A family of emus promenades along a hiking trail. The birds are among many animals that have benefited from the Sprigg family's safeguarding of Arkaroola's natural treasures.

Marg and Doug Sprigg remember their father expressing how angry he was when a group of miners shot an entire colony of wallabies for sport in 1946. It was an incident that galvanized his determination to buy the sheep station and turn it into a wildlife sanctuary.

Most importantly, the wallabies are barometers of the sanctuary's health. Across their normal range in the dry, rocky hills of inland Australia, their numbers have fallen dangerously low, and the species is listed as vulnerable. In the bad old days, they weren't hunted only for sport; they had a bounty on their heads because they competed with sheep for feed, and their coveted pelts were sold to England for the fashion industry. On top of that came extra predation from cats and foxes, competition for food from rabbits, and competition with goats for shelter.

Wallaby numbers were low on Arkaroola when the Spriggs took over in the late 1960s, but today the animals are a common sight, thanks to decades of hard work. Numbers rise and fall with the seasons and are estimated to have doubled in recent years. The rising numbers, Doug Sprigg says, are "a good indicator that the ecosystem is working."



Daniel Lewis is an Australian writer and an author of My Country, Our Outback.

Social Media Use in 2018: Are Changes Coming?

The Pew Research Center finds most Americans use Facebook and YouTube, but sees growing interest in other sites.

BY ERICA SANDERSON



The Pew Research Center's survey found, not surprisingly, that use of social media varies by age, with younger generations reporting the highest engagement. *iStock*

While Facebook and YouTube are by far the most popular social media sites for adults in the U.S., other sites are gaining, especially among people in their early 20s.

The findings come in the Pew Research Center's 2018 social media use report, released in March, which is part of the center's continuing analysis of how Americans use the internet and learn new information in the digital age. (The report is based on surveys conducted before news accounts this

spring about new privacy concerns among many Facebook users.)

The report found that YouTube is now used by roughly three-quarters of adults and 94 percent of 18- to 24-year-olds. Other than YouTube, Facebook continues to be the most popular social media site, with roughly two-thirds—some 68 percent—of adults reporting that they are Facebook users, and roughly three-quarters of them saying they log in to it daily. None of the other sites or apps measured in the

center's study, which began in 2012, are used by more than 40 percent of Americans.

Yet while the two sites are the biggest, the report found that the typical American uses three social media platforms. "We're seeing more diversification in people's social media portfolios," says Aaron Smith, associate director of research at the center.

Previous work focused on five social platforms: Facebook, Twitter, Instagram, LinkedIn, and Pinterest. And the latest report found that for the most part, the share of Americans who use each of these sites is similar to that of the last Pew report released in April 2016. The most notable exception was Instagram. Thirty-five percent of U.S. adults now say they use this photo- and video-sharing platform—an increase of 7 percentage points from 28 percent in 2016.

Not surprisingly, use of social media varies by age, with younger generations reporting the highest engagement. Roughly 9 in 10 people ages 18 to 29 say they use some form of social media. That share falls to 78 percent among those ages 30 to 49, to 64 percent among those ages 50 to 64, and to 37 percent among Americans 65 and older.

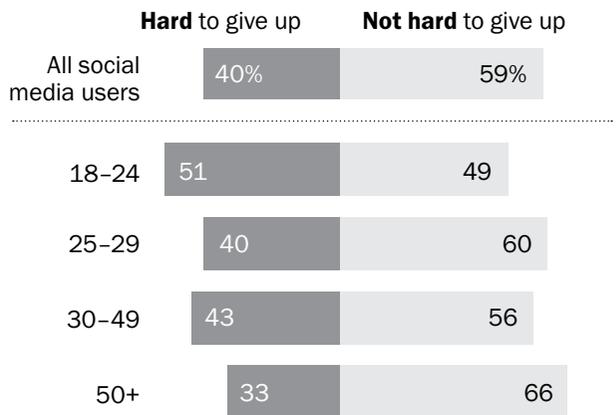
At the same time, there are pronounced differences among younger adults in their online use. Those ages 18 to 24 are substantially more likely to use platforms such as Snapchat, Instagram, and Twitter even when compared with those in their mid- to late 20s. Taking note of the rising interest in those sites, this year's survey marked the first time the center polled on how frequently people use Snapchat—a video- and photo-sharing app best known for its quirky "face filters" that allow people to alter photos of themselves in often funny ways. Snapchat has become one of the most popular platforms for the youngest adults. Seventy-eight percent of 18- to 24-year-olds are Snapchat users, while only 54 percent of those ages 25 to 29 use it. Researchers say this is not unusual: Young generations often experiment with new technology platforms and tools before others who are older. "Young people tend to be the first adopters of lots of different technologies," Smith says.

While fewer Americans overall use Snapchat, the people who do are a dedicated group. Forty-nine percent of respondents say they use the platform multiple times per day; that number increases among 18- to 24-year-olds, with 82 percent using Snapchat daily and 71 percent using it multiple times per day. Similarly, 81 percent of Instagram users in the same age group visit the platform on a daily basis, and 55 percent do so several times per day.

Whether these newer platforms grow beyond younger populations remains to be seen. "What we will be looking at moving forward is the extent to which these emerging platforms spread more broadly to older groups, as Facebook has," Smith says.

Majority of users say it would NOT be hard to give up social media

Among U.S. social media users, the percentage who say it would be _____ to give up social media



Source: Pew Research Center

Does this increasing daily use of social media make users more dependent on it? The survey found that 59 percent of social media users say it would not be hard to give up these platforms, but there were big age differences in responses. About half—51 percent—of social media users ages 18 to 24 say it would be hard to give up social media, but just one-third of users ages 50 and older feel that way.

The survey found that the share of social media users who would find it hard to give up these services has grown somewhat in recent years.

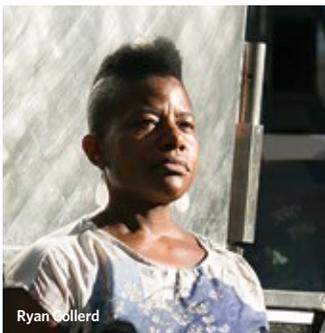
Perhaps the ability to sever ties to social media all depends on how you use it. "The places that people are in their lives help to inform the psychological benefits they get from social media," Smith says. The constant connection—previously unavailable when older generations came of age—is shaping how young adults interact not only with each other, but with the world. "One of the big open questions for us," he says, "is how this different information environment will influence the way that younger generations experience all sorts of news events and happenings in their lives relative to people who are older than they are."

Erica Sanderson is a staff writer for Trust.

A Conversation With Jennifer Kidwell

The acclaimed performer, who has drawn rave reviews from theater critics, talks about the “pluck and nerve” of Philadelphia artists.

Each year, the Pew Center for Arts & Heritage provides 12 fellowships to artists in a range of disciplines in the Philadelphia region. Jennifer Kidwell, whose performer-driven theater work addresses the complexities of race and notions of American history with intelligence and humor, was named a fellow in 2016. That same year The New York Times in its “Best Theater of 2016” feature lauded “Underground Railroad Game,” a play she co-created with actor and director Scott Sheppard and their Philadelphia-based theater company, *Lightning Rod Special*. She talked about her career and the city’s arts scene with Trust.



How did you become an artist? Is there a particular experience that drove you to this choice?

The summer before I began first grade, my parents sat me

down and offered me a choice: I could either join the Brownies—which I had been begging to do—or I could start violin lessons. Since I failed to convince my parents to let me do both, I went out on a limb and began playing the violin that fall. Private lessons expanded into weekly Kodály, solfège, repertory class, and orchestra. I was hooked on learning and playing music and the ensemble nature of orchestra. I stopped lessons when I was 16 because performance had become too anxiety-inducing. I remember violently shaking with nerves at every solo performance, so I decided to put the violin down. I took a year off from music, but ended up getting a scholarship to study voice my senior year of high school. That program included private vocal and piano lessons, music theory, repertory classes, out-of-town trips, performances, etc. Somewhere around that time, I saw an actor perform a monologue from [Ntozake Shange’s] “For Colored Girls Who Have Considered Suicide/When the Rainbow Is Enuf.” I was blown away by the writing and the drama of it all, and continued to be into the rigor of the vocal program in which I was enrolled, so I decided against studying law and opted to study art and performance instead.

You’ve studied and worked in both New York and Philadelphia, among other cities. Why do you choose to work and live in Philadelphia? In your experience, what makes the city’s arts scene distinctive?

I feel that the impetus of the arts scene in Philly is one of absolute possibility. There’s a lot of pluck and nerve, as well as curiosity among Philly artists. I also find the community unbelievably tight and strong. The spirit of doing, the closeness of artists across disciplines combined with the relatively low cost of living make Philly ideal for experimentation and making. I have been blown away by the number of opportunities I’ve had here, as well as the support of and interest in my work.

You’ve cited the work of 70s-era American comedians and their ability to “crack open dangerous truths” as a source of inspiration. What truths are you interested in uncovering as an artist? And what do you hope audiences take away from experiencing your work?

If I had to pare down what I hope are myriad interests of mine into an essential question, I’d have to say I’m most interested in paradox, the ways in which we act against our own interests. I guess I articulate these inconsistencies of ours as lies, so the truths are the paradoxes we shun, but with which we nevertheless live. I think humor has the incredible gift of allowing us to both confront and celebrate our paradoxical natures, as opposed to deliberately overlooking them out of a sense of shame. If I hope the audience takes anything away (besides a desire to return and see something else), I hope it’s the capacity to recognize and speak to these paradoxes.



Actors and creators Jennifer Kidwell and Scott Sheppard star as two teachers who assume multiple identities as they instruct modern middle schoolers about American slavery in the thought-provoking, complex, and much-lauded theatrical piece, “Underground Railroad Game.” *Kate Raines, courtesy of Fringe Arts*

How does your approach shift as a performer when acting as an interpreter of others’ work versus a creator of original material? What is constant for you in either role?

I don’t think it should be different, but I’m afraid it tends to be. Things one makes oneself come from inside and bubble out. There’s a way everything articulated in such work is germane to who I am—performance or not—so there’s a natural flow and confidence in the material. When I’m interpreting the work of someone else, there’s a necessary separation that I fear compromises the work. In those cases, I work harder as a performer to conquer my own ego in order to support the piece the lead artist wants to make.

What single ethical consideration most impacts the decisions you make as an artist?

If I were to be perfectly honest, can what I’m doing at all change things? If not, how might it?

What was the first work of art that really mattered to you? Did it influence your approach to your work?

“Purple Rain,” both the album and the movie. My cousin and I rocked out to and sang that album at full volume whenever we could. I remember begging my parents to let me see the film as I felt a real affinity, a real kinship to Prince. I finally got to see an edited version and it was worth the fight. I think the style,

the attitude, and the music had quite an impact on me—one that’s not exactly identifiable, but I nevertheless feel it spiritually.

What music are you listening to and/or which books are on your bedside table?

I’m deep in research for a piece right now, so I’m reading Ned Sublette’s “The World that Made New Orleans: From Spanish Silver to Congo Square” and “The American Slave Coast: A History of the Slave Breeding Industry.” Besides Sublette, there’s Eugene D. Genovese’s “Roll, Jordan, Roll: The World the Slaves Made,” “Warfare in the American Homeland: Policing and Prison in a Penal Democracy [Joy James, editor],” Michelle Alexander’s “The New Jim Crow,” and Sven Beckert’s “Slavery’s Capitalism: A New History of American Economic Development.” A new album I’m about to listen to is Frank Ocean’s “Blond(e).”

If you could collaborate with anyone alive today, who would it be?

A partial list in alphabetical order: Andre 3000, Aziz Ansari, Angela Davis, Viola Davis, Branden Jacobs-Jenkins, Jim Jarmusch, Kendrick Lamar, Young Jean Lee, Kate McKinnon, Steve McQueen, Janelle Monáe, Fred Moten, Michelle Obama, RuPaul, Hank Willis Thomas, Carrie Mae Weems, Jesse Williams, and Serena Williams.

Coral Ecosystems May Hold Cancer Cures, but Face Threats

A marine biologist explores the importance of protecting coral habitats to safeguard potential medical discoveries



BY HOLLY BINNS

To Shirley Pomponi the sea sponges lining her office shelves are more than colorful specimens—they're potentially lifesaving creatures, some of which could hold the complex secrets to cures for cancers and other diseases. The marine biotechnology expert has spent more than 30 years studying deep-sea sponges, simple organisms that are often found in coral ecosystems in all of the world's seas.

Sponges live from the shallows close to shore to thousands of feet below the surface. Together with corals, they make up unique communities that barely have been studied but, like some other organisms, are natural disease fighters. Scientists believe they hold important properties that already are producing treatments for some cancers.

Corals and sponges may appear primitive, but "they have genes, proteins, and metabolic pathways that are similar to ours," says Pomponi, who is research professor and executive director of the Cooperative Institute for Ocean Exploration, Research, and Technology at the Harbor Branch Oceanographic Institute of Florida Atlantic University.

The medical promise of sponges and corals is one of the driving forces behind efforts to conserve their valuable habitats, which are mainly threatened by damaging fishing gear, but also from oil and gas

development as well as changing ocean conditions. In the Gulf of Mexico, fishery managers are considering a proposal to safeguard coral and sponge hot spots by restricting damaging fishing gear, such as trawls, anchors, and bottom longlines, in as many as 23 sites deemed a high priority for protection.

Even with the deep sea's promise for human health solutions, scientists don't have plans to harvest corals and sponges for medical uses. Instead they would take samples they could use to try and replicate in a lab the promising properties sponges and corals produce in the wild.

"It would be economically and ecologically unrealistic to exploit these habitats, especially because corals and sponges provide habitat as well as feeding and breeding grounds for fish, crabs, shrimp, and many other species," says Pomponi, who is an expert on the hundreds of different species of sponges throughout the Gulf of Mexico and beyond.

Sponges and corals are natural disease fighters

Sponges have existed in the oceans for 600 million years, surviving through mass extinctions and severe environmental stresses.

They can't move. To defend themselves sponges produce chemicals, some of which are shown to fight infection in humans. Sponges further protect their territory by stopping other organisms' cells from dividing and taking over—similar to how drugs stop the spread of cancer.

In fact, in more than 45 years of studying sponges Pomponi has never seen one with a tumor. "Somehow they make sure cancer cell precursors either repair themselves or die," she says. Pomponi thinks that could help us better understand how cancer develops in humans—and how we might even prevent it. "We can not only tap into their arsenal of chemicals, but also their metabolic pathways for human health applications," she says.

Discoveries from sponges already have provided antibiotics and cancer drugs, and their skeletons are being studied to develop ways to grow bone for grafting and dental implants.

Scientists have discovered the potential for new medications underwater. This magnified photo shows a glass sponge (*Aphrocallistes beatrix*), which contains a potent anti-cancer compound. Photo courtesy of Shirley Pomponi



Some species in the Gulf of Mexico are used in drugs to treat breast cancer. Scientists see similar potential in deep-sea corals, which also have existed for millions of years. Researchers have discovered that one type of gorgonian coral, known as sea fans, contains powerful anti-inflammatory chemicals. Some soft corals have potential anti-cancer and antiviral properties, and bamboo corals may also be useful in bone grafting.

Human activity threatens to erase potential cures

Pomponi's institute has been exploring the Gulf of Mexico and other parts of the world, and researching marine-derived chemicals, since 1984. Yet with much of the Gulf and seas in the rest of the world unexplored, the race is on between those seeking beneficial discoveries and human activities that could

destroy a potential cancer cure before it's detected.

The Gulf's jewels have already been compromised, Pomponi says. In one case, promising research on melanoma was slowed when scientists, seeking more samples of a key sponge, returned to where they had found it to discover the sponges gone and the area heavily damaged by trawls. Scientists working on treatment for Alzheimer's disease encountered a similar situation—nearly obliterated habitat. Those researchers eventually found one small sample, after combing through 30,000 photos from the area to locate a still-viable specimen.

"We want to avoid a situation where the environment is damaged and some unique animal that produces a chemical that could cure cancer or other dreaded diseases is destroyed," Pomponi says. "Who knows what we'll lose?"



Holly Binns directs The Pew Charitable Trusts' efforts to protect ocean life in the Gulf of Mexico, the U.S. South Atlantic Ocean, and the U.S. Caribbean

Left: Shirley Pomponi carries a sponge she retrieved from deep underwater using a remotely operated vehicle.

Photo courtesy of Shirley Pomponi

Bottom: In The Bahamas, Pomponi dives in shallow waters to explore sponges and octocorals, marine animals that form fragile ecosystems.



Don Liberator

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

Dental Therapists Can Provide Cost-Efficient Care in Rural Areas

Minnesota case study finds therapist's average daily billing close to that of the clinic's dentists, but at a lower cost

BY JANE KOPPELMAN

A recently released study from Minnesota shows that a dental therapist can be a cost-efficient member of a rural dental clinic's team, with average daily billings only slightly lower than those of clinic dentists. The findings suggest that expanded use of these therapists can improve access to oral health care—as envisioned by state legislation adopted in 2009—while keeping costs down.

The study, which examines the use of an advanced dental therapist in a rural clinic, found that over three years, her average daily billing—a critical measure of use and value—was 94 percent of the average for the clinic dentists. The therapist's significantly lower hourly wage, up to 50 percent less than for a dentist in rural Minnesota, according to the state Health Department, then resulted in lower overall costs for the clinic team.

The case study, conducted by Apple Tree Dental, a Minnesota-based nonprofit, and sponsored by The Pew Charitable Trusts, examined the mix of procedures and the billing of the advanced dental therapist from 2014 through 2016 to evaluate her impact in the rural practice. Research shows that rural Americans often suffer from higher rates of poverty and tooth decay than the population as a whole and typically must travel longer distances to reach dental providers. Those factors make effective delivery of care critically important.

Jodi Hager had been a part of Apple Tree Dental's care team since 2004, initially as a dental hygienist and since 2011 as a dental therapist. In 2013, she was licensed as an advanced dental therapist. She provides care at the Madelia Center for Dental Health, which is housed in a community hospital that serves patients from Minnesota's south-central rural counties.

Dental therapists, akin to nurse practitioners on a medical team, are trained to deliver preventive and routine restorative care, such as placing fillings and performing simple tooth extractions. Their training to provide a limited set of common restorative procedures mirrors

the training for dentists. Advanced dental therapists are typically dually licensed in therapy, including restorative procedures, and dental hygiene. The therapists work under the supervision of a dentist and have been able to practice in Minnesota since 2011.

Among the findings of the case study:

- The therapist's average daily billing was 94 percent of the average for the clinic's dentists (\$2,792 compared to \$2,951).
- Although the average billing per visit was close to the average for clinic dentists—within 8 to 15 percent, the difference in pay was significantly larger, making the dental therapist's role cost-effective.
- Working four days a week, Hager averaged over 185 clinic days a year, providing more than 1,525 dental visits annually. Nearly 80 percent of her patients were insured by public programs.
- Nearly two-thirds (64 percent) of the services Hager provided were for restorative care.
- Over the three-year period, she placed 60 percent of the sealants at the Madelia Center (nearly 800 a year), providing one of the most effective therapies to prevent future decay.

According to federal statistics, 63 million Americans live in places that the federal government has designated as dentist shortage areas. More than half of this population resides in rural communities. Minnesota policymakers focused on this gap in access in 2009 when they moved to become the first state to authorize dental therapists to practice statewide.

The results of the study are particular to one practice, and the authors note the need for longer-term examinations involving larger numbers of therapists. Still, "Our findings strongly suggest that other rural dental practices could benefit from adding dental therapists to their dental care teams."

Jane Koppelman directs research for The Pew Charitable Trusts' dental campaign.

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.

Variable Speed Limits: Improving Safety or Confusing Motorists?

BY JENNI BERGAL

Washington state uses variable speed limits on Interstate 5 approaching downtown Seattle. A growing number of states are using the electronic signs that change speed limits based on traffic and weather conditions.

When nasty weather or heavy traffic congestion pops up ahead, drivers in a growing number of states may see electronic signs showing speed limits that are lower than usual.

The idea behind these variable speed limits, which can change depending on road, weather, or traffic conditions and can get lower as drivers reach the problem area, is to make traffic flow more smoothly and give drivers more time to react to changing conditions. That would help prevent accidents such as

rear-end or lane-changing collisions.

Some states say the high-tech systems have helped curb congestion and make the roads safer. But some critics question whether the costly technology is worth the investment, while others view the signs as speed traps. At least one state—Missouri—dumped variable speed limits after drivers and law enforcement gave them a thumbs down.

“There are a lot of pros and cons,” said Amy Ford, a spokeswoman for the Colorado Department of Transportation, which uses variable speed limits primarily when there are crashes. “The trick is getting drivers to comply and understand the idea of smoothing out speeds. It’s a difficult concept to try to communicate to people.”

More than a decade ago, only a small number of states used variable speed limits. Today, at least 15 states, from

Maine to Washington, deploy them on certain highways when there is congestion, inclement weather, or both.

Here’s how they work: Road sensors gather information about traffic speed, volume, weather, and road conditions. The data is transmitted to a traffic operations center and analyzed using an algorithm or a review by staffers, who make decisions about what speed limits should be posted.

In some states, transportation officials have the authority to decide whether to adopt these changeable speed limits on their own. In others, they need legislative approval.

High-tech signs on Interstate 5 through Seattle post variable speed limits to urge drivers to slow down for bad weather, blocked lanes, or traffic congestion. The speed displays take one minute to react to changing road conditions. The system, installed in August 2010, aims to decrease sudden moves and panic braking, key contributors to collisions.

Courtesy of the Washington State Department of Transportation



Last year, the Ohio Legislature authorized the state Transportation Department to use them in certain locations for inclement weather or congestion. And during a November storm, the agency deployed variable speed limits on an interstate near Cleveland.

In South Dakota, the state House passed a measure in January that would have allowed temporary variable speed limits on some interstates, but it died in the Senate. Some senators felt the signs were unnecessary or unfair to motorists who may miss them and get penalized because they didn't know they were speeding.

Road Safety

Some states say variable speed limits have improved road safety.

In Wyoming, which started using them in 2009 during winter storms or vehicle emergencies, the changeable signs made a "dramatic difference" within a year, said Vince Garcia, a state Department of Transportation program manager.

"We have a lot of severe weather conditions and we were consistently having a number of large, multi-vehicle crashes in certain trouble-spot areas," said Garcia, who pointed to a 2010 University of Wyoming study that found road closures had dropped and crashes were the lowest in 10 years in the year after the signs were installed.

The program was so successful that the state expanded it to several other highways over the next seven years, Garcia said. And the public hasn't objected to the signs, which can gradually reduce the speed on some interstates from 75 mph to 45 mph in a bad storm, he said. "When people can see a reason for a speed reduction, they're more tolerant."

But getting drivers to comply has been a challenge in some states, especially when changeable speed limits are used for traffic congestion.

"When there is weather ahead, drivers are more likely to slow down," said Mena Lockwood, assistant state traffic engineer for the Virginia Department of Transportation, which uses variable speed limits on some highways. "When there is congestion ahead, they're less inclined because they can't see it."

A 2017 Federal Highway Administration study found that using variable speed limits in heavy traffic or adverse weather can improve safety and eliminate bottlenecks. The agency has helped fund variable speed limit programs in some states.

But the study also noted that the programs rely heavily on driver compliance and in many states are only advisory, which means police can't issue tickets. In other states, the law allows the changeable speed limits to be enforced.

Shelia Dunn, spokeswoman for the Wisconsin-based National Motorists Association, a drivers' rights group, said variable speed limits are "very confusing" to motorists

and some consider them nothing more than a speed trap.

"You're going down the highway at 65 and you see the variable speed limit sign and think it's just a suggestion and not an actual speed limit, and all of a sudden you're pulled over," she said. "You don't even realize you've done something wrong."

Enforcement has been a challenge for police, the federal study found. Officers sometimes are unsure of the speed limit or fear there isn't enough supporting evidence to issue speeding citations.

And the systems can be expensive. The federal report estimated that deploying them along a route can cost anywhere from under \$10 million to nearly \$40 million. It noted that there is limited information about whether a system's benefits equal or outweigh its costs.

Thumbs Down in Missouri

While more states are turning to changeable speed limits, Missouri decided to back away.

Under a pilot program launched in 2008 aimed at reducing congestion and improving safety, the state installed 70 solar-powered variable speed limit signs along 35 miles of highway in the St. Louis area.

At first, police enforced the speed limits, but they became reluctant to continue because they were unsure of what the speed limit was at any given time, as they often were parked downstream of the signs.

The state commissioned a study in 2010, which concluded that while the signs had helped cut the number of crashes along the corridor, they hadn't improved congestion.

Researchers also surveyed the driving public and law enforcement and found wide dissatisfaction. The majority of respondents agreed the program should be eliminated.

In 2011, Missouri officials decided to make variable speed limits advisory instead of enforceable. Two years later, they ended the experiment, removing the signs altogether.

"The feedback we got from citizens and law enforcement partners was nobody was noticing any difference," said Tom Blair, a district engineer for the Missouri Department of Transportation. "Motorists thought of it as a speed trap. They were always questioning whether law enforcement was out to get them."

Blair said Missouri spent about \$900,000 for the program, considerably less than many other states.

"We walked away from it because we couldn't prove we had dramatically reduced the number of crashes or decreased traffic congestion," he said. "We didn't want to spend a lot more money on it."

==

Jenni Bergal is a staff writer for Stateline.

A Shared Goal of Informing the Public

Knight Foundation and Pew have long believed that an informed electorate is essential to a strong democracy.

BY DEMETRA AOSPOROS



Commuters read the news on paper and digital devices during their commute in New York City. Gary Hershorn/Getty Images

With the decline in newspapers and the rise of digital information sharing, the John S. and James L. Knight Foundation was interested in learning how Americans were getting their news and how these changes might influence how well-informed and civically active the national electorate is—or isn't.

It was a natural path of inquiry for Knight, whose founders built one of the United States' most successful newspaper companies: Knight Newspapers, which later became Knight-Ridder Inc., with 32 dailies in cities from Philadelphia—which happens to be Pew's hometown—to San Jose.

It also was a natural path of inquiry for the Pew Research Center, which has conducted survey research and analysis of journalism and the media business for more than two decades. A subsidiary of The Pew Charitable Trusts, the Washington-based center is a self-described nonpartisan "fact tank," whose mission is to generate data that enrich public dialogue and support

sound decision-making.

Building on these shared interests, a partnership between Knight and Pew resulted in a series of five reports in 2016 and 2017 that documented the dramatic changes in how the public receives, digests, and engages in the news in the modern day. The "Digital Age" reports received widespread attention in the media itself, with extensive coverage of the findings in *The Washington Post*, *The Wall Street Journal*, *Agence France-Press*, *The Atlantic*, and many other major outlets. Former White House press secretary Ari Fleischer tweeted about the findings, as did *The Washington Post's* media columnist, and

researchers at American University presented the findings to visiting Chinese journalists.

"We know that the morning paper that everyone got on their doorstep and was part of their day, which included a host of expert local writers, is gone," says Sam Gill, Knight's vice president of communities and impact and a senior adviser to the foundation's president. "There's a lot of discussion going on about what that relationship is between journalism and people's sense of attachment and advocacy to their community—the Digital Age work was important because it began to unpack some of those questions."

One report examined the news habits of civically engaged people and found that a connection to one's community and always voting in local elections is closely associated with strong ties to local news: Nearly 60 percent of those highly attached to their community follow local news closely, about twice the share of those less attached.

Another report, “The Modern News Consumer,” documented the significant shakeup in news consumption habits, with mobile phones now rivaling desktop or laptop computers as people’s primary pathway to digital news. And while TV remains the dominant—and favorite—news source among the public overall, that is driven by the news habits of those age 50 and older, while digital sources dominate for those under 50.

The reports reflected the center’s research expertise and ability to dive deeply into subjects. One study of the public’s reading habits analyzed 117 million anonymous smartphone interactions with 74,840 news articles from 30 news websites. It found that, even on a smartphone, people spend significantly more time with long-form news articles than short-form. That finding, based on real readership data, prompted the president of the prestigious Poynter Institute, a journalism think tank and training center, to comment on Twitter that “even in the mobile news era, Pew Research Center finds readers will still consume long-form journalism.”

The center’s thorough research was a major attraction in spurring Knight’s interest for a partnership.

“Knight has been delighted to partner with Pew on a number of projects through the years, but this set of research questions was particularly suited to exploiting the talents of an institute that combines depth, quality, and rigor of research with unparalleled expertise that enables that depth and rigor, that is authoritative and open to the kind of changes the research sought to explore,” says Gill.

Knight is based in Miami, where its founders once owned the *Miami Herald*. And it has long been interested in journalism and its impact on communities. The foundation previously supported a 2015 study by the center called “Local News in a Digital Age,” which examined how residents of disparate metro areas—Denver; Macon, Georgia; and Sioux City, Iowa—received local information. The center employed multiple types of quantitative research in each place, including cataloging all of the news providers, a content analysis of the news produced in one week, a public opinion survey of residents focused on their local news habits and civic engagement, and an examination of Facebook and Twitter posts in each area.

The report concluded that “whether in a tech-savvy metropolis or a city where the town square is still the communication hub, local news matters deeply to the lives of residents.”

The center’s journalism and internet research dovetails neatly with Knight’s mission. “Knight Foundation exists to promote democracy in the United States, and we do that by supporting programs that inform and engage citizens in their communities,” says Alberto Ibarra, the foundation’s president. “Understanding how people acquire, engage with, and disseminate information in the digital age is core to that mission. The Pew Research

Center is the gold standard of collecting and analyzing this type of data, which is why we have fruitfully and repeatedly partnered with them on research—and plan to continue to do so.”

And for his part, center President Michael Dimock welcomes like-minded philanthropic partners for collaborations.

“Knight is among the leading funders of media research in the country, and dedicated to the idea that informed and engaged communities are the bedrock of democracy—much in the way Pew believes in the power of knowledge to inform the public and invigorate civic life,” he says. “Knight was the ideal partner to help us explore how people are consuming and connecting with news in the digital information era, both for their expertise and their willingness to invest in innovative research approaches.”

Knight is also active promoting arts and community projects in every city where the chain once operated newspapers—just as The Pew Charitable Trusts is committed to its home city of Philadelphia, where Knight used to own *The Philadelphia Inquirer* and *Daily News*.

Gill says the two organizations share a sense of public spiritedness that goes beyond partnerships like the Pew Research Center reports.

In Philadelphia, Pew and Knight have both supported new landscaping for the Benjamin Franklin Parkway, one of the city’s most majestic thoroughfares. And the two organizations were instrumental in helping with the relocation of the Barnes Foundation and its world-renowned art collection from its original home on Philadelphia’s Main Line to a new home, lauded by critics as an architectural achievement, near Center City.

More recently Knight and Pew were part of a consortium that helped create Bartram’s Mile, a 1.1-mile greenway along the banks of the Schuylkill River that connects the oldest botanic garden in North America—and also the only park in Southwest Philadelphia—with the surrounding community. Since Bartram’s Mile opened in April of last year, it has changed the landscape for its surrounding community, reconnecting it not only to Bartram’s Garden but also providing it easy access to the Schuylkill.

“The longtime relationship between Knight and Pew has resulted in many benefits for the communities we care about,” says Gill. “And we look forward to more shared interests and more collaboration on the future of digital information and democracy.”



Demetra Aposporos is the senior editor of Trust.

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



Nguyen Linh/Unsplash

To Fight Illegal Fishing, Authorities Tighten Many Nets at Once

BY TOM DILLON

In most industries, the crimes would spark an international outcry: Thousands of tons of a prized commodity stolen every day, leaving a long trail of victims and frustrated authorities.

The commodity is fish. And the crime—illegal fishing—accounts for up to \$23.5 billion worth of seafood every year. The perpetrators roam the global ocean, often in huge vessels that net immense hauls of fish. They operate without regard for the environment, often poaching from marine reserves or severely damaging habitat, such as coral reefs, in pursuit of fish. They steal wherever and whenever they can, frequently targeting the high seas or waters of coastal countries that lack the resources to monitor and enforce their territories.

Many of the bad actors are well-financed and highly organized, selling their illicit catch through poorly monitored ports and exploiting a system beset by complexities and loopholes that make it very difficult to convict and punish criminals.

The victims? Illegal fishing hurts law-abiding fishermen by diminishing available stocks and driving market prices down. It also affects coastal communities around the world that rely on sustainable fisheries for food and income. And there's an even darker side to this story: Illegal fishing has been linked to a host of other crimes, including labor abuse and enslavement of crews, drug and arms smuggling, and human trafficking.

Although it has taken years, governments and the international community are finally acting to end illegal fishing and mete out punishments that fit the crimes.

These steps include the June 2016 entry into force of the Port State Measures Agreement (PSMA), a U.N. treaty designed to strengthen and harmonize the inspection processes for foreign-flagged fishing vessels coming into ports. Historically, illegal fishermen who were turned away at one port could simply continue on their way, trying other ports until finding one that accepted their catch. With the PSMA, governments now have a blueprint for determining which vessels are most likely to have illicitly caught fish and for detaining or seizing that catch when appropriate. Port officials in countries that have ratified the agreement—50 so far, in addition to the European Union—are also obligated to inform neighboring countries after turning away suspected illegal fishermen, which should make it much harder for offenders to find a port that will take their catch. More countries are expected to ratify soon, and the treaty grows stronger with each new member.

Another major obstacle to catching and prosecuting suspected illegal operators has been the difficulty in identifying vessels. Unlike cargo, merchant, and other classes of ships, fishing vessels are not universally required to have permanent unique identifying numbers. As a result, criminal fishermen often change their flags of registration, radio call signs, and even vessel names to throw authorities off their trails. These tactics have worked surprisingly well: In one case, crew members of a suspected illegal vessel were photographed painting a new name on the hull even as authorities closed in—a move that helped them avoid arrest and continue fishing.

Now, numerous governments and fishery management bodies are requiring that all vessels over a certain size carry International Maritime Organization numbers: unique, permanent identifiers that stay with vessels until they're scrapped. Expanding this requirement to the entire commercial fishing industry will make it much easier for governments and authorities to know which boats are operating illegally and which have histories of suspicious activity.

Another common tactic of illegal fishermen has been to simply head for another country's waters or to the high seas whenever authorities initiate a pursuit. This too has worked well, because most governments lack the time and resources for an extended chase.

Enter Interpol, the International Criminal Police Organization, which in 2013 launched Project Scale in partnership with Pew and the Norwegian government. The initiative, which helps Interpol's 192 member countries share information on suspected illegal fishermen, has helped catch numerous offenders, including the owners of the *Kunlun*, a vessel suspected of poaching millions of dollars' worth of toothfish from

the Southern Ocean. In 2016, Spain led a successful administrative case against those owners, fining them \$18.5 million (17 million euros) and banning them from involvement in commercial fishing for up to 23 years.

By tapping into Interpol's network and resources, national authorities around the world can better determine when and where to pursue suspect ships. And additional progress is now possible thanks to a platform called Oversea Ocean Monitor. Developed by Pew and the U.K.-based firm Satellite Applications Catapult, the platform enables countries to monitor activity in their waters or on the high seas using the vast reach of satellites, combined with data on vessels' ownership, licensing, history, and more.

The commodity is fish. And the crime—illegal fishing—accounts for up to \$23.5 billion worth of seafood every year.

The platform processes information from multiple sources—including space-based radar and photographic imagery, vessels' electronic transponders, and databases of authorized and blacklisted vessels and oceanographic and environmental data—to help analysts focus on ships that, for example, might be fishing in marine reserves or shutting off their automatic location transponders in an attempt to poach undetected. Chile, Costa Rica, Ecuador, and Thailand use Oversea Ocean Monitor, which has also been employed to monitor waters around the Pitcairn Islands, a British overseas territory in a remote area of the South Pacific Ocean. The island nation of Palau, which has made fighting illegal fishing a top priority, will start using the platform soon.

Together, these efforts are driving positive change, from the water to seafood markets and restaurants. But the global community still has a fight ahead to end this crime. Because illicit operators will carry on as long as they can profit, it's imperative that all of us who care for the ocean join with the millions of people who depend on the ocean to continue our work to end illegal fishing.



Tom Dillon is a vice president overseeing Pew's international environment portfolio. A version of this article first appeared on the National Geographic website on Jan. 9, 2018.

How Pew Helped Win Passage of Improved Food Safety Laws

An independent evaluation highlighted efforts to secure enactment of the most important food safety legislation in seven decades.

BY MICHELE LEMPA



After the passage of a landmark food safety bill—and the subsequent years of creating rules and regulations to implement the law—independent evaluators have praised Pew’s safe food project for its role in promoting passage of the legislation and its contribution to the law’s implementation.

In 2009, Pew created a safe food project to promote passage of legislation to protect American consumers from contaminated food, which federal officials have estimated leads to 48 million illnesses and 3,000 deaths annually. By 2011, the FDA Food Safety Modernization Act had become law—marking the most significant overhaul of U.S. food safety regulations since 1938.

After enactment, FDA was charged with writing and adopting regulations to implement the law, and the safe food project continued working to help ensure that this rulemaking process was effective and that FDA received adequate funding for its increased responsibilities.

As it often does with its projects, Pew launched an evaluation in 2016 to examine its contributions to the legislation’s enactment and to the subsequent rulemaking and appropriations processes, understand factors that affected these efforts, and gauge the project’s effectiveness to see what lessons could be learned to help inform the organization’s future work.

Pew’s evaluation unit engaged two outside, independent experts who conducted 40 interviews

with project staff and consultants, partners and other stakeholders, and congressional and FDA staff; analyzed public records from federal agencies and other groups; reviewed media coverage; and performed a social network analysis to map relationships between people and organizations to further understand the connections that were important to enactment and implementation of the new law.

In the end, the evaluators concluded that Pew’s overall contribution to the new law was significant, highlighting in particular the critical and unique role that the safe food project played during the rulemaking and appropriations processes.

The evaluators noted that federal food safety reform was almost two decades in the making when Pew launched the safe food project; however, evidence indicated that the reform efforts moved more swiftly with Pew’s involvement. The evaluators cited as key contributions the project staff’s “political savvy” and technical expertise, along with Pew’s robust communications effort and the project team’s coalition-building activities. Pew’s staff members, the evaluators said, had unique expertise among their nonprofit partners, with technical knowledge of the lawmaking process that allowed them to quickly understand the intent of draft legislation and to seek changes to strengthen the bill.

Pew also brought significant resources and expertise to a media campaign, the effectiveness of which the evaluators tested by examining the content of articles about the new law. They found that articles not mentioning Pew were less likely to cite data, more likely to appear in mass media outlets, and much more likely to be health focused. In contrast, articles about the new law where Pew was quoted or mentioned were more likely to appear in political- or agriculture-focused publications in addition to a strong presence in mass media outlets, more likely to include data with citations, and covered not just health but also a wider range of topics such as the economy or politics. The evaluators concluded that the diversity of media

outlets and types of articles in which Pew appeared likely increased the project's reach and credibility and were an indication of the success of Pew's efforts to reach a variety of stakeholders.

In addition, Pew trained victims of foodborne illnesses in how to tell their stories and brought them to Washington, D.C., multiple times to meet with members of Congress. All stakeholders interviewed cited this as one of Pew's greatest contributions to the legislative process because the victims' stories cut through the politics of the issue.

Throughout the campaign, Pew also served as a convener in a variety of ways. According to the evaluation, Pew's most significant contribution while Congress was debating the legislation was creation and leadership of the Make Our Food Safe Coalition. While member organizations often participated in other alliances advocating for food safety, Make Our Food Safe brought partners together with the focused mission of supporting passage of the food safety modernization law. Pew staff's knowledge of the legislative process enabled the coalition to translate its ideas, drawn from the coalition's subject-matter experts, into a "realistic legislative" approach with a unified message, the evaluators said.

The evaluators concluded that Pew's overall contribution to the new law was significant, highlighting in particular the critical and unique role that the safe food project played during the rulemaking and appropriations processes.

After enactment of the food safety act in 2011, FDA considered regulations to implement the law. The evaluators determined that Pew became more influential at this phase, calling its contributions decisive and noting that many stakeholders reported that they believed effective implementation of the law would not have been achieved without Pew-supported efforts. The evaluators also found that Pew's sustained presence had the added benefit of bolstering Pew's credibility in food safety.

During the rulemaking phase, Pew again served as a convener and communicator. Pew led the Collaborative Food Safety Forum, a platform for industry, public interest groups, and trade groups to engage with FDA on issues important to implementing the law. One coalition member told the evaluators that the forum helped them to "sit at the table in a way that we never had before" alongside industry, government agencies, and other food safety experts.

Pew also continued its leadership of Make Our Food Safe, which included coordinating written comments once FDA issued draft rules. Each coalition member submitted its own comments based on outlines developed by the group, which meant that FDA received multiple, consistent comments on each issue rather than one comment signed by many organizations.

While rulemaking was underway, Congress also was considering appropriations for FDA, including funds to support the new law. The safe food project worked to help ensure that FDA's budget could support implementation and enforcement. As with rulemaking, the evaluators found that Pew played a key role, noting that Pew's subject matter and regulatory expertise allowed it to serve in an informational role to FDA and congressional appropriations staff. In addition, Pew also ensured that industry, victim advocates, and the nonprofit community continued to call for sufficient funds to implement the law. The evaluators said that Pew's strategy "significantly enhanced industry engagement and created a strong and diverse voice" for funding.

Pew's relationships were central to the safe food project's overall success. When the evaluators conducted a social network analysis to understand the connections between the key stakeholders, they found that Pew was named most often by interviewees as one of the organizations most important to the effort's success. The Make Our Food Safe Coalition, the Collaborative Food Safety Forum, and the victim advocates were also cited by many as critical to the network. The analysis showed that Pew had close connections to organizations from different sectors, such as nonprofits, government, and industry, and served as an important connector between these different types of organizations. The evaluators concluded that Pew's ongoing and thoughtful collaboration throughout the whole process was one of its greatest contributions to the FDA Food Safety Modernization Act.

The main takeaway is that the essential components of Pew's approach to the FDA Food Safety Modernization Act, as cited by the evaluators—providing significant resources and highly knowledgeable staff; leading coordination and collaboration among disparate stakeholders; establishing a strong media presence; and providing credibility and a nonpartisan approach—can help future Pew projects build successful campaigns.

==

Michele Lempa is a director in Pew's planning and evaluation department.

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



Isolated desert landscapes lure visitors to Big Bend National Park in remote west Texas on the Mexican border. A record 1.5 billion people visited the national parks in the last five years, straining infrastructure needs such as roads, bridges, and campgrounds. In June, Big Bend and 116 other national parks will increase their entrance fees to offset a backlog of repairs. *Dean Fikar/1Stock*

Innovative tech solutions to fix national parks' infrastructure

In February, Pew hosted a “Parks and Tech Challenge” to develop innovative technological solutions for the National Park Service’s (NPS) more than \$11 billion backlog of repairs at historic buildings, trails, campgrounds, and other aging infrastructure. Out of nine entries, the judges chose a plan that would allow visitors to enter parks more efficiently with a speed pass and a mobile app—reducing staff needed at park entrances, increasing opportunities to collect

fees, improving the visitor experience, and enabling visitors to donate easily. The runner-up would make it easier for park employees to enter field data about NPS maintenance issues in a more efficient, timely way, allowing for more strategic decisions regarding how to prioritize resources. The top recommendations will be shared with the park service, the Department of the Interior, and the congressional committees overseeing the NPS.

Major marine conservation area designated in Arctic

In August, the Canadian government reached an agreement with local Inuit to create a marine conservation area in one of the most ecologically sensitive regions of the Arctic. The massive swath of waters off the northern tip of Baffin Island, named Tallurutiup Tariunga, will encompass more than 42,000 square miles of ocean—an area slightly smaller than Pennsylvania—and more than twice as large as any other protected area on land or sea in Canada. Pew’s team has worked since 2009 on establishing protection for Tallurutiup Tariunga, which has been called the “Serengeti of the Arctic” because of the breadth of its biodiversity.

Canada protects more boreal forests

In September, the Yukon government agreed to protect 15.5 million acres of boreal forestland in the Ross River Dena First Nation’s traditional land in the territory’s southeastern section. The First Nation’s council’s plan sets aside 9.1 million acres to be strictly protected—no development allowed—and an additional 6.4 million acres to be managed under sustainable development guidelines. Comprising approximately 13 percent of Yukon’s total land area, the Ross River community’s land is a regular breeding ground for 134 bird species and home to numerous plants, fish, and wildlife, including beavers, black and grizzly bears, caribou, wolves, and salmon. Pew’s international boreal conservation campaign has supported the effort to protect this land for more than five years.

On the other side of the country, the Quebec provincial government proposed a complex of protected areas called the Caribous-Forestiers-de-Manouane-Manicouagan that includes 2.5 million acres of intact forest. The designation would add approximately 1.7 million acres to already protected areas in the region, and preserve habitat for caribou and many other species. The actions in Yukon and Quebec move Pew closer to the goal of safeguarding 1 billion acres of Canada’s boreal forest by the end of 2022.

Pennsylvania to evaluate tax incentives

In October, Pennsylvania Governor Tom Wolf (D) signed bipartisan legislation that requires a regular evaluation of the commonwealth’s tax incentives for their impact on economic development. Following the enactment of the legislation in November, Pew staff advised policymakers on how to implement best practices for an evaluation process and also will help the state produce high-quality evaluations.

More U.S. ocean protected

The National Oceanic and Atmospheric Administration’s Fisheries Service gave final approval in June to a plan that safeguards five ocean areas off the U.S. Southeast coast where fish spawn. It was the last step toward putting into effect the protections initiated by the South Atlantic Fishery Management Council, which oversees fishing from North Carolina to east Florida. The council voted in 2016 in line with Pew’s recommendations to prohibit deep-water fishing in the areas to give reef species safe havens for spawning. Pew organized fishermen and chefs to support the effort and provided on-the-water research to verify spawning activity at several locations. The protections mark important progress in the effort to conserve critical ocean habitat and shift U.S. fisheries management toward an ecosystem-based approach.

Sales of antibiotics for use in animal agriculture decline

In December, the Food and Drug Administration released new data on the amount of antibiotics sold for use in food animals. The data showed that sales declined 14 percent between 2015 and 2016, the first decrease since data were initially reported in 2009. The report also marks the first time that animal drug companies have broken down sales estimates by major types of food animals—pigs, cows, chickens, and turkeys—setting a baseline for species-specific sales information in the future. Pew has long advocated for gathering better data to understand how antibiotics are used in animal agriculture in order to decrease use of these life-saving drugs.

Mid-Atlantic fisheries managers adopt ecosystem plan, protect forage species

In August, the National Oceanic and Atmospheric Administration’s Fisheries Service finalized a rule that bans commercial fishing of more than 50 species of forage fish—food for larger fish, seabirds, and other marine species—in federal waters from New York to North Carolina until the ecological impact of any new or expanded fishery is understood. The policy will protect anchovies, silversides, sardines, mollusks—including squids and octopods—and all species measuring less than 1 inch as adults, such as krill. The shift in policy from a single-species approach to one that includes the interdependent nature of ocean life is a significant advancement for Pew’s ecosystem-based fisheries management work.



Report on global media gets worldwide attention

The Pew Research Center published a report in January on global media habits, finding that adults in 38 countries overwhelmingly agree that the news media should be unbiased in their coverage of political issues. Respondents also gave political reporting the lowest ranking among all areas of news coverage. The report and related resources were widely covered in print and online media worldwide, and brought 39,000 visitors—53 percent of them located outside the United States—to the center’s website.

A newsstand in Beijing offers a variety of papers and magazines for sale. *Greg Baker/AFP/Getty Images*

Gender equity remains elusive in STEM workplaces

A January report released by the Pew Research Center found that half of all women working in science, technology, engineering, and mathematics (STEM) jobs say they’ve experienced gender discrimination and that the share of women in STEM reporting gender discrimination—78 percent—is higher for those in majority-male workplaces. The report was widely covered in the media and shared by notable stakeholders in the technology industry. Center staff discussed their research on race and gender in STEM workplaces with congressional staffers, the U.S. Equal Employment Opportunity Commission acting chair, and State Department scientists and foreign affairs officers.

What, exactly, is online harassment?

In January, the Pew Research Center published a report and video examining what Americans believe constitutes online harassment. The study posed fictional scenarios of escalating online interactions and asked respondents to indicate which specific elements they considered harassment—and found considerable disagreement over what constitutes online harassment. The report received more than 11,700 visitors, while the video has been viewed nearly 6,700 times and serves as a new tool for distributing the center’s survey research.

INVIGORATING CIVIC LIFE



Pedicab operators weave their lantern-decorated cycles in choreographed movements for the grand opening of Chinese artist Cai Guo-Qiang's work "Fireflies," a colorful public installation that celebrated the centennial of Philadelphia's Benjamin Franklin Parkway. Crafted by hand, the lanterns are shaped like space aliens, rocket ships, pandas, emojis, orbs, and stars. *Dominick Reuter/Getty Images*

The Pew Center for Arts and Heritage-funded projects debut

- Opera Philadelphia's inaugural 12-day "O 17" festival in September turned the city into an urban stage with performances at iconic places, including Independence Mall and the Barnes Foundation. The 31 performances drew many visitors from outside the region: "30 percent of festival package buyers, or those who purchased two or more festival operas, live more than 70 miles outside of Philadelphia," according to the Philadelphia Business Journal. The event received extensive positive media coverage.

- The Association for Public Art's "Fireflies," a large-scale, interactive work by internationally acclaimed Chinese artist Cai Guo-Qiang, commemorated the centennial of Philadelphia's Benjamin Franklin Parkway, also in September.
- In another September cultural landmark for the city, the Franklin Institute brought new, augmented reality experiences to visitors with "Terracotta Warriors of the First Emperor," an exhibition including 10 life-sized statues constructed in China more than 2,000 years ago and more than 160 artifacts such as weapons, gold ornaments, and ceremonial vessels. Philadelphia was the only East Coast city on the exhibit's tour.

Discovery Center breaks ground in Philadelphia

On Sept. 29, Philadelphia Mayor Jim Kenney (D) and other civic leaders gathered to break ground on the Discovery Center, a 16,000-square-foot indoor facility and 50-acre outdoor area that will serve as the primary site for the National Audubon Society's and Outward

Bound's local conservation, youth development, and community engagement programs. The center, in the East Park section of Philadelphia's Fairmount Park, is expected to open to the public this fall.

AMERICAN MUSLIMS: LOSE ONE, GAIN ONE

A substantial share of American adults who were raised Muslim no longer identify as a member of the faith—but unlike some other faiths, for the followers it loses, Islam gains about as many converts.

A Pew Research Center analysis released in January found that the 23 percent of adults who were raised Muslim and no longer identify with the faith is about on par with the 22 percent of Americans who were raised Christian but no longer identify with Christianity. But the share of American Muslim adults who are converts to Islam is also about 23 percent, a much larger share than the 6 percent of Christians who are converts.

MANY FORMER MUSLIMS SAY THEY HAVE NO RELIGION

Among Americans who were raised Muslim but no longer identify as Muslim, % who are now ...



MOST CONVERTS TO ISLAM WERE RAISED CHRISTIAN

Among Americans who converted to Islam, % who were ___ before their conversion



FORMER AMERICAN MUSLIMS' MAIN REASONS FOR LEAVING ISLAM

Reason	%
Issues with religion in general	25
Issues with Islam	19
Preference for other religion(s), spirituality	16
Personal growth	14
Family reasons	2
Other/unclear	13
No answer	12

AMERICANS' MAIN REASONS FOR CONVERTING TO ISLAM

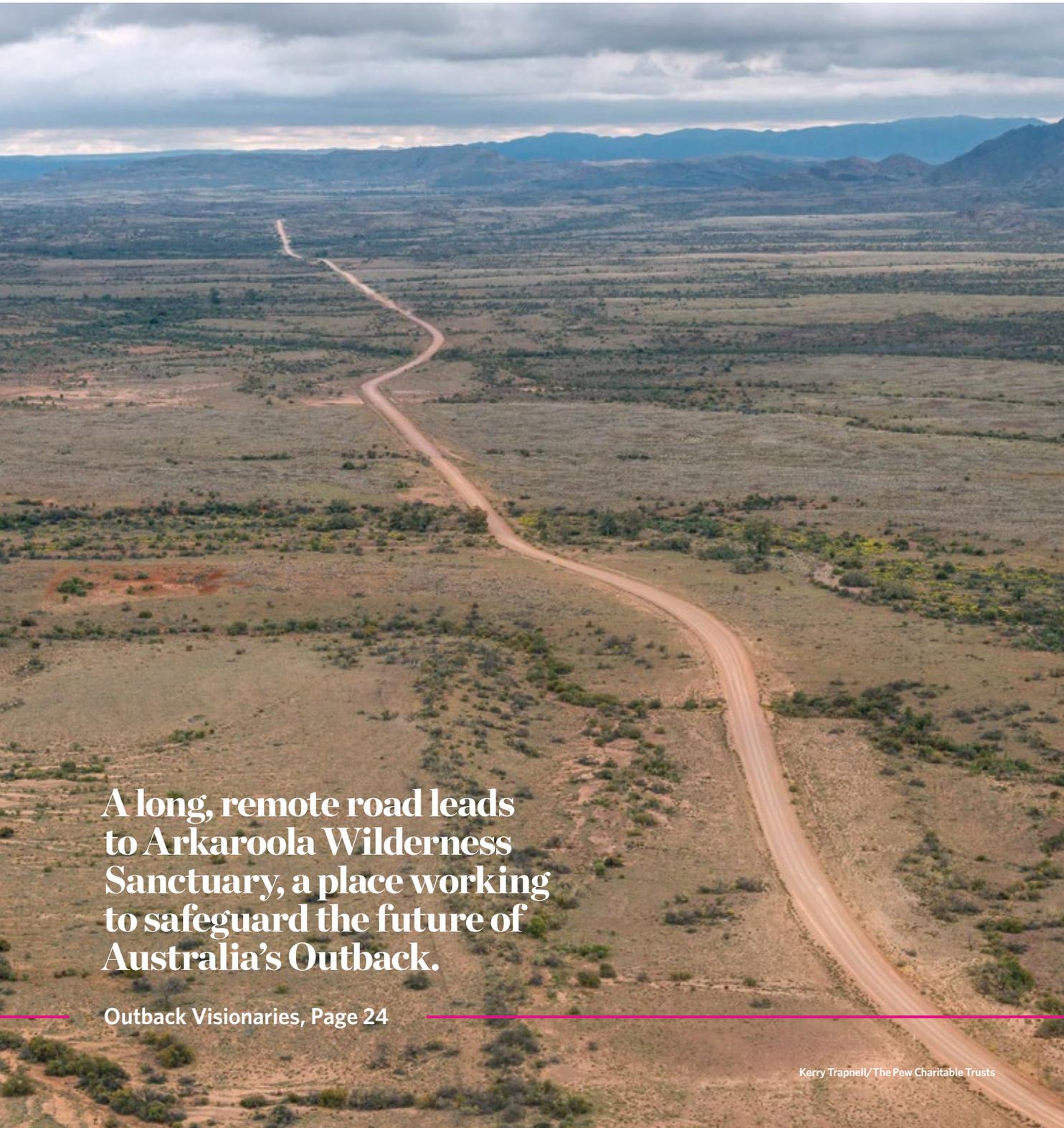
Reason	%
Preferred the beliefs, teachings of Islam/find more meaning in Islam	24
Read religious texts/studied Islam	21
Wanted to belong to a community	10
Marriage/relationship	9
Introduced by a friend/following a public leader	9
Family	8
Searching for answers/exploring personal spirituality	8
Found truth in Islam	5
Preferred practices of Islam	2
Other/unclear	3
No answer	<1

Six generations now exist side by side in America.

Go online to learn more about them—and the challenges and opportunities they represent—at trend.pewtrusts.org.



THE PEW CHARITABLE TRUSTS



A long, remote road leads to Arkaroola Wilderness Sanctuary, a place working to safeguard the future of Australia's Outback.