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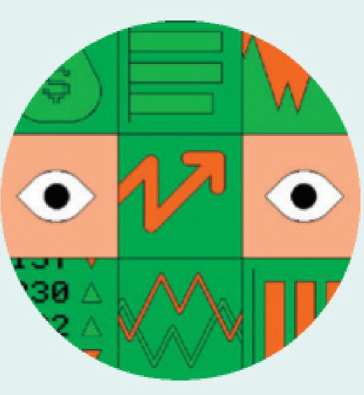

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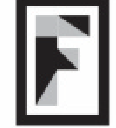

WHAT OUR EDITORS ARE UP TO NEXT

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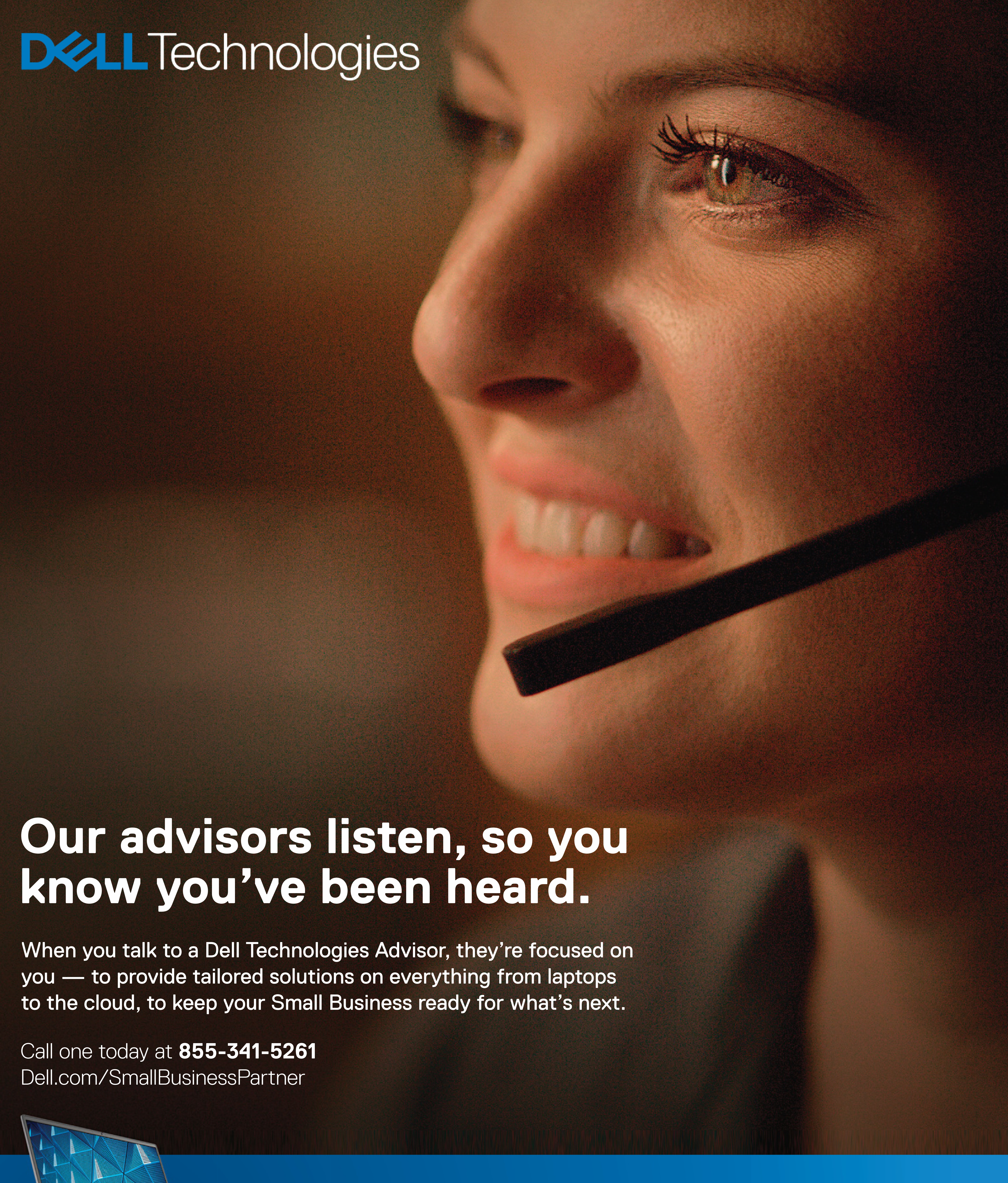

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Worth the Time

IT IS SOMETIMES HARD to fathom, in our era of instantaneity, how long the timeline can be for putting together a print magazine. Our story in this issue on the striking SolarWinds hack (which begins on page 62)—by David Z. Morris and Robert Hackett, two of the most seasoned and sophisticated writers on cybersecurity that I've ever read—got its germination shortly after this jaw-dropping breach was reported in mid-December.

Viv Walt, our senior special correspondent in Europe, began reporting on Elon Musk's controversial Gigafactory in Germany (see "Cold-Blooded," on page 42) in the days before Thanksgiving, when she heard the brouhaha building in Berlin. If my email archive is to be believed, writer Rey Mashayekhi first pitched his feature on Wells Fargo ("Busted Stagecoach," page 70) way back in June, after gathering string on the troubled bank in several other stories. And Erika Fry's simply mesmerizing tale of her home state in crisis, "Hawkeye Elegy" (page 80), got its start shortly after she was born—or at least that's my guess based on the sheer depth and expertise of the reporting.

That long, deliberate timeline is a feature, not a bug. To be sure, we are proudly digital first at *Fortune*—eager as any flock of ravenous reporters to take flight with a breaking story. And I hope, dear reader, you'll return to Fortune.com again and again to see what we've uncovered. Yet for all of the virtue of speed in this endlessly streaming information age, there is wisdom—perhaps even the irreplaceable kind—to be found in the slow-but-steady act of feature-writing.

That's what you'll find, I believe, in the collection of stories we've assigned for this issue's cover package. Together, they try to answer a question that has taken several patient weeks to figure out: *What comes next*? As a new President presides at the Resolute desk, as a new Congress dithers and perhaps even begins to deliberate, as a slate of challenges from COVID-19 to climate change to the collapse of civic kindness grow ever more urgent, what lies in wait just over the horizon?

I'm happy to say that the answers, conscientiously reported by my colleagues, do shed light. They offer thoughtful guidance for anyone who hopes to navigate an uncertain landscape for business, the economy, and life during a pandemic that won't seem to fade. One extra note of comfort, as political correspondent Nicole Goodkind reveals, is that the U.S. economy has a steady hand at the tiller in new Treasury Secretary Janet Yellen—a woman who has proved to be an assiduous steward in every previous role she's held (page 52).

This issue also marks another change in *Fortune*'s now-91-year history—and I believe it is a welcome one. We are now publishing our print magazine every other month. That move will not only free up our reporters to break more news and offer urgent commentary on Fortune.com, it will also help ensure that the stories you do read in these pages are always worth your time.

CLIFTON LEAF
Editor-in-Chief, Fortune
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MAN ON A MISSION: Albert Bourla, vet-turned-CEO of the *Fortune* 100 pharma company, has overseen the delivery of over 50 million doses of Pfizer's COVID-19 vaccine.

The Conversation

ALBERT BOURLA

As the pandemic took hold last spring, scientists at Pfizer set out to, in the words of CEO Albert Bourla, "make the impossible possible." Now, on the heels of achieving just that—developing the world's first COVID-19 vaccine with breakneck speed—the leader of the 172-year-old drugmaker talks about the clash of science and politics, drug prices, and his next impossible task. INTERVIEW BY **CLIFTON LEAF**

THIS EDITED Q&A HAS BEEN CONDENSED FOR SPACE AND CLARITY.

"This is why I was put in this position: to be able to take the right risk… not to be conservative and not move when the world needs us."

PHOTOGRAPH BY **MACKENZIE STROH**

GOING ALL IN ON SCIENCE

In early March, 2020, barely a year into your role as CEO, you made a near-instant decision to put some $2 billion of Pfizer's money at risk to develop a coronavirus vaccine. What drove you to make that giant wager?

BOURLA: It was a massive bet, but it was a very necessary one. There are not many companies that have the kind of end-to-end capabilities in vaccines that Pfizer has—ones that can start from early research and go all the way into not only manufacturing, but also distribution, which is challenging. So the question in my mind was, "If not us, then who?"

There are a slew of proven ways for constructing vaccines, but you chose to go with mRNA [1], a technology that had never before produced an approved vaccine. Why?

I knew that we were working with mRNA in flu [through our partnership with German firm BioNTech]. We had adenoviruses that we continue to work with in making vaccines for other diseases. We had recombinant proteins, you name it. But my team [led by head of vaccine research Kathrin Jansen] went through each technology, and said our recommendation is to go with mRNA, which could be scaled up very quickly once it was developed. It's true that there had been no vaccine made before with mRNA technology—but if we are successful, then ours would be the first.

My team wanted to get started very fast. And BioNtech [CEO Ugur Sahin, who had reached out to Jansen in a March 1 phone call] also said they wanted to do it very fast. So we started investing, and they started sharing their data with us—without even a contract.

The need for speed was one reason to go with an mRNA vaccine. Another benefit is that you can change the genetic recipe for the vaccine on the fly—something that may be necessary as the virus continues to

Your day job, of course, is to find solutions at Pfizer, where you've been trying to jump-start growth. You've projected annual revenue growth will reach 6% soon. That's well above where the company has been for the last couple of years [2]. Are you still confident in that trajectory?
I'm very confident now. And also, I want to say the projection is for "at least 6%" revenue growth. The 6% is not the ceiling, it's the floor. And I'm very confident—excluding anything coming from the COVID-19 vaccine—that the remaining segments of the business will deliver these numbers. And to that we need to add whatever the final impact of the COVID vaccine will be. We haven't released any projections for that—though I believe on revenues, we will be higher than $3 billion.

mutate and more variants emerge.
Exactly. Speed was of the essence and flexibility was of the essence. This was exactly the reason why we've chosen this for flu. [3] Flu has the same characteristics. Every year is a different flu. So every year the vaccines that we're getting for flu are different from the year before. [With other technologies] each takes months to develop. The RNA vaccines could disrupt that, because you can do in weeks what you'd need months to do in the other cases.

BETWEEN THE LINES

(1) Message received: Unlike traditional vaccines that use part of a disabled or dead virus to illicit an immune response, these vaccines use messenger RNA to instruct cells to make a harmless protein associated with the virus—which, in turn, alerts immune-system defenders.

(2) Annualized trailing five-year revenue growth: Pfizer's strong biopharma business has been dragged down by other units.

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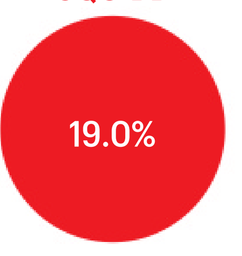

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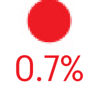
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SOURCE: S&P GLOBAL

The current coronavirus variants that have emerged are causing alarm. How effective is Pfizer's vaccine against these mutant strains?
We are quite confident right now that we can neutralize these variants. We have proved that in the lab—and this experiment that we did in our own labs has been already replicated in multiple labs in universities and hospitals. Right now we are covering both of the new variants [that have emerged in the U.K. and South Africa]. I think the fundamental question is, What are the chances that a new mutation that will not be covered by the vaccine emerges? Theoretically, it's a very possible scenario. If you protect a very big part of the population, and if there is a strain that emerges that can use this [vaccinated] pool of population to replicate while the current strains cannot, obviously this will overtake the original. So it's not a certainty, but it is now, I believe, a likely scenario. But that proves even more the case for an mRNA vaccine—because now you can very quickly develop a new version of the vaccine that either adds to the current immunogenicity or creates a very different one that can cover the new mutations as well.

How quickly is "quickly"?
That will depend on multiple factors. One of them, it is the regulatory framework. But I believe we will be able within two months to have it. And, of course, we would still likely have to manufacture at risk.

Speaking of risk, you made a second big bet not to take any government money to develop the vaccine, as some of your competitors did.
The government said, "We can finance this." But when the offer came, I thought a little bit what would happen if we take the money because it was the easiest thing to take. I realized that if the government gives you money, there's no way that they will not want a seat at

the table. "How are you going to do it?" they'll ask. "How will you use the money? Give us a report." Within a massive company like Pfizer, we have a lot of bureaucracy to deal with. I was betting that I would take control, so as the ultimate decision maker in the company I would waive all bureaucracy. My goal was to say, "You talk to me directly. I'm replacing all governing bodies. I'm making the decisions." But I couldn't do that if I was taking the government money. I knew that we'll never be able to make the impossible possible if we didn't do that. Keep in mind that we started much later than Moderna [4], for example. But also we didn't need the money. I'm sure Moderna needed it. Now, if we failed, was it going to be very painful? Absolutely. But if we failed, was that going to be the end of Pfizer? Absolutely not. This is why I was put in this position: to be able to take the right risk—not to be reckless, but also not to be conservative and not move when the world needs us.

For all the logistical feats you've pulled off [5], there has been widespread frustration with the vaccine rollout in general. What's gone wrong?

Look, there are two phases. There is the phase that I was worried about a lot, where Pfizer is sending the vaccine to vaccination centers in every country that has asked. That is our responsibility and fortunately we were able to do that very difficult logistical step quite successfully. We were able to see almost 99.99% [6] successful shipments—on time without any issues with the quality, because we were monitoring the temperatures on every single box that we sent. But a lot of the countries, including the U.S., were not ready to distribute those vaccines. They didn't have enough capacity in the vaccination centers. I'm sure—and I hope—that all of them will get their act together. They will change their plans and they will be able to dramatically increase the vaccination rates. And then, if they do that, we may have a period that we are the bottleneck and we need to produce much more, and we are preparing for that. We announced recently that we are increasing our expected production this year from 1.3 billion to 2 billion doses.

(3) Dream team: Before COVID-19, Pfizer and BioNTech were working on developing a flu vaccine. "Right now, flu vaccines, in many cases, have less than a 50% efficacy," says Bourla. With the success of their coronavirus vaccine, he expects the partners "to bring a vaccine that will have almost ultimate efficacy of more than 90% against the flu."

(4) Booster benefactors: Several U.S. agencies helped Moderna, a much smaller company than Pfizer, finance the development of its mRNA-based coronavirus vaccine. The Moderna vaccine received emergency use authorization from the FDA one week after Pfizer's.

(5) From lab to logistics: Pfizer has delivered more than 50 million doses to more than 10,000 vaccination points around the world.

(6) By the dashboard light: The figure is not an estimate. Pfizer tracks its actual success rate in shipping vaccine through a real-time dashboard that monitors the location (by GPS) and temperature of each box.

EVERYTHING IS POLITICS

As complex as the task of making and distributing this novel vaccine has been, you've had to deal with something even more challenging over the past year: politics. That came the moment you suggested your vaccine might be available this past October and you found yourself at the center of a bruising presidential campaign fight.

It was a whole different game—completely different than what I was expecting. And let me clarify something. The October timeline was the one I'd set in March with my team when I pushed them to go as fast as they possibly could. I was thinking that October is the flu season—without even thinking, of course, that in November we have elections. Suddenly it became the biggest political issue. It was shocking when I heard the first presidential debate and COVID and the vaccine were being discussed in political rather than in scientific terms. This is when I made the statement the next day that some people want us to go faster, some people want us to do it slower. I'll tell you, we'll go at the speed of science. And so be it. And then, the vaccine ended up coming a little bit after the November election. And now, what for some had been "too early," for others became "too late." Well, what can we do? I tried hard to navigate this political minefield. And one of the reasons why we didn't take the government money in the first place was that. Because if you take governmental money, then everything that you do becomes even more politically charged.

There's a new administration in the White House and a new Congress. Sounds like a good time to push for some long-term solution on drug pricing—an issue that continues to dog your industry.
Let me first say that I'm a very strong believer that reform is needed. The current status quo is not sustainable and it's not desirable. The vast majority of my peers are already in this column as well. Everybody says that we need to make changes. But those changes, I believe, have to have two fundamental pillars: They need to be pro-innovation and pro-patient. There is of course a major debate in the U.S. over drug pricing. But there are two different aspects to drug prices: One is the cost of medicines to the system, for example, to Medicare, the federal budget. The second is, what is the cost of medicines to individuals—the person who goes to the pharmacy and has to pay something out of his pocket? Those two are very different. The first one [how much the system is paying for medicines] represents 12% of the overall health care cost. So by definition, it cannot be the "big" problem, okay?

But when it comes to patients—the people who buy their medicines—this is by far their biggest challenge. Because right now, Americans are paying for their medicines as if they don't have insurance—even when they do. They pay a huge amount out-of-pocket. That needs to change. Now, to move costs out of the patient's hands, then someone has to pay, because it's not a zero sum. We are willing to take over a very big part of out-of-pocket costs for the patients right now. I don't say—and I don't think anyone would say—that it's fair that we take all of it. But we are willing to take our fair share and even more. But this is where the money should go. I don't think that the money should go to cover the black hole of federal budgets that will grow and grow. But in any case, we must find a solution and we must find it now—this year.

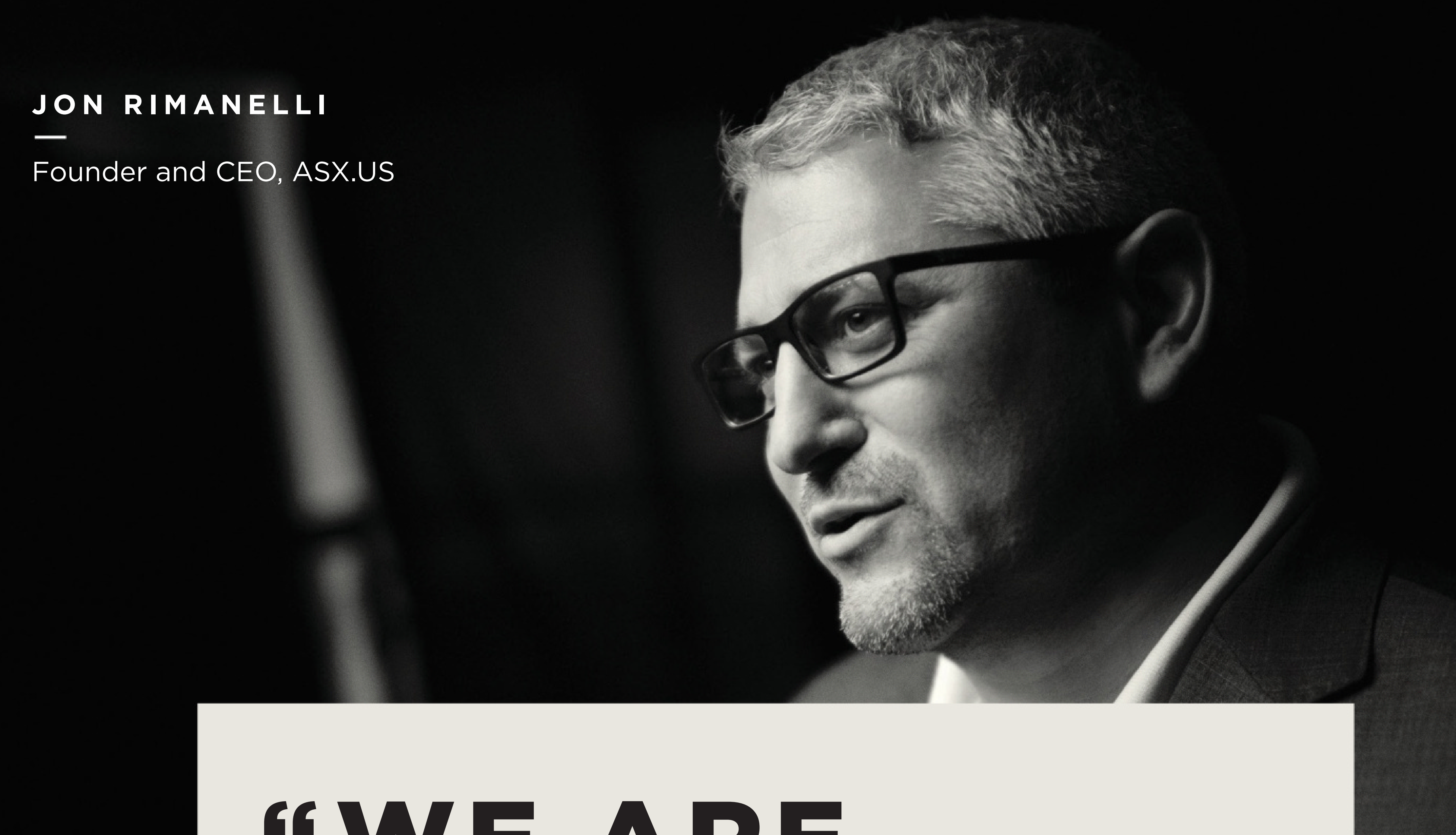
BETWEEN THE LINES

(7) Animal spirits: Bourla, who holds a DVM and a Ph.D., practiced veterinary obstetrics at a university hospital in Greece for five years, specializing in in vitro fertilization, artificial insemination, and embryo transfer.

(8) Greek tragedy: "In my city of Thessaloniki," says Bourla, "there were 55,000 Jews and only 2,000 survived the Holocaust. And then actually many of them left. So eventually, when I grew up, we had a community of 700 or 800 people in a city where we once made up half of the population."

You began your professional career as a veterinarian 7 and now spend most of your time focused on human disease. Has studying animal health helped you see things in your current role that others might not?
I believe everything that is a little bit out of the ordinary helps bring different perspectives. As you say, I'm a veterinarian and that lets me understand the science so I can better communicate with our drug development teams. I also worked in the animal health group of Pfizer [since spun off as Zoetis], and when I moved to the human health side—11 years ago—I realized that Big Pharma, at the time, was very much brand focused. It was the brand that mattered. That was never the case in animal health. There, it was the customer who mattered—it was the owner and the dog; it was the veterinarian.

Also, I think coming from a small country like Greece—one with glorious history, but which in the current reality doesn't have a very big seat at the international table—has brought some perspective. You learn how to fight, [you know] it's not going to be easy. Being Jewish in a country where the Jewish population was almost exterminated during the Holocaust taught me to be adaptive, and to be much more flexible in society so you can survive. My mother was arrested and survived. My father was hiding and survived. But it was not the same with their families. So brothers, parents, they were exterminated. That gave me an identity. 8 The fact that in my career in Pfizer I lived in eight different cities in five different countries has also made me appreciate the power of diversity and how every culture is unique and brings things to the table. My own experience taught me to be very sensitive to that. All of that gave me perspectives that have helped me become who I am, and I think everything helped.



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THE BRIEF

BUSINESS. DISTILLED.

EMPLOYMENT

Is America Giving Up on Working Women?

The female workforce has borne the brunt of COVID-19's economic devastation. What will it take to put women's careers back on track?

BY MARIA ASPAN AND EMMA HINCHLIFFE

→

PHOTO ILLUSTRATION BY **SELMAN DESIGN**

In early 2020, just before the first U.S. patient was diagnosed with COVID-19, women crossed a major employment milestone. The labor market was booming. Health care, education, and other service sectors largely staffed by female workers were racing to hire more people. And for a few shining months in early 2020, government data showed that women outnumbered men in the U.S. paid workforce.

Then "the whole house burned down," says Michael Madowitz, a labor economist at the Center for American Progress.

It's been almost a year since COVID-19 closed the schools and day cares working mothers rely on for childcare, and battered many of the service-oriented businesses with majority female workforces. And in that time, the pandemic has set working women back by more than three decades—to levels of labor force participation last seen in 1988. The resulting employment conflagration has spread across race, age, and industry, from low-paid essential workers to "knowledge" employees in remote-friendly corporate roles—although it has, predictably and awfully, done the most damage to the Black and Latina women who were already the most economically vulnerable.

"We've lost so much ground. It's astronomical," says C. Nicole Mason, president and CEO of the Institute for Women's Policy Research.

The numbers are shocking: 5.4 million women's jobs gone since last February—55% of all net U.S. job losses in that time period. Almost 2.1 million women vanished from the paid labor force entirely. By September, three working mothers were unemployed for every father who had lost his job.

Then, early this year came perhaps the bleakest statistic yet: In December, the U.S. economy shed a net 140,000 jobs, the first such downturn since April. Jobs lost by women account for the entirety of that number. While individual men became unemployed during that period, men as a group gained 16,000 jobs for the month. But women as a group—especially women of color—lost 156,000.

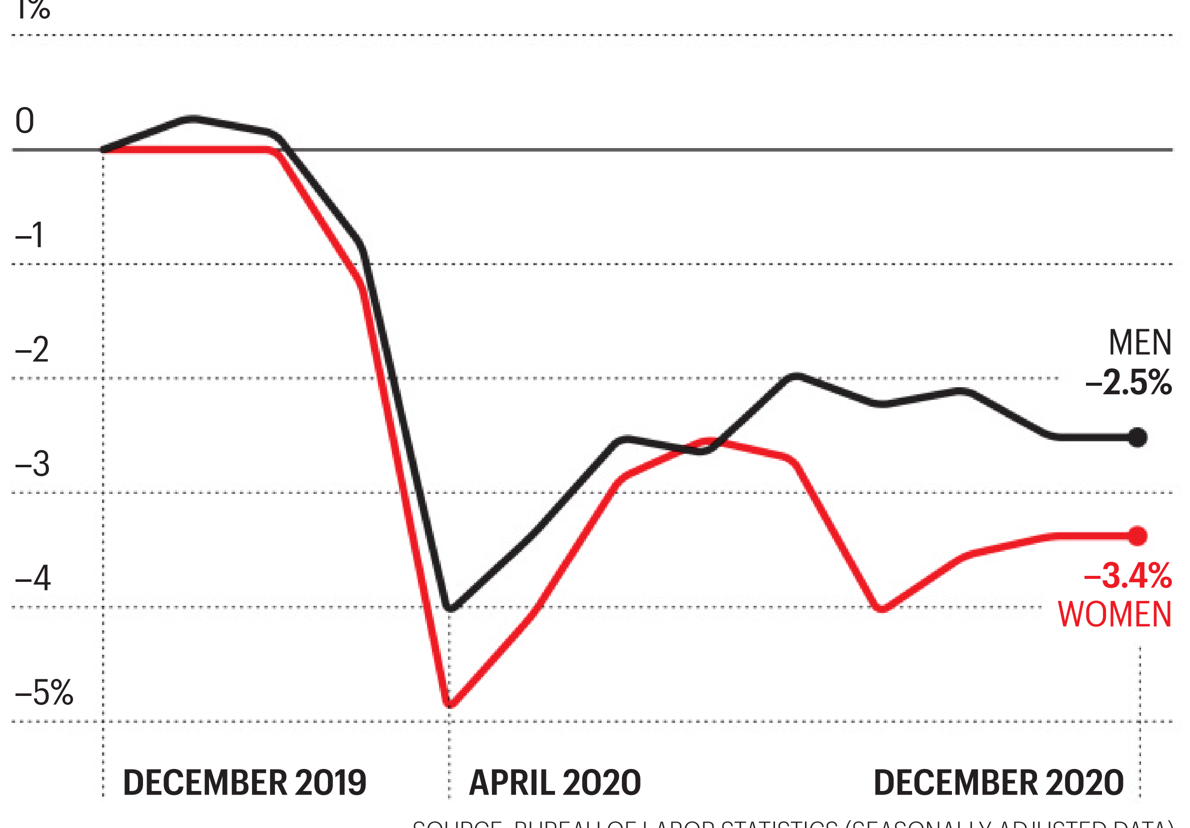
The damage to women's employment is likely to endure beyond the pandemic's eventual end. Women who have lost jobs or left the labor force are missing out on future retirement and Social Security income as well as current wages and savings. Ultimately, some economists predict, the crisis will increase the gender wage gap by five percentage points. And women who try to return to the labor force in the future will do so with a yawning hole in their résumés.

"Whether women regain their footing in the post-pandemic economy depends on whether employers recognize the reason for those gaps or penalize women for a reality they had no control over," says philanthropist Melinda Gates, whose Pivotal Ventures fund focuses on gender equity.

"THERE HAVE definitely been days where I'm like, 'Maybe I should give up,'" says Julia Pollak, labor economist for online job marketplace ZipRecruiter and a mother of two young children. Their schools have been remote since March, so Pollak is scheduling her paid work around the kids' Zoom calendars. But at least her job's flexibility allows her to "make up for lost time during the day" by working 8 p.m. to midnight, when the kids are in bed.

"It's lower-wage women, who have to leave the house to go to a grocery store or a warehouse, who have no choice but to leave

CHANGE IN LABOR PARTICIPATION RATE



SOURCE: BUREAU OF LABOR STATISTICS (SEASONALLY ADJUSTED DATA)

the labor force entirely," Pollak says. "It really is mothers who are bearing the brunt of the crisis."

The fact that moms—rather than dads—are shouldering the bulk of family obligations became vividly obvious in September, when schools resumed. With classrooms remote, "hybrid," or some unpredictable mix, 865,000 women dropped out of the labor force in that month alone—four times the number of men who left.

"Bringing everyone back into the house exposed the wound of gender inequality," says Misty Heggeness, a principal economist with the U.S. Census Bureau. "For women with children in their households, the struggle has been real in a way that women haven't experienced for decades."

Heggeness points out that men—as fathers and business leaders—could do "a lot more" to take on childcare responsibilities and "to actively encourage change in other men's behavior." But any systemic fixes will require federal policy, including legislation that centers on mothers and the affordable childcare infrastructure that would enable more women to remain in the workforce.

President Joe Biden's proposed $1.9 trillion COVID-19 relief plan would be a good start, several economists and policy experts tell *Fortune*; it includes child tax credits for low-income families and $25 billion to support the country's floundering childcare providers. The Biden administration proposals also include an expansion of paid leave; an increase in vaccine rollouts, which could help schools and day-care centers reopen more quickly; and a federal minimum wage of $15 per hour, an increase that advocates say would directly benefit the women of color disproportionately working in low-wage service jobs.

Online ed: When schools started up in September, women dropped out of the workforce at four times the rate of men.

AL SEIB—LOS ANGELES TIMES/GETTY IMAGES

All of these policies are expensive, of course, and the Democrats' razor-thin hold on Congress will complicate President Biden's efforts to enact them. In the interim, some private employers are trying to make a significant, if nonsystemic, difference.

"The lasting impacts of this are going to be far-reaching," warns Nickle LaMoreaux, chief HR officer for IBM. Beyond expanding some employee benefits, the enterprise-tech giant is widening eligibility for a "returnship" program that hires and trains women who have taken a break from the workforce. "This is not a sprint," she says. "This is going to be a marathon for female employees—and for their employers."

But while tech companies are known for their rich benefits, the industry writ large has a shoddy track record of hiring women. Instead, some of the biggest private employers of women are retail companies, which largely rely on their workers showing up in person. When *Fortune* asked eight of the largest brick-and-mortar retailers about how they are supporting their female workers, the response was mixed. Some said they haven't seen women struggle to stay in their workforces. Others said they have expanded paid leave or pandemic-era bonus pay. Target offered the most concrete plan, saying it is providing all U.S. employees with unlimited company-paid in-home or day-care "backup care" through May.

Telecom titan Verizon offers another potential example of how to support essential workers with childcare obligations. When lockdowns closed 70% of Verizon's stores, the company retrained the 8,000 affected workers—including many women—to do at-home tele-sales or other remote jobs. Verizon allowed some of those workers to remain remote or go part-time even as stores reopened—and expanded its paid childcare benefits for all employees, offering to reimburse up to $15 per hour and $100 per day.

"For a lot of parents, this broke their work/life infrastructure," says Christy Pambianchi, the company's chief HR officer. She credits these expanded benefits with a lower-than-normal turnover at Verizon last year—and says the not-insignificant price was worth it.

"It is expensive," Pambianchi says, though she declines to share the exact cost of Verizon's programs. "But on the other hand, turnover has a high expense. And we think it's really important that our employees know, and society knows, that we're here for them." ■

100% WOMEN'S SHARE OF THE 140,000 U.S. JOBS LOST IN DECEMBER

CHANGE AGENTS

SAUDI ART STAR

To celebrate Saudi Arabia's return to the Venice Biennale, celebrated land artist **Zahrah Al-Ghamdi** created a stunning site-specific installation in 2019.

In her sensitive and personal work, Al-Ghamdi uses natural materials to explore the poetics of the past and the changing nature of village life in Saudi Arabia.

Exhibiting across the Middle East and Europe, she is one of the brightest stars in a new constellation of Saudi artists.

Part of a dazzling new wave of Saudi artists, Zahrah Al-Ghamdi is delighting international audiences with her poetic and sensitive meditations on memory, loss, and identity.

The Venice Biennale had never seen anything like it. Overrunning the floors, pillars and ceilings of an ornate 500-year-old arsenal, more than 50,000 pebbles, rocks, lumps of clay, and scraps of burnt leather transformed a Renaissance-era depot into a stunning simulacrum of the ancient lifestyle of the people of the Saudi deserts.

Evoking the landscape, architecture, and culture of village life in Saudi Arabia, this extraordinary organic artwork, *After Illusion*, was the creation of Jeddah-based artist **Zahrah Al-Ghamdi**.

In recent years, Al-Ghamdi, who was chosen to represent her country at the 2019 Biennale art fair, has emerged as one of the brightest stars in the fast-developing art world of Saudi Arabia and the Middle East. Exploring the impact of globalization and cultural change on traditional lifestyles, and making sensitive and imaginative use of natural materials, Al-Ghamdi's handcrafted work is intensely personal. She is preoccupied with memory, with the passing of time, and with finding meaning in the past and in her own childhood experiences.

"I like my work to be authentic," she says. "An artist's work should reflect their identity and culture. For art to have feeling, an artist must put their soul into it. That is why I use materials related to my culture, my environment. and the homes and architecture of the places where I grew up."

Al-Ghamdi says that the continuing changes in Saudi Arabia have helped unlock the potential of a new generation of artists, especially women

Al-Ghamdi's work is inspired by the culture and landscape of the desert villages where she grew up.

artists, to express themselves and create works that resonate across society.

A faculty member of the Art and Design department at Jeddah University, Al-Ghamdi is on a mission to help other artists find their way in the art world.

"New opportunities are opening up for creative Saudi art students to develop their skills, display their work, and fulfill their ambitions," she says. "It is an inspiring time to be an artist in Saudi Arabia."

What inspires you most as an artist?
I grew up in southwestern Saudi Arabia, surrounded by traditional domestic architecture. All my art reaches back to the memory of these spaces and that culture. I am inspired by history, by stories, and by memories of places related to my childhood. Identity, loss, and storytelling are all important to me. I focus on the loss and extinction of traditional architecture.

I want my work to inspire intense feelings and emotions. Like other land artists, I use raw materials such as sand, clay, rock, and leather to express my feelings and bring out strong reactions in the viewer.

How is the Saudi art world changing?
When I started out, my art was just a hobby. The arts scene at that time in Saudi Arabia did not make it possible for me to go professional. Changes in the art world here have opened vnew doors for me, not only locally, but even internationally. The Ministry of Culture is now developing major events and supporting Saudi artists. These changes have made it possible for me to make a living from my art.

What is it like making installations in the deserts of Saudi Arabia?
I have always wanted to take my art pieces outside the walls of the gallery. This dream became possible with the Desert X project at Al-Ula, supported by the Ministry of Culture. Al-Ula is a magical, beautiful place. It used to be a crossroads of many different civilizations. I chose to install 6,000 tin cans traditionally used for storing dates, in many different colors and sizes. I filled the metal containers with reflecting mirrors andw various shades of sand. The idea was to show how people of different races and backgrounds can come together in this one stunning landscape. I called it *Glimpses of the Past*.

Al-Ghamdi's stunning installation *After Illusion* was one of the highlights of the 2019 Venice Biennale.

What advice do you give to your students who are beginning their lives as artists?
I am passionate about teaching art. I always try to teach my students that to make art, you need to combine ideas, feelings, and skills.
Some Saudi students are very shy about expressing how they feel or think. I see it as a success if I can push my students out of their shyness and make them braver about expressing themselves with their art. I encourage them to display their work outside college. And I teach them that art is limitless.

I WANT MY ART TO BE SOMETHING YOU CAN FEEL, NOT JUST SOMETHING YOU CAN SEE.

—

ZAHRAH AL-GHAMDI,
ARTIST

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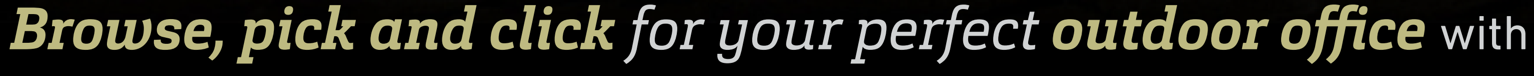

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T-Mobile CEO Sievert worked side by side with John Legere, then took the reins in April.

TELECOM

T-Mobile's New CEO Answers the Call

After taking over from the legendary John Legere in April, Mike Sievert has a plan to dominate 5G—and dial up big gains.

BY AARON PRESSMAN

IT'S ONE THING to take over from a successful CEO. It's quite another to follow in the footsteps of a larger-than-life, brash-talking, Twitter-fueled leader like T-Mobile's John Legere, who also happened to transform the company into the No. 2 carrier and the dominant player in 5G, and quintupled the stock price over his eight-year tenure. But by his side the whole time was Mike Sievert, who as of April won the top job upon Legere's retirement. While Sievert brings a decidedly suburban Seattle dad vibe to the party, he also possesses top-notch marketing chops honed at some of America's leading brands.

To be sure, history shows that following a star exec is no easy task. Tim Cook has successfully extended Steve Jobs' trailblazing path at Apple, but whether it's Craig Barrett taking over at Intel for Andy Grove or Jeff Immelt following Jack Welch at GE (see story on the opposite page), the *Fortune* 500 is littered with succession stories that do not go as planned.

And though Legere's glorious run included adding more new customers than all his competitors combined to triple T-Mobile's subscriber base, analysts say there's still more opportunity for Sievert, especially as consumers are only starting to seek the benefits of 5G networks where T-Mobile is well positioned to lead. "Worst-to-first stories are rare enough in American business, but in telecom they're almost unheard of," longtime industry analyst Craig Moffett at MoffettNathanson Research gushes. With lower prices than AT&T and Verizon plus a potentially better network, "that's a powerful recipe for continued share gains," he adds.

The reason T-Mobile is considered the leader in 5G comes down to airwave spectrum, the precious but limited commodity of the wireless industry. Thanks to the Sprint deal, T-Mobile has vast swaths of underused spectrum in the 2.5 GHz band, which is well-suited for sending speedy 5G traffic to subscribers on the go or in homes and businesses. Verizon and AT&T don't have anything like it available and have been bidding like mad at the most recent federal airwave auction to try to catch up. But those new airwaves won't be online for a year or more.

The challenge is convincing sticky cell phone customers at AT&T and Verizon that T-Mobile's 5G is enough of a game changer to switch allegiance. All

three carriers have muddied the waters with forgettable ads so far that in some cases had to be pulled after the ad industry's watchdog pegged them for exaggerations. T-Mobile's recent ad starring Bill Nye, the Science Guy, got dinged for promising the "most reliable" 5G network, while Verizon had to pull a Super Bowl ad claiming its 5G network was built for first responders and drop its claim it had the "most powerful" 5G.

Still, Sievert may be ideally suited to design the message that wins the 5G era as firmly as Verizon's "Can you hear me now?" campaign helped it dominate the 3G and 4G periods. "We're going to create some real FOMO among people carrying around AT&T and Verizon phones," Sievert wagers.

He first learned the business sitting at the kitchen table listening to his dad, a marketing guru for IBM and other companies, craft campaigns. After graduating from the Wharton School in 1991, he joined Procter & Gamble, where he oversaw brands including Crest and Pepto-Bismol. The stomach-calming Pepto team sat with the Metamucil team, leading to some hilarious co-marketing opportunities, at least inside P&G's walls. A T-shirt with both product logos read, "With friends like these, who needs enemas?" "P&G didn't have quite the same swag game as T-Mobile," Sievert jokes now.

From P&G, Sievert won increasing responsibilities across corporate America, joining IBM's personal computing unit for a few years before the lure of the dotcom bubble drew him to E*Trade in 1998, where, at not yet 30 years old, he was named chief marketing officer and helped develop the broker's memorable Super Bowl ads. Then came lead marketing roles at AT&T Wireless in 2002 and at Microsoft. From there, missing a "hypercompetitive market like wireless," he found his way to Sprint's Clearwire unit, and ultimately, in 2012, to T-Mobile.

Sievert helped develop Legere's "Uncarrier" strategy that did away with two-year contracts, overage charges, and other annoyances. Loyal customers were rewarded with free pizza promotions and "Netflix on us." T-Mobile, in fourth place in 2012, passed Sprint in 2015 and is now ahead of AT&T by some measures and aiming to pass Verizon.

"The opportunity we have in front of us is like nothing we've ever had," he says. T-Mobile's fast 5G already covers where more than 100 million people live and will double that by year-end. AT&T and Verizon cover a tiny fraction of that with their fastest 5G. Also in Sievert's sights is completing Legere's effort to take on the cable market. "It's a $100 billion industry dominated by companies customers don't love," Sievert says.

Sounds like a great call. ■

In 2018 *Fortune*'s Geoff Colvin delved into the decline of GE; the article in part spurred Immelt's book.

BOOKS

HE WROTE THE BOOK ON GE

JEFF IMMELT OPENS UP ABOUT WHAT WENT WRONG AT ONE OF AMERICA'S GREAT COMPANIES (AND THAT GE TATTOO).

BY GEOFF COLVIN

WHY WOULD Jeff Immelt write a book about his troubled tenure as General Electric's CEO from 2001 to 2017? He confronts that question on page one. "My tenure had ended badly," he acknowledges in the first paragraph of *Hot Seat: What I Learned Leading a Great American Company*. "My legacy was, at best, controversial ... Maybe it would be better not to write a book at all." He changed his mind in 2018; an article I wrote played an indirect role. He decided to tell the story of why he did what he did, to own up to mistakes, distill what he had learned, and defend himself against criticism he considers unmerited. He does it engagingly and candidly, emphasizing his successes while admitting to errors of judgment and action. After years of refusing to criticize his celebrated predecessor, Jack Welch, Immelt blames him for leaving behind messes that had to be cleaned up. Yet he writes that he called Welch for advice in the financial crisis—a period so traumatic for Immelt that, he reveals, he briefly planned to resign after being forced to cut GE's dividend for the first time since 1938. He confirms that he was pushed out of his job suddenly, after a disastrous performance before a group of Wall Street analysts. He also explains why GE's famous round logo is tattooed on his left hip.

Immelt's story is not ultimately a happy one. The hard fact remains that GE today is a mere remnant of what it was when he became CEO. This book is his telling of what the hell happened.

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REAL ESTATE

First Bars, Then Banks?

COVID has clobbered small businesses—and the ripple effects could create big headaches for lenders. BY LANCE LAMBERT

FLOOR-TO-CEILING, the interior of Tattooed Mom is covered in graffiti. The bar, which has been open for 23 years on South Street in Philadelphia, doesn't stop its hipster patrons from getting crafty. But even with its faithful clientele transitioning to takeout, Tattooed Mom has problems that can't be painted over. It's unprofitable, and sales remain down 70% from pre-pandemic levels. Robert Perry says his bar will survive, but many of its neighbors won't. "Within a one-block radius there are six restaurants that are already gone," he says. "Every week you read about new closures, and it breaks my heart."

Some buttoned-down bankers could soon share his pain. As the pandemic wears down bars, gyms, hotels, and other businesses, it runs the risk of causing a commercial real estate (CRE) tenant crisis, which could put billions of dollars' worth of loans in jeopardy. Neel Kashkari, president of the Federal Reserve Bank of Minneapolis, tells *Fortune* that CRE is the most vulnerable financial sector—with the potential to cause a shock to the system. "Thousands of small businesses have already or will go under ... That rolls up into the commercial real estate market and rolls up into the banking sector," Kashkari says.

Small to midsize banks face the greatest risk. At Bank of America and JPMorgan Chase, CRE makes up only 6% and 15% of all loans, respectively, according to Morningstar. But that figure is 38% at Buffalo-based M&T Bank and 37% at Texas's Cullen/Frost Bankers—which in January conducted its first layoffs in nearly two decades. Banks like these are bracing for defaults: In 2020, M&T increased its provision for credit losses to $800 million, up 355% from the prior year.

Any crisis could take years to brew. Outside of hotels, distressed sales of commercial property aren't abnormally high to date. But Greg Gleason, president of real estate private equity firm Corigin, says more such sales loom, as banks and owners unload vacant assets. Through 2022, analytics firm CoStar forecasts $126 billion in distressed CRE sales, with the total rising to over $320 billion by 2025. The outlook could be grimmer if work-from-home trends outlast the pandemic, creating trouble for office buildings. As of now, 75% of companies plan to use less office space in the future, according to a *Fortune* survey of CEOs in December in collaboration with Deloitte.

Still, Kashkari says the CRE risks should be manageable if banks are vigilant about their portfolios. Keep an eye on the vaccine rollout, he advises: The longer it takes to tame the virus, the more businesses will close—and the shakier some banks will look. ■

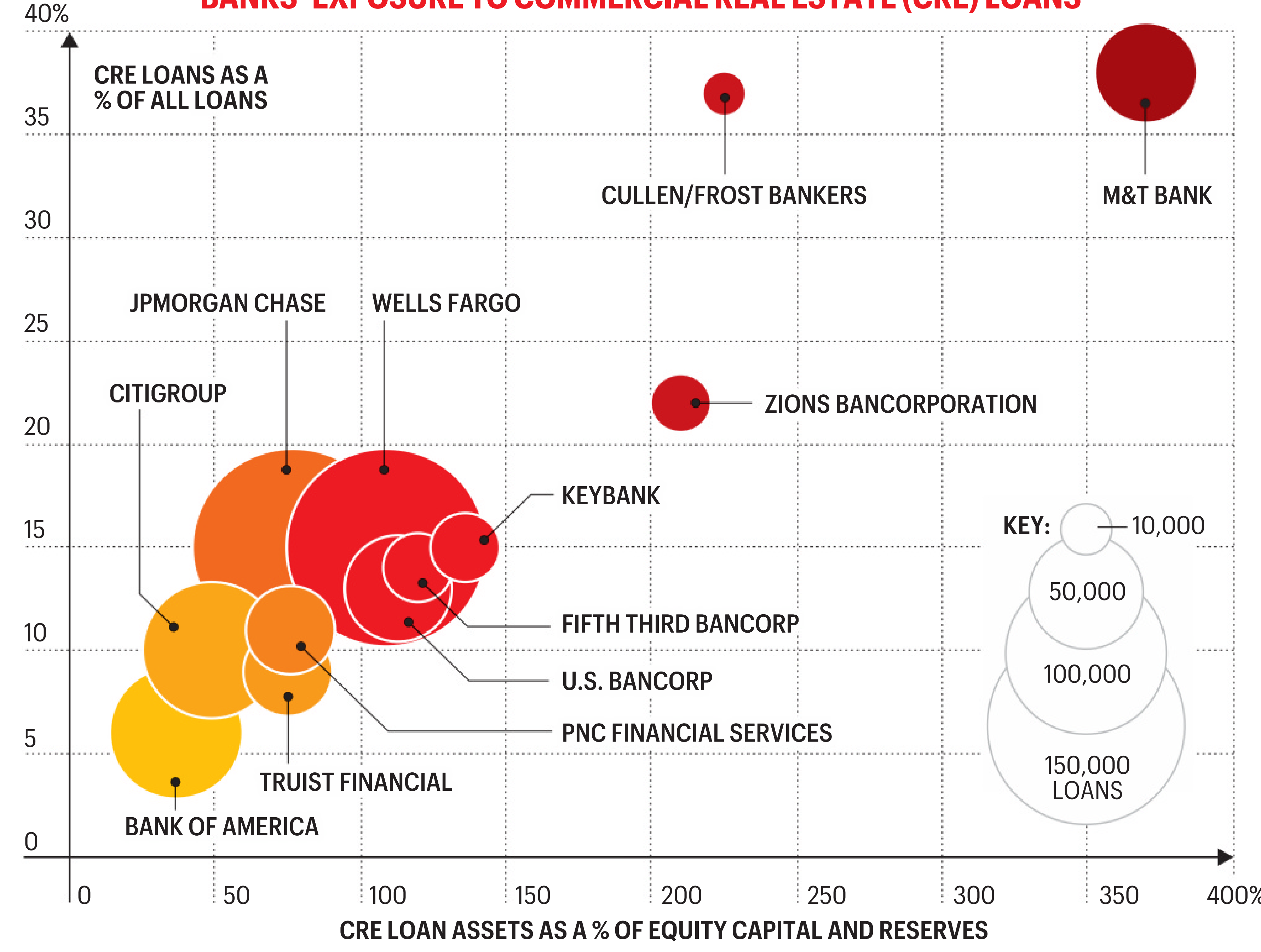

CHART SOURCE: MORNINGSTAR

WHAT THE FUTURE HOLDS FOR AP AUTOMATION

The pandemic has brought AP transformation into sharp focus, proving that **automated payables processes** are key for cash flow management, saving time, decision-making—and enterprise success.

"THE PANDEMIC HAMMERED HOME THAT ORGANIZATIONS NEED NOT ONLY FULL VISIBILITY INTO THEIR SUPPLIER UNIVERSE BUT ALSO TRUE BUSINESS CONTINUITY THAT'S INDEPENDENT OF PHYSICAL OFFICE LOCATIONS."
KLAUS ANDERSEN
CEO, Basware

THE MODERNIZATION AND AUTOMATION OF accounts payable (AP) was on track to become mandatory in many countries even before the COVID-19 pandemic. But global shutdowns accelerated AP digital transformation, and companies relying on manual payables processes struggled to maintain operations.

"The pandemic hammered home that organizations need not only full visibility into their supplier universe but also true business continuity that's independent of physical office locations," says Klaus Andersen, CEO of Basware, a global cloud-based procure-to-pay and e-invoicing solution headquartered in Finland.

AP automation is essential for a successful enterprise, Andersen says—for cash flow management, saving time, data-backed decision-making, and more. He predicts three major trends for 2021.

TREND 1. Artificial intelligence (A.I.) and machine learning will accelerate innovation

One of the core facets of AP automation is the elimination of paper invoices and the ability to receive quality data electronically. The once-standard optical character recognition technology relies on mapping each field from every new invoice. A.I. and machine learning have completely revamped that model. Basware's SmartPDF AI, for example, uses machine learning to convert data from PDF invoices into an electronic format with a high level of data accuracy and gets smarter over time, making invoice processing faster and less wasteful without manual effort.

"Transforming an unstructured PDF invoice into a structured e-invoice, agnostic of language, sounds easier than it is," Andersen says. "In a few years, we'll move toward increased analytical capabilities leveraging A.I. and machine learning. But for 2021, a lot of businesses can make great gains with just the data visibility."

TREND 2. E-invoicing legislative mandates will spread to more regions

Historically, the private sector has instigated AP automation. But recently, government-mandated invoicing standards in places like Germany and India have increased, and Andersen expects that trend to accelerate.

"Right now, there's a lot of variance between countries," Andersen says. "The pandemic is advancing the conversation about how legislation can standardize the AP process and help protect against tax and IT fraud, among other benefits."

TREND 3. The AP professional's role will evolve

As automation solutions give AP professionals more bandwidth and data, their role is quickly evolving, says Andersen.

"They've historically been operators, in principle, ensuring things are flowing through the system," he says. "With AP automation, they can focus on just the exceptions, freeing them up to help guide the business in terms of 'Here's what's going on, and here's where we can improve.'"

Specifically, Andersen adds, AP professionals will increasingly need to interpret data and translate it into business analyses, then communicate actionable insights to the C-suite for enterprise success.

And that's the kind of next-level, data-backed decision-making that AP transformation can enable—powering the innovation that will help companies thrive in 2021 and beyond. ■

CONTENT FROM PGA TOUR

DURING THE PANDEMIC, GOLF FACILITIES, SUCH AS TPC SAWGRASS [PICTURED], IMPLEMENTED HEALTH AND SAFETY MEASURES THAT ALLOWED PEOPLE TO CONTINUE PLAYING THE GAME.

After a partial shutdown, **golf** is now on a hot streak.

On the Upswing

GOLF HAS ALWAYS BEEN A GAME THAT REQUIRES, and rewards, improvisation and resilience. Even PGA TOUR superstars hit a bad shot once in a while—amateurs, a little more often—and part of the game is learning to shake off a less-than-perfect lie and find a way back toward the hole. Given this need for resilience, it's not surprising that despite recent challenges to the world of professional sports—and to every aspect of our lives—the game of golf has not only survived but also thrived.

Playing Through a Pandemic

In March and April of 2020, more than half the nation's golf courses—54%—closed due to the COVID-19 pandemic. But with some foresight and quick action, the game waged an incredible rally with a widespread reopening in May. The PGA TOUR helped lead a group of industry stakeholders on "Back2Golf," a cohesive framework to reopen facilities while communicating to players and staff that thoughtful, enhanced personal safety measures had been enacted. Back2Golf provided three phases of guidelines, reviewed by the Centers for Disease Control and Prevention, which included limiting cart ridership to a single player, mandating social distancing, providing new means of removing balls from cups without touching the pin, and more.

These efforts proved fruitful, and suddenly, it seemed, everyone was a golfer, or a golfer in the making. Despite losing two months of play, total rounds completed in 2020 were up 13% year over year [YOY] through November, according to Golf Datatech. And per the National Golf Foundation, the industry expected to add 500,000 new junior golfers in 2020, a 20% YOY gain. Equipment sales rose with this tide. Golf Datatech reported that July 2020 saw almost $389 million in sales, the highest

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ever tracked by the organization in a single month, while August's $331 million in sales was a 32% YOY increase that surpassed that month's prior sales record by $44 million.

What may be even more remarkable is that the sport has experienced a boom in popularity in 2020. When professional play resumed, engagement with and consumption of the PGA TOUR also experienced a boom. From the TOUR's first official return event in May, the Charles Schwab Challenge, through the TOUR Championship in September, broadcast household ratings on partners CBS and NBC rose 23%, while cable household ratings on the Golf Channel surged 50%—in a year when all other major sports saw decreased ratings. Average weekly cross-channel engagements on television, streaming services, and digital and social media increased 52%, with streaming subscribers to PGA TOUR Live rising a whopping 68%, with the average user watching 50 minutes more per week. Average weekly PGA TOUR app and website visits were up 28%, and social media engagements were up 68%.

That golf was visibly, actively engaged in raising money for the fight against COVID-19 likely helped the sport earn additional goodwill. The industry rallied to support relief efforts to the tune of more than $40 million via a variety of undertakings. Among the first and most high-profile charity sporting events were a pair of PGA TOUR–backed televised endeavors featuring superstars Dustin Johnson, Rory McIlroy, Phil Mickelson, and Tiger Woods, among others. The TOUR, its players, tournaments, and partners raised more than $30 million to support COVID-related relief efforts during the sport's shutdown from March to May; and when the TOUR returned, it inspired fans with thoughtful gestures both big and small, such as including the names of local frontline workers on the backs of caddies' bibs (alongside the player's name). And the TOUR generated $160 million overall for charity in 2020, despite the truncated schedule.

IN MARCH AND APRIL OF 2020, 54% OF THE NATION'S GOLF COURSES CLOSED DUE TO THE COVID-19 PANDEMIC. BUT WITH SOME FORESIGHT AND QUICK ACTION, THE GAME WAGED AN INCREDIBLE RALLY WITH A WIDESPREAD REOPENING IN MAY.

New Faces, New Numbers

Last year also ushered in a compelling wave of young new stars. Collin Morikawa, at age 23, captured the first major post-shutdown title, and his second professional victory, at the 2020 PGA Championship at San Francisco's Harding Park, highlighted by a dramatic late eagle to break from a crowded pack. Two other charismatic young twentysomethings, Matthew Wolff (21) and Viktor Hovland (23), also enjoyed great success in 2020, and experts believe each of these three men will reach superstar status sooner than later.

If the PGA TOUR's numbers are all up, including the Q-rating of its rising stars, it is partially attributed to the quality of its data. ShotLink technology, powered by CDW, has tracked and recorded every single TOUR shot struck, in real time, since the technology's debut in 2001, using lasers and recently added high-speed video cameras around each putting green. The camera system, known as ShotLink Plus, produces advanced statistics and metrics that promise to grow even more focused and specific in the near future.

One example on the horizon: ball-in-motion statistics, which show not only where a ball ended up but also how it got there (by landing on the green before spinning back four feet, for instance). This technology will soon produce statistics that break down a player's likelihood of making putts of various lengths, while factoring in their success rates when those putts break left to right or right to left. Hard-core fans, gamers, and bettors want to know everything they can about these kinds of details so they can engage more deeply with the game, and ShotLink Plus will bring them one step closer. It's yet another sign of a game on the upswing.

—*EVAN ROTHMAN*

EXERCISE

Can Peloton Keep Up the Pace?

The fitness-tech company's business sprinted ahead during the pandemic. Now it faces a pack of new rivals.

BY ROBERT HACKETT

A FEW DAYS after pro-Trump rioters storm Congress, I mount my trial Peloton bike to let off steam.

Curious about the company's handling of the chaos, I select a 30-minute "high-intensity interval training and hill ride" recorded on Jan. 6, while law enforcement cleared the Capitol. I clamp on my clip-in shoes and join the cycling session's Adonic trainer, Cody Rigsby, who appears on an attached tablet screen.

"What we're gonna do is use movement and sweat and resilience and tenacity to get us through and process all of that emotion, okay?" Rigsby sermonizes, legs whirring in sync with an electro-house jam.

Sweat drips. Endorphins course. As I pedal harder, Peloton—a business I long dismissed from the sidelines as a frivolous luxury—begins to make sense. Something is bubbling up within me—a frisson. It's the feeling that John Foley, Peloton's cofounder and chief executive, refers to when he tells me he wants his exercise equipment and classes "to feel like a warm hug."

Perhaps no one is feeling more snuggled than Peloton and its investors right now. During the COVID lockdowns that began last year, the connected-bike maker quickly became one of the pandemic's biggest winners. Millions of suddenly gym-less people scrambled to satisfy their fitness fixes with Peloton's at-home gear and workout app. In response, the company's shares have soared. Since going public in September 2019, Peloton's stock price has sextupled to $157.14.

But Peloton is about to face its most challenging incline yet. With more people getting vaccinated, more gyms are poised

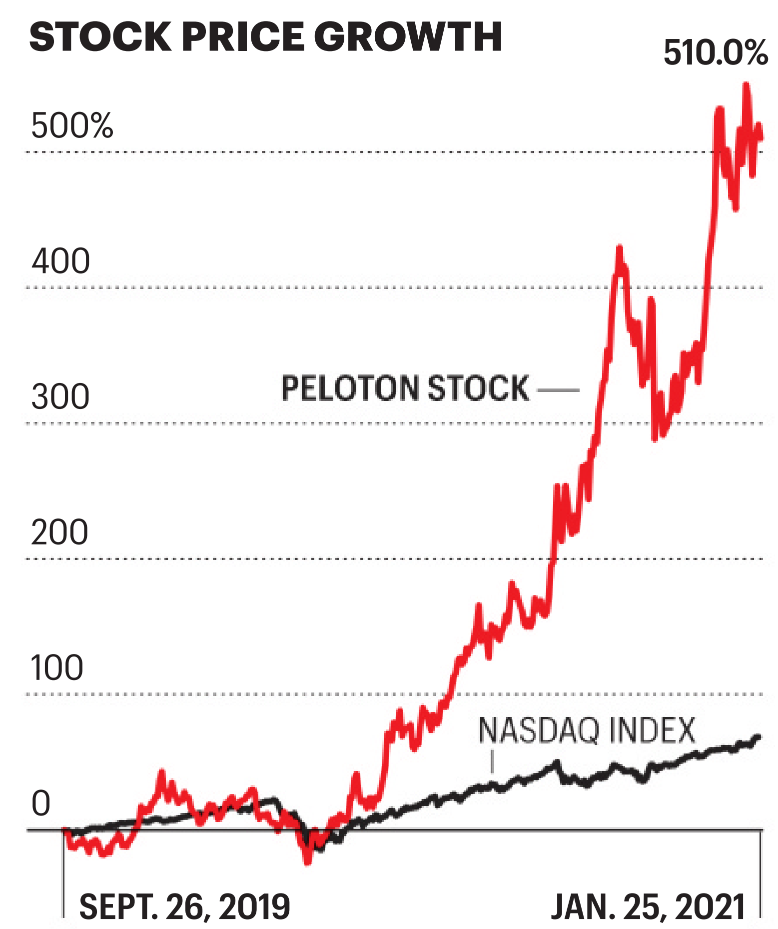
Peloton's exercise bikes have given it a major foothold in the market for at-home fitness equipment.

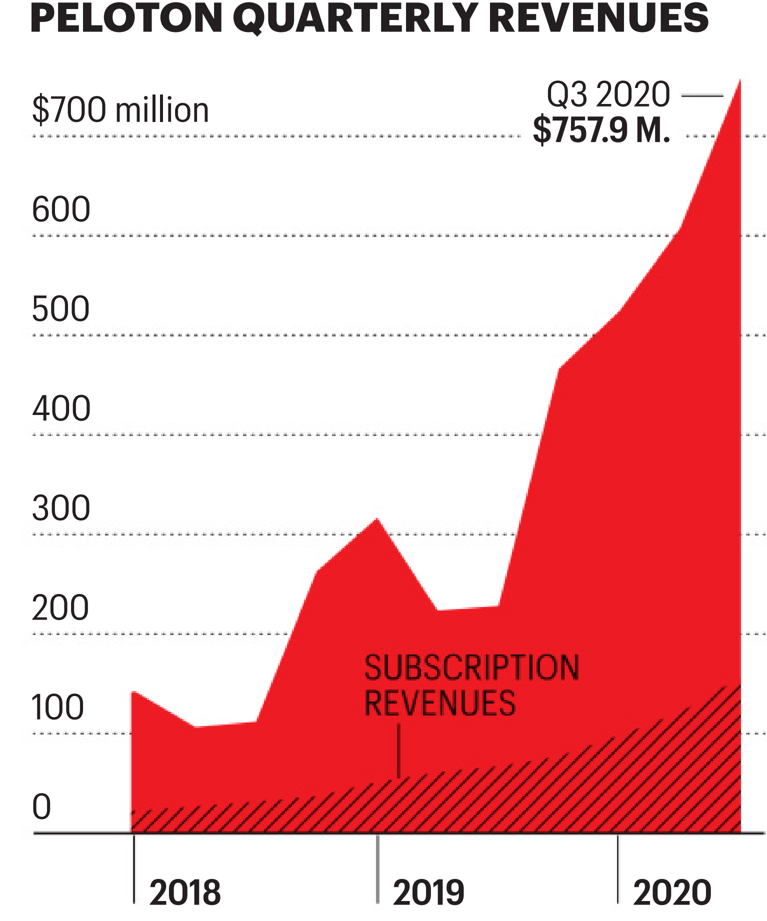
PHOTO ILLUSTRATION BY **ARMIN HARRIS**

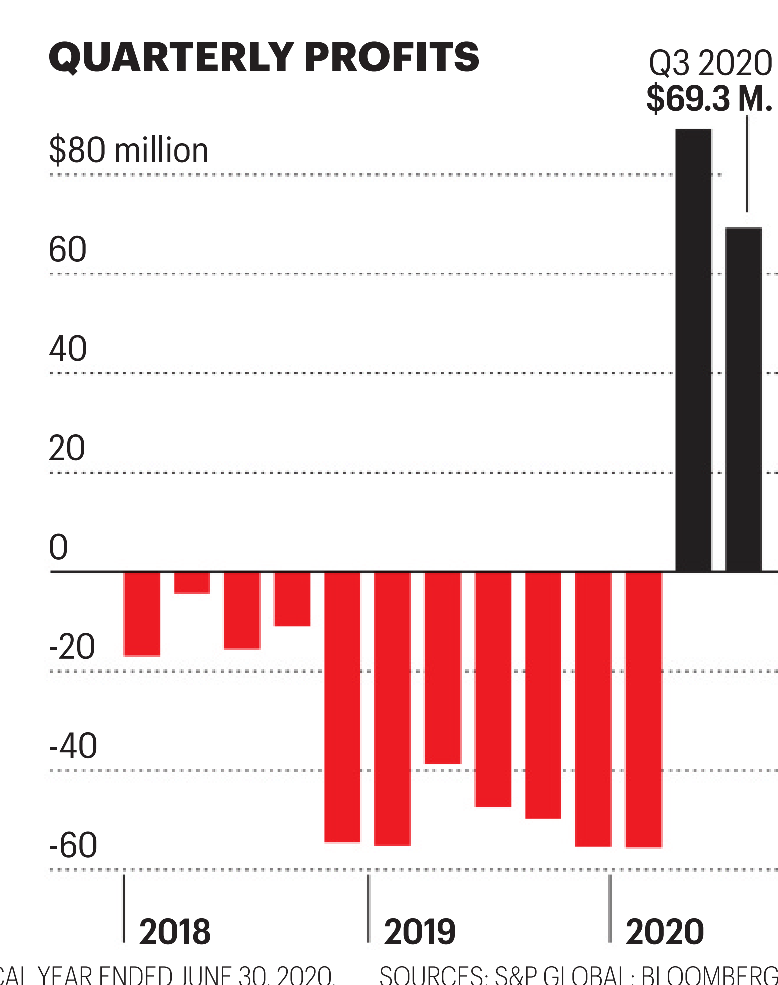
ORIGINAL PHOTOS: COURTESY OF PELOTON; NICK VEASEY—SCIENCE PHOTO LIBRARY/GETTY IMAGES

PEDAL TO THE METAL

In just a few years, Peloton has built an exercise empire, and the pandemic has only helped to accelerate its sales and profits. Wall Street has taken notice, sending the company's shares surging despite misgivings from some analysts.







NOTE: DATA DISPLAYED AS CALENDAR YEAR. PELOTON FISCAL YEAR ENDED JUNE 30, 2020. SOURCES: S&P GLOBAL; BLOOMBERG

to reopen, which could temper the home workout craze. Meanwhile, drafting off Peloton's lead, a host of competitors, from Apple to NordicTrack-maker Icon Health & Fitness, are muscling into the market. It's a pivotal moment for Peloton to prove it's got momentum, that it can be more than just a stay-at-home fad.

In 2014, a couple of years after Peloton's founding, Foley and Tom Cortese, Peloton's cofounder and chief operating officer, set up shop in a mall in Short Hills, N.J. Situated near an Apple store and a Tesla dealership, the two hoped to tap those brands' high-end allure while enticing passersby.

The Tesla connection would prove prescient. Both companies started with pricey, premium hardware and an ambition to reach mainstream customers. The fortunes of both businesses soared during the pandemic as poster children of a tech rally reminiscent of the dotcom craze.

The math of Peloton's valuation—it has a market capitalization of $46 billion—is difficult to justify unless one believes the company will become a tech-media titan. Jay Hoag, a venture capitalist with TCV who joined Peloton's board after leading a funding round in 2018, should know. An early investor and longtime director of Netflix, he compares Foley's ambitions to those of Netflix CEO Reed Hastings. Many peers wrote off these founders as "crazy," but Hoag believed in their vision, feeling "there was something magical about all of it," he says.

Not everyone is enchanted. Simeon Siegel, an analyst at BMO Capital Markets, is Peloton's iciest bear. "Humanity, by nature, is lazy," he says. Siegel argues that Peloton's market opportunity is limited: Most people prefer to plant butts on couches than glutes in saddles. Merciless in his appraisal, Siegel says Peloton's stock is "detached from reality"

> **"IT HAS LONG BEEN OUR THESIS THAT FITNESS IS MOVING TO THE HOME."**
>
> **JILL WOODWORTH,** PELOTON'S CHIEF FINANCIAL OFFICER

and should trade at $33, or nearly 80% lower than where it is today.

Whichever the case, Peloton's business is growing quickly. The company saw $1.8 billion in sales during its fiscal year ended June 30, 2020, doubling from the year before. Most of that money came from selling bikes, which cost up to $2,500. But the company is also focused on adding to its 1.8 million digital subscribers, who pay up to $39 monthly for virtual classes.

For most of its history, Peloton has hemorrhaged money. During the pandemic, however, with the influx of new customers, it finally switched gears into profitability—nearly $160 million in the past two quarters combined.

Still, Peloton has found itself on the defensive lately. During the madness of the pandemic, a spike in customers inconveniently coincided with a crippled supply chain. Quarantined ships, jammed-up terminals, and closed warehouses stalled the import and distribution of Peloton's bikes and treadmills from Taiwan, its main manufacturing base. Customers, strung along and disappointed by continual delivery delays, vented on social media.

Foley ultimately apologized for the problem and promised to do better. The company expects to clear its backlog by spring.

While Peloton whips itself into shape, competitors are angling to steal the lead by doubling down on workout tech of their own. In April, 45-year-old Icon started offering Planet Fitness's then 15 million members access to iFit, its catalog of streamed fitness classes. In June, clothing retailer Lululemon paid a half-billion dollars for Mirror, the maker of a smart screen for workouts. And in December, Apple debuted Fitness+, a subscription service for online exercise classes.

Meanwhile, Nike, Under Armour, and Strava are revving up their own fitness apps.

Will any of these, including Peloton, have staying power after the virus subsides? "It has long been our thesis that fitness is moving to the home," says Jill Woodworth, Peloton's chief financial officer. "We don't think that's going to abate when COVID is over."

Foley puts it another way: "We sell people effectively a Trojan horse." He means that buyers of Peloton's equipment get hooked on subscribing to Peloton's classes, and are therefore unlikely to defect to rivals.

Peloton is extending its hooks too. In December it shelled out $420 million for Precor, a maker of exercise equipment for hotels and gyms. That business will enable Peloton to follow its devotees on business trips and vacations. Crucially, the acquisition also expands Peloton's manufacturing footprint beyond Asia to the U.S., alleviating some logistical challenges.

FITNESS FIGHT

Peloton is facing off against a growing list of rivals. Here are some of them.

APPLE

CEO Tim Cook says Apple's greatest contribution to mankind will be in health. Apple Fitness+, a workout app introduced in December, is a key part of that push.

ICON HEALTH & FITNESS

The fitness equipment maker pitches iFit, its eight-year-old fitness software, as a Peloton alternative. The company plans to go public soon.

PLANET FITNESS

The gym franchiser, which has lost legions of members because of the pandemic, beefed up its app in April with content from Icon's iFit.

LULULEMON

Known for its athleisure wear, Lululemon in June paid $500 million for Mirror, a maker of a $1,500 wall-mounted device that streams video of vinyasa flows and kickboxing.

EQUINOX GROUP

The gym chain started offering $2,500 SoulCycle bikes last year. Its spin classes are available through Variis, an Equinox-owned app that features content from Equinox subsidiaries including Blink Fitness and Pure Yoga.

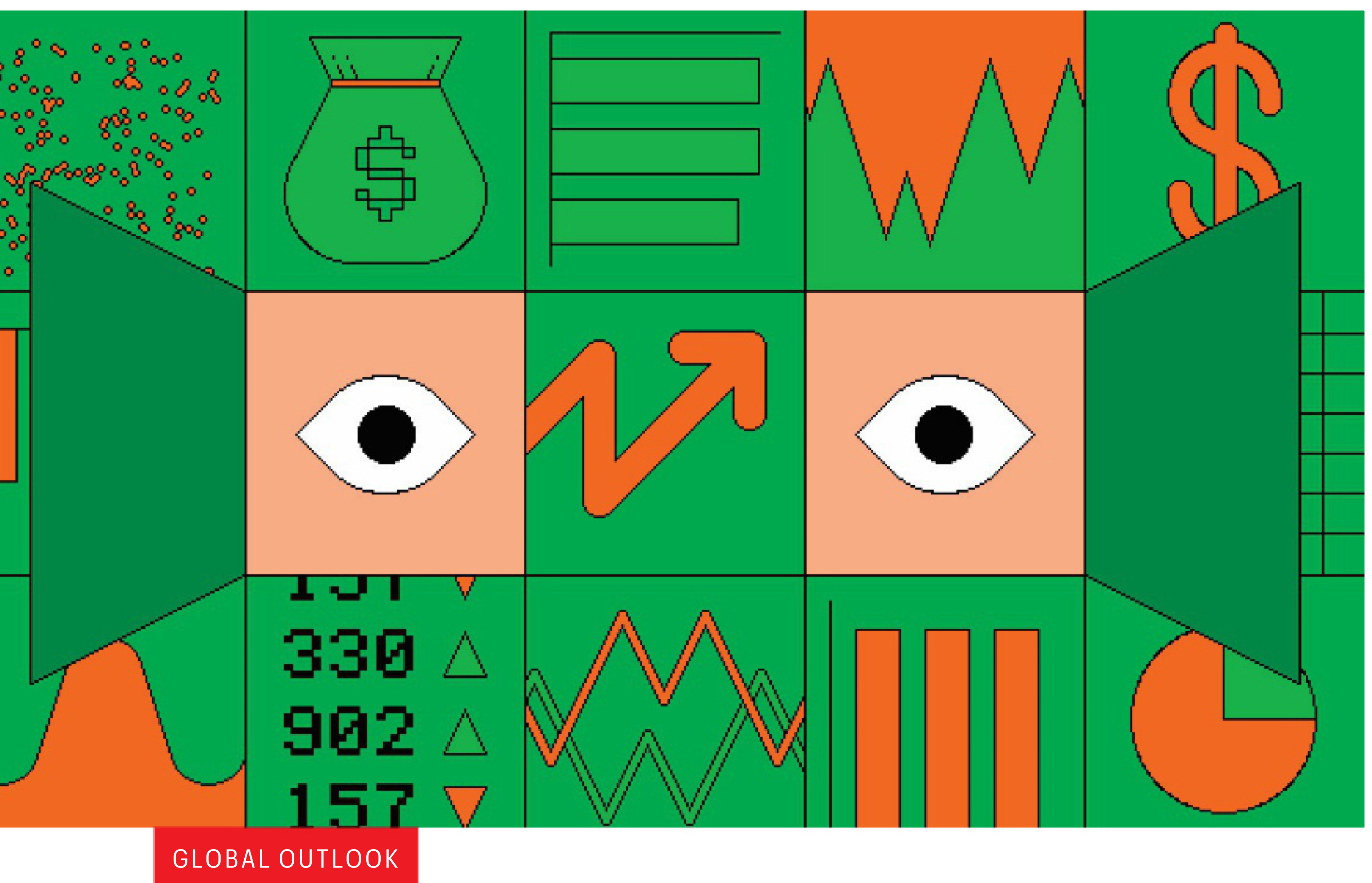
On a mid-January day, I tour a new Peloton R&D facility that opened as the pandemic struck. Here, Peloton tries to improve its products and dream up new types of torture racks for its customers.

At one point, cofounder Cortese lets me peek inside a room that contains equipment undergoing testing. Near the doorway, a bicycle hooked up to a computer is pedaling away with no one in the seat, as though a ghost is riding it. On the other side of the room, I glimpse something I doubt I'm supposed to see. It's a long-rumored follow-up piece of equipment that the company has never officially confirmed: a rowing machine.

When I ask about the machine later, a Peloton spokesperson says the company "often reviews and tests all kinds [of tech], but that doesn't mean we plan to pursue any of those particular product areas."

By the time I complete my own post-riot workout, I'm panting and perspiring. The class is cathartic, and the trainer's soothingly anodyne commentary assuages the recent terror of insurrection.

At the end of the session, pop singer Lizzo croons during the cool-down phase, "Baby, how you feeling?" I wipe the sweat from my brow and kick my heels from their foot clamps as the chorus arrives. "Feeling good as hell." ■



GLOBAL OUTLOOK

The Overlooked Tech Portfolio

During the pandemic, investors have flocked to Tesla, Zoom, and the "FAAMG" stocks. But the pros expect a very different cohort of market winners in tech this year. BY JEN WIECZNER

IF THERE WAS anything in 2020 that went *better* than expected, it was the stock market. Mike Lippert can attest to that. The manager of the Baron Opportunity Fund remembers feeling in April the bleak dread of recession. Instead, his fund returned roughly 90% last year—his best performance to date and perhaps, Lippert thinks, his best ever. "I am very realistic that it's a career year," he says.

But Lippert doesn't owe his outsize returns to any major dip-buying back in March, during the blink-and-you-missed-it bear market. Rather, his best bets had been years in the making—including stakes in Tesla (up 743% in 2020), Netflix, and of course Zoom. "We were investing in mostly digital trends, and they became must-haves, must-dos during the pandemic," explains Lippert.

It's a lesson that has increasingly been borne out in the past decade: Many tech companies have proved they are much less sensitive to downturns than anyone thought, while any company that's not on a digital trajectory puts its investors at risk. Put another way: If you want to make money in today's market, why own anything but technology stocks? "A lot of these technology companies have become the consumer staples of today," says Sonu Kalra, manager of the $48.4 billion Fidelity Blue Chip Growth Fund. "They've become an ingrained part of our lives." Besides Amazon, Kalra has recently bought more of big tech companies including Apple, Alphabet, and Facebook. Those four stocks, plus Microsoft, are the "FAAMG" companies, which went on a tear in 2020 that left them accounting for almost a quarter of the market capitalization of the S&P 500 by year's end.

Still, with most FAAMG companies valued at upwards of $1 trillion apiece, the math just makes it harder for them to continue delivering the multibagger returns investors strive for. That's why growth-oriented investors are now looking for gains from a younger generation of companies that are similarly promising to change the way we live and work, from finance to entertainment. Starting from a smaller base than the tech giants, these companies in the U.S. and abroad have more potential to get a lot bigger—but in many cases, their stock prices haven't, shall we say, zoomed quite as much over the past 12 months.

Indeed, with many tech stocks already trading at all-time highs, money managers are looking past valuations and prizing solid balance sheets over bargains—particularly as risks abound with much of the economy (notably, travel and hospitality) still in tatters. "Pretty much every good company trades at a high valuation today," says Lippert. Rather than reshuffling their

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portfolios for an economic recovery in 2021, investors are wagering on continued growth of innovative companies (which may still accelerate as the coronavirus wanes). “We believe winners can keep winning for a very long period of time,” says Rebecca Irwin, comanager of the PGIM Jennison Focused Growth Fund, which was up more than 67% last year.

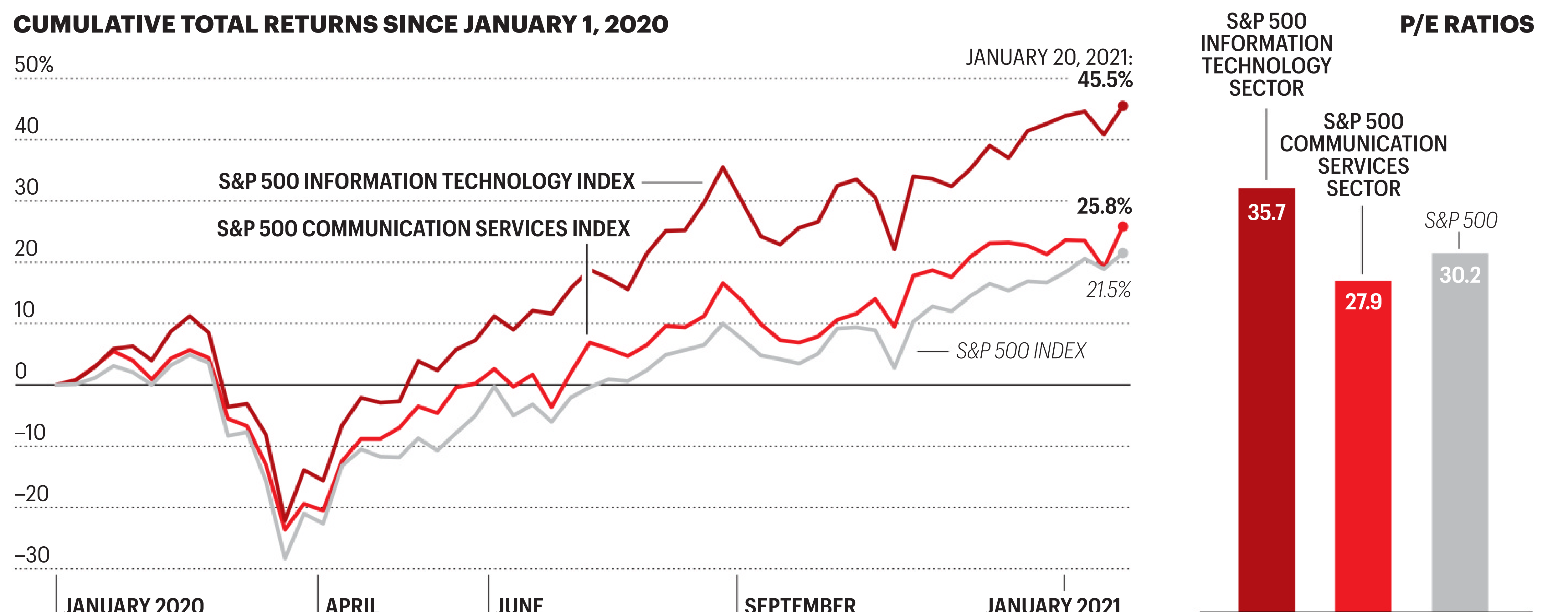
Lippert of Baron Opportunity has been paring his highest-fliers while building up positions in other stocks that have gone relatively overlooked. “We love Zoom Video, but they’re not going to grow as fast in 2021 as they did in 2020; it’s literally impossible,” he says. Lately he’s been buying cloud companies, including **Guidewire Software (GWRE, $126)**, which is digitizing the property and casualty insurance industry. Guidewire and some other enterprise tech companies lagged the sector last year as their clients put big software deals on hold. But Lippert thinks such stocks will thrive over the next four years as corporate spending bounces back. “I’m not arguing these are cheap companies,” he says, “but I believe we can make double-digit long-term returns.”

Alan Tu, manager of the $8.8 billion T. Rowe Price Global Technology Fund, which returned more than 75% last year, has been sorting out “COVID winners” from what he calls “COVID impostors”—companies whose success will fade with the coronavirus. In the winning camp he puts **Twilio (TWLO, $393)**, the company behind those text messages alerting you when your Uber is outside, your takeout order is ready for pickup, or it’s time to vote for your candidate. Twilio’s stock price more than tripled in 2020, valuing it at $60 billion, but “you can kind of get this feeling that we’re just scratching the surface, now that this digital relationship has been established,” says Tu.

Likewise, Fidelity’s Kalra thinks certain quarantine-inspired behaviors will last even when people go back to offices. That’s why he recently stocked up on **Wayfair (W, $294)**, the online furniture and decor retailer. “My sense is that my appreciation for my house will continue post-pandemic as well,” he says. Those new homeowner habits, shared across the white-collar workforce, are fueling other changes at Wayfair: The e-commerce company turned its first profit in the second quarter of 2020

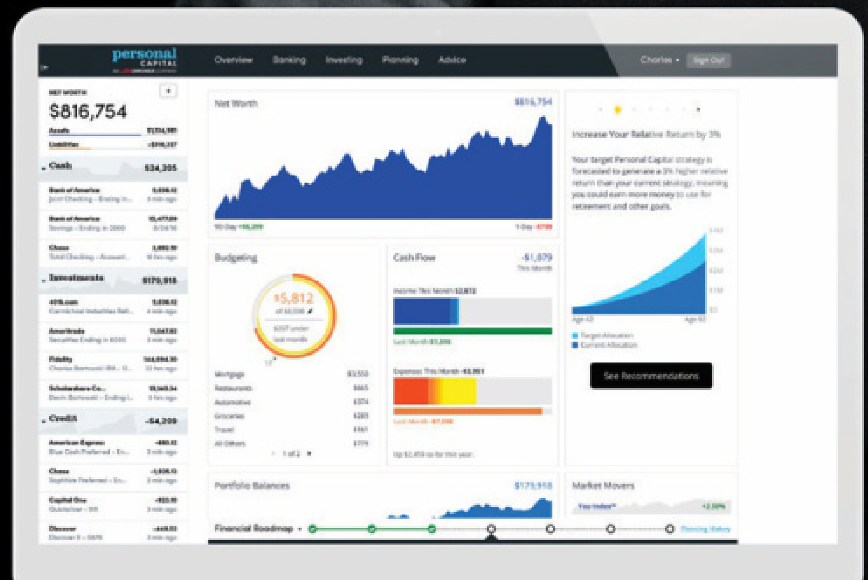
MORE ROOM TO RUN

The economy’s most tech-heavy sectors had a blistering 2020, but their share-price valuations aren’t far out of line with the rest of the stock market.



SOURCES: BLOOMBERG; S&P DOW JONES INDICES. P/E RATIOS BASED ON TRAILING 12-MONTH EARNINGS AS OF 1/19/21

personal
CAPITAL
AN EMPOWER COMPANY



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and has continued the streak since.

Other companies that survived the pandemic with minimal damage will likely also get a boost as normality returns. Natasha Kuhlkin, comanager of the PGIM Jennison Focused Growth Fund, is fond of **Match Group (MTCH, $148)**, which owns more than 40 online dating communities serving demographics that range from Gen Z through senior citizens. While roughly 40% of heterosexual couples now meet online (up from 5% two decades ago), according to a 2019 Stanford study, that share is still increasing. Kuhlkin estimates Match's revenue grew nearly 20% last year, despite the damper that masks and contagion put on dating (thanks in part to new in-app video features). There should be even more potential when romance reverts to being a less dangerous undertaking: "We do expect some reacceleration," says Kuhlkin.

"A LOT OF THESE COMPANIES HAVE BECOME THE CONSUMER STAPLES OF TODAY. THEY'VE BECOME AN INGRAINED PART OF OUR LIVES."

Eventually, couples will want somewhere to go on dates again, which is one reason why Dan Chung, CEO and chief investment officer of Alger, sees opportunity in restaurants, particularly those that have leaned into online ordering. Digital orders now make up nearly 60% of sales at **Shake Shack (SHAK, $108)**, where overall sales were actually 4% higher in the final quarter of 2020 than the year earlier—despite the fact that many of the burger joint's locations remain closed. Even if online ordering shrinks to half its current proportion once people can dine out again, "it's going to be 30% of a company that's growing really rapidly," says Chung.

Underpinning restaurants' and other shops' ability to shift so quickly to e-commerce are the digital payments companies. But e-commerce payments are just one part of the business at **Square (SQ, $227)**. Irwin of PGIM Jennison is excited by the explosion in use of Square's Cash App, which enabled people to receive their stimulus checks digitally as well as trade stocks and Bitcoin on their phones. "I don't think you'd see us owning a traditional financial institution—they just don't have the growth prospects that really intrigue us," she says.

With the world's gaze on vaccines, no tech portfolio would be complete without technology-driven health care companies. Alger's Chung is investing in a handful of companies that supply the tools and materials to develop mRNA-based drugs, a therapeutic technology rich with research potential after the success of vaccine makers like Moderna. Chung describes his focus as "the picks-and-shovels way to play this, as opposed to trying to bet on which miner will hit gold" by buying pharmaceutical companies. He owns Massachusetts-based **Repligen (RGEN, $217)**, whose equipment is used to produce and test biologic drugs, as well as Minneapolis firm **Bio-Techne (TECH, $357)**, which supplies antibodies and reagents to pharmaceutical labs. "We sometimes call these compounders," Chung says. "This isn't going to be the fastest-growing company in the universe, but we think it's going to continue to be a nice, steady growth company for a number of years."

For other steady-growth tech companies, look no further than China, the only major economy that managed to expand in 2020. The pandemic sped up the shift to e-commerce even more acutely there, where a lack of major chain retailers combined with a dearth of storage space in small homes has long necessitated more frequent store runs—a particular inconvenience given heavy traffic congestion and then, the virus, says Fidelity's Kalra. "So when you put all those things together, the benefits of e-commerce are actually greater in China," he says. Besides shopping giant **Alibaba (BABA, $265)**, he's been buying lesser-known **Pinduoduo (PDD, $171)**, a growing e-commerce seller in China's midsize cities. (Pinduoduo, whose share price nearly quintupled last year, in August replaced venerable Silicon Valley data-management company NetApp in the Nasdaq 100.)

For a counterpart in Latin America, Irwin favors the region's largest e-commerce player, Argentina-based **MercadoLibre (MELI, $1,984)**, which has also built a fintech business for paying and lending that's flourishing in places like Brazil.

T. Rowe's Tu, meanwhile, is betting on Singapore's **Sea (SE, $233)**, a major e-commerce force in Southeast Asia that also makes a viral video game akin to Epic's *Fortnite,* as well as (what else?) a digital payments business that has taken off during the pandemic. There's a reason the NYSE-listed stock is now Tu's top holding, right above Amazon. "A company like Sea has elements of Amazon in its earlier years," says Tu. Investors would be smart to own both. ■

SECURING THE FUTURE OF AIR TRAVEL

Automated and artificially intelligent security systems are helping aviation leaders fast-track growth and innovation.

FAST, FRICTIONLESS SECURITY solutions that maintain high threat detection while speeding people and goods to their destinations are the future of transit. Underscoring the industry's growing push toward smarter airports, the Transportation Security Administration (TSA) has ramped up technology deployments by more than 270% since March 2020 alone.

"The aviation industry was already embracing seamless and contactless solutions before the pandemic, which has only served to accelerate this ongoing trend," says Jim Moos, president of the Civil Group at leading technology and security provider Leidos. "Going forward, it will only become more important for transportation leaders to embrace digital transformation by making travel experiences more touchless, automated, and intuitive."

Top security providers like Leidos are already helping speed up this transition by offering automated passenger-screening capabilities, hyper-accurate computed tomography (CT) image scans for baggage scanning, and fully sanitized automated handling of antimicrobial trays. Innovations like these simplify airport traffic patterns and workflows while minimizing manual pat-downs and false alarms. But in the near future, growing leaps in artificial intelligence (A.I.) and automation being pioneered by companies like Leidos will also increasingly allow passengers to self-identify and self-screen, without even stopping at security checkpoints.

"Airline leaders are increasingly looking for ways to decrease operating costs while improving security, just as passengers are putting an ever-growing premium on accessibility, safety, and convenience," says Moos. "By leveraging A.I. and machine-learning capabilities to quickly screen passengers and optimize productivity, our systems offer all of the pieces needed to deliver a seamless air travel experience." ■

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Since March, Tito's has produced and donated more than 1,155 tons of hand sanitizer to communities across the country.

LEADING BY EXAMPLE

In 2020, corporate America let its core values guide its strategy, and made a real impact in people's lives.

THE CORONAVIRUS PANDEMIC PLUNGED America into the worst public health and economic crises in living memory. As businesses large and small shuttered, or transformed in record time to stay afloat, hospitals became overcrowded, supplies dwindled, and millions of people retreated to mandated isolation, corporations in every industry confronted the enormity of the situation.

This demanded a great deal of introspection from corporate leaders. How could they ensure the safety of employees and customers in this new world? How could they help their communities and the people on the front lines of the pandemic? For many, it came down to a simple tenet: Do good, wherever you can.

"When doing good is something that is ingrained in the culture, something that the team feels empowered to do, it's amazing to watch not only the collective good that comes from that, but the meaning and purpose it brings to the team—especially now," says Amy Lukken, joyologist and head of philanthropy at Austin, Texas–based vodka brand Tito's Handmade Vodka.

Across the nation, the philanthropic responses to COVID-19 have shown corporate America at its best. In fact, seven in 10 U.S. corporate funders increased their charitable contributions in response to the coronavirus pandemic, according to a recent report from the Charities Aid Foundation of America. From local giving and food drives to the development of diagnostics and vaccines to pivoting production lines to make personal protective equipment, corporate philanthropy and action have been widespread and agile.

In March, as the world scrambled to find ways to prevent the spread of the virus, the Alcohol and Tobacco Tax and Trade Bureau authorized the production of ethanol-based hand sanitizers by permitted spirits distillers. Tito's stepped up to redeploy a portion of its distillery production lines to manufacture a much-needed supply, as well as to distribute it to communities in need. To date, the company has donated more

Austin through and through.

1995. After no one would invest in Tito's idea, he put it all on credit cards and built his own distillery in this shack on twelve Austin acres.

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7 in 10

U.S. corporate funders increased their charitable contributions in response to the coronavirus pandemic.

RIGHT: Volunteers from Wesley Financial Group delivered food and toys at the annual "Christmas on Monroe" event in Nashville—a community hit hard by tornadoes and the pandemic last year.

than 1,155 tons of hand sanitizer to critical frontline workers in 48 states and to the public via community giveaways.

"Within the first few days of announcing production, thousands of organizations reached out to us in need," says Taylor Berry, vice president of brand marketing at Tito's. "We would call, tell them we could get them whatever they needed, and then we'd hear joy and relief on the other end of the line. It was extremely meaningful for our entire team to be able to help in that way."

In addition to a plunge into hand sanitizer production, the company donated millions of dollars to nonprofit organizations, like Children of Restaurant Employees (CORE), the United States Bartenders' Guild, Southern Smoke, World Central Kitchen, and the National Restaurant Association Educational Foundation, that provided assistance to service industry workers as well as hundreds of local nonprofits in communities across the country assisting with COVID-19 relief efforts.

Tito's donated $1 million to the Baylor College of Medicine to research a low-cost, global vaccine for COVID-19, which is currently in phase II of safety trials in India; gave a $2.5 million grant to the University of Texas at Austin COVID-19 Modeling Consortium, which is working to help map the spread of COVID-19 and improve preparedness for future pandemic threats; and put $400,000 toward funding the development and production of 500 ventilators for immediate use in Central Texas.

Another firm that made a significant impact in 2020 is Wesley Financial Group, LLC, a Franklin, Tenn.–based consumer advocate that specializes in timeshare cancellation and timeshare debt elimination for individuals and families. Founder and CEO Chuck McDowell named the company for John Wesley, the founder of the Methodist Church, after one of his quotes stuck with him: "Do all the good you can, by all the means you can, in all the ways you can, in all the places you can, at all the times you can, to all the people you can, as long as ever you can."

"That quote is pretty much how and why we do what we do," McDowell says. "It's a personal thing for me, and I try to make it a personal thing for all of our employees too."

Putting those words into action, in 2020 McDowell personally donated more than half a million dollars directly to families and local churches in Tennessee. And he set an example for the rest of the company; employees managed to raise tens of thousands of dollars for local charities and people in need through individual efforts and corporate initiatives. Wesley Financial Group also stepped up its charitable work significantly in the wake of the pandemic. The firm took on pro bono cases for 114 families to help them get out of timeshare commitments they could no longer afford. They increased their support of nonprofits like the Jason Foundation, Inc., which is dedicated to the prevention of youth suicide. According to McDowell, supporting the organization was even more important this year because of the widespread depression that has resulted from job loss and isolation. McDowell is also establishing a foundation that will raise money to help small businesses weather this economic storm, with a jump-start from a personal donation of $500,000.

The global pandemic created an opportunity for companies to put their core values on display for the world to see, and much of corporate America stepped up to the challenge. Now, as we continue to create a path forward, it's clear that the purposeful leadership spurred by the pandemic is here to stay. ■

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-Mark & Vickie—Wesley Financial Group, LLC clients

COLD-BLOODED

ELON MUSK IS NOT ABOUT TO LET A FEW ENDANGERED REPTILES THROW A WRENCH INTO TESLA'S PLANS FOR A GERMAN GIGAFACTORY—AND EUROPEAN DOMINATION.

BY VIVIENNE WALT

IN LATE 2019, TALKS WERE BREWING in Berlin over a multi-billion-dollar deal so secret it needed its own code name—one that evoked the cloak-and-dagger espionage of the city's old Communist days: Project Anushka. "Everyone thought it must be related to Russia," says Axel Vogel, Minister of the Environment for the state of Brandenburg, home to the German capital.

As it turned out, no Russians were involved. Instead, in November of that year, Germans finally learned who was behind the biggest investment the country had seen in decades: none other than Elon Musk.

"We'll see you more often in Berlin," Musk gushed that November night as he took the stage to accept an industry award, and then stunned the audience by announcing a massive new factory in the city. "I love Berlin. It's great!"

Project Anushka was a reference to an old Soviet biplane in which German officials had whisked the Tesla CEO over the proposed site for the company's newest Gigafactory. The flyover was an edgy, stylish touch aimed at winning over an

LIESA JOHANNSSEN-KOPPITZ—BLOOMBERG/GETTY IMAGES

GO BIG OR GO HOME: Tesla's massive new Gigafactory going up in Grünheide, Germany, sprawls over more than 4.8 million square feet.

exec known for his edgy style. "Giga Berlin" as Musk calls the factory, will be the living embodiment of that persona. "It will be cool and fun," he told *Fortune* in a long interview in late January, wherein he laid out his vision for a huge push into Europe. "I'm aiming to have it be a real gem."

German officials had strong motivation for wooing Musk: His plan is epic. In a largely forgotten area of former East Germany, about 20 miles from the capital, Musk is racing to finish a vast facility capable of turning out, beginning as early as this summer, European-built Teslas—at a pace he expects will reach 500,000 cars a year by 2023. Musk also plans to add a battery factory that will be "the biggest by far in Europe, and one of the biggest in the world," he says.

No less important is the flood of new jobs the factory will bring to the region, beginning with "at least 20,000 people," he says, and rising over time to about 50,000 hires.

But as Musk has learned, the smallest of details can complicate the biggest of deals—and trip up even a man who has sent rockets (and his company's stock price) into the stratosphere.

As construction began on the factory last June, many living nearby expressed huge excitement that one of the world's most valuable companies had handpicked their backyard to launch its big move into Europe.

Yet not all locals were thrilled. Public hearings in October drew angry testimony, with a transcript that runs to 1,233 pages. Tesla's fourth factory, after California, Nevada, and Shanghai, sits on 750 acres in Grünheide, an exurb of Berlin with a population of 9,000, amid pine trees local authorities planted in the 1940s, hoping to sell them as lumber. Vogel says the area is now home to "people who want to spend quiet retirement or raise their children in natural areas," many of whom feel their lifestyle is "threatened" by Tesla's arrival.

But the greater threat has been to creatures far less visible: two endangered species, the sand lizard and the smooth snake. For decades,

MUSK'S WILD LIFE: An endangered sand lizard (left). Musk holds court with journalists outside the Gigafactory site in September.

NICOLAS ARMER—PICTURE ALLIANCE/GETTY IMAGES

the animals have burrowed in the woodlands around Grünheide, an increasingly precious respite from the encroaching human world. Immediately after Musk's 2019 announcement, environmental groups sued Tesla for endangering the reptiles, as well as the rare western barbastelle bat. All are protected under strict nature conservation laws, which prohibit construction that might harm listed wildlife. Musk admits he was amazed there were reptiles on the site. "I think this is not a fun place for a snake or lizard," he says. "They will be very, very cold. Frozen!"

In February of last year, a court order mandated that Tesla suspend building until it had a plan to save the wildlife on the land and relocate the lizards and snakes. Tesla offered to plant three times the number of trees it was planning to obliterate, but the legal challenges persisted. In December Tesla was twice ordered by judges to stop felling trees, because it could kill reptiles still alive on the site. As of late January, work was continuing.

For all the controversy, there appears to be no stopping Tesla's Gigafactory. "The total investment is very, very substantial," Musk says. "And we will continue for quite some time." Tesla's building application estimated the factory construction would cost a billion euros. And for politicians, the influx of new jobs is crucial for a region that suffered a disastrous brain drain after the collapse of Communism. "Almost a whole generation left from East to West," Brandenburg's Economic Affairs Minister Jörg Steinbach tells me. Thanks in part to Tesla's arrival, he says, "we are turning the wheel around 180 degrees." Musk says he intends to make the factory a tourist site, a "beautiful" tech showcase heavily powered by wind and solar. Being on the edge of Berlin is crucial, he says, to luring thousands of top engineers: "We are recruiting from across Europe."

But to environmentalists, officials have simply traded nature for business interests. "They saw all the advantages and ignored all the disadvantages," says Christiane Schröder, managing director in Brandenburg for the Nature and Biodiversity Conservation Union, one of the organizations that sued Tesla for endangering the animals.

Rescuing the reptiles from Tesla's bulldozers has required months of painstaking planning. "It is very, very difficult," says Jens Frayer, a professional lizard catcher for German conservation company Natur und Text, which is searching for animals living on the company's land.

Even in the best of times, Germany's indigenous *Coronella austriaca* snakes and *Lacerta agilis* lizards wage an all-out battle against the elements. Those that survive the cold, wet weather are often eaten by crows; an eight-year life span is rare. These are hardly the best of times. As Tesla began its frenzied build-out, so Frayer scrambled to save the reptiles, a task he says requires immense patience and well-honed skills. "Both the snakes and the lizards have camouflage," he says. "First we have to train people to see them. And then we have to train people to catch them."

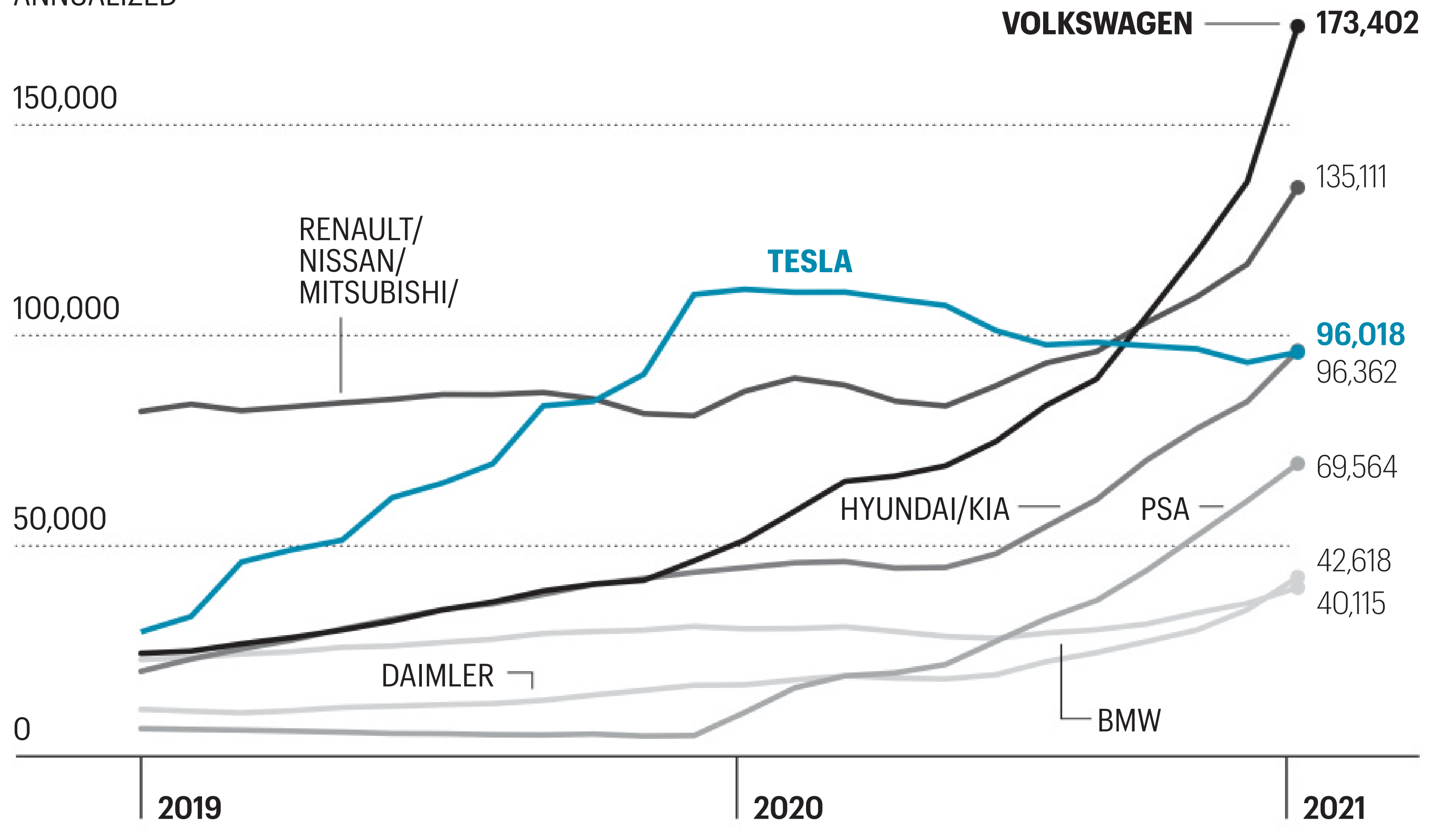
The railway tracks on Tesla's land, which sit atop piles of small rocks, are a favorite and frustratingly effective hiding place for the creatures. "The snakes can hear and feel when you're near," Frayer says. "You will never see them." In the end, the team built black plastic boards to

MUSK'S EUROPEAN TOUR

Tesla dominates the worldwide electric-vehicle market, with about 18% of total sales. But the company's primacy is slipping in Europe.

NEW REGISTRATIONS FOR ELECTRIC* PASSENGER CARS IN WESTERN EUROPE

ANNUALIZED



* WITHOUT SECONDARY SOURCE OF PROPULSION   SOURCE: SCHMIDT AUTOMOTIVE RESEARCH, 12-MONTH MOVING AVERAGE, 18 NATIONS COVERED

PATRICK PLEUL—PICTURE ALLIANCE/GETTY IMAGES

soak up the sun, coaxing the animals out as they searched for warmth. After 28 days of work, the team of four trackers caught just 17 lizards and 14 snakes.

Dozens are still hiding. "We don't know how many are still there," Frayer says. "We will have to continue in the spring."

By then, Musk says, the factory will be almost ready to roll out its first German Teslas—engaging in its own high-stakes battle against the country's cherished auto industry. German automakers, including BMW, Daimler, and Volkswagen, together produce about 5 million vehicles a year and hire more than 800,000 people, representing the country's single biggest industry.

Taking on that entrenched powerhouse will not be easy, even for Musk.

So far, Tesla has benefited from the slowness of German competitors to electrify their fleets en masse. But in 2020, Volkswagen finally sold more battery-powered vehicles in Europe than its upstart competitor. While Tesla's software capabilities remain superior, the Germans have spent decades building out giant factories and delivery systems, which Tesla is now creating there from scratch. What's more, the old-style automakers are under increasing EU pressure to shift away from fossil fuel. "Tesla did a terrific job entering the EU market, but it was against an empty playing field," says Matthias Schmidt, an industry analyst in Berlin. "Now they have much greater competition."

"TESLA ENTERED THE EU AGAINST AN EMPTY PLAYING FIELD. NOW THE COMPANY HAS COMPETITION."

Musk insists he is delighted by the growing rivalry. "The mission of Tesla is and always has been to accelerate sustainable energy," he says. Even so, to maintain its position as the world's leading electric-car maker (now controlling about 18% of the global market), Tesla will need to win in Europe. Musk believes that long-term success requires a stronghold in North America, China, and Europe. Without all three, he says, "you simply cannot achieve economies of scale."

Also ahead are likely battles with the powerful auto unions. Under German law, union officials occupy seats on auto companies' supervisory boards—a jolting contrast from the U.S., where Tesla has fought off workers' attempts to unionize.

Musk seems reluctant to change his stance at Giga Berlin. He says workers would want to unionize "only if we are doing something wrong and I am not properly seeing to their needs." Birgit Dietze, Brandenburg director for the IG Metall industrial union, which has 2.4 million members, says she expects Tesla to abide by Germany's labor laws, including a minimum of 24 vacation days a year and guaranteed overtime pay.

For all that, Musk sees a key opportunity in the EU's single market of about 450 million people. He says he will also open a car-design center in Berlin, tapping into the country's deep experience. "The best cars are made in Germany. Everyone knows that," he told the Berlin audience that night in 2019. He went on to recall the skepticism when Tesla launched in 2003 as the world's first maker of all-electric cars. "Everyone thought we were huge fools," he said, laughing. "I thought we were fools too, frankly."

Today, no one is laughing. Beginning this summer, sleepy Grünheide will bring another huge expansion to Tesla. Less clear is whether the lizards and snakes will fare as well. ■

DK Bartley
Chief Diversity Officer
Moody's

MAKING DIVERSITY AND INCLUSION A BUSINESS IMPERATIVE

How **Moody's** is listening, looking forward, and adapting in order to thrive.

FOR MOST BLACK PARENTS, HAVING "THE TALK" with their children about how to interact with police officers is an unfortunate, yet necessary, coming-of-age moment. It doesn't matter where you live, what your job is, or how much money you make. While Black families have been dealing with this issue for years, the killings of George Floyd, Breonna Taylor, and Ahmaud Arbery last spring brought the issue to the forefront for millions of other Americans on a scale that no one—including businesses—could ignore.

A pivotal moment for the global risk assessment firm Moody's took place at a companywide town hall meeting following the racial unrest this past spring. One of Moody's Black managing directors shared her own story about having "the talk" with her children. While she had achieved a great deal of success at her job, she said, it hadn't insulated her and her family from the dangers of systemic racism in America.

"I think it opened up a lot of employees' eyes," says DK Bartley, Moody's chief diversity officer. "At Moody's, we provide a safe space and see each other as equals. But the minute you step [outside these] doors, society may not care if you work at Moody's."

The solutions to the complex racial challenges facing this country are neither simple nor quickly achievable—and the first step toward making real progress is acknowledging that. At Moody's, an understanding of the nuances involved has led to a multipronged, ongoing effort to promote greater diversity, equity, and inclusion (DEI). This work is motivated both by a sincere desire to do the right thing—and an understanding that it's a necessity for responsible business.

According to Jinny Jeong, manager, Chief Executives for Corporate Purpose (CECP), 2019 data from CECP's *Giving in Numbers 2020 Edition* report shows that 93% of companies say that their measurement practices for DEI were either steady or on the rise. When CECP asked similar questions in a pulse survey of affiliated companies in spring of 2020, 73% of companies said that they expect

their DEI budget for next year to increase. These numbers are proof that Moody's mission reflects a larger trend in the corporate world. But Bartley stresses that Moody's efforts also address an even bigger picture.

"For us, diversity and inclusion are a business imperative. It's not just something that's nice to have; it is a must-have," he says. "We want to show our authentic commitment to advancing Black culture, and show how focusing on Black talent is an asset to our organization globally."

To Bartley's point, Moody's has partnered with the Executive Leadership Council, the premier organization for developing Black executives in America, to launch the Raymond McDaniel Scholarship Program for college students. The five-year, $1 million program, named for Moody's recently retired CEO, will offer recipients an internship at Moody's beginning their sophomore year and, upon graduation, a job that allows them to rotate between different sectors within the company. After two or three years, they will be evaluated for a permanent role.

This program will help young Black talent find professional opportunities at Moody's—and it will also help Moody's find promising and diverse new talent. The hope is that when scholarship recipients return to their campuses, they will tell their peers about the culture of inclusivity at Moody's, which will help diversify Moody's applicant pool in the future.

Moody's also understands the importance of community initiatives. In June, the company announced a $1 million commitment to support equal justice and the advancement of Black communities over the next five years. The effort was launched with a $100,000 donation to the Equal Justice Initiative (EJI), which is committed to challenging racial injustice in the United States. And to ensure that Black voices within the company are heard, donations will be made in consultation with Moody's Black Inclusion Group.

Additionally, Moody's has joined some of the world's largest companies as a participant in the Management Leadership for Tomorrow (MLT) Black Equity at Work Certification, which provides an objective third-party assessment of employers' efforts to move toward achieving Black equity.

The MLT certification road map helps companies achieve the same results-oriented success in Black equity as they do in other aspects of their business. Focusing on the three P's—People, Purchasing, and Philanthropy—the program provides actionable benchmarks, best practices, and insights that companies can use to achieve genuine racial equity across all levels of their corporate structure.

"As we go on this journey, we're providing a level of transparency, and putting a level of certification around it, to say what you're doing is the gold standard," says Bartley.

For Moody's, supporting Black employees is a cornerstone of its effort to support diversity and inclusion among everyone who works for the company. For example, the Raymond McDaniel Scholarship Program can serve as a model for future DEI-related initiatives that will improve the company's talent pipeline among other underrepresented groups, such as women, veterans, and people with disabilities, as well as in the LGBTQ+ and Latinx communities.

"There is this very continuous, purposeful, and engaging conversation around not just the Black experience but diversity at all levels," Bartley says. "DEI is in our corporate DNA."

As a company built on data and analysis, Moody's is used to finding objective, actionable ways to address complicated issues. Corporate DEI is no different.

"Just like we train employees on a skill set or a methodology, we're training them on diversity and inclusion," Bartley says. "We believe that by doing that consistently, we will deliver exponential benefits." ■

MOODY'S

In 2020 Moody's Black Inclusion Group (B.I.G) hosted a series of events to educate employees and celebrate Black History Month.

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WHAT COMES NEXT

HERE'S WHAT'S AHEAD FOR BUSINESS, FOR THE ECONOMY, AND FOR THE BATTLE AGAINST COVID-19.

THE ECONOMY

TAKING THE LEAD AT TREASURY

Former Fed chair Janet Yellen has an ambitious agenda at the Treasury Department. A look at her top priorities. PLUS: Meet the rest of the Biden team's new economic power players.

CYBERSECURITY

THE HACK THAT SHOULD CHANGE EVERYTHING

After the massive SolarWinds breach, the U.S. needs a new approach to untangle its cybersecurity mess. Here are four ways to fix the system.

BANKING

TURNING THE WELLS STAGECOACH AROUND

Wells Fargo CEO Charlie Scharf believes that the beleaguered bank is ready to leave its troubled history behind. Investors have their doubts. PLUS: The outlook for big banks.

THE HEARTLAND

HAWKEYE HEARTBREAK

Iowa was already staggering from a combination of COVID-19 and political discord when a massive storm tore across the state, leaving devastated farms and communities in its wake. What will it take to rebuild?

WHAT COMES NEXT

BY BRIAN O'KEEFE

Coping With the New Normal. Are you feeling optimistic, or anxious? If the answer is 'both,' you're ready for 2021.

You've heard the phrase roughly 10,000 times by now. There's no doubt the expression has been popping up in your inbox regularly. It's very likely, in fact, that you've said it yourself more than once: "The New Normal."

Sure, it's catchy and alliterative. And it taps into the sense of dislocation that we all feel after a year of uncommon upheaval, sacrifice, and, for many, forced isolation. But what, exactly, does it mean?

"There is this almost religious fervor with which we talk about the new normal," says Amy Webb, the founder and CEO of the Future Today Institute, a management consulting firm. "And I've been curious for a while now: What is driving us to seek that out? And I don't actually think the answer is that people want to know what the future is so they can plan for it. I think, instead, that desire to know the new normal is really our collective desire to have things stop changing so much."

The psychological imperative to slow down and normalize the path forward is a perfectly understandable response to the jarring turbulence of the past year. Most disruptive of all, of course, has been the SARS-CoV-2 virus, which has already infected some 100 million people around the world and taken the lives of more than 2.1 million. The pandemic has exacted an enormous economic toll, but it has also accelerated the development of new technologies and transformed the dynamics of how we work and live, introducing variables that are hard to predict long term.

As much as we might like to hit "pause," however, it's not really an option. If anything, the need to understand what comes next—for business, the economy, and our collective battle against COVID-19—is more urgent than ever. And the key to understanding may lie in this insight: After the turmoil of the past 12 months, some things are now permanently New; some things are still Normal; and the challenge is to recognize and navigate between the two.

For a case in point, look no further than the election of President Joe Biden. He's a lifelong centrist, a self-consciously traditional pol who might as well have "Normal" silk-screened on his hygienic face masks. But the fact that the Democrats now have narrow control of both houses of Congress for at least the next two years is undoubtedly New: It's a power shift with ramifications for Wall Street, global trade, and our relationship with China. That it follows the most contentious election in contemporary times, marked by the outgoing President's desperate attempt, through misinformation, to reverse the results of an election he lost definitively, only adds to our anxiety about this New moment.

The reboot in Washington is absolutely top of mind for Ian Bremmer's clients. The founder and president of the Eurasia Group, a political risk consulting firm, says that every customer wants to know, "How different is Biden? How much can he govern? Is the U.S. actually facing some structural challenges that are deeper than we thought?"

Wall Street appears to be betting that life under Biden will be the best kind of Normal. From Election Day through Biden's inauguration on Jan. 20, the S&P 500 rose 14.3%. In fact, the Biden boost was more than twice as strong as the Trump bump from four years ago, when the S&P rose

6.2% in the same span. For now, it seems the market is shrugging off any concerns about onerous new regulation or tax increases. Meanwhile, it almost appears as if the big banks are competing to issue the most bullish GDP forecast: JPMorgan Chase predicts the U.S. economy will grow 5.8% in 2021. Morgan Stanley sees 6.4%. And Goldman Sachs is forecasting 6.6%. That's a lot of pent-up demand, a belief that consumers will get Normal with a vengeance.

Much of the confidence, of course, stems from the early rollout of highly effective vaccines—developed, in a New way, at record speed—to counter COVID-19. (For insight into Pfizer's successful effort, in partnership with BioNTech, see "The Conversation" in this issue.) After a bumpy start, the vaccination distribution effort in the U.S. is picking up speed, even as the virus mutates and becomes more infectious. President Biden first announced a goal of distributing 100 million doses of vaccine in his first 100 days in office; by late January, he was pledging the U.S. would have enough doses for 300 million Americans by the end of summer.

In international relations, the New Normal may in fact resemble the Old Normal. The Biden administration will move quickly to smooth over ruffled relationships with key allies. A return to a less disruptive style of diplomacy in trade negotiations and the restoration of a globalist mindset in the White House add up to a predictability that business can embrace.

Still, there are stiff challenges ahead: The pandemic has only deepened and highlighted the problem of income inequality in the U.S. And it has further disrupted the ecosystem of business, as thousands of small enterprises have closed even as corporate behemoths, particularly the tech giants on which we're increasingly dependent, have surged.

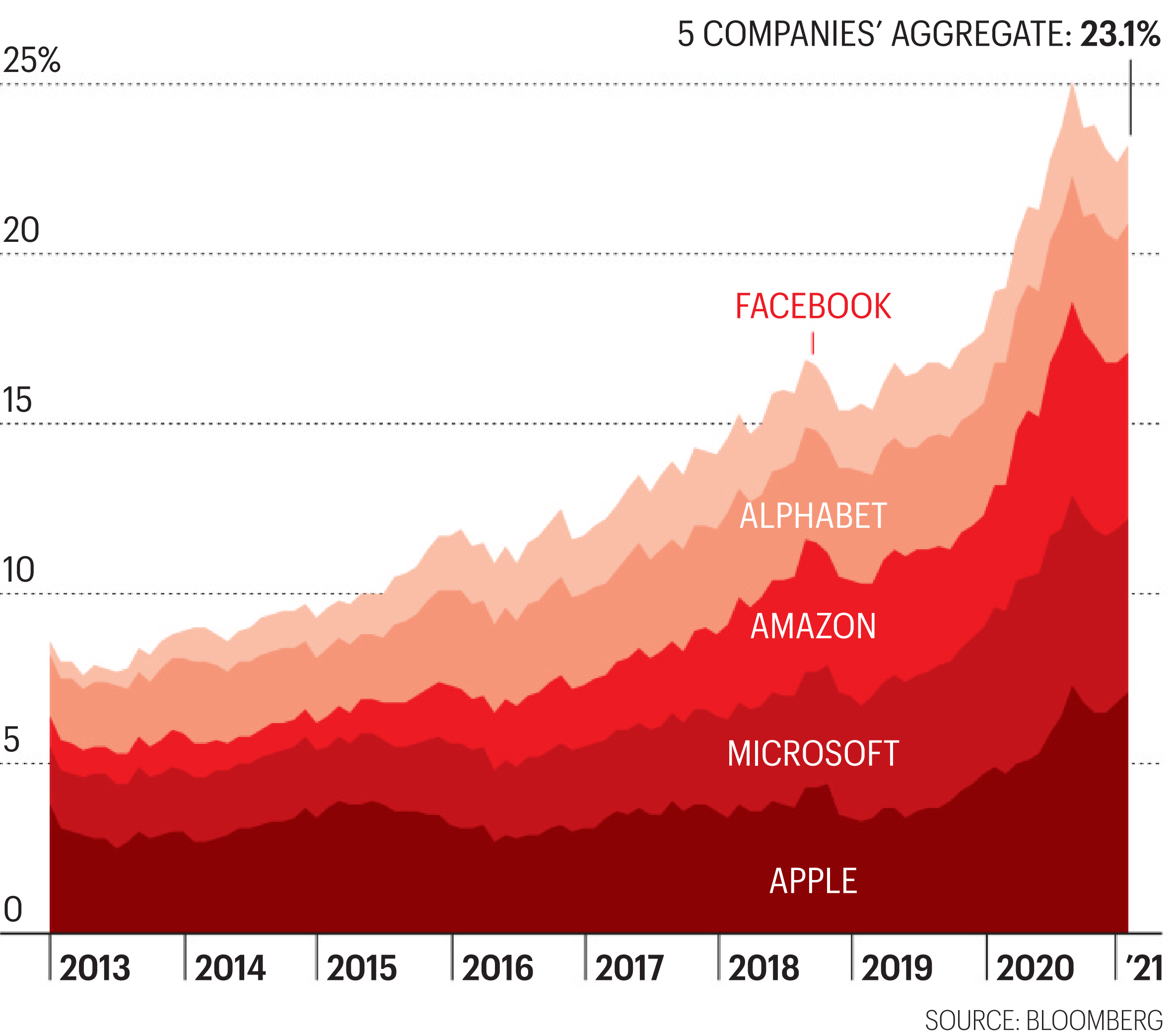
Technology has been our salvation as we've muddled our way through the pandemic. During lockdowns, it has allowed us to Zoom with colleagues, to binge-watch, to shop our looks online, and to socialize in isolation. But to many, this New doesn't feel Normal. Regulators, elected officials of both parties, and consumers are getting a little uncomfortable with Big Tech's heft and sway. In January, a *Fortune* and SurveyMonkey poll found that 64% of U.S. adults would like to see the federal government investigate at least one large tech company for antitrust violations. (Google and Facebook are already on the docket.)

Bremmer believes that the actions of the social media companies to "deplatform" President Trump in his final, dark days in office add an unexpected dynamic to the debate. In the eyes of Republicans, he says, tech regulation is now a partisan battle. "The tech companies are suddenly all in on the Democratic side, whether they like it or not," says Bremmer. "I can't remember a time when the most important companies in the U.S. economy were going to be in such a partisan battle with one political party." It may not be Normal, but it's definitely New.

THEY'RE BIGGER; WE'RE BITTER

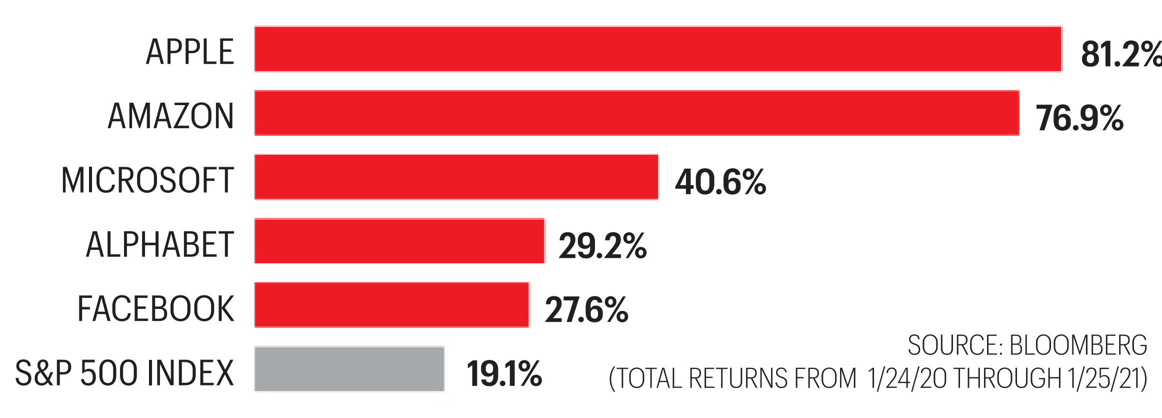
ONCE A SOURCE OF PRIDE, THE ROARING GROWTH OF TECH'S "BIG FIVE" HAS BECOME FOR SOME A SYMBOL OF ECONOMIC INEQUITIES AND AN UN-LEVEL PLAYING FIELD.

BIG TECH AS A SHARE OF THE S&P 500 INDEX



SOURCE: BLOOMBERG

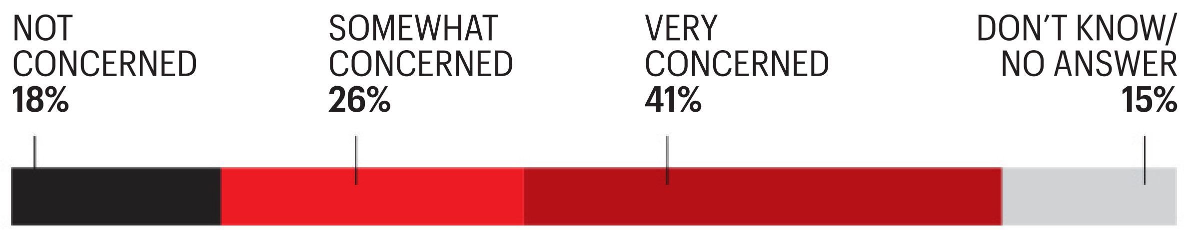
1-YEAR RETURNS FOR TECH STOCKS



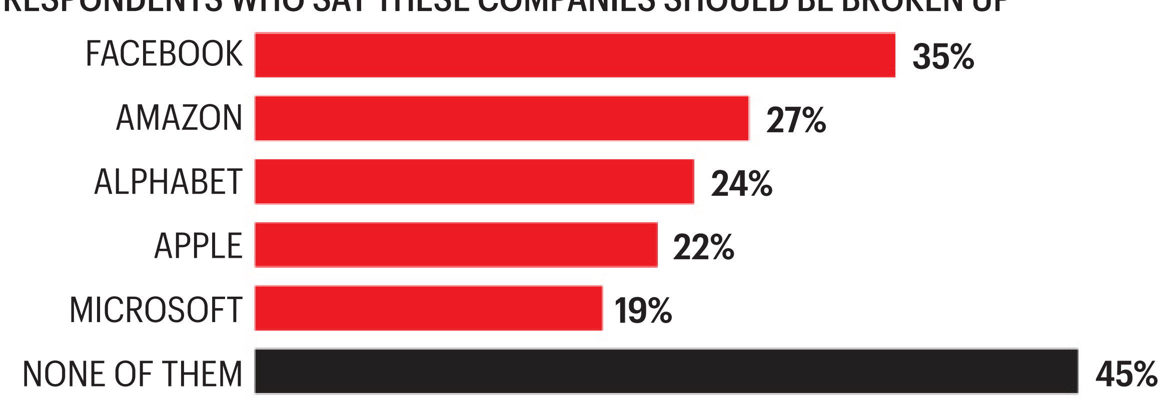
SOURCE: BLOOMBERG (TOTAL RETURNS FROM 1/24/20 THROUGH 1/25/21)

AMERICANS' OPINION ON TECH FIRMS

OPINION ON CONSOLIDATION AMONG TECH FIRMS



RESPONDENTS WHO SAY THESE COMPANIES SHOULD BE BROKEN UP



SOURCE: JANUARY 2021 FORTUNE/SURVEY MONKEY POLL

• WHAT COMES

JUSTIN CHIN—BLOOMBERG/GETTY IMAGES

THE ECONOMY

NEXT

BY NICOLE GOODKIND

The Most Prepared Woman in Washington

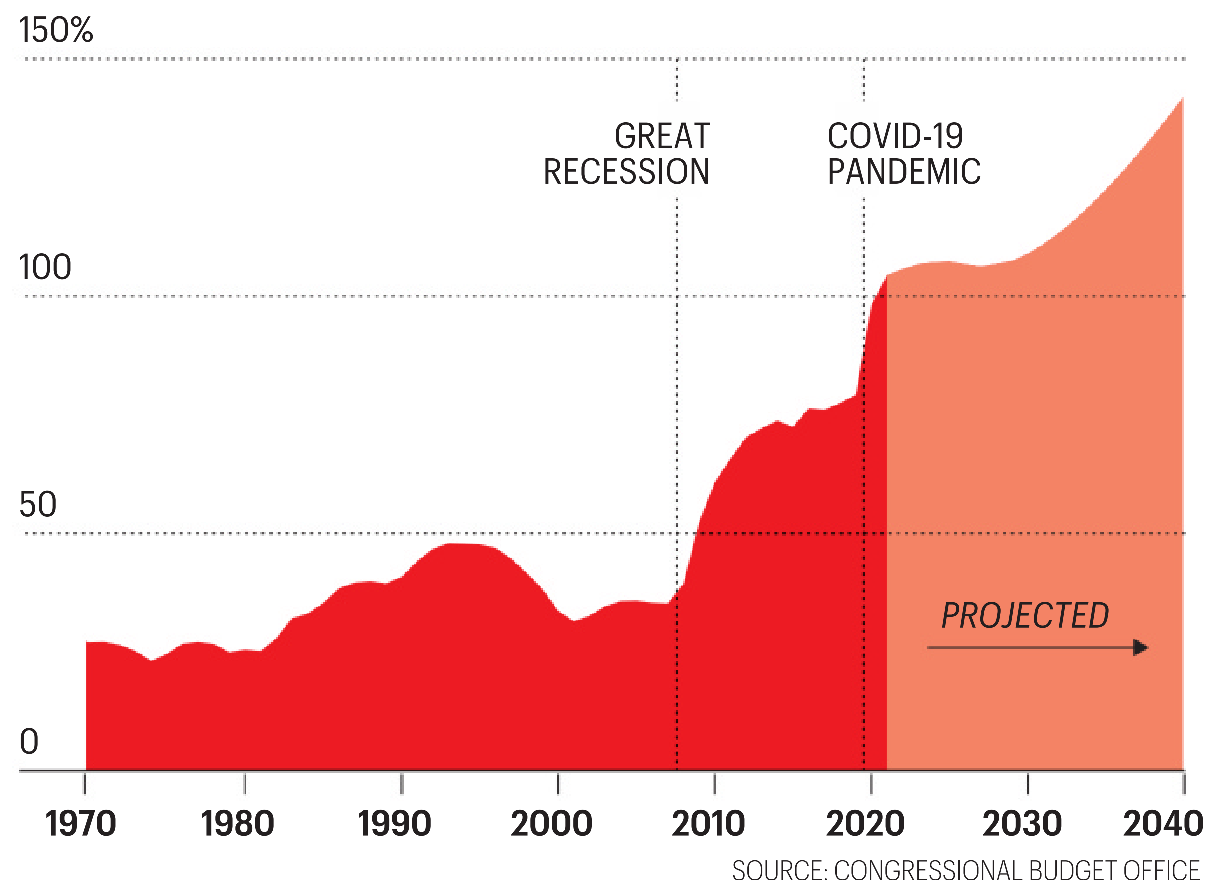
TRAILBLAZING **TREASURY SECRETARY JANET YELLEN** IS RENOWNED AMONG PEERS FOR HER METICULOUS RESEARCH AND RELENTLESS FOCUS. AS THE BIDEN ADMINISTRATION'S ECONOMIC POINT PERSON, THE FORMER FEDERAL RESERVE CHAIR IS NOW CHARGED WITH STABILIZING AND STIMULATING AN ECONOMY RAVAGED BY THE PANDEMIC. AND THAT'S JUST THE BEGINNING OF HER AMBITIOUS AGENDA.

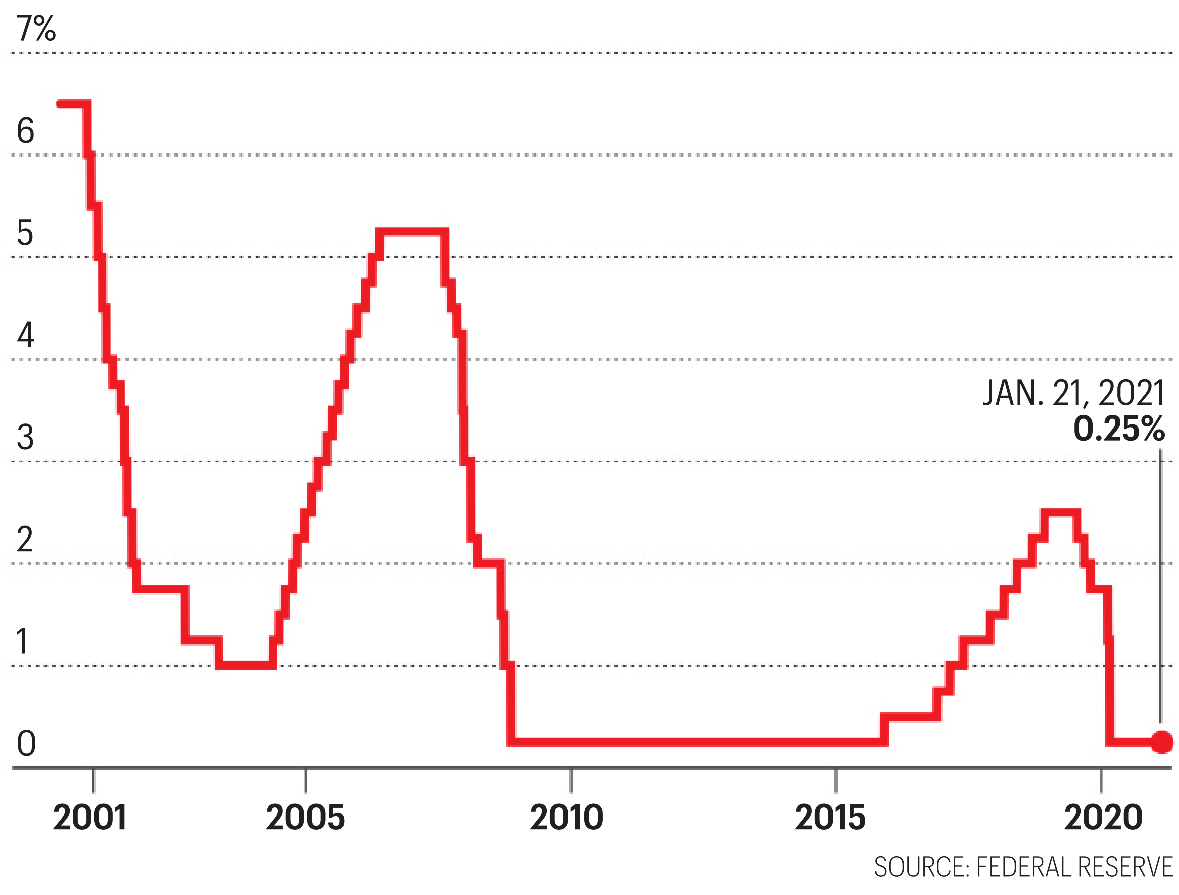
Janet Yellen is an icon waiting to happen. With her signature silver bob, single-strand pearl necklace, and seemingly infinite supply of jewel-toned jackets (collar popped, always), it's easy to imagine the new Treasury secretary's image emblazoned on T-shirts and her silhouette outlined on inspirational Instagram posts. She's a natural fit as an emblem of the #Girlboss movement that has so finely boiled down modern feminism into a shallow yet marketable vestige of unadulterated capitalism—a conceit used to describe the relentless rise-and-grind schedules of business leaders like Marissa Mayer and Sheryl Sandberg, and to help sell "Notorious RBG" merch to young women. Yellen's Q score with Gen Y should soon be on the rise.

On Wall Street, meanwhile, Yellen is seen as a known quantity. The former Fed chair is someone who doesn't make surprise decisions—who says what she's going to do and then does just that. Big Finance is optimistic that she'll be a business-oriented leader at Treasury and a friend to markets. That confidence is only bolstered by the fact that Yellen collected more than $7 million in speaking fees from the likes of Goldman Sachs and hedge fund Citadel since leaving the Fed two years ago—a revelation that stirred a bit of controversy among Democrats.

Progressives like to think of Yellen as an advocate for underrepresented Americans. They see her as someone who will push for a higher minimum wage, more regulation of shadow banking, and new legislation in the mode of Dodd-Frank to protect consumers. To liberals, Yellen is someone who will at last put the guardrails on Wall Street.

But no matter what persona is projected onto Yellen—feminist hero, Wall Street savior, progressive darling—the magnitude of her new day job dwarfs all of them in consequence. As Treasury secretary, she is running point for the Biden administration's efforts to stabilize a teetering U.S. economy that has been rocked by the COVID-19 pandemic.





Her decisions over the next few months will have a profound impact on how quickly the economy can rebound.

The challenges facing Yellen and the rest of President Joe Biden's economic team are daunting. Though the U.S. unemployment rate has fallen from its COVID peak of 14.7% last April, it plateaued at 6.7% in the final months of 2020, nearly twice as high as a year earlier. The Federal Reserve has already taken rates down to near zero. Thousands of small businesses have closed for good during the pandemic, which continues to ravage the country. And there is rising concern in Washington about continued borrowing to stimulate the economy. The U.S. national debt grew by a stunning $7.8 trillion over the past four years under the Trump administration, driven in part by Trump's signature 2017 tax cuts and the $3 trillion in stimulus funding Trump signed into law last year. Some Republicans are now using the specter of further debt to push back against President Biden's proposed $1.9 trillion stimulus bill, dubbed the "American Rescue Plan."

Yellen is also taking the reins at a Treasury Department that has been greatly reduced in size and capacity under her predecessor, Steven Mnuchin. Between 2016 and 2019, the Treasury's main offices, including domestic finance, economic policy, and international affairs, saw staffing drop by about 25% as budgets fell. Those departments control responses to the economic recovery, financial policy, and grant programs. Mnuchin operated without a deputy for two years and left the division of domestic finance without an official leader. Yellen will have to bring in a number of people, and quickly, to fill empty positions.

But it's hard to imagine a leader with more sparkling credentials—or a better demeanor—for the work at hand than the 74-year-old Yellen. Each career peak on her résumé has been seemingly followed by another, higher summit—a mountain range of firsts. Yellen was the only woman in her class to earn an economics Ph.D. at Yale University, and she was then (for quite some time) the sole female economics professor at Harvard University. She served under President Bill Clinton as chair of the Council of Economic Advisers (a rare non-first moment; she was the second woman to serve in that role). In 2014, she was confirmed as the first female chair of the Federal Reserve, under Barack Obama. Now, under President Biden, she's achieved yet another title: the first woman secretary of the Treasury.

Her new job also makes Yellen the first person—of any gender—to complete the holy trinity of the U.S. finance circuit: Council of Economic Advisers chair, Fed chair, and Treasury secretary.

Yellen has hit the ground running, working with Biden to get his COVID-19 relief bill passed by Congress quickly. In a conversation with *Fortune,* she underscores the new administration's top priorities: a successful distribution of at least 100 million doses of vaccine within 100 days; reopening schools; making sure Americans are able to remain in their homes without fear of eviction; and providing a $1,400 stimulus check to a majority of Americans and emergency funding for state and local governments. "It's a priority to help get us through the pandemic, to get our economy functioning again," she says of the stimulus legislation.

The new Treasury secretary also echoes President Biden's calls for both parties to dial back politics in the interest of problem-solving. "I hope very much that we can work in a bipartisan way, Democrats and Republicans, to get beyond this sort of stalemate that has been around for a number of years now," says Yellen. "I think that many people agree on both sides of the aisle. We need to invest in our people and our infrastructure. We need to solve our competitiveness."

The business world may be comfortable with Yellen, but she's no businessperson herself. Unlike Hank Paulson or John Snow, Wall Street execs turned Treasury heads, Yellen is a career economist. And the direction of the stock market is not her North Star. Yellen's perspective, says Ben Bernanke, the former Federal Reserve chair and now distinguished fellow at the Brookings Institution, isn't to please any particular interest group. Rather, it's "how do we get the economy going, and how do we make sure the benefits are spread as widely as possible?"

If Mnuchin was the Beltway's "most eager man," as he's been called, the Brooklyn-born Yellen is Washington's "most prepared woman." She certainly won't be arranging photo ops with sheets of money, as her predecessor did. "She's got a whole new set of issues that she's going to have to dig into, and she will," says Bernanke. "I mean, she won't be satisfied until she understands exactly why every particular line in the tax code is as unintelligible as it is, what it means, and how to fix that."

Indeed, Yellen is legendary for her focus. Her colleagues past and present emphasize that their relationship with Yellen is centered wholly around work and shoptalk. She often remarks that people would be bored if they joined her family for dinner, as she and her husband, George Akerlof, who won the Nobel Prize in economics in 2001, usually engage in rigorous work-related discussion. Her son is also in the family business; he received his Ph.D. in economics from Harvard University in 2009 and teaches at the University of Warwick in England.

Bernanke is quick to point out that Yellen prefers to prepare for meetings very, very far in advance. She's known for showing up to airports hours before her flight; she says that she uses the extra time to read. Adds Bernanke: "She's a meticulous, cautious, thoughtful person. She speaks quietly. She's well prepared, and she's done all of the analysis. But she's not a shrinking violet, and she's not afraid to speak up. Sometimes the quietest person in the room is the person you most want to listen to."

Yellen prefers to read from notes rather than speak off the cuff. As director of the Hutchins Center on Fiscal and Monetary Policy at the Brookings Institution, David Wessel has worked closely with Yellen and has seen her speak

POLICY

STRAIGHT FROM THE SECRETARY'S MOUTH

YELLEN OUTLINES FOUR OF HER TOP PRIORITIES.

The push for a $1.9 trillion COVID-19 relief package is the Biden administration's chief focus now. But true to form, Secretary Yellen has already outlined her tenure at the Treasury and identified what else she wants to accomplish. Here is what lies at the top of her list.

TACKLING INCOME INEQUALITY

Yellen believes it's critical to address the economy's structural imbalance. "We have an economy where the typical high school–educated worker is barely seeing any wage increase for the last 50 years, and we need to change that and make sure that those workers get the kind of pay they deserve," she says. That will happen by investing in infrastructure and R&D, and by educating workers so that they have the skills to utilize modern technology. Yellen also plans to focus on small-business loan programs to help boost job creation.

TAKING ON CLIMATE CHANGE

Expect a renewed focus on the environment from the Biden team. "Climate change is a big priority. It's going to be very clearly in focus," says Yellen. In the past, she's supported a carbon tax that would charge polluters for emissions and redistribute funds to U.S. households through dividends.
Last fall, Yellen cochaired a committee on how to achieve net-zero emissions. Recommendations included shifting incentives for companies to prioritize sustainability and using markets to speed the transition from fossil fuels.

CHALLENGING CHINA ON TRADE

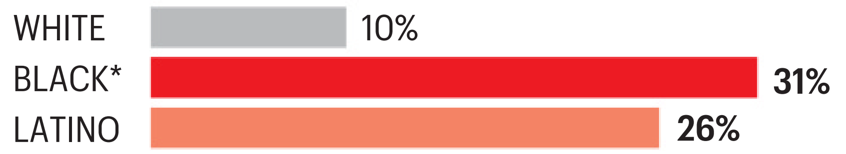
We need to reset the relationship with China, says Yellen, and in order to do so effectively the U.S. will have to work with allies to address common challenges instead of operating unilaterally as the Trump administration preferred. "China is a very strategic competitor," she says, noting that the U.S. needs to "use an array of tools" to address a number of disruptive actions taken by China, such as "dumping products, erecting trade barriers, and giving illegal subsidies to corporations." Those actions are "hurting our economy," she says.

REBUILDING CAPACITY AT TREASURY

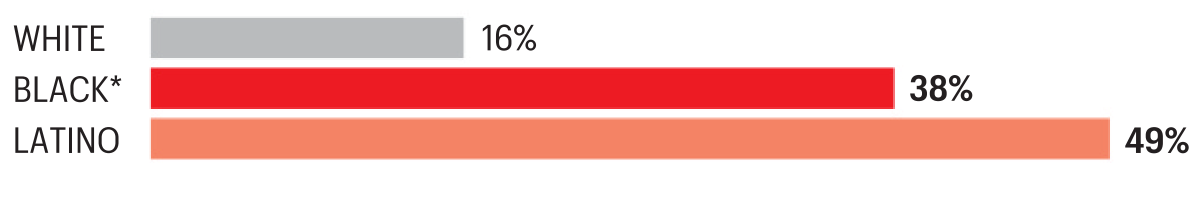
The Treasury budget over the past four years has been "cut enormously," says Yellen. There has been a reallocation of personnel toward activities ranging from monitoring terrorism and other national security concerns and away from economic security at home. While the former are "important things for us to preserve," says Yellen, "in the process, other areas of the Treasury have really been depleted." She will be staffing up Treasury with people dedicated to her overarching mission of addressing structural economic changes.

ECONOMIC HARDSHIP DURING THE PANDEMIC

People who say they were unable to pay for basic necessities like food, heat, or rent



People who say they used up all or most of their savings**



* WHITE AND BLACK DATA DO NOT INCLUDE LATINOS
** EXCLUDES THOSE WHO REPORTED NEVER HAVING HAD SAVINGS

SOURCE: THE COMMONWEALTH FUND

more times than he can count. He describes her unique procedure for answering audience questions. First, she writes out her response and commits it to memory. Next, she rips up the paper. And finally she speaks.

But Yellen also possesses a rare charisma. Mary C. Daly, president of the Federal Reserve Bank of San Francisco, says Yellen is especially skilled at making people feel seen. “I feel like we’ve met another Eleanor Roosevelt in Janet,” says Daly, who calls Yellen a mentor and a friend. “There can be a room of thousands of people, but when she walks up to the stage, everybody goes quiet, and all eyes are on her. I’ve never seen that happen with anybody else.”

She also makes a habit of asking colleagues for their opinions, even when it’s likely that she already knows what she’s going to do, says Wessel. Yellen may be genuinely curious, but soliciting input also offers colleagues a quick ego rub. And massaging egos is a skill that certainly doesn’t hurt Yellen, who has made a career of being the only woman in rooms full of well-venerated men.

The people sitting around the tables at the G7 and G20 and the IMF like Yellen but also respect her, says Wessel. “Her stature will give her substantial influence in the administration.” That influence will extend to the Oval Office, he predicts. “When she chooses to use it, she’ll have something close to veto power over big economic policies.”

But how exactly she wields that power remains to be seen. Yellen has spent the majority of her Washington career working at the Federal Reserve, an independent agency charged with keeping monetary policy decisions at arm’s length from political influence. As a result, she has been careful about revealing her personal leanings, or much about herself at all.

One event sticks out in Wessel’s mind as a moment when Yellen gave a rare glimpse of her political stripes. It was 2014 and Yellen was nearly a year into her role as Fed chair when she gave a speech on the inequality of economic opportunity to a room full of her peers at the Federal Reserve Bank of Boston. Income and wealth inequality, she said, were near their highest levels in the past 100 years, and the trend concerned her. And then, in an un–Fed chair (and un-Yellen) way, she editorialized just a little. “I think it is appropriate to ask whether this trend is compatible with values rooted in our nation’s history, among them the high value Americans have traditionally placed on equality of opportunity,” she said.

Yellen knew that reporters were there to cover the talk, but she believed her remarks were relatively benign.

Apparently, she misjudged. Neil Irwin of the *New York Times* called her words “downright radical.”

“No, that wasn’t Elizabeth Warren, or the editor of *The Nation*, or Paul Krugman,” began the *New Yorker* story

As director of the National Economic Council, Brian Deese, 42, will help set the agenda.

KEN CEDENO—CNP/BLOOMBERG/GETTY IMAGES

Meet the Economy’s New Power Players

ALONG WITH TREASURY SECRETARY YELLEN, THESE KEY BIDEN APPOINTEES WILL HAVE A MAJOR IMPACT ON DRIVING POLICY.
BY GEOFF COLVIN

18+

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about the event.

"Everyone [in the government community] knows that Yellen is a liberal Democrat, but that really shouldn't influence her job as Federal Reserve chair," commented N. Gregory Mankiw, former economic adviser to George W. Bush and then-chair of the Harvard economics department, to the *Harvard Political Review*.

Months later, Yellen, who appears to skew much closer to the center of the political spectrum than the far left, reported to Congress to deliver her semiannual monetary policy report. But she found that Republicans were still focused on her remarks in Boston.

"You're sticking your nose in places that you have no business to be," scolded future Trump chief of staff Mick Mulvaney, then a Republican representative from South Carolina. Rep. Sean Duffy, a Republican from Wisconsin and former cast member of MTV's *The Real World,* accused her of political bias.

A visibly rattled Yellen defended her position. "I am not making political statements," she said. "I am discussing a significant problem that faces America."

She didn't see what she was saying as anything but data-driven analysis. And anyway, "it had been a topic I'd addressed on a number of occasions before," she tells *Fortune.*

Yellen experienced a rare setback in 2018 when then-President Donald Trump essentially axed her and replaced

"PERSONNEL IS policy," says a Washington maxim invoked at the dawn of each new administration. The point is valid; you don't really understand policy until you know who's creating it and executing it. President Biden's economic team, still being assembled, reflects the forces shaping today's Democratic Party. "The staffing really runs the gamut from very centrist Democrats to people who come much more from the left," says Stan Veuger, a Washington-based economist at the American Enterprise Institute and an economics lecturer at Harvard. In addition to Treasury Secretary Janet Yellen, here are top power players on Biden's economic team.

Brian Deese, director of the National Economic Council. Just 42, and not a trained economist, Deese nonetheless held high-level economic posts throughout the Obama administration, including deputy director of the Office of Management and Budget and deputy director of the National Economic Council, which manages the President's economic decision process. "If you have a strong White House, the person who organizes the meetings, the presentations, and what will be presented to the President has a lot of power," says the Brookings Institution's David Wessel. "I think he will be that person."

Jared Bernstein, member of the Council of Economic Advisers. Bernstein's power is greater than his title suggests. He won't outrank other CEA members, but he's already one of the administration's most influential figures because of his long and close relationship with Biden. In the Obama administration he was chief economist to then–Vice President Biden. Bernstein is decidedly left of center but not over on the Bernie Sanders fringe.

Rohit Chopra, director of the Consumer Financial Protection Bureau (pending Senate confirmation). Amped up regulation of the financial services industry looks to be a significant trend in the Biden administration. Treasury Secretary Janet Yellen has said she thinks the Dodd-Frank law doesn't go far enough, and Chopra's record suggests he'll be an energetic regulator. Attorney Lucy Morris, who served with Chopra at the CFPB in its early days, writes, "I anticipate that he will be at least as aggressive as former director [Richard] Cordray, if not more," a prospect that may chill the blood of Wall Street executives. Since May 2018 Chopra has been on the Federal Trade Commission.

Other top power positions haven't been filled as of this writing, but whoever takes them will play important roles in executing Biden's economic policies. Two of the most important:

Assistant Attorney General for Antitrust. The Trump Justice Department was more active on antitrust than many would have expected under a Republican President. The Biden administration could be even more active. Candidate Biden said the tech giants wield too much power, a view with bipartisan support. The Trump DOJ last year sued Google on antitrust grounds, joined by 14 states, both red and blue. Biden's choice of an antitrust chief will signal what's ahead for Silicon Valley and potentially other industries.

Comptroller of the Currency. A low-profile post, it's crucially important in the regulation of national banks, including the biggest ones: JPMorgan Chase, Bank of America, Citigroup, and Wells Fargo. If increased financial regulation becomes a Biden priority, as many expect, the holder of this job will be highly influential.

As for the policy that the Biden economic team will be executing: At its highest level, it's driven partly by the circumstances of the moment and partly by shared deep beliefs. The most immediate imperative, managing the pandemic crisis, is more about competence than ideology. "If Elizabeth Warren or Bernie Sanders had become President, they would still have to deal first and foremost with just crisis management," says Veuger. Beyond the pandemic, the issues at the top of the team's to-do list are infrastructure, climate, inequality, and raising taxes. Biden and the team will pursue an activist agenda based on their view that today's ultralow interest rates—negative after inflation—present "a once-in-a-generation opportunity to make huge public investments that will pay off in higher living standards for the next generation," says Wessel.

That view fits well with a broader, deeper view of how to strengthen the overall economy. Wessel says, "If you got all the economic team of the Biden administration in a room and asked them, 'Do you think that investments in pre-K education and more aid for young children and low-income families can increase not only their prospects of moving into the middle class, but can also increase the productivity growth of the United States?' I think they would say yes."

Having hit the trifecta of controlling the White House plus both houses of Congress, Biden, his team, and their party now have a rare opportunity to test that belief.

"When she chooses to use it," says the Brookings Institution's David Wessel of SECRETARY YELLEN, "she'll have something close to VETO POWER over major economic policies."

Yellen speaking in December after President Biden announced her as his pick to run the Treasury.

KRISTON JAE BETHEL—THE NEW YORK TIMES/REDUX PICTURES

her as Fed chair with Jerome Powell. "She was disappointed," says her friend Wessel. "She thought that Trump liked her and that she had a shot at being reappointed." Still, she was happy that Powell, a peer she respects, was nominated to do the job.

It's still unclear exactly why Trump got rid of Yellen. Some speculate that he just didn't want an Obama appointment at the Fed. Trump told the *Washington Post* that he thought she was too short to run the Fed. Wessel remembers her joking about the story. The *Post* said she was five-three when in reality she's barely five-feet even. She wasn't going to call in a correction, Yellen told Wessel, but somebody else could feel free to.

In December, Yellen stood next to President-elect Biden in Wilmington, Del., as she accepted his nomination for Treasury secretary. There, in a speech that was uniquely candid for the reserved economist, she offered a window into how she became the person she is today.

Her father, she said, was a dentist who began his business during the Great Depression, setting up shop near Bush Terminal, a group of docks in South Brooklyn. He worked on the teeth of union workers. At the end of the day, he'd discuss their lives with young Janet. If they had lost a job, he would tell her about their financial and family problems, their inability to afford health care, their loss of self-worth.

Those lessons stuck with her "so much so that I became an economist because I was concerned about the toll of unemployment on people, families, and communities," she said in her speech.

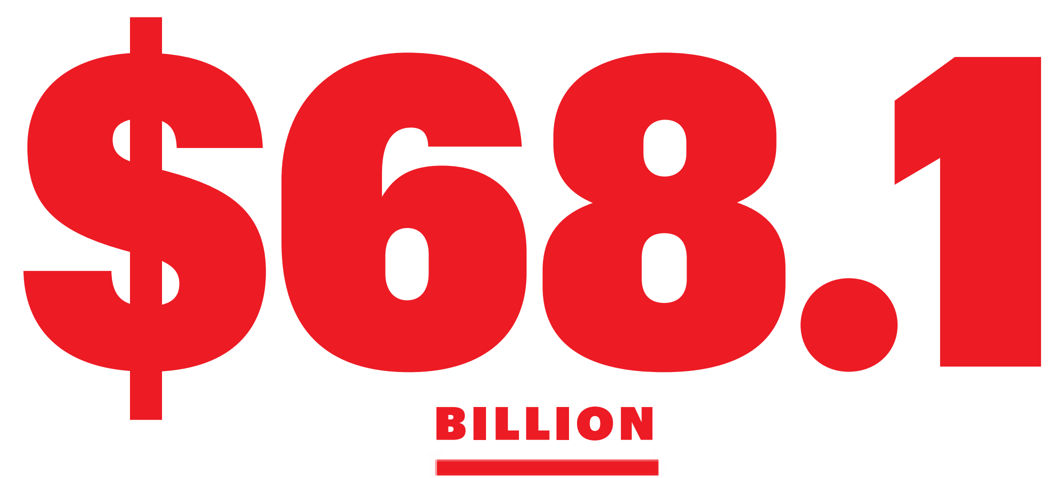
But entering a male-dominated field was not without challenges. "The sexual harassment was ever present," says Sylvia Ann Hewlett, who received her Ph.D. in economics from the University of London in the early 1970s before teaching at Columbia University. The idea of focusing on gender pay gaps and wealth inequality, as Yellen came to do in her career, was risky at the time, especially for a woman, says Hewlett. "Women had two choices—either they joined the dominant group and didn't write about it, or you were seen as a sore thumb."

In that context, it took chutzpah for a female economist

to step out of line and raise questions about the accepted wisdom in the field. But Yellen downplays that narrative, and describes her work as a natural evolution.

"When I first went into macroeconomics, the view that I had and had learned in graduate school was that a generally strong economy with a low unemployment rate would benefit workers across the income spectrum—that a so-called rising tide lifts all boats," Yellen tells *Fortune*. "But sometime in the mid-'80s that really began to change, and it became no longer true that when the economy was doing well overall that everybody benefited."

Yellen came to realize that while full employment was still important, it wasn't enough to address long-term declines in income for the majority of Americans. "And so I have focused for many years on understanding what the forces are that have been making it so difficult for workers to succeed," she says. "And because such a large share of the workforce hasn't been able to get ahead, income and



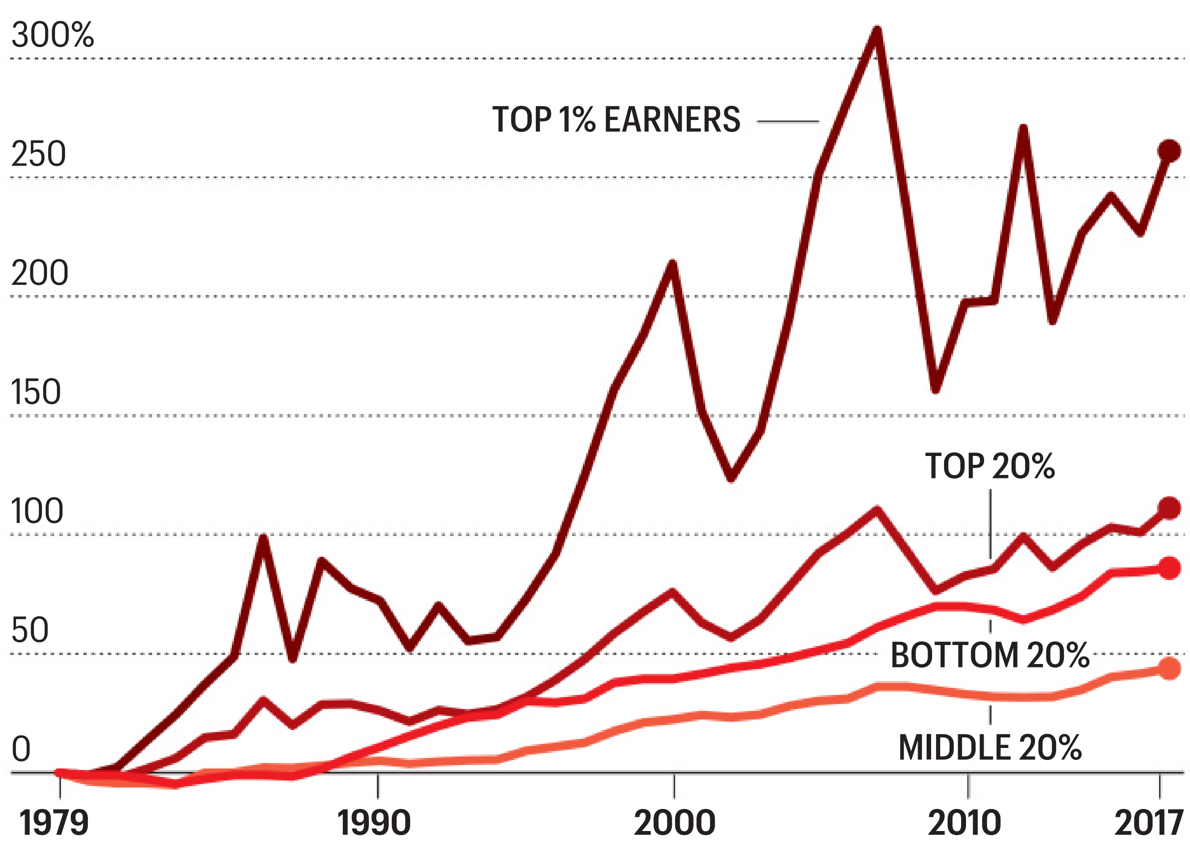
U.S. trade deficit with China in November, a 14-year high. Despite tariffs imposed under President Trump, the $61.2 billion in consumer goods imported from China to the U.S. was the highest on record.

wealth inequality has been the theme."

In 1998, under Bill Clinton, Yellen took the lead on a landmark study, "Explaining Trends in the Gender Wage Gap." It proved to be a pivotal moment in her career. The paper concluded that women earned 25% less than men, and it was published just as America was celebrating the 35th anniversary of President Kennedy's signing of the Equal Pay Act. The resulting media attention elevated her profile and eventually helped boost her into her next major role as president of the Federal Reserve Bank of San Francisco in 2004.

While at the Fed, Yellen's views on racial justice and the economy evolved. In July of 2015, Yellen received some blowback from testimony she gave to Congress that seemed to imply that there was little the Federal Reserve could do to improve disproportionately high Black unemployment rates. Progressive groups and senators pushed Yellen on the topic. She listened.

CHANGE IN HOUSEHOLD INCOME BY INCOME GROUP



SOURCE: CONGRESSIONAL BUDGET OFFICE NOTE: INCOME AFTER TAXES AND TRANSFERS

When she met again with Congress in 2016, she took a markedly different tone. "It is troubling that unemployment rates for these minority groups remain higher than for the nation overall, and that the annual income of the median African-American household is still well below the median income of other U.S. households," she said. Around the same time, Yellen created a task force to diversify hiring practices within the Federal Reserve itself.

Now Yellen is bringing that same perspective to the Treasury. David Clunie, executive director of the Black Economic Alliance and the executive secretary of the Department of the Treasury under President Barack Obama, has been working with Yellen to ensure that the department is focused on racial inequality while working through COVID-relief programs. Recent surveys found that Latino and Black Americans have experienced economic hardship during COVID-19 two to three times as great as that of white Americans. The pandemic has also had a disproportionate effect on women compared with men. (See "Is America Giving Up on Working Women?") "I've been encouraged by what I've seen," says Clunie. "She seems to have a new freedom to speak in much more outward terms about what this means to her personally."

Yellen tells *Fortune* that at the Treasury she will fight publicly to address inequality. But, perhaps thinking back to that contentious 2014 hearing, she has a message for her Republican friends in Congress. "The wage gap and income inequality should not be politicized," she says. "They're facts that everyone recognizes."

It's also a fact that her new job is more overtly political than any she has held before. Yellen brings to it a distaste for politics as usual and a reverence for data. And that might be just what the economy needs. ■

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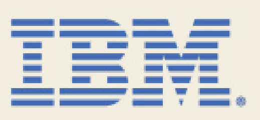

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• WHAT COMES

LELAND BOBBE—GETTY IMAGES

CYBERSECURITY

After SolarWinds: Untangling America's Cybersecurity Mess

THE SOLARWINDS HACK EXPOSED DOZENS—MAYBE HUNDREDS—OF U.S. COMPANIES TO HACKERS' SPYING EYES. IT ALSO UNCOVERED DEEP-ROOTED FLAWS IN THE WAY THE COUNTRY APPROACHES CYBERSECURITY. HERE'S WHAT WENT WRONG, AND HOW BUSINESS AND GOVERNMENT CAN FIX IT.

NEXT

DAVID Z. MORRIS & ROBERT HACKETT

In early December, the cybersecurity firm FireEye disclosed that it had been hacked, by miscreants who had taken copies of powerful tools used by the company's security testing teams. As it investigated, the company soon found that the attack was part of something much larger. FireEye's systems, it turned out, had been compromised using spyware implanted via the IT management and security platform Orion, a top-selling product of an Austin-based IT software firm called SolarWinds.

Five days after the initial disclosure, FireEye alerted the public to what it had discovered, triggering a broader search that revealed a threat of staggering scale and terrifying subtlety. The compromised Orion software had not only reached thousands of SolarWinds' corporate customers, but it had also exposed systems at the U.S. Treasury, the State Department, and the Department of Homeland Security. The attack had apparently begun more than a year earlier, and its methodical, long-simmering information-gathering approach suggested a nation-state was behind it. By early January, U.S. intelligence agencies were blaming Russia, and "SolarWinds" had become shorthand for a hacking catastrophe. (See "Timeline of a Cybercrime.")

"It's certainly going to be the worst cyberattack in United States history thus far, and I don't believe people understand its magnitude," says Tom Bossert, a former homeland security adviser for President Trump who is now president of cybersecurity startup Trinity Cyber. "It's primarily so troubling because of its alarming scope—the scale of this is breathtaking."

That includes the scope of the potential damage to business. While many high-profile hacks target customer data, such as credit card numbers and addresses, the SolarWinds attackers appear to have focused on much higher-value internal information. Their objectives appear

BEARS' LAIR? The Moscow headquarters of the SVR intelligence agency, whose "Cozy Bear" cyber unit is one suspect in the SolarWinds hack.

TIMELINE OF A CYBERCRIME

SECURITY EXPERTS RANK THE SO-CALLED SOLARWINDS HACK AMONG THE TWO OR THREE MOST SERIOUS CYBER ESPIONAGE INTRUSIONS IN U.S. HISTORY—AND IT MAY BE THE ONE THAT REACHES DEEPEST INTO CORPORATE AMERICA. HERE'S WHAT WE KNOW SO FAR ABOUT HOW IT UNFOLDED.

SEPT. 4, 2019

● **SolarWinds,** an Austin-based software company, is compromised. Engineering done for SolarWinds by subcontractors in Eastern Europe is one possible source of the breach.

The hackers implant malware into an update for Orion, an IT and cybersecurity management dashboard product made by SolarWinds. This malware, dubbed "Sunburst," is a so-called backdoor that allows hackers to monitor and potentially further infiltrate networks it is installed on.

MARCH–JUNE 2020

● SolarWinds believes that 18,000 Orion customers downloaded a **software-update** patch that included the Sunburst backdoor during this period. Because this download is part of a trusted process, there is nothing to alert even vigilant security teams that anything is amiss.

DEC. 11

● The hackers, using stolen credentials, attempt to register a new device for multifactor authentication. This action tips off the cybersecurity company **FireEye** to the intrusion; two days later, it publicly reports the hack.

DEC. 19

● FireEye reports that more than 1,000 infiltrated systems have been pinging a **command-and-control server** operated by hackers, giving them the option to penetrate further by stealing internal users' credentials that give them access to more systems.

Microsoft says about 40 of its own customers were attacked. An Amazon internal report later pegs the total of impacted firms and agencies at more than 250. Those reports have not named **the victims,** but Microsoft reported that 44% of the escalation targets it detected were in the IT sector, 18% were in government, 19% were NGOs or think tanks, and 9% were government contractors. The follow-on attacks appear to have mainly targeted email systems; their full extent is unknown.

DEC. 31

● **Microsoft** announces that the SolarWinds hackers accessed the internal source code that underlies some of its software. To date, there's no indication anything was tampered with or that customer data was stolen.

JAN. 5, 2021

● A group of U.S. intelligence agencies issue a statement saying that "an Advanced Persistent Threat (APT) actor, likely Russian in origin," is responsible for the attack. Some experts suspect the **SVR, the Russian foreign intelligence service** associated with the Cozy Bear hacking team. Russia denies involvement.

JAN. 10

● The Cybersecurity and Infrastructure Security Agency says "fewer than 10" **federal agencies** were impacted by the compromised Orion patch. Affected agencies reportedly include the Department of Homeland Security, the Treasury Department, and the State Department. Microsoft email accounts at the Department of Justice are compromised, though the DOJ says there's no indication that classified systems were breached.

JAN. 12

● Email security firm **Mimecast** reports that it has also been compromised by Orion. It says about 4,000 of its customers were "potentially affected," but only a "low single-digit" number of customers were targeted.

DIGITALGLOBE/SCAPEWARE3D/GETTY IMAGES

to have included penetrating email systems and accessing corporate secrets—among them, the source code underlying Microsoft's software. Cisco, Intel, Nvidia, and Deloitte are among the other giants who say they were exposed to the Orion patch. No company has admitted to being seriously impacted yet, but IT departments are bracing for the worst: theft of assets and intellectual property, leaks of internal data and deliberations, and the vast expense of scrubbing or even rebuilding their compromised systems.

Just as frightening as the scope is how smoothly the attack circumvented government and private-sector cyberdefenses. Some see the attack not as a failure by one software vendor, but as an indictment of U.S. cybersecurity itself. "The United States created the Internet," says Katie Moussouris, founder of Luta Security and a pioneering cyberdefense pro at Microsoft and Symantec. But in cybersecurity, "we are losing our lead." Whatever its consequences turn out to be, the SolarWinds hack has exposed major flaws in the patchwork public-private partnership we've relied on to keep our information technology safe, drawing attention to just how ill-coordinated and permeable it can be.

In the traditional defense supply chain—think the makers of fighter jets or Coast Guard cutters—private contractors submit to strict oversight and rigorous standards in exchange for long-term, high-value government contracts. In cybersecurity, in contrast, a handful of midsize government agencies work with a vastly larger constellation of private software developers, cybersecurity contractors, and their customers, offering relatively few guidelines and imposing only loose oversight.

Most experts in the industry view the decentralized, market-driven structure of U.S. cybersecurity as a source of agility and innovation. But in the SolarWinds debacle, they also see the system's weaknesses on full display. In this mega-breach, the industry's flawed financial incentives, a lack of transparency, underinvestment in training, and old-fashioned cost-cutting each played a role.

These failures encapsulate the challenge of fixing America's cybersecurity structure. The encouraging news is that corporate and public-sector reformers are already responding with repairs and countermeasures; the less good news is that many of those repair efforts are in their earliest days. (For more about those efforts, see the accompanying story.)

When FireEye went public with its SolarWinds news, neither the National Security Agency, the Pentagon's Cyber Command, nor any other U.S. intelligence or cyber agency had detected the attack, even though it had likely been underway for months. That notion is troubling enough: Even more stunning is the fact that FireEye wasn't legally obligated to inform anyone—publicly or privately—about its discovery.

There are a growing number of legal requirements for firms such as retailers or banks to report hacks involving

STRIKING BACK

HOW THE BIDEN WHITE HOUSE SHOULD RESPOND TO SOLARWINDS

THE EPIC HACK HAS UNDERSCORED THE DISORGANIZATION THAT UNDERLIES AMERICA'S CYBERSECURITY POLICY. HERE ARE **FOUR WAYS THE NEW ADMINISTRATION CAN CHANGE THE SYSTEM FOR THE BETTER**.

NOW THAT JOE BIDEN has taken office, he's got to figure out how to dig the country out of a spectacular, smoldering crater.

For about as long as the coronavirus pandemic ravaged the United States, another sinister invasion was taking place—except in secret. This incursion was an audacious, silent cyberattack that infiltrated, ransacked, and subverted at least 10 government agencies and potentially hundreds of corporations.

The President is inheriting a mess, to put it mildly. "It's not Pearl Harbor. It's not an act of war," stresses Mark Montgomery, head of the Cyberspace Solarium Commission, a federal cybersecurity task force. "But it was a brutal act of espionage that is going to cost us a lot of money"—many, many billions, he says—"to recover from."

Biden is entering the fray with no illusions, if little clarity, about the magnitude of the challenge he faces. "There's still so much we don't know, including the full scope of the breach or the extent of the damage it has caused. But we know this much; this attack constitutes a grave risk to our national security," the then President-elect said in December after the hack's discovery. Echoing Biden's avowal, a National Security Council spokesperson tells *Fortune* the administration will be "elevating [cybersecurity] as an imperative across the government from day one" and will "hold accountable those responsible for attacks."

Toward that end, Biden's team has earmarked $10 billion of pandemic relief for additional IT spending. Assuming Congress approves it, more than two-thirds will go to the Homeland Security Department's top cyber outfit to improve incident response and network monitoring across government. Biden has already made a number of calculated appointments to deal with the situation, including plucking Anne Neuberger, an NSA honcho, for a new cyber advisory role on his National Security Council, and the latest defense legislation gives him some powerful new tools.

If America is going to pull out of the ever-widening gyre that is the SolarWinds hack, the new Commander-in-Chief has to stay focused. On the following pages, you'll find four policy recommendations, sourced from public- and private-sector cybersecurity experts, that should top his list. ▶

1. RALLYING BEHIND A NATIONAL CYBER DIRECTOR

ON JAN. 1, Congress passed the $740 billion National Defense Authorization Act (NDAA) for 2021, overturning a veto by President Trump. In addition to approving the Pentagon's annual budget, the hefty piece of legislation contains some profoundly significant cyber policy initiatives. Most notably, the law approves the creation of a new executive branch role: the Office of the National Cyber Director. This office, with a staff of up to 75, is set to be the President's "principal adviser" and policy coordinator on all cybersecurity-related matters.

Of more than two dozen Solarium Commission recommendations adopted in the NDAA, the directorship may be the most significant, says Solarium's Montgomery. In cyberdefense, as in many other policy arenas, a spaghetti-tangle of agencies have overlapping responsibilities.

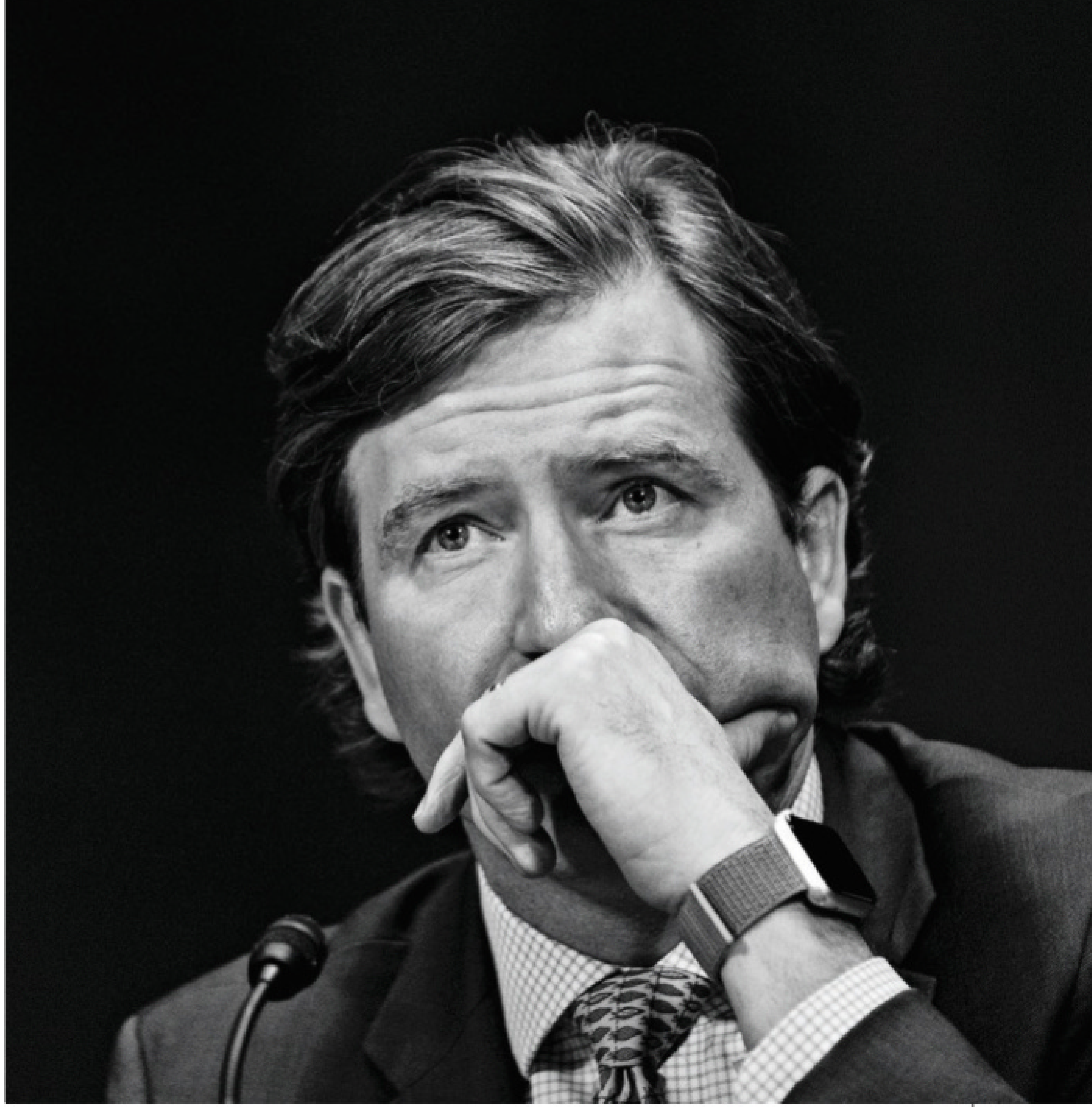
The hope is that the new office can give federal policy the cohesion it has lacked. The President doesn't have time to drop in on the Small Business Administration to check on its cybersecurity efforts, or to manage relationships between municipal water authorities and the EPA, Montgomery says. "In the end, you need someone who is accountable."

To be effective, the cyber director will need to work in concert with other agencies. An elevated "cyber bureau" at the State Department would be a key accompaniment: Together, the two could more persuasively corral allies, exert influence abroad, and push for bright, red "do not cross" lines on the Internet—like no plundering of intellectual property, interfering with elections, sabotaging public utilities, or harming civilians.

Michael Daniel, President Obama's cyber czar and now head of the industry group Cyber Threat Alliance, says the U.S. needs to be more consistent and explicit if it is to establish international rules of the road in cyberspace. As for SolarWinds, he says, America and its allies need to signal to the perpetrators that "anything that goes beyond espionage that we find"—like data destruction or physical damage—"we reserve the right to escalate."

Of course, the U.S. conducts espionage too, Daniel acknowledges. But there should be no tolerance for other nations' operations that "get too big, too bold," he says.

At press time, the rumored top contender for director was Jen Easterly, head of resilience at Morgan Stanley and a former NSA official who helped establish the U.S. military's Cyber Command. Whomever Biden puts in charge will set the tone for all that follows.



CHRIS KREBS, founding director of a key cybersecurity agency, has been hired by SolarWinds to address its post-hack mess.

ANDREW HARRER—BLOOMBERG VIA GETTY IMAGES

theft of customers' personal data. But the U.S. does not require independent research firms to share their findings about cyberthreats with government agencies, even if they constitute a potential national security threat.

In a $170 billion industry in which many companies are beholden primarily to private-sector clients, this gap in the law can create troubling incentives. Because their business models are often based on selling exclusive warnings and defense strategies to clients, cyberthreat intelligence firms don't have a direct financial inducement to share their findings publicly. Charles Carmakal, the FireEye investigator who led its probe of the SolarWinds attack, notes that private firms might hoard information about a novel cyberattack "to use it as a competitive differentiator."

To be sure, many cybersecurity firms do share their findings widely, and it's unlikely that any firm would have stayed quiet about a threat as dire as SolarWinds. But executives across the industry cite the lack of uniform expectations around disclosure as a pitfall that may let some attacks go unpublicized. Imagine if Boeing, in mid-1941, had discovered the plan to bomb Pearl Harbor, then taken time to weigh the costs and benefits of informing the Navy.

Private-sector dominance of software design contributes to another serious cybersecurity risk that the SolarWinds attackers exploited.

The malicious code at the core of the attack was deliv-

ANNE NEUBERGER, a veteran of the National Security Agency, is the top cybersecurity expert in President Biden's inner circle.

PHILLIP FARAONE—GETTY IMAGES

ered via a "supply-chain attack" that was fiendishly hard to detect. Once attackers compromised SolarWinds and inserted spyware in a trusted "patch," or update, it became nearly invisible to routine cyberdefense measures.

This vulnerability is especially dangerous because, in part for the sake of cost savings, most software reuses a variety of third-party components, such as open-source code. One compromised component can become a foothold for attackers to access or corrupt other systems, potentially turning it into a backdoor master key to any software built using it. Yet there is no widely accepted standard for tracking or reporting what components and interactions make up a piece of software, much less any regulation requiring such tracking. In the SolarWinds attack, this may have added obstacles, as thousands of private and government customers scrambled to understand the threat posed by the corrupted Orion patch.

There is growing awareness that effective cybersecurity must be built into software and networks from the ground up, including through "zero-trust" software that would limit hackers' movement between systems. But there's little market incentive to build software that is so robust, and governments don't have much leverage to require it. "You see an increasing reliance on commercial and even off-the-shelf technology in even very high-end [government] system spaces," says Eric Wenger, a tech-

2. STRENGTHENING CISA, THE WHITE HOUSE'S LIAISON TO BUSINESS

SHORTLY BEFORE the SolarWinds' hacking revelation, Trump ousted Chris Krebs, founding director of the Cybersecurity and Infrastructure Security Agency, or CISA, the agency that serves as the government's primary cyber-focused interface with private industry. Krebs, a veteran of Microsoft, had earned plaudits for building CISA, and for his role in keeping the 2020 elections free of foreign interference. He lost his job in a dispute over the President's baseless election fraud allegations.

The two-year-old CISA was already fighting to be "invited to the adult table in intelligence discussions," says Kiersten Todt, managing director of the nonprofit Cyber Readiness Institute. Krebs's dismissal would further handicap the agency most responsible for helping companies recover from hacks. (Krebs has since been hired by SolarWinds to help the company with its unenviable attempt to bounce back from its eponymous hack.)

But even as it absorbs its loss, CISA has gained new powers under the NDAA. For one, the agency got clearance to create a "cyber planning office" that will more closely and proactively coordinate with the private sector. That includes creating playbooks for how to respond to big hacks, putting in place economic continuity plans, and running tabletop exercises with corporations on code red situations. Such exercises would help big companies and cybersecurity firms plan for, say, what to do if Iran hacks a utility to poison local water supplies, the Kremlin causes citywide blackouts, or China fries our roughly three-dozen GPS satellites. "Bodies like CISA matter because they're trying to develop the philosophies and the methodologies and practices that we need share" to increase our collective defenses, says Vasu Jakkal, Microsoft's chief security marketer.

The NDAA boosts the authority of CISA in other ways as well. Crucially, CISA will be permitted to hunt down threats on federal networks, where who knows how many hackers are crawling. The SolarWinds hack ought to be viewed "as a long-term penetration of our most valuable networks," says Dmitri Alperovitch, founder of Silverado Policy Accelerator, a security-focused think tank. Staffing up a squad of top-notch search-and-destroyers "is something they need to start leveraging literally on day one," says Alperovitch, also a cofounder and former tech chief of the cybersecurity company CrowdStrike.

Word is that Biden intends to tap Rob Silvers, a former Obama official who helped negotiate a major trade-secret–stealing truce with China in 2015, as CISA's new leader. If he's confirmed, he'll be a close partner to the national cyber director.

3. SETTING BETTER STANDARDS

TOO OFTEN cost-conscious companies nick cybersecurity from their budgets first.

Ian Thornton-Trump says he experienced just that agony firsthand when the digital defense advice he gave to SolarWinds—whose widespread network monitoring tool Orion became ground zero for the hackstravaganza—went ignored a few years ago. (A SolarWinds spokesperson said, "We believe our investment in security has consistently been appropriate for a company of our size" and that the company is now "fortifying and implementing additional security practices.")

Thornton-Trump, now chief information security officer at cyber firm Cyjax, believes companies should keep up to snuff when it comes to certain basics, he tells *Fortune*. That could include requiring businesses to perform regular audits and penetration testing, which gauge how permeable a company's systems might be to a hack. He looks to the cybersecurity standards set by the New York Department of Financial Services, which came into full effect in 2019 and apply to financial firms operating in the state, as a solid precedent.

(Reaching for carrot over stick, Thornton-Trump suggests that the government offer tax rebates to companies that perform third-party attestations proving they've abided by the rules.)

Thornton-Trump also proposes requiring companies spend a certain share of their revenue on security controls. A 2019 study by Deloitte and FS-ISAC, a security-focused consortium for the financial industry, found that financial firms spend on average 10% of their IT budgets, or about 0.6% of their revenue, on cybersecurity. That's roughly $2,150 per employee. While there's no one-size-fits-all approach—and compliance doesn't equal security, any worth-their-salt security pro will tell you—the figure is not a bad rule of thumb.

Similar standards-setting is underway in the government. The Department of Defense asks its suppliers to comply with a "cyber maturity model certification" that aims to assure some basic level of data safeguarding.

Solarium's Montgomery hopes the government will establish a nonprofit bureau of cyber statistics—similar to Underwriters Laboratories, which tests and grades consumer products. That hypothetical organization could become an essential source of data for the nascent cyber insurance industry, a key lever for pushing the private sector to adopt better cybersecurity practices. It could also eventually rate software and software components based on their cybersafety—a grading system that could nudge sloppier tech companies to step up their game.

nology policy director with Cisco Systems. That's why the SolarWinds attack impacted public agencies and private companies alike: Using the same software exposes them to the same attacks.

SolarWinds can boast of an achievement that few of its rivals can match: Between 2010 and 2019, its profit margins tripled. The company was able to keep widening those margins, in part, by outsourcing work on its Orion product to less expensive software engineers in Eastern Europe. What seemed like a savvy business move may turn out to be the company's undoing: As of this writing, investigators were pursuing the possibility that hackers compromised SolarWinds through its Eastern European operations. But in outsourcing its engineering, SolarWinds was reacting rationally to market forces (not to mention following the lead of many of its software peers).

The underlying problem is that the U.S. has a severe shortage of cybersecurity talent. A recent survey by the labor analytics firm Emsi found that the U.S. has less than half the qualified cyber professionals it needs, across the public and private sectors—a gap that has resulted in hundreds of thousands of unfilled jobs. That helps make existing talent more expensive: The median cybersecurity salary in 2019 was $99,730, according to the Bureau of Labor Statistics, about 15% above the median salary for software engineers. And that extra cost gives firms in the industry another incentive to take production offshore.

In a sense, the problem starts in our universities, and some reformers think the solutions should begin there too. A 2016 review found that of the top 10 computer science programs in the U.S., none required cybersecurity coursework to graduate; three of those 10 didn't have a cybersecurity program at all. Some companies have been stepping up efforts to train entry-level cyberdefenders. Frank Cilluffo, a former adviser to the George W. Bush administration on counterterrorism and cyber issues, recommends thinking even bigger: "We need the equivalent of an educational moonshot around cyber issues, which will require federal funding," he says.

New cohorts of cybersecurity graduates won't help much, though, if they're working within a dysfunctional system. Restructuring that system is core to the work of the Cyberspace Solarium Commission, a task force commissioned by Congress to help reform U.S. cybersecurity. "Our focus [is] on making the market more effective at driving good behavior," says commissioner Suzanne Spaulding, a senior adviser for cybersecurity and counterterrorism at the Center for Strategic and International Studies. "If the market isn't performing the way it should, why isn't it?"

The commission spent the past year drawing up a wide-ranging list of recommendations, and in January, 26 of them became law as part of the 2021 National Defense Authorization Act. The NDAA creates a White House–

level Office of the National Cyber Director and grants new private-sector threat-response powers to the federal Cybersecurity and Infrastructure Security Agency—significant changes that commission members hope will prompt closer collaboration between government and industry on security standards. "A lot of the recommendations, some of us have been making for years," says Cilluffo, who's also a commissioner. "But the political will was not where it needed to be. Now, we don't need any reminders."

Solarium's mandate has been extended for at least another year, and its next round of advocacy and recommendations will focus more squarely on the private sector. The goal: creating better incentives for building secure software and sharing intelligence about cyberthreats.

On the engineering side, Solarium is pushing for a national cybersecurity certification authority—something like a Better Business Bureau that would grant its seal of approval to safer software. Such certification would likely involve tracking software manufacturers' defenses against well-known attacks, which make up a growing share of breaches. Increasingly, rank-and-file cybercriminals barely code at all, and instead use prepackaged tools sold by more skilled malefactors. Standardized defenses against this sort of simple, repetitive attack, Cilluffo says, could help free up cyberdefense teams to focus on fighting more subtle, innovative, and dangerous attacks, such as those from state-backed adversaries.

Other reformers back a so-called Software Bill of Materials: Such a bill would require U.S. tech companies to catalog the various third-party modules, open-source components, and library code they used to build a piece of software—addressing the industry's transparency problem. Such an inventory would make it easier to alert developers and customers to software in which security flaws were discovered, just as an auto manufacturer can issue a recall if, say, a brake shoe turns out to be defective.

The more urgent advocacy will be around the sharing of information about cyberassaults. Spaulding says that new rules could include enhanced threat reporting requirements for "critical infrastructure companies"—a category that might include private cybersecurity firms.

Proposals like these elicit understandable wariness from industry. Complying with a Software Bill of Materials, for instance, could be cost- and labor-intensive for companies, and could even create new risks by providing detailed information to attackers. Intelligence-sharing mandates, too, face opposition from many cybersecurity firms, which see them as eroding their competitive advantages. Cisco's Wenger worries, for example, that such rules could deter investment in cybersecurity, by reducing how much private firms can benefit financially from their research.

The question ultimately may be whether the cost of cooperation is greater than the cost of the next SolarWinds—or the one after that. ■

4. FEWER SECRETS: PASSING A DATA BREACH NOTIFICATION LAW

IN THE U.S. at present, companies have to disclose breaches only when they compromise certain types of data, like people's personal information. Most electronic break-ins—including ones featuring high-stakes stolen trade secrets, financial losses, or worse outcomes—therefore go unreported.

That's got to change, cybersecurity experts say, and the bar for public disclosure must be lowered. A national data breach disclosure law, akin to what Europe requires, would force companies to report any significant network intrusions to the government. If CISA can get a clearer picture of widespread hacking campaigns, it can better help coordinate responses. Down the line, obliging publicly traded companies to file cybersecurity-related metrics to the Securities and Exchange Commission, as they already do in accounting, will let stakeholders better assess risk.

If there's "less of a scarlet letter around a breach and a greater willingness to talk about them," says Amit Yoran, CEO of cybersecurity firm Tenable Networks and former president of RSA, then "you'll have more informed investors, and, as a nation, we'll have a better understanding of how many of these breaches are actually occurring and what the cost is."

"It's too easy for companies to argue their way out of disclosures under SEC guidance now, and the cottage legal industry that's formed around it is doing nobody any good," says Robert Knake, an ex–National Security Council member.

The trick is to make sure stronger disclosure requirements don't stop companies from rooting out intrusions in the first place, a possible negative outcome Knake says is like taking "an ostrichlike approach." Companies might prefer to stick their heads in the proverbial sand rather than spend money looking for hacks they'll have to tell the world about.

Companies that specialize in cyber "threat intel" are also wary about rules that might require them to disclose the hacks they unearth—in part because their business models are often based on selling warnings exclusively to clients. Suzanne Spaulding, a cybersecurity expert and a member of the Solarium Commission who supports such rules, says, "The concern over the years from companies has been, if I'm a good actor, and I disclose, but my competitor finds a way to hide it, that's a competitive disadvantage."

For the broader business community, stronger disclosure rules might have to go hand in hand with formalized audit and penetration-testing guidelines. Because if more hackings, like SolarWinds, can be brought out of the shadows, then sunlight can work its disinfecting magic.

WHAT COMES

"WE MADE A BUNCH OF MISTAKES": Scharf at a Wells Fargo office in Palm Beach. Federal penalties against the bank have limited its options.

PHOTOGRAPH BY **ERIKA LARSEN**

WELLS FARGO

Busted Stagecoach: Can Charlie Scharf —or Anyone— Fix Wells Fargo?

HOBBLED BY THE AFTERMATH OF ITS PAST SCANDALS, WELLS FARGO TURNED TO A TWO-TIME *FORTUNE* 500 CEO TO HELP IT GET BACK ON TRACK. THE PANDEMIC SHOOK UP HIS TURNAROUND PLANS. NOW THE 169-YEAR-OLD BANK AND ITS LEADER FACE AN EVEN STEEPER CLIMB.

NEXT

BY REY MASHAYEKHI

Charlie Scharf, the CEO of America's third-largest bank, is a man enamored with the potential of the company he leads. He sounds almost awestruck as he enumerates the forces at his disposal. There's the commercial bank that serves millions of small businesses. There's a consumer-lending platform that accounts for more mortgages than any other major bank. There's a wealth management division that has helped countless customers expand their affluence. "The core franchise, and what we do for consumers and businesses, is extraordinary," Scharf says.

He pauses before adding, matter-of-factly: "But we made a bunch of mistakes."

It is mid-October, the day before Scharf's first anniversary at the helm of Wells Fargo. The CEO is sitting in an elegant, wood-paneled study at his home on New York's Long Island, speaking via a Zoom video link. For much of a pandemic-afflicted year, this house has been the hub from which Scharf has tackled one of the toughest turnaround assignments in business. Scharf oversees an enormous, multifaceted bank with more than 260,000 employees and some 70 million customers. It's a company emerging from the most tumultuous period in its nearly 170-year history, one in which it got caught—on multiple occasions—flagrantly abusing the trust of those customers.

Wells Fargo continues to pay for those sins with a tarnished reputation and through the lingering impact of severe fines and sanctions. The most damaging of those is a Federal Reserve–imposed, $1.95 trillion cap on the bank's assets. As the economy reels from the impact of the coronavirus, all banks are feeling the effects of ultralow interest rates that clobber their profit margins. But unlike its rivals, Wells can't offset the impact by rapidly stepping

up lending volume or attracting capital reserves—the asset cap prevents it. Wells Fargo's revenue has steadily declined since 2017 and dropped another 15% in fiscal 2020, to $72.3 billion. Profits have shriveled, too, and its shares, which fell 44% last year, have consistently underperformed those of other big banks since the scandal erupted. "This company is a damaged company, and all strategies have to be put on the table to bring it back to a level of profitability that investors will find acceptable," says Gerard Cassidy, head of U.S. bank equity strategy at RBC Capital Markets.

When he took the gig, Scharf, now 55, stepped into one of the most closely scrutinized positions in finance. It's his third CEO stint at a *Fortune* 500 financial services company, and an extremely well-compensated one. He can earn up to $23 million annually, depending on stock incentives. It also ranks among the toughest chief executive jobs in America. Given Wells' status as one of the biggest "Main Street" lenders, its overall health has implications

6,400

POSITIONS ELIMINATED IN Q4 2020

With more than 260,000 employees, Wells Fargo has one of the nation's biggest workforces. More job cuts are likely, however, as the bank repositions itself.

for the broader economy too. Scharf's longtime mentor, JPMorgan Chase CEO Jamie Dimon, tells *Fortune* that the task Scharf signed up for is a challenge "too big to walk away from," adding, "It's better for the country and for the banking industry that they succeed."

For now, Scharf is concentrating on creating a leaner, more focused institution—shrinking the bank in order to save it. If he succeeds in shepherding Wells Fargo out of regulatory purgatory, he may restore the luster of one of the grand old names of American banking. Should he fail, Wells could be permanently relegated to afterthought status among its blue-chip rivals.

Fortune spoke with Scharf and top Wells Fargo executives—as well as analysts, critics, industry rivals, and former colleagues of Scharf's—to capture the state of the turnaround, some 15 months into the CEO's tenure. It has been an eventful time that has featured sweeping organizational changes—along with high-profile missteps that fueled skepticism about whether Scharf can institute meaningful cultural change. "It takes a long time to turn around such a big ship," says Jason Goldberg, a senior equity research analyst at Barclays. "He's learning that."

Scharf, for his part, sees a chance to restore the bank to its rightful place. "I came in with a clear understanding that the core franchise continued to be this great opportunity," he says, "but that there was a tremendous amount of work to do."

Scharf grew up in Westfield, N.J., a New York suburb crowded with financial professionals like his father, a stockbroker. By age 13, Charlie was working back-office jobs at Manhattan brokerages. As an undergrad at Johns Hopkins, he initially had designs on becoming a research chemist—until he had a sophomore-year epiphany. "I was in physical chemistry, locked in a lab, when I said to myself, 'I really don't want to spend my life in a place without windows,'" he recalls. In business, he realized, "you could create something in a very different way."

As fate would have it, a relative of Scharf's knew the father of a banker named Jamie Dimon, the young chief financial officer of Baltimore-based lender Commercial Credit. Dimon brought the recent grad on board in 1987—the start of a working relationship that would span more than 20 years. Scharf played a variety of roles under Dimon and Sandy Weill as they grew Commercial Credit into what eventually became Citigroup. When Dimon landed the top job at Bank One in 2000, he tapped Scharf as CFO. After Bank One merged with JPMorgan Chase in 2004, Scharf took the helm of Chase's sprawling retail banking business.

Dimon recalls Scharf as able to "handle just about anything" Dimon threw at him: "He got stuff done; he had a good nose for cracking through the bull." Scharf acquired the seasoning that came with ever-larger roles; he also saw Dimon's job evolve as he led ever-larger companies. Of what he learned from Dimon as a leader, Scharf says, "He stands in front. He doesn't hide behind people. He doesn't look at others when something goes wrong."

Scharf would put those lessons into practice in 2012, when Visa tapped him as CEO. Visa was still grappling with its 2008 transition from a private entity, owned by an association of card-issuing banks, to a publicly traded company. At Visa's San Francisco headquarters, Scharf found what he describes as an "insular" business that "didn't really engage with the technology community." He aimed to rectify that, establishing relationships with fintechs like PayPal and Stripe that expanded Visa's footprint in digital payments—a focus that proved prescient. Says current Visa president Ryan McInerney, a JPMorgan alum who followed Scharf to Visa: "A lot of the foundation he laid, especially as it relates to digital commerce, you're seeing the results now."

Scharf left Visa in 2016, seeking to be closer to his family on the East Coast—and leaving behind a company whose share price more than doubled during his tenure.

NEIGHBORHOOD FIXTURE: Wells Fargo has about 5,000 branches nationwide.

TING SHEN—BLOOMBERG/GETTY IMAGES

Even amid lockdowns, Wells Fargo had "1 MILLION CUSTOMERS A DAY COMING INTO OUR BRANCHES," says consumer banking head Mary Mack.

His experience there, as well as a subsequent stint as CEO of custodian bank BNY Mellon, taught him how all-encompassing the chief's role was. "There's no job that's comparable," Scharf says. "The whole organization looks to you for the wins and the losses, for setting the tone and the culture ... Some love it, and some don't love it." Scharf falls into the first category.

Around the time he was leaving Visa, another San Francisco–based company was reckoning with a scandal of tectonic proportions.

The details of Wells Fargo's fake-accounts fraud debacle are well documented: Driven by a hyperaggressive sales culture, employees opened accounts for and sold financial products to millions of customers—without their approval. The problems were endemic across the company, with similar sharklike misconduct surfacing in Wells' mortgage, auto lending, and wealth management businesses.

The fallout proved devastating. From 2016 through 2018, federal regulators hit Wells with five consent orders laying bare the institution's mismanagement—along with sanctions that included the constraining asset cap. Regulators also held Wells' leadership accountable: Former CEO John Stumpf, who stepped down after the scandal emerged in 2016, was eventually handed a $17.5 million fine and a lifetime ban from the banking industry. His successor, Tim Sloan, resigned under political pressure in March 2019. In a report last year, the House Financial Services Committee slammed Wells Fargo's board and management for continually failing to address the company's shortcomings, even years after the misdeeds came to light.

Wells Fargo had been one of the few American banks to emerge from the 2008 financial crisis with its reputation intact. As rivals stumbled, Wells grew stronger, as evidenced by its $15 billion mid-crisis acquisition of Wachovia. Now, it finds itself the bête noire of the banking sector. "We were growing while everyone else was focused on running themselves better," says Jon Weiss, a 15-year Wells veteran who now leads the corporate and investment banking division. "We were to some degree victims of our own success, and maybe we could have used a bit more introspection."

By spring 2019, Wells' board was searching for a CEO who could lead the company in a long, hard look in the mir-

ror. Six months after Sloan stepped down, Scharf got the job. Solving the bank's regulatory issues, Scharf said shortly after his appointment, would be "clearly the first priority."

For the first meeting of Wells Fargo's operating committee under the new CEO, its leaders gathered in a windowless conference room in St. Louis to address the daunting business of turning the bank around. "Charlie brought in a legal pad—not a PowerPoint presentation, not 40 pages of colored pictures the way that an investment bank would present—with a page and a half of notes, line by line, that he wanted to go through to explain the way he does business," Weiss recalls. "It was a disarming, casual, but very focused discussion with no baloney."

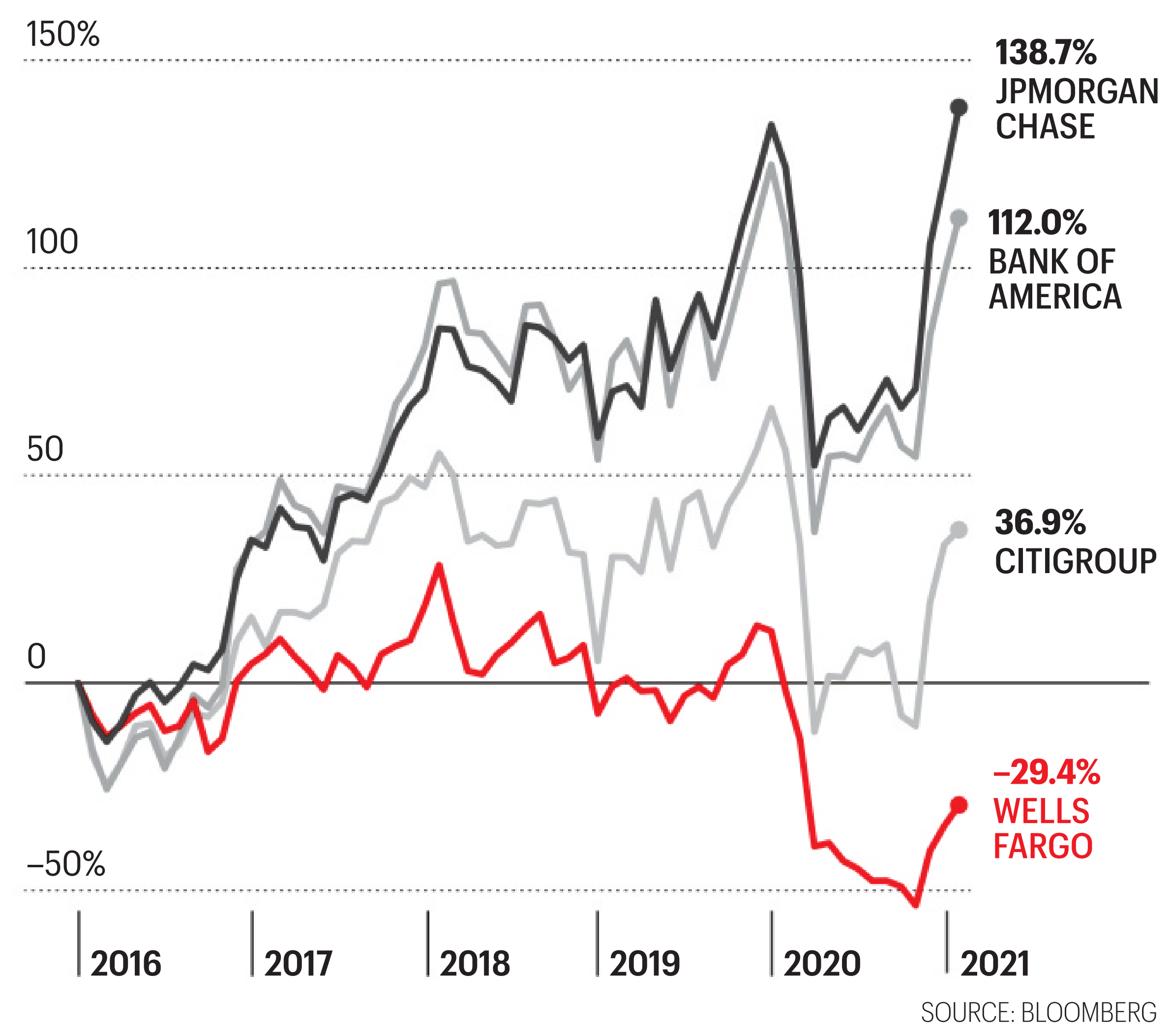
Matter-of-factness and a "no frills" demeanor are common threads in descriptions of Scharf; his directness can be as striking as his trademark shock of white hair. But plainspokenness can also be an asset for a chief executive with bad news to deliver and tough problems to solve.

The biggest problem Scharf identified at Wells Fargo was an exceptionally decentralized organization—one lacking the clear lines of accountability that might have prevented the fake-account fraud. The bank also lacked risk-and-compliance safeguards that most banks of comparable size already had. "We did have a relatively siloed organization, where you had intact businesses that were running a bit independently," says Mary Mack, who has been with Wells for 26 years and now leads its consumer and small-business banking division. "I don't think we did a very good job of stepping back and saying, 'Could that condition or set of weaknesses actually exist across the entire company?'"

Scharf began a major overhaul, starting with turnover at the top. Nine of the 17 people now serving with Scharf on the bank's senior leadership committee are new hires. Prior to last year, the role of chief operating officer didn't exist at Wells Fargo. Scharf created it and recruited Scott Powell, a former colleague at Citi and JPMorgan, to fill it. Powell most recently served as CEO of Santander's U.S. business, where he helped that bank cope with regulatory sanctions of its own. Several other new executives are also past colleagues of Scharf's: CFO Mike Santomassimo had the same role at BNY Mellon; Mike Weinbach and Barry Sommers, who now head Wells' consumer lending and wealth management divisions, respectively, are JPMorgan alumni.

In February 2020, Scharf unveiled a reorganization plan that redrew the company's business lines across five distinct divisions. Just as important was a reconfiguration of Wells' risk-management system: Each of the five divisions now has its own dedicated risk officer—a structure designed to ensure no unit of the bank is cutting corners.

Analysts hailed Scharf for bringing Wells Fargo in line with other banks' best practices. But subsequent events offered persistent reminders of the work that remains to be done. Last February, just days after the reorganization's unveiling, the Justice Department announced that Wells would pay $3 billion to settle criminal charges related to the accounts scandal. The consensus was that this would be Wells' last major penalty, but it offered another stark example of the scandal's erosion of the bank's profits. Another sign of the lingering cost: In 2020, Wells Fargo spent $6.7 billion on "professional/outside services"—more than 9% of total revenue—the lion's share of which reflects legal and consulting fees related to the post-scandal cleanup.



Meanwhile, the pandemic forced Wells Fargo to put daily emergencies ahead of long-term reforms. Scharf, still in the early days of meeting Wells' workforce, found himself confined to his Long Island home office. Keeping the bank's thousands of branches open was essential—even amid lockdowns, Wells had "1 million customers a day coming into our branches," says Mack—but keeping them safe, and transitioning nonbranch employees to remote work, was a logistical obstacle course.

COVID-19 also triggered a mini-scandal that echoed the bank's past misdeeds. After the government enacted mortgage relief measures to help people who couldn't keep up with payments, no fewer than 1,600 borrowers complained that Wells Fargo had placed their loans in forbearance without their consent—an act that could actually harm the borrowers' credit ratings and prevent them from refinancing. "We were erring on the side of trying to help customers in a very difficult time," Scharf says of the snafu, which the bank scrambled to correct. "Every institution makes mistakes."

The bank also entangled itself in difficult questions around diversity. No incident from his first year at Wells

Fargo proved more threatening to Scharf's reputation than comments he made in a June memo announcing new diversity initiatives, in which he cast doubt on the depth of talent available for top jobs at the bank. "The unfortunate reality is that there is a very limited pool of Black talent to recruit from with this specific experience," he wrote.

With nationwide awareness of structural racism honed to a sharp edge by the killing of George Floyd just a few weeks earlier, the comments were particularly tone-deaf. They upset many employees and drew widespread condemnation from critics outside the bank. They also highlighted the whiteness and maleness of the ranks of former colleagues from which Scharf had recruited many of his lieutenants. While his nine hires on the leaders' committee include a woman and two Black men, the highest-ranking ones, including the COO and CFO, are white men. "What we've seen is that he's replaced one insular group with another," says Nick Weiner of the financial industry labor group Committee for Better Banks.

Scharf quickly apologized for the "limited pool" comments, saying they reflected "my own unconscious bias." Wells has since created a diversity, representation, and inclusion group: Its chief, Kleber Santos, who joined the company in November from Capital One, sits on the senior leadership committee. Months later, Scharf is solemn and cautious as he discusses the gaffe. He points to the company's goal of doubling Black representation in its senior ranks over the next five years, as well as its plan (announced in his June memo) to tie some of executives' compensation to the diversity of their business lines. He also seems acutely aware that the hire-who-you-know approach that he has relied on for years has also perpetuated inequities. "When you look at the representation inside this company—and this is true of most financial institutions—there's a tremendous need to do things differently," he says.

January 15 at first glance seemed like just another dreary day for Wells Fargo. Disclosing earnings for the fourth quarter of 2020, the bank reported revenues that missed analysts' estimates, and shares fell nearly 8% on the day. The general gloom obscured the fact that Wells Fargo also revealed substantial details about its future—as a leaner institution doubling down on what it does well.

Recapping some moves and unveiling others, Scharf's team listed a series of asset sales that would extract the bank from "noncore" businesses. On their way out are Wells Fargo's $10 billion student loan portfolio and its Canadian equipment-financing business. The bank is also looking to off-load its asset management arm, which oversees more than $600 billion for institutional clients. "The businesses that we're exiting are perfectly good businesses," Scharf said on the earnings call. "The question is,

REORGANIZATION

DIGGING SMALLER, DEEPER WELLS

TO SURVIVE ITS CURRENT WOES AND KEEP SHAREHOLDERS HAPPY, A BIG BANK PLANS TO DOWNSIZE.

WITH REGULATORY sanctions limiting its ability to grow, Wells Fargo has been shedding "noncore" units to focus on its most promising businesses. Here are the units that CEO Charlie Scharf hopes will help the bank thrive again in better times.

CONSUMER AND SMALL-BUSINESS BANKING AND LENDING

2020 REVENUE
$34 BILLION

HEADS
MARY MACK AND MICHAEL WEINBACH

Wells Fargo has one of the largest home mortgage businesses in the U.S., and this division is Wells' biggest business segment by far. Falling interest rates have hurt the division's revenue as of late. But the bank's $400-billion-plus consumer loan portfolio also includes strong auto-financing and credit card businesses that command higher interest rates and should perk up as the economy improves.

WEALTH AND INVESTMENT MANAGEMENT

2020 REVENUE
$14.5 BILLION

HEAD
BARRY SOMMERS

Wells Fargo managed $2 trillion in total assets at the end of 2020—though it plans to sell its $600 billion institutional asset management business, the better to focus on individuals. Wells' wealth management team has historically served "mass affluent" and middle-class customers as well as richer ones. Scharf sees the division synergizing with consumer lending: "Huge numbers of customers who come into our branches have money to invest," he says.

CORPORATE AND INVESTMENT BANKING

2020 REVENUE
$13.8 BILLION

HEAD
JON WEISS

This division includes a $110 billion commercial real estate portfolio and a big stake in "C&I" loans (financing for businesses buying equipment and machinery). Overall, the bank's loans are split nearly 50/50 between commercial and consumer lending. While it's not a household name in the field, Wells Fargo is still the ninth-biggest investment bank in the U.S., according to Dealogic, and Scharf's team sees that as a business in which it could win market share.

OUTLOOK: UNCLEAR

WILL LIFE GET BETTER FOR BANKS?

BANKS HAVE BEEN SLOW TO RECOVER FROM THE COVID RECESSION—AND THE ROAD AHEAD LOOKS ROCKY.

FINANCIAL FIRMS, banks included, had a rough 2020 that wasn't reflected by the country's soaring stock markets. (The S&P 500's financials sector lost 4% in 2020, compared with a 16% gain for the broader market.) The coronavirus pandemic forced America's largest financial institutions to retool on the fly, leaving them scrambling to support their commercial and consumer borrowers, and undermining the income they made from interest rate spreads. Though sentiment has improved, 2021 looks like it will be far from a stroll.

A SLOW, UNEVEN RECOVERY

Some key indicators for banks, including mortgage demand and deposit growth, have remained strong. A resurgent bull market has driven trading revenues, and more economic stimulus seems likely. But high unemployment and lingering woes for small businesses remain burdensome headwinds, with no clear end in sight until COVID-19 abates. In the short run, big banks will emphasize their profitable—and thus far, relatively pandemic-proof—wealth management and investment banking businesses.

ROCK-BOTTOM INTEREST RATES

The Fed returned rates to near zero to deal with economic fallout from the pandemic, and it has signaled that they could remain there for years to come. That puts a ceiling on the rates banks can charge customers and reduces "net interest income," a key driver of revenues. (It's the difference between what banks earn on loans and what they pay out on deposits.) In the near term, expect banks to step up loan volume to make up for what they're losing in interest, especially in the mortgage space.

NEW MANAGEMENT IN WASHINGTON

Bank leaders won't miss the volatility and unpredictability of the Trump administration, but they may find themselves feeling nostalgic for some of its policies. President Biden will likely seek a reversal of Trump's pro–Wall Street deregulatory agenda, as well as the undoing of some tax cuts for corporations and high-net-worth individuals. Look for banks to team up with regulators to lay ground rules for new developments in fintech (like cryptocurrencies and digital payments) and capital markets (such as direct listings and SPACs).

are they best housed within Wells Fargo?"

In Scharf's vision, that housing is reserved for bread-and-butter businesses that Wells has dominated for decades—including consumer banking and personal wealth management—as well as for investment banking, where the company believes it can rise in the ranks.

To sustain profits while it pivots, Wells Fargo will keep cutting. The company has identified more than $8 billion in long-term cost savings, of which job cuts are part and parcel: Wells reduced headcount by 6,400 in the fourth quarter, and more cuts are expected this year. The bank plans to dramatically reduce its real estate footprint, scaling down its office space by up to 20%. A downsizing of its branch network is well underway. Wells Fargo had about 5,000 branch locations at the end of 2020, down from 6,600 in 2009, and it plans to close 250 more this year.

Ambitious as it is, the plan will likely leave Wells Fargo running in place insofar as overall growth is concerned—until it can satisfy regulators that it has fully reformed. The bank and its regulators refuse to comment on a timeline for the removal of the asset cap, citing legal constraints. "I understand people's desire to hear exactly what the company can look like when we get beyond these things," Scharf tells *Fortune*. But until his risk-control regime impresses the authorities, "beyond" will have to wait.

Some 20 years ago, while living in Chicago as CFO at Bank One, Scharf began taking guitar lessons. During the pandemic lockdown, he reconnected with his old instructor, and Scharf now studies with him over Zoom once a week, playing blues and rock. "It's creative," he enthuses. "The idea that you can pick up [a guitar] and make something out of it, differently than someone else who you hand the same device to, to me is just an extraordinary thing." Scharf is committed to coaxing something new and harmonious out of Wells Fargo. But it's going to take quite a while longer to get the instrument back in tune. F

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BILL HALL
CEO and Cofounder,
Redwood Tax Specialists, LLC

BRINGING INSTITUTIONAL TAX SAVING TO THE SMALL BUSINESS OWNER

Redwood Tax Specialists offers **innovative solutions** for reducing tax burdens on business owners and high-net-worth individuals.

BECAUSE OF COMPLICATED RULES, FEAR OF THE Internal Revenue Service, and the generalized knowledge of most certified public accountants (CPAs), many businesses just follow a standard tax plan. But a customized plan can help increase tax savings—something that Cornelius, N.C.–based Redwood Tax Specialists brings to the table for CPA clients every day.

A Storied History

By the time Scott Fedyshyn, lead strategic tax planner and cofounder of Redwood Tax Specialists, established the firm along with Bill Hall in 2019, he'd already had 17 years of experience, including tenure at two of the "Big Four" accounting firms, working as a strategic tax consultant for *Fortune* 500 companies. He had been involved in dozens of highly technical tax-reduction strategies and implemented tax savings to the tune of hundreds of millions of dollars.

But it wasn't until after Fedyshyn left the Big Four and ultimately owned his own CPA firm in Shelby, N.C., in 2014 that he first experienced a sense of the challenges faced by more traditional CPA firms.

"Endless legislative changes, commodity services with high competition, pricing pressures, and technology changes were just a few of the challenges I worked with then—and problems that CPAs are faced with today," Fedyshyn says. "I quickly realized that CPAs have to be nimble and wear many hats."

This realization would lead Fedyshyn to start pushing long-held boundaries within the CPA industry. His firm began partnering with other CPAs, including several of his prior colleagues at the Big Four, rather than viewing them as competitive threats. Fedyshyn formed long-term relationships with dozens of professionals with niche tax expertise and began to implement tax plans more like a project manager than a CPA. Ultimately, this allows Fedyshyn to assemble a team of professionals for each tax plan he implements and offer his clients multiple strategies simultaneously.

"THE BIGGEST STRATEGIC ADVANTAGE WE HAVE AT REDWOOD OVER OTHER SERVICE PROVIDERS OUT THERE IS OUR ABILITY TO BRING HUNDREDS OF STRATEGIES AT ONCE TO ANY GIVEN CLIENT."

SCOTT FEDYSHYN, CPA, CFP®
Lead Strategic Tax Planner and Cofounder, Redwood Tax Specialists, LLC

In short, Fedyshyn's outside-the-box thinking allowed him to be flexible—a skill that ultimately drives his position at Redwood Tax Specialists.

"Early on, I realized that the traditional model just doesn't allow for the necessary time and monetary investments in strategic tax-reduction services," Fedyshyn says. "Tax planning is the number one service requested by clients, but it takes a tremendous amount of resources to do it right, keeping this service out of reach for most CPA firms. Ultimately, the demand from clients and CPAs alike is what led to the creation of Redwood and our back-office tax planning team, and the expansion of strategic partnerships with advisors."

Leveraging the expertise he'd gained by working on tax-reduction strategies at the Big Four, Fedyshyn began implementing the same strategies on a smaller and more affordable scale at his firm. Some of his clients began realizing a 30% to 50% overall tax reduction, and Fedyshyn's firm flourished.

A Fortuitous Meeting

As Fedyshyn's firm and its innovative approach became more widely known within the industry, Fedyshyn eventually crossed paths with financial services professional and coach Bill Hall. Hall had spent most of his 38-year career helping high-profile financial advisors and CPAs grow their businesses by utilizing comprehensive tax strategies. Hall's extensive professional network and industry connections were a perfect complement to Fedyshyn's more technical tax foundation.

They decided to start Redwood Tax Specialists with a dedicated focus on tax reduction for business owners and high-net-worth clients. Out of the gate, their plan was to work collaboratively with a network of managing directors all across the country. Within a year, Redwood had grown to include almost 300 managing directors.

Hall explains that Redwood's tax-reduction plans aren't designed to replace the existing relationship between a client and their advisors; rather, they can be utilized by CPAs in addition to a client's current strategy. Redwood's turnkey advisory service, aimed at tax compliance firms, provides an opportunity for those firms to fully outsource tax planning, and avoid the intensive education and investment requirements necessary to expand into these technical areas.

"The biggest strategic advantage we have at Redwood over other service providers out there is our ability to bring hundreds of strategies at once to any given client," says Fedyshyn. "We customize each strategy for every client in order to achieve very specific outcomes, and we offer a complete implementation team. Nobody else is doing this with the level of competence that our team has."

Even when the COVID-19 pandemic hit and workforces went fully remote, Redwood's collaborative approach meant that it had a fortuitous head start, as the team was already using digital technologies to connect with directors and CPAs from coast to coast. Hall even points out that Redwood's remote service model can almost be regarded as the new industry standard.

"The results we've seen at Redwood have been spectacular," Hall says. "This kind of collaboration with deep-dive tax experts, along with our ability to maintain existing relationships, is a breath of fresh air to the industry. We're removing barriers and delivering unmatched client service, and we're fully prepared to take every opportunity presented to us in regard to tax benefits under any administration." ■

A drone's-eye view of the damage to bins at the Heartland Co-Op grain elevator in Luther, Iowa, on Aug. 11, the day after the derecho.

WHAT COMES

DANIEL ACKER—GETTY IMAGES

THE HEARTLAND

Hawkeye Elegy

LAST SUMMER A MONSTER STORM OF UNPRECEDENTED VIOLENCE TORE ACROSS IOWA, LEAVING BILLIONS OF DOLLARS IN DAMAGED FARMLAND IN ITS WAKE. IT WAS A BRUTAL BLOW TO AN ECONOMY ALREADY REELING FROM AN UNFORGIVING PANDEMIC AND A STATE DIVIDED BY POLITICS LIKE NEVER BEFORE. WHAT WILL IT TAKE TO REBUILD AND REUNITE?

NEXT

BY ERIKA FRY

The weather report showed a slight risk of thunderstorms, and in the early hours of Aug. 10, Justin Glisan, Iowa's state climatologist, was feeling hopeful about that. The land was dry and crying out for a good soak. On a call with field agronomists that morning, he'd exchanged wishes that the storm line making its way across Nebraska would hold together over Iowa.

Despite coming off two of the state's wettest years on record and ideal planting conditions in the spring, the summer months had been warm and windy, and by August, severe drought had taken hold in West Central Iowa. Glisan is attached to Iowa's Department of Agriculture and Land Stewardship, and on field visits, he had observed the telltale signs that crops were experiencing physiological stress: The corn had started to "fire," its lower leaves turning a brittle yellow as the plant shut down to conserve water; the leaves of soybeans, meanwhile, were flipping during the day to keep in what moisture they could.

All summer long, Glisan had watched storms approach the region, and just fizzle out as they hit dry air. The state's farmland desperately needed rain.

Before he became state climatologist in 2018, Glisan worked as a research atmospheric scientist at Iowa State University, building regional climate models and studying the fluid dynamics of the atmosphere. Every day, he thought about the acts of Mother Nature in terms of systems and parameters.

But nothing—not that work, not his Ph.D. and two meteorology degrees, nor his storm-chasing experience in the Midwest—prepared him for what so suddenly materialized over Iowa that day. He saw it coming from the deck of his Des Moines home, a wall of dark-as-night clouds that sent him scuttling to his basement. He was only halfway there when a tree limb hit his house and ripped out a gas main. The security alarm went off the moment he lost power—precisely four seconds past 11 a.m.

Over the course of the next two hours, the "monster" storm Glisan witnessed ripped across the state of Iowa with increasing intensity and devastation, leaving in its wake felled trees, downed power lines, overturned semis, crumpled grain bins, flattened crops, and mangled homes and businesses. By the time the storm petered out in Ohio, at the end of its 14-hour, 770-mile run, it had caused some $11 billion in damage, making it the most costly thunderstorm in American history, according to data from the National Oceanic and Atmospheric Administration (NOAA). At its peak, the wind gusts that day are thought to have exceeded 140 miles per hour in Iowa, such an anomaly in the middle of the country that NASA and Glisan are studying photos of damage to make sense of the storm.

Even in a state full of weather-conscious farmers, the event—which many Iowans still describe as an "inland hurricane"—seemed completely alien and unworldly, like nothing they'd seen before. In fact, it was a derecho

A grant from the NIHCM Foundation generously helped fund reporting for this story.

(pronounced deh-REY-cho), a term coined in the 1880s by Iowa's first official weather observer, Gustavus Detlef Hinrichs. A cantankerous, polymathic professor who had a hand in developing the periodic table, Hinrichs believed there should be a term to distinguish Iowa's straight-line wind events from rotational ones (a.k.a., tornadoes). He settled on the Spanish term "derecho" (meaning "straight"), which is defined today as a windstorm that travels at least 240 miles with sustained winds over 58 mph. Though such storms occur about every two years in Iowa, the term was not widely known in the state. Even DuWayne Tewes, the veteran disaster coordinator based in FEMA's Kansas City office who led the agency's response in Iowa, conceded he'd never heard the term before.

Tornadoes are of course the common disaster of the plains—terrifying and devastating, but short-lived and limited in their path of destruction. Derechos tend to be longer and more sweeping affairs, and this one was especially so. The storm essentially traveled due east along Highway 30—the old Lincoln Highway—and Interstate 80, cutting a swath of the state 90 miles wide that includes valuable farmland, a handful of meatpacking towns, Iowa's two largest university campuses (Ames and Iowa City), and Iowa's two largest cities (Des Moines and Cedar Rapids).

They were all caught, like Glisan, more or less unprepared. Derechos are especially complex, impromptu storm systems, making them hard to forecast with much lead time. Most impacted Iowans started their day with a standard August weather report and went about their activities, with no inkling that they'd have to shelter from 100 mph winds in a few hours, let alone live a week or more without power.

THE STORM'S PATH OF DESTRUCTION

COUNTIES DECLARED DISASTER AREA AFTER THE AUGUST 2020 DERECHO

MINNESOTA
WISCONSIN
MASON CITY
MARSHALLTOWN
FT. DODGE
AMES
TAMA
CEDAR RAPIDS
MADRID
HIGHWAY 30
IOWA CITY
NEB.
DES MOINES
OMAHA
IOWA
OTTUMWA
ILLINOIS
50 MILES
MISSOURI

SOURCE: FEMA

Ben Olson, a fourth-generation farmer in Benton County, was out hauling manure; Willie Fairley, a Cedar Rapids restaurateur was picking up supplies for his rib shack; Steve Shriver, a Cedar Rapids business owner, was grabbing lunch with his mom; Maria Gonzalez, a social worker in Marshalltown had just gone out with her dog, and her husband had run to the bank.

Father Craig Steimel, the pastor at five Catholic parishes in rural Benton Country, returned from running errands in the Cedar Rapids area just as the sky turned dark. His home in Norway is adjacent to St. Michael's Church, and the next thing he knew a garbage can flew by his window and then St. Michael's 110-foot, 140-year-old steeple landed in his yard. As the storm raged for another 30 minutes, he wondered if his house would collapse. Would the church blow over? "It was just ungodly," he says.

The storm was a trauma. But it was also more than that. It was a collision of disasters—this extreme weather event hit America's heartland in the middle of an economy-bruising pandemic and a summer of bitter polarization. For many, the derecho layered on more hardship and stress when they could least afford it. For local health officials, the storm complicated the already challenging task of managing a raging virus. For leaders, it piled another few Jenga pieces on the COVID-19 socioeconomic balancing act.

It's not fair to reduce Iowa's very real disasters to symbol, but on Aug. 10, with its flattened fields and exploded barns, Iowa looked like America felt.

When the rest of the country thinks of Iowa, they almost certainly conjure up long, flat stretches of cornfields and farms; flyover country populated almost exclusively by white people. But the state today is far more complex and diverse than the old stereotype suggests—like anywhere in America, it's a place in flux, full of tensions and contradictions.

One of the nation's top producers of corn, hogs, and soybeans, Iowa's economy remains driven by agriculture and related manufacturing. But as those industries have shed labor, Iowa's growth has shifted to more populated urban areas, powered by sectors like banking, insurance, business services, and health care.

Iowa has one of the nation's highest labor participation rates—it's a quirk of the Plains states that many middle-aged and older women work—but there aren't enough job opportunities to match the number of highly skilled workers the state supplies. Indeed, Iowa exports a lot of the talent it develops. "We educate the hell out of Iowans," says Dave Swenson, an economist with Iowa State University. "But the way our economy is configured with its heavy loading, production, manufacturing, and agriculture—all of that talent we educate, we can't use it."

Over the past decade, 70 of Iowa's 99 counties lost popu-

Scott and Jenni Birker on their farm near Garrison, Iowa. The couple were already struggling with the pandemic when the derecho destroyed their barn and damaged tractors.

lation. That includes many rural counties but also—and more troubling, says Swenson—the semi-urban ones that are home to "micropolitans," the manufacturing-dependent cities of 10,000 to 50,000 that have been shedding jobs and now have physical footprints larger than their economies. It's a dynamic that plays into the state's deepening urban and rural divide, which has been increasingly visible in the traditionally purple state's politics. In 2016 and 2020, Iowa supported Trump, but in 2020, more of that vote was in rural parts of the state. As is the case across the country, Iowa's red communities have gotten redder, and its blue communities bluer. At a high level, red is winning: Today, Iowa's governor, both of its senators, and three of its four representatives in Congress are Republican.

Going into 2020, Iowa's overall economy was flat. "It wasn't growing at all," says Swenson. Unemployment spiked like it did everywhere at the start of the pandemic but has since fallen to 3.6%. Swenson says that's less good news than it appears: Iowa didn't gain jobs during the year, it lost workforce. Swenson suspects the dropouts are largely women shouldering childcare responsibilities or people who retired early for pandemic-related safety concerns.

Not surprisingly, how Iowans weathered the past year and all of its unanticipated catastrophes depends on where you look and whom you ask. And so this accounting is a mosaic of many different individual stories, told as the derecho blew, from west to east.

The picture it reveals, while distinctly Iowan in some ways, is one that, from a distance, looks fundamentally American in 2021. It reveals a society struggling to grapple with a series of complex, interlocking issues at once—a novel coronavirus and climate change; an economy and demography in flux; a public bitterly polarized by politics. Sitting as it does in the geographic middle of the U.S., Iowa functions naturally as a microcosm of the broader nation. And the questions it's wrestling with echo those at the heart of our current circumstances: How do you balance public health and the economy? Personal freedom and the greater good? Fear and science with blind certainty and belief?

In short, what can Iowa show us about our way forward?

Like many people, I spent a lot of 2020 worrying. Catastrophizing is something I've always been good at, and so early last year, when the esteemed infectious disease expert Michael Osterholm told me that he expected a novel coronavirus in China to spread like the wind, my mind instantly went to my parents, both of whom are in their seventies and one a lifelong smoker, in Cedar Rapids.

When I told my colleagues I was worried about my parents getting the virus, they chuckled. In Iowa? That's the safest place you could be. This was the frenzied month of February when we lacked such imagination that the U.S. government was spending millions to evacuate American

PHOTOGRAPH BY **DANNY WILCOX FRAZIER—VII/REDUX PICTURES**

citizens from foreign countries, as if one could outrun the virus and that U.S. borders would protect them.

The coronavirus did of course reach Iowa. The first known cases were in early March—an adventurous group of senior travelers had contracted it in Egypt while on a Nile cruise—though it was probably spreading in the Hawkeye State already.

In the beginning, Iowa reacted to the coronavirus like much of the country, with the abrupt closure of schools, theaters, churches, bars, indoor dining, barbers, and tanning salons. Iowa Gov. Kim Reynolds, a conservative Republican in her fourth year on the job, issued a state public health emergency because of the virus on March 17. But she did not issue a shelter-in-place order, one of the few governors to not do so, leaving Iowa more open for business than most states.

I sent my parents N95 masks as well as a pulse oximeter, which I asked them to use regularly with the strong, and surely annoying, suggestion that they report their readings back to me. (They didn't.) We did weekly Zooms, which lifted spirits and provided some peace of mind.

Iowa, with a population of 3.2 million, is not a particularly dense state—it ranks 35th in the U.S. in density. But in the early weeks of the pandemic, the state had an alarming number of cases, most of them linked to meatpacking plants and nursing homes. The virus was hitting the essential and the infirm. "The tradeoff in Iowa was we were more than willing to maintain our economy, at the expense of the health and well-being of our workforce," says Swenson, the Iowa State economist.

"These people, they must have FLUNKED SCIENCE," says the mayor of Marshalltown about his citizens who won't wear face masks. "They just DON'T GET IT."

That Faustian deal led to community spread and punished other businesses too. Ben Olson, the farmer in Benton County, had 200 beef cattle lined up, ready for delivery at a nearby Tyson plant on March 31. Together they represented hundreds of thousands of dollars and the seven-month investment in raising them from 800 pounds to their precisely desired sale weight—1,500 pounds. He got a call 12 hours before go time: There was an outbreak at the plant; he'd have to wait. The same thing happened two weeks later. He sold his oversize cattle a month late, for a bad price. Pig farmers across the state faced similar dilemmas; some, with no market for their hogs, had to euthanize them.

The state's curve hadn't flattened much before Iowa reopened in mid-May, and since then the picture has gotten much, much worse. There were plenty of things, brought to light by local media and the public health community, that did not inspire great confidence in the state's response—like, for instance, the fact that the state's main testing infrastructure was provided by an inexperienced Utah startup that won a no-bid contract seemingly due to its connections to Ashton Kutcher, Iowa's favorite celebrity son.

Most of all, Reynolds was absolutely insistent, press conference after press conference, that the best approach to the pandemic was to put it in Iowans' responsible hands. The state didn't need to order its citizens about what to do because she trusted them to do the right thing. She wouldn't issue a mask mandate, nor would she give mayors in her state the power to do so.

At the time, my father was still holding out hope that there would be Iowa football games to attend in the fall, and the prospect of him in a stadium with the mask-less

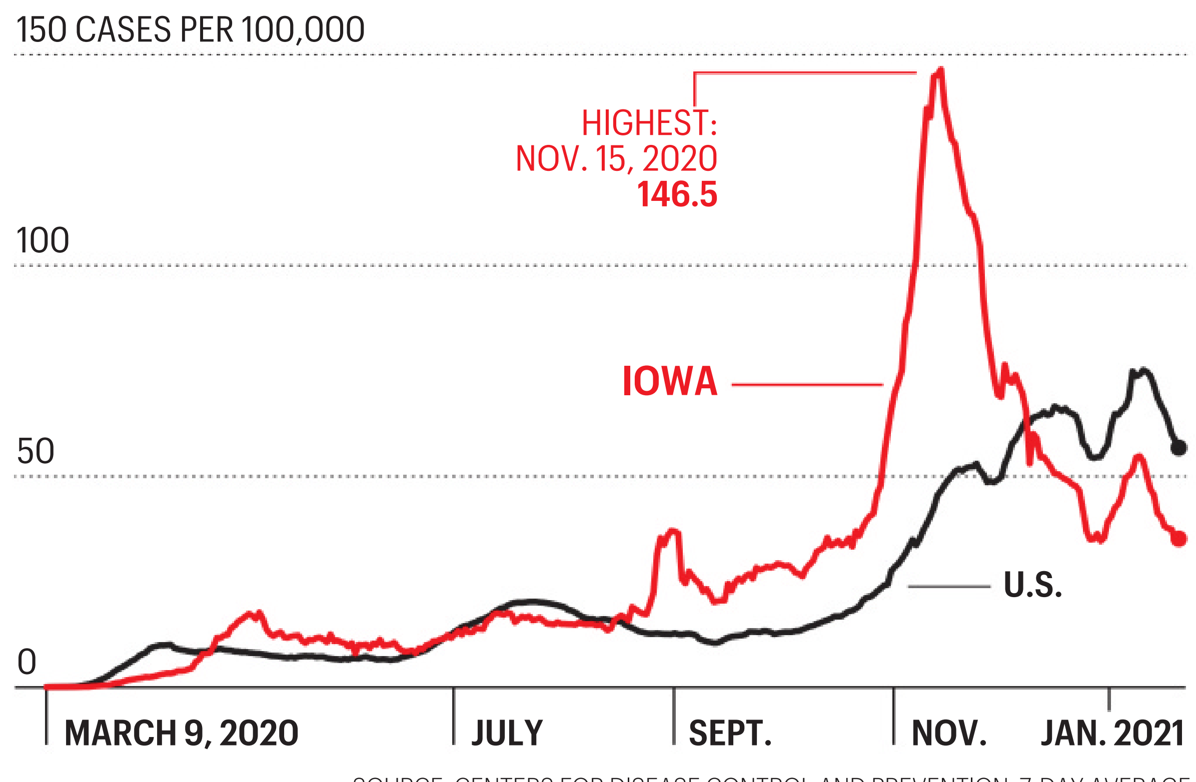
Kimberly Elder (left), the emergency management coordinator for Marshall County, is a one-woman disaster relief department. Restaurateur Alfonso Medina's slogan, "No love, no tacos," went viral in October.

masses was among my worst COVID fears at the time.

Then, in the middle of the afternoon on Aug. 10, my mom sent a group text that began, "We are safe [prayer hands emoji]…" There was a series of photos that were barely recognizable as their backyard. "Tornado!?" My sister texted. My brother, who lives a block away from my parents, wrote "land hurricane." They didn't have the power or cell reception to communicate much beyond that, and for the next 48 hours it was as if Cedar Rapids had been blown off the face of the earth.

There were a few video clips of the intense storm circulating on social media, but it was hard to find much news

RATE OF DAILY NEW CASES OF COVID-19



SOURCE: CENTERS FOR DISEASE CONTROL AND PREVENTION, 7-DAY AVERAGE

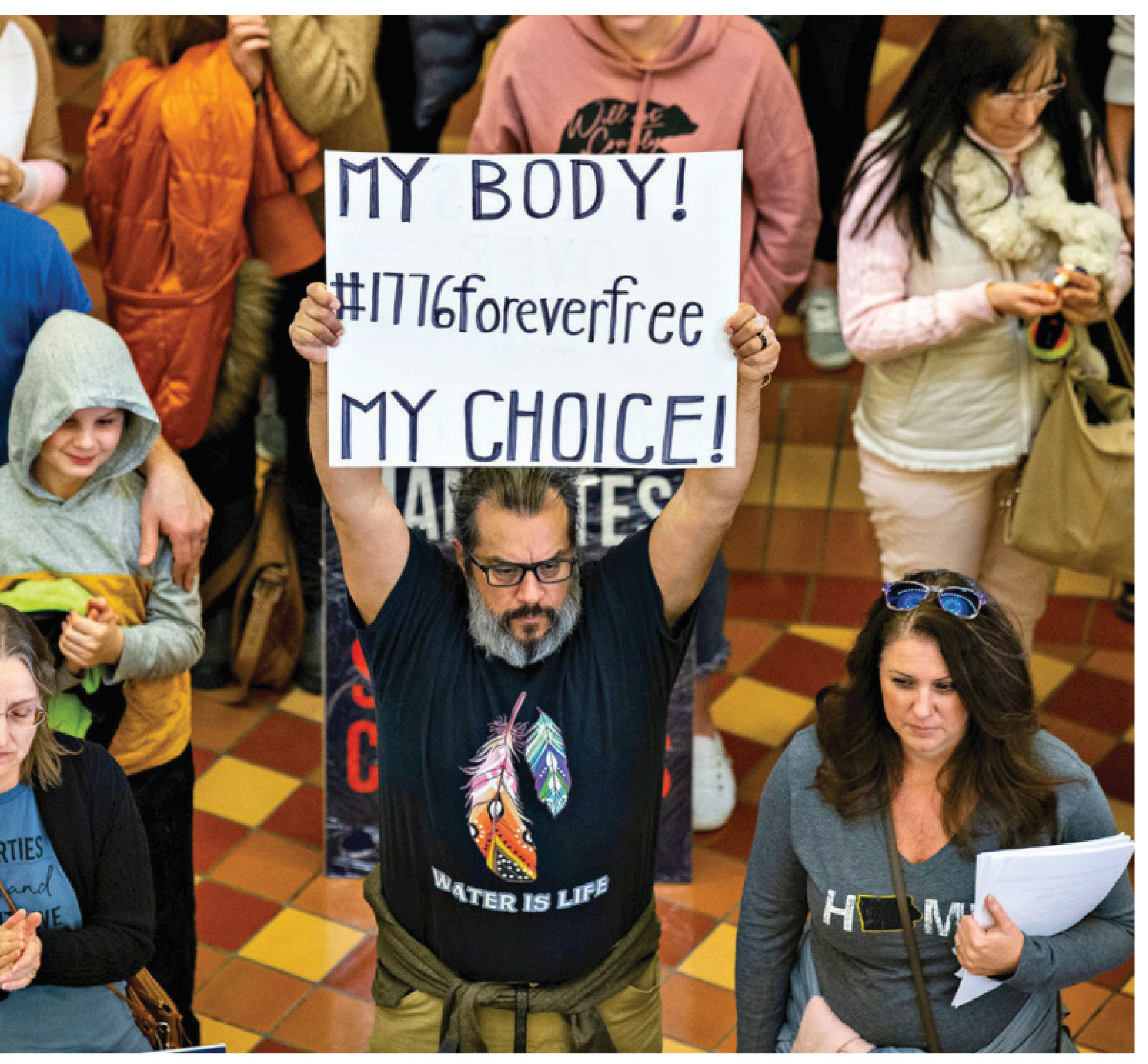
on what had happened beyond mention of a wind event in Chicago. Cedar Rapids hadn't been blown off the map exactly, but it, along with hundreds of other communities, had blown off the grid.

All of the Cedar Rapids metropolitan area, some 132,000 people, lost power in the storm. (Across the state, 680,000 customers did.) With cell towers toppled, some lost communications too. For a 51-hour period, St. Luke's Hospital, one of two medical centers in downtown Cedar Rapids, was a complete island—losing Internet, electronic medical records, the landline, and service from all three of Cedar Rapids' cell carriers. At the same time, Eastern Iowans who had been injured in the storm or debris-cleaning efforts were pouring into the emergency room. The hospital saw twice its normal volume in the 24 hours after the derecho. "It was probably the scariest time I've had as a hospital administrator," the hospital's CEO, Michelle Niermann of UnityPoint Cedar Rapids, tells me.

Assessing the scope of the damage was especially challenging in Cedar Rapids, which—beyond the loss of power and communications—was initially almost untraversable because of all the debris and fallen trees. (As a "Tree City USA," Cedar Rapids a lost an estimated 65% of its canopy in the storm.)

It's hard not to think of the derecho as a blatant spectacle of climate change, particularly when the city it hit hardest, Cedar Rapids, is not long recovered from the freak 500-year flood that destroyed much of its downtown and a good chunk of its affordable housing in 2008.

PHOTOGRAPHS BY **DANNY WILCOX FRAZIER—VII/REDUX PICTURES**



Anti-mask protesters inside the rotunda of the Iowa Capitol in Des Moines on Jan. 11, 2021. Marshalltown Mayor Joel Greer (at left, in suit) with Iowa Gov. Kim Reynolds (in jeans). The governor didn't issue a mask mandate until late in 2020.

FROM LEFT: KELSEY KREMER—THE REGISTER/USA TODAY NETWORK/REUTERS; OLIVIA SUN—THE REGISTER/USA TODAY NETWORK/REUTERS

As climatologist Glisan told me, it's difficult to link a single extreme weather event to climate change. But there's plenty of subtle evidence that Iowa's weather is changing and increasing the odds of damaging storms like the derecho. Much of Glisan's job is helping farmers adapt to that reality—like preparing for more frequent heavy rainfall. (The probability of receiving more than three inches of rain in a 24-hour period in Iowa has tripled over the historical rate in the past 30 years.)

In the 2020 Iowa Farm and Rural Life poll, 81% of farmers said they believe climate change is occurring, up from 68% in 2011. That's a much greater percentage than across Iowa's general public, of whom 67% believe global warming is happening. (The rate is 72% nationally.)

I didn't get to speak much to my parents during the 10 days they were in the dark, dealing with the derecho. Most attempts to call were met with understandable frustration about draining their phone battery. I know it was tough on them. My mom is still sometimes moved to tears when she talks about the volunteers—friends, family, and total strangers—who came with their chain saws to help them out. My family was lucky in that the trees that fell on their houses did not cause significant damage. My parents got a new roof, which was covered by insurance; my brother will get one in the spring.

I got the sense from them and others in Cedar Rapids, and I felt it myself when I visited in December, that one of the hardest things post-derecho was inhabiting a world of such obvious and inescapable physical loss, as if the landscape were reflecting their whole year's experience back at them.

The derecho wreaked havoc everywhere it hit. In Madrid (pronounced MAD-rid), 30 miles north of Des Moines, the storm peeled the roof off the four-floor Madrid Home, a senior living center, where six coronavirus patients were in isolation and receiving treatment on the facility's top floor. Kris Hansen, CEO of Western Home Communities, which runs the site, was in a virtual meeting when he got the panicked call from his executive director in Madrid.

For Hansen, who was an hour to the northeast, in a part of the state where skies were still clear, it was an unthinkable twist. With 10 senior-living communities in the state of Iowa, the pandemic had been a real test for Western Home—for all the reasons familiar to long-term-care facilities across the country (a lack of PPE, a shortage of workers), and for reasons more specific to Iowa.

"I got frustrated with the governor a few times for not coming out stronger with a mask mandate," he says, adding that it felt like the state had chosen the economy over protecting seniors. "Why would we put anybody at risk if

we don't have to? Our employees are still out in the community. They don't have a choice."

Western Home effectively guarded its sites against a COVID-19 outbreak until late July, when it experienced its first one in Madrid. The virus had slipped in during a visit from one of the facility's contracted therapists. Over the course of a few days, six patients and three staff on the home's first floor tested positive for COVID. It was tough on morale. "They were beating themselves up because they felt like they had failed," says Hansen, who, like other health and long-term-care providers across the country, has been contending with a serious shortage of workers.

The fall brought scary and unspeakable tragedy to some of Western Home's properties. The company had some managed-care facilities where nearly 100% of residents tested positive, and where workers, also positive, took care of them. "It just scares the crap out of you," he tells me. "[My employees] have got families too." The biggest challenge has been controlling the virus in dementia units. At one small facility in Cresco, Iowa, eight of 24 residents were lost to COVID. "We see what the results of this are," he says of the state's lax approach to the virus.

When I spoke with Hansen in mid-January, his staff and residents were still awaiting vaccines. Says Hansen: "It's not rolling out nearly as fast as we had hoped." He didn't blame the state but the federal government, which is running the rollout in long-term-care facilities with the private sector. "It's just not well-coordinated enough. We've got folks, quite honestly, that are going to die because of this, because of exposure that continues on."

Hansen remains frustrated by the dynamics around the virus in Iowa. He noted that the day before we talked there had been an "Informed Choice Iowa" rally involving hundreds of unmasked Iowans in the rotunda of the Iowa state house (where state legislators are not required to wear masks, and many don't). The group was calling for an end to COVID mandates. "I don't know what happened to common sense in the middle of this whole pandemic," says Hansen. "It's just crap that this thing turned out to be as political as it did."

Naturally, I didn't stop worrying about COVID when the derecho hit. I worried more. As Iowans will tell you, they come together in disasters. I imagined the virus spreading with all the goodwill.

Cedar Rapids did see cases peak slightly after the derecho and the immediate recovery, says St. Luke's Hospital's Niermann, but the situation wasn't as bad as she feared it would be. "Masking went way down," she told me. "Honestly, people had to work on a different level of hierarchy of needs."

Far worse was yet to come. For much of the fall, Iowa was one of the nation's COVID chart-toppers. The virus was everywhere, hitting rural counties especially hard. Despite growing cries from the public health community to do more, Gov. Reynolds again just asked Iowans to be responsible. As the curve climbed, the governor herself appeared on stage with President Trump and without a mask at an outdoor rally attended by thousands of his supporters in Des Moines.

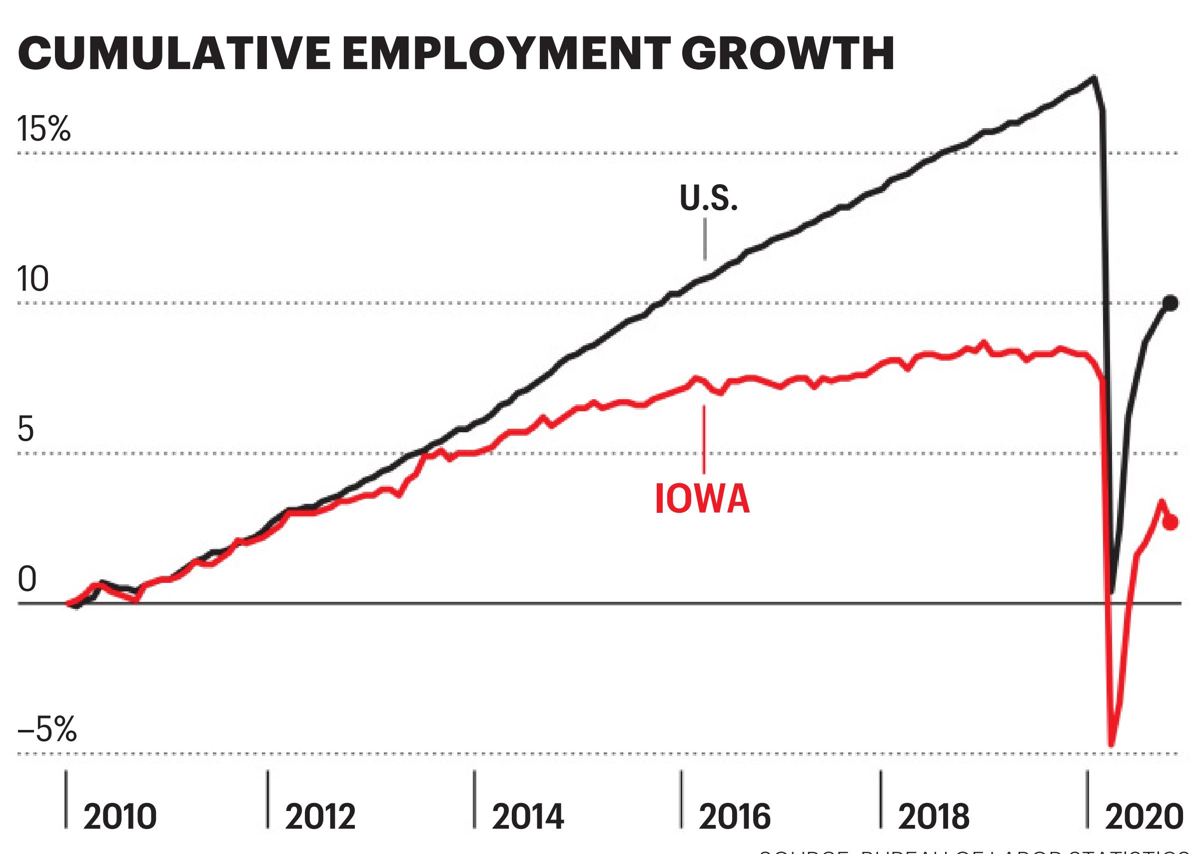
In November, health facilities around the state began announcing that they were at or near capacity—they lacked either the staff or beds to handle more COVID patients. The governor responded with a set of complicated rules aimed at controlling the spread: no more than two spectators per child at an athletic event; face coverings should be worn at indoor gatherings of 25 or more, or outdoor gatherings of over 100. Finally, the week before Thanksgiving, Reynolds, in a tone that begged forgiveness—"No one wants to do this … I don't want to do this"—issued a statewide mask mandate, albeit one with some exceptions.

The mask rule couldn't have come soon enough for Marshalltown Mayor Joel Greer. A lawyer by day, Greer had watched COVID stress his community since early spring. Marshalltown, a city of 28,000 smack dab in the middle of Iowa, is a meatpacking town, and like other Iowa cities it had had an early outbreak at its pork processing facility and largest employer, JBS. Dozens tested positive for the virus in April, and one local employee died a week before retirement in May.

It had just gone on from there. For Greer, it was a source of frustration and heartbreak that his county had at times been one of the most hard-hit in Iowa, while Iowa was one of the most hard-hit states in the country.

Greer Zoomed periodically with a group of mayors in central Iowa. Many wanted to issue mask mandates, something they technically didn't have power to do. Some went ahead with it anyway. Unwilling to exceed his legal

CUMULATIVE EMPLOYMENT GROWTH

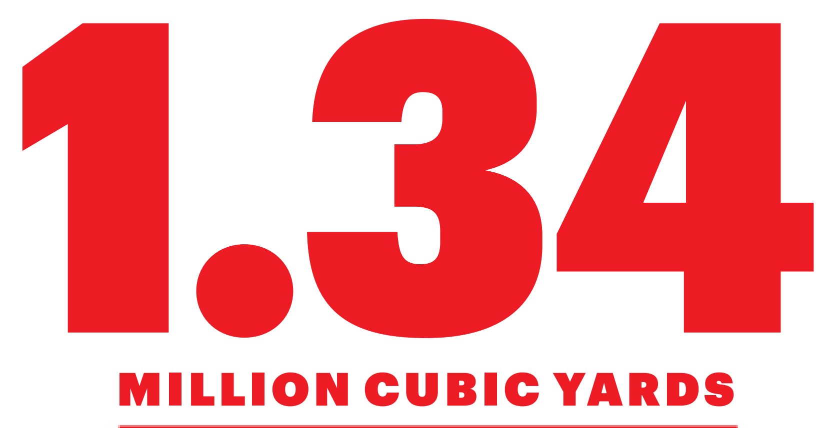


SOURCE: BUREAU OF LABOR STATISTICS

authority, Greer issued a mayoral proclamation requiring face coverings, with the caveat it couldn't be enforced. It didn't really catch on.

In October, Greer walked into a local bar to pick up a takeout order. The place was crowded, and while the staff were wearing masks, he was the only customer wearing one. The other patrons began making derogatory comments about him and questioning his manhood. "These people, they must have flunked science," Greer tells me. "They just don't get it."

Service workers in Marshalltown were among those who paid the price for the divide over mask-wearing.



MILLION CUBIC YARDS

Amount of storm debris hauled away by debris management companies in Iowa since the derecho, equal to about 24,000 dump trucks, or 133,000 tons

Alfonso Medina, the 31-year-old proprietor of La Carreta Mexican Grill, a popular Tex-Mex restaurant in the city, came down with COVID during the last week of November. He lost his sense of taste and smell, a symptom that, by that point in the year, he estimates 80% to 90% of his 17-person staff had already experienced. Since March, his team had tried to distance in the restaurant and take precautions. They had worn masks, but few customers did.

"It was very frustrating that customers didn't have to wear them because it was almost causing this, to a point," Medina told me in early January. "We could all be wearing masks, but we knew it's just a matter of time before someone gets sick."

While a couple of big-box stores in Marshalltown—Menards and Walmart—started requiring face coverings early in the pandemic, without a state mandate and as a minority-owned business, Medina thought it would be difficult to enforce a mask policy at La Carreta. His employees, particularly those in high school who worked part-time, weren't comfortable confronting customers. He wished his patrons would just be responsible. "If you're coming here to eat because this is your favorite restaurant, why wouldn't you just wear one?" (Since the governor issued the statewide mandate, he says, almost everyone wears them.)

Medina prayed his staff wouldn't all get sick at once and require him to shut down. The restaurant has actually done very well during the pandemic—he credits takeout alcohol sales for the fact that La Carreta had its best-ever Cinco de Mayo in 2020. And Medina says he was lucky to have gotten the virus himself during the quiet Thanksgiving week, at a time when his business could handle his 10-day absence.

Most of his employees had mild cases like his, and all eventually recovered, but nearly everyone on his team has lost someone to COVID: Medina's 52-year-old uncle in Ohio; his parents' 30-year-old physician in Mexico; his chef's father; the grandfather of two servers; loyal customers. "Death has been all around us," he says.

Medina was born in Roanoke, Va., and he spent his early childhood traveling around the country with his parents, immigrants from Mexico, as they built a growing business of Tex-Mex restaurants. They arrived in Iowa when he was 5 years old and later moved to Marshalltown, which he loved for its diversity, the good education he got, and the kindness of people generally. "It was a good place to grow up. You know, 'Iowa nice,' you really do see that," he says.

When the pandemic began, Medina noticed many high-demand items—sanitizer, rice and beans, toilet paper—were available from his bulk suppliers. He made large orders and started reselling things locally; at one point, he was providing local nursing homes with gloves. Throughout the pandemic, he's donated staples for local food-drive efforts and organized fundraisers for families who have lost members to COVID.

But Medina is probably best known for a slogan—"No love, no tacos"—that he promoted on a billboard in front of his restaurant, and on merchandise this fall. After the killings of George Floyd and other unarmed Black citizens by police last summer, Medina felt a responsibility to use his platform as a local business owner to be vocal about his values. He experimented on social media and got good feedback, so he placed a yard sign in front of La Carreta. It had, what seemed to him, nuggets of unimpeachable common sense: "Black lives matter"; "Human rights are women's rights"; "Science is real." But the sign prompted an angry, handwritten note on a receipt one day; the customer called the sign un-Christian. Medina posted a photo of the receipt on his personal Facebook page with his own note: "No love, no tacos." He also set up a website and online clothing store under that banner, advocating for fairness and equality and that Election Day be made a federal holiday to ensure all can vote. Profits from the site went to a local scholarship fund Medina had previously established.

As things do, his message went viral, especially after he was featured by CNN in October in the run-up to the election. Orders for "No love, no tacos" hats and shirts poured in from around the world, and as people posted photos of themselves voting in November, many hashtagged them, #NoLoveNoTacos. The effort funded 14 scholarships to

The backyard of a home in Cedar Rapids damaged by the derecho. Designated as a "Tree City USA," Cedar Rapids lost an estimated 65% of its canopy in the storm.

JOSEPH CRESS—IOWA CITY PRESS-CITIZEN/USA TODAY NETWORK/REUTERS

Marshalltown's community college.

Medina says he received at least one letter that was far nastier than the note that had kicked off everything. I asked him if COVID and the current political climate had made Iowa less nice. He said he and his employees don't talk politics in the restaurant for a reason.

"There's people in Marshalltown with way different points of view, and I respect everybody's point of view," he says. "I have clientele here that have different party affiliations than mine. They walk in with whatever gear or whatever their shirt says, and I tell my employees, 'We give them the same five-star service as anybody else.'"

Mayor Greer has found that type of neutral ground increasingly hard to preserve. He laments how politicized the pandemic has become in his city. He's taken heat over COVID—in emails, texts, and a whole lot of comments lobbed at his mayoral Facebook page—from both sides. "Half the people are mad as hell that school's in session, the other half are mad that it's not. It's been pretty ugly," he says.

Three years in, Greer's tenure has involved dealing with one catastrophe after another in Marshalltown. One July day in 2018 a tornado literally traveled down Main Street, felling the courthouse's clock tower and ransacking the historic district and downtown businesses, before damaging a number of homes in one of Marshalltown's low-income neighborhoods. That made the derecho a surreal and especially cruel sequel of sorts.

Much of the burden of responding to these disasters has fallen on the shoulders of Kimberly Elder, emergency management coordinator for Marshall County. She's been in her role since 2003, and every year, it seems, there are more disasters and fewer resources to deal with them. For much of 2020, she worked out of an office full of boxes. Some of them are filled with PPE, the county's stockpile that she herself distributes to nursing homes and emergency responders. Others are file boxes, brimming with paperwork—the long tail of administrative business that follows a disaster. Elder hasn't had a vacation in more than two years, and, as a one-woman shop, her biggest fear is getting sick with COVID. Says Elder: "If I'm in the hospital, like some of these people are, what are they going to do?"

Elder isn't the only one mired in the process of recovery.

Some in the community have struggled more than others to get timely relief from insurers and state agencies. As Iowa cities go, Marshalltown is uniquely diverse, with a population that is 30% Hispanic, according to recent census data. Students in the Marshalltown school district are native speakers of more than 40 different languages; kindergartners in the district are 70% nonwhite. The meatpacking plant helped give rise to this multiculturalism because its jobs have drawn different populations to

the city over time, including most recently Burmese and Congolese refugees.

In navigating the recovery process, language barriers are one issue; the other is time. The city's immigrant population makes up a large part of Marshalltown's essential workforce, employed in jobs that often don't offer flexibility to deal with things like lining up an insurance adjuster.

For some on the Meskwaki Settlement, the 8,000 acres of Tama County that is home to the Sac & Fox Tribe of the Mississippi in Iowa—east of Marshalltown—displacement because of the derecho came with another brutal cost: COVID.

Iowa's only federally recognized tribe, the Meskwaki purchased the land in 1857 after resisting banishment by the federal government to a reservation in Kansas. Over the years the tribe expanded its holdings, and the settlement, where 1,200 or so tribal members currently reside, has its own health clinic, court, and school. In 1992 the Meskwaki opened a hotel and casino on the property—advertised as having "the loosest slots in Iowa"—which today provides about 70% of funding for tribal operations.

The derecho damaged 271 of the settlement's 350 homes, and in the storm's aftermath, the generator-powered hotel was the obvious place for those affected to go. Seven hundred tribal members "jam-packed" into the hotel, some five or six to a room, says Lawrence SpottedBird, the settlement's executive director. People found themselves in proximity to people from whom they'd been socially distanced for months.

"We were interacting more closely and working more closely," says SpottedBird. "We had to drop our guard to do that. The result was our cases spiked."

The settlement, in some ways, had taken an opposite approach to the state's in handling the pandemic. Rudy Papakee, health director at Meskwaki Tribal Health Clinic, learned of the community's first COVID case in March. A tribal member had sought care at a hospital for breathing problems and tested positive for the virus. Soon the individual's family members and their contacts did too. Several of the cases were severe, involving hospitalizations, and one elder who contracted the virus died.

"We were a little epicenter, at first," says Papakee. He knew many in the population were vulnerable, either as elders or individuals with health conditions, like diabetes and high blood pressure, that put them at greater risk. Tribal leadership responded almost immediately with a shelter-in-place order, shuttering the casino and other operations on the settlement. They continued to pay employees and asked them to stay home. They had a robust and accessible testing infrastructure, thanks to the Indian Health Service. When the tribe opened back up in early summer, it did so conservatively: It required face masks in public and canceled the annual powwow and other culturally important ceremonial gatherings.

But there were limitations to the effort. Many of the settlement's residents work in nearby towns like Tama, Toledo, and Marshalltown, and everyone has to leave the settlement to get groceries and other supplies. The Meskwaki's efforts to stop the spread of the virus could only be as good as the efforts in those surrounding communities.

"The state of Iowa was one of those states that didn't take the virus too seriously," says SpottedBird, who moved from Seattle to take his job in May (he's not a tribal member). "So safeguards were kind of lackadaisical, loose, and people were generally not wearing masks for a long time."

Like many health professionals in the state, Papakee has been frustrated greatly by Gov. Reynolds's response to the pandemic. He would tune into her press conferences on the virus only to be dismayed each time by her continuing insistence that she trusted Iowans to make the right decisions. "Obviously you could not, because our numbers continued to soar," he says.

He admits some of the same challenges exist on the settlement; there are those in the community who bristle at being required to wear masks or being told how to conduct their social lives. At one Christmas gathering on the settlement, a single person exposed 25 others. The casino, which provides the tribe with important revenue, reopened in July with a new nonsmoking policy, temperature checks, and masking and social distance requirements—a combination of measures that Papakee says have been effective but not perfect.

Vaccinations have started on the settlement, but Papakee had no idea when the next shipment was showing up, making things hard to plan. The community's elders were anxiously awaiting their turn.

Reflecting trends seen across the country with Native American populations, the Meskwaki have been more impacted by the virus than other groups. When I spoke with Papakee, roughly a quarter of the settlement's tribal population—301 people—had so far tested positive for COVID; five had succumbed to the virus.

Outside the settlement, Shannon Zoffka, CEO of Tama County Public Health and Home Care, leads the area's pandemic response. She has lived in the small, rural county of 17,000 all her life, but the past year has been eye-opening. "There's definitely a large percent of the population in the county that don't believe in masks. They think that the vaccine is unsafe; they think that COVID is a hoax," Zoffka tells me one afternoon in early January.

That resistance to reality persists despite the county's nursing home and meatpacking plant outbreaks, and the fact that Tama ranks in the top 4% of counties nationally in deaths per capita due to COVID. There was also a spike

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in cases after the derecho; the county had made community meals and cooling stations available to residents during the weeklong period they—and Tama County Public Health—went without power, making cases especially complicated to trace.

But things got really ugly at the start of the school year, as quarantines that were prescribed after known COVID-19 exposures started to affect sports. “People were very angry,” says Zoffka, who says her office’s attempts to investigate contacts or inform people of exposures to the virus were often met with verbal abuse. “People think they have the right to call you names and yell and scream and threaten.”

Soon she noticed people taking a different but equally bad-faith approach to her office’s outreach. “People got smart very fast when the definition of a close contact changed to being within six feet of someone for consecutive 15 minutes.” People said to the case investigators, “Well, you don’t have a tape measure or a stopwatch. You don’t know.” Or: “You can’t prove that we were there.”

Estimated total damage caused by the derecho after its 14-hour, 770-mile run across Iowa and through much of the Midwest, making it the most costly thunderstorm in American history

While Zoffka’s team has had good support from partners like the school system, local business, law enforcement, and the Meskwaki Settlement, such attitude from community members was a disillusioning blow: “I don’t think we expected that early on. Our thought was, ‘We want to keep people safe. People want to keep other people safe.’ But then once [public health efforts] really affected their personal lives after some of the restrictions have been lifted, it got kind of rough.”

Given that, Zoffka says it was hard to stomach the governor’s continuing reliance on Iowans to “do the right thing” to control the virus. Beyond slowing the spread of disease, Zoffka says, a mask mandate would have supported businesses in the community who were trying to encourage safe behavior and often getting pushback.

In studying how the pandemic was playing out in Iowa—before I spoke with Zoffka—I had come across and become somewhat obsessed with Tama County Public Health’s Facebook page. The information was clear and the posts impressively transparent; the office regularly updated case numbers and explained why they were higher than the state’s (the state’s data was behind). Following the posts, you could also sense a growing, desperate pleading behind them: Wear a mask! Wash your hands! Protect your grandparents!

You only had to read the comments to get a sense of what the office was up against. While there were plenty of supportive and thankful followers, comments often enough devolved into heated arguments between citizens about why there were so many cases in the county. Others argued the whole thing was overblown.

Even though her team tries mightily to push out facts over their own Facebook page, Zoffka largely blames social media for the misinformation that has spread within the community about COVID, and for the harsh, bullying tone in which many discuss the virus, both online and increasingly in person. She expects hurt feelings and memories of the animosity that has emerged during COVID will linger, and that the doubters will remain. “I think people who don’t believe are never going to believe until they’re affected directly,” she says with some resignation.

When I spoke with Zoffka, her staff was working their way through administering its supply of Moderna vaccine doses. The logistics had been a challenge, particularly through the holidays, but it was going all right. She hasn’t had a lot of time to process what stage of the pandemic journey she’s in, or think much about the future. She’s just been responding—to questions about the virus, or the vaccine, or cases that need investigating, or all the other things that land on her desk. She’s hopeful that a lot of people will get vaccinated, and that maybe life will start inching its way back to normalcy by the end of the year. “I’ve kind of had it in my head that 2021 is going to be similar to 2020 in a lot of ways.”

When the state climatologist Justin Glisan went out on his first trip to survey the derecho-impacted fields, the scene was staggering—acres and acres of corn blown flat, snapped off, or tipped so far over that it was not salvageable. Some of it had been further damaged by hail, shredded, as if it had taken on machine-gun fire.

“To stand in a field and to be able to look across it and realize I can see things I should not be able to see because the corn is just flat, it’s devastating” says Meaghan Anderson, a field agronomist with Iowa State University Extension and Outreach. She choked up for a moment, then added, “I have a job where I get a paycheck every two weeks. I don’t put hundreds of thousands of dollars upfront to plant something in April and then hope that, come September or October, I can harvest it and make my

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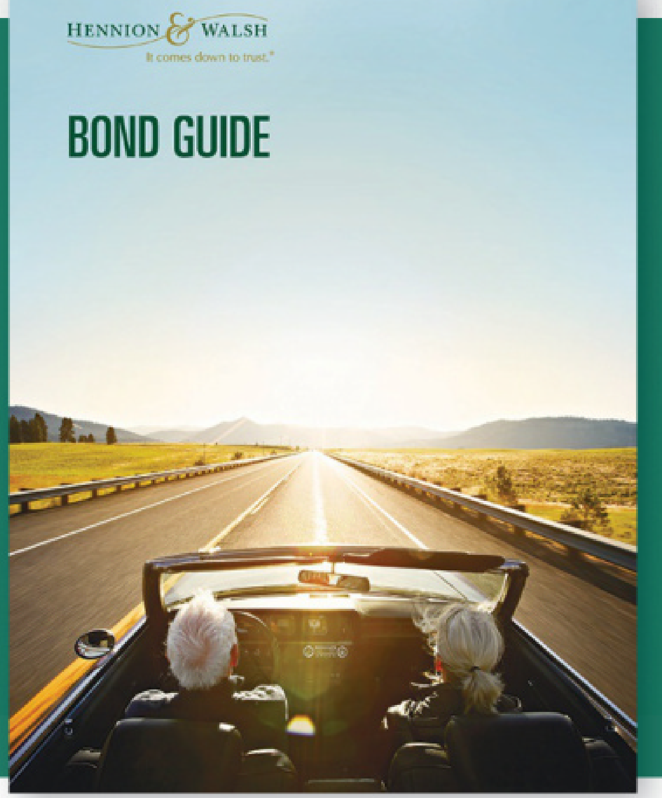

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money back. That's an incredible show of faith."

Farmers that were hit didn't lose just crops but also a lot of their infrastructure—the expensive equipment, the barns and grain bins. "We're going to be dealing with this for years to come," says Anderson.

Crop and other insurance covered much of the damage, but many, like Jenni and Scott Birker, still faced significant losses in 2020 because of the compound effect of the pandemic and the derecho. In recent years, the couple, who live in Benton County and raise beef cattle, watched their margins slim to almost nothing. "I've changed from being a cowboy basically to being a businessman. We're picking up pennies and nickels every day out here," Scott says.

But 2020 was a new type of challenge. Starting in February, with virus fears rattling markets, the Birkers weren't able to secure their usual put option to ensure they covered the cost of their cattle. Then outbreaks started shuttering the state's packing plants. Given the backlog of cattle waiting to be sold, the couple made the decision to modify their animals' rations—"basically we put them on a 60-day diet"—to prolong the period before they took them to market. "We had to pay for that extra feed cost with no insurance on the cattle, which we thought was the right move at the time," says Scott. "We didn't have a clue what to do."

And then the derecho hit. The Birkers lost their barn, chicken coop, miles of fence, and much of their corn crop, and had multiple tractors damaged. As they emerged from their basement after the storm, they found their five-dozen chickens and laying hens scattered among the wreckage. Their cattle were all alive, but wandering free in the pasture. When they finally sold the cattle in October, it was for a loss. In all, it was a terrible year, but they have no plans to quit.

Others have had it even worse. And Anderson and others worry about the potential for farm bankruptcies to come as well as mental health issues among the agricultural community. (She knows of one farmer who committed suicide after the derecho.) Ag giant Cargill does too; it has sponsored some of the work the ISU extension service is providing for farmers and their families.

The bleak outlook is far from universal. For those who managed to harvest their crops, or who lived in a part of the state that didn't get hit by the derecho or drought, yields were good in 2020 and corn prices have risen nicely since summer. Federal assistance in the form of trade payments and COVID relief have provided a generous cushion and were a good part of the reason that farmer incomes, on average, increased in 2020.

"People think they have the right to call you names and YELL AND SCREAM AND THREATEN," says one public health official trying to limit the spread of the virus.

In Cedar Rapids, as elsewhere, the recovery continues. There is plenty of evidence—in the form of debris piles, dented fences, and tarped roofs—that the city is still being put back together. But mostly there's great satisfaction in how the community came together and some lingering wonder at all they went through. The mayors of both Cedar Rapids and Marshalltown touted big investment projects they have underway—developments that have nothing to do with rebuilding from disasters, but rather just boosting the strength of their cities.

Since the pandemic began, the state has recorded a total of 313,907 cases of COVID and 4,448 deaths due to the virus—ranking it eighth among states in terms of cases per capita, and 17th in terms of deaths per capita over the course of the pandemic. After Iowa's scary, hospital-straining battle with the virus in November, the situation is much improved: The state's case numbers have nose-dived. It might have been the mask mandate; it might have been Iowans being responsible.

A spokesperson for Governor Reynolds said in a statement: "The governor had a very targeted and balanced approach to mitigating the COVID-19 pandemic. The focus was protecting lives, livelihoods, preserving hospital resources, and bringing kids back to school safely. A mask is one layer of protection and she emphasized all of them on a near daily basis."

For those I interviewed, the new year has almost universally come with a sense of hope—because of the vaccine, or the rising price of corn, or the stronger community spirit, or just the turn of the calendar away from 2020.

My parents are fine. They're thinking about new trees and alternative ways to provide shade in a yard that lacks them. Their pulse oximeter remains virtually untouched, in its box. And they got vaccinated for COVID as I was finishing this story. I still worry about them and the virus, but then I probably always will. ■

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A CRITICAL TIME FOR BUSINESSES AND CYBERSECURITY

Cybercrime has accelerated during the pandemic. Here's how to fight back.

LAST YEAR, BUSINESSES ACROSS SECTORS STRUGGLED to keep their doors open. But the economic repercussions of the COVID-19 pandemic were not the only corporate disruption in 2020. With consumers spending more time online and businesses struggling to support suddenly distributed workforces, network security became more vulnerable than ever, leading to a 400% uptick in cybercrime reports, according to the Federal Bureau of Investigation.

"We've seen an increasing prevalence of ransomware attacks as the world has become more virtual," says John DeSimone, vice president of cybersecurity, training, and services at Raytheon Intelligence & Space, a leader in developing advanced sensors, training, and cyber and software solutions. "Digital technologies that address ransomware attacks are even more of a priority, as those attacks have increased in sophistication."

Raytheon employs more than 3,000 cybersecurity experts globally to help public- and private-sector clients protect critical assets. "Everyone wants to be cyber secure," DeSimone says. "But keeping up with increasing digital threats is a challenge: Hiring and retaining highly skilled in-house cyber experts for around-the-clock protection is usually not affordable or practical." And there is a lot at stake. What used to be individual networks managing distinct services, such as data, video, and voice, are quickly converging. Meanwhile, the IT components connected to those networks are proliferating in data centers, throughout supply chains, and especially on far-flung connected devices. That may help automate business, but it also creates weaknesses.

"All of these systems are now interconnected, and therein lies the additional cyber vulnerability exposure," says DeSimone. "Any time access to critical business systems and networks goes unchecked, there's more inherent vulnerability."

In response, companies are deploying new tools, such as machine learning for more accurate and faster cyber threat hunting or smart sensors for advanced analytics. Raytheon offers these services to clients without the in-house overhead. Critical asset protection helps companies secure their most important assets without overspending by offering everything from managed detection and response to advanced threat hunting according to need.

"Trust no one" may be a warning common in cinematic thrillers, but it's also become something of a mantra in cybersecurity. Zero-trust architectures operate on the principle of "never trust, always verify" and treat all users as potential threats—giving only authenticated users access to sensitive data. These architectures can provide another key tool for establishing data resilience, by helping maintain operations after a disruption.

In short, if 2020 was the year many companies became aware of new cyber vulnerabilities, 2021 is providing a chance to address them. "The cyber-threat landscape is constantly changing," DeSimone cautions. "And so are the opportunities for companies to fight back." ■

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THE WORLD'S MOST ADMIRED COMPANIES

AFTER A YEAR in which humanity leaned more heavily than ever on tech giants—to connect, entertain, and even feed us in a time of isolation—it's fitting that Apple, Amazon, and Microsoft hold the top three spots in *Fortune*'s ranking of corporate reputation. Apple, the premier personal-tech provider, tops the roster for the 14th year in a row, based on our poll of some 3,800 corporate executives, directors, and analysts. Elsewhere on our All-Stars list, companies that became even more essential during the pandemic were among the biggest movers. Streaming juggernaut Netflix returned to the top 10. Big-box giant Walmart (No. 11) and Target (No. 17) earned their highest rankings since 2011 and 2008, respectively. And chipmaker Nvidia, medical supplier Abbott Laboratories, and fintech pioneer PayPal each made their Top 50 debut. (FOR MORE DETAILED RANKINGS, VISIT FORTUNE.COM.)

THE 50 ALL-STARS THESE COMPANIES WON ADMIRING VOTES FROM INSIDE AND OUTSIDE THEIR INDUSTRIES.

Rank	Company	Last year's rank	Category
1	APPLE	1*	COMPUTERS AND COMMUNICATION
2	AMAZON	2	COMPUTERS AND COMMUNICATION
3	MICROSOFT	3	COMPUTERS AND COMMUNICATION
4	WALT DISNEY	4	MEDIA AND ENTERTAINMENT
5	STARBUCKS	6	STORES AND DISTRIBUTORS
6	BERKSHIRE HATHAWAY	5	FINANCIALS
7	ALPHABET	7	COMPUTERS AND COMMUNICATION
8	JPMORGAN CHASE	8	FINANCIALS
9	NETFLIX	14†	MEDIA AND ENTERTAINMENT
10	COSTCO WHOLESALE	9	STORES AND DISTRIBUTORS
11	WALMART	18	STORES AND DISTRIBUTORS
12	SALESFORCE	10	COMPUTERS AND COMMUNICATION
13	NIKE	13	CONSUMER PRODUCTS
14	SOUTHWEST AIRLINES	11	TRANSPORT
15	JOHNSON & JOHNSON	26	NATURAL RESOURCES
16	FEDEX	14†	TRANSPORT
17	TARGET	22	STORES AND DISTRIBUTORS
18	BLACKROCK	25	FINANCIALS
19	HOME DEPOT	21	STORES AND DISTRIBUTORS
20	AMERICAN EXPRESS	14†	FINANCIALS
21	PROCTER & GAMBLE	23	CONSUMER PRODUCTS
22	COCA-COLA	12	CONSUMER PRODUCTS
23	DELTA AIR LINES	19	TRANSPORT
24	3M	29	NATURAL RESOURCES
25	MARRIOTT INTERNATIONAL	17	MEDIA AND ENTERTAINMENT
26†	GOLDMAN SACHS GROUP	27	FINANCIALS
26†	USAA	24	FINANCIALS
28	UPS	33	TRANSPORT
29	NORDSTROM	20	STORES AND DISTRIBUTORS
30	UNILEVER	31	CONSUMER PRODUCTS
31	TOYOTA MOTOR	30	TRANSPORT
32	CVS HEALTH	38	CONTRACTED SERVICES
33	ACCENTURE	34	COMPUTERS AND COMMUNICATION
34	SINGAPORE AIRLINES	28	TRANSPORT
35	BMW	32	TRANSPORT
36	VISA	36	FINANCIALS
37†	MERCK	49	NATURAL RESOURCES
37†	NVIDIA	N.R.	PRECISION
39	PEPSICO	43	CONSUMER PRODUCTS
40	ADOBE	47	COMPUTERS AND COMMUNICATION
41	IBM	35	COMPUTERS AND COMMUNICATION
42	ABBOTT LABORATORIES	N.R.	PRECISION
43	MASTERCARD	42	FINANCIALS
44	CHARLES SCHWAB	37	FINANCIALS
45†	BANK OF AMERICA	N.R.	FINANCIALS
45†	NESTLÉ	39	CONSUMER PRODUCTS
47	LOWE'S	N.R.	STORES AND DISTRIBUTORS
48	PUBLIX SUPER MARKETS	48	STORES AND DISTRIBUTORS
49	SAMSUNG ELECTRONICS	N.R.	PRECISION
50†	PAYPAL HOLDINGS	N.R.	FINANCIALS
50†	UNITEDHEALTH GROUP	N.R.	CONTRACTED SERVICES

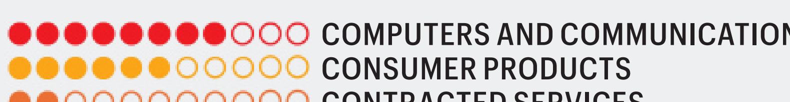
*LAST YEAR'S RANK

N.R.: COMPANY NOT RANKED LAST YEAR

†A TIE IN RANK

DROPPED OUT OF THE TOP 50: ADIDAS (RANKED 40 LAST YEAR), CATERPILLAR (44), EXXON MOBIL (50), LOCKHEED MARTIN (46), L'ORÉAL (45), AND MCDONALD'S (41).

THE 50 ALL-STARS BY CATEGORY



INDUSTRY STANDOUTS
AS RANKED BY THEIR PEERS

CLOSELY WATCHED AND HIGHLY ESTEEMED

SHEER SIZE CAN CREATE a virtuous cycle that in turn gets reflected in the scores of *Fortune*'s Most Admired Companies survey. The scoring system favors companies that excel at multiple facets of management (see the adjoining column for more on our methodology). And the bigger a company is, the more likely its peers and competitors are to avidly seek information about how and why it's succeeding, and to keep that information at the top of their minds.

That phenomenon may help explain the perennial top status of **Apple,** which is not only one of the world's largest companies, with $275 billion in revenue in fiscal 2020, but also one of the most closely followed by the tech community and business media. We ask survey respondents to rate companies on nine criteria: This year, Apple ranked in the top 10 in eight of those, earning the highest scores of any company in the "quality of products" and "soundness of financial position" categories.

Target earns similar respect from its peers, also cracking eight out of nine top rankings. After a year when the big-box retailer hired tens of thousands of employees and vastly expanded its curbside pickup and online shopping, respondents gave it the survey's highest scores for "management quality" and "wise use of corporate assets." E-commerce and cloud titan **Amazon,** meanwhile, captured top 10 scores in six categories, with best-overall rankings in "innovativeness" and "value as a long-term investment." (The latter honor is almost an understatement: A $100,000 investment in Amazon 10 years ago would be worth more than $1.6 million today.)

In addition to the overall All-Stars list, the Most Admired Companies survey tracks 52 industry groups—and among those, some winning streaks rival or even eclipse Apple's. **Berkshire Hathaway,** for example, has topped the property and casualty insurance group for 23 years in a row. **Walt Disney** has been the No. 1 entertainment company for 18 straight years. And in a year when it devoted vital resources to the search for a COVID-19 vaccine, **Johnson & Johnson** finished first in the pharmaceutical industry for the eighth consecutive time. (Berkshire and J&J join **Microsoft, Coca-Cola,** and **Toyota** in another elite category: Those companies have appeared on our All-Stars list every year since 1998.)

Still, while continuity is common, it isn't the rule. Fresh names reached the top in several other industries, including mining and crude oil production (where miner **Newmont** won); trucking, transportation, and logistics (where top honors went to Denmark's **Maersk**); packaging and containers (**International Paper**); and financial data services (**S&P Global**). In consumer foods products, **PepsiCo** ranked first this year, ending a 15-year run by **Nestlé**—and capping a year in which Pepsi drew as much attention for its stances on race and social justice issues as it did for its global brand portfolio.

And in life and health insurance, **New York Life** took the No. 1 spot for the first time. In its biggest acquisition ever, the 175-year-old company cemented its status as America's largest mutual life insurer in 2020 by acquiring several business units from Cigna. The takeaway: Sometimes your good repute can scale up along with your business.

—Matt Heimer and Scott DeCarlo

HOW WE DETERMINE THE LIST

AS WE HAVE in the past, *Fortune* collaborated with our partner Korn Ferry on this survey of corporate reputation. We began with a universe of about 1,500 candidates: the 1,000 largest U.S. companies ranked by revenue, along with non-U.S. companies in *Fortune's* Global 500 database that have revenues of $10 billion or more. We winnowed the assortment to the highest-revenue companies in each industry, a total of 670 in 30 countries. The top-rated companies were picked from that pool of 670; the executives who voted work at the companies in that group.

To determine the best-regarded companies in 52 industries, Korn Ferry asked executives, directors, and analysts to rate enterprises in their own industry on nine criteria, from investment value and quality of management and products to social responsibility and ability to attract talent. A company's score must rank in the top half of its industry survey to be listed. (For complete rankings, visit fortune.com.)

Results were not published in the following categories because of insufficient response rates: cable and satellite providers; petroleum refining; pipelines; U.S. energy.

To select our 50 All-Stars, Korn Ferry asked 3,820 executives, directors, and securities analysts who had responded to the industry surveys to select the 10 companies they admired most. They chose from a list made up of the companies that ranked in the top 25% in last year's surveys, plus those that finished in the top 20% of their industry. Anyone could vote for any company in any industry.

The difference in the voting rolls explains why some results can seem at odds with each other. For example, Lockheed Martin fell off the All-Stars list this year but ranked No. 1 within the aerospace and defense category when votes from only those in that industry were counted. *—S.D.*

UNDERRATED / OVERRATED

WHICH CEOs DESERVE MORE ATTENTION, AND WHICH GET TOO MUCH? *FORTUNE* ASKED EXECUTIVES AND DIRECTORS FOR THEIR VOTES.

MOST UNDERRATED CEOs BASED ON 5,250 RESPONSES

SATYA NADELLA MICROSOFT

328 VOTES

NADELLA'S PEERS HAVE NOW VOTED HIM "most underrated" five years in a row—an indication, perhaps, of his ability to steer the company through a major reinvention while generating shockingly little drama. Tech analysts believe (though Microsoft won't confirm) that the Azure cloud business Nadella has championed now accounts for as much revenue as the Windows software that turned the company into a behemoth a generation ago. The successful absorption of LinkedIn and software development site GitHub have demonstrated the 53-year-old CEO's ability to win on multiple fronts, as has the Xbox's sustained cred in gaming circles. Microsoft's share price, meanwhile, has more than quintupled during Nadella's seven-year tenure—a sign of investors' long-term confidence in his big bets.

MARY BARRA
GENERAL MOTORS
151 VOTES
Last spring, GM was making PPE for health care workers; by fall, it was posting healthy profits.

TIM COOK
APPLE
146 VOTES
The pandemic barely slowed Apple's rollout of new phones, watches, and services.

DOUG MCMILLON
WALMART
135 VOTES
Walmart has been a bulwark against COVID, keeping stores open and hiring widely.

MOST OVERRATED CEOs BASED ON 4,489 RESPONSES

MARK ZUCKERBERG FACEBOOK

445 VOTES

FACEBOOK IS HARDLY THE ONLY ONLINE PLATFORM to have struggled to curb the spread of misinformation. But over the past year, with COVID-19, the killing of George Floyd, and the presidential election each spurring waves of algorithmically amplified falsehoods and hate speech, Zuckerberg's company came under unprecedented scrutiny—and an expanding circle of critics faulted the CEO and cofounder for doing far too little, years too late. Advertisers began voting with their dollars in meaningful ways, pulling back and even pulling out, as revenue growth slowed. An antitrust suit by the Federal Trade Commission, meanwhile, seeks to undo Facebook's acquisitions of Instagram and WhatsApp—taking aim at some of Zuckerberg's signature accomplishments.

JEFF BEZOS
AMAZON
407 VOTES
Amazon's hypercompetitive culture inspires as much criticism as admiration of late.

ELON MUSK
TESLA/SPACEX
294 VOTES
Fortune's Businessperson of the Year for 2020 remains profoundly polarizing.

JAMIE DIMON
JPMORGAN CHASE
280 VOTES
Some bank analysts think JPMC has been too complacent in the fintech race.

ILLUSTRATIONS BY **SAM KERR**

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FORTUNE
WORLD'S MOST ADMIRED COMPANIES 2021

THE DEFINING MOMENT

IN 2015, RICKIE FOWLER TRAILED SERGIO GARCIA BY FIVE STROKES WITH JUST SIX HOLES TO PLAY ON THE STADIUM COURSE. WITH UNPARALLELED PRECISION, FOWLER BATTLED THE FINAL HOLES AND WENT BIRDIE-PAR-BIRDIE-EAGLE-BIRDIE-BIRDIE AND FORCED A PLAYOFF WITH GARCIA AND KEVIN KISNER. AFTER THE 3-HOLE AGGREGATE PLAYOFF, KISNER AND FOWLER WERE TIED AND RETURNED TO THE WORLD-RENOWNED 17TH HOLE FOR SUDDEN DEATH. FOWLER LANDED HIS TEE SHOT A MERE FIVE FEET FROM THE PIN AND ULTIMATELY MADE A BIRDIE TO WIN THE PLAYERS CHAMPIONSHIP.

Grant Thornton

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PASSIONS

AUTOS

Land Mark

By focusing on off-road fundamentals, the new Land Rover Defender proves to be worthy of its name. **BY DANIEL BENTLEY**

THE NATURAL INCLINATION when getting behind a completely reengineered vehicle like the Land Rover Defender is to compare it to its predecessor. In this case, that earlier model was an icon: an overlander that went largely unchanged from the Land Rover Series 1 of the 1940s until 2016, when the long-in-the-tooth Defender could no longer keep up with modern requirements for safety and emissions.

That Defender provided decades of admirable service for those heading off-pavement, whether it be UN peacekeepers in Rwanda or a sheep farmer in Wales, and it won a rabid fan base who still keep them rolling over muddy hillsides today.

Among those fans, this writer included, the 2019 unveiling of the new Defender raised eyebrows. It is big—very big—and swaps flat-sided steel panels for bulbous alumi-

COURTESY OF LAND ROVER

BUILT ON LEGACY

[**1**] The new Land Rover Defender earns its badge with superlative off-road performance. [**2**] Luxury materials meet rugged utilitarianism in the Defender's cockpit. [**3**] Queen Elizabeth II and the Duke of Edinburgh with their Land Rover Series IIa.

FROM TOP: COURTESY OF LAND ROVER; PA IMAGES/GETTY IMAGES

num. Yes, if you squint, you can see the "design DNA" of the original, but the new Defender is definitely not more of the same. It was a big risk for struggling parent company Jaguar Land Rover (JLR), but one that just might pay off.

Fortune reviewed the Defender in its top-of-the-line four-door 110 X package, priced at $85,750, which comes with a 395-horsepower, three-liter mild-hybrid gasoline engine (U.S. buyers are denied the diesel options available in Europe). That power plant, which JLR dubs its Ingenium engine, packs quite the party trick: Its electric-powered supercharger near-instantly spins up when the throttle is applied. The result is snappy acceleration with plenty of low-end torque that gets you to 60 mph in just under six seconds—in a vehicle weighing over 5,000 pounds. *Crikey.*

The Defender successfully walks the line between providing the luxury expected of such an expensive vehicle and being appropriately rugged. The ride is plush, thanks to adjustable air suspension, and the tech is cutting-edge—the rearview mirror uses a camera when visibility is obscured, and there's an excellent touch-screen entertainment and control system. But the Defender also has rubber floor mats and a metal-lined trunk that are begging to be sullied by muddy boots and dirty gear. This is a utility vehicle with a capital U.

So while it has impeccable road manners, to really see what the Defender can do, you need to give it some unforgiving terrain. Thankfully the New York weather cooperated during *Fortune*'s review, serving up snow, sleet, and freezing rain. Driving through that mess on gravel and dirt demonstrates what makes the Defender special in the indistinguishable landscape of SUVs.

Even though Land Rover has equipped the Defender with various selectable terrain modes for snow, gravel, and sand, its normal ride mode, paired with optional off-road tires, is more than capable on loose and slippery ground. And while *Fortune* didn't have the chance—or the nerve—to test it, JLR says the Defender can wade through water of up to three feet, no modifications required. All this, along with its superb visibility and commanding presence, inspires a level of driver confidence that few of its competitors can provide.

It's in this realm that the new Defender earns its badge. It may look different. It may drive like a luxury SUV on the highway. But Land Rover has imbued the Defender with the uncompromised off-roading chops of its ancestor. And that has given the purists plenty to smile about. ■

A wealth manager is more than someone who manages portfolios — it's someone who helps clients plan for their future and their children's future. The advisor-client relationship is a vital piece of the puzzle, which is why it's important to find the right wealth manager to work with for the long haul.

Five Star Professional has been researching and recognizing outstanding wealth managers for more than a dozen years. In that time, Five Star has identified a need to help people find a wealth manager who is a great personal fit. To further assist people in finding their ideal wealth managers, Five Star is now recognizing Five Star Wealth Manager award winners under 40. (Each of the featured advisors was under the age of 40 as of Jan. 1, 2020).

What makes these wealth managers so unique is that they are part two exclusive groups. First, they're all Five Star Wealth Manager award winners, meaning they have been vetted by a third-party research process that includes 10 objective criteria. On top of satisfying those criteria, the winners below have the distinction of winning the Five Star Wealth Manager award while under the age of 40.

Congratulations to our Five Star Wealth Managers Under 40!

RESEARCH DISCLOSURES

In order to consider a broad population of high-quality wealth managers, award candidates are identified by one of three sources: firm nomination, peer nomination or prequalification based on industry standing. Self-nominations are not accepted. Award candidates were identified using internal and external research data. Candidates do not pay a fee to be considered or placed on the final lists of Five Star Wealth Managers.

- The Five Star award is not indicative of a professional's future performance.
- Wealth managers may or may not use discretion in their practice and therefore may not manage their clients' assets.
- The inclusion of a professional on the Five Star Wealth Manager list should not be construed as an endorsement of the professional by Five Star Professional or *Fortune*.
- Working with a Five Star Wealth Manager or any professional is no guarantee as to future investment success, nor is there any guarantee that the selected professionals will be awarded this accomplishment by Five Star Professional in the future.
- Five Star Professional is not an advisory firm and the content of this article should not be considered financial advice. For more information on the Five Star Wealth Manager award program, research and selection criteria, go to fivestarprofessional.com/research.

DETERMINATION OF AWARD WINNERS

Award candidates who satisfied 10 objective eligibility and evaluation criteria were named 2020 and 2021 Five Star Wealth Managers. **Eligibility Criteria – Required:** 1. Credentialed as a registered investment adviser or a registered investment adviser representative. 2. Actively employed as a credentialed professional in the financial services industry for a minimum of five years. 3. Favorable regulatory and complaint history review. 4. Fulfilled their firm review based on internal firm standards. 5. Accepting new clients. **Evaluation Criteria – Considered:** 6. One-year client retention rate. 7. Five-year client retention rate. 8. Non-institutional discretionary and/or non-discretionary client assets administered. 9. Number of client households served. 10. Education and professional designations.

Regulatory Review: As defined by Five Star Professional, the wealth manager has not: been subject to a regulatory action that resulted in a license being suspended or revoked, or payment of a fine; individually contributed to a financial settlement of a customer complaint; been convicted of a felony. Within the past 11 years the wealth manager has not: been terminated from a wealth management or financial services firm; filed for personal bankruptcy; had more than a total of three settled or pending complaints filed against them (and no more than five total pending, dismissed or denied) with any regulatory authority.

Five Star Professional conducts a regulatory review of each nominated wealth manager using the Investment Adviser Public Disclosure (IAPD) website. Five Star Professional also uses multiple supporting processes to help ensure that a favorable regulatory and complaint history exists. Data submitted through these processes was applied per the above criteria; each wealth manager who passes the Five Star Professional regulatory review must attest that they meet the definition of favorable regulatory history based upon the criteria listed above. Five Star Professional promotes via local advertising the opportunity for consumers to confidentially submit complaints regarding a wealth manager.

Daniel D. Rogowski

Financial Advisor, Managing Partner

Daniel is a Texas-raised Harvard graduate and Eagle Scout. His firm, Harman Rogowski & Associates, is held to a fiduciary standard and has a team of CPAs and financial advisors collaborating to optimize your entire financial life, including taxes, investments and planning.

2020 Five Star Wealth Manager

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Lucas J. Noble

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FIVE STAR WEALTH MANAGER AWARD WINNER

For more information on the Five Star award and the research/selection methodology, go to fivestarprofessional.com. 4,374 Dallas-Fort Worth region wealth managers were considered for the award; 335 (8% of candidates) were named 2020 Five Star Wealth Managers. 4,069 Boston wealth managers were considered for the award; 480 (12% of candidates) were named 2021 Five Star Wealth Managers.

FIVE STAR WEALTH MANAGERS — Under 40

Andrew Dziedzic

Managing Partner, CExp, MBA

We Are Wealth Planners for Life's Transitions

With 15 years' experience in financial services, Andy creates a client experience that helps business owners and wealthy families solve complex financial situations. Knowing how to find out-of-the-box ideas to help clients save on taxes and efficiently transition wealth to the next generation is what makes him unique.

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FIVE STAR WEALTH MANAGER AWARD WINNER

Lawrence S. Tundidor

Financial Advisor, AIF®, AAMS®, AWMA®

Lawrence S. Tundidor provides financial planning, retirement spend-down strategies and estate and tax-sensitive planning. As an Accredited Investment Fiduciary® designee, he develops financial plans that put his clients' best interests first. He received his degree in economics and minor in consumer psychology (Wharton School) from the University of Pennsylvania.

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FIVE STAR WEALTH MANAGER AWARD WINNER

Competence and Prudence

Alec Horley

CFP®, President

Alec Horley is a Certified Financial Planner™ professional and the owner of Accumulus Wealth Management. Mr. Horley works with business owners and high net worth families to comprehensively deliver advice for all of the dynamic aspects of wealth. With over a decade and a half of industry experience, Mr. Horley can provide his knowledge of markets and economics with a top focus on navigating the road ahead. He is an eight-year Five Star Wealth Manager award winner.

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FIVE STAR WEALTH MANAGER AWARD WINNER

Mark S. Stratton

ChSNC®, CFP®

Your Future. Our Experience. Like Family.

Mark Stratton has been a financial planner since 2006. Mark's goal is to help align clients' actions with their goals so they can make today's dreams tomorrow's reality. One of his favorite parts of his career is celebrating clients' accomplishments, helping them succeed and helping them thrive in business and family life.

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FIVE STAR WEALTH MANAGER AWARD WINNER

Investing at Its Finest

Derek N. Eichenwald

CEO and Senior Investment Executive

Mr. Eichenwald is the CEO and senior investment executive with Triumph Capital Management. Mr. Eichenwald assists clients of TCM on their lifetime financial and strategic goals.

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FIVE STAR WEALTH MANAGER AWARD WINNER

The Five Star Wealth Manager award, administered by Crescendo Business Services, LLC (dba Five Star Professional), is based on 10 objective criteria. Eligibility criteria – required: 1. Credentialed as a registered investment adviser or a registered investment adviser representative; 2. Actively licensed as a registered investment adviser or as a principal of a registered investment adviser firm for a minimum of 5 years; 3. Favorable regulatory and complaint history review (As defined by Five Star Professional, the wealth manager has not; A. Been subject to a regulatory action that resulted in a license being suspended or revoked, or payment of a fine; B. Had more than a total of three settled or pending complaints filed against them and/or a total of five settled, pending, dismissed or denied complaints with any regulatory authority or Five Star Professional's consumer complaint process. Unfavorable feedback may have been discovered through a check of complaints registered with a regulatory authority or complaints registered through Five Star Professional's consumer complaint process; feedback may not be representative of any one client's experience; C. Individually contributed to a financial settlement of a customer complaint; D. Filed for personal bankruptcy within the past 11 years; E. Been terminated from a financial services firm within the past 11 years; F. Been convicted of a felony); 4. Fulfilled their firm review based on internal standards; 5. Accepting new clients. Evaluation criteria – considered: 6. One-year client retention rate; 7. Five-year client retention rate; 8. Non-institutional discretionary and/or non-discretionary client assets administered; 9. Number of client households served; 10. Education and professional designations. Wealth managers do not pay a fee to be considered or placed on the final list of Five Star Wealth Managers. Award does not evaluate quality of services provided to clients. Once awarded, wealth managers may purchase additional profile ad space or promotional products. The Five Star award is not indicative of the wealth manager's future performance. Wealth managers may or may not use discretion in their practice and therefore may not manage their clients' assets. The inclusion of a wealth manager on the Five Star Wealth Manager list should not be construed as an endorsement of the wealth manager by Five Star Professional or this publication. Working with a Five Star Wealth Manager or any wealth manager is no guarantee as to future investment success, nor is there any guarantee that the selected wealth managers will be awarded this accomplishment by Five Star Professional in the future. For more information on the Five Star award and the research/selection methodology, go to fivestarprofessional.com. 4,148 Philadelphia-area wealth managers were considered for the award; 366 (9% of candidates) were named 2020 Five Star Wealth Managers. 824 Portland-area wealth managers were considered for the award; 85 (10% of candidates) were named 2020 Five Star Wealth Managers. 4,374 Dallas-Fort Worth region wealth managers were considered for the award; 335 (8% of candidates) were named 2020 Five Star Wealth Managers. 2,172 Denver-area wealth managers were considered for the award; 213 (10% of candidates) were named 2020 Five Star Wealth Managers.

FIVE STAR WEALTH MANAGERS — Under 40

Branden C. Mann

Financial Advisor, MBA, AIF®

After serving in the United States Army as an infantryman for eight years, Branden found his new calling in the financial services industry. Branden serves high net worth individuals and routine investors, aiming to steadily grow their portfolios. He is a 2019 and 2020 Five Star Wealth Manager.

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FIVE STAR WEALTH MANAGER AWARD WINNER

Anthony Silva

Regional Vice President, Certified Financial Planner™ professional

Anthony helps uniquely successful people with planning that goes beyond wealth management. He looks to create tax-efficient investment strategies with not only today in mind but the potential for future rising rates. Diversification, asset location and proper planning to help reduce clients' taxes, their largest expense, are his focus.

Equitable Advisors, LLC

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FIVE STAR WEALTH MANAGER AWARD WINNER

Seth Aaron Renaud

Wealth Management Advisor

Treat Everyone as You Would a Member of Your Family

Seth Renaud is a managing partner at CIG Private Wealth Management. After growing up in a family that lacked financial knowledge and planning, Seth launched his 16-year career in financial services with the desire to help others create the life they deserve. As a Chartered Financial Consultant® (ChFC®), Accredited Investment Fiduciary® (AIF®) and Certified in Long-Term Care (CLTC®), Seth provides independent guidance to the highest fiduciary standard. He holds his Series 6, 7, 22, 31, 62 and 63 security licenses.

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Eric J. Pascarella

CPA, PFS, CFP®, AIF®, Financial Advisor

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Nicholas Pascarella & Co.

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FIVE STAR WEALTH MANAGER AWARD WINNER

Left to right: Nine-year winner Troy J. Wold, CLU®, ChFC®; Four-year winner Tayne DeNeui, MPH

WOLD Financial

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FIVE STAR WEALTH MANAGER AWARD WINNER

2021 Five Star Wealth Manager

Gabriella Sheffield

MSBA, CFP®, AIF®, Founder/CEO

With over a decade of financial experience, Gabriella wanted to provide a boutique and customized financial planning service that often seemed to be lost at larger firms. Upholding a strong fiduciary standard while remaining transparent with fees and investment selection opens the door for her to create long and trusting relationships with her clients. Gabriella works with every client on a one-on-one basis to help them develop and implement personalized financial strategies in order to reach their unique goals.

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FIVE STAR WEALTH MANAGER AWARD WINNER

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FIVE STAR WEALTH MANAGERS — Under 40

Molly A. Root

Financial Consultant

We believe your financial plan should tell a story of who you are and what you care about most. We see money as a tool in creating a future that is meaningful to you, as well as a legacy that reflects your values long after you are gone. Through our holistic and intentional approach, we come alongside you to help you achieve your vision and support you in making these dreams your reality.

Financial Planning

thrivent

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FIVE STAR WEALTH MANAGER AWARD WINNER

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FIVE STAR WEALTH MANAGER AWARD WINNER

To see the full list of winners, visit www.fivestarprofessional.com.

Baltimore

2,029 Baltimore-area wealth managers were considered for the award; 237 (12% of candidates) were named 2021 Five Star Wealth Managers.

Justin Kyle Bowmaker · MML Investors Services · 443-492-6624

Stephen R. Holt · PPG Wealth · 443-837-2533

Boston

4,069 Boston-area wealth managers were considered for the award; 480 (12% of candidates) were named 2021 Five Star Wealth Managers.

John Patrick Foley · E3 Financial Planning · 781-444-4907

Alexandre Miguel Oliveira · Olive Tree Wealth · 781-996-4480

Kerri L. Wilkes · Commonwealth Financial Network · 978-887-0677

Chicago

4,636 Chicago-area wealth managers were considered for the award; 356 (8% of candidates) were named 2020 Five Star Wealth Managers.

Taylor G. Boice · Capital & Risk Management Services, LLC. · 312-458-4517

Cincinnati

1,406 Cincinnati-area wealth managers were considered for the award; 216 (15% of candidates) were named 2020 Five Star Wealth Managers.

Christopher R. Ward · EntryPoint Wealth Management · 859- 816-6326

Dallas/Fort Worth

4,374 Dallas-Fort Worth region wealth managers were considered for the award; 335 (8% of candidates) were named 2020 Five Star Wealth Managers.

David Brian Hesler · Kendlell Financial · 214-693-6180

Jacob B. King · Beaird Harris · 972-503-1040

Delaware

521 Delaware-area wealth managers were considered for the award; 51 (10% of candidates) were named 2020 Five Star Wealth Managers.

Andres Felipe Bonell · Bell Rock Capital · 302-227-7608

Detroit

3,105 Detroit-area wealth managers were considered for the award; 284 (10% of candidates) were named 2020 Five Star Wealth Managers.

Scott Hankins · Merrill Lynch · 313-594-9247

Houston

3,219 Houston region wealth managers were considered for the award; 174 (5% of candidates) were named 2020 Five Star Wealth Managers.

Justin Anthony Makris · Wealth Design Group · 281-220-2781

Los Angeles

3,574 Los Angeles-area wealth managers were considered for the award; 168 (5% of candidates) were named 2021 Five Star Wealth Managers.

Dustin L. Gale · Kayne Anderson Rudnick · 310-284-5500

Memphis

542 Memphis-area wealth managers were considered for the award; 42 (8% of candidates) were named 2020 Five Star Wealth Managers.

Joshua James Joiner · Vere Global Wealth Management · 832-390-2375

New Jersey

6,123 New Jersey-area wealth managers were considered for the award; 459 (8% of candidates) were named 2021 Five Star Wealth Managers.

Daniel Owen Barsnica · Tomorrow's Financial Services, Inc. · 732-792-7000

James Anthony Costabile · Intellectual Capital Group · 732-359-3838

Orange County

2,320 Orange County-area wealth managers were considered for the award; 152 (7% of candidates) were named 2020 Five Star Wealth Managers.

Letitia Steiner Berbaum · The Zandbergen Group · 949- 668-0771

Philadelphia

4,148 Philadelphia-area wealth managers were considered for the award; 366 (9% of candidates) were named 2020 Five Star Wealth Managers.

Grant C. Holdren · Allied Financial Advisors, LLC · 215-874-6422

Pittsburgh

1,886 Pittsburgh-area wealth managers were considered for the award; 224 (8% of candidates) were named 2020 Five Star Wealth Managers.

Ryan M. Coulter · Park Avenue Securities · 412-303-0880

Rhode Island

624 Rhode Island-area wealth managers were considered for the award; 151 (24 % of candidates) were named 2021 Five Star Wealth Managers.

Stephen M. Clair · Hall Capital Management · 401-245-0049

James S. Cruise · The Virtus Group · 401-223-0500

San Diego

2,218 San Diego-area wealth managers were considered for the award; 231 (10% of candidates) were named 2021 Five Star Wealth Managers.

Christopher Lee Gall · Luminous Financial Group LLC · 858-764-4300

St. Louis

2,431 St. Louis-area wealth managers were considered for the award; 170 (7% of candidates) were named 2020 Five Star Wealth Managers.

Neal M. Albritton · Albritton Financial Services · 314-985-0291

Paul Douglas Larson · Larson Financial Group · 314-438-2073

Twin Cities

4,004 Twin Cities-area wealth managers were considered for the award; 630 (16% of candidates) were named 2021 Five Star Wealth Managers.

Daniel John Klein · Advanced Wealth Management Group · 612-347-8693

Eric T. Norman · Investors Financial Group

Ben Ollila · Thrivent · 651-288-7580

Grant E. Piller · Piller Financial Group · 952-258-5157

Michael George Trudeau · Thrivent · 651-288-7580

Washington, D.C.

2,535 Washington, D.C.-area wealth managers were considered for the award; 115 (5% of candidates) were named 2020 Five Star Wealth Managers.

Scott J. Greenberg · Equitable Advisors · 703-407-7896

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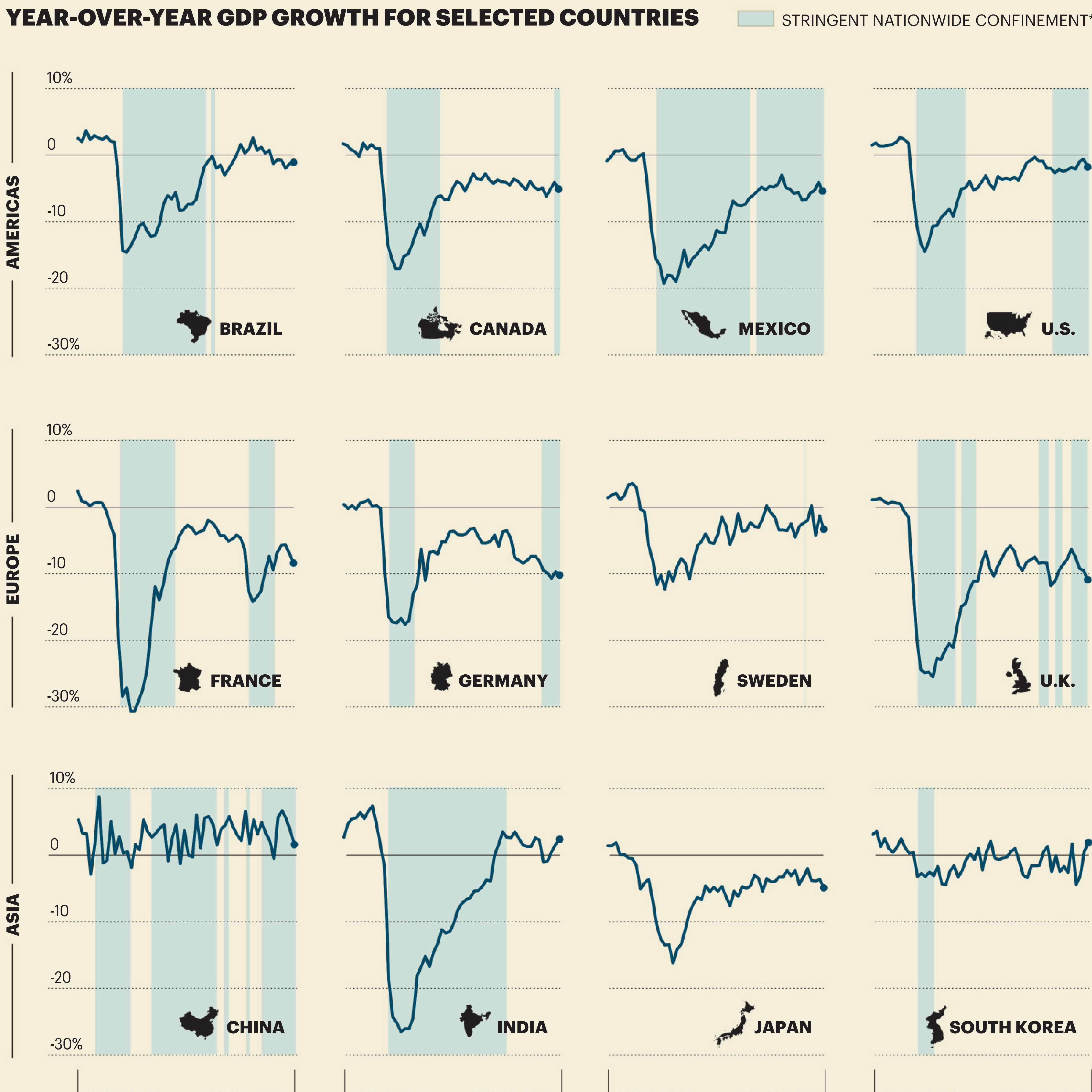

THE ECONOMIC IMPACT OF LOCKDOWNS

ONE BY-PRODUCT OF THE GLOBAL PANDEMIC has been to speed up tech-driven innovation in a range of areas—including economics. Data scientists have long sought to improve real-time GDP estimates. And the challenge has become more urgent as policymakers try to balance the COVID-19 health crisis with the toll of lockdowns. So Nicolas Woloszko, an economist at the OECD, developed a system that uses Google Trends data and machine learning to provide weekly snapshots of GDP in 46 countries with a high degree of accuracy. Here, we've overlaid Woloszko's GDP numbers for the past year with data from the University of Oxford on strict lockdowns in 12 major economies. One conclusion: With a virus as devastating as SARS-CoV-2, there is no universal policy blueprint for success. —**BRIAN O'KEEFE**

INFOGRAPHIC BY **NICOLAS RAPP**

*INDEX VALUE ABOVE 70 ON THE OXFORD CONFINEMENT STRINGENCY INDEX (0–100)

SOURCES: GDP WEEKLY SIMULATION BY NICOLAS WOLOSZKO FOR THE OECD WEEKLY TRACKER OF ECONOMIC ACTIVITY; CONFINEMENT DATA FROM THE OXFORD COVID-19 GOVERNMENT RESPONSE TRACKER

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