Agro-U
Jobseekers' initiative
Thessaloniki, Greece

Korina and Kyriakos used Google's digital training to help farmers find workers during the pandemic.

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ARE WE THERE YET?
No, but we're close.
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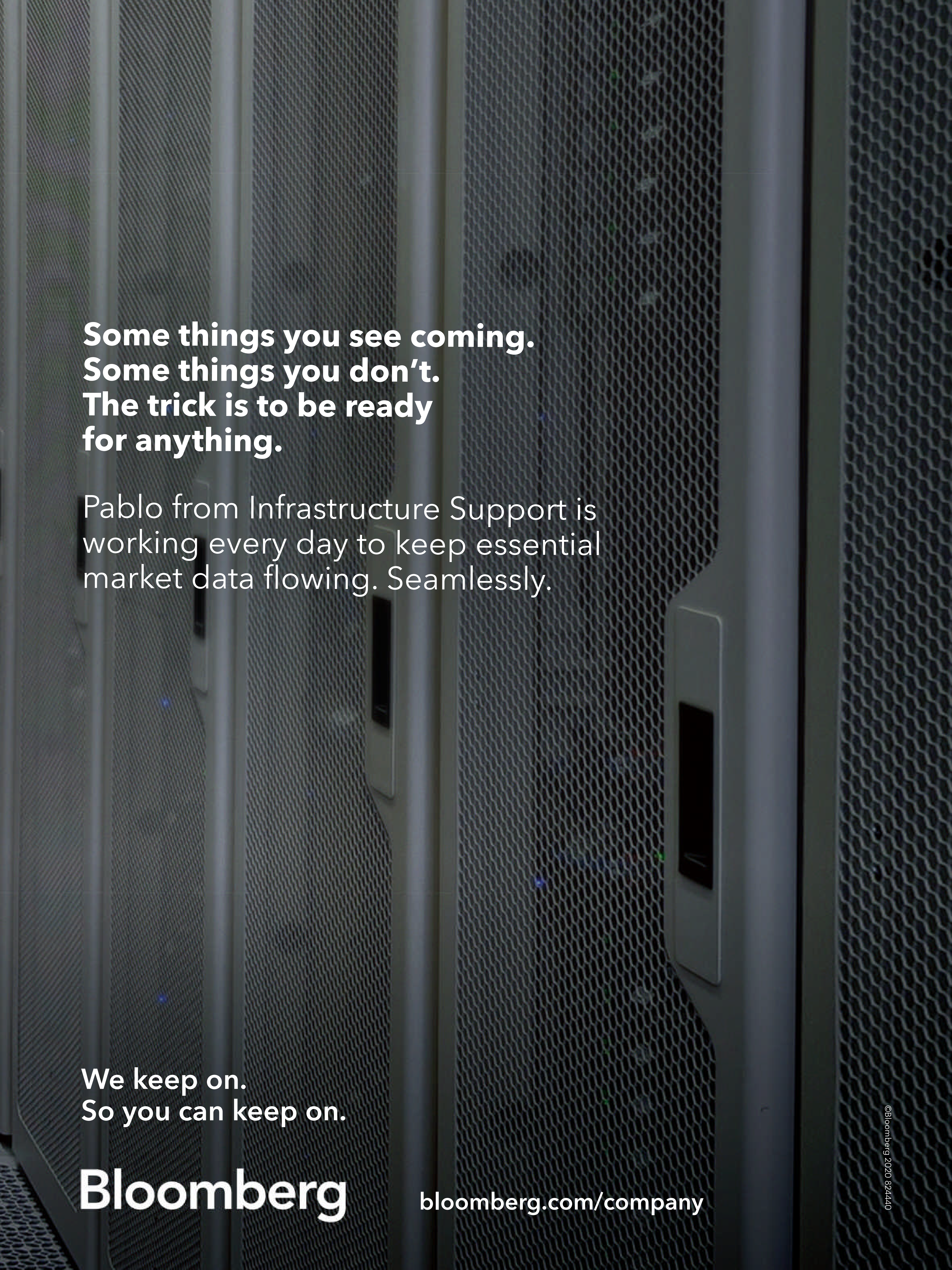
$18 billion sprint for a vaccine 42

Photographed responsibly by Pablo with a tripod


Some things you see coming.
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November 2, 2020

◀ A BTS memento belonging to Jiye Kim, a Sydney schoolteacher who runs one of the band's biggest fan accounts

PHOTOGRAPH BY ISABELLA MOORE FOR BLOOMBERG BUSINESSWEEK

FEATURES

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■ COVER TRAIL

How the cover gets made

❶

"This week we're looking into Operation Warp Speed."

"At last! Been waiting for the newest *Star Trek* since *Discovery* went off the air."

"Oh, no. No, no. This is a virus thing. It's the name of the White House task force set up to get us a vaccine."

"Is this project going to tarnish the name of the one thing I hold sacred?"

"Actually, it's going pretty well! Maybe we do something cool with *Star Wars* type."

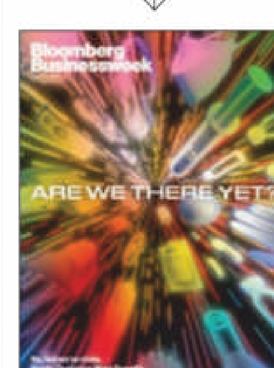
"*Star TREK*. Warp speed is from *Star Trek*. How about this, but with lots of needles and Covid stuff flying by?"

"Thats great! Maybe there's a little Yoda or something."

"IHvaD bImaw' 'e' DaHar."

"Huh? Was that in Jedi?"

"Are we done yet?"



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By Benedikt Kammel

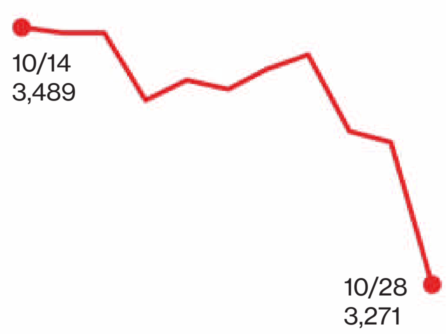
● Global coronavirus cases topped 44.1 million, and deaths exceeded

1.16m

Europe has seen a rapid resurgence in infections, forcing governments to consider reimposing all-out lockdowns. Germany will close all restaurants, bars, concerts, and cinemas for a month beginning Nov. 2.

● The U.S. stock market fell more than 5% over three days starting on Monday, Oct. 26, as rising infections and tougher shutdowns added to worries about the pandemic's economic hit.

S&P 500 index



● "We're not going to control the pandemic. We are going to control the fact that we get vaccines, therapeutics, and other mitigation areas."

White House chief of staff Mark Meadows, responding to the increase in Covid-19 cases in the U.S. and a fresh outbreak among several of Vice President Mike Pence's aides. Democrats accused the administration of admitting defeat.

● The U.S. Senate confirmed Amy Coney Barrett on Oct. 26 to join the Supreme Court, where she will solidify a 6-3 conservative majority. All the Democrats and one Republican voted against her, objecting to approving a justice so near the election.

● Turkey called for a boycott of goods from France, accusing the country of hostility toward Islam.

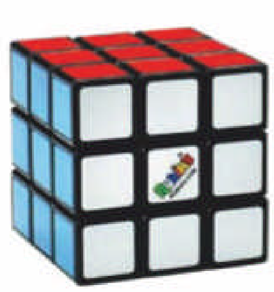
French President Emmanuel Macron has vowed to crack down on Islamic extremism following the beheading of a teacher near Paris on Oct. 16.

● Advanced Micro Devices agreed to buy Xilinx for $35 billion in stock, in what would be one of the largest chip deals ever. AMD wants to build a broader array of products and take on Intel.

● Lee Kun-hee, who

transformed Samsung Electronics from a copycat South Korean appliance maker into the world's biggest producer of smartphones, televisions, and memory chips, died on Oct. 25 at age 78. Lee had been permanently hospitalized since a heart attack in 2014.

● Spin Master, the company behind Etch A Sketch, agreed to acquire Rubik's Brand, maker of the famous cube, for about $50 million. Hungarian inventor Erno Rubik created the colorful plastic brain bender in 1974. Its sales have risen dramatically during the pandemic.



● Shares of German software maker SAP slumped as much as

23%

on Oct. 26, the most in more than two decades. The company cut its annual revenue target and warned that a second lockdown wave risks hurting demand into the middle of next year.

● Chinese payment company Ant Group raised about

$34.5b

through offerings in Shanghai and Hong Kong. The dual listing—the biggest IPO ever—makes founder Jack Ma the world's 11th-richest person.

BARRETT: TASOS KATOPODIS/GETTY IMAGES. MA: ANDREW BURTON/GETTY IMAGES. CUBE: COURTESY RUBICK'S. HEE: SEONGJOON CHO/BLOOMBERG

The U.S. Would Help Itself by Helping the World Beat Covid-19

Restoring America's respected position in the international community is an important matter for voters to consider. A return to partnership with other countries on trade, climate change, and many more issues would be a boon to health and prosperity for the U.S. and the world. At the moment, a surpassing concern is to create and distribute a vaccine against the coronavirus. The U.S. needs to join the international push–already well under way–to see that vulnerable people in every country can be inoculated as quickly as possible.

At this point, more than 180 countries have joined the global vaccine purchasing pool known as Covax (Covid-19 Vaccines Global Access Facility)–including, recently, China. Of the dozen or so countries still on the sidelines, the U.S. stands alone in publicly rejecting the project. The Trump administration refuses to work with the World Health Organization, which is one of the three international agencies behind Covax.

This is a foolish position, and not only because it subverts America's proud tradition of world leadership and compassion in public health. It also makes it harder to defeat Covid, which will persist until it's brought under control everywhere. This is the reality of pandemics–and why, for example, the world has worked so hard, via the WHO, to eradicate infectious diseases from smallpox to polio. Furthermore, until Covid is brought under control worldwide, global supply chains and economic activity cannot rebound.

Perhaps the most self-damaging aspect of this is that it limits America's access to potential vaccines. Covax is a way to help supply poorer countries with vaccines when they become available, but it's also an insurance policy for wealthy countries, giving them access to the earliest effective shots, even if their money's on other candidates.

Covax is supporting the development of at least nine vaccines, and may eventually help fund as many as 18. It hopes to buy 2 billion doses by the end of 2021, prioritizing frontline health-care workers and highly vulnerable people worldwide. Its more affluent partner countries have contributed about three-quarters of the $2 billion that Covax aims to raise by the end of the year to help pay for shots in poorer countries.

Meanwhile, the U.S. is investing about $18 billion through Operation Warp Speed to secure supplies of at least six potential vaccines in development. If one of these turns out to be the first to work safely, Americans will be in luck. But if one of the many others reaches the finish line sooner, the U.S. will want to procure it–and it could if it joined Covax. Even if an American-backed vaccine is an early success, the U.S. could buy additional doses, beyond the number it has contracted for. Countries can access enough doses for 20% of their population through Covax, provided there are enough to go around. Collaboration can also improve all countries' efforts to address vaccine distribution challenges and popular resistance to vaccination, which appears to be increasing in the U.S.

An expert panel from the National Academies of Sciences, Engineering and Medicine has urged the White House to reconsider joining Covax–in the interest of ending the pandemic and improving global health security, and because it is America's "moral duty" to "maintain its historical position as a leader in global health." The U.S. should also contribute 10% of its vaccine supply, the scientists said.

Vaccine nationalism is counterproductive, because it risks prolonging the pandemic. Governments should put the health of their own people first–but that means helping the rest of the world conquer Covid. Ⓑ *For more commentary, go to bloomberg.com/opinion*

AGENDA

▶ And the Winner Is...

On Nov. 7, the World Trade Organization—an arena for U.S.-China disputes—chooses a new director-general: either South Korea's Yoo Myung-hee or Nigeria's Ngozi Okonjo-Iweala.

▶ The U.S. Federal Reserve sets its benchmark on Nov. 5, two days after the general election. Economists expect borrowing costs to remain steady at 0.25%.

▶ Berkshire Hathaway reports earnings on Nov. 7. Warren Buffett has had a busy quarter, including a financing deal for E.W. Scripps and a bet on software maker Snowflake.

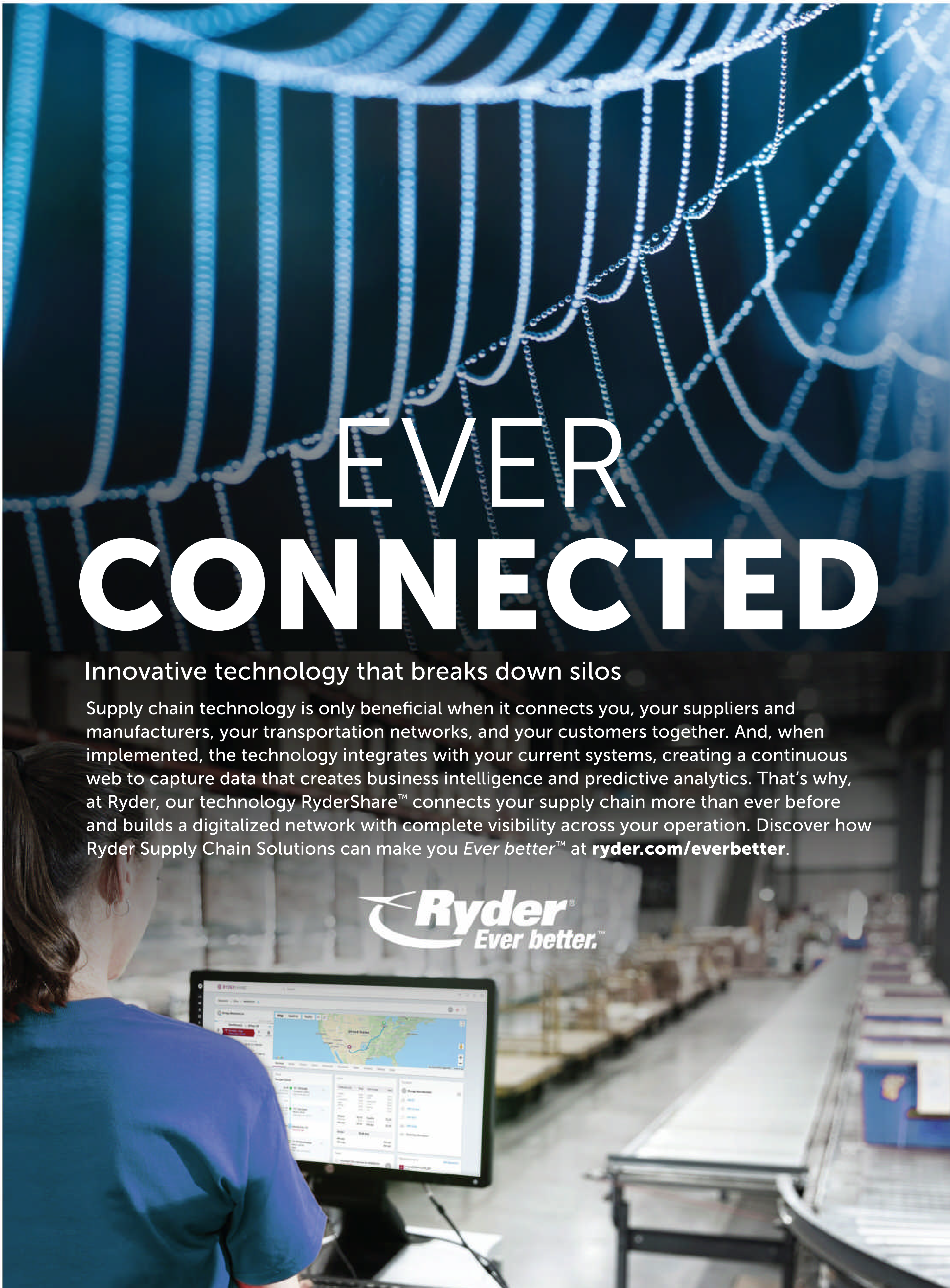
▶ The European Commission releases its quarterly economic forecasts on Nov. 5. With the virus making a brutal comeback, the bloc is facing another downturn.

▶ Alibaba delivers earnings on Nov. 5. China's largest and most valuable corporation has benefited from retail sales in Asia rebounding after Covid restrictions eased.

▶ Malaysia unveils its annual budget on Nov. 6. The government has promised a combination of business-friendly policies and fiscal stimulus to help stabilize the economy next year.

▶ Fans waiting for the latest James Bond movie can bid for vintage posters from *Goldfinger* and other classics in a sale starting on Nov. 5 at Sotheby's in London.

ILLUSTRATION BY SAMANTHA SLINN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Return of the Dragon

● China is rising in the eyes of the U.S. and the West. But in its own historical perspective, this is a restoration

● By Michael Schuman

No foreign policy issue will plague the winner of the White House more than China. There's already a debate raging among China watchers over what Washington's next steps should be. Some favor a "reset" to tamp down tensions and return to more constructive diplomacy. Others are fearful of that very reset and argue the U.S. mustn't stray from the hard line.

The choices made by the next administration will be critical. As the U.S. struggles to contain the coronavirus outbreak and restart its economy, China appears to be gaining strength. Its gross domestic product expanded 4.9% in the third quarter, an astounding rebound in a world still mostly mired in a pandemic-induced paralysis. (Official Chinese data have to be taken with several grains of salt, but economists generally agree the economy is rapidly on the mend.) In its own foreign policy, Beijing has barely flinched under U.S. pressure and instead has become more assertive—enhancing its influence in global institutions such as the World Health Organization, crushing the pro-democracy movement in Hong Kong, turning up the heat on Taiwan, and brawling (literally) with India along their disputed border.

But before the U.S. and its allies can move forward, they have to look back to figure out how the world got to this point with China in the first place. The consensus holds that Washington's policy of engagement was a grave error that created a dangerous adversary to the U.S. and democracy itself. But that's certainty born of hindsight.

The West really got China "wrong" by understanding the country's arrival as a major power within the confines of its own—not China's—historical experience. Because of that, we in the U.S. and the West talk and think about China the wrong way and craft policies mismatched to the deep historical trends shaping today's China and its role in the world.

The key is to see the country as the Chinese see it and to place China within the context of its history, not ours in the West. With that, another China emerges that demands a different set of policies. Without this altered understanding of China, Washington policymakers will struggle to contend with Beijing and its intensifying challenge to American global primacy.

The problem starts in high school. Mine, in Clifton, N.J., offered the option of U.S. history or U.S. history. We learned about other parts of the world only when they drifted into the American narrative. China made an occasional cameo: John Hay's Open Door Policy, or Chiang Kai-shek's World War II alliance against Japan. A lot of us were probably taught history in a similar manner—through the prism of our own story.

Prisms, though, distort. It just so happens Americans encountered China at one of the darkest points in its history. China in the 19th and early 20th centuries was politically decrepit, militarily inept, economically archaic, and, as Westerners saw it, socially backward. We were left with an image of the country that at best was an unmodern realm of quaint rice paddies and silk-robed mandarins; at worst, a war-torn basket case drenched in destitution and decay. Sure, we all know something of China's glittering past—of bejeweled emperors, their grand palaces, and the engineering genius of the Great Wall. But that China is beyond our prism.

That skews the way we describe and discuss China today. We call it an "emerging market," which it is within the boundaries of our own view. But twist the prism, and Chinese poverty is a fairly recent aberration. The country had consistently been one of the world's largest economies over the past 2,000 years—and still was well into the 19th century. That's why Westerners who visited China were awestruck by riches exceeding anything they'd witnessed in Europe. When the first Portuguese seafarers made their way to Guangzhou in the early 16th century, they gasped at silk flags as large as sails. "Such is the wealth of that country," reads one contemporary Portuguese account, "such is its vast supply of silk, that they squander gold leaf and silk on these flags where we use cheap colors and coarse linen cloth."

Rather than something startling, China's growth into the world's second-largest economy is a return to the norm. So is the critical role it plays in modern manufacturing and trade. We grouse that China has "stolen" our factories and fret over how much stuff at Target is "Made in China." Historically, though, the country had been a major manufacturing center and premier exporter, capable of producing valuable goods on a mind-boggling scale. The Song dynasty (960-1279) experienced a near-industrial revolution seven centuries before England's. Silk and porcelain, both Chinese inventions, were among the world's first truly global consumer products, the iPhones of their age. Centuries before Vasco da Gama felt his way to India in 1498, China was the beating heart of a global economic system, with trade links stretching from South China, across Southeast Asia and the Indian Ocean, to the Persian Gulf and Red Sea.

We also talk of the "rise of China" as if it's astonishing and unique. Yet China has "risen" many times before. One of the most remarkable features of its history is how frequently the Chinese were able to rebuild their society into a major power after periods of decline, political disorder, and invasion. This latest period of weakness, with China subordinated to the Western world, hasn't been all that long by the standards of Chinese history. For the first 300 years of direct and consistent contact between China and the West—beginning in the early 16th century—the emperors retained the upper hand over the seaborne Europeans. It wasn't until the Qing dynasty's defeat by the British in the first Opium War (1839-42) that the balance of power swung to the West. From ▶

ILLUSTRATION BY SHUHUA XIONG

◀ the standpoint of Chinese history, what's unusual about modern Asia is the dominance of the West, not the return of China as a regional powerhouse.

A much better way to describe the country's 21st century ascent is as a "restoration," not so unlike the many imperial restorations of the past. The current regime, though not a dynasty topped by an emperor (at least officially), is rebuilding the traditional pillars of Chinese greatness—economic, political, military, and (less successfully) culturally—much like the Tang, Song, or Ming dynasties had in their day.

Thinking of modern China's growing power as a restoration forces a shift in how we contend with it. We in the West discuss how to fit China into the global political and economic order we created. But China was never going to be content being a mere cog in the Western machine. For much of its history, it sat at the center of its own world order, based on a distinctly Chinese form of foreign relations and governed by Chinese diplomatic ideals and practices, with roots dating back more than 2,000 years. The Chinese rules of diplomacy and trade were based on the at least ceremonial stature of China as a superior civilization, perched at the top of a hierarchy of societies. Other kings and chiefs had to display their respect by giving tribute to the emperors, who then considered them vassals. With the resurgence of Chinese political and economic clout, Beijing is resurrecting some of these traditional foreign policy precepts. President Xi's pet project, the infrastructure-building "Belt and Road" initiative, treats its participants as little more than supplicants to the throne, which can benefit from China's bounty only by playing by Beijing's rules and performing the proper kowtows.

The first step in dealing with a Chinese restoration is to accept that China wants to be and most likely will be a global superpower. The notion that the U.S. can "stop" China is a nonstarter. Washington can slow things up by withholding technology and disrupting trade. But the Chinese believe that, based on their history, they have a right to be a superpower, and an approach meant to "keep China down," as they see it, will generate conflict but few tangible results. Similarly, efforts to compel China to "play by the rules," as in our rules, are almost equally hopeless. The Chinese perceive the Western world order as an imposition on an East Asia they'd usually dominated, so they're far more likely to assert their own rules than follow ours.

A better route is to allow China more diplomatic space in areas where it doesn't fundamentally damage U.S. interests. Washington has fallen into a pattern of contesting Beijing on everything, which makes the Chinese feel unduly contained. If Washington stops opposing their initiatives at every turn, and is occasionally even supportive, the Chinese will sense they're getting the respect they deserve, at minimal cost to U.S. influence. So if Beijing wants to set up its own international institutions, as it did with the Asian Infrastructure Investment Bank, just let it. Maybe even join, to sway the projects from within. Ditto with Belt and Road. If Beijing wants to lose money and alienate other governments building uneconomic railways and roads, we should wish it the best.

Still, today's China does present a threat. Its history suggests Beijing will expect to be the dominant power in East Asia (at the very least). That's too vital a region to concede to China, and the U.S. will need to protect its core interests there. Best to do so with deft diplomacy through international organizations or alliances rather than vitriol-filled, one-on-one slugfests, as the Trump administration has attempted. A restored Chinese "empire" will likely be too strong, and too determined, to assert its normal position in Asia to be taken on alone. For instance, to contain China in the South China Sea, which the Chinese consider to be almost entirely their territory, organize the contending parties in Southeast Asia into a collective and prod Beijing to negotiate. Perhaps cooperate with the Association of Southeast Asian Nations as a possible forum. Working within the World Trade Organization to influence China, rather than outside of it, is also smarter. Chinese leaders badly crave international stature and acclaim, and that desire can be turned against them within these bodies to alter Chinese policy.

Most of all, a U.S. policy that recognizes Chinese history doesn't equal a soft one. Washington must still target China's bad practices, more carefully but also more forcefully. Chinese companies and officials with proven records of stealing technology or participating in human-rights abuses, such as the mass detention of minority Uighurs, should be sanctioned. Duties ought to be slapped on Chinese exports that are unduly subsidized by the state. When possible, draft policies to deal with the risks China presents without making them blatantly anti-China. For example, instead of banning Chinese apps such as WeChat, devise a broader policy to protect U.S. privacy and data from all possible foreign threats. The U.S. should continue to loudly proclaim support for civil liberties by backing Hong Kong democracy advocates and the democratic government of Taiwan.

Contesting these outrages are not a fight with "China," but with the Chinese Communist Party. The party asserts the two are equivalent, but they aren't. The scholar-statesmen who managed imperial China, steeped in Confucianism, believed good government was founded on benevolence, not brutality, and Chinese history's most tyrannical rulers were usually looked upon with scorn by the Confucians. We should follow their lead.

I don't believe in historical inevitabilities: Just because China has restored itself to great power status in the past doesn't automatically mean it will now. Contemporary China is still a middle-income country lacking key technologies and plagued by an artificially aging population; it has a long way to go to become a global superpower. Yet from a policy standpoint, it's wiser to recognize the historical trends propelling it forward and rejigger the world order to address Chinese aspirations (though not its autocracy). It won't be easy. But neither is denying history. Ⓑ

Physical Distancing helps stop the spread of COVID-19. When someone coughs or sneezes, they can spray small liquid droplets from their nose or mouth which may contain the virus. So please remember to maintain a physical distance of at least 6 feet or 2 metres between yourself and others. Avoid all unnecessary physical contact. And please stay home when you can.

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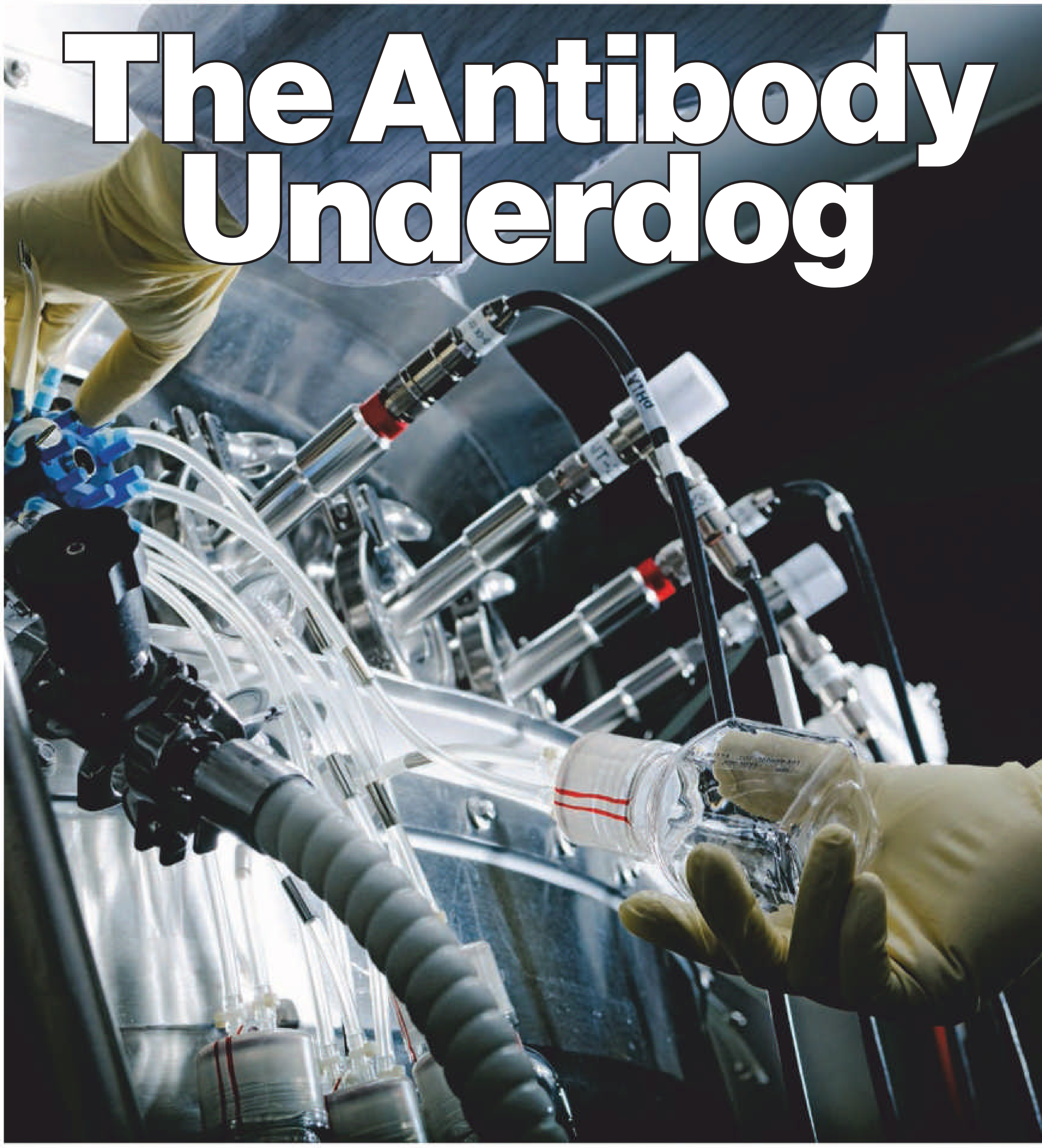
COVID-19
RESPONSE

The Antibody Underdog



● Regeneron made headlines. But Eli Lilly bets its Covid drug can help more patients faster

In April, Eli Lilly & Co. Chief Executive Officer David Ricks made a radical decision. He told U.S. regulators the drug giant would halt production of a colon cancer medicine at a New Jersey plant in order to start making a coronavirus antibody treatment that hadn't even moved into human testing. "We had no evidence it would work," Ricks recalls. "It now sounds slightly crazy, but in the middle of the pandemic, it seemed like the right thing to do."

It was an expensive risk. Or as Ricks puts it, just the kind of "unusual maneuver" necessary to bring patients a treatment when they need it most: before a vaccine becomes widely available (page 42). Any day, Lilly could find out whether the bet has paid off.

Both Lilly and Regeneron Pharmaceuticals Inc. have sought U.S. emergency authorization for their antibody-based treatments for Covid-19 on the strength of promising preliminary trial results. They've become some of the highest-profile experimental therapies since a Covid-stricken President Trump received Regeneron's in October. "I want everybody to be given the same treatment as your president," he said on Twitter just days after leaving the hospital. "The drug companies have just made a lot of it!" Trump said, citing Regeneron and Lilly. "You're going to get it fast, just like I did."

Edited by James E. Ellis

That's misleading. Even if the U.S. Food and Drug Administration gives the go-ahead tomorrow, every bit of spare capacity will be needed, and it still won't be enough. That's because monoclonal antibodies—man-made versions of antibodies the body produces—are among the most complicated pharmaceutical products to manufacture, brewed in live cells over a period of months. They've rarely been made at the mass scale needed for a pandemic.

The antibodies Lilly, Regeneron, AstraZeneca, and GlaxoSmithKline, with Vir Biotechnology, are testing are among the most promising categories of Covid treatments. Infused into the bloodstream soon after an infection, they may decrease virus levels, lowering the risk for severe complications and possibly providing a bridge until vaccines are widely available. And if vaccines prove not to be the silver bullet public-health officials are hoping for, demand for antibody treatments could persist indefinitely.

Since Trump's seemingly successful treatment, Regeneron's two-antibody cocktail has captured the most attention. But Regeneron has just 50,000 doses now, and it may have only 300,000 more in the next few months. Lilly made 100,000 doses of its drug in October and plans to have 1 million by year-end. That's because it decided to conduct tests using lower doses of a single antibody—called LY-CoV555—rather than a more complex cocktail. The U.S. government on Oct. 28 agreed to a $375 million deal to buy 300,000 doses of the Lilly antibody—if the treatment gets the regulatory go-ahead.

Still, even if usage is restricted to high-risk patients, such as the elderly, there will be big shortages. "The bigger problem is the people who will never be able to get the drugs," Ricks says. "We're going to have a supply problem no matter what."

Making matters trickier, the Branchburg, N.J., plant where Lilly plans to make much of its initial supply has faced quality-control issues, according to internal agency documents Bloomberg reviewed. Employees didn't investigate potential quality problems and routinely overrode standard test results, according to the documents. Lilly says it hasn't received a warning letter from U.S. regulators and is working to resolve the issues, which haven't affected the antibody treatment or the pace of production.

The company's treatment consists of synthetic copies of an antibody isolated from one of the first Covid patients in Washington state early this year. "It's just like in the movies, where they say we're going to find this patient, find something in his blood, and turn it into a treatment," says Daniel Skovronsky, Lilly's chief scientific officer.

A second antibody Lilly is testing in combination with LY-CoV555 was derived from a patient in Wuhan and licensed from Shanghai Junshi Biosciences Co. in May. That cocktail, though possibly more effective than the single-antibody treatment, won't be available as quickly due to the challenge of manufacturing it. Lilly plans to request an emergency use go-ahead for the two-antibody combo in November.

The company started work on an antibody treatment in February after Ricks and Skovronsky received a proposal from AbCellera Biologics Inc., a small drug-discovery shop that had developed a "lab-on-a-chip" technology to search blood samples for antibodies but needed help developing and producing them. Drug discovery work normally takes years. But Lilly set a deadline for choosing a lead antibody candidate in mid-April, just 52 days after the blood samples were received. By July, Lilly had started making batches in Branchburg, ultimately scaling up to 12,000-liter bioreactors. Normally, "it can take 12 months" to ramp up from pilot production used for trials to full-scale manufacturing, says Darin Moody, a Lilly senior vice president for product manufacturing. "We basically did it in 90 days."

Lilly aims to have five different plants producing the antibodies next year, including production arrangements with Samsung Biologics and Amgen Inc., as well as Fujifilm Diosynth Biotechnologies, which will produce them for poor nations with funding from the Bill & Melinda Gates Foundation.

◀ A Lilly lab technician tends to cell cultures for coronavirus antibodies

▲ Cell culture testing vats in Branchburg, N.J.

Exactly how powerful the antibodies will prove to be remains uncertain, despite Trump's claims they are a cure. "The real value is averting hospitalizations," says Amesh Adalja, a senior scholar at the Johns Hopkins University Center for Health Security. He says the antibodies aren't miracle cures and will likely need to be administered soon after diagnosis to be effective. That concept was bolstered ▶

PHOTOGRAPHS BY MARK SOMMERFELD FOR BLOOMBERG BUSINESSWEEK

◀ on Oct. 26, when a government-sponsored trial of the Lilly antibody in hospitalized patients—who tend to be sicker—was terminated due to lack of efficacy. Still, that failure may not deter the pending FDA authorization, which is focused on "high risk" patients with mild-to-moderate Covid symptoms.

Ricks says rich nations will pay more for its drug than poor ones—it's charging $1,250 per vial in the U.S., less than some analysts expected—but Lilly doesn't expect big profits. "We're not optimizing our financial return in the short term," he says. "We're trying to escape the pandemic and do some good." *—Robert Langreth and Riley Griffin, with Anna Edney*

THE BOTTOM LINE Eli Lilly and Regeneron are racing to produce antibodies against Covid. But even if they work as hoped, the companies won't be able to make enough to satisfy demand.

When the Pitchman Isn't Human

● As Covid grounds many social influencers, brands are turning to digital spokespeople

During the pandemic, many social media influencers—those online tastemakers marketers use to reach young, connected consumers—have been stuck at home. But not Seraphine, whose flowing pink hair, catchy songs, and cute Instagram posts about her cat have won her a devoted fan base of nearly 400,000 followers who track her every move. She's busy making appearances in Shanghai to promote her music and prepping for a future collaboration with K-pop girl group K/DA.

Dealing with the harsh realities of pandemic life is easier for her because, well, she's not real. Seraphine is a digital creation of Riot Games Inc., the folks behind *League of Legends*, a hit e-sports game. So she can keep cranking out posts—and marketing tie-ins—on Twitter, Instagram, and SoundCloud despite lockdowns or travel restrictions. (That doesn't mean she ignores reality: Seraphine sometimes wears a mask.)

At a time when interacting safely with other humans can no longer be taken for granted, businesses' appetite for such digital spokespeople is accelerating. Brands are expected to spend as much as $15 billion annually on influencer marketing by 2022, up from $8 billion last year, according to Business Insider Intelligence. And a growing slice of that money belongs to virtual influencers, whose producers often use sophisticated video and digital tools to make them look and act almost human.

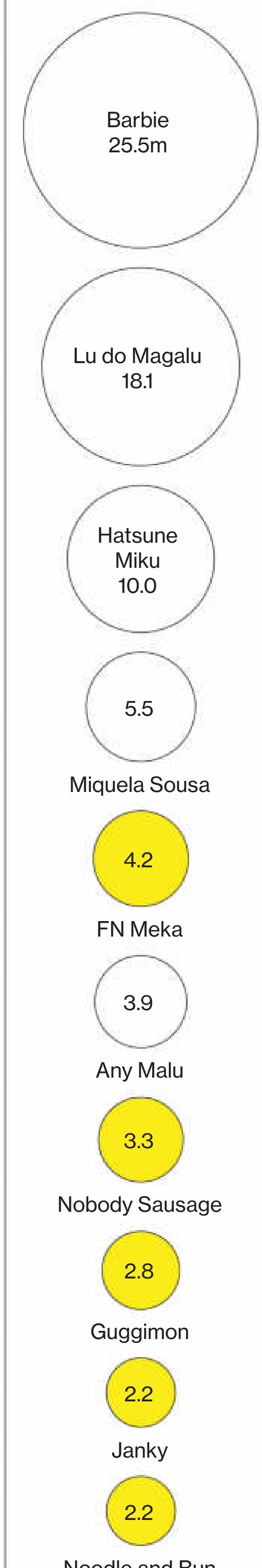
"Virtual influencers, while fake, have real business potential," says Christopher Travers, the founder of virtualhumans.org, a website that documents the industry. "They are cheaper to work with than humans in the long term, are 100% controllable, can appear in many places at once, and, most importantly, they never age or die."

Seraphine—who on Oct. 13 was also tapped to be a playable character on *League of Legends*, which draws as many as 8 million concurrent daily users—is one of about 125 active virtual influencers, according to Travers. More than 50 of those premiered on social media in the 18 months prior to June 2020.

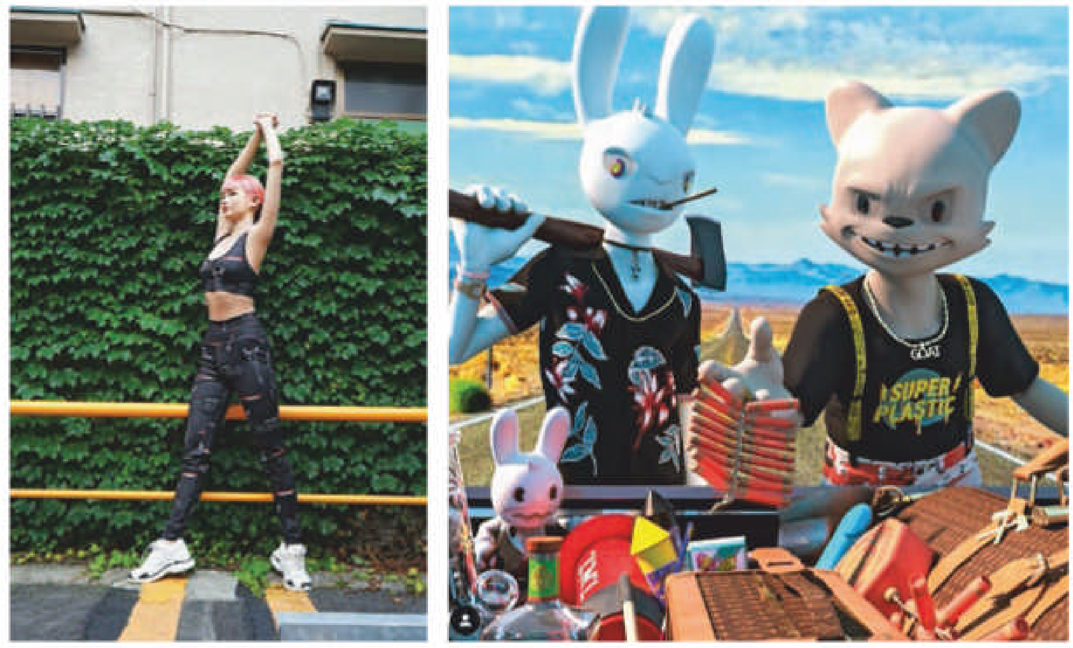
The biggest influencers can attract brand partnerships and other lucrative deals. With 2.8 million Instagram followers and a fee of about $8,500 per sponsored post, Lil Miquela—a Brazilian "model" who's done promotions for Calvin Klein, Prada, and other brands—is the industry's highest earner, according to OnBuy, a U.K.-based online marketplace. OnBuy estimates Lil Miquela could make up to $11.7 million this year. As Covid leads to the cancellation of product launches and sponsored travel junkets, many human influencers with big social media followings are seeing revenue streams dry up. Virtual pitchpeople haven't suffered that fate.

▼ Virtual influencers with the largest followings across all social media platforms as of September 2020

■ First appeared online in 2019 or 2020



◀ Digital influencer Seraphine at home



▲ Fashion model Imma (left) and Superplastic's Guggimon and Janky

The pandemic may be bringing virtual influencers to the fore, but the trend's real driver is Gen Z. That cohort is expected to number more than 2.56 billion by the end of this year. And as its oldest members start to hit their mid-20s, their earnings are growing, making them attractive to marketers worldwide. According to McKinsey & Co., millennials and Gen Z represent spending power of about $350 billion annually in the U.S. alone.

Of course, virtual influencers are still a relatively small phenomenon, and the "uncanny valley" factor—a common, discomfiting emotional response we have to things that look almost but not quite human—makes it unlikely they'll ever be to everyone's taste. But being fictional doesn't make an influencer like Seraphine any less relatable to this audience, says Patrick Morales, the character's creative director at Riot Games. "Knowing the interests and browsing habits of our young and tech-savvy player base…it became apparent that social media provided a potential platform for storytelling in a way that wasn't possible for other parts of our fantasy-based IP," he says.

Investors are interested, too. Superplastic, the Vermont-based animation and entertainment branding company behind popular virtual influencers Janky and Guggimon, as well as a range of art toys and apparel, raised $10 million in seed funding in August 2019. Craft Ventures, SV Angels, and music industry kingpin Scooter Braun (he manages Justin Bieber and Ariana Grande, among others) all invested. And Aww Inc., a Japanese startup whose virtual stars include Imma and Plastic Boy, raised $1 million from Coral Capital in September.

Scrolling on your phone quickly, you could be forgiven for thinking Aww's Imma—who has bright pink hair, goofy dance moves, and a stylish wardrobe—was a person. More than 300,000 Instagram followers have viewed her partnerships with fashion brands such as LVMH'S Celine and her editorial shoots in fashion magazines. She also participates in viral challenges on video-sharing app TikTok, where her version of the #syncchallenge, which involves a handshake and a mimed gunshot, garnered more than 5.6 million views. Her social media posts show her visiting art galleries and, in a recent campaign for Ikea, "living" inside the Swedish homeware giant's store in Tokyo's trendy Harajuku district.

Aww employs about 20 people, most with film production backgrounds. The company uses 3-D scanning, motion capture, facial capture, and photo-realistic modeling to create its characters.

"When we created her look, we wanted to think like how overseas [people] think of Japan, so that was the idea of her originally," says Yumi An Anzai, a director at Aww. She says Imma was originally intended as an art project and just happened to attract sponsors. "We didn't create her because we wanted to achieve a marketing plan or anything. We just believed in the possibilities of the future, and then the market followed."

While many virtual influencers appear human, Superplastic and other companies are betting on more fantastical creations like Janky and Guggimon, who together have 2.3 million Instagram followers. Janky is a "celebrity stuntman" who looks like a tall cat crossed with a bear, while Guggimon resembles a towering bunny with shark teeth. In one video, both characters are seen aimlessly dancing, Janky with an ax in his head. In another sponsored post, they stand in front of a Prada storefront they've just destroyed in their DeLorean car. Both are dressed in outfits from the Italian fashion house.

"Because they live both in the physical world and a digital one, there really isn't a limit to their universe," Superplastic founder Paul Budnitz said in an email. "Guggimon can hang out with the Chainsmokers and Rico Nasty and the next day drive his DeLorean through a convenience store window. All our characters wear real clothing labels, eat real food, and drive real cars. So it's a mix between reality and hyper-reality."

"Because they live both in the physical world and a digital one, there really isn't a limit to their universe"

That mix creates huge potential for attracting eyeballs and making money, since there's an endless potential for more content and the creative scope is limited only by what a computer can do. Still, the ability to travel anywhere anytime doesn't preclude an affinity for home. In a recent Instagram post, Seraphine is in her bedroom, cuddling her cat above the caption "self care together!" It has more than 100,000 likes. —*Thuy Ong*

THE BOTTOM LINE Brands are forecast to spend $15 billion annually on social media influencers by 2022. Using digitally created stars gives marketers more control.

SERAPHINE: COURTESY RIOT GAMES. IMMA: COURTESY AWW. JANKY AND GUGGIMON: @GUGGIMON/INSTAGRAM. DATA: VIRTUALHUMANS.ORG

2

TECHNOLOGY

Gig Economy—Yes or No?

● App companies want Californians to enshrine their drivers' contractor status

The gig economy is preparing for a reckoning. California voters are set to pick sides during the Nov. 3 elections in one of the most fraught debates of today's labor market: Are flexible working arrangements worth the trade-offs of weaker job security and fewer benefits? A state ballot measure, known as Proposition 22, would exclude app-based companies from California's new gig economy law, which makes it tougher for companies to classify workers as contractors rather than employees. If voters reject the proposition, the companies would have to start treating drivers as staff who are eligible for benefits such as guaranteed minimum wages, paid sick days, and other standard protections.

Ride-hailing apps Uber and Lyft and food delivery services DoorDash, Instacart, and Postmates sponsored the initiative, pouring a record $200 million into the campaign to convince voters that app-based drivers want to preserve their

Edited by Sarah McGregor

◀ An app-based gig worker at an Oct. 8 demonstration outside Los Angeles City Hall

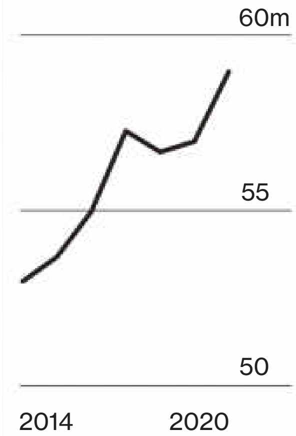
freedom and that an employee-based model would raise costs for customers. The outcome—while legally binding only in California—could have ramifications across the U.S., potentially influencing states looking to tighten regulation of the gig economy, which has thrived in the era of app-based work. Lawmakers from New York to Illinois who are also rethinking labor laws for gig and freelance workers may take a cue from California's handling of Prop 22.

App-based companies have propelled "this longer-term trend away from stable full-time employment," says Juliet Schor, a professor at Boston College who studies gig workers. "The dangerous thing about it is, the bigger this gig economy is and the more it undermines protections for workers, the more likely you see the reduction of those stable, secure jobs."

The stakes are high in California, where the gig economy has been a driver of economic growth and an often-mimicked business model for many technology companies based in Silicon Valley. A study by the U.S. Bureau of Labor Statistics estimates 10% of American workers now take part in "alternative work arrangements." These include temp agency and on-call workers, though most economists can't even agree on a formal definition of gig work, let alone on the size of its contribution to the workforce. The Federal Reserve says 31% of adults age 18 and older participate in the gig economy, at least for supplemental income. In academia, researchers at the sister institutions University of California at Riverside and UC Berkeley are feuding via papers and rebuttals over how to calculate hourly earnings: Should the time in which drivers are waiting for rides count, or not?

The ballot measure promises to be a nail-biter. While an early August poll from London-based consulting firm Redfield & Wilton Strategies showed "yes" leading "no" 41% to 26%, 34% of voters were still undecided. In a survey by UC Berkeley released on Oct. 26, the "yes" and "no" sides were close, ▶

▼ Number of American workers who freelance

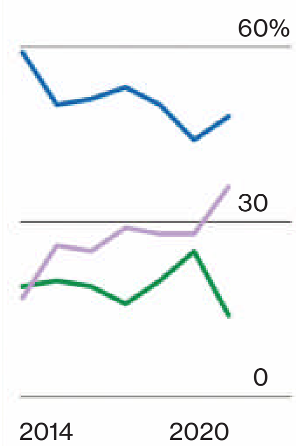


▼ Types of freelancers

Full-time

Part-time

Full-time employees who earn extra money from freelancing

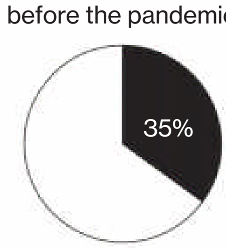


▼ Reason active freelancers say they started

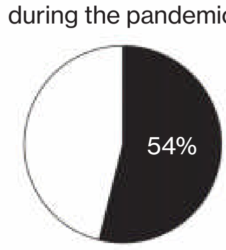
■ Necessity

☐ Choice

Freelancers who started before the pandemic



Freelancers who started during the pandemic



MIKE BLAKE/REUTERS; DATA: UPWORK

◀ at 46% and 42%, respectively, with the rest of respondents saying they're unsure.

Gig platforms are highlighting worker freedoms that they argue come with contractor status. They say Prop 22 will allow workers to keep their flexibility, while also introducing extra measures such as health insurance stipends and regular background checks and safety courses for drivers. Most important, it will maintain a way for hard-up workers to get quick cash during a job-crushing pandemic. Uber Technologies Inc. Chief Executive Officer Dara Khosrowshahi describes Prop 22 as the "best of two worlds." Uber estimates that redefining workers as employees could double the price of rides and may force the company to reduce its driver base in California. That's assuming the companies stay—Uber and its rival Lyft Inc. have previously threatened to shut down in California, or parts of it, if they're forced to change.

Drivers and labor advocates on the "no" side, which has raised only $20 million to promote its views, say the ballot initiative is a way for well-funded tech companies to buy themselves favorable legislation and fend off related lawsuits. They argue that Prop 22's pledged benefits are tied to driving time, which doesn't account for the hours drivers spend waiting for a ping, shuttling to and from more lucrative cities to work, and disinfecting their cars.

The companies get an advantage from drivers who are waiting to pick up passengers so that the service can be deemed "on-demand," says Kurt Nelson, an Uber engineer who wrote an op-ed against Prop 22 in October—disagreeing with his employer's view. "Workers are subsidizing the product with their free labor," he wrote. If those workers had to be paid for waiting time, it would limit the number of drivers on the road at any given moment.

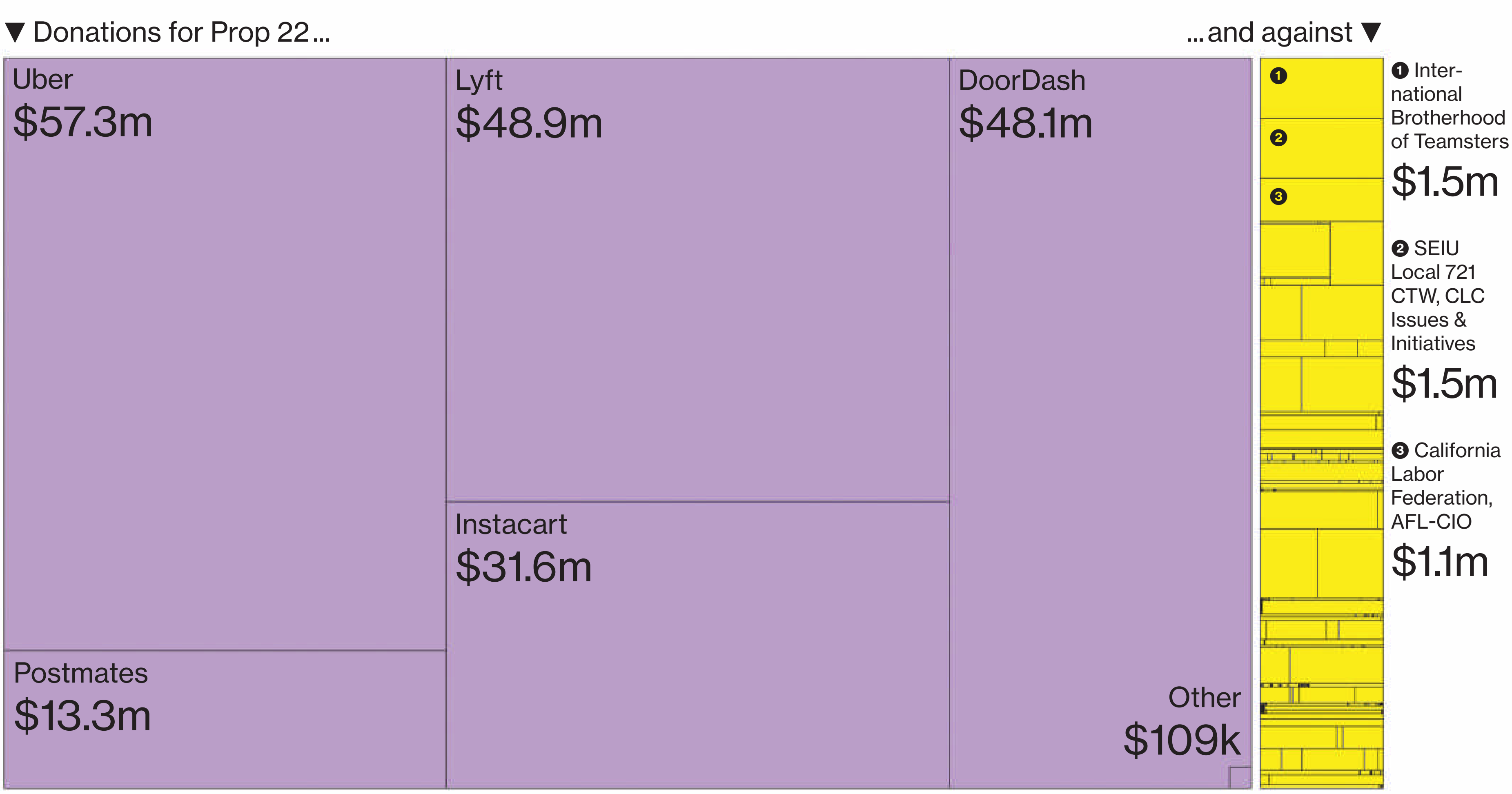
If California voters reject the measure, "the company will have a powerful economic interest to put as much of the work hours into the fewest number of drivers possible because payroll taxes are per head, not per income," says Bill Hamm, an economics consultant with Berkeley Research Group.

The barrage of "Yes on 22" messages from gig platforms has become more frenzied as the election nears. Uber's in-app map shows little "Yes on 22" bubbles hovering over the car icon, and DoorDash Inc. said in a filing that it spent $100,000 distributing takeout paper bags adorned with "Yes on 22" to restaurants that use its service. "I choose to be an independent contractor. It provides the

"Why would you kill an industry that employs so many individuals?"

Dollars Devoted to Prop 22

"Yes" campaigners have outspent the "no" side by about 10 to 1



DATA: CALIFORNIA SECRETARY OF STATE, AS OF OCT. 26

◀ Dunbar, who drives for Lyft, supports Prop 22

PHOTOGRAPH BY JOHN FRANCIS PETERS FOR BLOOMBERG BUSINESSWEEK

flexibility I need in my life," an Instacart Inc. worker wrote in a marketing email to customers. A group of "no" proponents in late October dropped banners over four busy freeway overpasses in Sacramento, the state capital.

In Los Angeles, a group of clergy rallied at City Hall to support the proposition on Oct. 22. Reverend K.W. Tulloss, one of the participants, says the measure will help protect drivers, especially minorities and poor people who may rely on gig work. He acknowledges that the same rationale could be used to argue against Prop 22 and for increased benefits, but he stands by his position: "If drivers want to remain independent, why can't we hear their voices?" Tulloss says he drove for Uber for three months a couple of years ago when he was between jobs: "I knew what I was signing up for. Why would you kill an industry that employs so many individuals? Especially now, when people are being laid off from their jobs."

Gig economy workers are split on whether they're satisfied with the flexibility—largely based on whether the work is their primary source of income, says Boston College's Schor. She found that occasional workers tend to earn more per hour and get benefits from another job or a spouse. Those who were working full time and dependent on gig income felt more trapped. Over the past few years, the latter group has become a bigger slice of the workforce, she says. As the pandemic has crushed jobs in retail, restaurants, and other service industries, even more people are turning to gig work. But the crisis has also shone a bright light on the precarious nature of a job that has few guarantees, like paid sick days.

Prop 22 was born out of a California bill known as AB5 that was passed into law last year and took effect in January, which sets higher standards for workers to be classified as independent contractors. The proposition, if passed, would become nearly untouchable. State lawmakers could make tweaks to it, but any attempt to overturn or drastically change it would have to be approved by voters in another election.

If the ballot measure fails, Uber, Lyft, and others aren't likely to give up. "They could just keep trying to write another bill that would carve them out of the law," says Veena Dubal, a law professor at UC Hastings. The companies have already been shaping how workers and voters view labor force regulations, Dubal says. "The idea that flexibility is tied to independent contractors' status is cultural work the companies have done," she says.

Vivian Marlene Dunbar, a 72-year-old retiree, is a Lyft driver in San Ysidro, Calif. She says she's "totally dependent" on her gig work to cover rent and make ends meet. Even then, she's not interested in benefits that might help ease her financial worries. She's supporting Prop 22. Job flexibility is "invaluable" to her, she says. "If I want to go out there and get a regular wage job with wonderful benefits, I would be at Costco or Sam's Club, like other seniors," she says. "But this is our choice. If I want to go sit under the apple tree and wait for a ride, I can do that." *—Ellen Huet, with Jacqueline Davalos*

THE BOTTOM LINE California voters on Nov. 3 will decide what benefits and pay guarantees app-based drivers should get, which could have ramifications for the wider gig economy.

● Share of U.S. adults who participate in the gig economy, according to the Federal Reserve:

31%

Cornering Heath-Care Markets

Private equity leads the roll-up of specialized treatment facilities, raising competition worries

The Florida city of Naples is known for its abundance of white-sand beaches, restaurants, and resorts. But when it comes to cancer care, some residents may find themselves with little choice. A single company, GenesisCare, operates all four of the city's radiation treatment centers.

GenesisCare got its foothold in Naples after buying another chain, 21st Century Oncology, that grew with backing from private equity investors. Throngs of wealthy people hoping to retire on Florida's Paradise Coast made it plum territory for the business, according to Isaac Vire, a former

Edited by Pat Regnier

radiation therapist at 21st Century. "Naples is kind of a cash cow," he says.

For years now, private equity has been following a similar strategy in a wide range of medical fields—from anesthesiology to hospice care—buying small practices and putting them under a corporate umbrella. With patients shunning in-person visits and postponing elective surgeries amid the Covid-19 pandemic, solo offices are struggling to stay afloat and are under increased pressure to sell to chains.

The private equity buying spree has raised alarms among doctors, researchers, and antitrust regulators. The concern is that mergers and takeovers are diminishing choices for consumers, potentially undermining quality of care and raising costs. Democratic presidential candidate Joe Biden has said he'd scrutinize anti-competitive behavior in medicine.

For its part, GenesisCare says that operating on a larger scale improves care, because it allows the company to operate more efficiently, hire top practitioners, standardize clinical practices, and engage in research. "All of these are advancements that are great for cancer patients," it said in a statement.

Private equity funds raise money from institutions and wealthy investors to buy large stakes in companies and, typically, overhaul their management. The industry's favorite strategy in health care is known as the roll-up: buying myriad small players to build a behemoth. Last year the investment companies did 226 roll-up or "add-on" deals in health care, almost quintuple the amount in 2015, according to data provider Irving Levin Associates. After several years, the private equity firms generally sell the company or take it public.

Many acquisitions are so small that they escape the notice of regulators. The Hart-Scott-Rodino Antitrust Improvements Act of 1976 requires companies to flag only larger deals to the Federal Trade Commission and the U.S. Department of Justice Antitrust Division—currently, those worth more than $94 million. (GenesisCare submitted its purchase of 21st Century to regulators for review before closing the deal.)

FTC Commissioners Rohit Chopra, a Democrat, and Christine Wilson, a Republican, are calling for a study of health-care roll-ups. "Through these strategies, private equity sponsors can quietly increase market power and reduce competition," Chopra, a former assistant director at the Consumer Financial Protection Bureau, said in a July statement. A U.S. House panel has recommended scrutiny of similar small purchases by technology giants such as Amazon.com Inc. and Facebook Inc.

States are also intervening. Connecticut and Washington have passed laws requiring notification of even small health-care mergers. A similar bill in California stalled amid pushback by private equity's main lobbying group, the American Investment Council. Jason Mulvihill, AIC's general counsel, said in a statement that regulators should avoid imposing unnecessary burdens on investments in smaller businesses. David Dahlquist, an antitrust attorney at Winston & Strawn LLP, says his clients, which include private equity firms, worry such laws could proliferate, creating a chilling effect on deals. ▶

▼ Private equity roll-up acquisitions

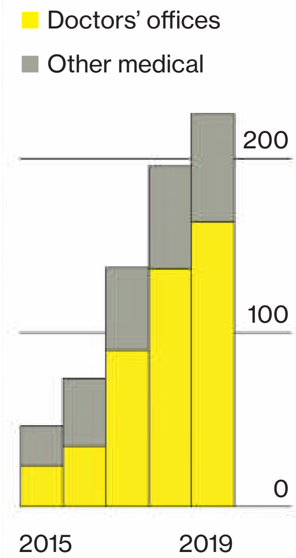


ILLUSTRATION BY CHARLOTTE POLLET. DATA: IRVING LEVIN ASSOCIATES

◀ Private equity has played a key role in the radiation-oncology market's consolidation. For almost a decade, New York-based private equity firm Vestar Capital Partners owned 21st Century Oncology, building it through acquisitions. (Vestar declined to comment.) The cancer-care chain filed for bankruptcy protection and in 2018 emerged from reorganization with new owners. In May, it changed hands again when it was taken over by Australia's GenesisCare, which is partly owned by KKR & Co., one of the world's largest private equity companies. Then 21st Century adopted the GenesisCare name.

Authorities are starting to look more closely at the industry in Florida. In April, the Justice Department announced that Fort Myers-based Florida Cancer Specialists & Research Institute had admitted to conspiring until at least 2016 with another company to carve up the Southwest Florida cancer-care market to curb competition. Prosecutors didn't name the second company, but other court documents indicate it was 21st Century.

Florida Cancer Specialists agreed to pay $100 million, the statutory maximum, to settle the Justice Department's case in a deferred-prosecution agreement. The government says the investigation is ongoing; 21st Century hasn't been charged. "GenesisCare and its leadership are not subject to any liability" for that firm's conduct before the reorganization and their purchase of it, a company spokesperson said.

Many other marquee private equity names are pursuing medical roll-ups. Apollo Global Management Inc., led by billionaire Leon Black, owns LifePoint Health, which has been snapping up rural hospitals. Goldman Sachs Group Inc.'s private equity arm owns Capital Vision Services, which is assembling a chain of optometry practices. Bain Capital, founded by U.S. Senator Mitt Romney, backs Surgery Partners Inc., an acquirer of surgical practices. "The M&A pipeline is as robust as we've ever seen it," said Surgery Partners Executive Chairman Wayne DeVeydt, citing the pandemic's damage to medical practices, speaking to analysts during an earnings conference call in August.

Ravi Parikh, a retina specialist who wrote a paper about consolidation in ophthalmology, says private equity-owned groups are building local monopolies. "This means there are fewer options for patients, fewer options for doctors, and less control over delivery of care, all of which may hurt patients," he says in an interview.

Some researchers cite the dialysis market as a cautionary tale. Dialysis cleans the blood of patients with kidney failure and typically requires three treatments a week. Kidney care is one of the most expensive interventions and is largely covered by the government, costing U.S. taxpayers more than $100 billion a year. Thanks to years of acquisitions—a number of them by private equity firms, including Bain—two publicly traded companies now dominate treatment: Fresenius Medical Care AG, a German company, and Denver-based DaVita Inc., which counts Warren Buffett's Berkshire Hathaway Inc. as its biggest shareholder.

A working paper published this year by the National Bureau of Economic Research found that the small-company loophole in the antitrust law made it easier for companies in the dialysis industry to merge, resulting in less pressure to compete on quality and more hospitalizations and deaths than there otherwise might have been. The study examined data from 1996 to 2017. Last year, Duke University researchers, examining data from 1998 to 2010, found the big chains replaced skilled nurses with less-trained technicians, increased patient loads, and raised Medicare costs by prescribing more drugs. Fresenius and DaVita representatives say patient care has only gotten better as the industry has consolidated and advanced, citing an improvement in mortality and hospitalization rates over time.

Before receiving his second kidney transplant several years ago, Dale Rogers, a former auto mechanic, chafed at the few choices he had for dialysis, as well as their quality. Rogers recalled driving 30 miles several times a week for dialysis treatment at Fresenius from his home in Silver Valley, Idaho. "It was a herd-animal experience," says Rogers, 51, a board member of the American Association of Kidney Patients. "It was sit back in your chair, shut up, and do what I tell you."

Fresenius spokesman Brad Puffer pointed to the experience of patients such as Gloria Stephens, a 71-year-old from Jacksonville, Fla., who praised the company. "They know me, and they know how I am, and every once in a while remind me, 'Make sure you do this and that,'" Stephens says. "It is very much like sisters and brothers."

"This means there are fewer options for patients"

One thing is clear: With the two companies delivering care to 75% of U.S. dialysis patients, some doctors have struggled to remain independent. Raffi Minasian, a nephrologist, sold a dialysis center to DaVita in 2013, saying it was too small to compete. "They were purchasing everything so much cheaper than I was," Minasian says. "They were beating me by $30 or $40 on treatments just because they were so much bigger." *—Sabrina Willmer*

THE BOTTOM LINE Many private equity-backed acquistions of medical practices are so small that they fly under the radar of regulators, but they can have a big impact on local communities.

Could Funds Bet On the Election?

● A trading firm floats the idea, but it's not clear why investors would want to do it

With the onset of an historic U.S. presidential election, a quantitative trading firm has been trying to pique hedge funds' interest in casting big bets in political-prediction markets.

Susquehanna International Group, based in Bala Cynwyd, Pa., is a big player in options and the exchange-traded fund market, but its founders have long had an interest in the statistical side of gambling. The firm runs its own blog on gaming and poker strategy tips and has been building up a sports-betting operation in Ireland. It's recently gauged funds' interest in bets on election outcomes. Although few have gotten involved, Susquehanna is willing to take the other side of wagers on the presidential race for up to $100 million per bet, says a person familiar with the firm, speaking on the condition of anonymity because the plans are not public.

Funds wouldn't be able to place bets from the U.S., where the practice is banned in most cases, and would have to consult their lawyers to ensure they're in the clear. Susquehanna isn't offering a betting service or product: Funds would place wagers at licensed betting platforms in the U.K., which would look for a counterparty to take them up. Susquehanna's Dublin affiliate could then step in, essentially acting as a behind-the-scenes market maker for the bets.

Investors already express views on political outcomes in the securities they buy. Strategists at JPMorgan Chase & Co., for example, have created a "Trump basket" and a "Biden basket" of stocks expected to do well under each future administration. But traders are often wrong about what elections really mean for stocks. In 2016 futures contracts on U.S. stock indexes plummeted on election night as Donald Trump's victory became clear. The next day the S&P 500 rallied. So if you want to make a bet, why not just wager directly on the outcome of the election? "It's just another thing to add to the portfolio," says Paul Krishnamurty, a professional gambler and freelance political markets analyst for Betfair, a prediction exchange with headquarters in London. "It's just another hedge."

A trickier question is what risk you'd actually be hedging. If it's hard to predict how an election will affect markets, then it's not clear how a winning political bet might offset a loss elsewhere. That's one reason the U.S. Commodity Futures Trading Commission in 2012 stopped a company from listing derivatives contracts tied to elections. The CFTC also said such markets could damage the integrity of elections, for example by giving people a direct financial interest in voting for a candidate they wouldn't otherwise support.

Political betting also faces more mundane objections: Even where it's legal, fees are often high, and markets tend to be thinly traded, without much opportunity to rake in big winnings—at least in Wall Street terms. Betfair has matched about $266 million in trades on who will win the presidential race.

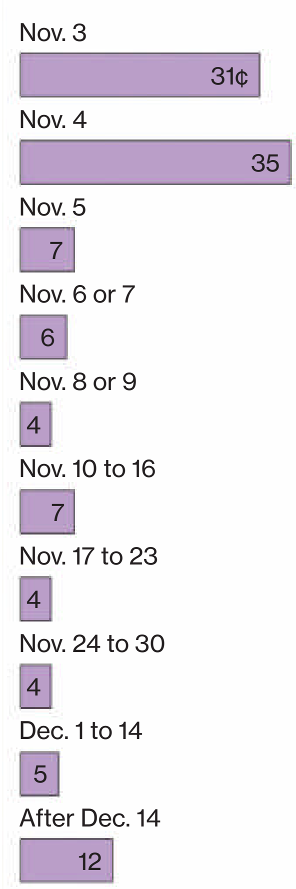
Markets to bet on U.S. presidential elections operated from 1868 to 1940, according to research by Paul Rhode of the University of Michigan and Koleman Strumpf at Wake Forest University. New York was a hub for it, especially the informal Curb Exchange, which later became the American Stock Exchange. Sometimes, for brief periods, betting on politics would exceed stock and bond trading. Political markets faded as scientific polling ascended and other types of gambling became more accessible.

An online market called PredictIt has carved out a legal niche in the U.S., getting an exemption from the CFTC to run a political-betting exchange for academic research purposes. (Iowa Electronic Markets received a similar exemption.) The agreement caps the size of any individual bet on PredictIt to $850. Participants buy "shares" in possible election outcomes, so prices reflect their predictions. PredictIt has also offered markets on how many times Trump would tweet in a week, and is taking bets on when the election's result will be called. Nov. 4—the day after Election Day—is in the lead.

Thomas Miller, faculty director of the data science program at Northwestern University, says prediction markets may pick up information polls miss. They're faster, and people may be more honest about what they think. Miller created a prediction engine based on betting that runs a million hypotheticals on the presidential election every hour. On Oct. 28 it showed Biden with a 76% chance of winning. —*Annie Massa*

THE BOTTOM LINE Financial regulators in the U.S. mostly don't allow political betting, in part because they don't see how it can help anyone hedge risk.

▼ PredictIt prices as of Oct. 28 for bets on when the election will be called. Wins pay $1



DATA: PREDICTIT

The Not-So-Mighty Dollar

● Biden may get the weaker greenback that eluded Trump's presidency

A weaker dollar and the boost it could provide to U.S. manufacturers and exporters has long been part of President Trump's prescription to make America great again. But it could be his opponent, Joe Biden, who gets a less mighty greenback and its spoils.

The alleged unfairness of U.S. trading relationships with the rest of the world has been a cornerstone of Trump's rhetoric and actions. Accusations of currency manipulation have been as much a mainstay of his policy as tariffs on items including solar panels and washing machines. And grievances about the strength of the dollar—often part of attacks against China, Europe, and even the U.S. Federal Reserve—have peppered the president's Twitter feed.

The Fed's trade-weighted measure of the U.S. currency, which goes back to the 1970s, shows the dollar has on average been stronger since Trump's election than under his predecessors—and about 18% higher than during the eight years following Barack Obama's initial win. "Trump said he wanted a weaker dollar, but what he did meant it got stronger," says Ned Rumpeltin, a currency strategist at Toronto-Dominion Bank.

A big part of the equation was the relative economic strength of the U.S. over recent years and how that's affected monetary policy and investor returns. The expansion under Obama and Trump was the longest on record, taking unemployment to a half-century low, while recoveries in other major industrialized nations lagged. Unlike its peers in Europe and Japan, the U.S. central bank managed, albeit briefly, to lift interest rates away from zero, providing an appealing premium for investors that helped buoy the dollar.

The Trump administration's policies also played a role in pumping up the greenback. Tax and regulatory changes increased corporate profitability, which is why investors were willing to overlook the mounting pile of debt. At the same time, the market instability caused by the president's trade war

Edited by Cristina Lindblad

ILLUSTRATION BY BRÁULIO AMADO. DATA: FEDERAL RESERVE with China fueled demand for the dollar, which has long been viewed as a safe-haven currency. "Trump was seen as business-friendly and pro-growth—less taxes, lower regulations—and that's good for the dollar," says Jack McIntyre, a money manager at Brandywine Global Investment Management LLC. "But probably more important was the U.S. rate structure relative to the rest of the world."

The dollar's unprecedented strength has proven a boon for U.S. consumers and companies that buy products overseas. But it's driven up costs for manufacturers, which is why many American companies have continued to offshore production and jobs, even at the risk of being called out by Trump. Now the tide appears to be turning: The dollar has fallen more than 8% from its peak earlier this year and is forecast to weaken further. The premium that U.S. Treasuries provide over comparable debt from major economies such as Germany has shrunk as the Fed has retreated from its foray into higher interest rates.

U.S. policymakers intend to keep rates near zero for years to come to encourage people and businesses to spend their way out of a recession, a stance that typically weighs on a nation's currency. The pain that the pandemic has caused may prompt even more monetary easing.

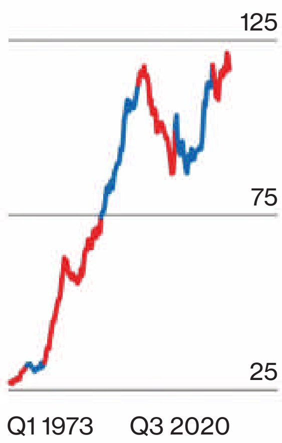
The median estimate in a Bloomberg survey of currency strategists is for Intercontinental Exchange Inc.'s widely watched dollar index—a gauge that tracks the greenback against its biggest industrialized peers such as the euro and the yen—to fall by almost 3% from now through the end of 2021.

A Biden presidency, especially if combined with a "blue wave" that gives Democrats control of Congress, has the potential to speed the U.S. currency's slide. The party has drafted a coronavirus relief package that would increase the government's already substantial borrowing by trillions of dollars.

As the issuer of the world's foremost reserve currency, the U.S. has unique advantages. There will always be a certain level of demand for greenbacks, and the country is unlikely to ever default. Nevertheless, any perception that U.S. debt is spiraling out of control could fuel concerns about the valuation of the dollar. Abdelak Adjriou, a money manager at American Century Investment Services Inc., says that with U.S. debt rising, the dollar will weaken over the long term regardless of who wins. Under Biden, who intends to raise taxes, the depreciation could "happen very quickly," he says.

Hanging over all of this is the lesson of 2016, when markets' unexpectedly upbeat reaction to Trump's victory left many on Wall Street red-faced. The consensus wisdom is that a Biden White House and a Democratic Congress equals a weaker dollar, but any economic recovery they preside over could attract money to the U.S., supporting the currency. On the flip side, a Trump win and a divided legislature might well extend the current stalemate over fiscal stimulus, cementing the need for ultralow interest rates that weigh on the currency. And then there's the big unknown: the risk of a contested election. Months of uncertainty would likely fuel demand for the greenback as a haven. *—Susanne Barton, Anchalee Worrachate, and Benjamin Purvis*

THE BOTTOM LINE A Biden victory may speed the dollar's slide, rendering U.S. manufacturers more competitive and helping whittle down the trade deficit, which are among Trump's stated goals.



Is GDP Falling Out of Fashion?

● The search for alternative ways of measuring economic well-being has new impetus

History may show that it was during the pandemic that our fixation with gross domestic product really started to wane.

A renewed push to demote GDP as a measure of economic welfare has emerged amid a crisis that's brutally exposed gaps in health care and social safety nets. A World Economic Forum (WEF) report released on Oct. 21 proposes embedding GDP into a dashboard that also takes into account factors such as inequality, energy use, and public health. The same day, at the European Central Bank's first public hearing as part of a policy review, contributors raised the topic of alternative economic models.

"The pandemic has completely highlighted that what we care about, including as economists, is not the amount of money circulating in the economy but people's well-being in a broader sense," says Diane Coyle, professor at the University of Cambridge and author of *GDP: A Brief But Affectionate History*. But "there's no obvious single candidate to replace GDP at the moment." ▶

◀ The indicator has dominated economic discourse for almost a century. Its endurance has much to do with its simplicity. It's a single, easy-to-understand number that seems to capture the overall health of the economy. GDP's hegemony has come under assault in recent years, particularly from left-leaning economists. Nobel laureate Joseph Stiglitz has spoken of "GDP fetishism" and, along with Jean-Paul Fitoussi, proposed a nuanced approach that includes well-being and the environment. "You can have a very important growth rate of GDP, but if it goes to only 1% of the population, it has no meaning," says Fitoussi, professor emeritus at the Paris Institute of Political Studies.

GDP's origins reach to the Great Depression, when American economist Simon Kuznets was looking for ways to explain to Congress what was happening to the U.S. economy. Even then he warned of its limits. "The welfare of a nation can scarcely be inferred from a measurement of national income," he wrote.

The big problem is that the gauge is crude: The production of weapons, hospital beds, or chocolate cake all get counted in the same way, whether or not they're beneficial to society and the environment. Also, it's an imperfect tool for measuring production of intangibles—a definite downside in our digital age. And it makes no allowance for unpaid labor such as child rearing and housework.

Bhutan started pursuing gross national happiness in the 1970s, and other alternative measures have sprung up this century. Australia began measuring well-being in 2001, and Europe's "Beyond GDP" initiative of more comprehensive indicators dates to 2007. A United Nations-linked group publishes a World Happiness Report.

Kate Raworth, an adviser at the University of Oxford's Environmental Change Institute, came up with a "doughnut model" that includes access to housing, food, health care, and education, as well as climate change. The ring of the doughnut is the sweet spot between minimum social standards on one side and overusing the planet's resources on the other.

The U.S. Bureau of Economic Analysis has embarked on a "GDP and Beyond" initiative to improve its use of data on economic well-being and sustainability. It released a set of prototype measures in March and expects to update some of them regularly starting in December.

Climate change and social justice feature heavily in many alternative models. Some even argue the objective of growth itself must be abandoned in major economies to save the planet. That's the crux of the "degrowth" movement. "It's not just enough to switch to a better indicator, although we must also do that," says Jason Hickel, senior lecturer in anthropology at Goldsmiths, University of London. "We also have to have policy that's actively organized around reducing energy and material throughput."

The coronavirus could accelerate the shift. "The time is right, because people have become much more aware that it's not only material success, but there are other things that count in life," says WEF founder Klaus Schwab. "Covid has shown us very clearly what those are." —*Jana Randow, Catherine Bosley, and Jill Ward*

THE BOTTOM LINE The pandemic has rekindled efforts to design frameworks for measuring economic well-being that also factor in things such as climate change and social equity.

Lost in the Weed

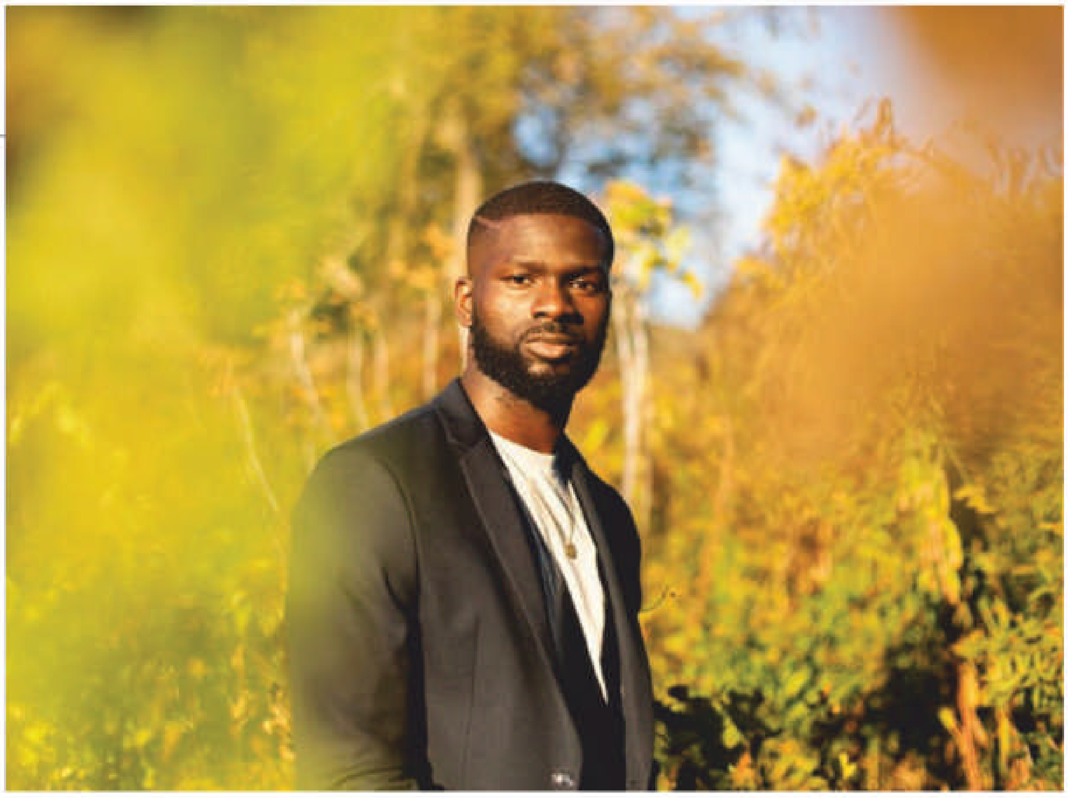
● Minority entrepreneurs struggle to break into the $16 billion U.S. pot market, despite government efforts to give them a leg up

"We're here to get you guys medicated and elevated," says Seun Adedeji, greeting customers at the Oct. 15 grand opening of his store in central Massachusetts with a pandemic-friendly elbow bump.

Adedeji is a cannabis entrepreneur. In his skinny suit, T-shirt, and wingtips with no socks, he looks the part. His shop, not so much. It's a low-slung brick building that used to be a gas station in the former mill town of Athol (population 12,000). It still could be mistaken for one, except for the green marijuana leaf balloons hanging from the ceiling and the rainbow of glass pipes on the counter.

As a 27-year-old Nigerian immigrant with only a high school diploma, Adedeji is a rarity in the $16 billion-a-year U.S. legal marijuana business: a dispensary owner who's Black. His company's name, Elev8 Cannabis, has a double meaning. It's about getting high, of course, but also alludes to the legalization movement's social equity mission. Advocates call for government support of Black-owned cannabis companies to reverse the devastating toll of the war on drugs and mass incarceration on minority communities. Growing up in Chicago, Adedeji himself was arrested at 13 for selling pot.

Yet, for all the talk of justice, it's White corporate types—many from Wall Street, Silicon Valley, and big liquor and tobacco—who've come to dominate the lucrative emerging industry. The Minority



Cannabis Business Association estimates that only 200 of the nation's more than 7,000 licensed dispensaries are Black-owned.

Adedeji says Black people deserve access to legal pot's windfall profits. It would be a step toward repairing the inequities of systemic racism. "We need to create generational wealth in the minority community," he says. The argument is gaining currency amid a booming pot industry. On Nov. 3, voters in Arizona, Montana, New Jersey, and South Dakota will decide whether to legalize recreational pot, as have 11 other states and the District of Columbia since 2012. (Thirty-five permit medical marijuana.)

Some state and city governments have social equity programs for marijuana businesses. Those of Massachusetts and Illinois, as well as Oakland, Calif., and Los Angeles, are among the most developed. These efforts generally give a leg up to business owners with nonviolent marijuana convictions who live in neighborhoods with disproportionate drug arrests. Help can include training, breaks on regulatory fees, and priority in awarding licenses and loans. "None of these programs have been a smashing, immediate success" because of the challenges facing disadvantaged businesses, says Shaleen Title, who holds the social equity seat on the Massachusetts Cannabis Control Commission. Adedeji didn't receive any special treatment under the program.

The main barrier is money. Opening a dispensary typically costs $500,000 to $1.5 million, according to cannabis industry tracker Arcview Market Research. Banks loans aren't an option, because the federal government still considers pot illegal. So wealthier people, who can tap funds from networks of family and friends and even private equity, are edging out the disadvantaged.

When Adedeji needed $1 million for his first Massachusetts shop, a large marijuana industry supplier lent him the money, at 8% interest, but also levied a $3 per item fee and specified that he had to buy 70% of his product from the lender, Massachusetts records show. After a state investigation, the bigger company dropped those conditions.

Kevin Sabet, an Obama administration drug policy adviser, says big corporations will end up reaping the rewards of legalization, while poor neighborhoods bear the cost of increasing pot use. "It's dangling money in front of communities that deserve richer opportunities," says Sabet, president of Smart Approaches to Marijuana, which supports decriminalization rather than commercialization.

Adedeji opened his first pot dispensary in Eugene, Ore., in 2017, and has secured licenses to operate three in Massachusetts. In Athol, where there are none, he paid only $50,000 to buy the former gas station.

At the shop's grand opening, about two dozen people, wearing masks, wait in a socially distanced line to enter. Noreen Perez, 52, a former dog groomer, seeks help for her anxiety and pain. Bruce Fowler, 78, an Air Force veteran and retired toolmaker, has come to browse.

The scene is a far cry from the crowds at some of the better-financed White-owned dispensaries such as New England Treatment Access LLC, which occupies a soaring Beaux Arts-style former bank building listed on the National Register of Historic Places. The business is owned by a company called Parallel, whose chairman is the billionaire heir to the Wrigley gum fortune. Before Covid-19, it could see 2,500 customers a day, making it one of the most successful dispensaries in the country.

Athol may not seem the most natural market for a Black-owned pot business. The town is more than 90% White. In the 2016 presidential election, its voters favored Donald Trump, whose Department of Justice has often been unfriendly to legalized pot. Local officials nonetheless welcomed Adedeji's business for the potential bump it could deliver to the local economy and tax revenue.

On opening day, Marc Ostberg, a branch manager of BankHometown, visits from down the block. Dressed in a suit and sporting a plastic face shield, the banker nods and smiles as Adedeji raves about the store's soothing indica and animating sativa cannabis blends. The conversation highlights both the challenge and possibility of the new venture. "Have you ever been elevated before?" Adedeji asks. "No? One day, we've got to change that up." *—John Hechinger*

THE BOTTOM LINE Only about 200 of the nation's more than 7,000 licensed dispensaries are Black-owned, undermining hopes that legalization would provide a vehicle for social equity.

▲ Adedeji

● The investment needed to open a dispensary starts at

$500k

PHOTOGRAPH BY KAYANA SZYMCZAK FOR BLOOMBERG BUSINESSWEEK

A Diaspora Divided

● Indian-Americans lean strongly Democratic, but Trump is making inroads—thanks to Narendra Modi

Although they represent only slightly more than 1% of the U.S. population, Indian-Americans are the second-largest immigrant community and one of the fastest-growing racial or ethnic groups in the nation. Not long ago this group could be assumed to be reliably Democratic: In 2008, 93% of Indian-Americans cast ballots for Barack Obama, on par with the voting pattern of Black Americans, according to the National Asian American Survey.

Eight years later, Donald Trump performed better with the community, and recent data suggest a further tilt to the right in 2020. The research firm AAPI Data found that 28% of Indian-Americans may vote for Trump, up from 16% four years ago. A recent survey by YouGov with the Carnegie Endowment for International Peace, Johns Hopkins University, and the University of Pennsylvania puts Trump's support among this group at 22%.

The shift has a lot to do with Indian Prime Minister Narendra Modi, his Bharatiya Janata Party (BJP), and its polarizing, hard-line brand of Hindu nationalism, or *Hindutva*. Modi enjoys strong support for Hindutva and for his efforts to accelerate development and crack down on terrorism. President Trump has been a close ally of Modi's. At a nonpartisan rally called "Howdy, Modi!" held in Houston in September 2019, about 50,000 people of Indian origin listened to speeches by the visiting Modi and by Trump. (Other Indian-Americans protested outside.)

Last year, Modi's government revoked the autonomy of the contested region of Kashmir, which is predominantly Muslim, and changed a citizenship law to favor members of religious minorities from Muslim-majority neighboring countries. These moves sparked deadly protests at home and criticism from abroad that India, which is about 80% Hindu, was discriminating against its 200 million Muslims. Asked about the citizenship law on a state visit to India in February, Trump said it was "up to India."

The Trump-Modi relationship is one reason some Indian-Americans, especially men who are middle-aged or older and foreign-born, have boarded the Trump train—men such as Dinesh Agrawal, a materials researcher at Penn State who voted for Hillary Clinton in 2016. "Over the last four years, I've seen Trump have the strongest and most favorable relationship with India since India's independence," he says.

Younger and U.S.-born Indian-Americans are more likely to focus on domestic issues. The dynamics are complicated by Democratic challenger Joe Biden's selection of Senator Kamala Harris, who's Black and Indian-American, as his running mate.

"Indian-Americans are as divided as Indians are" over politics, says Shekar Narasimhan, chairman and founder of the AAPI Victory Fund, a Democratic super PAC.

There are large Indian-American communities in the key swing states of Florida, Michigan, and Pennsylvania—large enough to make a difference if the results are close. Both parties are trying to reach them before Nov. 3 with targeted ads.

Edited by Amanda Kolson Hurley

ILLUSTRATION BY JONATHAN DJOB NKONDO

In their corner, the Democrats have Harris, whose mother was born in India's Tamil Nadu state and who used the Tamil word "*chittis*" ("aunties") in her speech at the Democratic National Convention. "The optics on Trump's side might be good, but look at the actions," Narasimhan says. "Our argument focuses on having Kamala Harris on the ticket."

According to the YouGov survey, half of Indian-Americans said the pick made them more enthusiastic about Biden, with most citing Harris's Indian heritage. But 31% said it made no difference, and 15% said it made them less enthusiastic. Of those in the last category, 20% said Harris identifies more with her Black roots, and 19% said she will weaken India-U.S. relations.

Harris expressed support last year for India-born Representative Pramila Jayapal, a Washington Democrat, who introduced a resolution in Congress to urge India to uphold human rights in Kashmir. In response, India's foreign minister refused to attend a meeting with U.S. lawmakers including Jayapal.

Courtney Parella, deputy national press secretary for the Trump campaign, says Biden having Harris on his ticket "won't fix his enthusiasm problem" among Indian-Americans, citing "Howdy, Modi!" by way of contrast.

Former U.S. ambassador to India Richard Verma and other Indian-American Democrats point to Obama-Biden trade and defense deals with India and say Trump's restrictions on visas and revoking of India's preferential trade status show that his policies don't match his chumminess with the prime minister.

But there are rumblings of discord within the party. Biden has been asked by Indian-American donors about the Muslim-American agenda page on his website, which calls to restore rights "for all the people of Kashmir" and expresses "disappointment" over India's handling of the citizenship law. A "South Asians for Biden" talking-points document seen by *Bloomberg Businessweek* cites voter concerns such as "Biden is anti-India" and "Biden only cares about the Muslim community." Meanwhile, Emgage PAC, the largest ▶

◀ Muslim-American PAC, declined to endorse Democratic congressional candidate Sri Kulkarni because it claimed he was close to Hindu nationalist organizations. And the head of Biden's Asian-American outreach came under heat for his support for Modi and his father's links to the BJP.

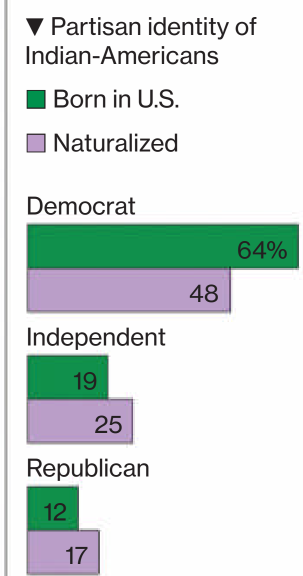
Milan Vaishnav, director of the South Asia program at the Carnegie Endowment, predicts that U.S.-born Indian-Americans will soon outnumber new immigrants from India, changing the dynamics. But for now, many families tread carefully around political fault lines.

"It's not a coincidence Biden used the word '*inshallah*'" in the first presidential debate, says Ravi Kaw, a Hindu from Kashmir who came to the U.S. in 1970 and now lives in California. ("Inshallah" is an Arabic word meaning "God willing.") Kaw sees it as a sign of favoring Muslims. Although he doesn't like Trump's divisive rhetoric, "it's only for four more years," Kaw says. Whereas "in societies like India, history is ingrained forever and ever, unless something is done to fix the situation," he says, alluding to Modi's policies.

Kaw's son, Sidharth, agrees with his father that "progressive Democrats have a very narrow view of Indian politics." But to him, he says, "ultimately, those positions don't matter as much as their domestic stances. For my parents, who are more attached to their homeland, this tension is forcing them to decide between the two."

His father says he's waiting until the last moment to decide how to vote: "I may end up flipping a coin." —*Karishma Mehrotra*

THE BOTTOM LINE Indian-Americans tend to favor Democrats. But the president's ties to Modi have swayed some to the GOP. A recent survey shows that 28% may vote for Trump this year vs. 16% in 2016.



Bolivia Tacks Left, Into Headwinds

● Socialists are back in power, but the Morales-era commodities boom has fizzled out

It looked like regime change. In November 2019, after the armed forces' chief called on him to step down, Evo Morales, Bolivia's first indigenous president, boarded a plane and fled to Mexico, ending 14 years of socialist rule. He called it a coup.

Days later, Jeanine Añez, an opposition senator, seized control of the presidency, brandishing a giant Bible to symbolize that Christianity rather than indigenous rituals would guide Bolivia's new rulers. Doctors from communist Cuba were expelled, and the country switched overnight from being a friend of Venezuela to an ally of the U.S.

One year later, the events of 2019 look like a temporary blip. The government of Añez became so unpopular that she withdrew her candidacy in the presidential election, and Morales's socialist party, MAS, now under the leadership of Luis Arce, regained power. Arce got more votes on Oct. 18 than all his rivals combined, while his party won a majority in both houses of congress.

MAS owes its dramatic resurrection in part to Arce, who appealed to voters who'd tired of Morales after he ignored a referendum defeat on term limits to try to stay in power. Arce has a very different style from Morales: more academic and less confrontational. Corruption scandals that roiled the transitional government also gave MAS a boost. And even though Morales had resigned amid violent protests, the timing was in one way lucky. It meant the party dodged responsibility for managing the coronavirus pandemic, which sent the Andean nation into its deepest economic slump since the Great Depression.

The transition government blundered by trying to cling to power rather than simply organize elections, says Eduardo Rodriguez, who was president in 2005. The vote was postponed twice because of the pandemic. The more people lost their jobs or got sick with Covid-19, the more they missed the relative prosperity of the Morales era.

Arce, an economist who studied at the U.K.'s University of Warwick, has pledged to revive ▶

"Those factors that gave such extraordinary benefit to Evo Morales don't exist anymore"

DATA: CARNEGIE ENDOWMENT FOR INTERNATIONAL PEACE

◀ public investment, cut value-added taxes, and impose a wealth tax on the country's millionaires. He oversaw fast growth as Bolivia's finance minister from 2006 to 2017. That was an era mostly characterized by buoyant natural gas revenue, which allowed him to run a budget surplus while also ramping up welfare spending. Arce is unlikely to be anywhere near as fortunate as he takes over an economy in crisis, with soaring debt and poverty, dwindling dollar reserves, and lower prices for energy exports.

"Obviously, the good times aren't coming back," says Napoleon Pacheco, an economist who teaches at the Universidad Mayor de San Andrés in La Paz. "Those factors that gave such extraordinary benefit to Evo Morales don't exist anymore."

Bolivia, the poorest country in South America after Venezuela, is set to suffer an economic contraction of 7.9% this year, according to a forecast from the International Monetary Fund. The main credit ratings companies have cut Bolivia deeper and deeper into junk.

One of the risks they cited—political instability—has receded with Arce's landslide and his new majority in congress. The October 2019 election, in which Morales won a short-lived victory, unleashed three weeks of violent chaos as the opposition alleged fraud and took to the streets, and there were fears that another contested vote this year would trigger more unrest.

Bolivia, a landlocked country of 11 million people, has a long history of coups and military interference in politics. MAS and its supporters never accepted the Áñez government as legitimate.

But if the political crisis has now been resolved, other risks such as an overvalued currency and inadequate foreign exchange reserves remain to plague Arce after he takes office on Nov. 8.

The Morales government failed to diversify the economy to cut its dependence on commodities exports, Pacheco says. That's hurting the country now that both volumes and prices have fallen for its natural gas exports to Brazil and Argentina.

Many Bolivians, including Arce himself, believe the next boom may come from the nation's massive lithium deposits. During the campaign, he stood on the blinding white plain of the high-altitude Uyuni salt flat and said its lithium wealth could transform Bolivia into "that dignified and rich country we have always wanted to be." Automakers need the metal to produce batteries for electric vehicles.

But the lithium-rich region of southern Bolivia is so remote, so far from the nearest port in Chile, and so poorly served with infrastructure that the nation is still nowhere near ready to cash in on this boom. "Bolivia keeps talking about lithium, but there are plenty of better options for any company seeking to develop a resource," says Joe Lowry, president of Global Lithium LLC, which provides advisory services. The country is unlikely to become a significant producer of the metal in the next 10 years, he says.

Arce has also highlighted the potential of food produced in the rich farmlands in the eastern lowlands, though the sector is being held back by Bolivia's overvalued currency, which makes exports expensive. The central bank has burned through more than half its reserves over the last five years to defend the boliviano's peg of about seven per U.S. dollar.

Arce said during his campaign that it wouldn't be appropriate to adjust the exchange rate but that doing so may depend on whether Bolivia's neighbors see further devaluations in their currencies.

▼ Arce, fourth from right, celebrates his win in La Paz on Oct. 19

JAVIER MAMANI/GETTY IMAGES

The Brazilian real and the Argentine peso have both weakened more than 20% this year.

During the boom years, Bolivia's international reserves peaked at almost $16 billion, giving the nation a solid buffer against crises. Now, at $6.6 billion, its reserves aren't adequate "to provide a lot of flexibility or really buffer the economy from external shocks," according to Fitch Ratings analyst Todd Martinez.

When gas prices fell in 2015, Arce boosted public spending to support the economy. Bolivia no longer has the "war chest" to do that, Martinez says. MAS's departure from power may have proved temporary, but Bolivia's economic crisis is likely to be more long-lasting. —*Matthew Bristow*

THE BOTTOM LINE Falling natural gas exports, dwindling reserves, and other problems will make it hard for Bolivia's new socialist government to match Evo Morales's economic success.

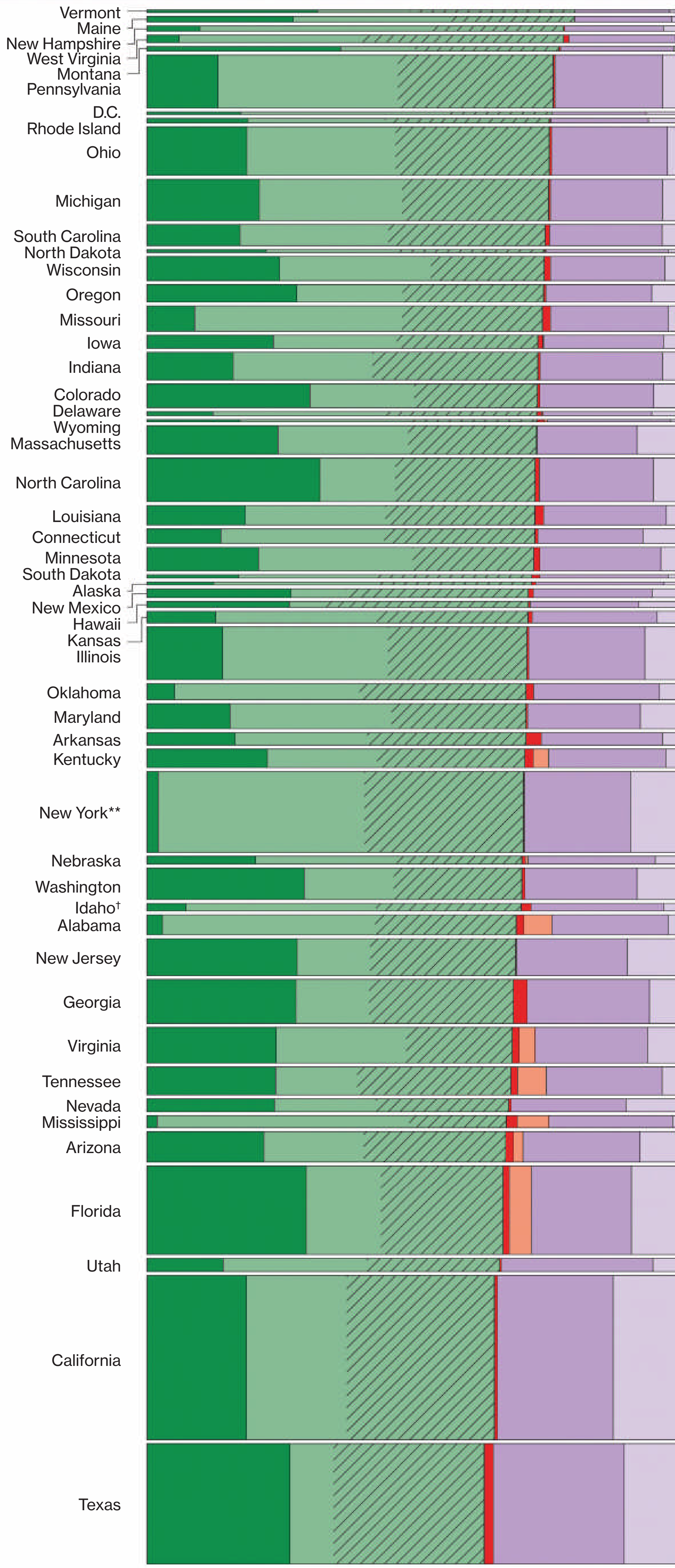
America Votes Early

● As grim as it's been, 2020 looks set to be a banner year for civic participation in the U.S. Voting has become a thing—to do and to show off on social media once you've done it, despite the coronavirus pandemic. As of Oct. 27, 67 million people had already cast mail or in-person ballots for the Nov. 3 election. Most states have blown past their early-vote counts from 2016, and a few are approaching their 2016 totals for all votes.

- Voted early, as of the morning of Oct. 27
- Eligible but haven't voted early*
- Proportion of eligible population that didn't register or vote in 2016
- Not eligible due to being in prison, in jail, on probation, or on parole
- Not eligible post-sentence
- Citizen under 18
- Noncitizen

Height indicates state population

5 million



Montana, where Democratic Governor Steve Bullock is challenging Republican Steve Daines for his Senate seat, has seen a strong early turnout, surpassing 75% of 2016's vote total.

Hawaii had the lowest turnout among eligible voters in 2016.

Early in-person voting didn't start in New York until Oct. 24. Lines stretched for blocks at some sites in New York City.

Some of Georgia's almost 2 million (so far) in-person voters reported waits of several hours. President Trump and challenger Joe Biden appear to be deadlocked in the state.

Florida's early voters this year (6.4 million and rising) outnumber its noncitizens and citizens under 18 combined. Most have voted by mail as of Oct. 27.

California has the highest share of residents unable to vote because of their citizenship status.

In typically lower-turnout Texas, early votes cast as of Oct. 27 had surged to 86.9% of the 2016 all-vote total.

*MAY ALSO INCLUDE INDIVIDUALS WHO ARE DECLARED INELIGIBLE TO VOTE DUE TO MENTAL DISABILITY.
**NEW YORK ONLY REPORTS EARLY IN-PERSON VOTES.
†IDAHO ONLY REPORTS EARLY-VOTING NUMBERS FOR ITS MOST POPULOUS COUNTY.
DATA: U.S. CENSUS BUREAU, UNITED STATES ELECTIONS PROJECT, SENTENCING PROJECT

How to Fight Food Waste

Fruit is sprayed at the lab in Santa Barbara

PHOTOGRAPH BY YURI HASEGAWA FOR BLOOMBERG BUSINESSWEEK

Apeel is marketing a plant-based coating that can cut down on spoilage

November 2, 2020

Edited by Sarah McGregor

Once smallholder farmers in the Kenyan village of Masii have picked their crops, all they can do is wait until a buyer trucks through. The system works fairly well for beans and corn, but mangoes—the area's other main crop—spoil more quickly. If the trader is late, they rot.

"We lose market because the mangoes go spotty," says Obadiah Kisaingu, chair of the Masii Horticultural Farmers' Cooperative Society. He estimates 40% of the co-op's mango crop is lost to spoilage. But a simple coating could change that. A California company has created a formulation that doubles—or for some foods even triples—the shelf life of fresh produce, enabling farmers like Kisaingu to access far-off, larger markets.

Apeel Sciences Inc., based in Santa Barbara, exceeded a $1 billion valuation in May when it received $250 million in financing from Oprah Winfrey and Singapore's sovereign wealth fund GIC Pte Ltd., adding to earlier investments from Andreessen Horowitz and other venture capitalists. (Bloomberg LP, which owns *Bloomberg Businessweek*, is an investor in Andreessen Horowitz.) On Oct. 27 the International Finance Corp., the World Bank's private-sector arm, announced a $30 million investment in Apeel, a move that will open networks in East Africa, South America, and, pending regulatory approval, Southeast Asia. Singapore-owned investment company Temasek Holdings Pte Ltd. and food-focused impact investor Astanor Ventures are partners in the equity deal.

"This is a way to almost leapfrog the necessity of cold-storage chains and bring products to mature markets, where farmers can get better value for their crops," says Stephanie von Friedeburg, the IFC's interim managing director. More time for fresh produce on grocers' shelves means less food waste—a $2.6 trillion problem, according to the United Nations' Food and Agriculture Organization. Project Drawdown, a San Francisco-based nonprofit that analyzes climate solutions, says fixing it would be one of the most effective ways to reduce greenhouse gas emissions.

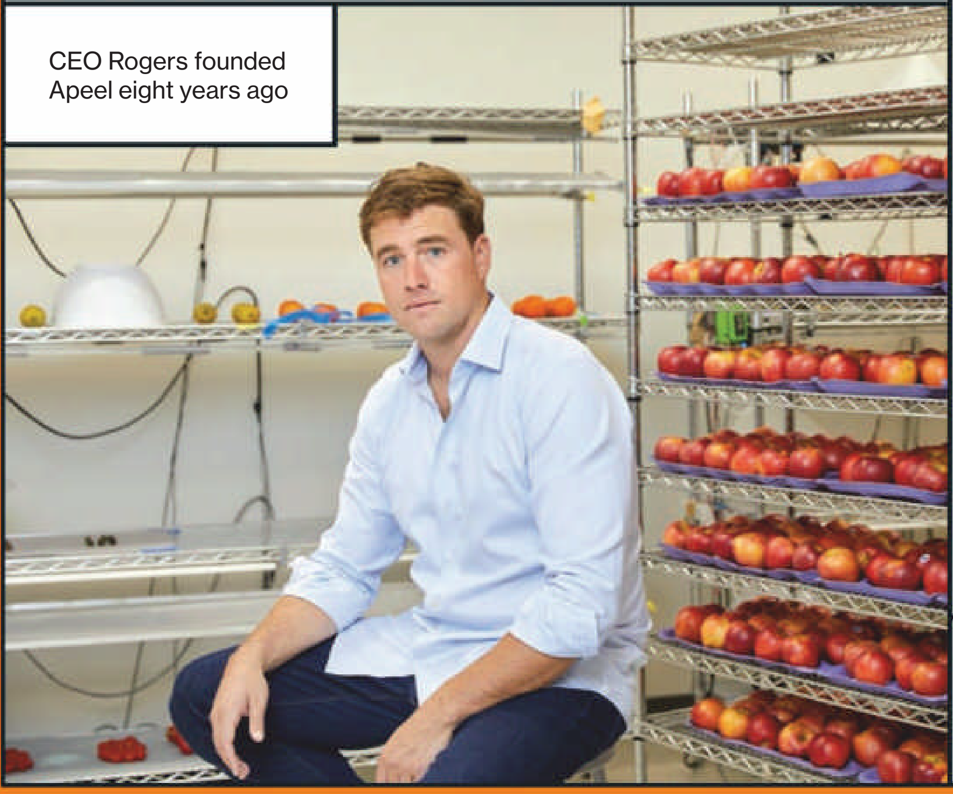
The investment brings Apeel closer to what James Rogers, 35, envisioned when he founded the company eight years ago. Rogers, who has a Ph.D. in materials science, wanted to solve the problem for food much in the same way that oxide barriers preventing rust have achieved for steel. He developed a natural, tasteless, and odorless protective coating from plant material—stems, leaves, skins, basically whatever gets discarded—that maintains the freshness of food for longer by holding water in and keeping oxygen out. The product extends the sweet spot between ripening and rot. And best of all, the treated produce doesn't require refrigeration, says Rogers, the chief executive officer.

Apeel traveled a long road to get here. It was six years from launch before products applied with the substance were in stores. Whether the company can cost-effectively reach small farmers in far-flung areas still remains a challenge. Rival technologies include Bluapple, which isolates excess ethylene—a hormone that triggers ripening in some produce—and antimicrobial packaging. Blasting foods with blue light, radio waves, or plasma has shown potential in the lab, but those methods aren't yet commercialized.

Apeel-treated fruits and vegetables are already in the largest grocery chains in Germany, Denmark, Switzerland, and the U.S., as well as Walmart Inc., and the company recently gained regulatory approval in Kenya, Uganda, Costa Rica, Colombia, and Ecuador. "We have 50% less waste of Apeel-treated produce and 30% more sales," says Mario Slunitschek, a vice president at Edeka, which operates more than 11,000 grocery stores in Germany.

The lack of access to cold-storage infrastructure raises farmers' costs while reducing their income. Fruit picked too early doesn't develop as much sugar, so it's less sweet. But harvesting late risks the fruit going to rot. So Kisaingu's co-op members gather only a small amount at a time, as the fruit ripens. Repeated trips to the field are labor-intensive, while frequent visits from the traders raise their costs and reduce the amount they'll pay for the co-op's mangoes. Such stagnated harvesting closes the doors of big distributors, which want to make large purchases all at once and fly tree-ripened fruit overseas, or mature the earlier-picked produce in cold storage in Europe, a key market.

"Apeel has huge potential to turn subsistence farmers in Africa into commercial farmers," says Christina Owen, senior program officer at the Bill & Melinda Gates Foundation, which helped Apeel launch with a $100,000 grant. "That means more money in pockets, and more food in bellies." —*Paul Tullis*



CEO Rogers founded Apeel eight years ago

PHOTOGRAPH BY YURI HASEGAWA FOR BLOOMBERG BUSINESSWEEK

THE BOTTOM LINE Apeel Sciences is winning investment for an edible material it's developed that doubles the shelf life of produce and cuts harvest-to-market losses for small farmers.

Tiny Steps Toward a Quantum Leap

Honeywell is betting on a slower but less error-prone technology

A decade ago, two scientists at Honeywell International Inc. pitched their bosses a most improbable idea: The century-old industrial company should build a quantum computer. The idea was met with some skepticism. For one thing, International Business Machines Corp. and Google were already moving ahead on quantum computing, which promises to be much faster, for certain tasks, than even the speediest transistor-based chips. And Honeywell was better known for making cockpit controls, security systems, and even work boots.

Yet management signed off, and scientists set up a laboratory in a one-story brick building outside Boulder, Colo. Now, Honeywell is pursuing its own path to producing a practical quantum computer that can be used for everyday business. On Oct. 29 it unveiled what it dubbed the H1, its second-generation quantum computer. JPMorgan Chase & Co., BP Plc, and other companies are paying for subscriptions to write algorithms on the machine and test those results with classical supercomputers.

These deals are very much experiments—Honeywell's clients aren't using its quantum machine to make business decisions, and any commercial quantum computer is years away. And Honeywell's achievements are less impressive than Google's boast last year that it had achieved "quantum supremacy" after its machine performed a calculation that chokes even the largest supercomputer. IBM first made a quantum computer available to the public in 2016 and has rolled out regular upgrades.

Honeywell makes a claim that's impressing industry observers: Its machine, though slower, appears to produce more accurate results. In this early stage all quantum computers make errors, or noise, as scientists call it. Honeywell has been able to minimize them. "Quality is really the holy grail," says Denise Ruffner, who previously worked at IBM's quantum unit and just started as a vice president at IonQ, a startup quantum computer maker. "What any user really wants is a quantum computer with the least amount of error or noise. So far, the technology that Honeywell is using has been the best at doing that."

Quantum computing is based on the mind-bending concept that atomic particles can be in multiple states at once. Conventional computers depend on electric currents being switched on or off—states that are represented by a "1" and a "0." Quantum computers use units known as quantum bits, or qubits, which can represent both a "0" and a "1" at the same time. Generally, quantum computers look at all the different combinations of data simultaneously, while classical computers work sequentially, making them much slower when dealing with large sets of variables.

But errors are prevalent. Honeywell decided early on to use existing atoms as the basis of its computer, a technology known as trapped ion, to minimize errors. Google, IBM, and others are assembling tiny devices that simulate particles using electric currents at extremely cold temperatures, a method called superconducting. This technology makes for a faster computer that can be scaled up in power using the industry's existing supply chain. But it's also more error-prone. "Any design element is looking at a trade-off," says Ilyas Khan, chief executive officer of Cambridge Quantum Computing, a software startup that counts Honeywell and IBM as investors. "If you wanted a speedster, you'd be looking at your superconducting quantum machine. And if you're more looking at accuracy and you didn't care about speed, you'd be looking at the ion trap."

Honeywell CEO Darius Adamczyk predicts that within 10 years its quantum computing business will have sales of $1 billion (the company had about $37 billion in revenue last year). "Over time, the market is going to be worth billions," he says.

One skeptic is Bob Sutor, vice president for quantum solutions at IBM, who says Honeywell's trapped-ion technology will have trouble scaling up. "We believe we can get through the scaling problem," he says. "The ion trap people will face that. They will hit it, and they will hit it pretty hard in the not-too-far-off future."

JPMorgan Chase is running software programs on Honeywell's computer with small sets of data that can be checked with a standard computer, helping boost confidence on the accuracy, says Marco Pistoia, chief of the bank's Future Lab for Applied Research and Engineering. He says he's eager to run more complex algorithms as the computers become more powerful so JPMorgan can be ready when the machines routinely solve problems that a standard computer can't.

Both approaches are far from finished. "Superconducting qubits have come a long way and today serve as a proof point of the potential that quantum computing promises," says James Sanders, an analyst at S&P Global's 451 Research. "Proponents of trapped ions tout increased accuracy in comparison, but these are presently slower to operate. Both need further development to eclipse the capabilities of classical computers." —*Thomas Black*

THE BOTTOM LINE Honeywell is carving out a pathway in quantum computing with slower, more accurate technology compared with industry front-runners IBM and Google.

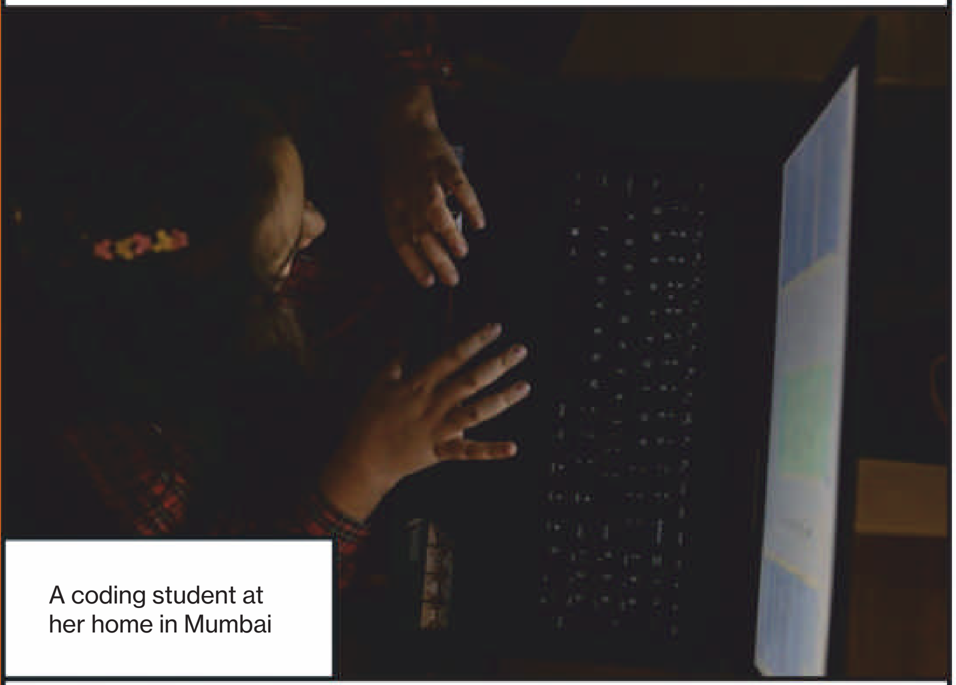
ILLUSTRATION BY 731

India's A-Level Kid Coders

The switch to remote learning is feeding demand for programming lessons

Shivank Patel has been learning to write software code for a year, and he's already built a handful of apps, including one for donating food to street children. Now he's working on a platform to help doctors track preterm babies. Patel, who lives near New Delhi, is 9 years old.

Online coding classes for elementary school students were taking off in India even before the Covid-19 pandemic accelerated the shift to online learning. Behind the boom is demand from parents who think knowledge of programming is as essential as writing and arithmetic, and who fret over keeping their homebound kids productive during the crisis.



A coding student at her home in Mumbai

India is a hotbed of experimentation in e-learning. At the forefront is Byju's, a Bengaluru-based company that offers online tutoring in math, sciences, humanities, and languages. Funded by an initiative of Facebook Inc. co-founder Mark Zuckerberg and his wife, Priscilla Chan, and other investors, Byju's is, at $11 billion, one of the world's highest-valued education technology startups, according to a list of top unicorns compiled by analytics provider CB Insights. "Coding lessons could be the next big export from India," says Abhishek Gupta, a consultant at RedSeer Management Consulting based in India, who draws a parallel with the country's outsourcing boom of the 1990s.

India, which boasts the world's largest pool of computer science grads and a large, low-cost English-speaking workforce, is uniquely positioned to build an industry out of one-on-one coding lessons, says Larry Illg, chief executive officer of Prosus Ventures, one of Byju's backers. "In the last 12 months you see a new crop of Indian startups," he says.

Coding startup WhiteHat Jr. was acquired by Byju's for $300 million in August. The Mumbai-based outfit has 120,000 paying users, half of them outside India, predominantly in the U.S., where it began offering classes early this year. "The whole world is a market for live coding lessons," says CEO Karan Bajaj.

Bajaj founded WhiteHat Jr. in 2018, when live coding lessons for kids were just becoming widely available in the U.S. and Europe but were almost nonexistent in India. After spending almost two decades as an executive with companies such as Procter & Gamble Co. and the Discovery Channel in the U.S. and India, as well as writing three novels, Bajaj was ready for a change. Inspiration struck while he was at an ashram in the Himalayas, training to become a yoga teacher. Aside from practicing his poses, he devoured books about parenting and childhood education. "When it comes to coding, earlier is better," says Bajaj, the father of two young girls. "Coding is Lego on steroids."

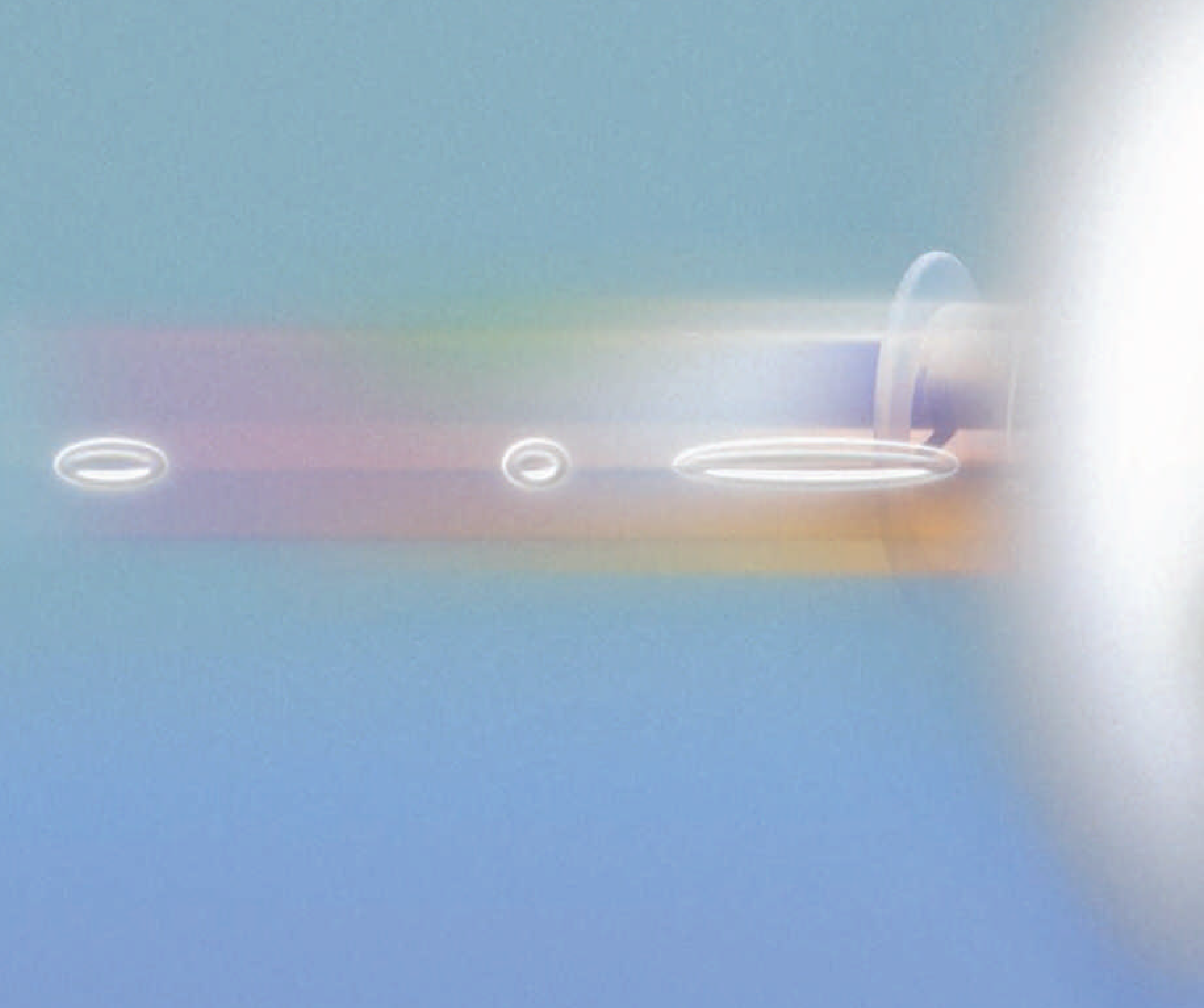
WhiteHat Jr. has an all-female teaching force—mainly from India but also some from the Philippines—of 12,000 (it only hires women). Its 8-hour beginner package teaches coding fundamentals, the 48-hour plan helps kids build a working app, and the 144-hour package goes all the way up to programming for space simulations, such as plotting an astronaut's trajectory to Mars or creating virtual models of black holes. "Coder at Age 7; Microsoft CEO at age 21: Bill Gates," read one of the company's recent online ads. Another featured a present-day image of Zuckerberg alongside one of him as a young boy. "Code hard. Make history," it said.

Ayesha Siddiqua, a 27-year-old single mother and WhiteHat Jr. teacher based in the southern city of Hyderabad, gave up her poorly paid job as a dentist, earning about 15,000 rupees ($203) a month, after she saw the company's recruitment ads on Instagram targeting teachers. From 2 p.m. she teaches children in Australia and India; after taking a break, she pulls an all-nighter to provide lessons in the U.S. and Canada. Her monthly earnings have reached 100,000 rupees, and she says she'll never return to dentistry. "In a few years, people will think you're backward if you don't know how to code," Siddiqua says. —*Saritha Rai*

THE BOTTOM LINE Indian companies such as WhiteHat Jr. are bringing online coding lessons to the world masses, driven by demand from parents trying to keep housebound children productive.

DHIRAJ SINGH/BLOOMBERG

Here. It. Comes.



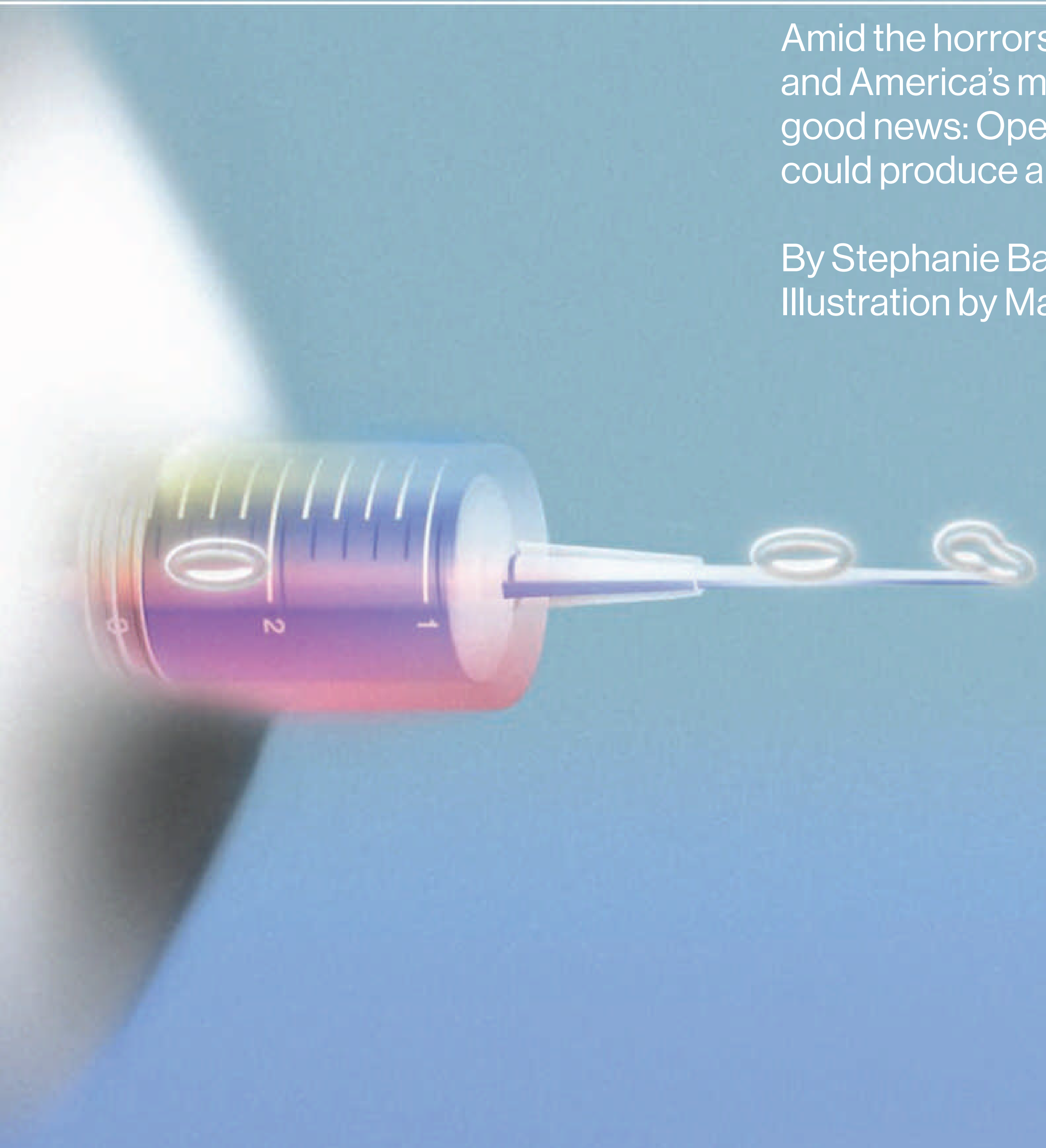
On a late August day in an industrial corner of Baltimore that had been mostly silenced by the pandemic, a red-brick manufacturing plant was buzzing with activity. Deep in the building, in a zone called Area 3, the stainless steel shell of a bioreactor lay on its side, having just arrived from Massachusetts. Employees had begun the task of making the bioreactor operational. Within weeks it would be the center of a production line for coronavirus vaccines.

When the owner of the plant, Emergent BioSolutions Inc., ordered the bioreactor, one supplier said some critical parts wouldn't arrive until November or December. And so Emergent enlisted the help of Operation Warp Speed, the federal government's mission to accelerate development of a Covid-19 vaccine. Officials working with OWS, a couple of whom are embedded with Emergent, called the supplier to say the order couldn't wait, throwing the weight of the government behind the request. "It's almost like having that Bat-Signal," says Syed Husain, who heads the company's contract manufacturing business. "They've been a great partner for us."

Emergent might be the ultimate Operation Warp Speed company. In June it secured a $628 million no-bid contract to produce vaccines and therapeutics, one of the biggest allocations of OWS funding outside of the pharmaceutical companies actually developing the vaccines. It subsequently signed $261 million in contracts to make doses for AstraZeneca Plc and then a $480 million contract with Janssen Pharmaceuticals Inc., a subsidiary of Johnson & Johnson. Those companies are themselves recipients of billion-dollar-plus OWS awards. Earlier in the year, Emergent produced vaccines for trials by the biotechnology company Novavax Inc., which subsequently received $1.6 billion from

Amid the horrors of the pandemic and America's mishandling of it, some good news: Operation Warp Speed could produce a vaccine soon

By Stephanie Baker and Cynthia Koons
Illustration by Maria Chimishkyan



OWS. Emergent is in business with three of the six vaccine makers OWS is known to have backed.

Over the past decade, Emergent turned itself into a business the U.S. government couldn't live without, the sole producer of approved anthrax and single-dose smallpox vaccines stockpiled for emergencies. When the novel coronavirus hit earlier this year and the U.S. government went hunting for surge capacity to make vaccines, it turned to Emergent. "This was actually a kind of global race to secure manufacturing capacity," says Paul Mango, deputy chief of staff for policy at the Department of Health and Human Services and a key figure at OWS. "We knew we would need an enormous amount of manufacturing capacity to get this done—hundreds of millions of doses in a time that has never been done in history. There wasn't a lot of idle manufacturing capacity laying around in the U.S."

Operation Warp Speed isn't an agency as such, but rather a mechanism to coordinate among private companies and an array of U.S. government bodies: the Department of Defense, HHS, the Food and Drug Administration, the Centers for Disease Control and Prevention, and beyond. More than 600 people in HHS and 90 people from the DOD are involved. "It's a coordination activity that helps to cut through the bureaucracy faster," says Paul Stoffels, chief scientific officer at Johnson & Johnson. OWS has awarded more than $12 billion in vaccine-related contracts and has an overall budget of as much as $18 billion.

As if the logistics and science aren't challenging enough, President Trump has dialed up the pressure to get a vaccine cleared before the Nov. 3 election. FDA Commissioner Stephen Hahn dashed those hopes in late September when he drew up tough new safety guidelines for approving coronavirus ▶

◀ vaccines. Just after he was released from the hospital for his own case of Covid, Trump attacked Hahn by tweet: "Just another political hit job! @SteveFDA."

The president's single tangible, constructive contribution to the pandemic response has been to bless the establishment of OWS. Denying the virus was a real threat for months, Trump failed to come up with a national strategy to control its spread and left it to the states to respond. Then he endorsed a company-driven approach. Mango says there are now more than 25 manufacturing sites producing or gearing up to make vaccines, vials, and other things necessary for a mass vaccination program, with OWS tracking progress through streams of spreadsheets.

It appears to be a conspicuous exception to the otherwise disastrous management of the pandemic. "The only part of the pandemic Trump responded to was things he could get companies to manufacture," says Peter Hotez, dean for the National School of Tropical Medicine at Baylor College of Medicine in Houston. "There was never an understanding that the hard part is giving adequate time to make sure the vaccines work. It was always reframed as a manufacturing problem. It was Trump bringing in his personal relationship with CEOs to get them to make stuff."

Calling the search for a vaccine Operation Warp Speed hasn't always engendered confidence. The name comes from *Star Trek*, and Trekkies know that when a spaceship travels at a high warp factor, things can go wrong. More to the point, Anthony Fauci, director of the National Institute of Allergy and Infectious Diseases (Niaid), has expressed concern that the name suggests recklessness. No one is cutting corners, Fauci insists. Perception issues aside, the idea behind OWS makes sense. A top-notch vaccine specialist from the private sector, former GlaxoSmithKline Plc executive Moncef Slaoui, is paired with military logistics expert Gustave Perna, a four-star general who led the U.S. Army Materiel Command and is now the OWS chief operating officer. They are a study in contrasts: On a recent visit to a Cincinnati hospital taking part in a vaccine trial, Perna was in camouflage fatigues while Slaoui wore a blue button-down shirt.

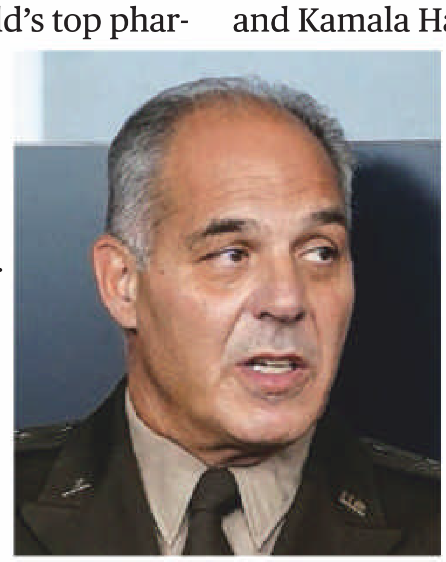
Guided by Slaoui, a Moroccan-born Belgian-American scientist, OWS selected a portfolio of coronavirus vaccine candidates being developed by some of the world's top pharmaceutical companies, as well as some untested newcomers. By betting on several horses, OWS in theory increased the chances that one or more would cross the finish line, hopefully at a warp-like speed. Slaoui steered investments not just to different companies but also to different ways of making vaccines. Moderna Inc. and Pfizer, which has teamed up with Germany's BioNTech SE, are testing vaccines that use messenger RNA, a genetic material that instructs the body to make viral proteins that in turn trigger an antibody response—in this case against SARS-CoV-2, the virus that causes Covid. J&J and AstraZeneca are using a viral vector technology that deploys an altered common cold virus to carry the genetic material of the coronavirus and produce an immune response. The Novavax vaccine and one from Glaxo and France's Sanofi SA are based on the virus's spike protein and use an immune-boosting adjuvant to spark antibody production. Pfizer might be first out of the gate; the company has said it could be ready to apply for authorization by late November. Unlike the others, the company chose to pay for its own testing and production and will recoup some of its investment only when its vaccine gets authorized and OWS buys the shots.

Being new to government may actually be to Slaoui's advantage. "Everybody is party to a given kingdom," he says. "Having somebody from the outside come in that's effectively blind to all the history and politics, the bureaucracy that may exist, and is uniquely focused on integrating their work…was an essential element of how Warp Speed was able to go very fast."

OWS released a document in mid-September outlining how it would distribute vaccine doses. It has a military tone; the title is *From the Factory to the Frontlines*. General Paul Ostrowski, Perna's deputy, has said the goal is to begin delivery within 24 hours of any approval or emergency use authorization, with distribution centralized and farmed out mainly through McKesson Corp., a Texas drug distributor that had an existing contract with the CDC to deliver vaccines. To track where every dose goes, OWS is building an integrated computer system that brings in the CDC's existing systems. OWS says it expects to have as many as 75,000 injection sites across the country. States have sent the CDC proposals for how to manage distribution locally, but in mid-October the bipartisan National Governors Association submitted a long list of questions to the Trump administration about everything from funding to storage, making it clear the states don't see a workable federal plan in place.

Some observers have questioned how a victory for Joe Biden might affect the course of the program. According to Mango, the point is largely moot. The U.S. is on track to produce more than 100 million doses of coronavirus vaccines, manufactured by multiple companies, by the end of the year, he says, and by Inauguration Day, "the vast, vast majority of the heavy lifting will be behind us." The Biden campaign says it will back scientists involved with Warp Speed. "Joe Biden and Kamala Harris will provide the leadership that has been lacking under Trump to empower scientific professionals throughout our government—including those involved in Warp Speed—to ensure that a safe and effective vaccine is distributed equitably, efficiently, and free to all Americans," spokesman Andrew Bates said.

Mango says more than 600 million shots should be available by April 2021. Behind those big numbers are a lot of variables and uncertainties. Five of the six OWS-backed vaccine candidates require two doses. It's possible the FDA will not approve all of them, which



▲ Perna

▼ Slaoui

means untold millions of doses could end up in the garbage. (And indeed, AstraZeneca and J&J have had to pause their U.S. trials because of safety concerns. Both companies resumed on Oct. 23.) Each vaccine has its own storage requirements. Pfizer's needs to be kept at -75C (-103F), which makes distributing it across the country a daunting task.

The creation of Operation Warp Speed might have been unnecessary if not for a series of decisions that now look tragically myopic. Public-health experts had been sounding the alarm about the lack of pandemic preparedness for the past two decades, but they were drowned out by concerns over a bioterrorist attack. Those fears were amplified in June 2001 when a group of U.S. officials and policymakers convened for Dark Winter, an exercise which simulated a biological weapons attack involving smallpox. In many ways, the exercise gamed out much of what has unfolded in the U.S. during the Covid pandemic, including the lack of surge capacity to treat victims and the difficulty of controlling the outbreak.

After Dark Winter came Sept. 11 and a series of highly publicized anthrax attacks in the U.S., ushering in a new round of government spending to ward off a bioterrorist attack. Emergent, then called BioPort Corp., was the lone producer of the only FDA-licensed anthrax vaccine. The federal government soon began stockpiling millions of doses.

In 2004, Congress passed the Project BioShield Act, which provided $5.6 billion over the following decade to develop and purchase "medical countermeasures"—vaccines and therapies against biological and chemical attacks—for the Strategic National Stockpile, including Emergent's anthrax shot. The act wasn't designed to tackle naturally occurring infectious diseases, despite coming right on the heels of severe acute respiratory syndrome, or SARS, which was caused by a coronavirus. SARS had by that time infected 8,000 people globally and killed 774, with outbreaks still popping up in Asia that year.

Drug companies weren't eager to invest in the development of drugs and vaccines needed for the Strategic National Stockpile—they're often risky research bets with an uncertain payoff—so in 2006 Congress created the Biomedical Advanced Research and Development Authority, known as Barda, to fill that void. Through a series of Barda contracts and acquisitions, Emergent consolidated its grip on the biodefense industry. In 2007 it secured a contract to deliver 19 million doses of its anthrax vaccine for the national stockpile. It then acquired and renovated a facility in Baltimore—the one now producing Covid vaccines.

There's a world in which those vaccines might have come sooner. In 2012, Hotez, the Baylor scientist, got a large Niaid grant to devise a vaccine against SARS. By 2017 the grant ended, and even though the vaccine looked promising, he couldn't find money to begin testing it in humans. He says it might have provided some protection against the new coronavirus. "We had it in the freezer," he says. "These are not really moneymaking products."

President Obama said in an October speech that he left the Trump administration a 69-page document on how to deal with emerging pathogens, including coronaviruses. "We literally left this White House a pandemic playbook," he said. But the Trump administration has made a habit of pulling the plug on Obama-era initiatives. In 2018, Trump's national security adviser, John Bolton, dissolved the Directorate for Global Health Security and Biodefense, created by Obama after the Ebola epidemic of 2014 to coordinate the White House response to outbreaks of infectious diseases around the world. Bolton said via Twitter that global health remained a top priority of the National Security Council and that its experts effectively handled the 2018-19 Ebola outbreak.

Responsibility for pandemic planning has long been scattered across the federal government. There's nothing as visible as a Federal Emergency Management Agency. Perhaps the closest thing is the Office of the Assistant Secretary for Preparedness and Response, headed by Robert Kadlec, a doctor and retired Air Force colonel. A year after being appointed to the position by Trump, Kadlec took control of the $650 million budget for the Strategic National Stockpile, which had been managed by the CDC. Kadlec was at one time a paid consultant for Emergent and had been in business with the company's founder, the *Washington Post* reported in May. Asked whether Emergent's relationship with Kadlec put it in a favorable position, the company said it's worked with multiple administrations, both Democratic and Republican. Under the Trump administration, Emergent's revenue has more than doubled, to $1.1 billion in 2019 from $488 million in 2016. When the pandemic hit, the Strategic National Stockpile had millions of doses of anthrax vaccine and enough smallpox vaccine to inoculate every U.S. citizen.

It's not as though Kadlec didn't recognize the risk of a naturally occurring pandemic. In 2019 his office oversaw a simulation of an influenza pandemic emanating from China. The exercise, called Crimson Contagion, laid bare how unprepared the U.S. was for something like the novel coronavirus. In testimony before Congress in December 2019, Kadlec said the U.S. lacked sufficient manufacturing capacity for almost all necessary pandemic supplies: vaccines, therapeutics, needles, syringes, and masks. If the simulation was designed to spark significant changes to the government's planning, they didn't come in time.

On Jan. 13, Sean Kirk, Emergent's head of manufacturing and technical operations, grew worried as he watched the news about a respiratory illness spreading in Wuhan, China. He walked down the hall to his colleagues running the company's global supply chain and told them to start locking up critical raw materials. "I was fearful that this thing could blow up," he recalls. Later that month, Emergent submitted an ▶

PERNA: KEVIN LAMARGUE/ALAMY. SLAOUI: DREW ANGERER/GETTY IMAGES

Operation Warp Speed Vaccine Investments

Pfizer with BioNTech
$1.95b
Phase 3

◀ in-depth white paper to Barda reminding the agency of everything the company could do.

Rick Bright, who was serving as director of Barda as the virus hit the U.S., filed a whistleblower complaint earlier this year that painted a picture of a federal government that was slow to act on vaccines. He says he was ousted in April after fighting pressure to allow use of hydroxychloroquine, an anti-malaria drug that Trump had been pushing despite the lack of rigorous trials to prove it was safe and effective. In January, Bright says, he tried and failed to persuade Kadlec and HHS Secretary Alex Azar to allocate money for Covid drug and diagnostics development. In a written statement, the HHS said that from his position, Bright couldn't know everything being done to combat the pandemic. Bright didn't respond to requests for comment for this story.

Moderna
$2.5b
Phase 3

Barda pressed ahead on Covid anyway. In January the agency contacted Johnson & Johnson to discuss using the same approach for the novel coronavirus that it had used for its Ebola vaccine, recalls Stoffels, the chief scientific officer. "We know the technology you have is developed and you can scale it," he recalls Barda experts saying. Over three meetings in Washington in February, Stoffels says, the company and Barda came up with a development plan. As it hammered out the initial contract, J&J began talking to Emergent about locking up manufacturing capacity. On March 30, HHS announced $456 million in funds to support clinical trials and manufacturing of J&J's eventual candidate, followed by an additional $483 million for Moderna. In April, Emergent signed an initial $135 million agreement to manufacture J&J's vaccine, with some work starting in 2020 and large-scale production beginning in 2021.

By mid-April, daily deaths from Covid were surging, and the pressure to act was growing. HHS officials were fleshing out how to set up OWS. The decision to create a new body struck some as an unnecessary gimmick, given there were existing interagency structures in place that the government used to respond to Ebola.

AstraZeneca
$1.2b
Phase 3

Although OWS wasn't formally announced until mid-May, HHS and the DOD started laying the groundwork by interviewing as many as 10 people for the role of chief adviser. Azar, Defense Secretary Mark Esper, and White House adviser and Trump son-in-law Jared Kushner interviewed Slaoui and decided he was the right person for the job. He joined OWS as an outside contractor instead of as a government employee, which meant he wasn't subject to federal ethics rules regarding disclosure and divestment of shareholdings that might conflict with his role. Slaoui agreed to work for OWS for a nominal $1 salary, with his expenses covered under an HHS contract awarded to Advance Decision Vectors LLC, based in Alexandria, Va., which is handling compensation for several OWS consultants.

Slaoui has come under fire from congressional Democrats, who say he has too many conflicts of interest with OWS companies. He vociferously denies that. (He says he's a registered Democrat who joined OWS because he believed finding a vaccine was more important than party politics.) After heading vaccines at GlaxoSmithKline, he'd taken board seats at Moderna and, briefly, the Swiss drug manufacturer Lonza Group Ltd., Moderna's vaccine manufacturer of choice. When he agreed to join OWS, he resigned from Lonza and Moderna and promised to sell all his Moderna shares. He insisted on keeping his multimillion-dollar stake in Glaxo, which he's called his "retirement," but pledged to donate any gains to the National Institutes of Health from the day he started at OWS. He says he wasn't involved in negotiating the deals with Moderna or the Sanofi-Glaxo partnership. "I stayed completely out of it," Slaoui says.

Johnson & Johnson
$1.5b
Phase 3

On July 2, Francis Collins, the NIH director, and Gary Disbrow, acting Barda director, testified on OWS before Congress but refused to provide details on how the program would pick vaccines to fund. At that point, OWS had announced $1.2 billion for AstraZeneca's vaccine developed with the University of Oxford. Democrats asked how many vaccines it would back. "More than one," Disbrow said with a chuckle. "I'm sorry—it really is procurement sensitive."

Over the next six weeks, OWS handed contracts worth more than $8 billion to back five additional vaccines—those from Johnson & Johnson, Moderna, Novavax, Pfizer, and Sanofi jointly with Glaxo. The government reluctantly released some of the contracts—heavily redacted—over the summer in response to Freedom of Information Act requests. Slaoui says the fuss is unnecessary: "They are plain-vanilla contracts. There's nothing special about them apart from the amount of money, which relates to the cost of developing the vaccines." In mid-October, the advocacy group Public Citizen filed a lawsuit demanding the release of coronavirus vaccine contracts. In late October, HHS released a Moderna contract, heavily redacted.

OWS deals have led to a huge payday for many pharma executives. Moderna executives netted a profit of $115.5 million from selling shares in their company from May 15 to Aug. 31, according to Accountable Pharma, a nonpartisan watchdog group. A Moderna spokesman said the share sales were done through previously scheduled programs and in accordance with insider-trading regulations. Emergent executives netted $5 million selling shares during the same period, and in September the company's executive chairman, Fuad El-Hibri, sold an additional 80,000 shares for a net profit of $8.1 million. Emergent said in a statement that executives

Sanofi with GSK

$2b

Phase ❶❷

regularly sell stock, following all laws governing financial transactions. Emergent's shares were up 78% this year through Oct. 23.

"It's a perfect business," says Eli Zupnick, a spokesman for Accountable Pharma, of the OWS companies. "Their downside is covered by taxpayers, and their upside is already in their pockets."

After announcing the $628 million OWS award for Emergent in June, Perna and Slaoui visited the company's Baltimore manufacturing facility to deliver a message that the entire U.S. military was ready to help work out supply chain glitches. "He had said that everything is on the table," Emergent's Husain recalls of Perna's message. "Every day counts, every hour counts."

Some pharma executives describe the military's role in speeding up vaccine manufacturing as a genuine bright spot in the federal pandemic response. Much of the work, however, remains opaque. Ostrowski, Perna's No. 2, says OWS intervened on behalf of suppliers working with Moderna to expedite orders of key equipment and supplies, but he didn't offer any specifics. "My hat goes off to these great Americans that want to be part of the solution to this national pandemic," he said in emailed responses to *Bloomberg Businessweek*'s questions. Moderna is the largest recipient of taxpayer funds—a total of $2.5 billion—to advance and supply its vaccine, including a $300 million milestone payment if it's able to deliver 100 million doses by Jan. 31, 2021, under an FDA emergency use approval or full license. Moderna said in a statement that it interacts with several federal agencies but declined to say what support it's getting. The milestone payment didn't require the company to accelerate timelines for its trials, a spokesperson says.

Novavax

$1.6b

Phase ❶❷ US ❸ UK

Amid widespread fears there would be a shortage of key materials for a mass vaccination program, OWS signed contracts to finance large-scale manufacturing of hundreds of millions of vials. Corning Inc. secured $204 million in funds from OWS in June to expand its capacity to produce specialized glass vials. The company has weekly calls with OWS and has used a system under the Defense Production Act to gain priority with suppliers. "It's been a helpful tool to make sure we're not getting stuck in line behind anything that's noncritical," says Brendan Mosher, Corning's head of pharmaceutical technologies. "We're doing things at least three times faster than we would have."

Not every company is treating its relationship with OWS like a military secret. SiO2 Materials Science of Auburn, Ala., won a $143 million award in June to produce 120 million plastic vials with a thin glass coating for Moderna's vaccine and several others that it declined to disclose. Lawrence Ganti, SiO2's president of customer operations, says the company has used the Defense Production Act to solve myriad problems to keep production humming. Over the summer, one of its suppliers outside Chicago shut down because of a local power outage. Ganti says he got the power company's head of legal affairs on the phone, gave her the supplier's Defense Production Act letter, and got the power restored within 45 minutes. "They understood the gravity of what we were working on," he says.

Mango says he's confident the U.S. will be ready to begin vaccinating millions of people by the end of the year. "The vaccines will be ready on the shelf," he says, declining to say which vaccine he's referring to. "We'll have all the needles, syringes, stoppers, and vials—all of that stuff will be ready to ship literally the day the FDA gives us a green light."

If Emergent is anything to go by, that timeline looks like a stretch. Its first doses of the AstraZeneca vaccine won't be available until late January at the earliest. Production finally started in mid-September, but it will take 90 days to produce bulk doses, which will then be shipped to a separate company, Catalent Inc., based in Somerset, N.J., for filling into vials, a process that takes another 45 days including quality-control checks.

With so many vaccines in the race, OWS can turn to others if the candidates made at Emergent don't cross the finish line, but fewer approvals would diminish the chances of delivering millions of doses quickly. The world needs more than one shot to get back to normal. "Success for Operation Warp Speed is not six vaccines all working. It's enough vaccines in enough quantities by yearend to vaccinate the most vulnerable Americans," Mango says. "The odds of six out of six hitting in the time frame we want, I mean, you'd sooner get struck by lightning."

The biggest threat to OWS's success may end up being not the science, not the logistical challenges, but people refusing to take an approved vaccine. A Pew Research Center study in September showed that just 51% of U.S. adults say they would definitely or probably take it—down from 72% in May.

"I think this is a result mostly of the politicization of this process and the fact that it's happening around an election year and the kind of politics that are going on in the country," Slaoui says. His hope is that 60% to 70% of Americans will be immunized, at which point, though Covid won't disappear, the pandemic will subside. "The circulation of the virus will be hugely impaired," he says. "Infections will go down, susceptible people will survive, and life will go back to normal. I look forward to that." Ⓑ —*With David Kocieniewski*

Non-Vaccine Investments

Emergent	Manufacturing	$628m
Texas A&M with Fujifilm	Manufacturing	$265m
Corning	Vials	$204m
Si02	Vials	$143m
ApiJect	Syringes	$138m
Grand River Aseptic	Fill-finish	$160m
Cytiva	Manufacturing	$31m

DATA: U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES

Trolling for a Good Cause

Korean pop superfans set the stage for QAnon—then took the spotlight back

By Olivia Carville

Even by the standards of U.S. politics in the accursed year 2020, the wall of thrusting digital crotches was weird. One day in June, barely a week after a Minneapolis police officer murdered George Floyd and ignited nationwide protests, people started tweeting #WhiteLivesMatter so frequently that it became one of Twitter's most popular hashtags worldwide. The white supremacist phrase is a call to arms within QAnon, the militant sect that believes God sent President Trump to defeat a shadowy cabal of pedophiles and child traffickers. But the tweets weren't what they seemed. Anyone who clicked the hashtag or typed it into Twitter's search bar looking for fellow racists instead found a rolling stream of video clips featuring Korean boy bands, their pelvises gyrating below their smoldering eyes and perfect pastel hair.

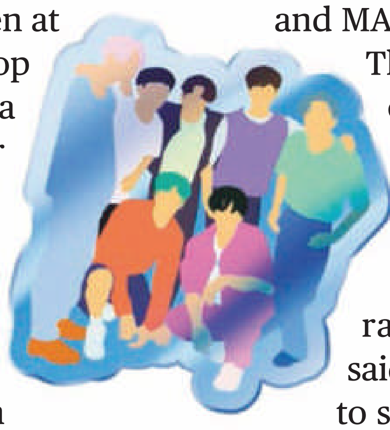
More than 22,000 tweets bearing Korean pop stars flooded hashtags like #WhiteLivesMatter and #QAnon that evening, according to market researcher Zignal Labs. Some typical accompanying text: "Stan twitter RISE." The barrage effectively commandeered the hashtag and rendered it all but unusable to white supremacists. QAnon devotees are familiar with this tactic, known as keyword squatting, because they use it all the time. "They got beaten at their own game by Korean pop fans," says Mike Rothschild, a conspiracy theory researcher who's writing a book about QAnon. "I'd never seen anything like it before."

K-pop stans have. Stan culture takes its name from the titular character in an old Eminem song about a psychotically obsessed fan. Often, stanning means pumping up YouTube view counts on new music videos or voting for a band in numbers high enough to crash whichever website is soliciting votes for an award. Other times, it can cross the line into group harassment of a preferred celeb's perceived enemies.

When that happens, it can feel to targets like they're being trolled by QAnon—ask anyone who's crossed the Beyhive or the Swifties and lived to post about it. K-pop stans, in the years they've spent organizing online, have been known to swarm critics who've described their favorite genre's deep debts to Black music as cultural appropriation. They've also relentlessly bullied anyone who's criticized or made lewd comments about their idols online. More conventionally, they've overwhelmed the phone lines at hundreds of U.S. radio stations by calling en masse to demand airplay for the latest single by Blackpink or Monsta X.


Agbakoba and her ARMY light stick

In the past few months, Trump supporters have started to understand how those radio producers feel. K-pop stans have regularly hijacked QAnon and MAGA social media hashtags. They've led get-out-the-vote efforts against the president. And many were among the online pranksters who boasted about helping derail a Trump rally in Tulsa where he'd said 1 million people planned to show up, and barely 6,000 did. It's tough to know how many of the 13,000 unused seats were meant for stans who'd asked for tickets with no intention of going, but the emptyish stadium infuriated Trump and came to be seen as a turning point in the presidential campaign. While K-pop stans probably won't swing the election, their trolling is enough of a cultural force that political consultants have taken notice.



The stan activism has been dominated by fans of BTS, the kings of K-pop. The seven-member boy band, also known as Bangtan Sonyeondan ("Bulletproof Boy Scouts"), can cut slightly ridiculous figures with their double denims, platform sneakers, and cotton-candy pink hair. But they're the first group since the Beatles to release three Billboard-chart-topping albums in a year, and they're also the most tweeted-about band on Earth. Before Covid-19 hit, BTS was selling out U.S. stadiums faster than Taylor Swift. Big Hit Entertainment Co., the group's management company, made $820 million in an initial public offering on Oct. 14 and is now valued at more than $4 billion. BTS fans call themselves ARMY, which stands for Adorable Representative M.C. for Youth. (Clearly, they really wanted to spell ARMY.)

Big Hit markets its straightedge Disney princes extremely carefully. Like most K-pop acts, the members of

BTS find their lifestyles and freedom of expression tightly policed—no significant others, no tattoos, no divisive thoughts on politics. (The company also declined to make the band available for comment for this story.) So it was a big deal when, in June, BTS tweeted a brief statement of support for the Black Lives Matter movement to its 26 million followers and announced that it had donated $1 million to the cause. "We stand against racial discrimination," the band said. "We condemn violence. You, I and we all have the right to be respected. We will stand together. #BlackLivesMatter."

To some extent, the band was following the lead of its fans, many of whom were already demanding that ARMY take a stand. Millions of BTS fans live in the U.S. and identify as people of color, according to researchers and surveys of popular fan accounts. Many are over the age of 30, repping Twitter handles like @KpopDad and @MomsNoonas (bio: "Never ever, ever too old to fan-girl"). But ARMY has its share of young people, too. Some professors attribute a recent spike in American college students studying Korean to K-pop fans who want to understand the lyrics of their favorite songs.

Daezy Agbakoba, a recent graduate of London's Middlesex University who's now back home in Maryland, has a K-pop conversion story that would sound familiar to a 4chan kid radicalized into QAnon. Four years ago, she stumbled onto her first BTS video while watching YouTube. Now, untold hours of algorithmic recommendations later, she's studying Korean by day and binge-watching the band's videos at night, her ARMY light stick—a vastly upgraded version of waving a phone flashlight during a concert—resting nearby. "When you get into them, it's just this steep descent," she says. "Kind of like how Alice falls down the rabbit hole."

This spring, Agbakoba was the first to tweet the hashtag #MatchAMillion, imploring her fellow stans to add another $1 million to BTS's Black Lives Matter donation. They did so in a little over 24 hours. "It shocked me, because I didn't realize how much influence we actually had," she says. Since then, she's been applying to grad schools and working with other young American ARMY members to rally opposition to Trump and his QAnon adherents. "The state of our country is getting to a really dark place," she says. "I think it would be important to try and help against that in any way we can." Or, as a repeated meme posted during the #WhiteLivesMatter keyword squat asks, "Will #Kpop a day keep #QAnon at bay?"

The business of K-pop is largely apolitical, but the genre's origins are anything but. The modern South Korean mashup of American hip-hop and pop-rock can be traced to 1992. For decades, officials in South Korea had frequently banned new music, movies, books, and newspapers with messages deemed outrageous or overly political. Into the spotlight stepped Seo Taiji & Boys, a try-hard boy band with a punk-rock look. They auditioned for a talent show on one of South Korea's major TV networks with *Nan Arayo* ("I Know"), a hip-hop-influenced song that mashed together rap verses, pop choruses, and catchy dance moves. Although the group received the lowest score of the night from the show's horrified judges, they won the popular vote—the track topped the country's music sales charts for 17 straight weeks. Seo Taiji & Boys followed up that hit with risqué songs about censorship and youth oppression. When officials threatened to ban their music, fans rioted in the streets.

A few years later, with South Korea in the grips of the Asian financial crisis, the government reversed tack and embraced pop culture as an economic lifeline, boosting its official culture budget. It began promoting K-pop, along with homegrown dramas and video games, as a core part of the nation's identity. This was the start of what's become known as the *Hallyu* (Korean wave) movement, which eventually swept the country's pop culture westward.

K-pop stans are tightly linked to the bands and their success. Official fan clubs have long contributed directly to funds set up to support artists through their ramen days. They also coordinate online efforts to boost the acts' profiles, both through word-of-mouth and by buying extra copies of albums to push them up the sales charts. The advent of social media and streaming made it possible for K-pop acts to turbocharge fan loyalty by producing intimate videos almost nonstop, from short clips of them goofing around backstage to livestreams where they open up about their daily foibles as well as more serious mental health struggles.

BTS, which made its debut in 2013, expertly synthesized these marketing strategies. ARMY began life as an official fan club, though it has grown much broader as it's fought to penetrate America's parochial music ecosystem. When U.S. fans began mass-calling hundreds of radio stations to play BTS, they came armed with prewritten scripts for any DJ who hadn't heard of the band. Grassroots pressure from ARMY put BTS albums on the shelves of Walmart, Target, and Best Buy; landed BTS on *The Ellen DeGeneres Show* and *Jimmy Kimmel Live!*; and got them ringing in the New Year with Ryan Seacrest in Times Square. When Ticketmaster Entertainment Inc. put seats for a BTS tour on sale last year, all 300,000 tickets sold out in minutes, then the website crashed from the overload. When band member Jungkook told fans online that he uses a Downy fabric softener scent branded Adorable, two months' worth of the global supply sold out in a day. And when the band endorsed the Hyundai Palisade last year, the SUV was on back order for months.

Many ARMY members consider BTS their friends and revel in the band's victories. These include the Big Hit IPO, which made the seven band members a combined $105 million, and this ▶

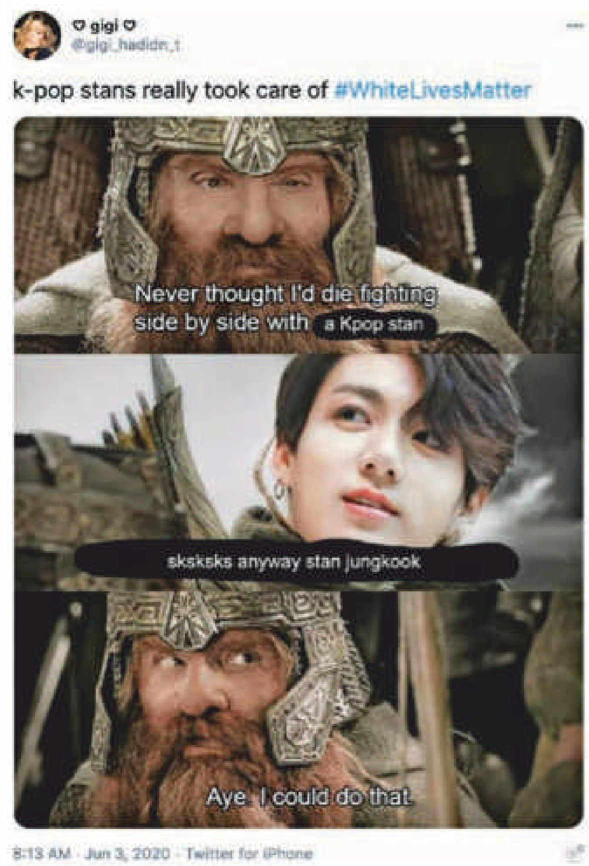
ILLUSTRATION BY MIIGO. PHOTOGRAPH BY EVA O'LEARY FOR BLOOMBERG BUSINESSWEEK

◀ September's chart-topping success of the band's first English-language single, *Dynamite*, which also won four MTV video music awards. South Korea's culture ministry estimates that the song will contribute $1.4 billion to the nation's economy.

The 10-figure haul is a testament to fans like Vivian Herr, a 43-year-old C-suite executive in Silicon Valley who falls asleep with BTS booming through her AirPods. Herr estimates she spent more than $16,000 on copies of *Dynamite* to push it up the Billboard rankings, including by sending money to hundreds of people in her Venmo contact list and asking them to download it. When she learned the song had hit No. 1, she politely excused herself from a business meeting, darted into a nearby bathroom, and doubled over, screaming. Herr says her husband and kids don't really get it.

The video for *Dynamite* might not make the band's *je ne sais quoi* especially obvious. You'll see seven grown men jiving like it's 1999 while they sing lyrics like "Dy-na-na-na, na-na-na-na-na, na-na-na, life is dynamite." Asked why they're so devoted, ARMY members tend to say the same thing, often word for word: "I came for the music, but stayed for the message." The members of BTS are Unicef ambassadors who support a wide range of charitable causes and stress the importance of self-acceptance. Despite Big Hit's tight rein, the band also laces many of its lyrics and videos with imperatives to challenge the status quo. "Don't get trapped in someone else's dream," BTS croons in the song *N.O*, a rejection of workaholic culture.

Two years ago, when arenas were still a thing, Erika Overton rented a car and drove 10 hours from Detroit to New York to see BTS play Citi Field. The then-38-year-old contract recruiter had never been to a live concert before; she brought her 63-year-old mom, who's also ARMY. "This is not just hysterical girls screaming over guys and thinking of nothing else," she thought while looking up at her idols, the beat pulsing through her sneakers.



Earlier that year, Overton co-founded One In An Army, which organizes monthly charitable-giving campaigns among its 150,000 Twitter followers. They've backed causes such as feeding starving children in Yemen and constructing water-treatment facilities in Tanzania. OIAA campaigns typically raised about $6,000 a month until this past June, when Agbakoba made #MatchAMillion trend.

Black Lives Matter posed some uncomfortable questions for the K-pop industry. K-pop idols borrow more than just the kinds of hip-hop beats that originated in the Bronx. They also copy Black artists' hair and clothing styles, dance moves, even mannerisms like a distinctive wag of the finger. ARMY has lost more than a few members uncomfortable with the online backlash to criticism along these lines. "That's definitely the dark side of the fandom," says Brie Statham, a 37-year-old BTS fan from Maryland. "It becomes really hard to be a Black K-Pop fan when you disagree with something like cultural appropriation and you get attacked for it."

Yet ARMY has also pushed its avatars to take a more active role in the U.S. protest movement. The day after Floyd died under a police officer's knee in Minneapolis, Jiye Kim, a 26-year-old high school teacher in Sydney who runs one of the world's biggest BTS fan accounts, woke to a relentless buzzing on her phone. Dozens of her quarter-million followers were demanding that she speak out against Floyd's murder.

Kim felt more than a little out of her element, not least because she couldn't point to Minnesota on a map. Her claim to fame is speedy translation of BTS lyrics. When a new album drops, she'll spend 14 hours translating the songs into English, even if it takes her until 4 a.m. on a school night. Soon, though, she was posting educational articles about police brutality in the U.S. "Not only is there an expectation that K-pop artists speak up in regards to social issues," she says, "there's now an expectation that fan accounts do, too."

All the earnestness notwithstanding, when the stans take action, they often bring a sense of fun. A few days before ARMY hijacked #WhiteLivesMatter on Twitter, the Dallas Police Department unveiled a surveillance app called iWatch and asked citizens to send it videos of illegal activity during city protests against police brutality. Instead,

Kim felt pressure from fellow stans to speak out against George Floyd's murder

stans crashed the app by flooding it with close-up clips of K-pop idols winking at the camera, a flex the cops attributed to "technical difficulties." And ARMY members who took credit online for ruining Trump's Tulsa rally posted videos of themselves doing the Macarena in front of their tickets or joking that they couldn't go because they were walking their plants or feeding their pet rocks.

On the surface, ARMY's signal-jamming and GIF warfare might seem to echo the unsavory viral memes that helped drive support for Trump four years ago and lay the groundwork for QAnon. But K-pop stans came first, says Wasim Khaled. He's chief executive officer of Blackbird.AI, a company governments and corporations hire to analyze digital disinformation campaigns and other forms of social media manipulation. He had to learn how to account for ARMY when developing Blackbird's algorithms years ago, because the sheer volume of K-pop-related material was throwing off every large data analysis he tried to do. Once he learned what BTS was, it took a while to find a way to filter out the stans' noise. The ripple effects of QAnon look much the same, he says: "Consider QAnon like conspiracy stans."

ARMY has been somewhat quieter in the presidential race's waning months than they were this summer. Partly, that's because the fandom has resisted co-option attempts by the Democratic Party mainstream. After Trump's disastrous Tulsa rally, the Biden War Room, a grassroots outfit seeking to elect the ex-vice president, began tweeting lame "K-pop for Biden" memes and seeking stans' support, only to earn replies such as "We don't like you, either" and "hell to the no."

The fandom isn't a monolith—it's leaderless, hard to harness, and divided on the question of what to do next. Overton says ARMY should steer clear of politics to make sure the actions of some overzealous fan don't backfire on BTS. Herr, in Silicon Valley, says getting involved is a credit to BTS and a part of ARMY's civic duty. "The Trump administration's message is racist, and it's not what we believe or stand for," she says. With like-minded stans, she's talked younger and non-English-speaking ARMY members through voter registrations and helped organize get-out-the-vote efforts across California.

Of course, QAnon and similar groups aren't about to disappear after Nov. 3. If Joe Biden wins the presidency, ARMY's political engagement could be all the more valuable in countering a fresh wave of revanchist conspiracy theorists, including Trump. If Trump wins reelection, his more paranoid supporters will likely plow additional resources into the strategies that have put QAnon followers on the ballot in several states. Either way, K-pop stans are "the only other online crowdsourced group that has the same kind of amplification power across social media networks," Khaled says. "There's definitely no other group that can go up against QAnon." B

PHOTOGRAPH BY ISABELLA MOORE FOR BLOOMBERG BUSINESSWEEK

FEEL POW

THE

▲ RADENBAUGH RIDING A RAD

A Seattle startup is leading the e-bike boom. Can it hold on?

By Ira Boudway
Photographs by David Jaewon Oh

In March, as U.S. states began issuing stay-at-home orders, Mike Radenbaugh, co-founder and chief executive officer of Rad Power Bikes LLC, made a plan for lean times. The temporary shutdown of the U.S. economy, he figured, would be bad for his business, a Seattle-based startup that sells electric bicycles online. "We really started to batten down the hatches," he says. "It was a lot around cash planning and preserving the business in case of it cratering."

But by mid-April, Radenbaugh realized he'd miscalculated. Not only was Rad not hurting, it couldn't replenish bike stocks fast enough. Sales tripled that month over the same period in 2019, he says. They haven't cooled since. By mid-May, Rad had sold through its inventory. It's restocked since then, but many models are still on back order.

Bike retailers across the country are in the same happy predicament. With the pandemic disrupting vacation plans, exercise routines, and commutes, Americans are turning to bicycles in record numbers. Electric bikes, though a tiny slice of the market, have been especially hot, with sales more than doubling in the first eight months of this year over the same period last year, according to NPD Group Inc., which tracks bike shops and big-box stores but not direct-to-consumer brands such as Rad.

Last year the U.S. imported about 270,000 e-bikes, mostly from China, says Ed Benjamin, founder and chairman of the Light Electric Vehicle Association. This year, Benjamin expects the total will end up somewhere between 500,000 and 600,000. Even that won't fully meet demand, he says, because the virus forced many Chinese factories to shut down in the spring: "There's howls of frustration about getting more bikes."

No other company, Benjamin says, sells more e-bikes than Rad. The privately held business, founded in 2015, had sales of about $100 million last year.

Rad's customers tend to be middle-age suburbanites and rural retirees, says Ty Collins, co-founder and chief marketing officer. They don't especially care that motorized bicycles are considered "mechanical doping" in the bike racing world. They just want a little help to get over a hill on the way to work, to drop off their kids at school without sweating, or simply to ride a bike for the first time in years.

Within the cycling industry, there's hope that the pandemic will help convert this demographic into permanent e-bikers, which has already happened in Europe and Asia. (About 270 million e-bikes are used daily in China alone.) There is some precedent: During the oil crisis of 1973, U.S. bike sales spiked, leading to a long-term change in bike culture. "Before that bicycle boom, bicycles were toys for kids," says Benjamin, who worked at a Schwinn dealership at the time. "An adult on a bicycle, or even a teenager on a bicycle, was regarded as messed up." A similar trend is emerging for the e-bike now. "It's been a little bit exotic," he says. "In another year it'll be regarded as an entirely valid, entirely acceptable transportation choice."

If Benjamin is right, Rad has a considerable head start in the market. There ▶

◀ are more than 100,000 Rad bikes on the road worldwide. The company's success comes down largely to its pricing. Rad bikes are hundreds, and sometimes thousands, of dollars cheaper than competitors' bikes. The company's cargo bike, the RadWagon, for instance, sells for $1,700, whereas a top-of-the-line model from Riese & Müller goes for more than $8,000. Rad keeps its prices low, in part, by cutting out the bike shops. Markups there account for $600 of the average price of $2,600 for an e-bike, according to the nonprofit PeopleForBikes. Rad also uses cheaper motors, gears, brakes, and other parts than many of its bike shop competitors. For Rad to live up to its vision of selling workaday vehicles by the millions and reshaping the way Americans go from place to place, it will have to prove that low cost doesn't mean low quality and fend off increasing competition from traditional bike makers.

Radenbaugh, 30, built his first e-bike 15 years ago as a teenager. He wanted a new way to make the 16-mile trip to and from his high school in Garberville, Calif., a dirt-road town four hours north of San Francisco. The bus was a "long and dreary" ride; his mountain bike left him soaked in sweat; and there was nothing more mortifying for a self-described "nerdy guy" than arriving with his mom, the school nurse. So Radenbaugh soldered together a 40-pound lead-acid battery and a Specialized mountain bike using parts he found online and at the local RadioShack. After a few failed trials, the bike was ready to ride down Highway 101. It did get him to school, but didn't help his efforts to look cool: "I got honked at a lot by classmates," he recalls.

Two years later, in 2007, Radenbaugh sold a home-built e-bike at a local summer fair, swapping it for a 20-foot tepee, which he put up in his family's yard and lived in for a few months. Over the next couple of years, as he finished high school and enrolled at Humboldt State University, Radenbaugh and Collins, a childhood friend and college roommate, built and sold custom bikes on campus, advertising in classified ads and on Craigslist. In 2014, Radenbaugh moved to Seattle to pursue Rad Power full time. The following year, he and Collins sold their first batch of about 300 bikes through a prepay online campaign on Indiegogo and opened their online store.

"We saw what the likes of Warby Parker and Casper were doing and saw an opportunity there," Collins says. But as a relatively low-margin business with hundreds of competitors, e-bikes hadn't been a typical target for venture capitalists. During its first year, Rad took a five-figure sum from a pair of investors who happened to have an office nearby, but otherwise rose on its own steam until last year when Darrell Cavens and Mark Vadon, co-founders of Zulily LLC, put in more cash.

Still, Rad couldn't follow the typical direct-to-consumer startup playbook of losing huge sums to acquire new customers. "We didn't take the strategy of let's get customers at any cost," Collins says. "We needed profit to keep going." In the early days, he adds, he was the only person answering calls when customers had questions or problems. He used what he learned from those conversations to target ads on Facebook. He and Radenbaugh had expected to sell bikes to people like themselves—twentysomething city dwellers—but their early customers, he says, were mostly "suburban dudes in their 50s, 60s, and 70s."

"It really was baby boomer after baby boomer," Radenbaugh says. As sales grew, so did Rad's ad budget. The company now spends in a day running ads on Facebook, Instagram, and Google what it used to spend in a month, Collins says. The customer base, he adds, has since broadened to include more of the young city dwellers they had envisioned.

In February, Rad raised $25 million from a group of venture investors, including Vulcan Capital. Although Rad has been profitable since 2015, Radenbaugh says, the infusion of cash will allow the company to develop products, expand service, and sell bikes faster. "When people jump on these bikes and try them out, it's a totally new experience," says Stuart Nagae, one of Rad's venture investors. "So I'm super-bullish on adoption."

Rad's growth prospects will depend partly on convincing customers that they can use the bikes to replace at least some car trips. That's what happened to Zachary Deegan, a schoolteacher in exurban Denver who got interested in e-bikes while teaching a lesson on urban planning to his high school environmental studies class. He was running through the costs of the Hyundai Santa Fe and Subaru Impreza

RAD BIKES IN THE SEATTLE SHOWROOM

"WHEN PEOPLE JUMP ON THESE BIKES AND TRY THEM OUT, IT'S A TOTALLY NEW EXPERIENCE"

that he and his wife, Amanda, use to commute and to get around town with their two kids. "As I'm saying it out loud, I was like, 'Oh my God. What am I doing?' " he recalls. After some research, Deegan bought the RadWagon 3 ($1,500), which weighs 75 pounds and can carry two kids. His wife got the RadRunner, a $1,200 bike with smaller wheels. "They were kind of a sweet spot for a good, durable bike," Deegan says, "but pretty affordable." In July the Deegans sold their Santa Fe for $12,500.

Rad ships its bikes via FedEx in a big box. They come partly assembled, with a small bag of wrenches and a booklet of instructions for attaching the front tire, handlebars, seat, pedals, and a few other parts. In July, Rad sent the latest version of the Wagon to my home in suburban New Jersey, where I lugged the box to the back of the driveway and spent the better part of a day putting together the bike. I've assembled my share of Ikea dressers, and I can say confidently that this was more difficult. If, like me, you don't know what "torque to 10 newton meters" means or what a cable pinch bolt is, you'll want help.

Rad operates nine mobile service vans that will deliver and assemble bikes for a fee in Austin; Portland, Ore.; Sacramento; Seattle; and Vancouver. It also offers service from the bike repair startup Velofix Holdings Ltd., which sends vans on house calls, and from about 450 bike shops in the U.S. that are part of its service network. The nearest shop to me, however, was more than 10 miles away, and there was no way I was going to be able to fit the bike in the trunk of my car. So I was left to my own devices and whatever help I could get through emails to Rad's roughly 100 support staff in Seattle, who couldn't torque any bolts for me. "We have a lot of room to grow in this area," Radenbaugh acknowledges.

I could have also brought it to an out-of-network bike shop, but they're overwhelmed with service requests at the moment and aren't especially eager to work on e-bikes they don't sell. At Gregg Cycles, one of the most popular bike shops in the Seattle area, there's a surcharge for work on Rad bikes. "We've had discussions with our service staff numerous times," says longtime general manager Marty Pluth. "They want to ban working on Rad Power bikes because they're so poorly put together." He says Gregg has had to buy electric stands to be able to lift the heavy frames while they work on them. And he worries about the quality of Rad's components. The gears and brakes are the kind Pluth would normally expect to see on lighter, less expensive bikes. "When you're selling e-bikes below $2,000, it has to be a compromise," he says.

Pluth isn't an impartial observer—Gregg sells more expensive e-bikes made by Cannondale, Specialized, Trek, and others—but the consensus around the e-bike industry is that you get what you pay for. Rad bikes are, by most accounts, better than the $800 e-bikes that can be found on Amazon.com but worse than, say, a $5,000 Specialized. "It's really hard to divorce quality from price," says Morgan Lommele, head of e-bike initiatives at PeopleForBikes. "I look at direct-to-consumer brands, and the reason why their sales are booming is because they're just cheaper than the in-store counterparts. But they're selling a product that, in my opinion, isn't as durable."

Radenbaugh disputes this. "It's a common tactic for traditional bike shops that sell e-bikes from our competitors to try to use our affordability against us, claiming our lower price tag means lower quality," he says. "Let me be clear: It does not." Rad is cheaper, he says, because it cuts out the middlemen. Its bikes, Radenbaugh says, are made with "similar high-quality components" to those of the bike shop brands.

This year, Dorel Industries Inc., which owns Cannondale and Schwinn, began selling midprice e-bikes online through its Charge brand. Trek sells an e-model through the Electra brand. The prices are competitive with Rad's, and the bikes come with the support of the hundreds of bike shops in their networks. Radenbaugh is undaunted by these efforts to sell both online and in stores. "While they're trying to figure that out, we're just scooping up market share," he says.

After only five hours of sweating and muttering about deflopilator springs, I was able to get the Wagon up and running. At first it felt unwieldy. Turns were surprisingly wide; stops and starts, awkward. The bike's rechargeable lithium-ion battery sits under the seat and connects to a motor in the hub of the rear wheel that adds power as you peddle. Buttons on the left handlebar control, on a scale of zero to 5, the level of assistance. A twist throttle on the right offers an extra shot of power. (As a Class 2 e-bike, the motor quits automatically once it reaches 20 mph.) After a couple of hours I was comfortable enough maneuvering the bike to put my two kids—ages 8 and 5—onto the back for a cruise.

Whatever its durability, the RadWagon was fun to ride and turned heads. "I want one of those so bad," said a child on the sidewalk as we rolled past. The counter guy at the pizza shop came outside to tell us how cool the bike was. Nothing brings in new customers faster, Radenbaugh says, than a test ride from a friend or neighbor. "Once you do that, you can't get the grin off your face," he says. "You can't go very many days before you crack and have to get one."

I haven't cracked, yet. The Wagon was just too much bike for my little garage, so I sent it back. My kids were sad to see it go. Another e-bike, I promised them as the FedEx guy took the Wagon away, was in our future. With the pandemic dragging on into winter, promising long months cooped indoors, I may crack sooner rather than later. B

For more about e-bikes and the future of transportation, visit www.bloomberg.com/hyperdrive

Bring The Heat

Here's how to keep warm in the great outdoors—even if it's just out back

By Antonina Jedrzejczak
Photograph by Hannah Whitaker

A Modfire gas fire pit, a pair of Chup socks, and an Elder Statesman blanket

OUTDOOR SPECIAL

November 2, 2020

Edited by James Gaddy

Businessweek.com

Once the initial shock of quarantining wore off in the spring, homeowners began to outfit their house-turned-office-turned-restaurant-turned-school for the sweltering months ahead. Backyard staples such as hammocks and inflatable pools became more popular, and harder to find, than they'd been in years.

Now the cold, drizzly months of late fall and winter loom. This year's holiday season—a time traditionally reserved for entertaining while standing a little too close to the punch bowl and one another—will be like none we've ever known.

Even in the name of good cheer, indoor gatherings are a risky proposition, while dipping mercury levels have complicated responsible hosting plans. Consumers have been bingeing on sturdy tents, warming furniture, and heat lamps, assuming they're even in stock.

Miranda Jones, co-founder of heated seating specialist Galanter & Jones, says sales at her business have almost doubled over the last year. "It's more important than ever to make outdoor spaces function as an extra room, an entertaining spot, and a place to relax," she says.

Redwood Outdoors, which sells a range of wood-fired hot tubs and geodesic domes from its headquarters near Tacoma, Wash., has seen this increase firsthand. "Everyone is spending a lot more time at home as a result of the pandemic," says operations director Steve Maguire. "They're looking for products that help them enjoy their homes and gardens to the maximum."

There's also growing demand for safe and savvy shelters that provide ventilation while keeping everyone dry and warm. Tentmaker Alvantor LLC has seen customers use their tents "for a handful of purposes—over Jacuzzies, on the back deck, for dining—that we hadn't even thought of," says Sapphire Wills, operations assistant.

The most sought-after piece on the outdoor living checklist is the fire pit. "We sell fire pits every day, all day long," says Elizabeth Przygoda-Montgomery, a landscape designer in Arizona and owner of the shop Boxhill & Co. Pre-Covid sales of fire pits, she says, would max out at about 50 a month. Now more than 200 on a Saturday is common.

On the East Coast, propane and gas models do best. When advising customers with small spaces, Przygoda-Montgomery suggests looking for dual-purpose elements such as a hidden tank that allows the piece to function as an ottoman or end table. In the Midwest, where real estate is generous and wildfires less of a danger, wood-burning units are more popular.

Fire isn't merely a source of physical heat. Przygoda-Montgomery finds that her consumers are looking for a more existential warmth—it is, after all, the foundation of human survival and interaction from the days of our cave-dwelling ancestors. "People are not buying the fire pit to have it just look a certain way. They're buying it to create a memory," she says. "It's one of the oldest ways to connect, just sitting around the fire and telling a story or bringing out a guitar."

Here we've compiled a master list of the most functional and luxuriously warm ways to weather the seasons ahead.

Six-person cedar sauna with porch from Redwood Outdoors

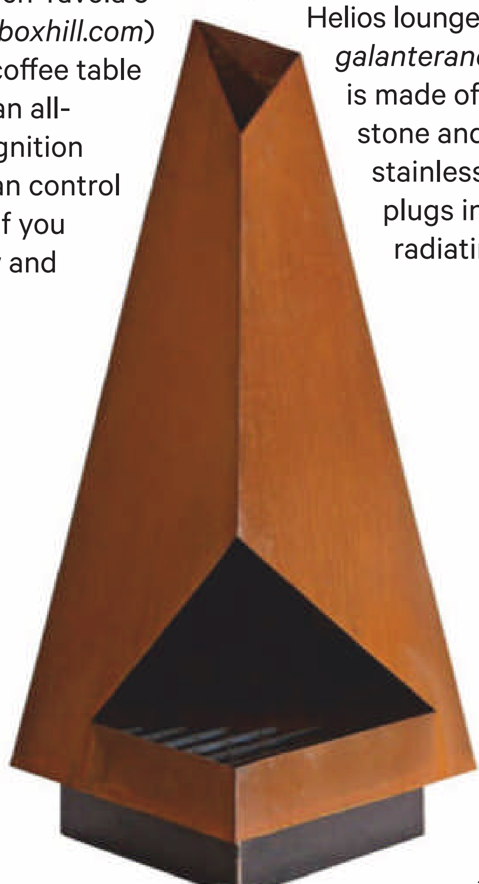
Luna Bell tent from Boutique Camping

Shelter

Putting the bulk of your effort into finding a separate sanctuary will pay dividends through colder months. Redwood Outdoors's Milky Way geodesic dome (*$4,999; redwoodoutdoors.com*) is constructed from steel pipes that can withstand high winds, and it contains a sturdy wooden door and a waterproof, fire-retardant cover. A built-in chimney bracket lets you add a wood-burning stove. If you like it extra-hot, the brand's Cube outdoor sauna (*from $7,299; redwoodoutdoors.com*) is made from Canadian red cedar, quickly heats to 195F, can be used wet or dry, and has a convenient porch for two. The distinct yurt dome shape of Boutique Camping Supply Ltd.'s Luna Bell tent (*$1,529 for 16-foot size; belltent.com*) is characterized by a central pole and aluminum framework that stands up to gusts, and the fabric is mold- and water-resistant. "We've seen a huge increase [in sales] since lockdown," says Hanna Rose-Wynter, the brand's social media executive. "People are now purchasing stoves and matting to make them more winter-friendly." Alvantor, a tent-centric business founded in 2011 near Los Angeles, is seeing a substantial uptick in orders, too; its waterproof Bubble tent (*from $600; alvantor.com*) is a top seller. The pop-up clear shelter retains an impressive amount of heat while accommodating your own pandemic bubble: as many as a dozen adults in the largest, 15-by-15-foot option.

Fire

There's no one right way to bring the heat—which can create an exciting, and bewildering, shopping experience. Like most furniture investments, fire pits depend on the space you're working with. At a mere 4 feet tall with a base diameter of 22 inches, the Modfire Tribalfire (*$1,750; modfire.com*) won't overwhelm a smaller area. Choose from propane or natural gas and a range of colorful finishes. For larger backyards, Boxhill's 80-inch Tavola 5 (*$3,200; shopboxhill.com*) doubles as a coffee table and includes an all-weather gas ignition system you can control with a tablet. If you need a narrow and tall option, the stainless steel and aluminum Lightfire patio heater (*$4,499; frontgate.com*) emits infrared heat—so the surface isn't hot to the touch—and covers a 450-square-foot area. The Lil' Timber Patio Heater (*$849; woodpelletproducts.com*) uses wood pellets, which run at a quarter of the cost of gas while producing twice the energy. Looking for a showstopper? Koby Knoll Click's steel fire pit chiminea (*$1,800; 1stdibs.com*) is reminiscent of a Richard Serra sculpture and fits standard split logs. Or stay toasty sans flame with a heated seat from Galanter & Jones. The bestselling Helios lounge (*$7,900; galanterandjones.com*) is made of colorful cast stone and powder-coated stainless steel and plugs in for hours of radiating warmth.



A steel firepit by Koby Knoll Click, available at 1stdibs

Heated Helios lounge from Galanter & Jones

Wool turtleneck from Babaà in northern Spain

Gloves from the North Face collaboration with Maison Margiela

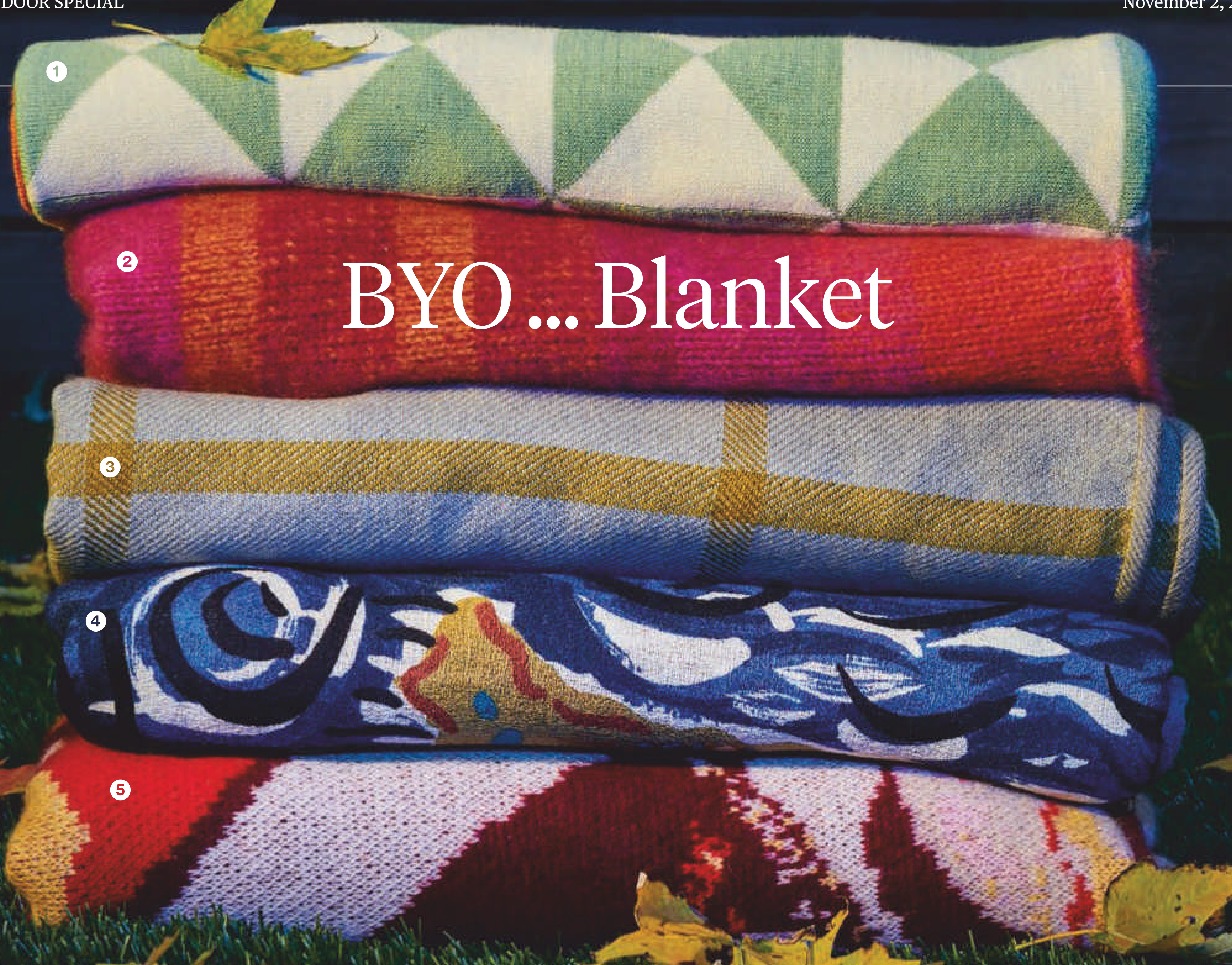
Fleece unisex joggers from Industry of All Nations

Clothing

The key to a stylish and cozy look starts with a functional foundation. A pair of whimsical wool Chup socks (*$35; chupsocks.com*) keeps toes snug. Inspired by patterns from indigenous tribes around the planet, the brand sources top-quality yarns to create festive designs. Working your way up, a pair of indigo-dyed unisex fleece joggers from Industry of All Nations (*$140; industryofallnations.com*) features a unique texture thanks to a reverse weave.

On top, think big with Babaà's luxuriously oversize No. 17 sweater (*$260; babaa.es*), hand-knit from the purest wool in northern Spain. Upgrade your accessories by adding a soft cashmere scarf from Begg x Co. (*$460; beggxco.com*) in a trusted neutral and a pair of gloves that go up to the elbows from the North Face collaboration with fashion house Maison Margiela (*$490; maisonmargiela.com*). If you prefer something less bulky, consider Loro Piana's Fair Isle wrist warmers (*$400; net-a-porter.com*) and a traditional flecked Aran rib hat from Inis Meáin (*$395; inismeain.ie*). For a more intimate accoutrement, make Grandma proud with NakedCashmere's Helen hot water bottle (*$125; nakedcashmere.com*), which comes wrapped in five-gauge ribbed cashmere.

PHOTOGRAPHS COURTESY COMPANIES



BYO ... Blanket

When the fire burns low, turn up the heat with one of these comforting wraps. *By Antonina Jedrzejczak*
Photograph by Hannah Whitaker

1 THE KID WRANGLER
If you're not quite ready to let go of the sea breezes of summer but need to cuddle up in November, split the difference with a Sea Foam Wind Farm throw from Crane & Canopy, a direct-to-consumer bedding brand. Its geometric, reversible pattern comes in a gentle green and a tightly knit 50-by-60-inch size. Made of cotton, it's surprisingly warm and machine washable. *$85; craneandcanopy.com*

2 THE SHOWPIECE
It's no surprise that the product that started it all—a luxurious blanket—is still a fan favorite for lovers of the Elder Statesman in Los Angeles. Handspun yarns, handloom knitting, and a penchant for one-of-a-kind psychedelic patterns all come together on 86-by-58 inches of woven cashmere. Shades of warm oranges and magenta conjure the heat. *$3,475; elder-statesman.com*

3 THE KEEPSAKE
Hermès's Clamp Dye Plaid from its home line is the collectible you can actually use. The 78-by-59-inch blanket is handwoven in cashmere and made using a dyeing technique that dates to the 7th century, in which the cloth is pinched tightly in wooden clamps and dipped into color to produce simple patterns. Six plaids in six combinations are available. *$2,450; 800 441-4488*

4 THE SOUVENIR
Even if that annual ski sojourn to Bormio turns into a staycation on your terrace, Missoni's whimsical printed throw can lift spirits. Made at the brand's Varese headquarters using 100% wool—hands down the most trusted, keeps-out-the-chills textile around—the 68-by-55-inch fringed warmer traces a map of Italy from the heel of Puglia to Lombardy's Alpine peaks. *$810; mrporter.com*

5 THE TRENDSETTER
Turn a party Technicolor with this cashmere Lips throw from New York home decor darling Voutsa. A collaboration with artist Sean McNanney's design arm, Saved, the blanket is based on an iconic wallpaper pattern and handmade in Mongolia. It comes in three sizes, including a massively cozy king. Consider the smallest one a pop art statement piece for the patio. *From $1,425; voutsa.com*

Maduro ▼

A Cut Above

Ante up with wildly designed cards at your next game of poker—or solitaire. *By Daniel Taub*

Jackson Robinson was 2 years old when he was dealt a bad hand. "I choked on a corn dog," he says, a common accident that uncommonly cascaded into pneumonia, a removed lung, and nine months in the hospital.

To keep him busy during his convalescence, Robinson's mother got him into drawing, a hobby that eventually led to art school in his home state of Texas, then a gig creating illustrations for *Star Wars* toy packages and Coca-Cola cans, and, after that, a stint as a video game artist.

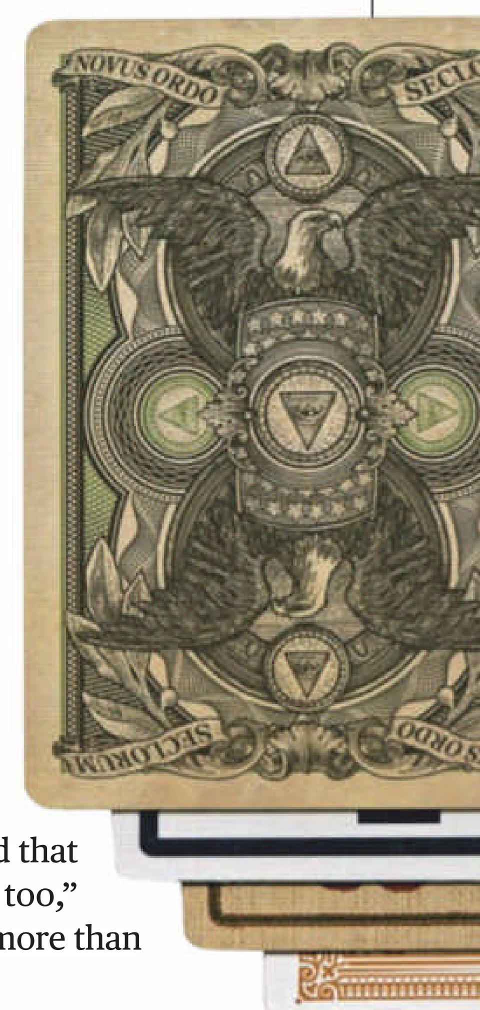
Since 2013, Robinson, now 38, has been building a business that makes something as ubiquitous and ordinary as a can of Coke: playing cards. He noticed that a Kickstarter campaign for a collectible pack had raised almost $150,000, so he decided to make his own. When his project raised a similar amount with 2,800 backers, and a second one even more, he gave the video game company his two weeks' notice and moved back to Texas to focus on building Kings Wild Project Inc., now a 20-person enterprise.

His decks are far wilder, as the name implies, than the standard Bicycle cards that have been around for well over a century. The first, called Federal 52, is inspired by the engraved designs found on U.S. currency. A more recent pack replicates a VHS cassette tape from 1982 with holographic elements. Another looks like a fat maduro wrapped with a golden cigar band, and a new Back to School deck could be mistaken for a box of classic Crayola crayons.

VHS 1982 ▶

Compared with a $3 Bicycle pack, Robinson's decks aren't cheap: $15 for most editions and as much as $50 for cards with red-gilded edges, dedicated to one of his daughters, Scarlett. And yet, more than 1,000 playing-card collectors have signed up for Kings Wild's monthly deck, up from 144 when the subscription service started two years ago.

Subscribers to the Kings Wild Shorts Standard Edition get a new deck designed by Robinson each month for $12. A separate, bimonthly option—the Table Players Series, also at $12 a deck—is aimed at collectors who are more likely to use them for poker or other card games than leave them pristine in the box. More playing-card subscriptions can be found online, but the Kings Wild decks stand out, coming from a single artist.



Federal 52 ▼

The company is in the process of moving from Austin to outside Chattanooga and on track for gross sales of $1.5 million in 2020, triple 2019's figure and more than 10 times what it brought in two years ago. Business has been buoyed by online shopping during Covid-19—Kings Wild sells mostly through its website—and the consumer trend toward entry-level luxury favoring everyday goods that have a maker's personal touch.

"The pandemic has really kind of forced me and probably other people to reevaluate the things that were taking up the hours of their lives, and that reflects on people's buying habits, too," Robinson says. "People are wanting more than just cookie-cutter stuff."

For now, Kings Wild is a small player next to collector-card companies Art of Play and Theory11, which sells its decks at Target and Walgreens. And it's dwarfed by the industry's 800-pound gorilla, the U.S. Playing Card Co., maker of Bicycle, Bee, and Hoyle cards. U.S. Playing Card had sales of $112 million in 2018, the year before being acquired by Belgium's closely held Cartamundi. (The Erlanger, Ky.-based manufacturer also prints cards for other companies, including Kings Wild.)

"It's still kind of in the realm of an impulse buy for a lot of people, and we usually find that our first-time customers will buy one deck of cards," Robinson says. "They receive it, and then they're like, 'Wow, this is awesome, I didn't know that playing cards could be this. I didn't know that this world existed.' And then about two weeks later, they'll come back, and they'll buy six decks." Ⓑ

The Defender 110

On Guard

The Land Rover Defender returns with a nod to Silicon Valley

By Hannah Elliott

A few hours into driving through 117-degree heat in the California desert, I got the distinct impression I was in over my head.

I'd just floored the new Land Rover Defender 110 up the side of a five-story-high sand dune near the Salton Sea, giddily ignorant of any actual threat, when one of my fellow drivers got his Defender stuck so far into the sand he couldn't open the door.

Serious contemplation commenced. Then gentle rocking, as it pushed into reverse. A few minutes later, true to its *Lawrence of Arabia* roots, his truck was no longer stuck.

The Land Rover mystique begins in 1948, when British farmers, hunters, and expat explorers adopted the World War II-influenced boxy ride for its practicality and reliability. By 1983 a 110 emerged, and in 1990 it was renamed Defender. U.S. sales began in 1992 but were discontinued by 1997 because of increasingly strict emission guidelines. Worldwide, the last one left the production line in 2016.

Since then, SUV and truck sales have increased to 70% of U.S. automobile sales, and brands are trying to capitalize: Ford Motor Co. reintroduced its Bronco. General Motors Co. is releasing an electric version of its Hummer. The 2020 Land Rover Defender 110 actually made its debut last year at the Frankfurt motor show, and customers began receiving them in June.

After testing its mettle in the desert in October, I can confirm that the Defender merges the solid, brutish DNA of its 72-year-old history with the vehicle-as-appliance ethos that dominates car culture today. With 7 terrain modes, 11 variants, and more than 170 clever accessories—ladders, snorkels, exterior cargo boxes—it provides maximum capability out in the sticks. The Defender is easily the leading option for those who want heft and heritage bundled in a 4x4 package.

There are two available engines (inline-four or inline-six) and two powertrains (turbocharged or turbocharged with electric boost), with up to 395 horsepower and 406 pound-feet of torque. Seating comes for five to seven people. It will ford water 35 inches deep, carry 1,984 pounds, and tow 8,201 pounds—esoteric stats, as most owners will never push its limits past the slopes of their local speed bumps.

I drove up and down boulders on three wheels, over dusty gravel shards, and through dry creek beds, and it remained so unflagging I was unnerved. All I had to do was push the right buttons in the center console to adjust ride height, axle response, and other driving systems, then press onward. In the original Defender, drivers had to lock the central differential manually; in the new one it's controlled via touchscreen.

The Defender 110 "X" I drove is the range-topper, a fully loaded $82,900 cabin of comfort—and a significant price premium, considering a fully equipped Ford Bronco Sport costs less than $40,000. A basic 110 starts at $49,900.

Blasting down the highway from the dusty outpost of La Quinta, Calif., past the casinos and truck stops that litter the desert highways, it was both commanding and comfortable, with multiple USB outlets, generous cup holders, rubberized flooring, and Meridian sound. The interior feels suitably high-end, with supple Windsor leather and a 30% wool-blend textile that accents the sides. (Miko suede is also an option.)

It's quieter and better-made than any Jeep Wrangler or Bronco I've driven; the 10-inch touchscreen with standard Apple CarPlay and Android Auto is particularly intuitive. My experience validated the Defender's fundamental selling point of rugged, push-button simplicity in an upscale package that, however far it takes you into the wild, it will get you out, too.

The design is polarizing to some. I'd describe it as a rather bloated caricature of the original. And the gas range is abysmal—early reports are saying less than 13 mpg.

The bigger concern is the electronics. New owners have complained about minor, but annoying, glitches: a clock that works only intermittently, keyless entry failure, irregularities with the preprogrammed infotainment system, poor operation of the side-hinged rear door, even an engine stall at a stoplight when the stop-start function failed.

Although I didn't note any issues with the electronics or technology on my desert run, the reports I've heard of computer errors must temper my endorsement. When I asked the company about these problems afterward, it responded that corrective software updates are "the new normal" in the auto business. So, caveat emptor: After a top-to-bottom rethink, the alpha male of off-roading is still in beta.

PHOTOGRAPH COURTESY LAND ROVER

Tunes, To Go

Sound for any adventure, courtesy of DemerBox. *Photograph by Sarah Anne Ward*

When a three-time Grammy winner gets so excited about a speaker he decides to buy the company that created it, it's time to listen up. In 2017 country crooner Zac Brown took a DemerBox on a spearfishing trip to Belize and came back ready to invest. No wonder: The Bluetooth-powered DB2 speaker ($349) offers more than 40 hours of lithium-ion battery life and 100 feet of range from a box that weighs only 5 pounds. Its hard-shell, military-grade Pelican 1300 case opens up to stash your wallet and keys, so it does double duty as an entertainment system and a dry bag. The two 3-inch, 8-ohm aluminum-cone speakers are offset by a retro-looking selection of colors (like Haast orange, pictured) in a bold rectangular shape, so it stands out in a category awash in black and gray cylinders.

THE CASE
A waterproof, weatherproof speaker doesn't have the same novelty as it did five years ago, but that doesn't mean all boomboxes are created equal when it comes to a freak rainstorm—or an accidental dip in the Jacuzzi. DemerBox's DB2 isn't the lightest or most portable of the bunch, but it's the toughest, which you wouldn't necessarily expect from the playful design. As a bonus, the company prides itself on a sustainable ethos: Rather than ship your speaker off to a landfill if there's a problem, it will fix it. There's also the option to pair your model with as many as six of its siblings within the 100-foot range, guaranteeing club-level audio no matter how distanced you and your guests may be. *$349; demerbox.com*

THE COMPETITION

• The heavyweight contender, at almost 20 inches long and 12 pounds, is the $499 JBL Boombox, with both indoor and outdoor bass modes. Simultaneously connect two Bluetooth devices to achieve DJ-ing democracy.

• At the other end of the sound spectrum, Ultimate Ears' $100 Wonderboom 2 checks in at less than a pound. But its 13 hours of battery life and new Outdoor Boost mode are built for backyards, and it comes with a handy hook for hanging.

• The $69 Anker Soundcore Flare 2 is only 6 inches tall, but it brings outsize festivity with its halo of LED lights that pulse to the rhythm of your playlist. The cylindrical shape projects 360-degree surround sound, too.

Cold Comfort

The ever-adaptable hot toddy makes a reliable winter-weather companion

By Kara Newman
Illustration by Franco Zacharzewski

The toddy is bartending at its most basic: whiskey, sugar, and lemon–that's it–mixed and then topped with scalding water. "It's a pretty straightforward template," says Jillian Vose, beverage director at New York's Dead Rabbit Grocery & Grog, a World's Best Bar winner rightly famous for its boozy cold-weather menu. How you improve on the formula, down to the optional cinnamon stick garnish, is largely up to you. "It's not every day you have a hot drink," Vose says. "It soothes the throat, warms the soul." Think of it as cocktail medicine. Here are three variations for you and your closest crew.

A NEW STANDARD
The Dead Rabbit features Irish whiskey in its fanciful adaptation of a recipe first published in 1862 in Jerry Thomas's *The Bartender's Guide: How to Mix Drinks, or The Bon Vivant's Companion*. The lemon "sherbet" makes enough for several drinks.

- 2 oz Powers Signature Irish Whiskey
- ½ oz honey syrup (2 parts honey dissolved in 1 part hot water)
- ½ oz lemon sherbet
- 1 dash Angostura bitters
- Boiling water
- Freshly grated nutmeg, for garnish

Combine whiskey, honey syrup, and sherbet in a heatproof glass or mug. Stir in 3 oz hot water, or to taste. Garnish with nutmeg.

Lemon Sherbet
In a jam jar or other lidded container, combine the peels of 4 lemons with ½ cup sugar. Let sit for a few hours, until sugar is damp. Add ½ cup fresh lemon juice and shake until sugar dissolves. Discard peels.

A LITTLE BITTERSWEET
Amaro and orange bitters supply plenty of astringency without added citrus for an aged rum drink called Winter in the Caribbean. Bar manager Lindsay Matteson of Seattle's the Walrus and the Carpenter says using cognac, Scotch, or aged genever also works well.

- 1½ oz aged rum
- ½ oz Averna or another medium bittered amaro
- 1 tsp honey
- 2 dashes orange bitters
- Hot water

Stir all ingredients in a toddy glass. Garnish with a cinnamon stick and a lemon twist.

THREE TODDY TIPS
- Pre-warm glasses with boiling water to keep a toddy hotter longer.
- Stir toddies well. "That's important," Vose says, "so you don't get a mouthful of sugar at the end."
- Ginger, cinnamon, cloves, and other spices may seem more pronounced or spicy when heat is applied.

JUST ADD TEA
Kenta Goto of New York's Bar Goto offers a further variation of this Yuzu Hot Toddy by trading brandy for *shochu* and a small measure of gin.

- 1½ oz Laird's Apple Brandy
- 2 oz brewed lemon-ginger tea
- ⅔ oz honey syrup (recipe at left)
- ½ oz lemon juice
- 1 tsp *yuzu* marmalade (optional)

Stir brandy, tea, honey syrup, and lemon juice in a saucepan over medium heat, just until hot. Pour into a teacup. Serve yuzu marmalade on the side for additional DIY sweetness.

The S'more You Know

(And a few you don't)

By Matthew Kronsberg

It's a delicious bit of culinary history that the graham cracker was named after a Presbyterian minister who believed that rich foods caused impure thoughts and deeds. The good Reverend Graham's chaste cookie would be corrupted in the 1927 book *Tramping and Trailing With the Girl Scouts*, which included a recipe that added toasted marshmallow and molten chocolate: a s'more. Unfortunately, the traditional Hershey bars forsake sensuous flavors for chalkiness and one-dimensional sweetness, and the major contributions of the marshmallow are sugar shock and scalded fingertips, thanks to the napalm-like qualities of a half-carbonized glob of goo. Still, we love the idea of s'mores, possibly more than we love the confection itself. Here are nine ways—including three that come packaged as kits—to upgrade your favorite part of the bite.

MARSHMALLOW / CHOCOLATE / CRACKER

CLASSIC

Vanilla marshmallows from **Lake Champlain Chocolates** are simple perfection: creamy, richly flavored, and handmade in 10-pound batches. *$20 for 5.25 oz; lakechamplainchocolates.com*

The richness of **Goodnow Farms'** single-origin chocolate comes from the cocoa butter that goes into it. That's why its new Classic Milk bar softens so readily under a toasted marshmallow's warmth. *$12; goodnowfarms.com*

San Francisco's **Dandelion Chocolate** is beloved for cocoa confections, as showcased in a 12-serving kit that has three single-origin chocolates. But the chocolatier makes its own honey graham crackers as well. *$50; dandelionchocolate.com*

INTENSE

Along with its own single-origin bars, **Indi Chocolate** in Seattle's Pike Place Market makes a four-serving s'mores kit with mole-spiced marshmallows that have smoky undertones and a hit of chile. *$18; indichocolate.com*

Haiti's first and only bean-to-bar chocolate, **Askanya**, uses rapadou, a locally grown unrefined cane sugar, in its 90% Perle Rare bar. It's a more complex molasses-y kind of sweetness that suits "adult" tastes. *$6.75; askanya.ht*

Swap innocuous graham crackers for a chunky, salty-sweet pretzel shortbread from Philadelphia's **Lost Bread Co.** Its sharp alkali bite and bursts of coarse salt quickly give way to a mellower, maple-rich sweetness. *$12 for eight; lostbreadco.com*

IRREVERENT

XO Marshmallow of Chicago, a cafe devoted to the fluffy stuff, specializes in zany flavors such as "funfetti" with rainbow sprinkles. Its strawberry and spicy chocolate varieties have something extra, too: 10mg of CBD. *From $9.95; xomarshmallow.com*

The most irreverent thing to do with the chocolate in a s'more? Leave it out. **1927 S'mores Co.** co-owner James Kelly suggests topping the marshmallow in the brand's lemon-chamomile kit with lemon curd. *$18; 1927smores.com*

Mrs. Hanes' Moravian cookies are hand-rolled until they're wafer-thin, yet they hold up heroically to the inevitable smushing of s'mores-making. The buttery black walnut cookies are a winning combo with chocolate and marshmallow. *From $24; hanescookies.com*

PHOTOGRAPHS COURTESY COMPANIES

The Airplane Company Facing the Steepest Climb

By Brooke Sutherland

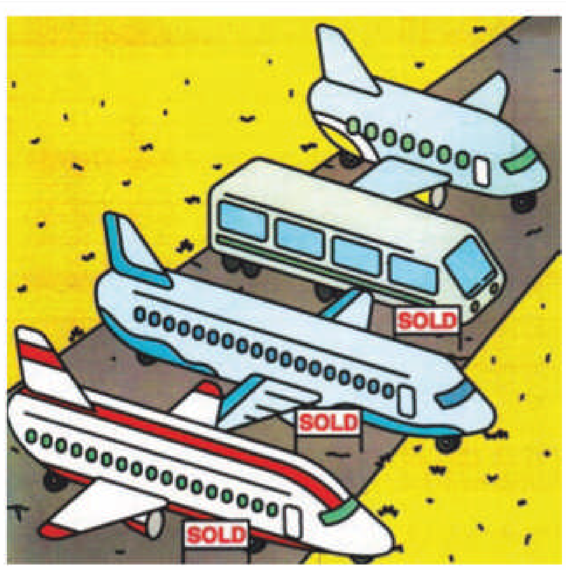


ILLUSTRATION BY GEORGE WYLESOL

Bombardier Inc. is the little aerospace company that can't seem to catch a break. Once valued at more than $20 billion, the Canadian company today is worth a fraction of that and was kicked out of the S&P/TSX Composite Index earlier this year. Its woes stem largely from the C Series commercial jet program it launched in 2008. That effort was scuttled by delays, budget overruns, and an (ultimately unsuccessful) trade complaint from Boeing Co., forcing Bombardier to sell a majority stake in the program to Airbus SE for a single Canadian dollar. Airbus earlier this year agreed to buy Bombardier out of the program—now called the A220—entirely for about $600 million. The huge debt load Bombardier took on to fund the plane's development remained, however.

Having already agreed to sell its regional jet line to Mitsubishi Heavy Industries Ltd., Bombardier announced a deal earlier this year to divest its train unit to Alstom SA for $8.4 billion, including transferred liabilities. So when Covid-19 hit, Bombardier was planning a future around just one operating unit: business jets. It's predicted deliveries of business jets will be down 30% industrywide this year relative to 2019 and is eliminating 2,500 jobs.

The irony is that private aviation is one of the relative bright spots in the beleaguered aerospace market. The pandemic has made avoiding other people on flights more appealing than ever. And the swift rebound in financial markets has meant that money isn't as tight for the wealthy and corporations as it was in past doownturns. Honeywell International Inc., which makes engines for business jets, has predicted private-jet flights will return to 2019 levels by next year. The International Air Transport Association says it will take until at least 2024 for global commercial passenger traffic to recover.

But the most popular private plane options this year have been smaller jets, noted Rob Stallard, an analyst at Vertical Research Partners, in an October report. That doesn't favor Bombardier, whose sales pitch for its marquee Global 7500 model is that it's the largest and longest-range business jet available.

New designs typically account for more than half of total market demand, said Carter Copeland, an analyst at Melius Research, in an August update on the sector. That favors companies with the youngest portfolios of business jets, such as General Dynamics Corp.'s Gulfstream division and Textron Inc.'s Cessna unit. And Bombardier's stressed financial situation may turn off buyers worried about whether they'll be able to get their planes serviced years into the future, Copeland said.

Bombardier's great unraveling was about getting time and money to rebuild around its business jet unit. The relatively shallow downturn in this market during the pandemic means it still has a shot at making that happen. But it won't be easy. Ⓑ —*Sutherland writes about deals and industrial companies for Bloomberg Opinion*

Bloomberg Businessweek (USPS 080 900) November 2, 2020 (ISSN 0007-7135) H Issue no. 4676 Published weekly, except one week in January, February, March, May, July, August, September, October, November and December by Bloomberg L.P. Periodicals postage paid at New York, NY., and at additional mailing offices. Executive, Editorial, Circulation, and Advertising Offices: Bloomberg Businessweek, 731 Lexington Avenue, New York, NY 10022. POSTMASTER: Send address changes to Bloomberg Businessweek, P.O. Box 37528, Boone, IA 50037-0528. Canada Post Publication Mail Agreement Number 41989020. Return undeliverable Canadian addresses to DHL Global Mail, 355 Admiral Blvd., Unit 4, Mississauga, ON L5T 2N1. Email: contactus@bloombergsupport.com. QST#1008327064. Registered for GST as Bloomberg L.P. GST #12829 9898 RT0001. Copyright 2020 Bloomberg L.P. All rights reserved. Title registered in the U.S. Patent Office. Single Copy Sales: Call 800 298-9867 or email: busweek@nrmsinc.com. Educational Permissions: Copyright Clearance Center at info@copyright.com. Printed in the U.S.A. CPPAP NUMBER 0414N68830

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