

INSIDE THE \$10 BILLION NFT FACTORY

SPECIAL
ISSUE

LORD OF THE FILMS: PETER JACKSON'S JACKPOT

IS FRACKING ACTUALLY GREEN?

INVESTING'S IRON MAN



Forbes

Spotify
Hitmaker
DANIEL EK

"AUDIO SHOULD
BE A \$100 BILLION
INDUSTRY—
IT'S OURS TO WIN."

30 UNDER 30

MEET THE CLASS OF 2022:
600 INNOVATORS IN 20 INDUSTRIES
RESHAPING OUR WORLD

PLUS: THE UNDER 30 HALL OF FAME



TITLE OR RESPECT?

ASK YOURSELF, WHERE NEXT?



Forbes

Bumble
Billionaire
**WHITNEY
WOLFE HERD**

“DON'T FOCUS ON
THE SHORT TERM.
STAY MARRIED
TO THE LONG-TERM
VISION.”

30 UNDER 30

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RESHAPING OUR WORLD

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EGO OR INFLUENCE?

ASK YOURSELF, WHERE NEXT?



Forbes

Pop Royalty
MILEY CYRUS

“IF I KNOW THERE’S
GOING TO BE A
GREATER REWARD
BY TAKING A
GREATER RISK,
USUALLY I’LL DO IT.”

30 UNDER 30

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FAILURE OR LESSON?

ASK YOURSELF, WHERE NEXT?



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Robinhood Cofounders
BAIJU BHATT
VLADIMIR TENEV

"YOUNG PEOPLE DIDN'T FEEL
LIKE INVESTING WAS FOR THEM.
THAT'S WHY WE BUILT
ROBINHOOD."

SOCIAL
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CAN ALSO
BE A SIGN
OF ANOTHER
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A decade ago, Daniel Ek convinced record labels and artists to stream their songs on Spotify, reviving the flatlining music industry. Now, after amassing a \$4.4 billion fortune, he's moving the super-streamer past pop stars and personalities in a bid to own the world's digital eardrums.

By Steven Bertoni

GUERIN BLASK FOR FORBES

“Accuracy is everything when you’re setting mankind’s highest altitude record.”

Brian Binnie

- Spacecraft altitude record holder (367,442 ft in space)



Brian Binnie rocketed the first private manned spacecraft to an altitude of 69.6 miles, opening a new era in space flight. At 50,000 feet, he fired SpaceShipOne's rockets, reached 2,500 mph, and broke through the edge of the atmosphere into space. Despite all his training and hard work, each mission can be both dangerous and risky. That's why a dependable timepiece like BALL watch is so important in an environment that features truly adverse conditions.

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30 Under 30

The 600 entrepreneurs, innovators and disruptors inventing tomorrow today. The future has never looked so bright.

**Edited by Alexandra Wilson with
Alexandra Sternlicht**

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California Scheming

Nowhere is the affordable-housing crisis more acute than in the Golden State. To the rescue come the most notorious junk municipal-bond peddlers in the nation, and a promise to turn luxury apartment buildings into “workforce housing.”

**By Matt Schifrin with Isabel Contreras
and Rachel Sandler**

COVER CREDITS

DANIEL EK
*Photographed in New York by Guerin Blask
Stylist: Sam Spector
Stylist Assistant: Fred Kim
Groomer: Suzana Hallili*

WHITNEY WOLFE HERD
*Photographed in Detroit by Guerin Blask
Hair and Makeup: Suzana Hallili*

MILEY CYRUS
*Photographed in Los Angeles by Jamel Toppin
Stylist: Bradley McPeck
Stylist Assistant: Patrick Pedraja
Hair: Danillo
Makeup: Janice Daoud*

VLAD TENEV AND BAIJU BHATT
*Photographed in Menlo Park by Jamel Toppin
Groomer: Sherrie Long
Produced by Peter Schnaitmann*

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ENGINEERED TO A HIGHER STANDARD—THE HUMAN STANDARD

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Biden's Vaccine Diktat Is Wrong

The Fifth U.S. Circuit Court of Appeals has temporarily blocked President Biden's sweeping vaccine mandate. As a result, OSHA has backed off enforcing it. The case is now in the hands of another appeals court. Ultimately, the issue will go to the Supreme Court, which will throw out this executive order—and rightly so.

Last September President Biden issued an executive order to force private-sector companies with 100 or more employees to have their workers get vaccinated or be tested weekly and wear face masks. Noncompliant employers could face fines of more than \$13,000 per violation.

Such a sweeping order would set a dreadful precedent.

For instance, what would stop future decrees from banning or limiting the sale and consumption of sugary sodas in the name of fighting the scourge of obesity? Not to mention placing severe limitations on chips or other junk foods. Or a virtual prohibition of cigarettes, which bring on cancer, heart disease and other deadly ailments?

The administration says the president has the right to issue emergency orders. But an emergency applies to a sudden catastrophe, which was the case when the pandemic burst forth in March 2020.

The word *emergency* doesn't apply here. After all, the president made his announcement in September. Only in November did the administration get around to issuing the actual order, which runs 490 pages. And that order wasn't scheduled to take effect until January 4, 2022.

Moreover, the decree doesn't take into account those who have already had Covid-19. Countless physicians have pointed out that the immunity acquired from Covid is upward of 27 times more potent than the vaccines themselves.

The legal challenges will soon reach the Supreme Court, which will most likely throw the mandate out.

Perhaps, then, the government will undertake the hard work of calmly and carefully answering skeptics' questions, take into account those who have had this disease and factor in the miracle of the new therapeutic pills from Pfizer and Merck.



House. The action is wrongheaded and should be resisted. In fact, its implications go beyond the deal itself.

The original concept of antitrust was to bust up destructive combinations that illegally thwarted competition and, importantly, used a monopoly position to gouge consumers with high prices. Until the Biden administration took office, the criterion for pursuing antitrust actions was what impact a deal might have on prices for customers. Bigness itself was and is not bad.

The Penguin-Simon & Schuster transaction would hardly create a monopoly. Their combined share of book sales would come to around 27%. But the DOJ whines that best-selling authors might be harmed by not getting big advances because there would be one fewer major publisher that might participate in an auction.

Huh? We have to wield the power of the federal government to ensure fat advances for a handful of writers?

The suit alleges that the deal would enable the merged entity to exercise unprecedented control over what's published in the U.S. and how much authors are paid. This, the government avers, would hurt authors from earning a living writing books.

Real world to the White House: Hundreds of thousands of people would like to earn a nice living writing books. Just as there are probably millions who'd love to be entertainment stars or megapopular musicians but never get much further than waiting tables or doing local gigs.

Only a relative handful of writers achieve big success.

Moreover, thanks to technology, the ability to self-publish has never been greater. Many writers have figured out that they can make greater money arranging the printing and doing their own marketing than relying on a publisher's royalties.

If Biden antitrusters were really worried about books, they'd be looking at Amazon's outsize influence in that marketplace. The real agenda behind this and similar suits: using antitrust laws as a new weapon to exercise government control over how companies are allowed to operate.

It's part of modern socialism: The government doesn't take over companies and industries; it's easier and cheaper to make a business' survival and well-being dependent on government bureaucracies. So, under the guise of "preserving economic opportunities," Washington can meddle in every aspect of how a company operates.

This lawsuit is really about expanding government power, not fostering opportunity and prosperity.

An Ominous Misuse of Antitrust

The Biden Justice Department has filed an antitrust suit to block the proposed purchase of book publisher Simon & Schuster by its far larger competitor, Penguin Random

THE FORBES 2021 ALL-STAR EATERIES IN NEW YORK

The best thing for the future of Big Apple restaurants is the city's new mayor, Eric Adams, who actually likes the industry and delights in dining out. He's the happy antithesis of his lazy, nasty, utterly inept, chip-on-the-shoulder predecessor, Bill de Blasio, who took grim joy in making life unnecessarily more miserable for eateries during the pandemic. Adams, who wants his city to thrive again, is also well aware of how critical this industry is to such a renaissance. Fine dining in places with traditional and excitingly creative offerings was a crucial attraction for tourists of all kinds, not to mention one of the things that made Gotham a magnet for the ambitious. Our stellar team of discerning tasters—*Forbes'* chief content officer, Randall Lane; *Forbes* contributor Richard Nalley; preeminent media maven Monie Begley; and brothers Kip and Tim—herewith unveil their list of where you can enjoy the city's most savory comestibles.



Aquavit
Bâtard
Daniel

Gabriel Kreuther
Gramercy Tavern
The Grill

Jean-Georges
La Grenouille

Le Bernardin
Le Pavillon
Marea

The Modern
Momofuku Ko
Per Se

Four stars barely do justice to chef Daniel Boulud's new creation, **Le Pavillon**: breathtaking space, welcoming and impeccable service, sensational seafood, a dizzying array of vegetable dishes and other outstanding offerings. During the pandemic,



Gabriel Kreuther

Boulud extensively renovated his beloved **Daniel**. What hasn't changed here are the awe-inspiring courses; they remain magical, so splurge. At \$225 apiece, **The Modern's** prix-fixe tasting menu isn't cheap, but it's worth every penny. Portions are perfectly sized and keep you wanting more. A sleek, sophisticated space on which staggering sums of money must have been spent gives **Gabriel Kreuther** an unobtrusively rich look—a perfect setting for a magnificent meal. For instance, the miso-marinated steak could be cut with a fork. Its outside dining area is among the most sophisticated in town. **La Grenouille** is still here, and the food is as fabulous as ever. End your delectable meal with the espresso soufflé. **Marea** has long been known for its seafood and homemade pasta, but there's much more to rave about, including possibly the best roasted duck breast around.



Le Pavillon

CLASSICS

These epitomes of excellence were crucial to pre-Covid New York City's establishment as the cuisine capital of the world—and will be again.

- | | |
|---------------------------------|--------------------------------|
| <u>Balthazar</u> | <u>Nippon</u> |
| <u>Grand Central Oyster Bar</u> | <u>Nobu Downtown/Nobu 57</u> |
| <u>Katz's Delicatessen</u> | <u>Peter Luger Steak House</u> |
| <u>Keens Steakhouse</u> | <u>The River Café</u> |



PHOTOGRAPHY BY JAMEL TOPPIN; PAUL FRANGIPANE / BLOOMBERG (BOTTOM)



ABC Kitchen

Ai Fiori

Antonucci Cafe

Aretsky's Patroon

Atera

Avra Madison

Carbone

Ci Siamo

The Clocktower

Cote

Crown Shy

Estela

Frenchette

Gage & Tollner

Gotham

Hawksmoor

Hutong

Junoon

La Goulue

L'Artusi

Majorelle

Marc Forgione

The Mark Restaurant

Michael's

Milos

Misi

Nougatine

Nur

Perry St

Portale

Porter House Bar and Grill

The Simone

Sixty Three Clinton

Sushi Nakazawa

Union Square Cafe

Wayan



Danny Meyer waited three years to open **Ci Siamo**, and it was well worth the wait! Chef Hillary Sterling and crew are creating outstanding Italian fare. At **Nougatine** the food is beyond sublime, and the setting is sleek with a Scandinavian vibe. **Gage & Tollner**, the Gilded Age jewel (previous incarnation 1879–2004), is gorgeously back—a glittering hall of mirrors, wrought-iron chandeliers, dark wood and tufted banquettes. Its richly satisfying food is back, too. A posh yet easygoing London-chophouse import, **Hawksmoor** provides locally purveyed meat, seafood and cheese. You have to find **Estela**, a snug-fitting sliver of a room up a flight of stairs, but once there, you'll be transported to another world by the vividly flavored small-dish cooking. **Sixty Three Clinton's** seven-course, \$92 prix-fixe menu is a delicious bargain. Another outstanding bargain is **Sushi Nakazawa**, which delivers 21 remarkable pieces of fish for \$120. If you want to go Greek, **Avra Madison** is the place to go. **Atera** remains one of the city's great American culinary experiences, with two seatings a night. It's still tough to get a reservation for **L'Artusi**, a jostling West Village staple, but a few bites into your meal you'll know what lures the regulars back. Since reopening in June, **Crown Shy's** majestic space has been packed. Many of the shared-plate favorites have returned, such as citrus-marinated chicken with house-made hot sauce. Back after what was thought to be a permanent closing, **Gotham** features a redesigned space and a refreshed menu of seasonal fare with creative flourishes. Reopened in a dramatic new space, **Junoon** continues to delight with its sophisticated Indian dishes and extensive wine list. Under the watchful eye of Jacques Le Magueresse, one of the city's greatest maître d's, service at **Majorelle** remains impeccable. **Portale** is a deliciously delightful, authentic Italian-American trattoria.

SPECIAL

abcV with Jean-Georges—It's no surprise that vegans and vegetarians love the original offerings here, but meat eaters are wowed as well.

Al Vaporetto—Venice itself would be envious of the ways in which the variety of food is prepared.

Amaranth—Reopened and as popular as ever with the Midtown lunch crowd—and the crowd is correct when it comes to the food served.

Bistrot Leo—Its outdoor dining area is one of the most attractive in the city, and the desserts are beyond sublime.

Brasserie Cognac East—Cognac is king, but the mix of French classic dishes and bistro fare makes for a royal experience.

Café D'Alsace—A visit to this spot is like being transported to Strasbourg. The food is as good as any you'll find in eastern France.

Dhamaka—Excellent Indian meals. Not every dish is through-the-roof hot, but diners should come prepared to feel the burn.

Donohue's Steak House—No one has a beef with these unmistakably stunning steaks.

Ernesto's—Basque in the beauty of this particular cuisine.

The Fulton—A fabulous waterfront view, including the Brooklyn Bridge, that's matched by fabulous fish fare.

Gem—Creation of wunderkind chef Flynn McGarry, whose terrific tasting menus are internationally inspired. The menu is a colorful pamphlet with a history of each dish.

Hudson Yards Grill—The place to go to get the epitome of American fare.

Lamalo—A mouthwatering modern Middle Eastern menu that has patrons returning again and again.

L'Amico—Incredibly creative Italian renderings.

Les Trois Chevaux—An over-the-top-fantastic "food vacation." Setting is Paris formal, with mirrors and carts galore. What's French for "delicious indulgence"?

Llama San—Scrumptiously creative cuisine that impressively combines influences of Peruvian and Japanese cooking.

Mercado Little Spain—Sensational Spanish-inspired fare.

Milk Bar—Here you can personalize your perfect dessert with an array of cookies, cakes, ice creams and pies that will send you on a sweet, heavenly high.

Rezdôra—Pasta perfections, not to mention other delicious Italian dishes, pack in the patrons.

Sabor Argentino—Great steaks, and the flan really has its fans.

Sistina—Outstanding Italian offerings, especially the special pastas, at this longtime Upper East Side gem.

Tomokase—A complete, fully catered omakase dinner delivered to your home. A maître d' and chef arrive

with a suitcase or two and serve up a mouthwatering 15-course tasting menu of sushi and sashimi, concluding with a delectable dessert.

UVA Next Door—Designed as an authentic Italian trattoria, this place feels like it's been here forever but courageously opened last April. Fare is authentically excellent and is accompanied by hip music.

Wayla—Thai food for a culinary adventure.

Wild ink—Unique dining menu creatively blends flavors from around the world. That goes for the cocktails, too.





TONDA *PF* ANNUAL CALENDAR

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WHAT'S
NEW

FRONTRUNNER

WHO'S
NEXT

30 Under 30

HALL OF FAME

Ten years. 100,000 nominees. 6,000 revolutionaries across 20 industries. In honor of the 10th anniversary of the Forbes 30 Under 30, we've picked the 30 all-time all-stars. Among them: a Nobel laureate, six social media bigwigs, two crypto kings, two EV evangelists and the top-earning female athlete ever.

Miley Cyrus

LeBron James

Vlad Tenev

Zhang Yiming

Patrick Collison

Melanie Perkins

Whitney Wolfe Herd

UNDER 30 BY STEVEN BERTONI; ELISABETH BRIER; ABRAM BROWN; MICHAEL DEL CASTILLO; AMY FELDMAN; JEFF KAUFMAN; SERGEI KLEBNIKOV; ALEX KNAPP; ALEX KONRAD; ALAN OHNSMAN; CHASE PETERSON-WITHORN; CHLOE SORVINO; ALEXANDRA STERNLICHT AND ALEXANDRA WILSON; CLOCKWISE FROM TOP RIGHT: ATIRA JEFFERSON/NBAE/GETTY IMAGES; IMAGINE CHINA/NEWS.COM; GUERIN BLASK FOR FORBES; DEAN MACKENZIE FOR FORBES; COURTESY OF STRIPE; JAMEL TOPPIN FOR FORBES (2)

CLASS OF 2012

Daniel Ek

THEN: His music streaming experiment Spotify had just entered the U.S. and had 10 million active users and was worth \$2 billion.

NOW: Today (*see page 104*), Spotify streams 70 million songs to nearly 400 million users across 184 markets. It's worth \$50 billion; Ek is worth \$4.4 billion.

Drew Houston

THEN: Dropbox, the file storage and sharing company that Houston cofounded in 2007 at age 24, was already one of Silicon Valley's hottest startups, with 200 million users.

NOW: A billionaire since 2014, Houston is still CEO of Dropbox, which went public in 2018 and has a \$10 billion market cap; the company says it has more than 700 million registered users.

LeBron James

THEN: The Miami Heat forward, then 27, was an NBA all-star and owned a small stake in the Liverpool F.C. soccer club.

NOW: The superstar has won four titles with three teams: the Heat, the Cleveland Cavaliers and his current squad, the L.A. Lakers. Off the court, he has earned over \$1 billion from deals with Nike and Walmart as well as from his appearance in *Space Jam: A New Legacy*.



Rihanna

NOW: Asana, which went public in September 2020, has more than 100,000 paying customers and roughly \$350 million in annual revenue.

Ben Silbermann

THEN: Pinterest wasn't an overnight success. Silbermann and his cofounder, Evan Sharp, spent several years fooling around with a shopping app called Tote before shifting to digital pinup boards. Things

CEO of the company, whose market cap is now \$30 billion.

Kevin Systrom

THEN: Instagram was 14 months old and had just seven employees. Still, 15 million had used its filters to jazz up their photos.

NOW: Systrom sold Instagram to Facebook months after his Under 30 appearance. It now has over 1 billion users but faces concerns about its effects on teens' mental health. Worth \$2.2 billion, Systrom hasn't run it since 2018. His most recent project: a Covid-tracking website he built in spring 2020.

Mark Zuckerberg

THEN: Eight years after Zuck started Facebook in his Harvard dorm room, his social network had amassed 845 million users—and was readying for its \$100 billion May 2012 IPO.

NOW: Now called Meta, the company has 3.6 billion users across Facebook, Instagram and WhatsApp as its market cap hovers around \$1 trillion. But amid declining interest from young users and a tarnished brand, Zuckerberg is shifting his focus to virtual reality and a still unproven idea for a metaverse.

CLASS OF 2013

Patrick and John Collison

THEN: Ireland-born brothers Patrick and John dropped out of MIT and Harvard to cofound Stripe in early 2010 at ages 21 and 19, respectively. They came up with the idea for accepting credit cards on the web while on vacation in South America.

NOW: Stripe is the second-most valuable U.S. startup, worth \$95 billion; the brothers each own a \$9.5 billion stake. Patrick, its CEO, is diversifying Stripe to include crypto and tax collection tools, among others, ahead of a much-anticipated IPO.

Rihanna

THEN: The 24-year-old pop star had secured endorsements with Vita Coco, Nivea and perfume Reb'l Fleur.

NOW: Rihanna is a billionaire, thanks to Fenty Beauty, her 50/50 joint venture with LVMH. The brand, which makes skin color-inclusive products, is worth an estimated \$2.8 billion. Her Jay-Z-backed Fenty lingerie brand raised money at a \$1 billion valuation in February.

Zhang Yiming

THEN: He founded ByteDance in 2012 in a four-bedroom Beijing apartment and launched news-aggregation app Toutiao months later.

NOW: ByteDance's roughly five-year-old app TikTok has more than 1 billion users worldwide, but its future will be in the hands of someone other than Zhang, who stepped down as ByteDance's chairman in November as the Chinese government exerts more pressure on high-profile CEOs.

CLASS OF 2014

Miley Cyrus

THEN: The 21-year-old pop star had just released her most commercially successful album, *Bangerz*, and made headlines for her infamous MTV Video Music Awards performance complete with twerking. She

“I feel really satisfied with what I’ve accomplished so far, but also I still have some runway ahead before I reach 30.”

— NAOMI OSAKA —

Dustin Moskovitz

THEN: Once the world's youngest self-made billionaire, the Facebook cofounder left in 2008 to start work-productivity toolmaker Asana. By 2012, it was launching early versions of its software.

clicked: A year after a desktop version launched, Pinterest had a \$270 million valuation.

NOW: Monthly users rose 37% last year to 459 million, due to a burst of new interest in the lifestyle app during the pandemic. Silbermann remains

“As a young female founder, I sometimes struggled to get institutional leaders to take meetings with us. The 30 Under 30 list certainly helped us validate our ideas and our platform.”

— RACHEL CARLSON —

rose to fame as a teenager thanks to her starring role in Disney’s popular television series *Hannah Montana*.

NOW: Cyrus has released three more albums and has 152 million Instagram followers. She founded the Happy Foundation to help support LGBTQ+ and at-risk youth and is an investor in startups including FanMade, which helps create superfan experiences, and feminine-product company Hers.

Rachel Haurwitz

THEN: Haurwitz cofounded the genome editing company Caribou Biosciences in 2011 based on Crispr research she conducted with cofounder (and later Nobel Prize winner) Jennifer Doudna. In May 2014, Haurwitz cofounded another biotech outfit, Intellia Therapeutics, that also uses a Crispr gene editing system.

NOW: Today the companies are publicly traded and have a combined market capitalization of over \$10 billion; both also have drugs currently in early clinical trials.

Evan Spiegel

THEN: Kids loved Snapchat and its central premise: disappearing photos. Spiegel’s app had 50 million users, their median age around 18. Facebook liked Snapchat, too. Mark Zuckerberg offered \$3 billion for the company; Spiegel declined.

NOW: Now called Snap, it has over 500 million users. Spiegel, who is still CEO and a billionaire, has plunged Snap into augmented-reality technology,

where digital images and environments are placed in real-life surroundings.

Malala Yousafzai

THEN: Shot by the Taliban at age 15 for speaking out publicly on behalf of girls and their right to go to school and learn, the Pakistani student cofounded the Malala Fund in 2013 to help others like her. She also published her autobiography, *I Am Malala*. In December 2014, Yousafzai won the Nobel Peace Prize, becoming the youngest-ever Nobel laureate.

NOW: She was named the U.N.’s youngest Messenger of Peace in 2017. Her fund has raised over \$100 million, and she continues to be critical of the Taliban.

CLASS OF 2015

Andy Fang and Stanley Tang

THEN: Computer science students at Stanford, they met recent graduate Tony Xu in 2012. Soon after, they developed the app DoorDash to help restaurants capitalize on digital ordering.

NOW: After one of the hottest IPOs of 2020, the delivery giant, which spent more than \$10 billion on acquisitions in 2021, is valued at \$84 billion. Fang, chief technology officer, and Tang, chief product officer, each hold 4% of company stock and are worth \$3 billion each.

Apoorva Mehta

THEN: A former Amazon engineer, Mehta started Instacart in 2012 after 20 failed startup ideas. In the early days, he did most of the shopping himself and made deliveries via Uber.

NOW: The app delivers goods from 65,000 stores in more than 5,500 U.S. cities. The privately held company is worth \$39 billion, and Mehta, its executive chairman, is worth \$3.5 billion.

Zach Perret

THEN: Plaid, which Perret cofounded with William Hockey

two years earlier and whose software lets companies connect to consumers’ bank accounts, had \$2.8 million in funding and a handful of customers including Venmo.

NOW: In April 2021, Plaid raised money at a \$13.4 billion valuation, making Perret, who is CEO, a billionaire. It has 5,500 customers ranging from Robinhood to Google.

Emily Weiss

THEN: Founder of successful beauty blog Into the Gloss, Weiss raised \$2 million to launch direct-to-consumer beauty line Glossier in 2014.

NOW: Glossier, which sells balms, makeup, skin care products and fragrances, has raised \$266 million and is worth \$1.8 billion. It’s about to open its first flagship store in Los Angeles.

CLASS OF 2016

Melanie Perkins

THEN: Eight million people had used her company Canva’s free web-based app to design everything from Pinterest graphics to restaurant menus. The Australia-based startup was valued at \$165 million.

NOW: Canva raised \$200 million in new funding in September at a \$40 billion valuation. Still CEO, Perkins and her cofounder husband, Cliff Obrecht, both billionaires, plan to give away 30% of their estimated combined 36% stake.

Vlad Tenev

THEN: With fellow Stanford undergrad Baiju Bhatt, Tenev launched no-fee stock trading app Robinhood in 2013, with the platform’s no-commission trading model revolutionizing the brokerage industry. When the cofounders debuted on the Under 30, the startup was valued at \$250 million.

NOW: Robinhood, which boasts over 22 million accounts, went public in July and now has a market cap of \$25 billion. Tenev, who is CEO, and Bhatt, the company’s chief creative officer, are both billionaires.

Apoorva Mehta





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Sajith Wickramasekara

THEN: Wickramasekara and an MIT classmate founded Benchling in 2015 to be a digital version of a scientist's lab notebook. A year later, the biotech R&D software startup had raised \$6 million at a valuation of \$17.5 million.

NOW: Benchling has more than 600 customers, including Regeneron, Sanofi and Syngenta. It is worth \$6.1 billion following a recent financing round led by Franklin Templeton and Altimeter.

CLASS OF 2017

Rachel Carlson

THEN: Guild Education, which Carlson had founded in 2015 to help companies offer education benefits to their workers, had landed Chipotle as its first big partner and raised \$10.5 million at a \$32 million valuation.

NOW: Carlson is one of America's richest self-made women, worth \$500 million, thanks to Guild's nearly \$4 billion valuation. Among its dozens of partners: Walmart, Target and Disney.

is worth \$620 million, tapped a new CEO in May but still promotes the brand to her 282 million Instagram followers.

Nick Molnar

THEN: Once Australia's top seller of jewelry on eBay, Molnar cofounded Afterpay in 2014 as a way for credit card-leery Millennials to buy items and pay them off in four installments over six weeks. In May 2016, he took the company, which had just 60,000 customers in Australia, public.

NOW: Square announced plans to acquire the buy-now, pay-later company, which has 16.2 million global customers, for \$29 billion; Molnar is worth an estimated \$1.8 billion.

Whitney Wolfe Herd

THEN: After settling a sexual harassment suit with her Tinder cofounder, Wolfe Herd started Bumble in 2014 as a dating app designed to enable women to make the first move. Within two years, it had some 11 million registered users.

NOW: Wolfe Herd took her company public in February at



Austin Russell

his wealth some \$400 million.

NOW: Since then, ethereum's price has exploded, leading to a market value of \$500 billion and a personal fortune of \$1.4 billion, making Buterin among the youngest known crypto billionaires.

Austin Russell

THEN: Aided by a \$100,000 Thiel Fellowship, the optics prodigy and Stanford dropout founded Luminar at age 17 to develop higher-quality laser sensors for self-driving vehicles.

NOW: Russell, 25, became the world's youngest self-made billionaire when Luminar went public on the Nasdaq in December 2020. The company, which he runs, is worth \$7 billion.

CLASS OF 2019

Naomi Osaka

THEN: Osaka, fresh off beating Serena Williams to claim the 2018 U.S. Open women's title, was ranked the No. 1 tennis player in the world at just 21 years old.

NOW: Osaka is the highest-paid female athlete ever, earning more than any previous such woman in both 2020 and 2021. While her ranking dropped to No. 13 in 2021, her star power and influence rose

when she pulled out of the French Open after being threatened with a fine for declining press interviews; she has since become a champion of mental health.

Alex Rodrigues

THEN: At age 19, he engineered a self-driving golf cart. Soon after, he won a Thiel Fellowship, dropped out of college and raised \$2 million to pioneer self-driving trucks. By 2018, his Embark Trucks had completed its first cross-country driverless haul and raised \$47 million.

NOW: Embark went public via a SPAC in November; at age 26, he's now the youngest CEO of a publicly traded company and worth a half-billion dollars. Embark has more than 14,000 preorders from companies.

CLASS OF 2021

Sam Bankman-Fried

THEN: His FTX cryptocurrency exchange had just raised \$40 million at a \$1.2 billion valuation.

NOW: Two huge fundraising rounds later—at an \$18 billion valuation in July and a \$25 billion valuation in October—Bankman-Fried is now the richest under-30 on the planet, worth \$26.5 billion.

“I was stunned and also energized. It felt like getting drafted into the big leagues. Being on the 30 Under 30 helped raise Dropbox's visibility.”

— DREW HOUSTON —

Kylie Jenner

THEN: The 18-year-old *Keeping Up with the Kardashians* star leveraged her 40 million-plus Instagram followers in 2015 to launch and promote Kylie Lip Kits, a lipstick-liner duo. The first batch of 15,000 kits was snapped up in minutes.

NOW: Jenner sold 51% of Kylie Cosmetics to global beauty company Coty Inc. for \$600 million in 2019. The beauty mogul, who

age 31, making her the youngest female CEO ever to do so and the world's youngest self-made female billionaire.

CLASS OF 2018

Vitalik Buterin

THEN: The inventor of the ethereum blockchain and cryptocurrency appeared on the list at age 23, when ethereum's market value was about \$30 billion and

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Across the planet, our 37 licensed editions span five continents, 25 languages and 13 time zones. They all share the same mission: celebrating entrepreneurial capitalism in all its forms.

CHINA



Tse Ping fronts *Forbes China's* list of the country's 100 richest people. His \$7.5 billion fortune comes from founding Hong Kong-listed Sino Biopharmaceutical, which gained FDA approval this year for an injection to fight chemotherapy nausea.

COLOMBIA

In October, President Iván Duque granted citizenship to Howard Buffett (*below*), the middle child of billionaire investor Warren. The 66-year-old philanthropist has contributed \$160 million to Colombia since 2008, initially teaming up with singer Shakira to feed and educate



GEORGIA

Oregon architecture firm ZGF is working with Georgian real estate developer m2 and CEO Nikoloz Medzmariashvili on a residential concept in Tbilisi. It will include more than 10 buildings encompassing 2,800 housing units, shops and more.



HUNGARY

Bestselling author and retired physician Gábor Máté, who hails from Budapest and lives in Vancouver, has established a clinical theory and training program centered on uncovering childhood trauma that may correlate to long-term health



INDIA



Forbes India's annual celebrity issue shines the spotlight on the film industry of South India—Telugu, Tamil, Malayalam and Kannada—whose box office revenue has leapfrogged that of Bollywood cinema.



ANGOLA

Beatriz Franck, a clothing entrepreneur who has three eponymous stores in Luanda, the country's capital, recently opened a \$1.5 million headquarters and academy aimed at building up Angola's fashion industry and supply chain.

ARGENTINA

Pfizer's manager for Argentina, Nicolás Vaquer, negotiated for months with President Alberto Fernández, finally agreeing in July to deliver the country 20 million doses of its Covid-19 vaccine by the end of the year.



BRAZIL

Brazilian singer and Latin Grammy winner Marília Mendonça, who appears on the cover of *ForbesLife Fashion*, died in a plane crash after the magazine went to press. The 26-year-old was en route to a performance in



CYPRUS



Justice Minister Stephe Dracos has a March deadline for establishing a fully operational Anti-Corruption Authority. A former insurance executive, she assumed the role from a predecessor who resigned in June, decrying the president's leadership in her

CZECH REPUBLIC

One of four women featured on *Forbes Czech's* ranking of 21 top CEOs, Ivana Tůmová joined snack maker Mondelez International in 1997 and today oversees five factories and 3,100 employees across the Czech Republic, Slovakia

FRANCE

Frédéric Jousset, cofounder of \$2 billion (2020 revenue) Paris-based customer relationship management provider WebHelp, now focuses on making art accessible through his \$5.6 million foundation, Art Explora, and \$113 million investment fund, ArtNova.



GREECE

Unicorn watch: Athens company Blueground recently raised \$180 million in capital and debt at a reported valuation of \$750 million. Cofounded by Alex Chatzieftheriou in 2013, it rents out and manages furnished apartments in 15 cities.



INDONESIA

Dharsono Hartono worked as a New York associate for JPMorgan Chase and PwC before starting PT Rimba Makmur Utama in Jakarta in 2006. It manages the Katingan Mentaya Project, which conserves large areas of peat forest that naturally consumes carbon dioxide, equal to removing 2 million cars from operation each



BOLIVIA

Sandra Bruno, 58, is the face of *Forbes Bolivia's* package spotlighting successful women over the age of 50. Since her father's death in 1993, she has run the family business, Cerabol, considered the country's pioneer in ceramic tile.

BULGARIA

Japanese investors have put about \$30 million into Leno, an eight-year-old Bulgarian fintech lender with offices in Sofia and Plovdiv. Board chair Nikolai Poppalov is looking to expand abroad.



ECUADOR



Forbes Ecuador calls Isabel Noboa the country's most powerful businesswoman. Descended from a leading banana exporter, she founded conglomerate Nobis Consortium in Guayaquil in 1997 and remains CEO. Holdings include a sugar mill, hotels and a shopping mall.



ISRAEL

Moti Ben-Yosef and his family headline *Forbes Israel's* list of Small Giants. Their farm south of Tel Aviv produces rare Moroccan argan oil, rich in vitamins beneficial to skin care. Small bottles retail for \$27; revenue is nearing \$100,000.

NICARAGUA



The U.S. has turned away or detained more than 49,000 Nicaraguan migrants this year, compared to 2,123 in 2020. The influx is expected to persist following the controversial election of President Daniel Ortega to a fourth term in November.

RUSSIA



A onetime Russian insurance billionaire, Sergei Sarkisov earned a daytime Emmy nod last year in his second act as a movie producer at the Moscow- and Hollywood-based company Blitz Films, which was started by his son.

SOUTH KOREA

Augmented-reality software from Seoul company Maxst powers 7,000 apps. One lets Hyundai Genesis drivers use a smartphone camera to see information about the car's features. CEO Jaewan Park expects \$6 billion in 2021 sales after a recent IPO.



UKRAINE

Ten years ago, Dmitriy Zaporozhets began GitLab in a Ukrainian abode that lacked running water. In October, the maker of the open-source-code collaboration tool began trading on the Nasdaq; its recent market cap was nearly



ITALY

Ugo Salerno helms \$570 million (revenue) RINA, a 160-year-old energy and shipbuilding conglomerate based in Genoa that recently announced it had signed a contract to help construct an offshore wind farm in Bulgaria.



JAPAN

At age 12, Kokona Hiraki became the youngest Japanese Olympic medalist, taking silver in park skateboarding at the Tokyo Games in July. Now, she tells *Forbes Japan*, she's mastering how to ride a bike.

LATVIA



Brothers Sergey (above) and Andrey Beskhnelnitskiy have built their Baltic dairy business into a regional giant. Their Food Union, which sells at least 80 ice cream flavors, has opened two factories in China and does about \$340 million in annual sales.

MEXICO

In October, Ritz-Carlton opened a luxury hotel and residential tower on the famed Paseo de la Reforma with stunning Chapultepec Park views. A 55th-floor home runs north of \$1 million.

POLAND



Athletes from eight countries, including Serbian tennis star Novak Djokovic, sported 4F apparel at the Tokyo Games. Founded by Igor Klaja, the outfit behind the brand has been fitting Olympians since 2008. It makes the list of the 100 Greatest Polish Private Companies for the third time.

PORTUGAL

Web Summit, the annual global tech gathering in Lisbon, returned to an in-person format in November with 42,000 attendees, down from 70,000 before the pandemic. Next year, says the nation's president, Marcelo Rebelo de Sousa,

SLOVAKIA



Aneta Kondelová and her husband co-own a furniture and home-goods business, Tempo Kondela, started in northern Slovakia in 1992. Today, 21 stores dot the country as the couple eyes expansion to Romania and expects sales of \$60 million this year.

SPAIN



For its November issue and annual list of the 100 wealthiest Spaniards, *Forbes Spain* commissioned and auctioned an NFT magazine cover created by Barcelona surrealist pop artist Sergio Mora. Bidding started at 1.5 ether, or about \$6,300.

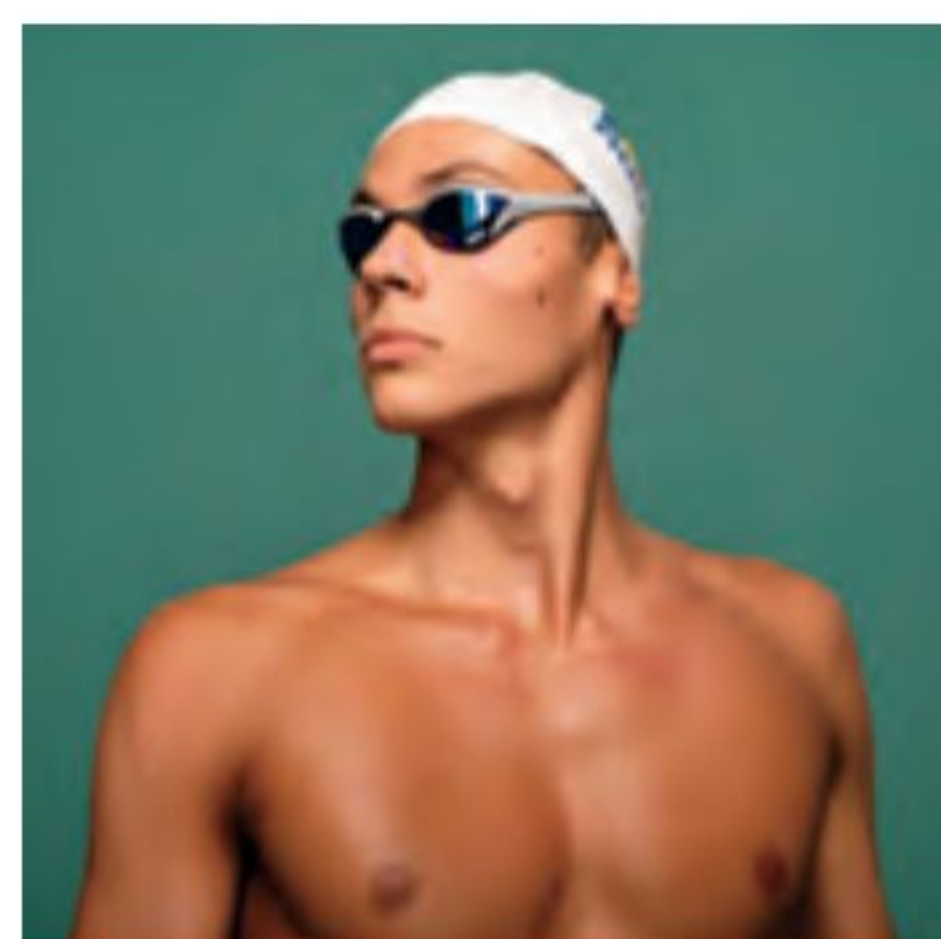
MONGOLIA



Enkhkhorvoo Dende started one of Mongolia's early e-commerce subscription businesses, Beauty Secrets, which ships monthly boxes containing five leading skin care products and is now doing about \$1.1 million in annual

ROMANIA

Bucharest native David Popovici, 17, is the world's fastest 100-meter freestyle swimmer under 18. He also ranks as the youngest honoree on this year's 30 Under 30 list from *Forbes Romania*.



SWITZERLAND

Racing Unleashed, based in the lakeside town of Cham, operates seven lounges in four countries where e-sport athletes or the general public can speed around a virtual circuit. India-born CEO Monisha Kaltenborn previously led Red Bull Sauber's Formula 1 team.



KAZAKHSTAN

Kazakh entrepreneur turned venture capitalist Murat Abdрахmanov, 58, has invested nearly \$14 million in 25 startups. In 2016, he put \$1 million into Almaty-based e-commerce company Chocofamily, which says it expects to finish the year with \$300 million in revenue.



NIGERIA

Aliko Dangote (below left) has amassed a \$13 billion fortune from Dangote Group, his cement, salt and sugar conglomerate. The richest African appears for a sixth time on the cover of *Forbes Africa*, this its 10th-anniversary issue.



SAUDI ARABIA



The first female executive at her family's Al Khobar-based holding company, Ahmad Hamad Algosaiibi & Bros, Samah Algosaiibi helped negotiate a \$1.9 billion settlement in September, resolving a decade-long outstanding debt.

THAILAND



The transition to remote work has been a boon for SIS Distribution, a Bangkok-based IT equipment retailer and wholesaler. Managing Director Somchai Sittichairichart expects 2021 revenue just shy of \$1 billion.

JAPAN: EMI; LATVIA: KASPARS FILIPS DOBROLOVSKIS; MONGOLIA: BATSAIKHAN S. FOR; ROMANIA: MATEI BUTĂ; RUSSIA: IVAN KAI DASH FOR FORBES; SOUTH KOREA: JUNG JUNHEE FOR FORBES; SWITZERLAND: RACING UNLEASHED; UKRAINE: STANLEY HU

HOW RETAILERS CAN USE TECHNOLOGY TO LOOSEN SUPPLY CHAIN CONSTRAINTS

BY SATTA SARMAH HIGHTOWER

Trying to fulfill online orders while relying on a shaky supply chain can be frustrating for retailers hoping to take advantage of the e-commerce boom.

One missed step, and a package may arrive late—or not at all. Those are high stakes for retailers whose reputations are based on trust and keeping promises, including delivering goods to homes and businesses on time.

But many retailers that have been affected by supply chain bottlenecks are responding by reimagining how goods move from factory to buyer, according to Melissa O’Keefe, group director of e-commerce product development and innovation at Ryder, a leading transportation and logistics company.

“Many companies are building resiliency and redundancy into their logistics networks,” she said. “They’re rethinking just-in-time inventory strategies. Companies are reconsidering their e-commerce growth trajectory, and they’re planning to ensure they have capacity to meet their e-commerce business growth. Many are expanding their operations to add fulfillment capacity in new geographies that get them closer to their customers.”

Understanding The Challenges

E-commerce sales totaled \$222.5 billion in the second quarter of 2021, increasing 9.1% over the same quarter in 2020, according to government data.

While the growth is welcomed, it ushers in huge logistics challenges for companies. Getting an order to a customer’s doorstep requires an intricate order fulfillment process, from the time the retailer receives an order all the way through shipping and processing returns.

“All of this growth has resulted in constraints in the e-commerce logistics partner networks,” O’Keefe said. “There are constraints in parcel delivery. Residential shipping carrier networks have faced

capacity constraints in the past year. We’ve seen significant increases in costs and also peak surcharges that apply.”

Limited warehouse space and labor shortages only compound the problem, and some consumers are feeling it in the form of long delays to get their merchandise—with delivery taking several weeks or even months in some cases.

Pursuing Digital Solutions

One of the most effective ways retailers can increase their fulfillment capacity is by working with a logistics provider to digitize their e-commerce fulfillment operations. By outsourcing operations, retailers can take advantage of the industry’s latest technologies, O’Keefe said.

Some logistics providers now use autonomous mobile robots to improve the efficiency of their picking operations, augmenting their workforce and reducing labor demands.

Ryder has leveraged APIs to streamline data sharing between its technology platforms and its customers’ systems. The company has added:

- Robust order management capabilities
- Inventory management alerts that help prevent stock-outs
- Back-order management capabilities
- Order sourcing rules that allow business customers to manage their orders using their own rules across geographically dispersed fulfillment centers

Ryder has also developed a new customer portal to give companies visibility into their entire fulfillment program, allowing them to take action on information that is constantly being updated.

“The goal is to provide easy access to our customers so they know what’s going on with their orders, with their inventory and with every aspect of their fulfillment program,” O’Keefe said.





EVER INNOVATING

Investing in the future of supply chain logistics & transportation

In business, new companies, technologies, and innovation are the seeds that sprout growth for the future. These seeds need to be nurtured to branch out and make a strong impact in the industry. At Ryder, through our venture capital fund, RyderVentures, we're creating an environment for these companies to grow. Together we will dramatically advance the industry with solutions linked to asset sharing, e-commerce fulfillment, next generation vehicles, data & analytics, and automation. Discover how Ryder can invest in your business at ryder.com/ryderventures.



SUPPLY CHAIN | DEDICATED TRANSPORTATION | FLEET MANAGEMENT SOLUTIONS



New Billionaire

BILBO BAGS A BILLION

The Lord of the Rings director Peter Jackson is officially a billionaire thanks to the sale of his Middle Earth-sized cash cow, the visual-effects firm Weta Digital.

Hobbits stand no more than four feet tall but carry the power to “shape the fortunes of us all.” So says royal elf Galadriel at the start of the first *Lord of the Rings* movie. That has certainly proven true for Peter Jackson. The director of that beloved trilogy and the later *Hobbit*

films, Jackson became a billionaire in November when he sold the tech unit of his Weta Digital visual-effects house to video-game software maker Unity Software for about \$1.6 billion.

The deal piled some \$975 million in cash and stock onto his three decades of Hollywood earnings, giving him an estimated net worth of \$1.5 billion. It also sent Unity’s stock up 15% in a week, boosting the fortunes of its two billionaire cofounders, Iceland-born David Helgason and German CTO Joachim “Joe” Ante, and propelling its CEO, John Riccitiello, into the billionaire ranks as well.

Jackson began toiling in Middle Earth in 1997 when he secured the rights to J.R.R. Tolkien’s fantasy epic. He would direct six films, which were huge successes: *The Lord of the Rings* trilogy (2001-03) nabbed 17 Oscars, including Best Picture and Best Director honors, and the franchise, including a trio of subsequent *Hobbit* films (2012-14), generated more than \$6 billion in worldwide box office receipts. Some \$1.1 billion came from DVD sales, with merchandise adding another estimated \$2 billion; Jackson got a piece of it all.

His most precious asset has been the technology used to bring Tolkien’s universe to life, including most famously Gollum, whose lust for the One Ring turned him from a lovable Hobbit into a monstrous creature. Weta contributed special effects to dozens of films and TV shows including *King Kong*, *Guardians of the Galaxy Vol. 2*, *Game of Thrones* and Marvel’s post-pandemic hit *Shang-Chi and the Legend of the Ten Rings*.

As for his new status, the New Zealand-born director didn’t comment, but an interview he gave to *Forbes* in 2004 suggests a Hobbit-like response: “In America, wealth is kind of a thing of pride. Here, it’s the opposite.”

Celebrities

BONEYARD BONANZA

Charlie and the Chocolate Factory author Roald Dahl punched his golden ticket to the hereafter more than three decades ago, but the streaming revolution has given him new life. In September, his estate

chose Netflix as his final destination, selling the Roald Dahl Story Company to the digital-content giant. The sale vaulted the *James and the Giant Peach* scribe to the top of our annual ranking of the highest-earning dead celebs for the first time. For full methodology and much more, see [forbes.com](https://www.forbes.com).

- | | | |
|---|--|---|
| 1. Roald Dahl
\$513 million (d. 1990) | 4. Charles Schulz
\$40 million (d. 2000) | 7. Elvis Presley
\$30 million (d. 1977) |
| 2. Prince
\$120 million (d. 2016) | 5. Dr. Seuss
\$35 million (d. 1991) | 8. Arnold Palmer
\$27 million (d. 2016) |
| 3. Michael Jackson
\$75 million (d. 2009) | 6. Bing Crosby
\$33 million (d. 1977) | 9. Gerry Goffin
\$23 million (d. 2014) |



Bing Crosby, Roald Dahl, Prince



Introducing ATEM Mini Pro

The compact television studio that lets you create presentation videos and live streams!

Blackmagic Design is a leader in video for the television industry, and now you can create your own streaming videos with ATEM Mini. Simply connect HDMI cameras, computers or even microphones. Then push the buttons on the panel to switch video sources just like a professional broadcaster! You can even add titles, picture in picture overlays and mix audio! Then live stream to Zoom, Skype or YouTube!

Create Training and Educational Videos

ATEM Mini's includes everything you need. All the buttons are positioned on the front panel so it's very easy to learn. There are 4 HDMI video inputs for connecting cameras and computers, plus a USB output that looks like a webcam so you can connect to Zoom or Skype. ATEM Software Control for Mac and PC is also included, which allows access to more advanced "broadcast" features!

Use Professional Video Effects

ATEM Mini is really a professional broadcast switcher used by television stations. This means it has professional effects such as a DVE for picture in picture effects commonly used for commentating over a computer slide show. There are titles for presenter names, wipe effects for transitioning between sources and a green screen keyer for replacing backgrounds with graphics.

Live Stream Training and Conferences

The ATEM Mini Pro model has a built in hardware streaming engine for live streaming via its ethernet connection. This means you can live stream to YouTube, Facebook and Teams in much better quality and with perfectly smooth motion. You can even connect a hard disk or flash storage to the USB connection and record your stream for upload later!

Monitor all Video Inputs!

With so many cameras, computers and effects, things can get busy fast! The ATEM Mini Pro model features a "multiview" that lets you see all cameras, titles and program, plus streaming and recording status all on a single TV or monitor. There are even tally indicators to show when a camera is on air! Only ATEM Mini is a true professional television studio in a small compact design!

- ATEM Mini.....\$295
- ATEM Mini Pro.....\$495
- ATEM Mini Pro ISO.....\$795



BUY, HOLD, SELL

Islamic Art

Alice Bailey

Head of Islamic and Indian arts at Rosebery's Fine Art Auctioneers, London



19th Century Mughal Jewelry

Antique Indian jewelry can be a bargain compared to European gems. This sarpach, a turban ornament that once belonged to the Maharaja of Patiala, sports 133 diamonds, 15 Burmese rubies and a natural pearl for just \$100,000.



Timurid, Safavid and Ottoman Texts

Written material from these West and Central Asian empires—especially illustrated Qur'ans and botanical and medical texts—will only appreciate. A 19th-century manuscript made for the Nawab (the ruler) of Sachin in British India recently sold for nearly \$300,000.



Ottoman Pottery

Production of these brightly hued items peaked 400 years ago, but demand for Turkish ceramics from the cities of Iznik and Kütahya is as high as ever: This Iznik dish, circa 1590, recently sold for \$6,000.

Flags

Thomas Del Mar

Director of Olympia Auctions, London; Sotheby's consultant



Regimental Flags, Colors and Guidons

Attractive to the historian and the interior decorator, regimental flags with rich histories can be found for a relative bargain, like this 18th-century silk standard from Britain's 96th Regiment of Foot (\$22,400).



Late 19th and Early 20th Century Flags

Interest in pieces from La Belle Époque is on the rise. This German standard from an 1898 Imperial visit to Ottoman Jerusalem fetched \$10,400.



The Historically Obscure

The relatively unknown story of Britain's 18th-century Lower Ashton Light Dragoon brigades, plus this guidon's generally poor condition, translated to a humble \$5,000 at auction.

Video Games

Jeff Maza

Head of video games, Metropolis Collectibles, New York



Super Nintendo Entertainment System Classics

The recent \$430,500 sale of an early *Sonic the Hedgehog* has Sega collectors in a frenzy. Avoid the crowd by anticipating the next trend: high-grade first-print SNES titles like *Teenage Mutant Ninja Turtles IV* and *Super Castlevania IV*.



Rare PlayStation Long Boxes

"Long box" editions, unique to the first PlayStation games, are going for \$60,000 to \$264,000 for titles like *Tekken* and *Resident Evil*. Iconic games, great box art and limited releases are the recipe for success.



Newer Titles

Inconsistency from companies that grade games' collectability means newer titles might flood the market at any moment. Pristine copies of *Grand Theft Auto: San Andreas* recently fell from \$10,800 to \$2,640 in just three months. Start selling.

Book Value

Leaders from the worlds of business, academia, entertainment and politics share what's on their bedside table.



Reid Hoffman

Billionaire cofounder of LinkedIn; partner at VC firm Greylock Partners



Like a Mule Bringing Ice Cream to the Sun

By Sarah Ladipo Manyika

As Morayo Da Silva nears age 75, she plans to get a tattoo to celebrate. Yet the DMV seems intent on taking her driver's license away.

When she injures her hip, her independence is further compromised. Still, the retired English professor is sure she still has many possible futures. Displacement is a recurring theme in the deliberate and eloquent *Like a Mule* (Legend Press and Cassava Republic Press, 2016). Morayo's relationships appear tenuous, and she's adjusting to an aging body that correlates less and less with who she knows herself to be.

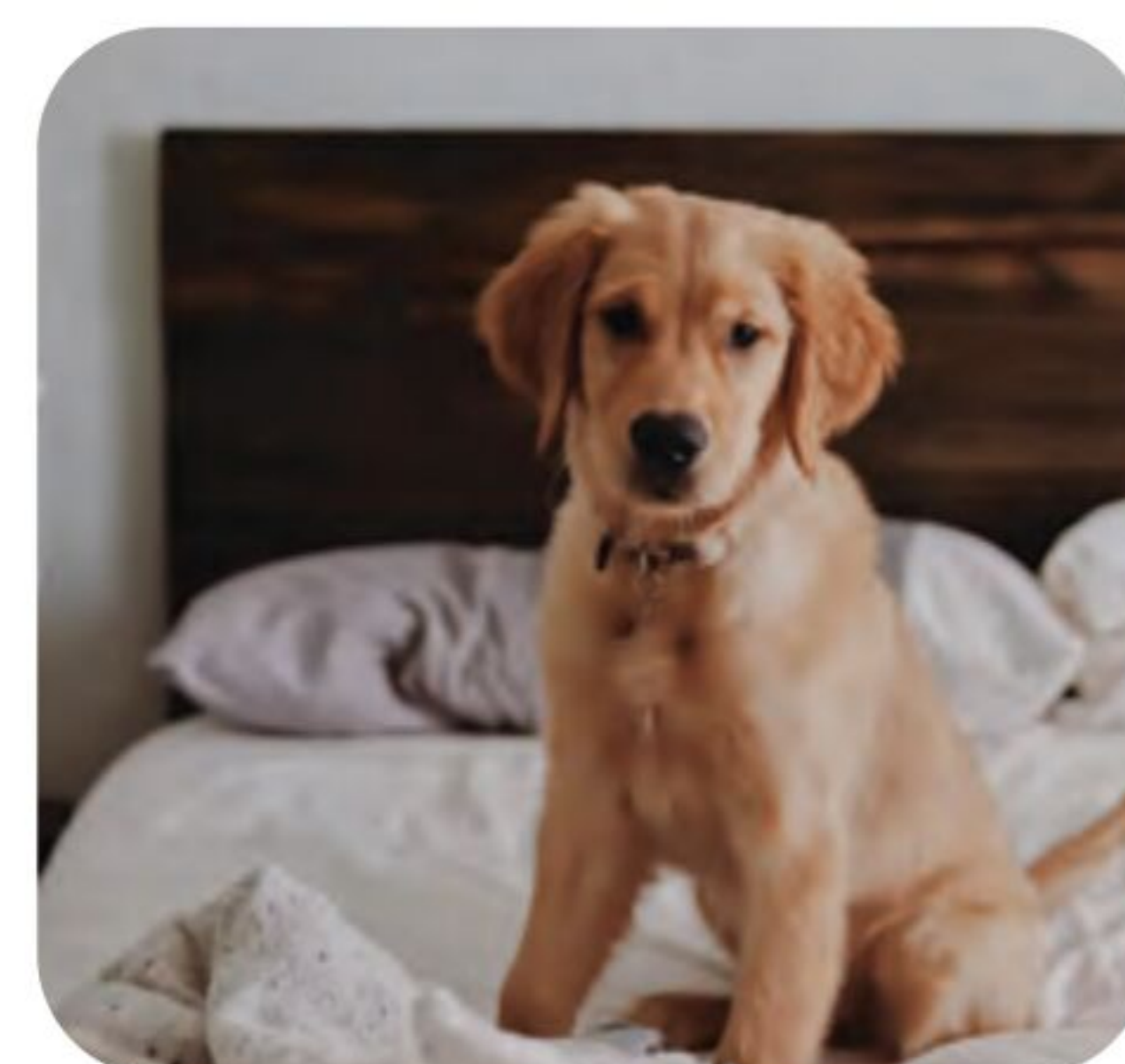
Another character is newly homeless. A third is navigating his wife's worsening dementia. But if displacement looms large, the desire to connect is there to counterbalance it. That's why I find this novel so compelling: We're so much more than we first appear—but it's only through interacting with others that we truly make ourselves known.

BUY, HOLD, SELL BY CHRISTIAN KREZNAR. ILLUSTRATIONS BY CHRIS LYONS FOR FORBES (LEFT); ILLUSTRATION BY SAM KERR (ABOVE)

What Will Be New For You In 2022?

Life requires a lot of choices. We're here to help simplify some of the most important ones, so you can get back to the things you care about

LESS STRESS. MORE LIVING.



LEARN



COMPARE



CHOOSE

how to prepare, grow and
protect what matters

the products and
services you'll need

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HOW PFIZER IS LEADING THE WAY TO CREATE A MORE DIVERSE, EQUITABLE AND INCLUSIVE WORKPLACE

By Satta Sarmah Hightower

Only 35% of corporate America's senior managers and 24% of its C-suite leaders are women, while women of color account for just 4% of C-suite leaders and 9% of senior managers. These figures suggest that advancing diversity, equity and inclusion (DEI) in the workplace will require companies to put more energy into the initiative than they have up to now. Pfizer, a 2021 Forbes "Best Employers for Women" list honoree, offers one model for how companies can move forward. Here's how the pharmaceutical company made equity one of its core values.

INITIATIVES THAT CAN CHANGE LIVES

"Our DEI efforts have to be bold, just like our purpose is. They're aimed at changing the lives of our people," says Payal Sahni Becher, executive vice president and chief human resources officer at Pfizer. Those efforts, she says, won't only give each employee a voice and ensure that Pfizer "look[s] like the population and patients" it serves: They'll also help drive innovation by harnessing the creativity of a wider range of talent.

Pfizer's DEI programs eschew an incremental approach in favor of precisely those bold efforts that Becher is calling for. The company, for example, in 2019 adopted metrics-driven opportunity parity goals that ensure fairness in promotions and horizontal movement across demographic groups, with the goal of increasing female and Black, Indigenous, Latino/Hispanic, People of Color representation in leadership roles by 2025.

Its Breakthrough Fellowship Program, a nine-year commitment designed to increase Black, Indigenous, Latino/Hispanic, People of Color representation at the company, launched this year with a group of 19 rising undergraduate fellows who participated in a 10-week summer internship at the company. Fellows are eligible for two years of full-time employment at Pfizer after they graduate from college. After that two-year period, the company will also pay for them to complete a full-time two-year MBA, MPH or MS statistics degree program and offer them a summer internship between the first and second years of that program. Finally, fellows can return to Pfizer for a permanent position upon the program's completion.

Pfizer aims to develop 100 fellows by 2025.

'A COMPANY THAT PUT ME FIRST'

"This is not just lofty goals without metrics," Becher says. "We have very clear metrics that we're measuring ourselves against." Pfizer, she says, wants "to move the needle, and we want to move it big."

By 2025, Pfizer aims to achieve a global workforce with 47% women at the VP level and above, increase Black, Indigenous, Latino/Hispanic, People of Color representation in leadership roles to 32% and double the population of Black and Latino/Hispanic employees within its U.S. workforce. Pfizer has already made significant strides in many of these areas. As of December 2020, the company had increased Black, Indigenous, Latino/Hispanic, People of Color and female representation at the VP level and above by 2.5% and 5.1% since 2019, respectively. Women now make up a third of Pfizer's executive leadership team.

"We have more women in leadership now than we ever have, and not just in our C-suite but at all of our leadership levels," Becher says.

Becher, whose family came to the U.S. as refugees from Afghanistan, understands firsthand the value of DEI initiatives. She joined Pfizer in 1997 through an internship program before being offered a full-time role. The company paid for her final year of graduate school, which Becher says was life-changing for her family.

"What I experienced was a company that put me first," she says.

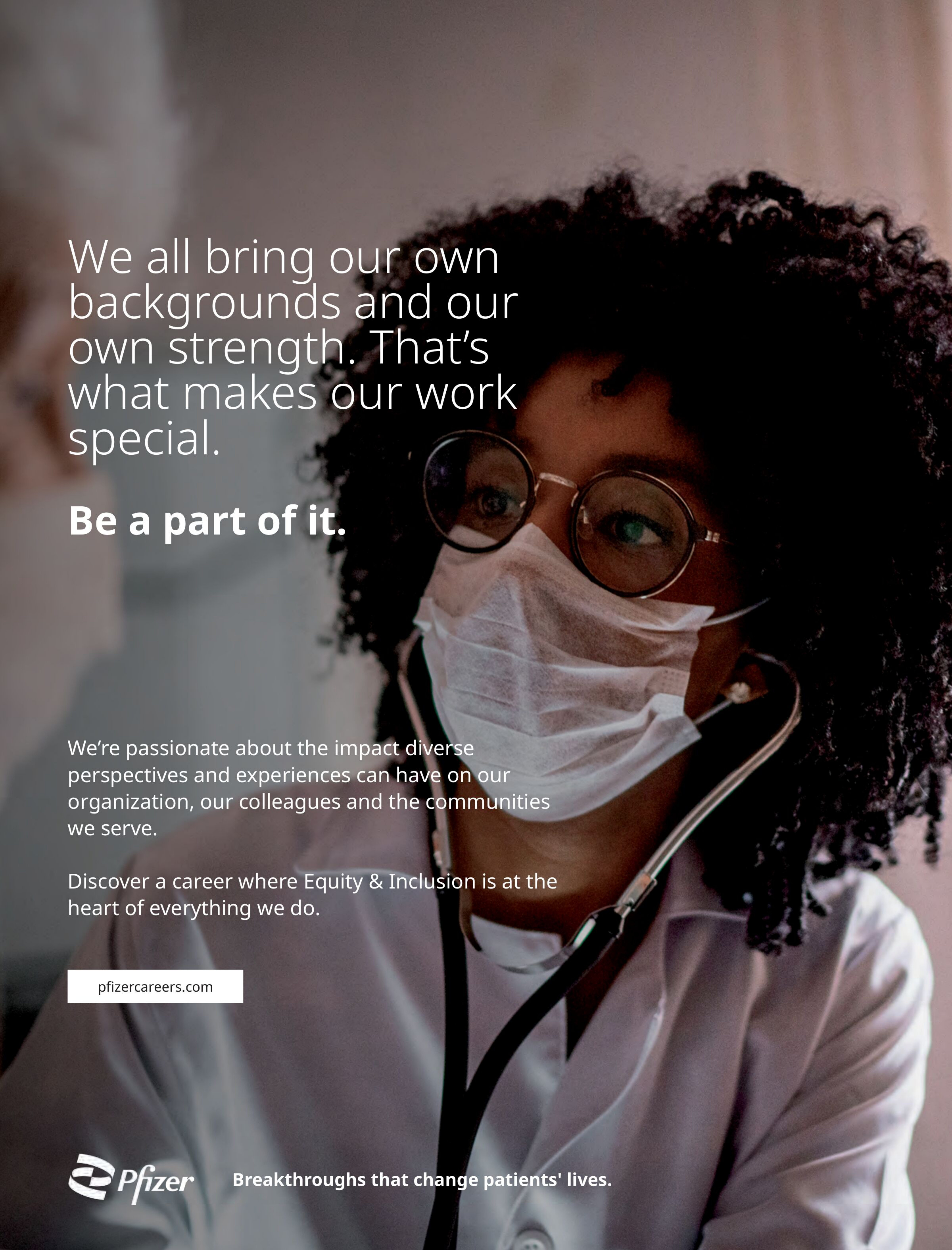
She says the support, encouragement and guidance she's received from allies of all backgrounds and from female mentors at Pfizer have helped her flourish at the company, and Pfizer is now nurturing a new generation of talented, diverse leaders.



"[We want to] make sure we're...the voice of change and that we're keeping our values front and center. When we say equity, we mean it. We want to make sure that we look exactly like what we're standing for."

PAYAL SAHNI BECHER

Executive Vice President and Chief
Human Resources Officer, Pfizer



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Conversation

BANKED MAN

Just 29, cryptocurrency exchange cofounder Sam Bankman-Fried, cover star of our October/November issue, has amassed a fortune topped at that age solely by Mark Zuckerberg. At the time of publication, Bankman-Fried was worth \$22.5 billion (good for No. 32 on his Forbes 400 debut; after another huge funding round he's worth \$4 billion more). That's due entirely to his exchange, FTX, and his relative lack of liquid assets helps explain why he hasn't yet poured much into "effective altruism" (the utilitarian notion of doing the most good possible), which he cites as his impetus for getting rich in the first place. Readers marveled: "Money being made so fast, only a matter of years before we see the first trillionaire," said @ricardo77 on Instagram. They gave the side-eye to Bankman-Fried's own crypto skepticism: "How do you try to change the future with something you don't believe in?" tweeted @ATLienZ404. And they lauded Bankman-Fried's acumen while throwing a little (undeserved!) shade at *Forbes*: "From #crypto underground to Boomer-press headlines," tweeted @cagezin. "That's my man!"

THE INTEREST GRAPH

1,292,380 The Forbes 400: The Definitive Ranking of the Wealthiest Americans in 2021

220,316 Next Billion-Dollar Startups 2021

192,210 Meet the World's Richest 29-Year-Old: How Sam Bankman-Fried Made a Record Fortune in the Crypto Frenzy

76,700 Meet Ramzi Musallam, Wall Street's Top-Secret Billionaire Investor

33,830 How Clever Deals Made Houston Rockets Owner Tilman Fertitta Billions Richer During the Pandemic

33,185 How Linda Alvarado Went from Manual Labor to Becoming One of America's Richest Self-Made Women

27,429 The Pope's Corruption Problems

15,132 **THE BOMB:** The \$30 Million Kitty: Meet the Investor Who Made a Fortune on Pet Food

THE DONALD GOES DOWN

After 25 straight years on The Forbes 400, Donald Trump slipped off in 2021: His \$2.5 billion fortune missed the cut by \$400 million. Readers' takes were piping hot. Who knew the former president could inspire such passion?

SHELLEY SEBEY:
"I'm sure he'll call it fake news and say he's worth more than Jeff Bezos. Heck, he might try to take credit for building Amazon."

@JOE_C_GILES:
"Off The Forbes 400 and about to be on the 10 Most Wanted."

@THEINDE72109330:
"[His net worth] was always inflated anyway. If this guy is a billionaire, then I'm Batman."

JEREMY SMITH:
"Finally, a politician who didn't multiply his wealth while in office."

@CRYPTONISM:
"Whatever. It doesn't necessarily mean he made less money. It could be that some people—like the new billionaires created by Covid—just passed him in wealth."

@KEEZ30:
"He invested in himself, and it was a terrible investment."

SYLWIA PAWLACZYK:
"His prior standings on that list were as legitimate as those *Time* magazine cover photos he had plastered around Mar-a-Lago."

@JONATHAN_777:
"Still richer than the previous 10 presidents combined."

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Dallas Education Foundation
The Discovery Center of Springfield
Friendship Public Charter School
Full STEAM Forward
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Great Oaks Foundation

- The High School for Recording Arts
Kairos Academies
Living School
Louisiana Key Academy
New Testament Christian Academy
New Way Global
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The winner will be announced in January 2022 during the Forbes 30 Under 30 / MIT gathering at the World Economic Forum in Davos, Switzerland.

DARE TO DO DIFFERENTLY

CONTRARIAN

INNOVATION

By Jeff Kauflin

Photograph by Sasha Maslov for Forbes

Boys in the Bubble

Startups are supposed to specialize, but **OPENSEA's** founders thrived by building a wide-open market for creating and trading all manner of NFTs, whether art, music or gaming. Now that they're centimillionaires and poised to become billionaires, they have other worries: competitors, fraudsters and the next crypto crash.

In March 2020, as Covid-19 began to spread, OpenSea founders Devin Finzer and Alex Atallah held a gut-check phone call. Their five-person startup had built a platform on which users could create, buy and sell all sorts of nonfungible tokens (NFTs)—computer files used to track ownership of unique digital assets like art and music on a ledger known as a blockchain. Yet 26 months after going live, they had just 4,000 active users doing \$1.1 million in transactions a month, which translated (given OpenSea’s 2.5% sales commission) to a paltry \$28,000 in monthly revenue. The NFT market had a “dead feeling,” recalls CTO Atallah, who conducted his side of the call from the basement of his parents’ Colorado home, where he had gone to work as New York locked down. Ominously, Rare Bits, a direct and better-funded competitor, had just announced it was folding. The pair set a do-or-die goal of doubling business by the end of the year—and met it in September.

Finally, in February 2021, the NFT market roused from hibernation—and went crazy. In July, OpenSea processed \$350 million in NFT trades. That same month, in a round led by Andreessen Horowitz, it raised \$100 million in venture capital at a \$1.5 billion valuation. In August, as NFT hype (and FOMO) reached a fever pitch, volume spiked tenfold to \$3.4 billion—an \$85 million commission windfall for OpenSea in a month when it likely burned less than \$5 million on expenses. Although transactions have since retreated to around \$2 billion a month, the platform now has 1.8 million active users and a dominant share of the market. It’s up to 70 employees and is scouting for dozens more, including much-needed customer service reps.

Recently, there’s been talk of another round of venture investment at a valuation that could reach \$10 billion. With a 19% ownership stake each, CEO Finzer, 31, and Atallah (a 2022 Forbes Under 30 honoree), 29, are centimillionaires on



Year of the NFT

Cofounders Alex Atallah (left) and Devin Finzer in OpenSea’s new SoHo office. The company, launched in 2018, is on track to exceed \$300 million in revenue this year, up from less than \$1 million in 2020.

the cusp of becoming crypto’s newest billionaires.

Yet Atallah was humble as he chatted in November at a restaurant in New York’s kitschy new Margaritaville Resort Times Square, sitting near its 32-foot Statue of Liberty replica, which hoists a cocktail instead of a torch. He was there for the third annual NFT.NYC convention, which boasted 5,500 registrants with 3,000 on the waiting list. Young enthusiasts prowled the hotel wearing Bored Ape Yacht Club sweatshirts—a tribute to a collection of 10,000 simian NFTs whose owners treat it as a social club as much as a collectible or investment.

You might say humility was at the heart of Finzer and Atallah’s successful strategy. Some advisors had urged them to specialize in an NFT niche—say, art, gaming or music. But they opted to build a category-agnostic platform because they didn’t think they were prescient enough to predict which NFT types would catch on.

Beyond casting a wide net, Finzer says, OpenSea has thrived simply by “being in the right place at the right time” and listening to users about what they want. The platform tracks NFTs on ethereum and other blockchains, and all purchases are made in crypto. Sellers can opt for a fixed-price or auction format. Artists can reserve a percentage of each resale price. Ultimately, Finzer sees the NFT ownership verification model working for

THE MAP LEADING TO FINANCIAL INCLUSION; HOW THIS MAN'S COMPASS FOR A HOLISTIC PAYMENT HUB IS MAKING THE FUTURE OF DISBURSEMENTS SIMPLE, SECURE AND AGILE.

Payments are meant to be the backbone of a digital transaction. Yet we are in 2021 and the payment experience is still antiquated for consumers who require disbursements. We're in a time where technology leads and carves our social habits. In a short period of time, AptPay has become a pinnacle for payments in North America and is creating a global benchmark for real-time domestic and cross-border payments. Through its coalition between FinTech and RegTech, AptPay has managed to solve an industry-wide concern of payments and regulations.

Shams Syed
CEO - AptPay



anything from concert tickets to real estate—he’s just not sure what will succeed when. “I’ve always had a pretty gray view of the future,” he says.

Despite its sudden success, OpenSea faces big and varied risks—from fraud and another NFT market bust to new competition. In October, Coinbase, the nation’s largest crypto exchange and an original investor in OpenSea, announced it will launch its own NFT peer-to-peer marketplace. Within weeks, Coinbase had 2.5 million sign-ups for its waiting list, and CEO Brian Armstrong was predicting the new business “could be as big or bigger” than its core crypto trading business.

OpenSea’s open-market approach heightens the risk of counterfeits, scams and fraud—just ask Amazon or eBay. For example, a scammer can copy an image of someone else’s art and sell it as an NFT on OpenSea. Finzer says the site is working on an automated way to spot fakes and has moderators who investigate suspicious offerings. Still, people can present problems too. In September, Finzer requested the resignation of OpenSea’s head of product after Twitter users discovered a crypto wallet linked to that executive was buying NFTs shortly before they appeared on the price-moving OpenSea homepage—in other words, he was allegedly frontrunning his own employer’s decisions.

While they come across as humble, OpenSea’s founders are hardly low on ambition. Raised in the Bay Area by a physician mom and a software engineer dad, Finzer says he was “devastated” to be rejected by Harvard, Stanford, Princeton and Yale. (He settled for Brown.) After a short stint as a Pinterest software engineer, he cofounded his first startup, Claimdog, in 2015 and sold it to Credit Karma a year later.

As a kid, Atallah, the Colorado-born son of Iranian immigrants, made spreadsheets to compare the attributes of everything from birds to browsers. After graduating from Stanford, he worked as a programmer before teaming up with Finzer. In January 2018 they entered the Y Combinator startup accelerator with an idea for paying users crypto to share their Wi-Fi hotspots. But at that point, CryptoKitties—the cartoonish virtual cats whose ownership records were digitally inscribed on the ethereum blockchain—had captured the public imagination. “It was the first time people who didn’t really care about crypto were suddenly getting interested in it for reasons other than flipping a coin. I thought that was really powerful,” Atallah says. They quickly pivoted to OpenSea and later moved their operation to New York City.

Much like Beanie Babies, their cloth-and-



The Vault

BOOM BURST BOOM

Things were looking frothy when we warned of “the great cryptocurrency bubble of 2017.” The combined market capitalization of cryptocurrencies had ballooned 870% to more than \$100 billion in just 12 months—more than six times the stock market’s rise during the height of the 1990s dot-com bubble.

“Buckle up for more blowups, more Mt. Gox-type fiascoes and tens of billions in losses for the people who are gambling in an area where there is precious little to protect them. The smart money, meanwhile, should do fine, vulnerable only to its own hubris. ‘Everyone’s like, token sales are complete madness right now,’ [crypto investor Olaf] Carlson-Wee says. ‘I don’t think we’ve seen anything relative to how big this could be.’”

—Forbes,
July 27, 2017

Spot on. The bubble burst within six months, but it ended up looking downright tiny compared to today’s runup: Cryptocurrencies have swollen to a total market cap of \$2.6 trillion—triple the 2017 bubble’s peak.

stuffing ancestors, CryptoKitties turned out to be duds as investment-grade collectibles—the supply was too great to make most of them worth much. After spiking in early 2018, interest in both crypto and NFTs went into hibernation.

What awakened the market in early 2021 wasn’t OpenSea’s doing. Instead, platforms like the billionaire Winklevoss twins’ Nifty Gateway captured attention with curated, high-quality art. Last March, Christie’s auctioned the NFT for digital artist Beeple’s “Everydays: The First 5000 Days” for \$69 million, the third-highest price ever paid for work by a living artist.

As NFTs fetched eye-popping prices, more and more ordinary folks decided they too wanted to become creators, collectors or speculators—and turned to OpenSea, with its anyone-can-be-an-artist ethos, built-in secondary market and handy features. For instance, the site has an advanced filtering system so users can find NFTs with the rarest—and theoretically most valuable—attributes. (Only 46 Bored Apes have solid-gold fur, and they command a hefty premium.) When a new NFT is created and recorded on ethereum, the site automatically spawns a webpage displaying it—a nice feature as NFTs became a status symbol, with people sharing their OpenSea pages and changing their Twitter profile pictures to an NFT they own. “It became this circular feedback loop, driven by envy and desire. And OpenSea really captured that market,” observes Richard Chen, a partner at VC firm 1Confirmation and an early OpenSea investor.

Dani, 27, a former fashion designer living in Georgia, has turned a \$17,000 investment in NFTs like the World of Women into a portfolio worth \$715,000. AJ, a 37-year-old former gaming company CEO from North Carolina, put less than \$10,000 into NFTs and now values his digital assets at \$1.3 million. He recently convinced his gastroenterologist brother to start buying NFTs. The brother, in turn, hooked his own buddies. “They’re pretty much doing colonoscopies and then checking their phones for new NFT drops,” AJ says.

Sounds like a bubble, all right, raising the question of how OpenSea will fare when it bursts. Responds Finzer: “We have a large amount of padding in case we need to weather a winter.”

FINAL THOUGHT

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—John Kenneth Galbraith



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NEMACOLIN

SINCE 1987

Culture, People, Teamwork: 84 Lumber's Maggie Hardy Knox On The Secrets Of Success



Photo by Jordan Millington

By Richard Sine

► 84 Lumber is the nation's largest privately owned supplier of building materials, manufactured components and industry-leading services for single- and multi-family residences and commercial buildings—and one of the best large companies to work for in America, according to *Forbes*. A family business founded in 1956, 84 Lumber is celebrating its 65th anniversary this year.

In an interview with *Forbes*, company president Maggie Hardy Knox discussed what makes her organization unique, how to weather hard times and profit from good, the advantages of family ownership and more.

What's the secret to 84 Lumber's success?

Three things: our culture, our people and our team-based competitive environment. Our steady organic growth is attributable to this culture. We've gone from over a billion dollars in sales in 1993, when I took the reins, to \$4.7 billion in 2020. We expect to hit a record \$7.5 billion in sales in 2021.

Our people want to get up early to make a difference. They want to be with a company that can truly give them autonomy to control their own destiny, to control their own earnings—we're very incentive-driven. I have a [store manager] who is going to make a life-changing amount this year.

My purpose is to take care of the families of those who work with me, and I will do whatever I can to [support them].

How has your company navigated challenges over the years?

When [big-box home chains] came in, I realized we were going to have to change the entire way we do business. We had to change the whole way that we did purchasing, [going] market by market, state by state, county by county. That first year, we went up to a billion in sales, but there was a lot of skepticism within my workforce. Yet we pulled through.

The housing market downturn of 2008 to 2010 provides another good example. We went from 10,000 people to 3,200 people in a matter of 18 months and from over 500 locations to 228. But we were going to save this company. When [a private-equity firm] said they were going to give me all this money at this very high rate, I was relieved. Everyone else said we were going to disappear, but they saw hope.

By 2020, when Covid-19 shut down the nation, we knew our team could get through any situation. 84 Lumber was deemed an essential business, and we pivoted to adapt to

new business conditions and to each individual customer. We made new investments in the business, including in growing and launching new training programs.

Then, when the housing industry began to skyrocket in 2020-2021, we empowered our people [to overcome] various difficulties, including labor and materials shortages and a high demand for building materials. I could sit and tell you ... about labor shortages and about an inability to get [certain] products, but that's not me and that's not our people. We won't accept that as a reason.

What's in the 84 DNA?

It's got a number of strands. We move fast. We cultivate an entrepreneurial spirit—our store managers run their stores as if they're their own businesses. We maintain partnerships with the highest-caliber vendors in the industry, and we value our relationships with our customers.

Our associates keep the culture alive by giving back to the next generation of associates who want to build a career. The industry is broad enough to where you can pick many career paths.

You're nearing the close of a great year. What's in the future?

I'm not in this to be the biggest but to be the best, with the best people, and to have peace of mind. The only way to do that is to have consistency in the culture and in the family values. I will continue to build, and build fast.

We're going to be expanding in both new and existing markets. We're also committed to keeping the company private to protect the family aspect of the culture. That's important to us, and it ensures we can continue growing our business and our associates the way we know works best.

About 84 Lumber | Founded in 1956 and headquartered in Eighty Four, Pennsylvania, 84 Lumber Co. is the nation's largest privately held supplier of building materials, manufactured components and industry-leading services for single- and multi-family residences and commercial buildings. The company operates nearly 250 stores, component manufacturing plants, custom door shops, custom millwork shops and engineered wood product centers in more than 30 states. 84 Lumber also offers turnkey installation services for a variety of products, including framing, insulation, siding, windows, roofing, decking and drywall. A certified national women's business enterprise, 84 Lumber was named by *Forbes* as one of America's Largest Private Companies in 2018 and one of America's Best Large Employers in 2019. For more information, visit [84lumber.com](https://www.84lumber.com).



CELEBRATING 65 YEARS IN BUSINESS

Founded in 1956, 84 Lumber is the nation's largest privately held building materials supplier and a second generation family owned company.

By **Chris Helman**

Photograph by **Chris Crisman** for Forbes

Greener Gas

52

CONTRARIAN • STRATEGIES

Environmentalists say fracking is hurting the planet. The **RICE BROTHERS** argue the opposite is true.

E



EQT Corp. is a venerable player in the energy business, going back 133 years to the earliest days of gas drilling in Pennsylvania, with headquarters in a granite-and-glass tower in Pittsburgh. But you'd never guess that from a visit to the office of Toby Z. Rice, its 39-year-old chief executive. Rice works out of a converted taekwondo studio upstairs from a state-run liquor store in suburban Carnegie, Pennsylvania, 15 minutes away from the city center. The dojo features a life-sized Iron Man sporting a gorilla mask on its head, graffiti-inspired art and a "Don't Tread on Me" Gadsden flag.

How did this unconventional Millennial end up running the country's largest producer of natural gas? By teaming up with family, lucking into the Marcellus shale formation at the right time and making very big bets.

Toby Rice's partners in gas exploration are his brothers Daniel, 41, and Derek, 36. The capital that launched

Three Men and a Drill

Brothers Daniel, Toby and Derek Rice at a Greene County, Pennsylvania, site where they plan to drill 10 wells, each more than two miles long, to tap 3,000 acres of shale from 25 surface acres.



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them was \$70 million in loans from a trust funded by their father. They have done well parlaying that stake; the three are now worth more than \$700 million.

The Marcellus is a shale deposit stretching underground from New York to West Virginia. Fracking technology made this layer of rock valuable overnight, just at the time the brothers were getting into the gas business.

Toby, Daniel and Derek grew up in Boston, living with their mother after their parents divorced. The boys played baseball and learned about business watching their entrepreneurial family of Armenian-immigrant cousins, aunts and uncles. Mom was a caterer, while their father, Daniel Rice III, managed a natural-resources portfolio at BlackRock. He made a windfall in hedge fund performance fees and decided his sons should do something big with it. “He planted the seed in our head,” Daniel the younger says.

But first they had to prepare. Daniel learned about oil and gas at Tyco, Transocean and the investment bank Tudor, Pickering, Holt & Co. Derek became a petroleum geologist, specializing in the new field of drilling shale formations. Toby, an All-American college baseball player who didn’t get drafted, worked as a roughneck on a Texas oil rig making \$9 an hour (plus \$2 in safety pay if everybody kept their fingers) and quit work on a master’s in hydraulic fracturing when the trio formed Rice Energy in 2007.

This was in the early days of the fracking revolution. There had been one big shale gas field developed at that point, the Barnett, near Fort Worth, Texas. The brothers went after the Marcellus shale of Pennsylvania, as much larger operators like Chesapeake Energy were also starting to lease drillable land there. Toby lived out of his truck, tracking down landowners to make deals to lease property passed over by the big guys.

“I’ve sat at more kitchen tables with more farmers and landowners than any politician in this region,” Toby says. Adds Daniel: “You start layering scraps onto scraps, and suddenly you have room for four wells.” Their dad stopped paying attention to the numbers in 2009, after questioning a \$2,300 check Toby had written to the 4-H Club of Washington County, Pennsylvania. He had won a charity auction for a rabbit, outbidding his leasing rival Range Resources. It gets you noticed. “We stormed the basin,” Derek says.

Frackers use steerable drill bits that bore down two miles to intersect a thin layer of hydrocarbon-bearing shale, then turn sideways through



HOW TO PLAY IT

By William Baldwin

Own a piece of the midstream via a fund that contains shares of companies transporting fuel, mostly underground. Of course, in 50 years nothing will be left of this fossilized business, but in the meantime there are nice dividends.

Tortoise North American Pipeline (annual expense 0.4%) yields 4.5%. Hold it in a taxable account, where you can get some mileage out of the fact that more than half the distribution is not immediately taxable. This fund is a better choice than the more popular **Alerian MLP** (0.9%), which suffers from a stiffer management fee and a potential corporate tax liability.

William Baldwin is Forbes' Investment Strategies columnist.

the shale layer. After cementing pipe into the hole, the driller uses pinpoint charges to blast holes in the pipe, then fractures the rock by injecting millions of gallons of water mixed with sand down the pipe at high pressure.

The Rice brothers believed in overdoing it—blasting a ton of sand per foot of lateral distance, triple what others used. Shale wells in the Barnett were considered big if they came online at 4,000 MCFs per day. (An MCF, or 1,000 cubic feet, has the energy content of 8.6 gallons of gasoline.) Rice Energy was cranking out Marcellus wells doing 30,000 MCF per day.

“We were just hoping for something as good as the Barnett. Instead, we were early into the biggest natural gas field in the entire country,” says Derek, who lived in a trailer on rig sites and showered at truck stops. The brothers shared a meal with every new employee and named drilling projects after comic book heroes.

The trio raised \$1 billion in a 2014 public offering for Rice Energy, with Daniel serving as chief executive, and another \$400 million for a sister entity, a partnership that owned pipelines. Derek says he knew they weren’t smarter than anybody else: “Clearly our peers were going to copy our designs. And then supply is going to go through the roof.” Indeed, gas production out of the Marcellus has exploded, to 35 billion cubic feet (BCF) a day, nearly a third of the U.S. total.

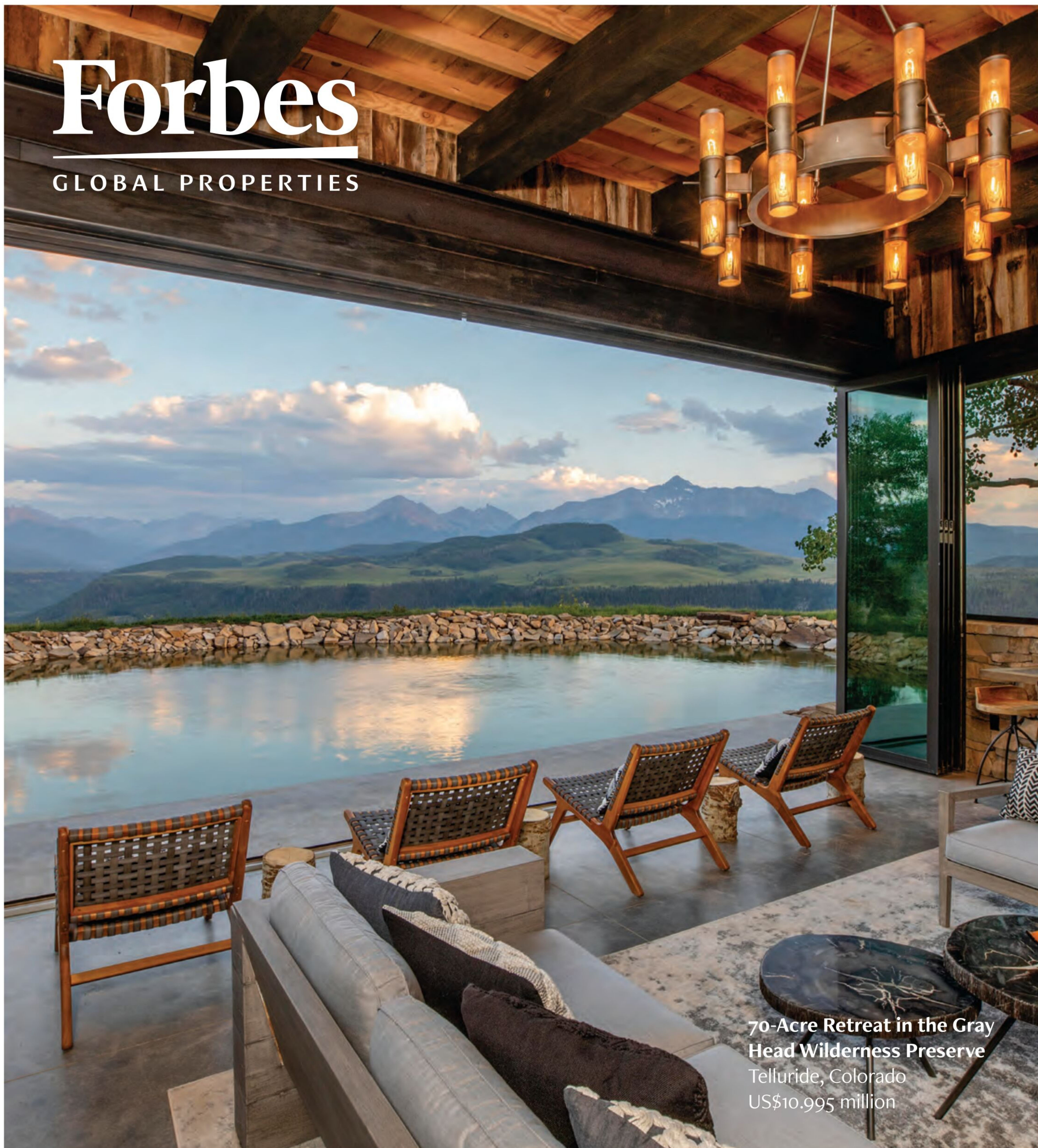
“Mentally we were prepared to run this company forever,” Daniel says, but in 2017 EQT made a generous offer: \$6.7 billion in stock and cash, plus the assumption of \$1.5 billion in debt. The Rice family got about \$200 million in cash and nearly 3% of EQT shares. EQT Midstream Partners acquired the Rice-founded pipeline partnership for another \$2.4 billion.

But soon after the deals closed, the Rices started getting calls from unhappy shareholders. Under CEO Robert McNally, EQT had overspent its capital budget by \$300 million. It was drilling bad wells where Rice had delivered barnburners. “We gave them their drilling schedule for three years,” Derek says. “They didn’t know what they were doing after three months.” EQT’s share price fell 45%.

Time for a proxy fight. Institutional investors backed the Rice slate of seven board members, who won 80% of the vote. In July 2019 McNally was out and Toby Rice was in. (Daniel is on the EQT board; Derek is an advisor.) The new boss shrank staff by a quarter, to 650, and invested in software and sensors. His Salesforce-enabled dashboard lets him see the conditions of 3,000

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Greener Gas Cont.

wells at 600 locations across 1.6 million acres.

In recent months EQT has acquired Chevron's Marcellus operations for \$735 million and Alta Resources' for \$2.9 billion. Those expansions vaulted the company to daily gas production of 5.5 BCF a day, ahead of No. 2 ExxonMobil.

Big bets are sometimes big mistakes. It's common for commodities producers to use futures and options to presell production volumes and lock in prices. Toby overdid it with his hedges and was taken aback by this year's runup in gas prices. His option trades took \$3 billion out of 2021's profits. But after adjusting its hedges, EQT is on target in 2022 to deliver \$2 billion in cash flow (net income plus depreciation less maintenance-level capex) on revenue of \$5 billion, analysts says. Its shares are up 40% since Toby took over, trailing some industry peers.

Many environmentalists, and a significant number of politicians, would like to put frackers out of business. Look at the numbers, the Rices retort: The shale gas revolution is the biggest reason annual U.S. carbon emissions have dropped nearly 1 billion tons since 2005, as power plants switch from coal to natural gas. Over the same period, China has increased its annual emissions by 4.7 billion tons, with coal use surging. EQT is eyeing the potential to liquefy Marcellus gas and export it out of the Philadelphia area. If that fuel gets to Asia and displaces coal, it will help mitigate climate change.

What about leaks of methane, a greenhouse gas more potent than carbon dioxide? Toby Rice pulls up a dashboard displaying details of a \$20 million program to replace 9,000 pneumatic valves at well sites with electric valves that leak almost no methane. He has enlisted Project Canary, a monitor of industrial emissions, to install the latest in laser-based sniffers. Canary cofounder Chris Romer boasts that these sensors are so good they can tell if a rig worker ate beans for lunch. It costs 2 cents per MCF to certify gas as responsibly produced. But that certification can fetch a premium of 3 to 13 cents per MCF.

Shares in EQT represent less than a quarter of the Rice brothers' fortune. Via Rice Investment Group, the three have sponsored two special purpose acquisition companies. "We're not going after popular things like wind and solar. We're going after things that make a difference," Derek says. One of those SPACs was for Archaea Energy, one of the biggest operators and developers of projects to capture fugitive methane that emerges from decomposing garbage in landfills. Catching such gas generates big tax credits, enough to

Little Big Picture**TREASURE SHIPS**

Just two years ago, exporting American liquefied natural gas (LNG), most of it produced by fracking, was a terrible business, with most exporters barely breaking even. Now, thanks to a pandemic-induced energy crisis, it's a license to print money. Here's what the profit margins are at three major import destinations.

**TOKYO**

2019 LNG price:
\$6/MCF*

November 2021:
\$34/MCF

**Current gross profit
per tanker: \$87 million**

ISLE OF GRAIN, U.K.

2019 LNG price:
\$5.1/MCF

November 2021:
\$32/MCF

**Current gross profit
per tanker: \$80 million**

DAHEJ, INDIA

2019 LNG price:
\$5.7/MCF

November 2021:
\$34/MCF

**Current gross profit
per tanker: \$87 million**

* November spot price or nearest future. Cargo values for average-size LNG tanker.
Sources: ICIS, Platts LNG Daily, U.S. Energy Information Administration

yield \$15 of revenue per MCF, versus \$5 for regular gas. "We sell a decarbonized energy product to people who have to use fossil fuels," says Archaea founder Nick Stork, 37. The Rice brothers own a quarter of the shares, worth \$600 million.

Naturally, Toby feels he still has something to prove. That will surely require outgrowing the converted taekwondo studio. In his Dodge truck, he takes a visitor on a tour of a rundown mill complex on the banks of Chartiers Creek and Whiskey Run at the heart of Carnegie, the little town named after Pennsylvania's most famous steel man. With so many mills shut down, its population is down by a third from its peak, but Toby foresees a revival. He wants to repurpose and rebuild a collection of warehouses and factories, creating spaces where staff will want to come to work even if they don't have to, where they can help build what he calls a "shalennial" culture. "We will get back to doing lunch with every new hire," he says. 📍

FINAL THOUGHT

"ALL NEW CLEAN ENERGY ISN'T REPLACING DIRTY ENERGIES; IT'S BEING ADDED ON TOP OF THEM."

—Jason Hickel



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The Ranch • US\$64.5 million
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 David Kramer • info@davidkramer.com +1 310.691.2400 • DRE 00996960
 Jeff Hyland • jeff@hiltonhyland.com +1 310.278.3311 • DRE 00389584
 Drew Fenton • drew@drewfenton.com +1 310.858.5474 • DRE 01317962



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Marathon Man

Across America, scores of municipal pension funds remain scandalously underfunded. But not the pension fund of Tampa's police and firemen, thanks in large part to **JAY BOWEN**, whose no-frills approach to stock picking has protected and served them for more than 45 years.



H

▼

Harold J. Bowen III has competed in so many triathlons he has lost count. At age 59, he's training for his twelfth Escape from Alcatraz race, which means that next June he will swim 1.5 miles across San Francisco Bay, ride a bike 18 miles to Golden Gate Park and run eight miles to Marina Green. Bowen describes his endurance-sports obsession as a "productive addiction," because many years ago he realized

that exercise would help him combat his attention deficit disorder.

"I will keep at it as long as I'm walking," insists Bowen, lean and tall with a slight Southern accent.

As the sole asset manager of Tampa, Florida's firefighters' and police officers' \$2.7 billion pension fund, Bowen has staked his success on focus and stamina. His firm—Bowen, Hanes & Company—is not only the first responders' sole asset manager, but the pension fund makes up nearly 80% of the Atlanta money manager's \$3.5 billion in assets.


In an industry in which diversification is foundational, Bowen is an outlier. His fund's balanced strategy—a mix of roughly 70% equities, 30% fixed income—has returned 15% (net of fees) over

Little Engine That Could

Bowen, Hanes president and CIO Jay Bowen at Tampa's Firefighters' Museum. More than 3,500 first responders are counting on him.




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SAN DIEGO ZOO

the last three years and 13.5% over the last five years, versus 13.7% and 12.4% for the benchmark index, respectively. That puts the boutique manager in the top 1 percent of comparable pension plans, according to data from the Wilshire Trust Universe Comparison Service. Over 47 years the fund has logged equity returns of 14.8%, outpacing the S&P 500's 12.6% total return. In the last year, Tampa's police and firemen have been treated to a 32% return. Even more importantly, actuarial reports show that their pension is 94% funded, compared to 71% among municipal pensions, according to Wilshire.

"It's tragic to say Tampa is the exception and not the rule," says Bowen, with a hint of hubris, over a salmon salad lunch in historic St. Augustine, Florida. "We don't get involved in any type of pool funds, private equity or hedge funds. We are unconventionally conventional, and it's boring, but it's also high-quality and long-term in approach."

"Jay" Bowen, as he's known, inherited his pension management operation from his father, Harold J. Bowen Jr., who founded the firm in 1972 but had courted the Tampa pension fund since the '60s. Bowen III's approach is very much "if it ain't broke, don't fix it." Like his late father, he uses a top-down "thematic" method to picking sectors and individual, mostly large-cap blue chips, typically with dividends. Another key to his firm's success is the 25-basis-point fee he charges Tampa, about half the industry average.

An English major who graduated from UNC Chapel Hill in 1984, Bowen joined his family firm in 1986. In 1989 he wrote a thesis on international economics at the London School of Economics and later spent time doing research in Washington, D.C., at the Cato Institute, a libertarian think tank.

"My time at the LSE and Cato made me realize how important monetary policy is to the markets," he says. "There are other important policy regimes to monitor—regulatory, tax and trade policy—but monetary policy is the granddaddy of them all."

In the 1980s, Bowen, Hanes used the economic backdrop of falling interest rates and declining inflation to buy winners like Campbell Soup and Coca-Cola. In the '90s, as a new global economy emerged after the fall of the Berlin Wall, Bowen's biggest holdings were in companies that would benefit from globalization, such as General Electric and Colgate-Palmolive. In the early 2000s, he saw opportunity in China's rapid growth and its voracious appetite for natural resources, making big bets on mining companies INCO, which



HOW TO PLAY IT

By Jon D. Markman

Many valuable tech companies are hiding in plain sight, masquerading as stodgy industrial firms. The best way to play this trend is Schlumberger, the giant oil-well services conglomerate. Since 2017, it has been working with Google Cloud to build an oil-and-gas tech platform based on AI and software simulation. Executives believe Schlumberger can transition most of its 1,700 software clients to the digital platform over the next few years, creating new revenue streams. For the first nine months of 2021, free cash flow reached \$1.7 billion, a gain of 95%. Shares could trade to \$50 during the next 18 months, a gain of 56% from current prices.

Jon D. Markman is president of Markman Capital Insight and editor of Fast Forward Investing.

was sold to Brazil's Vale in 2006, and BHP Billiton. Post-Financial Crisis, Bowen gauged which sectors the Fed's easy-money stance would favor and loaded up on S&P 500 momentum giants Apple and Microsoft but also consumer staples such as PepsiCo and Procter & Gamble.

Bowen's current picks focus on tech companies disguised as industrials. In other words, new technologies like AI, the internet of things (IOT) and 5G are changing the prospects for industrials like Charlotte, North Carolina's Honeywell, once best known for making home thermostats. Last November, Honeywell, a market leader in aerospace, invested in Trinity Mobility, an Indian company whose IOT apps will soon be put to work in so-called smart cities. Honeywell also paid \$1.3 billion a year ago for life-sciences software company Sparta Systems.

Other less-obvious technology plays he favors include Johnson Controls, Union Pacific, Tele-dyne and Corning, which as the largest global fiber-optic cable manufacturer profits from the growth of 5G networks. Corning is also a major supplier of the advanced glass used in displays for iPhones, flat-panel TVs and laptops.

"A lot of these companies are selling at either market multiple or below, and they have strong balance sheets and attractive yields," Bowen says, noting Honeywell's 1.8% dividend yield.

His approach is not without hiccups. He has long held Swedish telecom giant LM Ericsson, whose stock has languished for more than a decade and is down 9% year-to-date. "Their latest problems emanate from their Chinese exposure, but I haven't given up on Ericsson," Bowen says. "It's right in the heart of 5G equipment, and there are not too many players in that area."

Although Covid-19 has had little effect on Bowen's investment approach, he has embraced the work-from-home ethos, having moved his home and main office to Ponte Vedra Beach, just outside Jacksonville. His largest account is now about three hours away by car.

"Big public pension plans will usually have 20 or 30 managers," says Bowen, who notes that he has signed up a few other pension funds, including that of the employees of coastal Glynn County, Georgia. "We're lucky to be involved with a fund that views us as their core unconstrained manager, letting us pretty much do what we want." **F**

FINAL THOUGHT

"CONCENTRATING INTENTLY ON ANYTHING IS VERY HARD WORK."

—David Foster Wallace

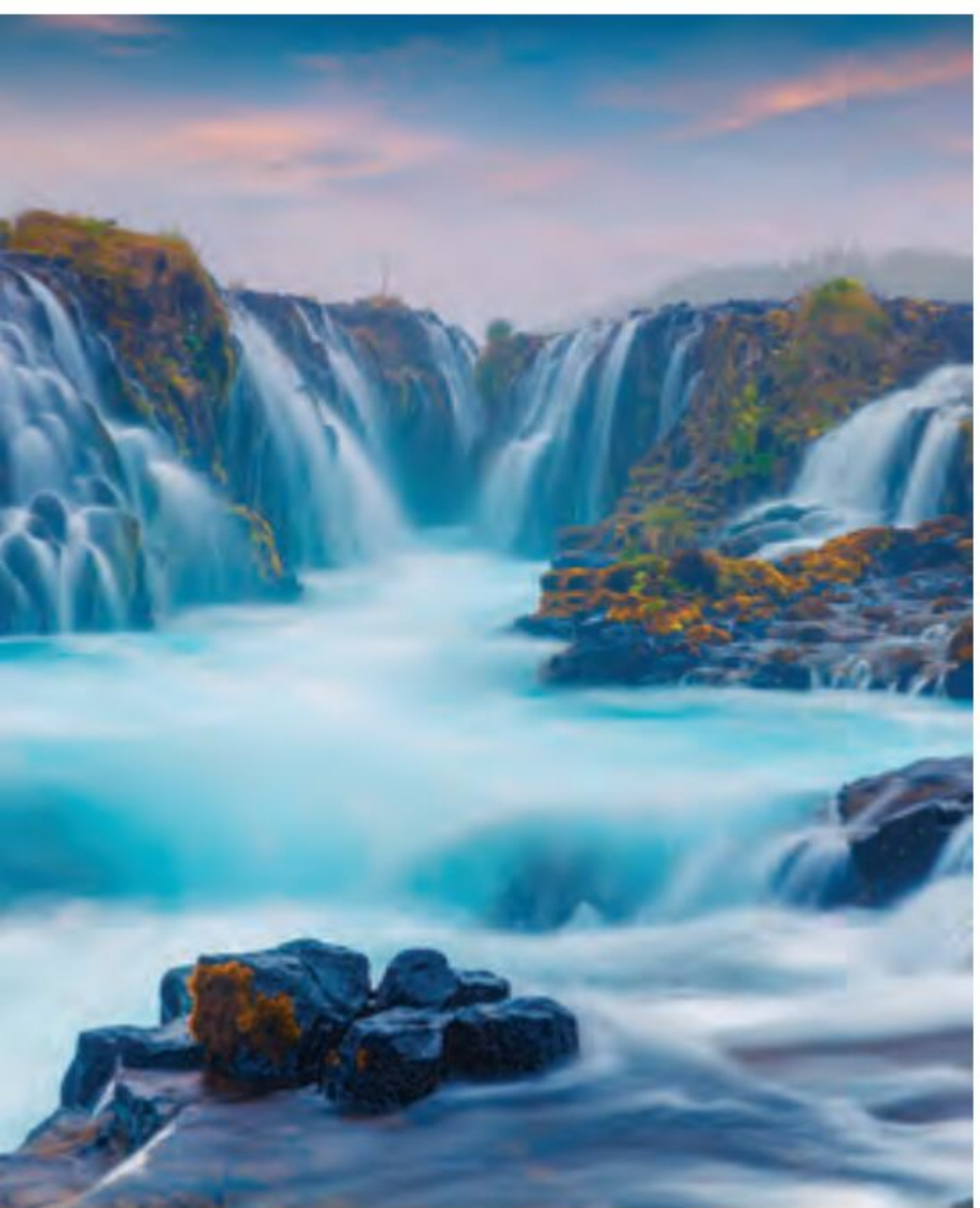


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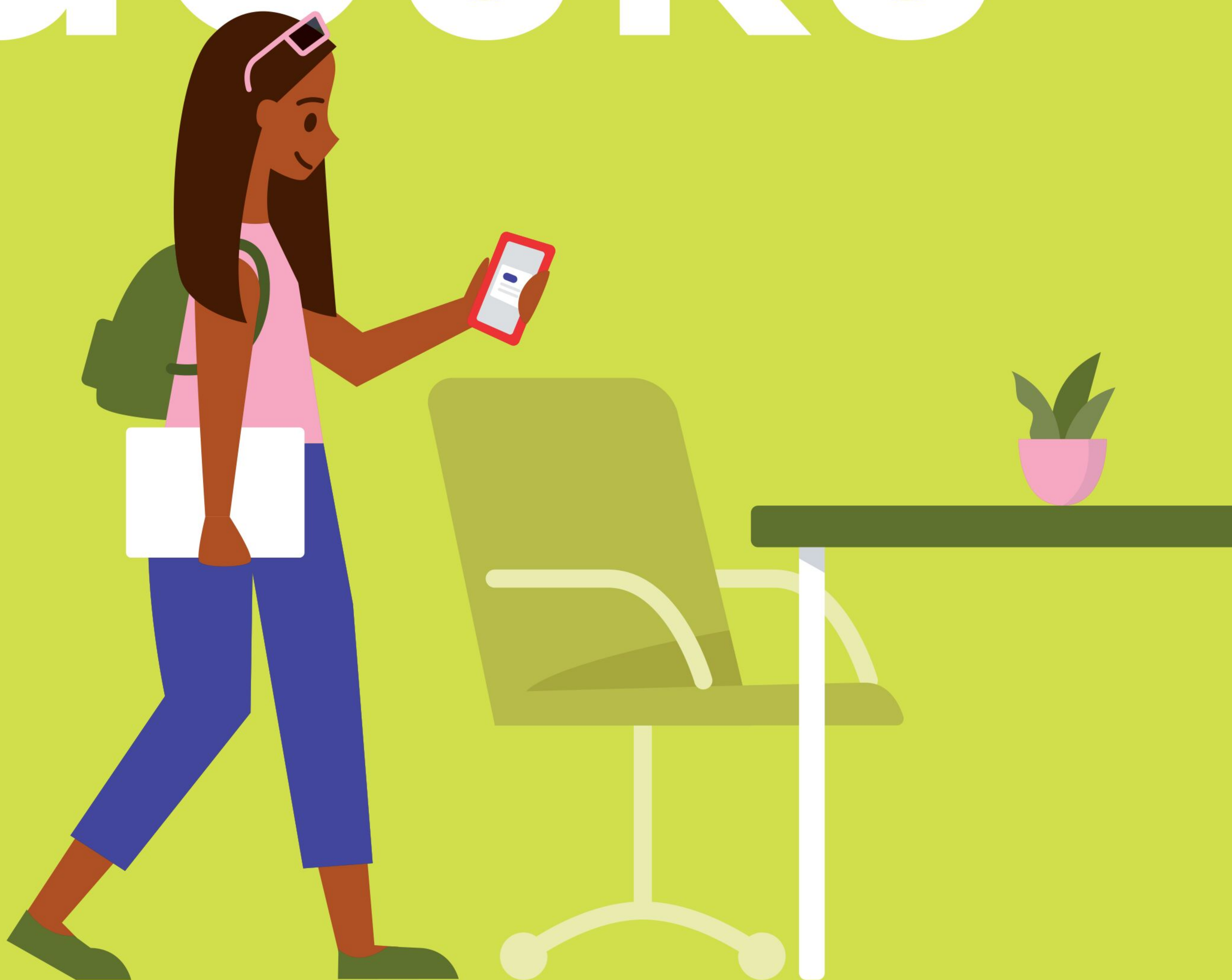
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rooms



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THE LIST



Forbes

30

30

UNDER

WE PUBLISHED THE first edition of the Forbes 30 Under 30 a decade ago, with one clear goal: to identify the new guard, the young innovators, trailblazers and disruptors remaking our world. That first list featured names like Kevin Systrom, soon to sell Instagram to Facebook for \$1 billion; Daniel Ek, who had just launched Spotify in the U.S.; journalist Ronan Farrow, years before he exposed Harvey Weinstein in the *New Yorker*; and actor Donald Glover, then mostly known as a cast member in the cult comedy *Community*.

Much of 2022 was being freshly created by this group back in 2012. Ten years from today, it's a good bet we'll all be living in the new world now being imagined by the 600 entrepreneurs, innovators and entertainers that make up our 10th anniversary class. The future has never looked so bright.

EDITED BY
ALEXANDRA WILSON WITH ALEXANDRA STERNLICHT

PHOTOGRAPHY BY
GUERIN BLASK FOR FORBES

MIRANDA COSGROVE

Age: 28 • Actor

The 2003 film *School of Rock* gave Cosgrove her big-screen debut at age 10, but her career really took off a few years later when she was cast as the titular character, Carly, in the hit Nickelodeon series *iCarly*. By 2012 she was pulling down \$180,000 per episode, making her the highest-paid child actor (a Guinness World Record that still stands). But something was missing. "I didn't have any creative control over what I was doing," she says. Having attended the University of Southern California, she's now an executive producer on the 2021 Paramount+ *iCarly* reboot. ViacomCBS CEO Robert Bakish has called out the show for being a leading driver of subscriptions in the streaming wars. "I knew from a really young age how the executive producer of the show pretty much got to decide almost every aspect," Cosgrove says. "Now I get to have a say in everything."

—Maggie McGrath and Lisette Voytko

HOLLYWOOD AND ENTERTAINMENT

- Celestine Au, 28**
Agent, ICM Partners
- Karen Chee, 26**
Writer
- Miranda Cosgrove, 28**
Actor
- Alexa Dectis, 28**
Associate Counsel,
Skydance Media
- Austin Denesuk, 29**
Agent, Creative Artists
Agency
- Barbie Ferreira, 25**
Actor
- Antonia Gentry, 24**
Actor
- Karam Gill, 27**
Filmmaker
- Xochitl Gomez, 15**
Actor
- Jalyn Hall, 14**
Actor
- Danny Kim, 29**
Senior Data Scientist,
Whip Media
- Kyung Sok Kim, 29**
Director
- Chelsea Kreps, 29**
Agent, WME
- Greg Kufera, 29**
Herman Phillips, 24
Cofounders, Cinapse
- Amira Lewally, 28**
Supervising Producer,
A+E Networks
- Mohan Mandali, 27**
Producer, Fabel
Entertainment
- Xolo Maridueña, 20**
Actor
- Phoenix Maulella, 28**
Director, Mass Appeal
- Aaron Millberg, 29**
Agent, United Talent Agency
- Liv Moore, 27**
Manager, Documentary and
Music Strategy, Netflix
- Alyssa Navarro, 27**
Manager, the Walt Disney
Studios
- Ben O'Keefe, 27**
Head of Diversity and Impact
Production, Creator+
- Siena Oberman, 27**
Founder, Artemis Pictures
- Mitch Roberts, 26**
Founder, EVO
Entertainment Group
- Naomi Shah, 26**
Founder, Meet Cute
- Jojo Siwa, 18**
Actor
- Bella Thorne, 24**
Actor
- Sheila Wilson, 28**
Writer
- Yingzong Xin, 29**
Character Designer,
Pixar Animation Studios
- Rachel Zegler, 20**
Actor

JUDGES: Jason Blum, CEO,
Blumhouse Productions; Gail
Berman, Chairman, the Jackal
Group; Ziwe Fumudoh, Writer
(Class of 2021); Kelly Marie
Tran, Actor (Class of 2019)

MUSIC

JACK HARLOW

Age: 23 • Musician

Harlow got his first taste of viral fame in 2017 when his music video “Dark Knight” went viral on YouTube, eventually clocking 7.5 million views. The singer, who grew up on a horse farm outside Louisville, Kentucky, and raps about things like fettuccine and airplane seats, has perfected the art of building a career on social media. He hasn’t made a full studio album, yet every show on his 2021 tour is sold out and he has moved over \$1 million in merchandise. He’s already giving back, too, raising seven figures-plus for Louisville-based nonprofits and HBCUs. “I can make a million hit songs, but that doesn’t compare to coming back home and saying, ‘I want to lift you up with me,’” he says. —*Abigail Freeman and Alexandra Sternlicht*

- Tyler Arnold, 29**
EVP, A&R, Republic Records
- Lydia Asrat, 29**
Cofounder, 10Q Management
- Reya Benitez, 29**
Head of Talent Partnerships, NTRK
- Jaime Bilotti, 23**
Founder, Fan to Band
- Blake Coppelson, 28**
Founder, Proximity
- Chelsea Cutler, 24**
Musician-Pop
- Iann Dior, 22**
Musician-Hip-hop
- Lil Durk, 29**
Musician-Hip-hop
- Chadrick Fellers, 29**
Founder, WastedPotential
- Matt Geffen, 22**
Management Partner, The Revels Group
- Giveon, 26**
Musician-R&B
- Jack Harlow, 23**
Musician-Hip-hop
- Ronny Ho, 29**
Head of Dance and Electronic Development, Spotify
- Allison Hsu, 25**
Senior Manager, Digital Marketing, Interscope Records
- Baby Keem, 21**
Musician-Hip-hop
- The Kid Laroi, 18**
Musician-Hip-hop
- Olivia Rodrigo, 18**
Musician-Pop
- John Vincent Salcedo, 29**
VP, Digital Marketing, Columbia Records
- Macy Schmidt, 25**
Founder, the Broadway Sinfonietta
- Loren Shokes, 29**
Attorney, Skadden
- Blake Slatkin, 24**
Producer
- Willow Smith, 21**
Musician-Rock
- William Tenney, 29**
Head of Streaming Strategy and Promotion, Crush Music
- Leon Thomas, 28**
Producer
- Tinashe, 28**
Musician-R&B
- Don Toliver, 27**
Musician-Hip-hop
- Tenille Townes, 27**
Musician-Country
- Alex Valenti, 26**
Cofounder, 3V Method
- Remi Wolf, 25**
Musician-Pop
- Klaudia Zadlo, 26**
Director, Global Research and Insights, Capitol Records

JUDGES: Miley Cyrus, Musician (Class of 2014); Justin Lubliner, Founder, the Darkroom (Class of 2019); Tayla Parx, Songwriter (Class of 2019); Phil Quist, Agent, Creative Artists Agency (Class of 2018)

SCIENCE

- Amin Aalipour, 29**
Resident Physician, Brigham and Women's Hospital
- Alex Abramson, 29**
Postdoctoral Fellow, Stanford University
- Christina Bailey-Hytholt, 28**
Assistant Professor, Worcester Polytechnic Institute
- Yanni Barghouty, 27**
Cofounder, Cosmic Shielding
- Raven Baxter, 28**
Founder, Raven the Science Maven
- Shannon Esswein, 29**
M.D.-Ph.D. Candidate, UCLA-CalTech
- Liang Feng, 27**
Postdoctoral Fellow, Northwestern University
- Jacob George, 28**
Assistant Professor, University of Utah
- William Gilpin, 29**
Assistant Professor, University of Texas, Austin
- Marianne Gonzalez, 29**
Engineer, NASA Jet Propulsion Laboratory
- Celine Halioua, 27**
Founder, Loyal
- Bashima Islam, 28**
Assistant Professor, Worcester Polytechnic Institute
- Srijan Kumar, 29**
Assistant Professor, Georgia Institute of Technology
- Caleb Lareau, 29**
Postdoctoral Fellow, Stanford University
- Paul Le Floch, 29**
Cofounder, Axoft
- Elora López-Nandam, 28**
Postdoctoral Researcher, California Academy of Sciences
- Malinda McPherson, 29**
Ph.D. Candidate, Harvard University
- Stephanie Michelsen, 27**
Cofounder, Jellatech
- Sarafina Nance, 28**
Ph.D. Candidate, University of California, Berkeley
- Xuyu Qian, 29**
Postdoctoral Fellow, Harvard Medical School
- Zhe Qiang, 29**
Assistant Professor, University of Southern Mississippi
- Pranav Rajpurkar, 26**
Assistant Professor, Harvard University
- Shruti Rijhwani, 29**
Ph.D. Candidate, Carnegie Mellon University
- Max Shen, 29**
Ph.D. Candidate, Massachusetts Institute of Technology
- Natasha Sheybani, 26**
Assistant Professor, University of Virginia
- Kaela Singleton, 29**
Postdoctoral Fellow, Emory University
- Michael Skinnider, 27**
M.D.-Ph.D. Candidate, University of British Columbia
- Richard Vachula, 29**
Postdoctoral Fellow, College of William and Mary
- Victoria Ashley Villar, 29**
Assistant Professor, Pennsylvania State University
- Jiajun Wu, 29**
Assistant Professor, Stanford University

JUDGES: Peter Beck, Founder, Rocket Lab; Eric Green, Director, National Human Genome Research Institute; Maddie Hall, Cofounder, Living Carbon (Class of 2021); Véronique Lecault, Cofounder, AbCellera

CELINE HALIOUA WEARS A VISCOSE SHIRT BY GANNI



CELINE HALIOUA

Age: 27 • Founder and CEO, Loyal

Halioua, who studied neuroscience at the University of Texas, Austin, and economics of gene therapeutics at Oxford, founded San Francisco-based biotech Cellular Longevity (known as Loyal) in 2019 to identify compounds that help prevent undue aging and cancer in dogs, which could also potentially help humans. One key advantage: It's easier to get experimental drugs approved for the veterinary market than for humans. Her first anti-aging drug entering clinical trials next year targets a cellular mechanism hypothesized to mitigate mental and physical decline associated with age. The pre-revenue company has raised over \$38 million in venture capital. "There's never been a drug approved for aging for any species, dog or human," Halioua says. "My core goal in life is to get the first drug approved." —Katie Jennings and Alex Knapp

SPORTS

DEVIN BOOKER

Age: 25 • Shooting Guard, Phoenix Suns

“I want to play for a very long time,” says Booker, a 6-foot-5 guard who is one of just six players in NBA history to have posted a 70-point game and who helped lead the Suns to their first conference title in 28 years last season.

But, he adds, “I’m worried about life after basketball and building businesses that will be here once the ball stops bouncing.” Joining the NBA’s investing craze, he has acquired equity stakes in multiple companies, including sports-video business Overtime and convenience store delivery app GoPuff, and is playing a hands-on role as a co-owner of coconut-water brand COCO5.

Booker, who won an Olympic gold medal in Tokyo, also collects an estimated \$8 million annually from endorsement deals with such brands as Nike and the video game *Call of Duty*, on top of his \$31.7 million salary this season. —Brett Knight

Devin Booker, 25
Shooting Guard, Phoenix Suns

Camille Buxeda, 27
Director of WSLAM,
SLAM Media

Kimberly Chexnayder, 25
Host, NFL Media

Kendall Coyne Schofield, 29
Forward, U.S. Women’s
Hockey Team

Alphonso Davies, 21
Left Back, FC Bayern Munich

Brad Fain, 29
Vice President, Ticket Sales
and Service, Detroit Pistons

Thomas Fields, 26
Founder, GRIND Interactive

Farzeen Ghorashy, 28
Chief Strategy and
Financial Officer, Overtime

Heath Gould, 29
Surgical Resident, MedStar
Union Memorial Hospital

Mikyla Grant-Mentis, 23
Forward, Toronto Six

Vladimir Guerrero Jr., 22
First Baseman,
Toronto Blue Jays

Molly Hayes, 29
Senior Director of Venues,
National Basketball
Association

Amanda Howett, 25
Athletic Director,
Penn State Shenango

Ashleigh Johnson, 27
Goalkeeper, U.S. Women’s
Water Polo Team

Jonquel Jones, 27
Forward, Connecticut Sun

Nelly Korda, 23
Golfer, LPGA Tour

Sunisa Lee, 18
Gymnast, U.S. Women’s
Gymnastics Team

Megan Lindon, 29
Senior Manager, Marketing,
Austin FC

Jordan Lucier, 26
Nate Rodman, 28

Jacob Rothman, 27
Cofounders, Perch

Simone Manuel, 25
Swimmer, U.S.
Swim Team

Carl Nassib, 28
Defensive End,
Las Vegas Raiders

Amber Nichols, 29
General Manager,
Capital City Go-Go

Jeremiah Paprocki, 22
Public-Address Announcer,
Chicago Cubs

Dak Prescott, 28
Quarterback,
Dallas Cowboys

Quinn, 26
Midfielder, Canada
Women’s Soccer Team

Omar Raja, 27
Social Strategist, ESPN

Haley Rosen, 28
Founder, Just Women’s
Sports

Claressa Shields, 26
Boxer

Matt Tifft, 25
Co-Owner,
Live Fast Motorsports

Elizabeth Williams, 28
Center, Atlanta Dream

JUDGES: Malika Andrews,
Host, ESPN (Class of 2021);
Tracy McGrady, Basketball
Hall of Famer; Jason Robins,
Cofounder, DraftKings;
Angela Ruggiero, Cofounder,
Sports Innovation Lab

GREG SCHWARTZ

—
Co-Founder and COO, StockX



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ART AND STYLE

TRISHA BANTIGUE

Age: 27 • Cofounder and CEO, Queenly

As a teenager fleeing an abusive home, the Philippines-born Bantigue did whatever she could to earn money, including working at McDonald's, modeling and entering beauty pageants for the prize money. "Pageants helped me get my degree, and they changed my life," she says. After graduating from UC Berkeley, she took jobs at Facebook, Google and Uber before cofounding Queenly, an online marketplace for users to resell formalwear, in 2017. "These gowns sometimes cost as much as a car, and it's crazy because you wear a gown only one time." The Y Combinator grad has already raised \$7 million from VCs including Andreessen Horowitz.

—Josh Burrell and Alexandra Sternlicht

- Storm Ascher, 27**
Founder, Superposition Gallery
- Trisha Bantigue, 27**
Kathy Zhou, 28
Cofounders, Queenly
- Kendall Bessent, 22**
Photographer
- Rahm Bowen, 26**
Artist, RAHMBOW
- Skylar Brandt, 28**
Principal Dancer, American Ballet Theatre
- Wei Hung Chen, 28**
Designer, Wei Hung Chen
- Susan Chen, 29**
Artist
- Rachel Cole, 28**
Founder, Rachel Cole Art Advisory
- Winnie Harlow, 27**
Model
- Eric Hart Jr., 22**
Creator, Love Hart
- Mónica Hernández, 26**
Artist
- Devin Johnson, 29**
Artist, Nicodim Gallery
- Devir Kahan, 26**
Cofounder, Stryx
- Prasanna Lachagari, 26**
Design Director, SDI Architecture
- Emily Lipson, 27**
Photographer
- Bronte Mance, 28**
Cody Mance, 26
Cooper Mance, 24
Cofounders, Naked Wolfe
- Lirika Matoshi, 25**
Founder, Lirika Matoshi
- Geron McKinley, 27**
Founder, the Grand Institute of Mastery
- Jake Nyquist, 26**
Founder, Hook
- Uyiosa Omorogbe, 24**
Founder, NASO
- Kate Pincus-Whitney, 28**
Artist
- Mitch Purgason, 29**
Founder, Stitched by Mitch
- Akua Shabaka, 24**
Cofounder, House of Aama
- Bryan Smaller, 29**
Senior Colorist, Company 3
- Ross Tran, 29**
Founder, RossDraws
- Austyn Wyche, 24**
Artist
- Nicole Xu, 27**
Illustrator, Nicole Xu Illustration
- Emily Yang, 29**
Cofounder, PleasrDAO
- Emilia Yin, 29**
Founder, Make Room Los Angeles
- Nazlia Yunus, 25**
Founder, Chvker Jewelry

JUDGES: Tyra Banks, Supermodel; Kim Shui, Founder, Kim Shui (Class of 2019); Amy Serald, Artist

TRISHA BANTIGUE WEARS A SATIN JACKET BY NANUSHKA, LEATHER DRESS BY VINCE AND PEARL EARRINGS AND BRACELET BY MONIES



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Congratulations to this year's Forbes Under 30 listers!

ROCKET Mortgage

KRIS LAMBERSON

Age: 25 • Professional Gamer, FaZe Clan

Lamberson, who boasts a 6-foot-6 wingspan, left a burgeoning college basketball career when videos of him playing *Call of Duty* evolved into a full-time job. He's now one of the most popular Black streamers on Twitch, with 1.9 million followers, and has amassed more than 2.7 million YouTube subscribers. In addition to appearing along with his e-sports teammates on the cover of *Sports Illustrated* in July, the gamer better known as "Swagg" earned an estimated \$2.5 million in the past year from streaming and collaborations with the NFL, Beats and McDonald's. "I think you're going to see a lot more of the traditional media trying to tap into gaming," he says. "Everybody wants to be a gamer." —*Matt Craig and Justin Birnbaum*

- Seth Abner, 26**
Professional Gamer, OpTic Texas
- Blessing Adeoye, 27**
Producer, Kinda Funny
- Jess Adepoju, 29**
Senior Product Manager, Bad Robot Games
- Nicholas Bagamian, 26**
Ian Proulx, 28
Cofounders, 1047 Games
- Victoria Caña, 26**
Lead Producer, Riot Games
- Jeannail Carter, 27**
Professional Gamer, Red Bull Gaming
- Tiffany Chin, 29**
Founder, Girls for Gaming
- Chase Davis, 25**
Technical Program Manager, Facebook
- Evan Frawley, 25**
Damian Suski, 25
Cofounders, Kanga
- Cody Hock, 28**
Cole Hock, 27
Cofounders, Up North Management Group
- Rachell Hofstetter, 29**
Content Creator, 100 Thieves
- Sasha Hostyn, 28**
Professional Gamer, Shopify Rebellion
- Maneet Khaira, 24**
Founder, Backbone
- Kris Lamberson, 25**
Professional Gamer, FaZe Clan
- Karen Lee, 28**
Senior Community Manager, Respawn Entertainment
- Mason Lieberman, 28**
Senior Composer, Tencent
- John Lim, 27**
Founder, UGLY
- Julia Onken, 28**
Creator Marketing Manager, Epic Games
- Alanah Pearce, 28**
Writer, Santa Monica Studio
- Grady Rains, 28**
Executive Producer, NRG
- Fernando Reyes Medina, 29**
Senior Multiplayer Designer, 343 Industries
- Ana Sena, 29**
Strategic Partner Manager, Twitch
- Tammie Siew, 29**
Khoa Tran, 28
Cofounders, Revery
- Kirin Sinha, 28**
Founder, Illumix
- Sarah Spiers, 27**
Producer, PUBG
- Victoria Tran, 27**
Community Director, Innersloth
- Shelby Ulisse, 29**
Esports Event Producer, Riot Games
- Walter Wang, 26**
VP of Operations, TSM
- Jackie Wiley, 27**
Game Designer, Blizzard Entertainment
- Jacob Wolf, 24**
Chief Reporter, Dot Esports

JUDGES: Imane Anys, Streamer (Class of 2021); Eunice Chen, Founder, Enlight; Amy Hennig, President of New Media, Skydance; Mike Rufail, Founder, Envy Gaming



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MARKETING AND ADVERTISING

Akil Alvin, 26
Founder, Digital Detroit Media

Matt Breuer, 29
CMO, Buffy

Jazmin Burrell, 29
Creative Strategist, Snap

Kristin Clark, 29
Matthew Low, 29
Creative Directors, BBDO

Sam Drozdov, 26
Benjamin Khakshoor, 26
Cofounders, Bloxbiz

Celeste Durve, 26
Cofounder, VIPER

Melanie Fellay, 29
Cofounder, Spekit

Josh Friedman, 27
CMO, Dr. Squatch

Grant Goldman, 27
Head of Growth, Pair Eyewear

Griffin Hadrill, 24
Sean Young, 28
Cofounders, VRTCL

Ibukun Ibraheem, 27
Global Brand Marketing Manager, Beats by Dre

Ro Kalonaros, 29
Global Director, Content & Culture, Omnicom Group

Ari Kohan, 26
Founder, 50Proof

Joe Laresca, 28
Founder, NOISE

Tim Lenardo, 29
Cofounder, JetFuel

Francisco Lopes, 29
Francisco Schmidberger, 27
Cofounders, Link Agency

Carly Mednick, 28
Cofounder, Monday Talent

Kyle Merwin, 28
Cofounder, Born & Bred

Alexandra Osten, 28
Head of Advertising Channel Partnerships, Sprinklr

Dan Pantelo, 26
Founder, Marpipe

Chantal Rapport, 29
CMO, Upstart

Dana Richards, 29
Cofounder, ettakit

Jorge Richardson, 26
Founder, HOPE Hydration

Kendall Schreiber, 26
Entertainment Marketing Executive, United Talent Agency

Laurel Schwartz, 28
Brand Director, Crisis Text Line

Reid Silverman, 27
Director of Brand, Mayweather Boxing + Fitness

Trevor Sookraj, 24
Founder, Divisional

Pierre Subeh, 23
Founder, X Network

Willa Tellekson-Flash, 25
Director of Community, Public.com

Michael Tich, 29
Cofounder, HomeRoom

JUDGES: Vince Cacace, Founder, Vertebrae (Class of 2017); David Droga, Founder, Droga5; Minjae Ormes, VP of Marketing, LinkedIn; Dara Treseder, Global Head of Marketing, Peloton

SOCIAL MEDIA

Ani Acopian, 27
Influencer

Abigail Barlow, 23
Emily Bear, 20
TikTokers

Anas Bouassami, 27
Pierre-Habte Nouvellon, 26
Redouane Ramdani, 28
Cofounders, Snipfeed

Kaelyn Castle, 25
Khamyra Sykes, 15
Theo Wisseh, 20
Influencers

Vernon Coleman, 24
Kevin Robertson, 24
Cofounders, Realtime

Kris Collins, 25
Influencer

Conrad Cornell, 26
Drew Williams, 26
Cofounders, Press Sports App

Eliana Eskinazi, 29
Mario Malavé, 29
Cofounders, Wagr

Kyle Forgeard, 27
YouTuber, Nelk

Lydia Fotiadou, 29
Talent Agent, Creative Artists Agency

Kai Gayoso, 28
Partner, Range Media

Michael Gruen, 23
Josh Richards, 19
Cofounders, TalentX

Zack Honarvar, 28
Founder, One Day Entertainment

Chase Hudson, 19
TikToker

Will Kim, 27
Cofounder, Karat Financial

Khoi Le, 23
Jerry Meng, 24
Jasmine Nguyen, 24
Cofounders, Fanhouse

Cole Mason, 25
Cofounder, Pearpop

Chisom Obi-Okoye, 29
Product Marketing Manager, Pinterest

Bella Poarch, 26
TikToker

Mac Reddin, 28
Founder, Commsor

Devon Rodriguez, 25
TikToker

Aakash Sastry, 25
Cofounder, Itsme

Varshini Satish, 25
Senior Associate, Snap

Tim Specht, 28
Director of Engineering, Reddit

Andrew Tan, 25
Founder, Ladder

Kelsey Taylor, 29
Senior Sports Partner Manager, Twitter

Jane Manchun Wong, 27
Security Researcher

Emily Wood, 29
UX Researcher, Facebook

Jeff Wright, 27
TikToker

Jesse Zhang, 29
Cofounder, Beacons

JUDGES: Joseph Albanese, Founder, Stir (Class of 2021); Li Jin, Founder, Atelier Ventures; Nicole Quinn, Partner, Lightspeed

MELANIE FELLAY

Age: 29
Cofounder and CEO, Spekit

Onboarding new employees can be a tricky process, especially during the pandemic, when many new hires haven't even met their managers or teams in real life. Spekit is here to help. The three-year-old Denver-based startup takes things like training manuals and employee handbooks and puts them in a centralized system where it's easy to access them over time. "In our personal lives, everything is instantly accessible in our smartphones and personalized to us, but in the workplace you have to go digging for information," Fellay says. Spekit has 90 employees, more than \$12 million in funding and clients including Southwest Airlines and Uber Freight.

—Marty Swant and Samantha Todd



COLE MASON

Age: 25
Cofounder and CEO, Pearpop

Everyone has his price, and Pearpop can prove it. This auction site, cofounded by former fashion model Mason and talent manager Guy Oseary, lets social media users bid on collaborations with top talent. A TikTok comment from Snoop Dogg starts at \$250, while a video from the DJ Marshmello goes for at least \$25,000. Pearpop also has celebrity investors: Amy Schumer, Diddy and Kevin Hart have all contributed to the \$20 million the Los Angeles-based startup has raised. “Before Pearpop, there was no way to get someone to collaborate with you at the level of Snoop Dogg,” Mason says. “I just wanted to give everyone access.”

—Abram Brown with Alexandra Sternlicht

LAURA KATZ

Age: 29
Founder & CEO, Helaina

Infant formula has seen little change in the past 40 years, despite being a \$50 billion global market. While most faux breast milk contains processed ingredients, corn syrup and gums, Katz is using yeast and fermentation to rapidly produce milk that replicates the exact proteins found in actual human milk. “If we can be advancing alternative meat and alternative milk using technologies like precision fermentation, this category deserves that same innovation,” says Katz, whose passion for food began at age 14, when she first entered Food Network competitions. The pre-revenue company raised \$25 million in venture capital and is now aiming for the majority of American mothers who use formula.

—Chloe Sorvino and Kristin Stoller

- Nenye Anagbogu, 25**
Cofounders, Sauce
- Jordan Anderson, 29**
Cofounder, Sami & Susu
- Eitan Bernath, 19**
Founder, Eitan Productions
- Amber Tamm Canty, 26**
Farmer
- Kayla Castañeda, 29**
Cofounder, Agua Bonita
- Brittany Charlton, 26**
Founder, Ohh! Foods
- Jake Cohen, 28**
Cookbook Author
- Caroline Cotto, 29**
Cofounder, Renewal Mill
- Miriam Cruz, 29**
Cofounder, Agni
- David Habib, 29**
Founder, Yo Mama’s Foods
- Nick Hamburger, 23**
Zack Schreier, 23
Cofounders, Quevos
- Ali Jawad, 28**
Founder, Taystee’s Burgers
- Joe Johnson, 29**
Cofounder, VADE Nutrition
- Ameet Kallarackal, 25**
Nick Loeper, 25
Cofounders, Fisherman
- Laura Katz, 29**
Founder, Helaina
- Brianna Keefe, 28**
Founder, Toastique
- David Kong, 29**
Founder, Glasvin
- Kyle Lee, 29**
Cofounder, Alaskan Salmon
- Edouard Massih, 27**
Owner, Edy’s Grocer
- Diana Montano, 29**
Zack Wageman, 29
Co-owners, Sobre Masa
- Ignacio Montenegro, 29**
Cofounder, Tripping Animals Brewing
- Alexis Nikole Nelson, 29**
Influencer
- Sam Norton, 28**
Founder, Heron Farms
- Ben Richter, 29**
Founder, Wake & Late
- Anika Sawni, 25**
Cofounder, Grüvi
- Josh Scherer, 29**
Director of Culinary Content, Mythical Entertainment
- Madeleine Voге, 27**
Paul Voге, 27
Cofounders, Aura Bora
- Wendy Wang, 29**
Andrea Xu, 29
Cofounders, Umamicart
- Haibin Yang, 27**
David Zhao, 27
Cofounders, Chubby Cattle International Group
- Amy Zhou, 29**
Partner, COTE Korean Steakhouse

JUDGES: Randall Lane, Chief Content Officer, Forbes; Trinity Mouzon Wofford, Cofounder, Golde (Class of 2020); Lee Schragger, Founder, Miami Food & Wine; Molly Yeh, Chef (Class of 2017)

MELANIE FELLAY WEARS A POLYESTER TOP AND PANTS BY PLEATS PLEASE ISSEY MIYAKE AND A MOUNTAIN CRYSTAL NECKLACE BY MONIES. COLE MASON WEARS A DENIM VEST BY NOON GOONS, WOOL SWEATER BY PARADIS PERDUS, COTTON T-SHIRT BY TODD SNYDER AND JEANS BY JOHN ELLIOTT. LAURA KATZ WEARS A CREPE JACKET AND TANK BY CINQ A SEPT AND EARRINGS BY MONBOUQUETTE

MANUFACTURING AND INDUSTRY

LEVI CONLOW

Age: 26 • Cofounder and CEO, Lectric eBikes

In 2018, when Conlow was 22, he talked his father into investing \$50,000 of his retirement savings in an affordable electric bicycle he was designing. Though his first iteration flopped because of factors like range and speed, and “potentially screwed up [Dad’s] retirement,” Conlow quickly retooled and created Lectric’s \$1,000 XP model (a typical e-bike costs more than \$2,000), which he started selling in 2019. To date, Conlow has sold more than 100,000 bikes; the company is on track to book \$85 million in revenue this year. Most importantly, his father got his retirement savings made flush again. “We got my old man paid back, and he’s happy with the investment now,” Conlow says. —*Elisabeth Brier, Amy Feldman and Alan Ohnsman*

- Tim Almond, 29**
Cofounder, Heartland
- Ariel Applbaum, 27**
Ivan Ralasic, 29
Cofounders, Forsight
- Mariam Awara, 26**
Ben Maxwell, 26
Cofounders, Pulsenics
- Rajat Bhageria, 25**
Founder, Chef Robotics
- William Binette, 27**
Josh Sevy, 28
Cofounders, Western Alliance
- Nicole Black, 29**
Cofounder, Beacon Bio
- Tessa Callaghan, 29**
Aleksandra Gosiewski, 26
Cofounders, AlgiKnit
- Levi Conlow, 26**
Robby Deziel, 26
Cofounders, Lectric eBikes
- Alfonso de los Rios, 23**
Cofounder, Nowports
- Honghao Deng, 27**
Jiani Zeng, 28
Cofounders, Butlr
- Eugenio Donati, 24**
Raymond Wang, 23
Cofounders, AeroVect
- David Doyon, 29**
Jacob Flood, 28
Cofounders, Eno
- Aedan Fida, 24**
Joseph Fida, 26
Giancarlo Sessa, 24
Cofounders, Blade Air
- Patrick Flynn, 28**
Cofounder, Hazel Technologies
- Dylan Gastel, 25**
Founder, EZ ICE Rinks
- Adam Gluck, 29**
Matthew Lee, 29
Cofounders, Copia Automation
- Anvesh Gurijala, 28**
Michael Segal, 29
Cofounders, Boston Materials
- Topher Haddad, 29**
Winston Tri, 28
Cofounders, Albedo
- Andrew Harris, 29**
Cofounder, ColorHub
- David Heller, 25**
Cofounder, C16 Biosciences
- Drake Hougo, 23**
Sean O’Bannon, 23
Wyatt Pontius, 23
Cofounders, ReMatter
- Nikita Iliushkin, 28**
Linar Ismagilov, 26
Cofounders, Skygauge Robotics
- Hilary Johnson, 29**
Inventor, Massachusetts Institute of Technology
- Elle Liu, 29**
Founder, Eucalypto
- Annie Lu, 21**
David Lu, 23
Cofounders, H2Ok Innovations
- Radin Rahimzadeh, 28**
Cofounder, Fore Transit
- Tyler Ratanamongkala-Bray, 23**
Founder, TK Trailer Parts
- Taylor Thomas, 28**
Cofounder, Samplize
- Ian Villa, 29**
Cofounder, Whisper Aero
- Michelle Zhu, 28**
Cofounder, Huue Bio

JUDGES: Sean Henry, Cofounder, Stord (Class of 2018); Natan Linder, Cofounder, Tulip; Tekedra Mawakana, Co-CEO, Waymo; Carmichael Roberts, Cofounder, Material Impact

LEVI CONLOW WEARS A SUEDE JACKET BY TODD SNYDER AND A CASHMERE HOODIE BY MASSIMO ALBA



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HEALTH CARE

ARIEL KATZ

Age: 28 • Cofounder and CEO, H1

Katz's New York-based startup has online profiles of more than 10 million doctors, which are updated daily with information about the physicians' publications, patient demographics and social media mentions. H1's biggest business is helping more than 100 pharma, biotech and medical device companies find the perfect doc. "You're funding billions of dollars in research every single year," Katz says. "What if I could tell you the right doctor to run your clinical trial?" H1's revenues were up 250% year-over-year as pharma companies scrambled to scale up large trials of Covid-19 vaccines and treatments. H1 has raised \$170 million after graduating from Y Combinator in March 2020. —*Katie Jennings and Alex Knapp*

- Emmanuella Asabor, 29**
M.D.-Ph.D. Candidate, Yale University
- Gabriela Asturias, 26**
Mackenzie Drazan, 26
Cofounders, MiResource
- Akilesh Bapu, 24**
Matthew Ko, 26
Cofounders, DeepScribe
- Adam Beckman, 27**
Special Advisor, U.S. Surgeon General
- Madison Campbell, 26**
Liesel Vaidya, 27
Cofounders, Leda Health
- James Diao, 26**
M.D. Candidate, Harvard Medical School
- Carino Gurjao, 28**
Researcher, Dana-Farber Cancer Institute
- Peter Pei-En Hao, 26**
Managing Editor, *China CDC Weekly*
- Lucia Huang, 29**
Jimmy Qian, 24
Cofounders, Osmind
- Ariel Katz, 28**
Cofounder, H1
- Neal Khosla, 28**
Cofounder, Curai
- Joseph Kitonga, 24**
Founder, Vitable Health
- Luke Koblan, 29**
Postdoctoral Fellow, Whitehead Institute for Biomedical Research
- Dana Le, 27**
Founding Team, KidsX
- Jong Yoon Lee, 26**
Cofounder, Sibel Health
- Tom Lemberg, 29**
Founder, Curebase
- Derek Lo, 26**
Founder, Medallion
- Victor Lopez-Carmen, 27**
Co-Chair, UN Global Indigenous Youth Caucus
- Michal Maslik, 28**
Fares Siddiqui, 29
Cofounders, Circadia Health
- Ian McLane, 28**
Cofounder, Sonavi Labs
- Kunaal Naik, 25**
Nisarg Patel, 29
Manav Sevak, 24
Cofounders, Memora Health
- LaShyra Nolen, 26**
Founder, We Got Us
- Charu Sharma, 29**
Cofounder, Osana Salud
- Shriya Srinivasan, 27**
Researcher, Massachusetts Institute of Technology
- Loza Tadesse, 29**
Assistant Professor, Massachusetts Institute of Technology
- Joseph Therriault, 28**
Researcher, McGill University
- Jennifer Tsai, 29**
Physician, Yale School of Medicine
- Stephanie Wisner, 27**
Cofounder, Centivax
- Xiao Wu, 28**
Postdoctoral Fellow, Stanford University
- James Yoon, 27**
M.D. Candidate, Yale University

JUDGES: Toyin Ajayi, President, Cityblock Health; Aneesh Chopra, President, Care-Journey; Matt McCambridge, Cofounder, Eden Health (Class of 2021); Deena Shakir, Partner, Lux Capital

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ENERGY

Maria Agazio, 25
CJ Gooderham, 24
Cofounders, Equitable Solar Solutions

Emmaline Atherton, 29
Liz O'Connell, 29
Cofounders, Arolytics

Peter Attia, 29
Battery Data Analyst, Tesla

Deepak Atyam, 28
Alex Finch, 29
Jesse Lang, 29
Cofounders, Tri-D Dynamics

Folasade Ayoola, 27
Anurag Kamal, 28
Cofounders, ElectricFish Energy

Brock Battochio, 29
Cofounder, Planetary Hydrogen

Sid Bhattacharya, 29
Worldwide Head of Products and Solutions, Amazon

Ryan Brown, 29
Cofounder, Salient Energy

Kate Casey, 28
Principal, KKR

Paul Cheek, 29
Cofounder, Oceanworks

Paul Gross, 25
Cofounder, Remora

Tara Gupta, 26
Founder, Map-Collective

Yazan Harasis, 28
Cofounder, Power Edison

David Jaramillo, 29
Ted McKlveen, 29
Bav Roy, 29
Cofounders, Verne

Zak Lefevre, 29
Cofounder, ChargeLab

Meade Lewis, 28
Founder, mlQrotech

Yige Li, 26
Founder, IQHi

Sakshi Mishra, 29
Staff Researcher, National Renewable Energy Laboratory

Jordan Mizerak, 29
Cofounder, JETCOOL Technologies

Nicholaus Rohleder, 29
Cofounder, New American Energy

Jimmy Rojas, 29
Founder, EvolOH

Jacob Sandry, 29
Cofounder, Euclid Power

Tunkie Saunders, 28
Chemical Engineering Manager, Redwood Materials

James Schiel, 29
Cofounder, Stable Auto

Thomas Sherman, 28
Daniel Vassallo, 27
Cofounders, CRCL Solutions

Corey Staller, 29
Director of Engineering, Celadyne Technologies

Marisa Sweeney, 29
Director, Generate Capital

Tom Tyree, 28
Vice President, Finance, Stronghold Digital Mining

John Walsh, 28
Founder, Endera

Sophia Wennstedt, 29
Cofounder, Blip Energy

JUDGES: Greg Beard, Cofounder, Stronghold Digital Mining; Kentaro Kawamori, Cofounder, Persefoni (Class of 2020); Emily Kirsch, Founder, Powerhouse; Katie Mehnert, Founder, Pink Petro and Ally Energy

CONSUMER TECHNOLOGY

Marc Atiyeh, 29
Andrew Malek, 27
Cofounders, Pawp

Emma Bates, 28
Cofounder, Diem

Ben Botvinick, 19
Founder, Hyper

Jacob Braunstein, 27
Noah Johnson, 28
Cofounders, LiveControl

Max Bruch, 24
Zach Bruch, 28
Cofounders, RECUR

Miri Buckland, 29
Cofounder, the Landing

Brandreth Canaley, 29
Iskander Karimov, 28
Cofounders, Sextant Stays

Patrick Chandler, 28
Cofounder, FightCamp

Catherine Dennig, 29
Keji Xu, 28
Cofounders, Fursure

Alessandro DiSanto, 28
Alex Jones, 28
Erich Kerekes, 28
Cofounders, Hallow

Tulsee Doshi, 27
Responsible AI and Human Centered Technology, Google

Ben Easton, 27
Rosa Hamalainen, 25
Cofounders, Rupa Health

Nikolaos Georgantas, 28
Selin Sonmez, 27
Cofounders, OneRoof

Max Gomez, 25
Cofounder, Breathwrk

Jonathan Hsu, 29
Andrew Wang, 29
Cofounders, Valon

Maika Isogawa, 25
Cofounder, Webacy

Jeff Kahn, 29
Leon Sasson, 29
Cofounders, Rise Science

Kristie Kaiser, 29
Cofounder, Personal.ai

Helen Mayer, 25
Founder, Otter

Aidan McCarty, 25
Liam McCarty, 26
Cofounders, Unum ID

Caspar Nagel, 26
Nicolaus Nagel, 29
Cofounders, Pave Motors

Joshua Sakhai, 25
Cofounder, Ephemeral Tattoo

Mike Shebat, 29
Cofounder, Traba

Uttara Sivaram, 28
Global Head of Privacy and Security Public Policy, Uber

Sam Terris, 29
Cofounder, Simulate

Jillian Tessler, 29
Director of Portfolio Strategy and Operations, Newco

Michael Tom, 29
Cofounder, Radiate

Isabella Tromba, 29
Cofounder, Tangram

Sid Yadav, 29
Cofounder, Circle

Jerry Yue, 29
Founder, Brain Technologies

JUDGES: Will Ahmed, Founder, Whoop (Class of 2017); Peter Boyce II, Founder, Stellation Capital (Class of 2015); Lydia Jett, Partner, Softbank Vision Fund

JOHN WALSH

Age: 28
Founder and CEO, Endera

The challenge for electric-vehicle maker Endera is not finding new customers—it's building fast enough to satisfy demand. Walsh already has orders for 2,000 of his all-electric vans, jitneys and delivery trucks worth \$400 million. "I believe that the clean-energy movement was catalyzed by the pandemic," he says. "Capital markets have shifted, and clean energy is becoming economically viable." Aside from having the company's name on the grille, Endera's vehicles look nearly indistinguishable from standard-issue gas guzzlers on the road today. And that's the point—to provide customers a seamless transition to electrified transportation.

—Eliza Haverstock
and Chris Helman

ANDREW WANG

Age: 29
Cofounder and CEO, Valon

Owning a home might exemplify the American Dream, but paying your mortgage can be a nightmare. Wang's Valon makes paying off life's biggest purchase a bit easier by automating payments, giving a clear view of one's balance and educating borrowers about loans, taxes and insurance. Mortgage lenders like Starwood Capital pay Valon for every mortgage it handles; earlier this year Wang raised \$50 million from Andreessen Horowitz and others to go after incumbents like Black Knight, the \$11 billion leader in the space. Valon currently services \$5.5 billion worth of loans and aims to offer home insurance. Says Harvard grad Wang: "It sounds like a boring business, but it's incredibly impactful."

—Steven Bertoni,
Nina Wolpov and
Will Yakowicz

STEVE WEN

Age: 28
Cofounder and CEO,
Dray Alliance

From his office window, Wen can see the long line of ships queuing up to get into the port of Long Beach, California. The supply-chain crunch that has stressed the global economy has been good for the China-born entrepreneur's startup, which helps clients such as Mattel and Wayfair find truckers to take containers from ports and railheads to warehouses and stores. The business is set to post \$28 million in revenue this year, up from \$11 million in 2020. Wen got the idea to modernize freight logistics while running a business that exported luxury goods. "In the shipping world, they were still faxing paperwork around," he says. "That made no sense to me."

—Martin Giles, Helen A.S. Popkin and Aayushi Pratap

- Dina Ayman, 27**
Program Manager, Microsoft
- Dylan Ayrey, 29**
Julian Dunning, 29
Cofounders, Truffle Security
- Parker Ballner, 24**
Nik Kotov, 27
Cofounders, Atomized
- Tsion Behailu, 29**
Aparna Dhinakaran, 27
Manisha Sharma, 27
Founding Team, Arize AI
- Josh Benamram, 29**
Cofounder, Databand.ai
- Andrew Boryk, 26**
Hadi Rashid, 28
Cofounders, Lunchbox
- Kalina Bryant, 29**
Global Head of Customer Advocacy, Asana
- Deirdre Clute, 29**
Cofounder, Rightfoot
- Florent Crivello, 29**
Founder, Teamflow
- Hank Cui, 28**
Steve Wen, 28
Jason Yu, 27
Cofounders, Dray Alliance
- Ganesh Datta, 26**
Anish Dhar, 26
Nikhil Unni, 27
Cofounders, Cortex
- Nirman Dave, 25**
Tapojit Debnath Tapu, 25
Cofounders, Obviously AI
- Iman Ghanizada, 29**
Global Security Solutions Manager, Google
- Christina Gilbert, 26**
Andrew Luo, 26
Cofounders, OneSchema
- Ryan Gottfried, 29**
Jason Kwiat, 28
Johnny Zhu, 29
Cofounders, UtilizeCore
- Alexa Grabell, 28**
Isaac Pohl-Zaretsky, 23
Cofounders, Pocus
- Lynn Greenberg, 29**
Founder, Pivt Enterprise
- Jesika Haria, 29**
Jackie Xu, 28
Cofounders, LogicLoop
- Brandon Hill, 28**
Tremaine Kirkman, 28
Cofounders, Vori
- Eric Ho, 27**
Andrew Myers, 28
Cofounders, RippleMatch
- Luke Jacobs, 29**
Cofounder, Encamp
- Pulkit Jaiswal, 28**
Imogen Low, 23
Cofounders, nwo.ai
- Julianna Lamb, 28**
Reed McGinley-Stempel, 29
Cofounders, Stytech
- Yunyu Lin, 23**
Rahul Sengottuvelu, 23
Cofounders, Cohere
- Madison May, 27**
Slater Victoroff, 29
Diana Yuan, 29
Cofounders, Indico Data
- Elliot O'Connor, 27**
Founder, Frontier
- Krish Ramineni, 27**
Sam Udotong, 27
Cofounders, Fireflies.ai
- Ashwin Sreenivas, 26**
Founder, Campfire
- Ellie Symes, 27**
Wyatt Wells, 27
Cofounders, the Bee Corp
- Anna Wang, 20**
Jasmine Wang, 23
Cofounders, Copysmith AI

JUDGES: Edith Harbaugh, Cofounder, LaunchDarkly; Girish Mathrubootham, Cofounder, Freshworks; Spenser Skates, Cofounder, Amplitude Analytics (Class of 2017); Michelle Zatlyn, Cofounder, Cloudflare



FINANCE

TAREK MANSOUR

Age: 25 • Cofounder and CEO, Kalshi

New York-based Kalshi lets investors place unusual bets on future events, such as how many Americans will ultimately receive a Covid-19 vaccine. While he was at Goldman Sachs, Mansour's clients wanted to hedge their investments during Brexit but had no direct way to do it. So in 2018, he started working on Kalshi with fellow MIT alum Luana Lopes Lara. The hardest part: regulatory approval. "In one day we both called 65 lawyers," Mansour says. "All of whom said, 'People have been trying to do this since the '80s, and it's not happening.'" But they persevered—and in November 2020, Kalshi became the first federally regulated event-based trading exchange in U.S. history. Billionaires Charles Schwab and Henry Kravis have invested alongside blue-chip VC shop Sequoia; Kalshi has raised \$36 million and processed \$10 million in trades since launching in July 2021. —*Maria Abreu, Michael del Castillo and Jeff Kauflin*

- Sam Aarons, 29**
Cofounders, Modern Treasury
- Matt Marcus, 27**
Cofounders, Modern Treasury
- Albert Abedi, 27**
Sami Tellatin, 29
Cofounders, FarmRaise
- Ambika Acharya, 27**
Cofounder, Weav
- Alex Atallah, 29**
Cofounder, OpenSea
- Sahana Athreya, 29**
Data Scientist, Millennium Management
- Clinton Bembry, 27**
Founder, Slingshot
- Hannah Buchan, 28**
Partner, Beehouse
- Jeron Davis, 28**
Senior Associate, RLJ Equity Partners
- Sophie DeWaal, 29**
Vice President, Bank of America
- Caroline Ellison, 27**
Sam Trabucco, 29
Co-CEOs, Alameda Research
- Brandon Gell, 27**
Nick Scaglione, 27
Cofounders, Clyde
- Antonio Juliano, 28**
Founder, dYdX
- Scott Kazmierowicz, 25**
Michael Spelfogel, 25
Cofounders, Cardless
- Tegan Kline, 28**
Cofounder, Edge & Node
- Jen Liang, 29**
Vice President, Portfolio Manager, AIG
- Mason Liang, 28**
Portfolio Manager, Millennium Management
- Luana Lopes Lara, 25**
Tarek Mansour, 25
Cofounders, Kalshi
- Akash Magoon, 25**
Cofounder, Nayya
- Patrick Mrozowski, 25**
Cofounder, Point
- Elena Nadolinski, 29**
Founder, Iron Fish
- Brooke Nakatsukasa, 29**
Vice President, Vista Equity Partners
- Alex Nesbitt, 29**
Principal, BC Partners
- Albert Owusu-Asare, 28**
Ameer Shujjah, 29
Cofounders, Cadana
- Rahul Raina, 28**
Cofounder, TRM Labs
- Roneil Rumburg, 29**
Cofounder, Audius
- Ophelia Snyder, 29**
Cofounder, 21Shares
- Ben Spiegelman, 29**
Director of Product Management, Fidelity Digital Assets
- Heather Steinman, 29**
Vice President, the Raine Group
- Connor Wienberg, 29**
Vice President, Deutsche Bank
- Justin Woodward, 28**
Cofounder, TaxBit

JUDGES: Paul Gu, Cofounder, Upstart (Class of 2020); Joey Krug, Co-Chief Investment Officer, Pantera Capital (Class of 2021); Jackie Reses, Angel Investor; Lauren Taylor Wolfe, Cofounder, Impactive Capital

TAREK MANSOUR WEARS A NYLON COCOON COAT BY DEVEAUX, MOHAIR SCARF BY SOLID HOMME AND A COTTON TURTLENECK BY UNIQLO

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PAIGE DOHERTY

Age: 23

Cofounder, Behind Genius Ventures

Doherty is investing in creators and the companies that support them as a cofounder of Behind Genius Ventures, the venture capital firm she launched with Joshua Schlisserman in March 2021. So far, the duo have begun to invest their \$5 million fund into 12 core investments including Pallet (a job site for independent creators), gamified fitness startup Aviron and FYPM, a sort of Glassdoor for Gen Z. Early backers include Union Square Ventures' Andy Weissman, Freestyle's Jenny Lefcourt, Bain Capital Ventures and Tribe Capital. To help describe her dream job to her parents, Doherty published a picture book explaining venture capital, *Seed to Harvest*, featuring a foreword by *Forbes* Midas List superstar investor Ann Miura-Ko. "My goal is to make venture more transparent," Doherty says. "I want more people to feel welcome here."

—Alex Konrad and
Rebecca Szkutak

VENTURE CAPITAL

- Gaurav Ahuja, 29**
General Partner, Thrive Capital
- Kamran Ali, 29**
Investor, Inspired Capital
- Brandon Allen, 27**
Marcus Stroud, 28
Cofounders, TXV Partners
- Chloe Breider, 28**
Principal, Renegade Partners
- Max Brickman, 29**
Founder, Heartland Ventures
- Casey Caruso, 28**
Partner, Paradigm
- Shuo Chen, 29**
General Partner, IOVC
- Meera Clark, 29**
Principal, Obvious Ventures
- Paige Doherty, 23**
Joshua Schlisserman, 25
Cofounders, Behind Genius Ventures
- Joshua Elkington, 28**
Founder, Axial VC
- Grace Ge, 29**
Principal, Menlo Ventures
- Matt Gibstein, 29**
Vice President, Goodwater Capital
- James Green, 27**
Principal, CRV
- Victor Gutwein, 29**
Founder, M25
- Asad Khaliq, 27**
Cofounder, Acrew Capital
- Danielle Lay, 27**
Principal, NEA
- Meagan Loyst, 24**
Associate, Lerer Hippeau
- Kevin Lynch, 27**
Investor, MGV
- Ellen Ma, 28**
Managing Director, UpHonest Capital
- Jared Madfes, 24**
Partner, Tribe Capital
- Maitree Mervana, 29**
Investor, Acrew Capital
- Jay Po, 29**
Cofounder, Stage 2 Capital
- Daniel Povitsky, 29**
Cofounder, Vine Ventures
- Vinny Pujji, 29**
Managing Partner, Left Lane Capital
- Katie Reiner, 27**
Principal, Torch Capital
- Tom Seo, 29**
Cofounder, Dash Fund
- Eric Tarczynski, 29**
Founder, Contrary
- Tali Vogelstein, 26**
Founding Investor, Avid Ventures
- Jillian Williams, 28**
Principal, Cowboy Ventures
- Nancy Xiao, 27**
Principal, BOND

JUDGES: Sarah Guo, Partner, Greylock Partners (Class of 2016); David Haber, Partner, Andreessen Horowitz (Class of 2016); Heather Hartnett, CEO, Human Ventures; Jamison Hill, Partner, Base10 Ventures (Class of 2016)

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EDUCATION

FELIX RUANO

Age: 26 • Cofounder and CEO, Emile Learning

The son of Mexican immigrants, Ruano went from L.A. public schools to Harvard and McKinsey before the pandemic. With millions of students stuck at home, he saw a chance to create a streaming service with high-quality education on demand. In the summer of 2021, he flew instructors to L.A. to film over 20 accredited high school classes, including 10 AP courses. He partners with high schools with teacher shortages or sparse AP offerings and offers subscriptions to individuals for \$10 a month. His startup, Emile Learning, breaks lessons into bingeable segments that run under 10 minutes, tailored to modern attention spans. He's signed up dozens of school districts, reaching over 70,000 students. "We're building the Netflix of high school education," he says. "A student anywhere in the world should be able to access any course, anytime, anywhere." —*Susan Adams, Katherine Love and Hank Tucker*

- Alberto Arenaza, 25**
Cofounder, Transcend Network
- Chandler Bolt, 28**
Founder, Self Publishing School
- Chrissybil Boulton, 29**
Founder, Jump Start Tutoring Center
- Justin Brezhnev, 29**
Founder, Hacker Fund
- Stephen Coggnetta, 28**
Jacob Simon, 29
Cofounders, Exponent
- Conor Delanbanque, 29**
Founder, Strategio
- Marwan El-Rukby, 22**
Amin Shaykho, 23
Dani Shaykho, 19
Cofounders, Kadama
- Dan Giovacchini, 29**
Brian Shultz, 29
Cofounders, Tango
- Katlyn Grasso, 28**
Founder, GenHERation
- Katherine Grill, 29**
Cofounder, Neolth
- Rohan Gupta, 26**
Anil Jason, 26
David Silin, 26
Cofounders, QuillBot
- Ricky Hamilton, 29**
CEO, Galvanize
- Tán Ho, 29**
Cofounder, Fiveable
- Jonathan Javier, 26**
Jerry Lee, 26
Cofounders, Wonsulting
- Alec Katz, 21**
Audrey Wisch, 21
Cofounders, Curious Cardinals
- Terren Klein, 26**
Cofounder, College Pulse
- Peyton Klein, 20**
Founder, Global Minds Initiative
- Simon Komlos, 26**
Bolun Li, 23
Simran Singh, 23
Cofounders, Zogo
- Joshua Lafazan, 27**
Adjunct Professor, Long Island University
- Anada Lakra, 29**
Cofounder, BoldVoice
- Skyler Lucci, 28**
Ryan Neman, 27
Cofounders, HeyTutor
- Connor McCarthy, 29**
Cofounder, Rize Education
- Jimmy McDermott, 22**
Cofounder, Transeo
- Manu Meel, 23**
CEO, BridgeUSA
- Gorick Ng, 29**
Author
- Andrew Powell, 29**
Sasha Seymore, 29
Cofounders, Learn to Win
- Apolonia Rockwell, 29**
Founder, True Safety Services
- Felix Ruano, 26**
Michael Vilardo, 29
Cofounders, Emile Learning
- Amrutha Vasan, 25**
Aditya Vishwanath, 25
Cofounders, Inspirit
- Hanmei Wu, 29**
Changxiao Xie, 23
Cofounders, Empowerly

JUDGES: Mitch Daniels, President, Purdue University; Joanna Smith, Founder, AllHere Education (Class of 2021); Deborah Quazzo, Managing Partner, GSV Ventures



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SOCIAL IMPACT

ARIELA SAFIRA

Age: 27 • Founder and CEO, Real

As a Stanford sophomore, Safira thought she and her peers were all living every overachiever's dream.

But when a friend attempted suicide, she realized it was more like a gilded fantasy. "Her experience in rehab was the first time she had ever encountered the mental-health care system," Safira says. "Imagine if someone never met a primary care doctor until they're diagnosed with cancer." Backed by \$16 million from VC shops Lightspeed and

Forerunner, actress Gwyneth Paltrow and soccer star Megan Rapinoe, Safira's app, Real, provides guides and workshops on common problems like dealing with seasonal depression. Unlike competitors such as Talkspace that are geared toward people in crisis, Real wants to be a preventive measure that eases users into long-term "mental wellness."

—Igor Bosilkovski and
Alexandra Wilson

- Alexia Akbay, 26**
Founder, Symbrosia
- Giana Amador, 27**
Cofounder, Carbon180
- Tim Barat, 29**
Abdulrahman Bin Omar, 28
Hall Chen, 24
Cofounders, Gridware
- Samuel Bertram, 28**
Cofounder, OnePointOne
- Devesh Bharadwaj, 27**
Founder, Pani Energy
- Nelly Cheboi, 29**
Cofounder, TechLit Africa
- Liran Cohen, 25**
Max Friedman, 26
Ari Krasner, 26
Cofounders, Givebutter
- Jake Dancyger, 28**
Cyrus Symoom, 28
Co-CEOs, Clariti
- Sirrita Darby, 29**
Cofounder,
Detroit Heals Detroit
- Pat Duffy, 27**
Alex Wilson, 28
Cofounders,
the Giving Block
- Ofo Ezeugwu, 29**
Founder, WhoseYourLandlord
- Jack Griffin, 23**
Founder, FoodFinder
- Anisha Gupta, 29**
Cofounder, Bluebird Climate
- Rahul Gupta-Iwasaki, 29**
Mark Ulrich, 29
Cofounders, Every.org
- Mitchell Hora, 27**
Founder, Continuum Ag
- James Kanoff, 23**
Aidan Reilly, 23
Cofounders,
the Farmlink Project
- Daniel Lee, 26**
Steve Lee, 29
Cofounders, Aura Health
- Beverly Leon, 29**
Founder, Local Civics
- Laureen Meroueh, 29**
Cofounder, Alchemr
- Donte Miller, 28**
Cofounder,
Village Micro Fund
- Maleka Momand, 26**
Lilli Oetting, 29
Cofounders, Esper
- Whitley O'Connor, 29**
Cofounder, Curbside
Enterprises
- Zach Oschin, 24**
Founder, Elenas
- Olivia Owens, 29**
Creator, IFundWomen
of Color
- Blake Resnick, 21**
Founder, BRINC
- Maricel Saenz, 29**
Founder, Compound Foods
- Ariela Safira, 27**
Founder, Real
- Ali Salhi, 25**
CTO, Loop Mobility
- Josh Santos, 29**
Cofounder, Noya
- Kyle Woumn, 26**
Founding Team, Overflow

JUDGES: Jean Case, Chairman, National Geographic; Cheryl Dorsey, President, Echoing Green; Randall Lane, Chief Content Officer, Forbes; Jennifer Xia Spradling, Cofounder, FreeWill (Class of 2019)

ARIELA SAFIRA WEARS A VEGAN LEATHER JACKET BY NANUSHKA, COTTON/WOOL/POLYESTER DRESS BY SACAI, GOLD NECKLACE BY PAMELA LOVE AND GOLD EARRINGS AND BRACELET BY LAURA LOMBARDI

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RETAIL AND E-COMMERCE

RAUNAK NIRMAL

Age: 29 • Cofounder and CEO, Acquco

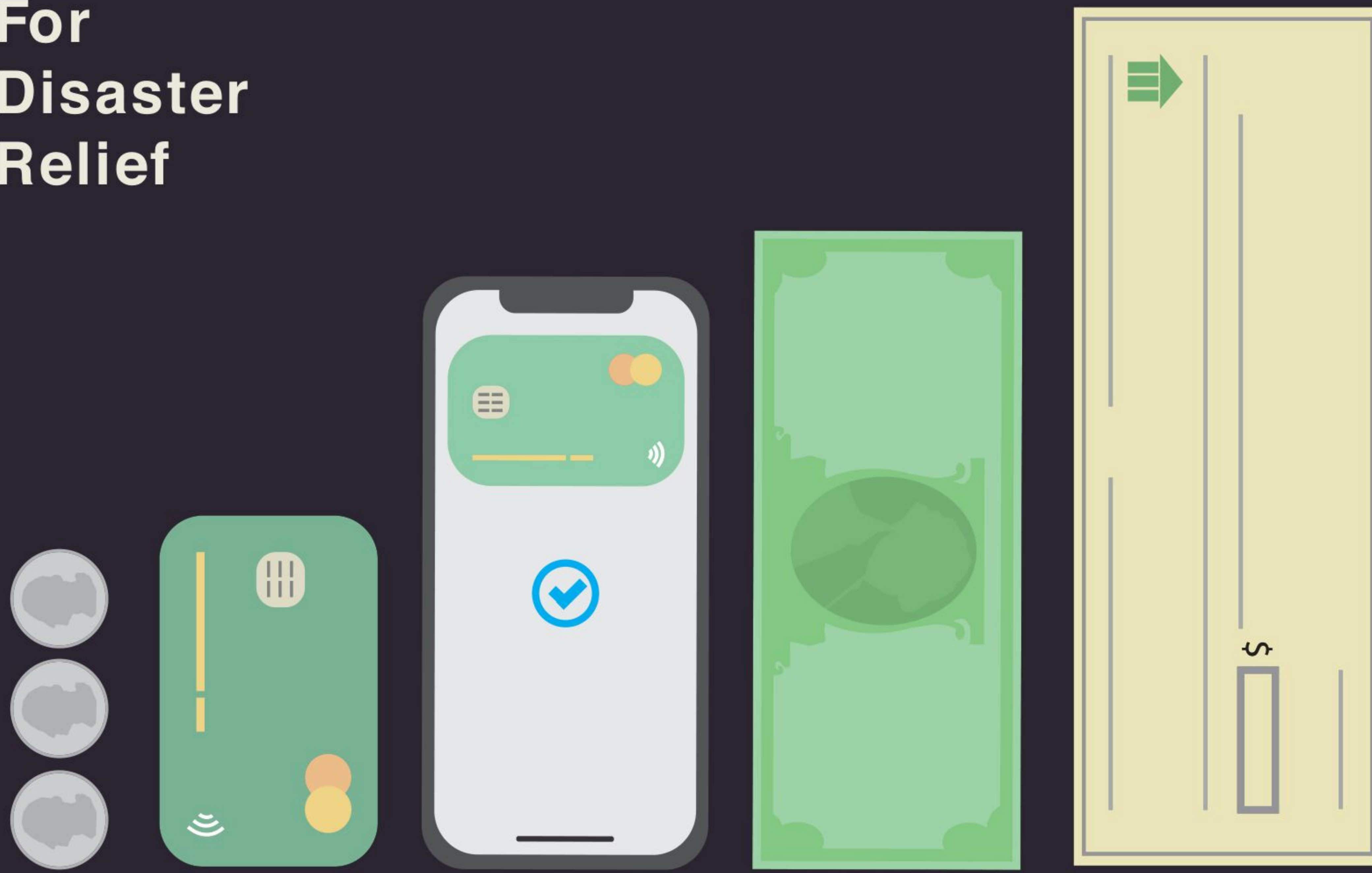
Acquco is one of the largest and fastest-growing aggregators of companies that sell on Amazon. Nirmal has raised \$160 million to acquire businesses that will generate some \$250 million in revenue this year. “I’ve been living and breathing Amazon,” says Nirmal, who worked as an analyst at the e-commerce giant right out of college and started several Amazon companies himself. Now he’s scaling others’ products (household items like shower curtains, bug zappers and milk frothers), a process that includes expanding beyond Amazon to sites such as Walmart, Target and Best Buy. “We think the potential isn’t just getting a bunch of brands on Amazon. We think the true potential is turning these brands into true omnichannel brands,” says Nirmal, a Sikh who emigrated from India when he was 7 years old. He has given away Teslas for leads on deals in the white-hot space and is in the process of raising another \$400 million.

—Margherita Beale, Lauren Debter and Vicky Valet

- Francesca Aiello, 26**
Founder, Frankies Bikinis
- Dane Baker, 25**
Peter Twomey, 25
Cofounders, EcoCart
- Akshar Bonu, 26**
Cofounder,
the Custom Movement
- Laura Burget, 28**
Connie Lo, 28
Cofounders, Three Ships
- Chloe Chamberlain, 26**
Taylor Chamberlain Dilk, 29
Stephen Dilk, 29
Cofounders,
Balance Athletica
- Josh Deemer, 28**
Josh Pierce, 28
Cofounders, JAXXON
- Bryant Ellis, 28**
Founder, the
Adventure Challenge
- Dan Fischetti, 29**
Cofounder, Standard AI
- Issam Freiha, 26**
Vinay Menda, 29
Cofounders, Blank Street
- Brandon Garcia, 29**
Jay Hack, 29
Cofounders, Mira AI
- Cecilia Gonzalez, 27**
Kimberly Robles, 28
Cofounders, Hype and Vice
- Spencer Hewett, 29**
Founder, RADAR
- Brenton Howland, 28**
Cofounder, Forum Brands
- Adina Kamkhatchi, 26**
Mayer Kamkhatchi, 24
Cofounders, Adina’s Jewels
- Aadil Kazmi, 28**
Cofounder, Swyft
- Tejas Konduru, 26**
Cofounder, Via
- Fenco Lin, 29**
Cofounder, Cider
- Hunter Morris, 27**
Cofounder, Hello Cake
- Raunak Nirmal, 29**
Cofounder, Acquco
- Adam Olejniczak, 26**
Cofounder, Buffalo Market
- Olamide Olowe, 25**
Cofounder, Topicals
- Bianca Padilla, 28**
Cofounder, Carewell
- Haley Pavone, 26**
Founder, Fashion Footwear
- Liv Portio, 21**
Founder, DBL Jewelry
- Lisa Marie Posso, 29**
Cofounder, GYFTING
- Hussein Rakine, 26**
Founder, JustCBD
- Benjamin Smith, 29**
Founder, Disco
- Chloe Songer, 29**
Cofounder, Thousand Fell
- Anthony Watson, 29**
Cofounder, Shipbob
- Bryan Ye-Chung, 27**
Cofounder, Alabaster

JUDGES: Reham Fagiri,
Cofounder, AptDeco;
Aileen Lee, Founder, Cowboy
Ventures; Chris Riccobono,
Founder, UNTUCKit; Amber
Venz Box, Cofounder, LTK
(Class of 2017)

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ALEXANDRA COOPER

Age: 27 • Executive Producer, *Call Her Daddy*

In 2020, two years after founding the wildly popular sex-and-dating podcast *Call Her Daddy*, Cooper and her cohost, Sofia Franklyn, went through a public breakup over intellectual property. Cooper came out victorious, striking a deal with Barstool Sports, which agreed to give her full IP rights if she'd do the podcast solo with Barstool for one year. She left Barstool this past summer after landing a three-year licensing agreement with Spotify reportedly worth north of \$60 million, making her one of America's highest-paid female podcasters. "I didn't go to business school," Cooper says. "I didn't know any of this stuff, trademarks and the importance of the IP." But she knows now. Today, millions of listeners tune in to a more mature version of the podcast, which focuses on mental health with guests such as Miley Cyrus, Chelsea Handler and Tiffany Haddish.

—Abigail Freeman, Haniyah Philogene and Kristin Stoller

Michelle Andrews, 21
Tim Chau, 22
Joelene Latief, 20
 Cofounders, Impact
Shira Atkins, 29
Jenny Kaplan, 29
 Cofounders,
 Wonder Media Network
Shray Bansal, 27
Nigel Egrari, 24
Arjun Mehta, 25
 Cofounders, Moment House
Willa Bennett, 27
 Associate Director,
 Social Media, GQ
Shaquille Brewster, 28
 Correspondent, NBC News
Cole Brown, 26
 Author
Alexandra Cooper, 27
 Executive Producer,
Call Her Daddy
Ja'Leah Davis, 29
 Founder, Eyeconic Television
Jeremy Diamond, 28
 White House Correspondent,
 CNN
Tyler Foggatt, 26
 Senior Editor, the *New Yorker*
Amanda Gorman, 23
 Poet
Isabella Gutierrez, 27
 Correspondent, NBC News
Leo Hentschker, 25
Josh Hone, 28
Jake Seaton, 26
 Cofounders, Column
Oladotun Idowu, 29
 Founder, Sisters in Media
Michael Ippolito, 28
Jason Yanowitz, 27
 Cofounders, Blockworks
Zolan Kanno-Youngs, 28
 White House Correspondent,
 the *New York Times*
Pierre Lipton, 24
 Cofounder, 1440 Media
Wendy Lu, 29
 Editor, *HuffPost*
Amber Mayfield, 28
 Founder, To Be Hosted
Eno Oduok, 22
 Founder, Naija Comm
Curt Pires, 29
 Founder, Tecc Content
Morissa Schwartz, 28
 Founder, GenZ Publishing
Charlotte Smith, 29
 Policy Communications
 Manager, Google
Alayna Treene, 27
 Congressional Reporter,
 Axios
Krithika Varagur, 28
 Author
Bryan Washington, 28
 Author
Elizabeth Woodward, 29
 Founder, Willa Productions
Tevin Wooten, 28
 Meteorologist, the
 Weather Channel
Jasmine Wright, 29
 White House Reporter, CNN
Remi Anne Yamamoto, 29
 Special Assistant to the
 President and Senior Advisor
 for Communications for the
 Office of the Chief of Staff,
 the White House

JUDGES: Jazmine Hughes,
 Staff Writer, the *New York*
Times (Class of 2018); Jason
 Stein, Founder, SC.Holdings
 (Class of 2014); Jacob
 Weisberg, Cofounder, Pushkin
 Industries; Elaine Welteroth,
 Author



INVEST FOR PROGRESS

3 Ways To Integrate Climate Into Your Portfolio With ETFs

By Ellen Sheng

Climate change is one of society's key issues.

The increasing number of extreme, climate-related events—from wildfires to droughts to winter storms—is negatively impacting populations and regions all over the world. Yet the implications of our warming planet don't stop there; climate change also brings new risks to investors.

"The idea that climate risk represents investment risk has moved from a novelty in the investment world to something approaching mainstream thinking in just a few years," says Armando Senra, head of iShares Americas. "We believe that the biggest potential benefits will accrue to the global investors who are quickest to ready their portfolios for the new era of climate investing."

Until recently, there wasn't a lot of choice for those

interested in climate investing. You could either research securities yourself or pay a premium to hire a professional. Now, investors have a convenient, low-cost way to invest in the emerging low-carbon economy through sustainable exchange-traded funds (ETFs), diversified collections of securities (like mutual funds) that trade on an exchange (like stocks).

"There are now nearly 600 sustainable ETFs globally, up from around 30 a decade ago,¹ and a growing number that have climate-oriented considerations," says Gargi Pal Chaudhuri, head of iShares Americas Investment Strategy. "The increasing number of sustainable ETFs, including climate-oriented ETFs, will offer new and convenient ways for all investors to access innovative strategies at a key moment in the transition to a low-carbon economy."

To help you get started with climate investing, here are three ways you can integrate climate risks and opportunities into your portfolio with ETFs.

01 Seek To Reduce Exposure To Carbon Emissions Or Fossil Fuels



THE STRATEGY

Funds with this strategy seek to reduce exposure to carbon emissions or activities related to fossil fuels. The iShares ESG Advanced MSCI USA ETF, for instance, seeks to track an index of companies with favorable environmental, social and governance (ESG) ratings while also screening out those involved in controversial business activities, including those related to fossil fuels.²

Other funds, like the iShares MSCI ACWI Low Carbon Target ETF, for example, reduce exposure by targeting companies with lower carbon emissions.

WHY IT MATTERS

“Evidence that ESG criteria and exposure to fossil fuel-related activities influence portfolio outcomes is helping to displace conventional notions that sustainable investing means sacrificing returns.³ ETFs may be included into portfolios for potentially better risk and return characteristics, and to help meet sustainability and climate goals.”

- Armando Senra, Head of iShares Americas

ETFs TO CONSIDER

- **iShares ESG Advanced MSCI USA ETF**
Prioritize higher-rated ESG companies while screening out controversial industries.
- **iShares MSCI ACWI Low Carbon Target ETF**
Target companies with lower carbon emissions.
- **iShares ESG Screened S&P 500 ETF**
Seek to eliminate exposure to certain controversial business activities that pose risks or do not align with an investor's preferences.

02 Target Climate Themes And Impact Outcomes



THE STRATEGY

Investors with high conviction in climate investing and a higher tolerance for risks and returns that deviate from broad benchmarks may want to consider thematic and impact investments. Some thematic and impact funds provide exposure to particular climate-related themes, such as clean energy. They may also invest in green bonds, which are used to fund specific environmental projects, like water treatment plants or wind farms.

With these ETFs, investors can support companies that are delivering positive environmental impacts. The iShares Global Clean Energy ETF, for instance, focuses on global companies in the renewable energy sector that are involved in the production or the distribution of solar, wind and other forms of renewable energy.

WHY IT MATTERS

“Increasing laws around emissions and progress toward a carbon-neutral economy as well as anticipation of further regulations is increasingly impacting how companies evolve their business to address climate change.”

- Gargi Pal Chaudhuri, Head of iShares Americas Investment Strategy

ETFs TO CONSIDER

- **iShares Global Clean Energy ETF**
Target exposure to companies that produce energy from solar, wind and other renewable sources.
- **iShares Global Green Bond ETF**
Access global investment-grade green bonds issued to fund projects with direct climate or environmental benefits.
- **BlackRock Future Climate and Sustainable Economy ETF**
Target companies addressing climate change across sustainable energy, future of transport, circular economy and nutrition.

03 Prioritize Companies That May Benefit From The Transition To A Low-Carbon Economy



THE STRATEGY

The transition to a low-carbon economy has started, and we believe companies preparing for that reality can benefit. Funds can invest in companies based on exposure to, and management of, transition risks and opportunities. The BlackRock U.S. Carbon Transition Readiness ETF, for instance, focuses on companies that BlackRock believes are better positioned to benefit from the transition to a low-carbon economy. This ETF considers a company's energy, water and waste management as well as energy production and clean technology involvement.

WHY IT MATTERS

“We believe that investors who don't consider the effects of climate change on the global economy and asset prices aren't seeing the whole picture. Emerging research suggests that companies that are most well adapted to a low-carbon economy are better positioned than peers to grow earnings, and that greenhouse gas efficiency has links to financial performance.”⁴

- Armando Senra, Head of iShares Americas

ETFs TO CONSIDER

- **BlackRock U.S. Carbon Transition Readiness ETF (Active)**
Invest in large- and mid-capitalization U.S. equity securities that may be better positioned to benefit from the transition to a low-carbon economy.
- **BlackRock World ex U.S. Carbon Transition Readiness ETF (Active)**
Invest in large- and mid-capitalization world ex-U.S. equity securities that may be better positioned to benefit from the transition to a low-carbon economy.

To learn more about how you can integrate climate risks and opportunities into your portfolio using ETFs, visit [ishares.com/sustainable](https://www.ishares.com/sustainable).

SOURCES:

1. BlackRock analysis of Morningstar global data (as of December 31, 2020).
2. Screens are based on revenue or percentage of revenue thresholds for certain categories (e.g., \$500 million or 50%) and categorical exclusions for others (e.g., nuclear weapons). MSCI, the iShares ESG Advanced MSCI USA ETF's index provider, screens companies with involvement in fossil fuels by excluding any company in the energy sector as per GICS methodology and all companies with an industry tie to fossil fuels such as thermal coal, oil and gas—in particular, reserve ownership, related revenues and power generation. Companies that meet the fossil fuel involvement screen but that derive more than 50% of revenues from alternative energy and do not have an industry tie to thermal coal or oil sands or have fossil fuel reserves used most likely for energy applications, as determined by MSCI, will be added back.
3. MSCI, "Foundations of Climate Investing: How Equity Markets Have Priced Climate Transition Risks," March 2021.
4. Ibid.

IMPORTANT INFORMATION:

Carefully consider the Funds' investment objectives, risk factors, and charges and expenses before investing. This and other information can be found in the Funds' prospectuses or, if available, the summary prospectuses, which may be obtained by visiting www.iShares.com or www.blackrock.com. Read the prospectus carefully before investing.

Investing involves risk, including possible loss of principal.

A fund's environmental, social and governance ("ESG") investment strategy limits the types and number of investment opportunities available to the fund and, as a result, the fund may underperform other funds that do not have an ESG focus. A fund's ESG investment strategy may result in the fund investing in securities or industry sectors that underperform the market as a whole or underperform other funds screened for ESG standards. In addition, companies selected by the index provider may not exhibit positive or favorable ESG characteristics.

A fund's strategy of investing in securities of companies with low carbon exposure limits the type and number of investment opportunities available to the fund and, as a result, the fund may underperform other funds that do not seek to minimize carbon exposure. A fund's low carbon exposure investment strategy may result in the fund investing in securities or industry sectors that underperform the market.

Fixed income risks include interest-rate and credit risk. Typically, when interest rates rise, there is a corresponding decline in bond values. Credit risk refers to the possibility that the bond issuer will not be able to make principal and interest payments.

A fund's green bond investment strategy limits the types and number of investment opportunities available to the fund and, as a result, the fund may underperform other funds that do not have a green bond focus. A fund's green bond investment strategy may result in the fund investing in securities or industry sectors that underperform the market as a whole or underperform other funds with a green bond focus. In addition, projects funded by green

bonds may not result in direct environmental benefits.

The BlackRock funds are actively managed and their characteristics will vary.

When comparing stocks or bonds and ETFs, it should be remembered that management fees associated with fund investments are not borne by investors in individual stocks or bonds.

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DECADE AGO, **Daniel Ek** CONVINCED LABELS AND ARTISTS TO STREAM THEIR SONGS ON SPOTIFY, REVIVING THE FLATLINING MUSIC INDUSTRY. NOW, AFTER AMASSING A \$4.4 BILLION FORTUNE, HE'S MOVING PAST POP STARS, OPENING HIS SUPER-STREAMER TO STORYTELLING, LIVE TALK AND A NEW BREED OF AUDIO CREATORS IN A BID TO OWN THE WORLD'S DIGITAL EARDRUMS.

BEYOND THE SOUND BARRIER

BY STEVEN BERTONI

PHOTOGRAPHY BY
GUERIN BLASK FOR FORBES



It's

lunchtime in late October, and 71 stories above Wall Street at 4 World Trade Center, Daniel Ek is strolling along the polished concrete floors of Spotify's headquarters. He passes sleek sculptures of headphones crafted in neon-hued metal, couch-lined luxury lounges for VIP advertising clients and sound-proof podcast studios custom-built for the medium's biggest stars, then enters a large cafeteria rigged with stage lighting for pop-up concerts.

The room is being prepped for dinner with Spotify's board, which will include a surprise performance by Brothers Osborne—a hip country-rock duo whose hit song “Stay a Little Longer” has been streamed 180 million times on Ek's music service. Spotify just reported third-quarter earnings, and Ek, a 38-year-old self-described introverted engineer who seldom gives interviews, is having a rare day in the spotlight.

The soft-spoken Swede, who has a shaved head and a beard, has been on the move since 5 a.m. hosting calls with financial analysts, sitting for a parade of interviews and leading a 200-employee town hall. “It was crazy, because it was the first in-person meeting we've done here in two years,” says Ek, decked out in black jeans, a black suede coat and patent-leather sneakers. “It had a great, warm vibe. Everyone was hugging and applauding.”

There were billions of reasons to cheer. Earlier in the day, Spotify dropped blowout quarterly numbers, making a racket that reverberated across the worlds of Wall Street, music and media. Revenue hit \$2.9 billion, a 27% jump from the same quarter last year. Ad sales climbed 75% to nearly \$375 million. Active listeners grew just shy of 20% over the same time the previous year to more than 380 million. Ditto paid subscribers, who now top 170 million. Its stock, stuck on pause for most of 2021, popped 10%, adding \$5 billion in value and pushing

Spotify's market cap above \$50 billion for the first time since the summer.

The company has come a long way since Ek reluctantly threw on a suit and tie—and threw back a few whiskies—to pose for the cover of the first Forbes 30 Under 30 issue ten years ago. Back then, in January 2012, Spotify had just 500 employees, \$300 million in sales and a valuation of \$2 billion. The service had been available in America for only six months. Today, Ek's super-streamer plays in 184 countries, has 7,400 employees and \$9.7 billion in annual sales. Spotify went public in 2018, and Ek—who in 2012 had a paper fortune of \$300 million—is now worth \$4.4 billion.

“Spotify was the force that transitioned hundreds of millions of users from piracy to paying customers,” says Sean Parker, who, as cofounder of Napster, was considered the Blackbeard of the music business before becoming Facebook's first president and a Spotify investor. “It's no exaggeration to say that Daniel saved the music industry.”

Record labels are certainly cashing in. When Spotify arrived in the U.S. in 2011, streaming was a \$600 million business, accounting for 4% of the recording industry's annual global revenue. In 2020, streaming services delivered \$13.4 billion in sales, representing 62% of industry revenue. Last year, Spotify paid out \$5 billion to rights holders, mostly the big labels, which passed along an estimated \$500 million of that to recording artists. “Let's be real,” Ek says. “I had no idea Spotify's cultural and monetary impact would ever be this big.”

Now he wants to go even bigger. Let other media behemoths battle for eyeballs; Spotify is going after the world's eardrums. “Everyone underestimates audio. It should be a multi-hundred-billion-dollar industry,” Ek says. “Audio is ours to win.”

Much of the audio world remains fragmented and shockingly analog. Radio, a 135-year-old technology, has proven more resilient than Keith Richards.

“IT'S NO EXAGGERATION TO SAY THAT DANIEL SAVED THE MUSIC INDUSTRY.”

Each day the old-school medium reaches an estimated 3 billion people, and each year it pulls in ad revenue topping \$30 billion, according to advertising research firm WARC. “In the U.S. alone, two-thirds of all audio ad spending still goes to terrestrial radio,” Ek says. “That's a massive amount of revenue that needs to shift online.”

He's shaping Spotify into the go-to destination

It's an obvious decision.

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for all digital sound: not just music but news, storytelling, live talk, audiobooks and education. He wants to provide the tools to empower audio creators to dream up entirely new categories with fresh soundscapes. All of which will be run through Spotify's AI-powered algorithms to deliver an audio stream personalized to each listener. What TikTok, YouTube and Instagram have done for photos and video, Ek wants to do for sound.

"Having easy-to-use cameras in our hands has taken video production from esoteric to the mainstream. Audio should do the same," says Mary Meeker, the founder of venture firm Bond and longtime author of the influential *Internet Trends* report. "The opportunity to evolve audio creation and interactivity for millions of people is significant."

When the Swedish-born Spotify burst on the American scene in 2011, the music industry was a mess. Late to transition to digital music and bled dry by piracy and file-sharing sites like Napster, the recording business had fallen hard from the glory days of the late 1990s, when compact discs

reigned supreme. In 2011, recorded-music revenue was near \$15 billion, 40% less than the \$24 billion in sales it logged ten years before.

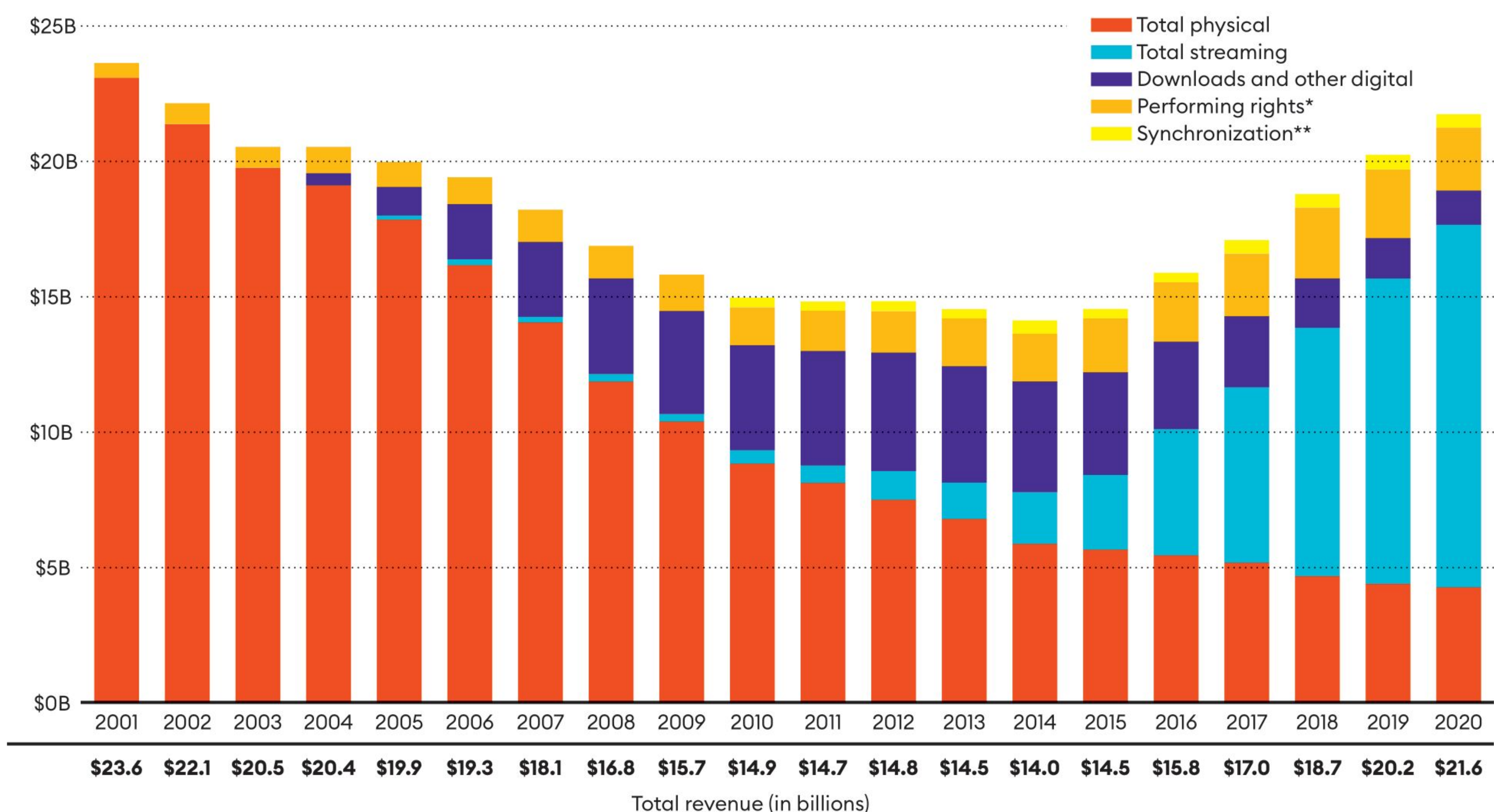
Enter Ek. Raised in Stockholm's rough Ragsved neighborhood, he had a natural talent for music and coding. In high school he made websites for local businesses, then dropped out of college during his first year to build a digital ad company he later sold to online marketer Tradedoubler for more than \$1 million. Just 22, Ek bought a Ferrari and bottle service in flashy clubs before the rock-star life ultimately left him depressed. He retreated to a remote cabin to focus on fixing digital music. In 2006, he teamed up with Tradedoubler's cofounder, Martin Lorentzon—now Spotify's chairman, who's worth \$5.8 billion thanks to having bankrolled much of the streamer's early days. The duo set out to build an ad-based music site with the ease of iTunes, the speed of Google, the sharing of Facebook and the massive music library of Napster—but legal.

The challenge was part technical, part contractual.

FULL STREAM AHEAD

When Spotify first landed in America in 2011, music streaming was just a \$600 million global business. Physical album sales and downloads totaled \$12.4 billion. Fast-forward to 2020, and the music industry had its best performance in 18 years, jumping 47% to \$21.6 billion. Streaming accounted for \$13.4 billion of that, 62% of the take.

GLOBAL RECORDED MUSIC INDUSTRY REVENUE, 2001-2020



*Performance rights: fees paid for music at sporting events, live broadcasts, supermarkets and more.
 **Synchronization: fees paid for music used in advertisements, TV and movies. Source: IFPI



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Ek obsessed over a design that seamlessly worked on desktops and the exploding smartphone market. His engineers created a clever distribution system using a combination of physical servers, cloud computing and peer-to-peer file sharing that let millions of people access tens of millions of songs simultaneously.

The lawyers proved tougher. Years of rampant internet-based piracy had left record labels paranoid about giving up rights, especially to a free, ad-based service. After Spotify debuted in Eu-

brand around music," Parker says. "Few thought Spotify would survive with iTunes preinstalled on billions of iPhones and Macs." Of course, Apple remains a potent player in the space, with an estimated 70 million subscribers in 2020 (YouTube Music has around 50 million, Amazon Music 55 million). But the big three are far behind Spotify's 170 million paying customers. And Apple and Amazon don't offer a free, ad-based

option. Spotify does, and it attracts an additional 220 million users. "Before, ad-supported music was just the on-ramp to subscriptions," says Richard Greenfield, a partner at media research shop LightShed Partners. "Now it's big business by itself, and Spotify has no competition."

The company got a head start thanks to its easy-to-use, play-anywhere product, shareable playlists (there are now some 4 billion) and having been the first to offer a streaming model that customers preferred over either paid downloads or piracy. It proved sticky, too: Once listeners built libraries, they had few incentives to switch to a different service. Extreme focus and a clear mission also helped. "The best people in audio come to Spotify because we're the best at it. Over at Apple, music is priority No. 27," Ek says. "If you want to build a self-driving car, don't come to us."

Although Spotify has become music's new Mecca, its stock has sputtered. Over the last 12 months, shares are up 4%—vastly underperforming the S&P 500 and Nasdaq's more than 30% gains. Investors hate its CD-thin margins and

the leverage the major labels hold over it. Because Spotify doesn't own the music it streams, as much as 70% of every revenue dollar goes to rights holders (who then, depending on contracts, pay the artists). Spotify has never swung an annual profit. Last year its losses tripled to \$713 million. "I focus on cash flow. It's positive, and we're not dependent on investors to fund us," Ek says with a shrug. "We aren't profitable yet because we keep investing. We want to keep growing because there is such a big prize at the end of the tunnel." He's betting big on podcasts to get to the light.

A

fluke was the spark of Spotify's podcast epiphany. In 2017, Ek noticed something odd out of Germany, one of the company's top markets. Music labels, to maximize streams, had



Opening Act

Daniel Ek jams out at Lincoln Center in Manhattan on a frigid December night during his cover shoot for the 2012 inaugural edition of the Forbes 30 Under 30.

rope, Ek negotiated for more than three years to get the rights he needed to launch in the U.S. "Daniel could have entered America much sooner by signing a bad deal that would have destroyed the company," Parker says. "He had the iron will to resist labels and artists trying to take advantage of the company."

That iron will alchemized Spotify into a gold mine—for both its early investors and the music industry as a whole, whose companies now trade near historic highs. Warner Music Group is up 50% over the past 12 months, with a market cap of \$20 billion. Universal, which recently spun off from media titan Vivendi, is worth nearly \$50 billion.

Most shocking of all, Spotify has kept its lead even as a trio of trillion-dollar titans—Apple, Alphabet and Amazon—launched competitive products. "Apple's big comeback [in the early 2000s] was centered around the iPod—they built their whole

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begun uploading audiobooks. Spotify was built for three-minute songs, not 30-minute chapters. The user experience was terrible. Fast-forwarding and rewinding were tricky. Chapters would be shuffled out of order. Nonetheless, some titles cracked the charts next to the latest pop hits. “It showed we had permission to go outside of music,” Ek says.

Podcasts, long dominated by Apple, seemed ripe for a shake-up. “It was still download-based. Advertising and discovery were clunky. You couldn’t play the podcast easily in your car or on your smart speakers,” Ek says. “We realized everything we built for music could be adapted to podcasts.”

That segment started small and was initially a flop. Most people saw Spotify strictly as a music company. Then Ek went big. “I told our team we were publicly committing \$1 billion to podcasting. They told me the entire market isn’t worth a billion. I said, ‘Well, it will be,’” Ek says with a laugh. “The number was significant enough that it was scary for us, which is important. I wasn’t betting the entire company on it, but it was meaningful enough that everyone, including us, had to take it seriously.”

Spotify, a hardcore tech business, was now diving head-first into content. Ek hired Dawn Ostroff, a TV veteran who had helmed the UPN and CW networks in the early 2000s and, later, Condé Nast Entertainment, to amass a sweeping array of shows and build an advertising machine to monetize it. In 2019, Spotify paid \$194 million for prestige podcast network Gimlet Media, \$55 million for true-crime studio Parcast and \$190 million for Bill Simmons’ sports-and-culture network, the Ringer. For tools, Spotify dropped \$154 million on Anchor, which makes software for recording shows, and another \$236 million to buy Megaphone, an ad network.

“LET’S BE REAL—I HAD NO IDEA SPOTIFY’S CULTURAL AND MONETARY IMPACT WOULD BE THIS BIG.”

In 2021, Spotify generated buzz by signing a widely reported \$60 million licensing deal for Alex Cooper’s *Call Her Daddy* and \$100 million for *The Joe Rogan Experience*—the latter podcasting’s most popular, and polarizing, show. (Spotify declined to comment on the deal prices.) Next came partnerships with A-listers including Barack and Michelle Obama, Prince Harry and Meghan Markle, Kim Kardashian and filmmaker Ava DuVernay. “It was a multitiered strategy,” Ostroff says. “We had to build a catalog of as many podcasts as possible, attract established podcast stars and go after top talent who could lend their craft to the medium.”

In February, Spotify launched its advertising network, enabling brands to serve targeted ads to listeners of its more than 3 million shows. While Apple has been notoriously stin-

gy about sharing data, Spotify is going in the opposite direction, providing a bundle of analytic tools to help brands and creators measure the effectiveness of campaigns and offer clear info on audiences.

Podcasters love it. “To borrow an NCAA metaphor, [before Spotify] we were an independent university trying to compete with the big boys in the SEC,” Bill Simmons says. “We’re now doing twice as many shows as before, and the quality and diversity of our shows is incredible.”

Spotify’s trove of data is a powerful perk. “It gives us unbelievable insight and advantage,” Simmons says. “It shows us moves we should be making and things we’re not doing right.” When Simmons’ fantasy-football podcast initially underperformed, data revealed that its competitors attracted strong followings by launching episodes well before the NFL season began. Simmons debuted the program earlier, and listener numbers soared. Lydia Polgreen, Gimlet Media’s boss, used Spotify’s metrics to develop true-crime programs that mixed the tabloid drama audiences craved with Gimlet’s brand of high-quality storytelling. (Video giants Netflix and Amazon Prime have long mined data to spot promising plots and stars for series and films.)

Next up? New revenue models for creators to better interact with—and make money off—their fans. Spotify’s “free” and “paid” tiers will remain, but Ek is adding more options that will let creators charge for exclusive content, early access and interactive experiences. The basic idea isn’t radically different from other membership sites like Patreon—or OnlyFans—but it’s tailored specifically to audio. A recent deal with Shopify will let artists sell tickets and merchandise on their Spotify pages. Whatever the model, Spotify will likely get a piece of each sale—a fresh revenue stream it won’t have to share with record labels and publishers.

With Spotify’s podcasts hitting all the right notes, Ek has turned to other formats. In November, he bought audiobook network Findaway to take on Audible, the Amazon-owned market leader. He’s also rolling out video podcasts.

This summer, Spotify launched its live-content product Greenroom as an answer to Clubhouse, a live-talk app that became a surprise hit during the pandemic. Bill Simmons initially thought Ek was chasing a fad. “Daniel made a smart case. He said we’re the best at audio. This might be a thing—or it might not. But we must do it, make the best version of it and see if it works.”

Ek is a tinkerer, an improver of improvements, rather than a tech visionary with a fixed master plan. “I don’t have Steve Jobs’ crisp view of the future,” he says, standing in his mic-filled podcast studio. “But I have a direction. If we’re moving fast enough, I know we’ll eventually get there.” **F**

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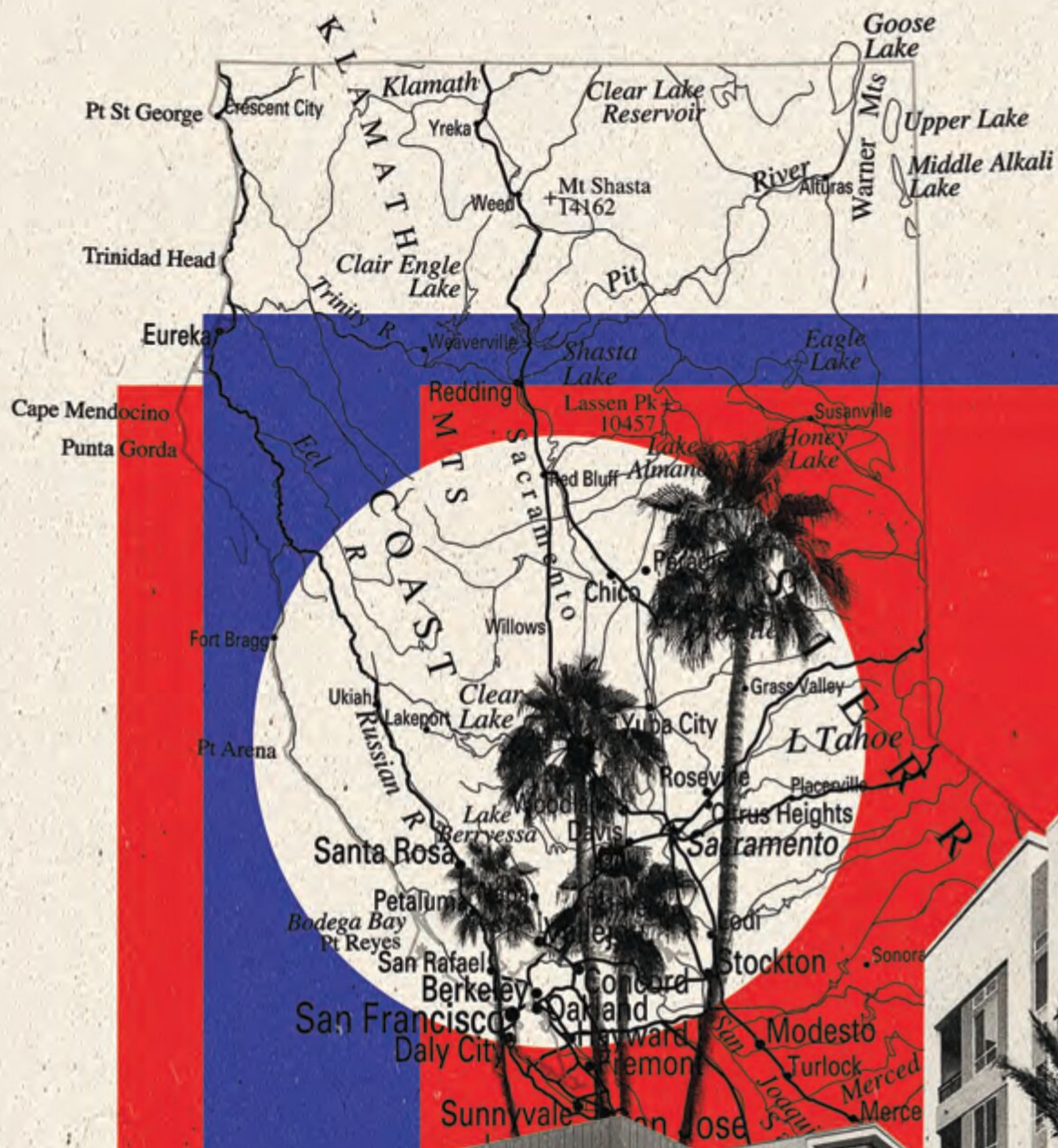
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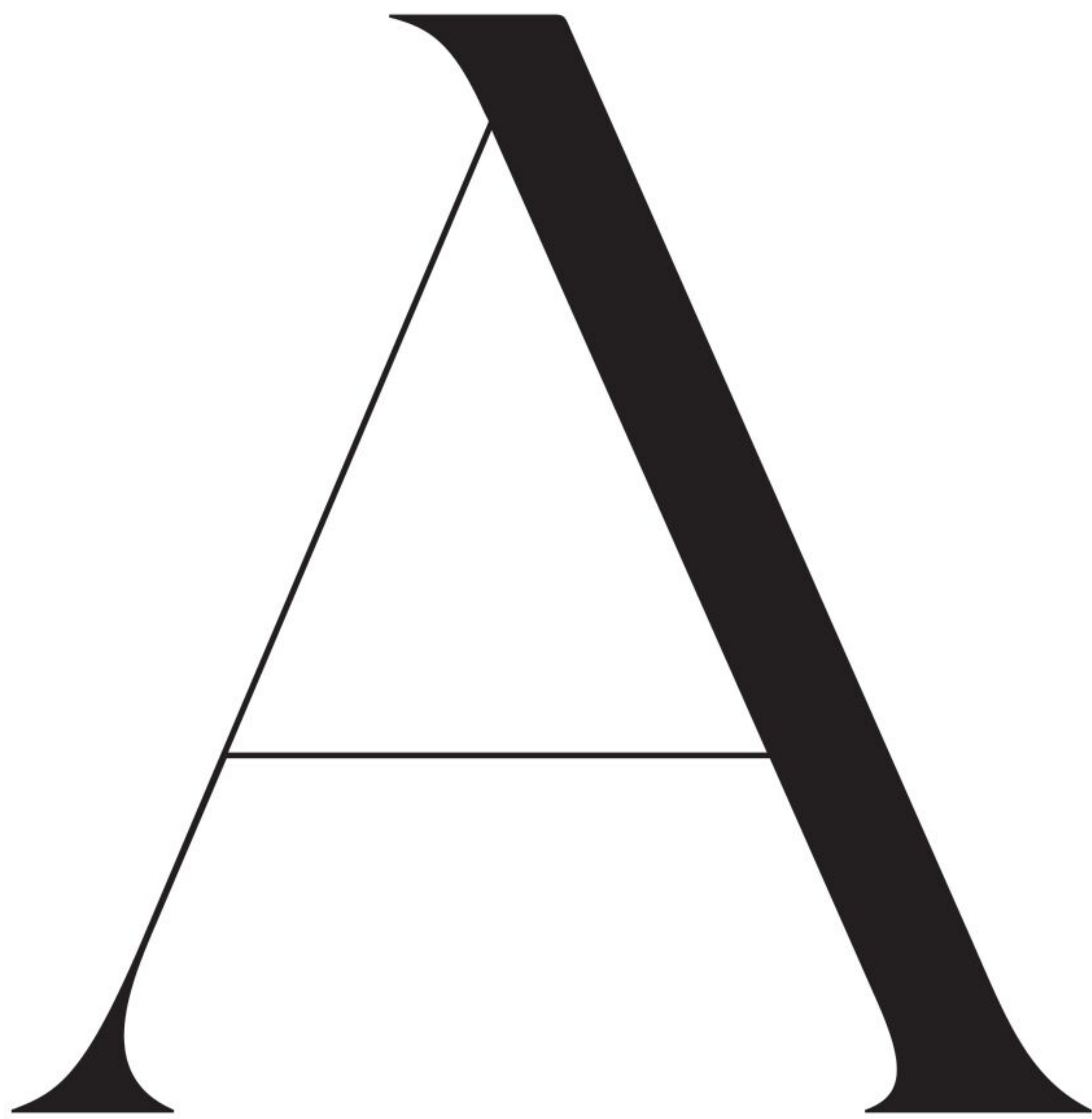
THE INVESTIGATION

Nowhere is the affordable-housing crisis more acute than in the Golden State. To the rescue come the most notorious junk municipal-bond peddlers in the nation, and a promise to turn luxury apartment buildings into “workforce housing.”

SCHEMING

BY MATT SCHIFRIN WITH ISABEL CONTRERAS AND RACHEL SANDLER





AMONG CALIFORNIA real estate developers, Jordan Moss has an exceptionally big heart. His Marin County firm, Catalyst, is dedicated to developing affordable housing—no small challenge in a state in which small one-bedroom apartments routinely lease for more than \$3,000 a month and rents can climb at double-digit rates annually.

“I quickly came to the conclusion that I don’t have the temperament for that business, when you’re waiting years and years to find out if you’re going to get an allocation of [low-income housing tax] credits and bonds, and all the other things needed to make that sausage,” says Moss, a former UC Davis basketball player.

But in 2019, he partnered with a group of municipal-bond wizards and has since acquired 14 fully occupied luxury apartment buildings in some of California’s most expensive Zip codes—places like Sausalito, Larkspur and Huntington Beach. Even better, because he promises to turn these buildings into so-called “essential” or “workforce” housing, his deals were 100% financed by \$2.5 billion in tax-exempt municipal bonds, mostly courtesy of a little-known governmental entity he helped create: the California Community Housing Agency (CalCHA).

Moss’ Catalyst has already reaped more than \$23 million in upfront fees from his apartment deals, and over the 30-to-40-year lifespan of the bonds he stands to make hundreds of millions more. More than 20 California counties and cities have signed up with CalCHA, including tony Menlo Park, Mountain View, Napa and Berkeley. Moss plans to buy another dozen apartment complexes in 2022.

“When we connected the dots, we had an ‘aha’ moment,” says Moss, who recently hosted *Forbes* on a tour of one of his purchases, the 342-unit Serenity in Larkspur, with two saltwater swimming pools and a yoga studio. “The key

to success and scalability was governmental ownership.”

Welcome to the most exciting innovation to hit the municipal-bond business in decades. Essential housing bonds issued by quasi-governmental agencies like CalCHA aren’t limited by state municipal volume caps and cleverly sidestep the bureaucratic red tape required for tax credit-based financing. Since 2019, nearly \$6 billion in muni bonds have been issued to acquire more than 30 upscale apartment buildings at nosebleed prices.

Bankers from firms such as Goldman Sachs and Jefferies, property managers like Greystar and white-shoe law firms are feasting on hundreds of millions in fees. Then there are the sellers, like Equity Residential REIT and Lennar, getting top-dollar prices, and yield-hungry municipal-bond funds snapping up the 3% to 5% tax-exempt debt as fast as it hits the market.

“These are California exempt, and that’s a huge benefit because they’re also federally exempt. For a top tax bracket, especially a California investor, it’s pretty nice,” says John Miller, head of municipals at Nuveen, which has already slurped up some \$800 million in bonds. “And these are some pretty nice buildings.”

Not everyone is a fan of California’s housing-bond boom. Besides the front-loaded fees, these highly leveraged deals rely on rosy 30-plus-year recession-free forecasts. For the cities and counties that will ultimately own the buildings, it means forgoing millions in property tax revenue for decades. And it’s doubtful whether the often-modest rent discounts being offered to middle-income tenants will ever make up for the lost tax revenue.

“It’s like getting a slight discount on a Ferrari and calling it affordable,” says Matt Schwartz, president of California Housing Partnership, an affordable-housing advocate.

Be wary. The muni-bond industry’s solution to California’s affordable-housing crisis may soon be coming to your neighborhood. These deals are the brainchild of a small group of Northern California financiers who are also behind the market’s most controversial player, the Public Finance Authority of Wisconsin. In the last 11 years, PFA, which is only nominally headquartered in Madison and is managed by the same private financiers running CalCHA, has issued hundreds of bonds in 44 states for entities ranging from retirement homes in North Carolina to a zoo in Alabama, New Jersey’s American Dream Mall and proton-treatment cancer therapy centers in five states. According to Municipal Market Analytics, Wisconsin’s PFA has the worst default record of any municipal issuer, a charge the Public Finance Authority vigorously disputes, saying instead that its financings contribute to the social and economic growth of communities.

Counters Thomas Doe, president of Municipal Market Analytics: “You want to do a bond deal, you contact the Wisconsin PFA. They will accept anybody.”

INNOVATION COMES SLOWLY to the municipal-bond market. Despite dating back to financing the Erie Canal in 1812, the entire market is only \$4 trillion, compared to

\$11 trillion for corporate bonds. Munis are supposed to have a higher purpose. They are tax-exempt because their mandate is to finance essential public services, things like roads, hospitals, airports—and affordable housing.

Since many smaller cities and towns lack the expertise to issue their own bonds, some states have passed a law known as the Joint Exercise of Powers Act. This allows counties and cities to band together to create a governmental entity known as a Joint Powers Authority, which in practice outsources their bond-issuance powers to private financiers. Unlike traditional issuing authorities such as the Dormitory Authority of the State of New York, which has more than 450 staffers, JPAs are often shell companies that are run by a handful of financiers and lawyers.

One of the oldest and most prolific JPAs is the California Statewide Communities Development Authority (CSCDA). It was created in 1988 with help from two former Alameda County officials, Stephen Hamill and Jerry Burke, who formed a private advisory firm called HB Capital Resources. CSCDA counts more than 530 California counties and cities as members. Since inception it has raised more than \$65 billion through 1,700 different bond issues to finance everything from charter schools to sewer plants.

In 2004 HB Capital petitioned the California Legislature to allow CSCDA to finance projects outside the state. That effort was rejected. So Hamill and Burke took their show on the road, convincing the Wisconsin Legislature to create the Public Finance Authority in 2010 to issue tax-exempt and taxable conduit bonds nationwide.

Got a charter school, assisted living facility, chain of radio stations, hotel or otherwise well-intentioned project in need of low-cost financing? Simply visit PFA's website and pick from a menu of choices: 501(c)(3) nonprofits, affordable multifamily housing, manufacturing, waste facilities, commuter transportation. Then fill out an application and wait. Since it began issuing bonds in late 2010, Wisconsin's Public Finance Authority has been responsible for 464 bond issues worth nearly \$13 billion, according to Refinitiv. In the last three years, less than 1% of its projects were in Wisconsin.

Many of PFA's deals fall in the junk category—they tend to be unrated by S&P or Moody's and offer tax-exempt coupons as high as 10%. Many have paid bondholders well, but others have ended in disaster. In 2015 a former bond salesman named Victor Farias filled out PFA's five-page application and was able to secure \$10.8 million in 8% taxable munis to finance his Boerne, Texas, startup,



Tax-Exempt Havens

By selling to muni-backed buyers, REITs like Equity Residential and UDR and developers including Lennar got top dollar for these prime properties—now ready for California's missing middle. (Clockwise from left) Oceanaire in Long Beach, Anaheim's Parallel and Sausalito's Summit apartments, including its outdoor lounge area.



Integrity Aviation Finance. Farias promised that his company would buy commercial jet engines at a discount, refurbish them and lease them to major airlines. PFA reviewed no audited financials or feasibility studies before issuing the bonds.

Today those bonds are nearly worthless. According to an SEC complaint, Farias was running a Ponzi scheme. In addition to the \$11 million in bonds he sold through PFA and Austin, Texas, broker National Alliance Securities, he raised \$14 million in 12% promissory notes mainly from retired police and first responders in San Antonio. Farias was recently sentenced to 11 years in federal prison.

Other troubled PFA bond issues include \$43 million in 10% tax-free municipals issued for eight retirement facilities in Georgia and North Carolina, a chain of Goodwill stores in Nevada financed with \$22 million in tax-exempt debt, an osteopathic college in Minneapolis that never even opened and a maritime academy in Palm Beach, Florida.

Free-standing proton-therapy cancer treatment centers are a new source for bond deals and fees for Wisconsin's PFA. Since 2017 they have financed the acquisition of no fewer than five cancer therapy centers across the country, raising more than \$700 million in tax-exempt bonds paying between 6% and 8.75%.

All are in financial trouble. Some of their woes stem from the pandemic. Says PFA attorney Andrew Phillips: "The bonds issued in the vast majority of all PFA projects, including the proton treatment centers that treat cancer patients across the country, are professionally underwritten by financial institutions, supported by feasibility

"These apartments are being bought for 33 times net operating income. Historically, it's the very top of the market."

studies and sold to institutional investors." Still, some may never recover from the malignant effects of heavy debt and high interest costs.

PFA's Maryland proton center lost \$20 million on revenue of \$29 million in the nine months ending September 2021. Nearly all the loss came from debt costs including fees to PFA. Its "cash on hand" to cover operating expenses is a mere 12 days, down from 120 prior to its deal with PFA.

OUTSIDE MUNI-BOND CIRCLES, little is known about Michael LaPierre and Scott Carper, the financial wizards behind Wisconsin's PFA. The duo declined repeated interview requests from *Forbes*. Both learned the ropes at CSCDA under Hamill and Burke at HB Capital. In 2014,

after PFA deals began getting negative press, LaPierre moved a few miles away in Walnut Creek and, with backing from HB Capital, formed GPM Municipals, taking the Wisconsin PFA contract with him. HB Capital continued to manage California-focused CSCDA, and in 2015 LaPierre set up his own California Joint Powers Authority, called the California Public Finance Authority. CalPFA has so far issued 34 bonds worth \$1.3 billion.

California's workforce-housing gold rush may be LaPierre and Carper's most lucrative gambit yet. CalCHA is calling its luxury-to-affordable multifamily deals "essential" housing bonds. LaPierre and Carper's former colleagues at CSCDA are issuing bonds even faster, labeling *their* workforce-housing deals "social" bonds, with an endorsement from ESG research firm Sustainalytics. So far, CSCDA, with help from developer Waterford Property of Newport Beach and others, has completed 19 deals backed by nearly \$3 billion in bonds versus CalCHA's 14 apartment complexes backed by \$2 billion in munis.

All the deals have similar features. After a private developer and its JPA partner identify a multifamily asset to acquire, the pitch to local politicians goes something like this:

Around a third of the units will be leased to those earning up to 80% of the average median income in the area, and most other apartments will go to those making between 81% and 120% of the average median income. Rents on units will be restricted to 30% to 35% of household income, with a cap on annual increases at 4%. No existing tenants, who are paying market rent in these fully occupied apartments, will be displaced.

And though the local governments will become beneficial owners of these apartment buildings, the deal is sold to them as a no-money-down commitment, with no liability for the bonds and no use of precious tax credits. The JPA and the developer handle everything, from disbursement of funds to management of the properties. And the feasibility studies always provide pages of assurance that rents will easily cover the debt. The catch is that the city or county (and local schools) will have to forgo the income from property taxes. No worries, say the muni merchants: Cities stand to make a windfall because after 15 years, the municipality has the right to sell the building.

"When you look at the value of California real estate compounding over multiple decades, you could pick any starting and ending period in history," Moss asserts. "The values only go one direction."

Such rosy forecasts make for highly leveraged deals. In February 2021, the CSCDA, on behalf of the city of Anaheim, purchased a 386-unit apartment complex, Parallel, with amenities including a spa, a pet washing station and a basketball court. The seller, an NYSE-listed REIT called UDR, built the facility in 2018 and sold it to CSCDA, 95% occupied, for \$156 million, booking a tidy \$51 million gain. Goldman Sachs underwrote \$181 million worth of muni bonds for the deal, tacking on an additional \$25 million in debt.

Why the extra leverage? Generous fees are a big factor.

CHANGE IS POSSIBLE

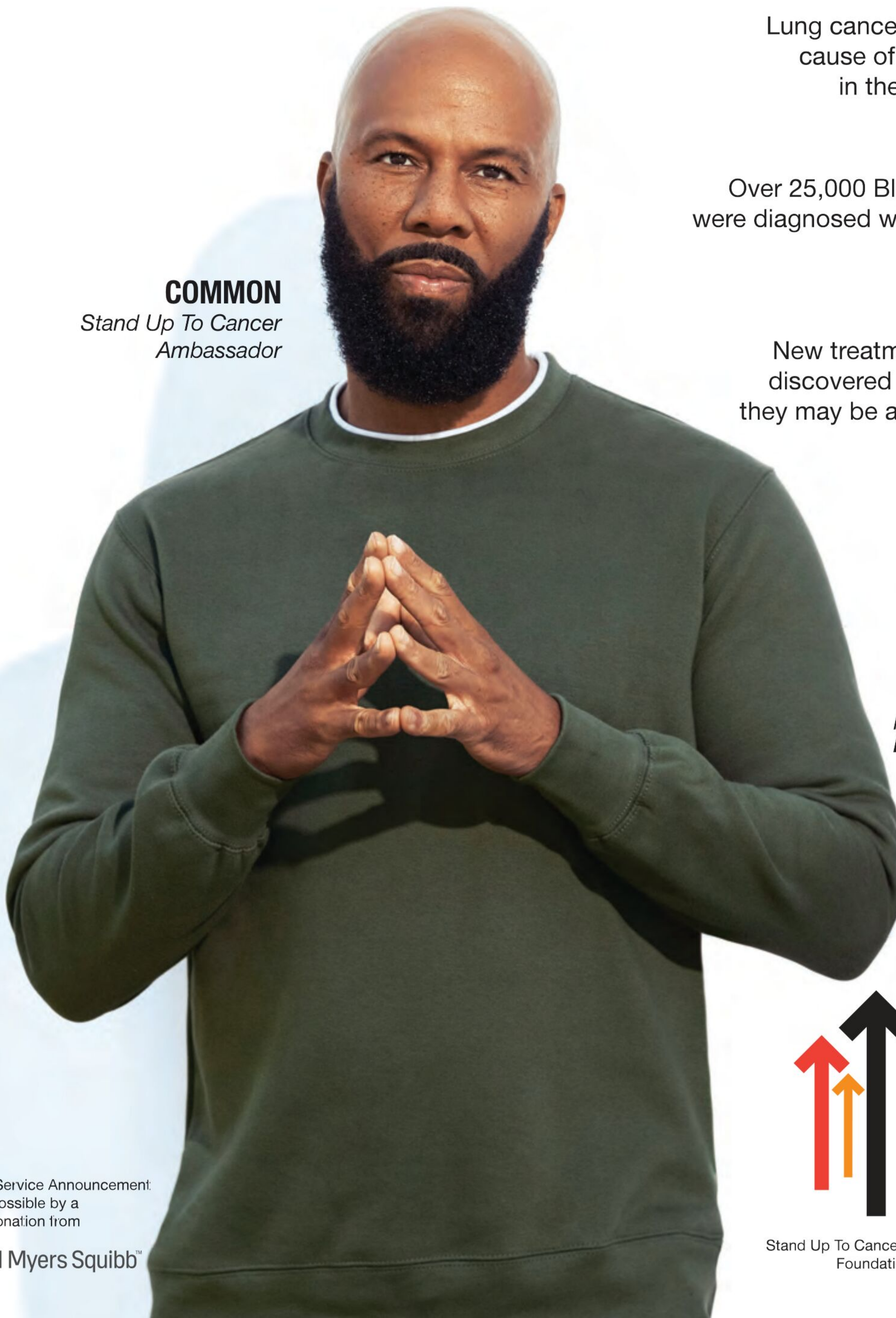
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Fact:

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25k

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Goldman; bond counsel Orrick, Her- rington & Sutcliffe; and CSCDA shared an upfront fee of \$5.6 million. The de- veloper Waterford Property, responsi- ble for securing the deal, booked an im- mediate \$2 million “project adminis- tration” fee and will oversee the proper- ty manager, Greystar, which will earn at least \$144,000 a year. Additionally, Wa- terford was granted \$5 million in sub- ordinate debt designed to pay 10% tax- exempt interest (\$500,000) annually as long as the 35-year bonds are outstand- ing. Municipal-revenue bond rules pre- vent any equity in the deal, so Water- ford’s subordinated debt, or “B” bonds, which are not redeemable until all oth- er bond debt is paid, are a clever work- around, acting as preferred equity.

The fees don’t end there. Waterford is entitled to another \$200,000 per year, increasing by 3% every year for 30 years. That amounts to \$9.8 mil- lion. CSCDA gets its pound of flesh too. It expects to earn \$271,515 per year in “authority” fees. Over 30 years the tally comes to more than \$8 million.

That’s just one bond deal, for one apartment complex. According to *Forbes’* analysis of bond documents, CSCDA will make at least \$127 mil- lion in ongoing fees if its 19 bond deals are outstanding to maturity. CalCHA, run by the same crew operating Wis- consin’s PFA, has completed 14 deals to date. This fledgling JPA stands to make no less than \$87 million.

Moss’ Catalyst stands to do even bet- ter. In the last two and a half years, it has collected \$23 million upfront on its 12 deals with CalCHA. Ongoing fees and interest payments could add more than \$300 million. Waterford, which has been sponsor of at least eight muni deals with CSCDA, has collected an es- timated \$18 million and could make \$260 million over the life of the bonds.

“There’s never a recession in this world, never a sudden operating or rehabilita- tion expense,” says Gene Slater, chair- man of municipal-bond advisory CSG Advisors, who analyzed JPA proposals for several local California governments. “They’re assuming straight-line projec- tions of income from rents going up at the same level as operating expenses.

“Historically, capitalization rates for most multifamily properties in Cali-

ifornia have averaged 5% or higher,” he adds, referring to the ratio of annual net operating income to market value. “From 1989 to 1990 cap rates got down into the fours. Then we had disasters and lots of defaults. It happened again in 2006. The bond deal I was looking at last week had a capitalization rate of 3.25. Meaning these apartments are being bought for 33 times net operating income. Historically, it’s the very top of the market.”



THE BIGGEST TEST for these new workforce-housing deals is whether they will actually make a difference in California, where middle-income families face a genuine affordability crisis.

“Is this program making a difference? One hundred percent,” says Jon Penkower, CSCDA’s managing director and an HB Capital alum. He says 65 of the leases in one of his buildings in Long Beach have turned over since May, filled with middle-income tenants. “People are leaving California and can’t afford to live here anymore. It’s the most cost-effective innovative way to reduce rent in this income demographic.”

Critics argue that the rent reductions are modest because the JPA deals use nontraditional measures for average median income and affordable rent levels. In affordable-housing deals sanctioned by the federal Department of Housing and Urban Development, for example, rents, including utilities, are set at 30% of average median income. JPA workforce-housing deals often use 35% and exclude utility costs. Last February, Los Angeles consultant HR&A was asked by the city of Long Beach to analyze a \$135.7 million CSCDA bond deal to buy the Oceanaire, a 216-unit luxury building with such high-end flourishes as Wi-Fi thermostats, built-in USB hubs and “chef-inspired kitchens.” HR&A’s analysis showed that using CSCDA’s cal-

culations, the cheapest Oceanaire studio apartment for someone earning less than 80% of the area’s median income would be \$1,841 per month, versus \$1,489 had it used standard HUD calculations. (In reality, managing agent Greystar is currently advertising studios in the Oceanaire starting at \$2,351, more than the neighborhood’s market rate.)

Local governments have no power to enforce that these apartments are being rented to median-income tenants. According to bond documents, sponsors are required to make only “best efforts” to bring in middle-income renters. Another provision stipulates that if at any time bond counsel determines that these affordability requirements aren’t needed to maintain the bonds’ tax-exempt status, they can simply be eliminated.

“In virtually all these cases, what we found is that the reduction in property tax is far greater than the reduction in rent,” Slater says.

At Serenity in Larkspur, for which CalCHA issued \$220 million in bonds via Jefferies in January 2020, rent receipts are down \$1.7 million a year since 2019. But Serenity no longer contributes \$3 million annually in property taxes. Had a private buyer purchased it, rather than CalCHA, its new higher assessed value would have contributed significantly more in taxes. Financially, Serenity is experiencing high anxiety. Since the CalCHA deal, its debt burden has nearly tripled interest expenses and ongoing fees (including \$873,000 per year to Catalyst) to more than \$9 million. The complex reported net losses of \$6.7 million in the year ending September 2021 compared to losses of \$3.7 million prior to its bond offering.

How affordable are Serenity rents? Despite reductions and a reported average rent of \$2,695, Greystar, which is being paid more than \$160,000 annual-

ly for its services, advertises apartments between \$3,368 and \$4,038 a month.

Moss admits that rents at Serenity are steep. “The basic math is if you look at the [average median income] levels in Marin County, at 80% of that, for a single young person, let’s say a young teacher who makes \$50,000, they’d be asked to pay, like, two-thirds of their income toward rent.”

So Moss has created his own non-profit, the Essential Housing Fund, to subsidize local schoolteachers wanting to live in his muni-bond-backed workforce housing. “We’re funding it out of Catalyst corporate profits,” says Moss with pride, sitting on a model apartment terrace at Serenity.

He’s less eager to talk about another use for Catalyst profits, which are now being used to prop up his first-ever workforce-housing bond deal with CalCHA, issued in April 2019, for Santa Rosa’s Annadel apartments, located in California wine country. Little more than a year after it issued \$194 million in debt, Annadel’s net operating income was falling short of its interest costs. “While project occupancy has remained relatively stable, rental revenues have been lower than projected,” CalCHA told bondholders in late September while giving notice of a potential restructuring. “Operational impacts and restrictive legislation” related to wildfires and the pandemic were apparently to blame.

To avoid raiding the bond issue’s coverage reserve fund, Moss has had to infuse cash three times in the last 14 months, totaling \$1.3 million, in exchange for “cash flow notes” bearing 10% annual interest.

Smart move. As Moss and his CalCHA buddies know all too well, a messy default could spoil their plans for sponsoring ever more lucrative bond deals in dozens of cities in California—and, soon, in a city near you. **❶**

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Obligations



Paradise Taxed

October 16, 1995

“It’s like heaven,” said Warren Robinson, reflecting on the 100,000 acres his family owned on two small Hawaiian islands, Kaua’i and Ni’ihau. That fiefdom was worth a half-billion dollars. But the outside world was **“impinging on the Robinson retreat in the threatening form of the tax collector.”** Unlike some billionaires today who make a lot of noise about tax obligations they can easily fulfill (looking at you, Elon!), the Robinsons really were struggling to pay up. Cash flow was tight and sugar prices were stagnant, hurting the Robinsons’ sugar plantation. Even though they lived frugally and practiced careful stewardship over the land that their ancestors bought from King Kamehameha in the late 19th century, satisfying Uncle Sam might mean selling land or finally allowing commercial development. **“We go out to dinner three times a year,”** said Bruce Robinson, a cousin of Warren’s. **“We can’t afford it. We get our meat from the mountains.”**

SOURCES: HORACE, BY PIERRE CORNEILLE; ALL’S WELL THAT ENDS WELL, BY WILLIAM SHAKESPEARE; THE SANDMAN: BOOK OF DREAMS, BY NEIL GAIMAN; A HAZARD OF NEW FORTUNES, BY WILLIAM DEAN HOWELLS; POWERFUL: BUILDING A CULTURE OF FREEDOM AND RESPONSIBILITY, BY PATTY McCORD.

“Human happiness and moral duty are inseparably connected.”

—George Washington

“Our job as artists is to always strive to be a punctuation mark in history.”

—Takashi Murakami

“I will do what I have to do. And I will do what I must.”

—Neil Gaiman

“He felt a comfort in irretrievably committing himself, and exchanging the burden of indecision for the burden of responsibility.”

—William Dean Howells

“Train a child up on the way he should go, and even when he is old he will not depart from it.”

—Proverbs 22:6



FINAL THOUGHT

“The world expects each man to do his duty. If he doesn’t, both suffer.”

—B.C. Forbes

“When you have a voice, you have an obligation to use that voice to empower others.”

—Diane von Furstenberg

“Do your duty, and put yourself into the hands of the gods.”

—Pierre Corneille

“You can, for you ought to.”

—Goethe

“Duty is what no one else will do at the moment.”

—Penelope Fitzgerald

“Our remedies oft in ourselves do lie / Which we ascribe to heaven.”

—William Shakespeare

“What kills us isn’t one big thing, but thousands of tiny obligations we can’t turn down for fear of disappointing others.”

—Alain de Botton

“Not for ourselves alone are we born.”

—Cicero

“Bad men need nothing more to compass their ends, than that good men should look on and do nothing.”

—John Stuart Mill

“A company’s job isn’t to empower people; it’s to remind people that they walk in the door with power and to create the conditions for them to exercise it.”

—Patty McCord

“Those who expect to reap the blessing of freedom must undertake to support it.”

—Thomas Paine

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