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FEATURES

DO THEY LOVE YOU BACK?

Lots of companies offer loyalty rewards to regular customers to keep them coming back. But not all loyalty programs are created equal. While some are just gimmicks, the best offer real savings and value.

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Vladimir/Getty



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Japan's car firms drive shift to new CASE era

CASE in point: Japanese auto makers are making large investments in R&D as they look to lead the transformation to the new era of Connected, Autonomous, Shared and Electric vehicles.



"Japan is leading in Industry 4.0 technologies such as robotics and other hardware fields"

Takahiro Hachigo,
President, CEO & RD,
Honda Motor Co., Ltd.

Two major global scenarios have prompted the most important transformation in the automotive industry in decades. Firstly, environmental regulations have compelled manufacturers to build more fuel-efficient vehicles. And with many countries aiming to completely ban the sale of fossil-fuel-powered cars by 2030, auto-makers have turned their attention to the development of hybrid and electric vehicles that are set to become more prominent on highways across the world.

Secondly, the advent of fourth industrial revolution technologies such as advanced sensor technology, the Internet of Things and automation has spurred the development of fully connected smart cars and autonomous vehicles. With the dawn of this new era of so-called CASE (Connected, Autonomous, Shared and Electric) vehicles, the automotive industry will create automobiles that are much safer and less harmful to the environment.

With Japanese car makers looking to position themselves at the forefront of this new CASE era, they are leading major investments to improve their capabilities in these latest technologies. And the fact that Japan's four biggest R&D spenders in 2019 were automobile companies is testament to this.

Toyota, unsurprisingly, topped the list with 1.1 trillion yen (approx. \$10.4bn) in R&D investment. "In light of technological innovations in 'CASE', the very concept of the automobile is on the verge of major change. Given this situation, we must transform our business model into one that is in line with the CASE era," Toyota Motor Corporation CEO, Akio Toyoda, has admitted.

Coming in second was Honda, which allocated 860 billion yen (approx. \$8bn) for R&D investment in 2019. In response to the new market realities, Honda is undergoing a major overhaul in everything from product development to production, while also striking up new partnerships to tap into the latest technologies. The company has invested in U.S.-based autonomous driving company Cruise, while also developing a collaborative relationship with GM in the fields of hydrogen fuel cell stacks, electric car components and autonomous vehicles. Honda's R&D spending has also focused on hybrid vehicles and new innovations such as Honda Sensing.

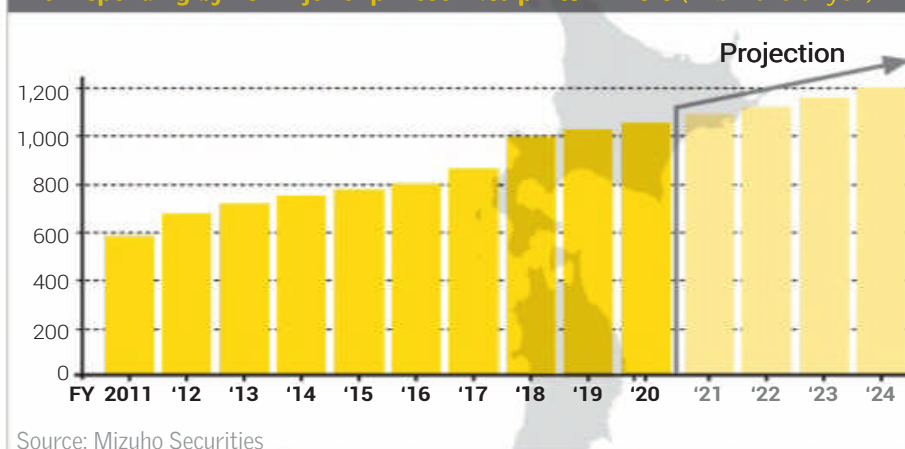
"Honda's overarching objective is to make cars accident-free. To achieve this, we need to reduce human error from human decision-making, and we need to relieve driving fatigue and make driving more comfortable," said CEO, Takahiro Hachigo, in an interview with outlet *Automotive News* in 2019. "Thus, we are focusing on Honda Sensing, and we will improve each and every element of Honda Sensing as we go forward."

The backbone of the industry

While big auto-makers like Toyota and Honda represent Japan on the international stage, the smaller, lesser-known auto-parts makers form the backbone of the Japanese automotive industry. Crucial to the supply chain, they too are making major investments in R&D in response to the CASE era as they look to supply the high-performing and light weight components demanded by Toyota and Honda.

"We conduct regular interactions with Honda's R&D division

R&D spending by 16 major Japanese auto parts makers (in billions of yen)



Smart cars fueling the future of Japan's auto industry

Connected car market size in Japan 2015-2025



to respond to their demands on what kind of modification parts they need," says Tomoyuki Hashimoto, president of M-TEC, which supplies modified parts mainly for Honda's motorsport division as well as developing its own electric motorcycle technology based on its Shinden racing motorcycle that has won the Isle of Man TT ZERO Race six times. "Our highest priority currently is the electrification of motorcycles and cars, which is regarded as a global trend."

Electrification is also a priority for GMB Corporation, which supplies cooling systems, engine drive systems, transmission, steering and suspension parts to both Japanese and global companies.

"R&D is a crucial part of every manufacturing company at the moment. When mentioning the word innovation in the automotive industry, the trend is EV," says president, Makoto Matsunami. "There are two major areas where we expect to manufacture new products on the Japanese market, first the after-market and second the

electrification of cars. Taking into account global trends and these two areas, we will be able to create new products needed in the automotive industry."

Meanwhile, as Toyota, Honda and Nissan look to develop more fuel-efficient vehicles, MINO INDUSTRY strives to provide them with industry-leading aluminum die casting solutions that have become ever-more popular in the development of lightweight parts and components, such as PCU covers and convertor frames for hybrid systems and ECU casing for engine control.

"The changes that the automobile industry is facing are immense," says MINO president, Jun Sugimoto. "The electrification of cars is going to be great for us because the need for our engine casing will be much greater."

Looking at the automotive industry's efforts to adapt to the demands of this new era defined by fourth industrial revolution technologies and stricter environmental regulations to tackle climate change, Japanese auto-makers offer a true 'CASE' in point.

3DOM's bold vision to transform the global transportation sector with industry-leading green technologies

Amid worsening environmental crises, 3DOM has developed the right combination of competitive elemental technologies and innovative applications that can help to transform the mobility sector.



"Conventional EVs alone won't cut it – a truly CO2-free transportation sector calls for a bold vision and reimagined lifestyles, with the technology to back it up"

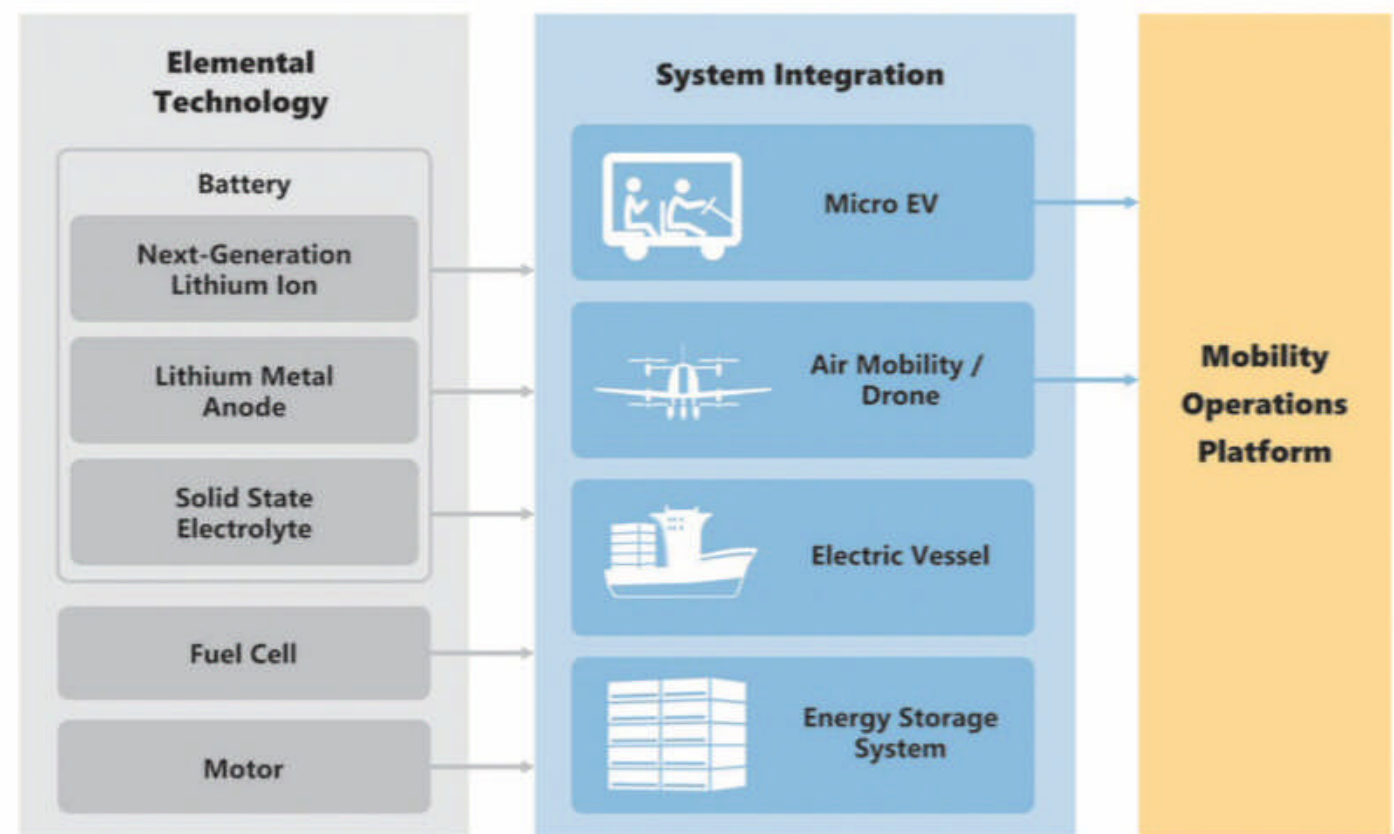
Masataka Matsumura,
Representative Director and
President, 3DOM Inc.

With global transportation accounting for around 16% of the world's greenhouse gas emissions, the urgent reduction of the industry's carbon footprint is a vital pillar in the fight against climate change – and, ultimately, in the race to save our planet.

Hailed as the future of mobility, electric vehicles (EVs) will indeed go some way in helping to reduce carbon emissions. However, in order to drastically reduce transport's CO2 output to the levels required, experts agree that there needs to be a complete overhaul of the entire segment, from cars, buses and trains, to freight, air and sea transport.

That is the bold vision of Japanese company 3DOM – a vision it intends to turn into a realistic and attainable goal through the development of innovative battery and mobility technologies. "Conventional EVs alone won't cut it – a truly CO2 free transportation sector calls for a bold vision and reimagined lifestyles, with the technology to back it up," says 3DOM Representative Director, Masataka Matsumura.

Indeed, the shift to a zero-carbon electric-driven transportation industry also requires development of



advanced battery technologies. As Mr. Matsumura points out, "Other companies might claim to have the environment in mind, but be pumping out as much CO2 in battery manufacturing as the battery saves in its use powering an EV. At 3DOM we are looking to propose more radical and more effective solutions that achieve our objectives of protecting ecosystems and reducing CO2."

In light of these objectives, 3DOM is not only developing batteries and other elemental technologies, but also plans for subsidiaries around the world to integrate these technologies into applications on land (Social Mobility), air (quintuple air), and sea (LAVLE), conducting mobility operations that are friendly to the environment and to users.

3DOM began as a university venture researching one crucial, but previously overlooked part of the rechargeable battery – the separator. Now, the company has gathered an experienced team of industry leaders and developed three distinct next-generation batteries – lithium ion, lithium metal anode, and solid electrolyte. In an ongoing trade-off between energy density and reliability in the battery industry, 3DOM's next generation lithium ion secondary battery using the 3DOM separator simultaneously achieves remarkably high levels

of both – positioning it to become the next global standard. The addition of the 3DOM separator has confirmed potential to double the lifespan of conventional lithium ion batteries as well. 3DOM's next-generation lithium ion battery will have wide applications including EVs and energy storage systems.

The company's lithium metal anode battery, meanwhile, boasts twice the energy density of lithium ion batteries, with usage expected to start in drones and air mobility. And as for the solid-state battery that has the industry buzzing, 3DOM has successfully produced a prototype with unique technology that achieves overwhelming energy density with further enhanced reliability.

For all three types of batteries, 3DOM is targeting a fabless model, with business based on licensing and consigned development of batteries optimized to clients' required specifications. Numerous automotive OEMs and other potential partners across a range of industries are already expressing interest.

Some of the batteries will go to 3DOM's subsidiaries to be integrated into groundbreaking micro EV, air mobility, and electric marine vessel applications. These environmentally friendly mobility solutions will benefit not only from the 3DOM Group's highly efficient battery, motor, and

fuel cell technologies, but also innovations to the manufacturing process for significantly reduced emissions throughout the entire life cycle. Moreover, application of 3DOM Group company Kaula's advanced blockchain technology to on-board batteries will allow for verification of lifetime information, unlocking a battery circular economy.

The next step is the optimized operation of these green mobility devices through lease and subscription models that are not only considerate of the environment, but considerate of the lifestyles and wallets of consumers, too. 3DOM already has partners lined up in Asia and Africa to provide mobility solutions that can revitalize rural areas, relieve congestion in urban centers, and prevent environmental destruction in developing nations.

3DOM is analyzing mobility from all angles, committed to finding comprehensive solutions for a truly CO2-free transportation sector. While ambitious, 3DOM has the right combination of competitive elemental technologies, innovative applications, and smart business models to make it a reality.

3DOM

www.3dom.co.jp/en/

Auto-manufacturer Mugen makes moves to accelerate electric vehicle transition

Renowned in the world of motorsport for its long and successful relationship with Honda, Mugen boasts a rich racing and manufacturing heritage and is now embarking in the EV business.



"In terms of the strategic plan of the company, we are thinking about adopting EV technologies for various fields."

Tomoyuki Hashimoto,
President, M-TEC Co., Ltd.

Mugen, meaning "without limits", is the aptly monikered brand name of M-TEC Co. Ltd, which participates in various race activities, including Formula One, and develops and manufactures aftermarket parts for Honda cars. Hiroto Honda, the son of Honda Motor Company's eponymous founder, Soichiro Honda, set up Mugen in 1973. Today, the Mugen brand and its trading name M-TEC, is overseen by Tomoyuki Hashimoto, the company president and man in the driving seat when it comes to steering the business to greater successes.

"Mugen has maintained its three major activities since it was established in 1973," explains the president. "Of course, with the course of time, there have been changes of environment and market demand, however, we do still keep our strong company philosophy as it has always been; to be a manufacturer that makes good products."

The Mugen business model is testament to this commitment to quality, as the success of

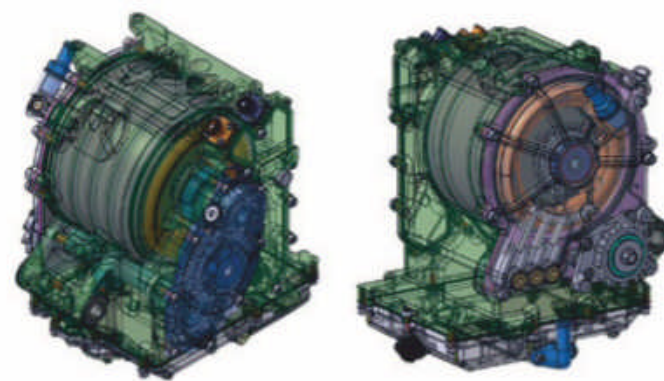
the Mugen Motorsports team on the racing track directly depends on the quality of parts made in its factories. "When we design racing car parts, we are not simply producing them but we also assemble and represent our racing cars under the name of Team Mugen on the circuit, so these two business areas are complementary to each other and are irreplaceable," says Mr. Hashimoto.

The quality of Mugen's car parts is equally crucial to the success of Honda Racing, with whom the company continues to share extremely close ties and collaboration. "The main part of our business, in fact, is modification and designing of existing parts for the racing purposes of Honda Racing," says Mr. Hashimoto. "There are several parts we make for them, including carbon body parts and engine parts. We also provide engines and engine circuit support services for Honda race cars. We believe such collaborating activities contribute to the many victories of Honda on racing circuits around the world."

Despite the symbiotic relationship, Mugen and its Motorsports arm continue to operate in their own independent way. Mr. Hashimoto cites its recent respected work in the field of electric vehicle racing, an area in which the business is deploying increasing focus and which forms a key part of its future strategy.

"We've now won the world-renowned Isle of Man TT ZERO Race with our own EV motorcycle, Shinden, six times in a row. Now our new EV Motocrosser, 'E-REX', is adopting technologies accumulated through the Shinden project – compact but high-output motor technologies we've developed which are so unique that other manufacturers cannot replicate them," says Mr. Hashimoto.

"The maximum output is 120Kw and the maximum torque is 210Nm, while at the same time we unified both the motor and



Mugen e-Axle general-purpose model

the inverter in one package. We have achieved the creation of a very reliable and weight-saving motor without losing drivability and cooling performance in the quite limited space of the motor-cycle. We believe this technology can be utilized for various motor business fields."

Taking forward these EV successes, Mr. Hashimoto says Mugen's highest priority in the future is facilitating the mass electrification of cars and motorcycles in line with the global trend. To this end, the market for aftermarket parts in which Mugen traditionally specializes, is an area on which it looks

to capitalize as EVs become more popular.

"In terms of the strategic plan of the company, we are thinking about specifically tailor-made custom parts for the current changing market trend. Aftermarket parts are currently expanding into electrification, as some people do not only buy a car for its initial purpose as transportation, but also something they can modify

unique to their tastes, as is human nature. For that, the EV modification trend is fast coming on the market right now. We believe it will expand more in the future and we will also provide those people with the modifications that they need."



無限 MUGEN

www.mugen-power.com

The Japanese companies leading the shift towards a zero-carbon world

As one of the world's leading industrial nations, Japan will play a major role in achieving the goals set out in the COP Paris Climate Agreement to significantly reduce carbon emissions.



"We have the potential to introduce new products like e-Rubber that go beyond the automotive industry"

Naoki Miyazaki,
President, Toyoda Gosei

Along with the EU and South Korea, Japan has set a goal of reaching zero emissions by 2050. As such, Japanese companies in large carbon-emitting industries, such as automotives, energy and heavy manufacturing, will play a major role by developing innovative new technologies that will help Japan – and indeed the globe – to reach ambitious carbon-reduction targets.

In the automotive industry, Japanese companies like Toyota, Nissan and Honda have been at the global forefront of the development of hybrid, electronic and hydrogen fuel cell vehicles. Behind the scenes, these major auto-makers are supported by the nation's legion of parts and components manufacturers like Toyoda Gosei, which will make rubber and plastic automotive parts that will be at the core of next-generation automobiles.

"The electrification of vehicles offers significant business opportunities for us because automakers will want to replace heavy metal parts with lighter-weight rubber and plastic products that can decrease the weight of the car," says chairman, Naoki Miyazaki. "One of our current focuses is the development of e-Rubber, a novel rubber material that can act as both an actuator and sensor."

Kawasaki Heavy Industries
Kawasaki Heavy Industries (KHI) – one of Japan's largest companies whose activities span mobility (air, rail and marine), energy and industrial equipment – is also playing its part on the path towards zero emissions by supporting the shift to a hydrogen society.

Aside from its investments in hydrogen and renewable energy technologies, KHI is also making its production and other equipment more energy efficient and advancing the use of renewable energy to

reduce the CO2 emissions from its plants.

One of KHI's suppliers, Futagawa, which provides heavy machinery and equipment to several of the big heavy industry players, has also drastically upped its investments in renewables, with projects like its Hirotoni-Ike Pound Solar power plant.

"We are in an industry that consumes a large volume of energy. We've started focusing on renewable energy to get ahead of the coming curve," says Futagawa president, Masaya



Yasuhiko Hashimoto,
Representative Director, President
and Chief Executive Officer,
Kawasaki Heavy Industries, Ltd.

Futagawa. "From December, all of the electricity used in the company became renewable. But this trend won't end and so we are looking to expand renewable activity."

GMB Corporation: driving endless innovation in the automotive industry



The future of the automobile industry will not only be determined by the big carmakers, but also the smaller manufacturers that supply parts and components to these tier 1 companies.

With the global shift in the automotive industry driven by vehicles, electronic vehicles and demand for increased fuel efficiency, Japanese components companies like GMB Corporation are tasked with developing lighter and higher-performing parts.

"Today, with the progress of global warming and global aging, the envi-

ronment surrounding automobiles has been changing more than ever before," says president Makoto Matsunami. "GMB Group not only responds to social changes through continuous technological innovation, but also aims to be a company that continues to create new value in building a rich future society."

Established in 1943, GMB Group supplies a range of high-quality parts and components – such as cooling systems, engine drive systems, transmission, steering and suspension parts – to carmakers in Japan and around the world. Having a

built a wide network of international operations, GMB Corporation's leading position in the global automotive industry is supported by group affiliate, GMB Korea. Moving forward, Mr. Matsunami believes deeper collaboration between Japan and Korea could lead to GMB's further success in developing new innovations in response to the latest industry demands.

"The benchmark is here in Japan but the market aggressiveness is happening in Korea. We support them technically and provide knowledge to create a synergy," he says. "We think of them as a partner company apart from being a group company, from both an operational and innovation perspective. If we could blend more firmly to adapt both strengths of the two countries, Japan and Korea, we will be able to accomplish even greater things."



Makoto Matsunami,
President, GMB Corporation

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Developing ultra-lightweight aluminum products for the world's leading carmakers

In response to the latest industry demands, MINO INDUSTRY has developed Ultra-Thin Die Casting Technology for the manufacture of high-performing components that are a step ahead of those of its competitors.



"We have been focusing heavily on heat dissipation products for producing automobiles, like aluminum die casting"
"The thinness of how we produce this product is a huge strength of ours"

Jun Sugimoto, President,
MINO INDUSTRY Co., Ltd.

Higher environmental standards have compelled auto makers to build more fuel-efficient vehicles, which has spurred demand for increasingly lighter parts and new lightweight materials. Subsequently, the use of die cast parts for weight reduction is serving as a major driver of the automotive parts aluminum die casting market, which is expected to grow at a rate of 7.5% CAGR through 2025.

Manufacturers have found that the use of lightweight aluminum – and specifically aluminum die casting – can significantly improve a vehicle's miles-per-gallon performance. As a result, stricter environmental regulations in the automotive industry have prompted major opportunities for aluminum die casting manufacturer MINO INDUSTRY, which supplies high-performing parts and components to some of the world's leading carmakers, including Toyota, Honda, Nissan, GM, Ford and Mercedes.

"The changes that the automobile industry is facing are immense, but they are not just limited to

electric engines. Cars are going to become much more lightweight as well and so there is a growing focus on aluminum," explains MINO INDUSTRY president, Jun Sugimoto.

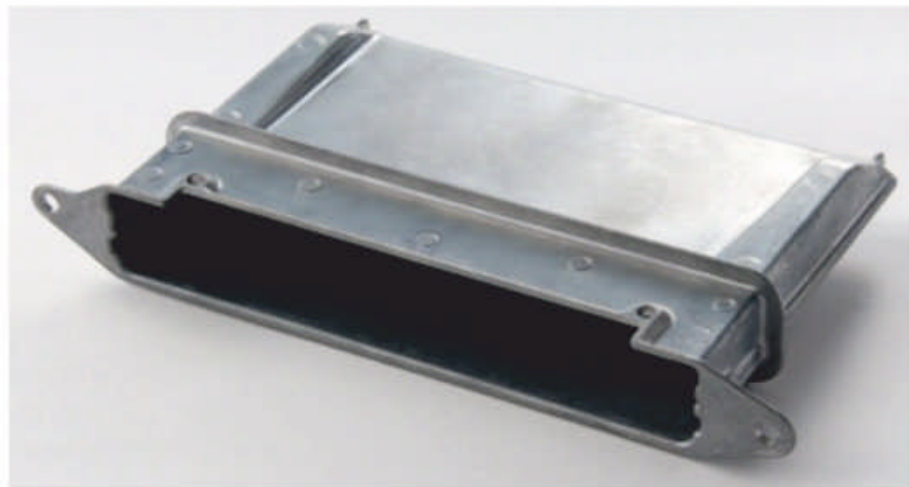
"Those that make home appliances are looking into the auto industry because the materials are easily transferable. Die casting serves a great role in what cars are going to become, much better and bigger than the role resin can and will play. We have been focusing heavily on heat dissipation products for producing automobiles, like aluminum die casting."

Significant developments and improvements in the aluminum die casting process have been led by MINO, which has drawn on its 70-year experience in innovation to develop unique Ultra-Thin Die Casting Technology for downsizing and thin wall construction. MINO boasts an integrated production line from casting to machining, ensuring the manufacture of products at high levels of efficiency and quality.

These industry-leading manufacturing technologies have allowed the company to create high-performing components that are a step ahead of those of its competitors – including PCU covers and convertor frames for hybrid systems, ECU cases for engine control, as well as components for gear boxes and electric power steering systems.

"The thinness of how we produce aluminum die casting is a huge strength of ours. For this aluminum die casting, the price can be reduced with differences in molding. But this requires keeping a very close eye on temperatures and therefore requires very close management, which other less-skilled companies and countries cannot do," explains Mr. Sugimoto.

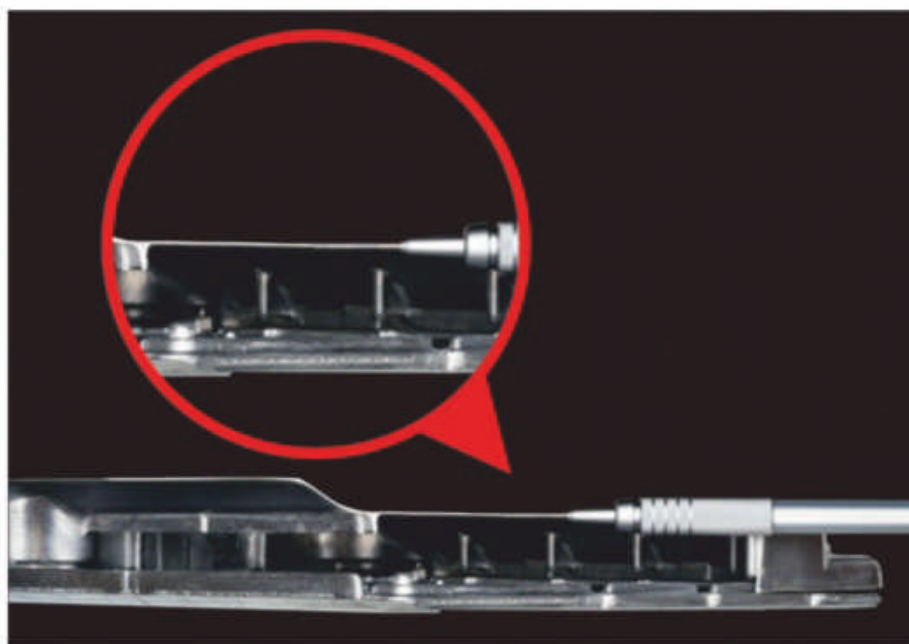
Strictly adhering to the Japanese manufacturing philosophies of *monozukuri*, *kaizen* and *Suriawase*, Mino also works hand-in-hand with its clients, which has been key to its product development and ability to respond to the latest industry demands.



Mass-produced ECU case made of aluminum with 0.8mm thickness by die-casting.



MINO has finally managed to produce the ECU case with extraordinary thinness.



A cross section of the ECU case in picture 2 above, showing its extraordinary thinness at less than 0.45mm.

"We act as a Tier 1 company in the way we communicate with big automobile companies. We assign one leader to each company so our communication channel is very clear. Thanks to this communication channel, MINO INDUSTRY can produce products that die casting hadn't been able to produce up to now, for example in terms of thinness and lightness," says Mr. Sugimoto.

"Such efforts concerning relationship-building with customers to produce high-quality products is called *Suriawase*. That is why we think *Suriawase* is the essence of *monozukuri*."

MINO
www.mino-in.co.jp

Benda Kogyo: the ring gear leader with an eye on global expansion

Benda Kogyo's high-quality, high-yield manufacturing technology enables the company to make perfectly round ring gears.

Almost 60 years on since Kazuyoshi Yashiro established his company with an ambition to "bend the world's iron", Benda Kogyo has become a world leader in manufacturing technology and continues to work towards its goal to become a global Tier 1 corporation, grounded in the Japanese *monozukuri* philosophy.

"*Monozukuri* excellence is born in our factories," says third-generation president Kazunari Yashiro, whose grandfather developed the groundbreaking Benda Method in 1975. Thanks to continuous refinements to this method, Benda Kogyo has established a high-quality, high-yield manufacturing technology that produces perfectly round metal rings, which

earned the company the 'Minister of Economy, Trade and Industry Award' at the 'Manufacturing Japan Awards' in 2009.

Today, Benda Kogyo holds a 20% global market share for its top product, the ring gear, which is used for automobile engines, trucks, ships, construction and agricultural equipment. Having expanded its global operations through the establishment of local companies, mega-suppliers and a state-of-the-art R&D centre in South Korea, Benda Kogyo aims to strengthen its international presence by developing new products and technologies – an example of which would be a new product for hybrid electric vehicles (HEVs).



Kazunari Yashiro,
President,
Benda Kogyo Co., Ltd.

"Our strategy to increase our client portfolio overseas is



to target mega-suppliers, as a result, we will be able to launch new products on the market and become more powerful," says Mr. Yashiro. "We will realize our vision of 'One Benda, World Benda', to continue to strengthen the bonds throughout the group, strengthen the roles of each

company, and capture a greater share of global markets. We are aiming to become a global Tier 1 corporation that develops cutting-edge technology."

BENDA-KOGYO CO., LTD.

www.benda.co.jp/en/

UNYTITE: the undisputed leader in high-performing fastening systems

Developing fastening systems built to perform under the toughest conditions.



"We want to bridge the gap between the product and the application they are going to fit"

Jun Hashimoto,
President, UNYTITE

Fastening systems, the literal nuts and bolts of industry, are the most essential part of any manufactured product or construction. While seemingly simple by design, humble-looking fastening systems must perform under the

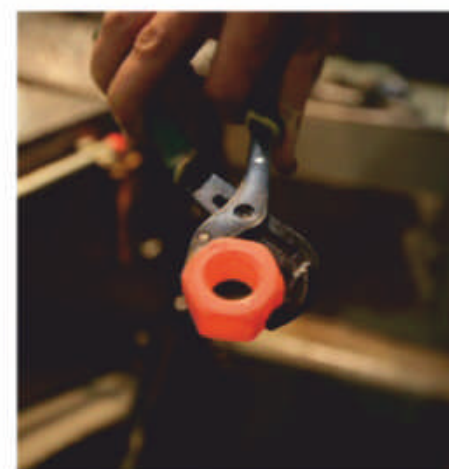
toughest conditions, particularly in the automotive, heavy manufacturing and construction industries, where many companies turn to the high-quality solutions developed by reputed Japanese manufacturer, UNYTITE.

As a company that continues to harness the essence of Japanese *monozukuri* craftsmanship, UNYTITE combines tradition, innovation and an appreciation for listening to customer needs to develop innovative fastening systems perfectly fit for purpose. Having built a strong reputation in Japan among construction, auto and heavy machinery firms, the company now aims to take its tried-and-trusted brand to a wider global client base, while also venturing into new industries such as wind turbines.

"Keeping the essence of *monozukuri* allows our company to be competitive in many different industries and many different

countries," says president, Jun Hashimoto. "Our goals are to work with our clients to solve their internal issues. We see ourselves as a company that provides innovative fastening systems. A traditional nuts and bolts manufacturing company would make just the products, but we like to know the application of our products better, so we can provide customers with a way to have the most efficient fastening system."

Thanks to its commitment to R&D and hearing customer needs, UNYTITE has been able to create innovative and comprehensive solutions that help clients to reduce costs and installation lead times. "We don't believe in just 'produce and supply'," says Mr. Hashimoto. "We want to bridge the gap between the product and the application they are going to fit."



UNYTITE

www.unytite.com

Maruei Kogyo: rising to the challenge of adaption through ceaseless innovation

Leveraging on its innovative capabilities, Maruei Kogyo Corporation is adapting to industry and market trends by developing parts for the next generation of automobiles and adopting the latest Industry 4.0 technologies to improve its manufacturing processes.



For almost 70 years, Maruei Kogyo Corporation has played an integral role in the Japanese automobile manufacturing supply chain. Drawing on its core cold forging and machining technologies, the company produces high-quality steel, iron and aluminum products for automobiles, as well as air conditioner parts, switches and other components, with Toyota-owned parts maker Denso among its major clients.

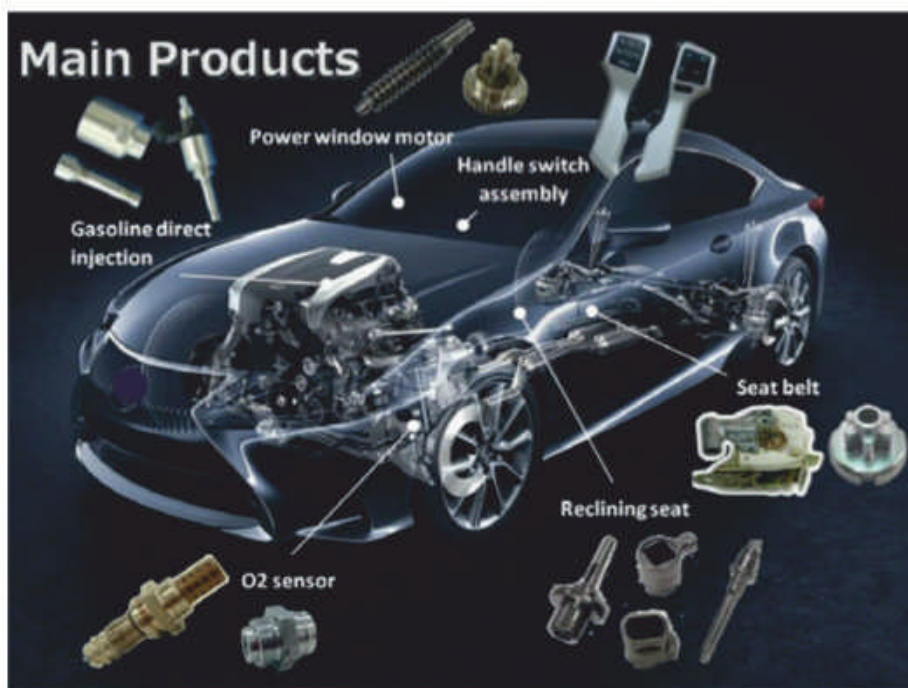
"Maruei Kogyo will celebrate its 70th anniversary in April 2021. For the next 80th, 90th, and 100th anniversaries, we believe it is important for us to continue the passion for manufacturing that we have cultivated over the years and to continue to take on new challenges," says president, Akimitsu Takagi.

Maruei Kogyo's core technologies, particularly the combination of cold forging and machining, is what has given the company a competitive edge and opened the door to its success over the past decades. As the company moves forward, it will leverage on its R&D and technology capabilities, as well as its incredible ability to adapt, to take on the new challenges being posed by market and industry trends – by developing parts for the next generation of light-weight and electric automobiles; adopting the latest manufacturing processes; and strengthening its foothold in the international market.

"The electrification of cars has really changed our industry. We've had to be very adaptive

and re-find ourselves in our core values. We hope we can ride every wave, be innovative and run alongside the innovation that is coursing through every industry," explains Mr. Takagi.

"One new trend we are working towards is manufacturing with alloys. We are not undergoing a complete shift but we are involved in this new trend. We have to continue to anticipate the future in every step we take that changes our processes."



Rising to the challenges

In terms of manufacturing processes, Maruei Kogyo has risen to the challenge of adaption by adopting new technologies, such as 3D Printing, IoT, robotics and Big Data, at its manufacturing plants both in Japan and abroad. "The industry does not know how much 3D printing is going to impact cold forging, but if you are armed with both you are really positioning yourself well," says Mr. Takagi.

In order to achieve high quality, high productivity, and low costs, Maruei Kogyo has developed an innovative production line in cooperation with a processing equipment manufacturer. "Aiming for zero operator and zero in-process defects, and 100% availability, we developed a line with high-speed loaders, in-line washers and chip grinders, and robots. The installation area of the line was reduced by 35%. We are using this line to



"We've had to be very adaptive and re-find ourselves in our core values"

Satoomi Takagi, Director
Akimitsu Takagi, President,
Maruei Kogyo Corp.

increase our international competitiveness," Mr. Takagi explains.

Development of the "i-Factory"

Key to the company's international competitiveness is its Vietnam manufacturing base, where a lot of its innovative new processes and advanced technologies are being tested out for the first time.

In collaboration with its Vietnam-based engineers, the company has developed a low-cost smart factory system, known as the "i-Factory", to improve the efficiency of factory operations. The new system is already in place, enabling real-time monitoring of equipment operation status, automatic processing of inspection data, worker attendance management, factory energy management, as well as other improvements through the collection and storage of large amounts of data.

"The system supports improvement by creating a database of information," says Mr. Takagi, adding that the new factory system will allow Maruei Kogyo to support more companies in Thailand, Indonesia and Vietnam as part of its internationalization strategy.



Futagawa puts renewed focus on renewable energy and sustainability

Leading by example by focusing on renewables and sustainability, Futagawa will help lead the heavy machinery industry's shift towards a greener future.

Thanks to major global players like Mitsubishi Heavy Industries, Kawasaki Heavy Industries, Komatsu, Hitachi and Kobelco Construction Machinery, Japan has been a world leader in heavy manufacturing for decades.

Since 1964, Futagawa Manufacturing has supplied these tier one manufacturers with heavy machinery and equipment that has helped to ensure their leading global position. Among its best-selling products are oil and fuel tanks, which it manufactures for both domestic and international clients. "As a supplier, the essence of our manufacturing is producing exactly what our client wants," explains president, Masaya Futagawa.



Masaya Futagawa,
President, Futagawa

"Since the materials for tanks are very different from heavy fabrication products which require thick plates, it is difficult to manufacture both tanks and such heavy fabrication products. That is our strength as we have the capability."

Serving international firms like Caterpillar, Futagawa has itself been pursuing global expansion in recent years and has a particular eye on the construction industries in China and Southeast Asia, while it also aims to further strengthen its presence in the US and Europe. While seeking and working with international partners to develop new technologies and solutions, Futagawa, which is acutely aware of its industry's impact on the environment, has put renewed

emphasis on renewable energy and environmental sustainability.

"We are in an industry that consumes a large volume of energy. We've started focusing on renewable energy to get ahead of the coming curve. From December, all of the electricity used in the company became renewable. But this trend won't end and so we are looking to expand renewable activity," explains Mr. Futagawa.

"It is no doubt that the construction machine industry has an aspect that cut down mountains and destroyed towns, so we are considering to take actions to protect the environment as much as possible from now on."

With this environmental focus, Futagawa will help lead the heavy machinery industry's shift towards a more green-minded future, with renewable energies taking centre stage.



Hirotani-Ike Pond Solar power plant.



www.futagawa.co.jp

RYUUSS: "Manufacturing is still a human profession"

The OEM and custom machinery maker focuses on human development rather than R&D to become a market leader.

Automobiles, semiconductors, liquid crystals, aircraft, robotics. These are just some of the parts and finished products that exit factories owned by RYUUSS, which manufactures custom made machinery for its global customer base and also as an Original Equipment Manufacturer (OEM).

"80% of our turnover is given to the department for custom made machinery," explains Kyoichiro Ishida, President of RYUUSS. "Apart from this, we have recently seen an uptick in OEM where we produce products under a company's brand name, including our investment in various Silicon Valley startups."

Whilst many SME manufacturers partner exclusively with other manufacturing brands as an OEM

to supplement profits, RYUUSS on the other hand has carved out a niche in the Japanese market. "Instead of just making a product for the company that needs their own products to be made, for us the true meaning of OEM – and what makes us successful – is to sell off-the-shelf products," says Mr. Ishida. "We thought this is something that would have a huge amount of success in Japan since there is nothing similar here."

One of RYUUSS's major new developments is the innovative manufacture of Warehouse Automation Robots, which operate completely autonomously to fulfil factory orders with precision. As an OEM, the company is currently working with other partners to roll out this technology to the market. To fulfil its order book for its new automated product, RYUUSS has

proved that robotics does not have to come at the expense of humans, making a strategic decision to invest in human capital through enhancing its sales force and engineering skills.

"It takes advanced human skill to manufacture custom-made high-precision machines. Therefore, we invest heavily in human capital development," says Mr. Ishida.

Although so many aspects of manufacturing are automated, the RYUUSS president believes that at its heart, the industry is still very much a human profession. "We believe that strengthening these human skills will help us provide better services and technology to our customers, and this is directly correlated to what we can and have achieved as a company."



Kyoichiro Ishida,
President, RYUUSS Co., Ltd.



Custom-made machines by RYUUSS Co., Ltd



www.ryuuss.com

Japanese steel to help drive the electric vehicle revolution

Though crude steel production felt the weight of the coronavirus pandemic, the industry expects a stellar recovery led by increased demand from the global auto industry and accelerating appetite for EVs.

Japanese crude steel production – like many global industries – did not escape the heavy impact of COVID-19, with levels falling to lows not seen since 2009 in the first quarter of 2020. However, with the economy largely reopened again, steel manufacturers forecast a solid recovery to reach near 90m tons during 2021 based on rebounding demand at home and abroad led by auto-producers.

As Japanese steel regains its momentum, one key cog in the wheel will be Hayashi Seiko Co., whose line of business includes the production of steel sheets and bars used by auto-manufacturers the world over.

"The role of Japanese steel-related SMEs in the global supply chain is quality," says Mikiya Hayashi, the company's president. "The products of the Japanese steel industry are a different class. When someone

wants quality, they come to Japan for its pultrusion bar technology. The iron wires and bars manufactured by our company are highly efficient and productive, and become various parts for automobiles."

One bright spot, both for the auto industry and its steel supply chain, was the continued acceleration of global electric vehicles (EV) sales in 2020, rising by 43% to more than 3 million despite the pandemic. The insatiable rise of EVs is therefore a sub-sector that Hayashi Seiko and Japanese steel is keen to capitalize on.

"With the advent of hybrid cars and EV cars, there is a growing need for rods that serve to recharge batteries. There is also a need for shafts that can withstand high-speed rotation and loads, such as turbochargers," adds Mr. Hayashi.

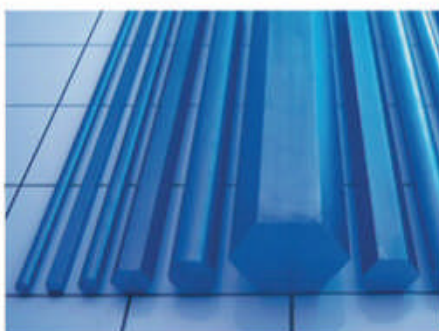


Mikiya Hayashi, President, Hayashi Seiko Co., Ltd.

Automakers are today demanding all kinds of steel variations to meet these needs for the EV revolution, and Hayashi Seiko aims to become a leading supplier of new-age automotive components.

HSK
HAYASHI SEIKO CO., LTD.

www.hsk-web.jp



Tokki: "Our philosophy is based on adaptation"

To avoid the market-based perils of so-called Galapagos Syndrome, specialized industrial machinery manufacturer Tokki is employing a concerted strategy of international expansion, flexibility and innovation.



Tetsuya Okada, President, TOKKI Co., Ltd.

For much of Japanese history, the island nation went through a period of isolation termed 'sakoku' lasting some 220 years. Though the country has long since opened up, a strikingly similar phenomenon to the period still prevails in certain areas of culture and business. Dubbed the Galapagos Syndrome, Japan's technological revolution resulted in the development of technologies and practices that have failed to gain popularity

overseas and can be only be found within the island nation, from tiny cars to flip phones. However, many Japanese manufacturers actively rally against the phenomenon, ensuring they remain relevant to the international market through a commitment to innovation, adaptability, and global partnerships.

"Galapagos syndrome comes as much from a certain management style as much as it does from a dysfunctional business and marketing style," explains Tetsuya Okada, company president of industrial machinery manufacturer, Tokki Co. Ltd. "But our philosophy is based on adaptation and never getting stuck in our ways, therefore we don't suffer from a strict Japanese mindset. We are trying to weave innovation into our every thought and product. Investing in human capital has

also proven to be immensely important and balancing that with replacing certain roles with technology."

The president of Tokki, which serves chemical companies with its specialized machinery, says that a company culture that promotes openness, flexibility, and new ideas is also incredibly important. But avoiding insularism must ultimately be achieved through an international business strategy, emphasizes Mr. Okada. "For some time, we've been doing business in foreign markets, like Malaysia. We learned the importance of those types of overseas partners. More recently, we have begun business in Indonesia. Many other firms are expanding there and it is a very active market with high demands. We see the country as our window to Southeast Asia."



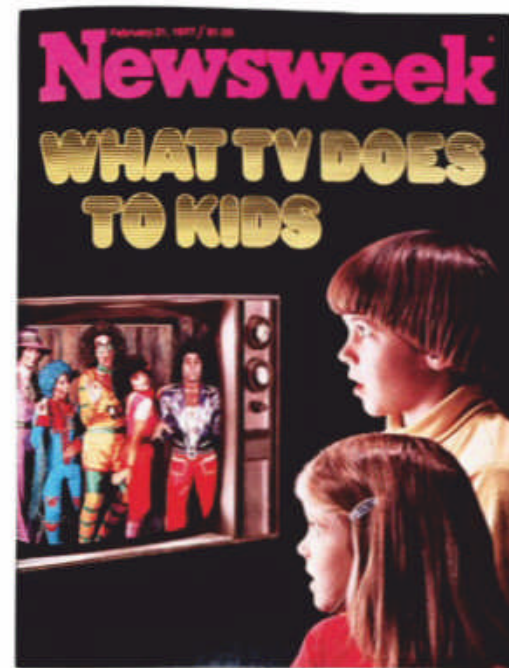
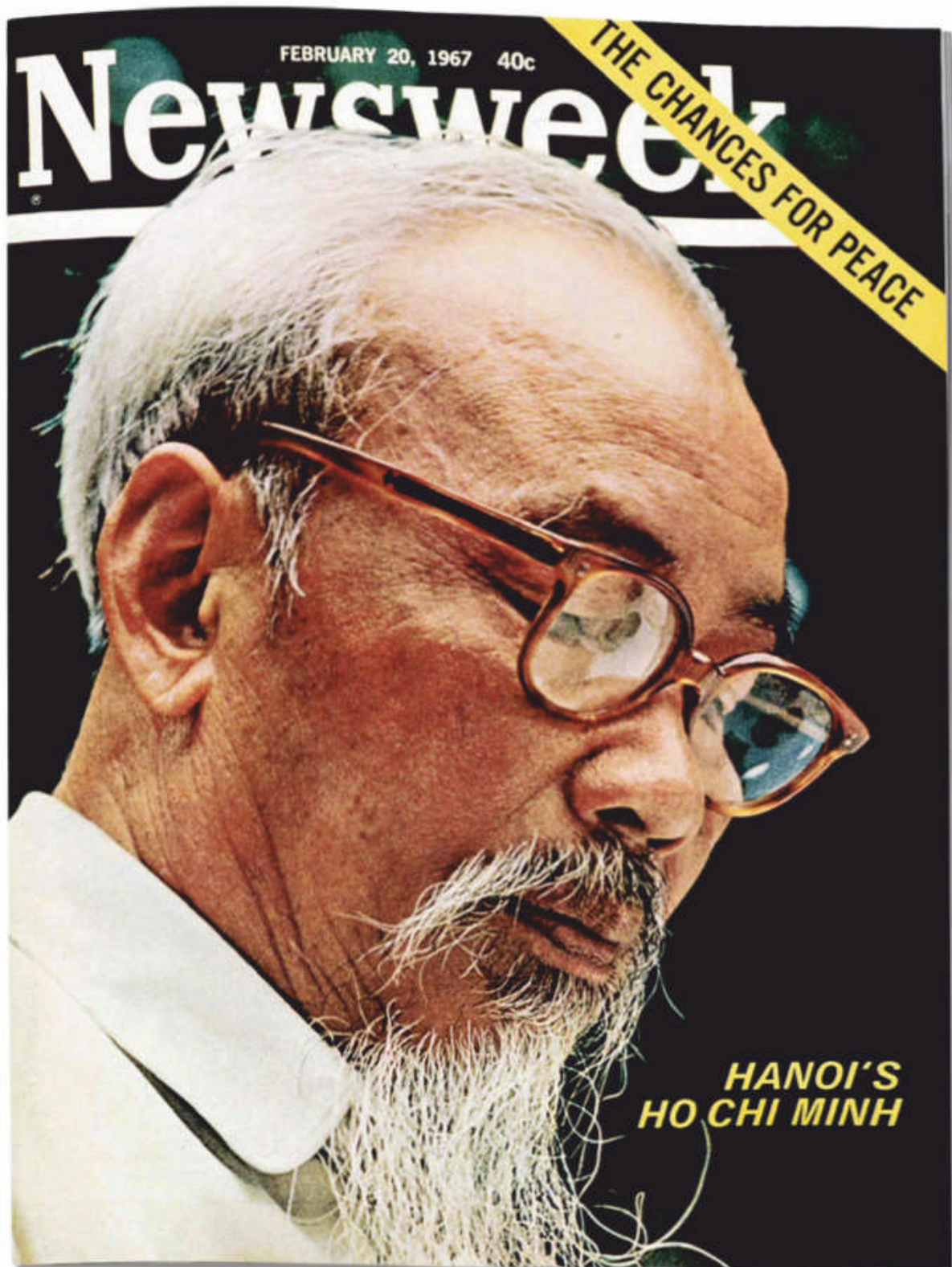
TOKKI LTD.

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The Archives

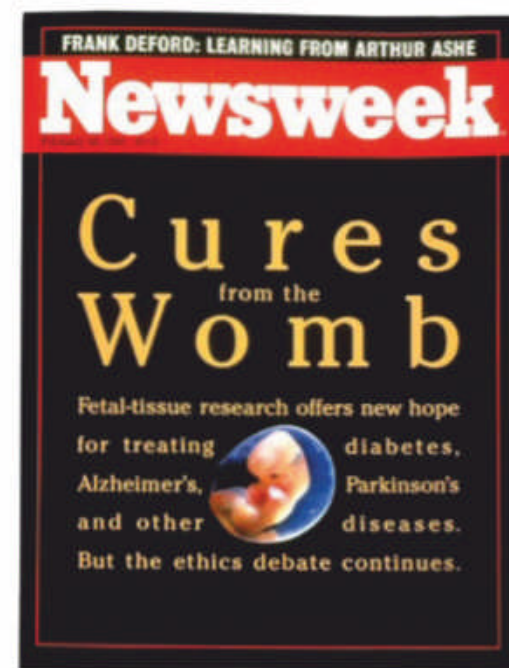
1967

Newsweek wrote, “As the four-day truce in Vietnam ran out last week, the U.S. and Communist North Vietnam were still deadlocked on the issue of the bombing of the north, which Hanoi insists must end before peace talks can begin.” The U.S. received a report that Mao Zedong had “given North Vietnam the green light to begin talks with the United States.” However, multiple attempts at negotiating peace fell through as the U.S. continued launching bombing campaigns. Eventually, the Paris Peace Accords were signed in January 1973, ending American involvement in the war.



1977

Amid fears that “TV is turning children’s minds to mush and their psyches toward mayhem,” *Newsweek* reported “decidedly negative” evidence for the children under 5 who watched an average of 23.5 hours weekly. Today, 8- to 18-year-olds spend on average 7.5 hours in front of a screen daily.



1993

“President Bill Clinton rescinded the Reagan-era ban on spending federal funds for the transplantation of tissue from aborted fetuses into humans,” *Newsweek* wrote. Researchers value these cells for their plasticity and rapid growth. But in 2019, President Trump banned scientists at the NIH from using new fetal tissue for research. ❏

PERSONAL FINANCE

Make the Most of Your Next Stimulus Check

Pay bills, erase debt, save for emergencies or something else? Financial pros suggest five smart money moves if Congress passes another round of pandemic relief





➔ UNDER PRESIDENT JOE BIDEN'S PROPOSED \$1.9 trillion coronavirus relief plan, most Americans would receive a third round of stimulus payments—this time a more generous \$1,400 per person and perhaps as much as \$5,600 for a family of four and \$7,000 for a family of five. Given the sizeable amounts involved, the challenge, if the measure passes, will be to make sure you use the money in a way that delivers the biggest boost to your family's financial security.

"The stimulus funds should be viewed as a way to lessen one's financial stress, not as a windfall," says financial planner Nick Hofer, president of Boston Family Advisors.

The emergency pandemic relief package, dubbed the American Rescue Plan, still faces significant hurdles on the path to becoming law. Republican lawmakers have countered with a smaller, \$618 billion proposal that would give \$1,000 stimulus checks to far fewer Americans. But given the Senate's current even split between GOP and Democratic members, with some procedural maneuvering, a slim majority might be enough to see Biden's plan through. Either way, it could be spring before Americans see any new stimulus money as the impeachment trial of former President Donald Trump, along with the ongoing confirmation hearings for various members of the Biden administration, could divert Congressional attention and delay passage.

Still, Biden says he is committed to providing the additional aid, piling onto the \$600 payments sent out in the last stimulus package to "finish the job of getting a total of \$2,000 in cash relief to people who need it the most."

That would represent a huge one-time boon in income—bigger than either of the previous packages provided: In addition to the proposed \$1,400 sum per individual, households would likely receive payments for each dependent, including for the first time potentially, adult dependents, such as those age 17 and older and college students, who

weren't eligible for funds in the two previous stimulus rounds. And that dependent bonus could be up to another \$1,400, rather than the \$500 or \$600 awarded in the two previous stimulus plans.

While qualifying details remain to be seen, if the bill follows the parameters of the previous payments, then individuals earning up to \$75,000 and couples earning up to \$150,000 in 2019 will receive the full amount. The checks diminish in size gradually for households earning more, topping out at \$87,000 for single filers and \$174,000 for joint filers, in the second stimulus round, and \$99,000 for individuals and \$198,000 for married couples filing jointly, in the first stimulus round.

This means about nine in 10 Americans would likely qualify for some stimulus payment, according to the Federal Reserve Bank of New York—and the time to think about how to maximize the benefit to your family is now.

Hofer, the financial planner, suggests the process starts by zeroing in on the biggest stress points in your budget: "The first question to ask is, what is causing me the most anxiety?"

What is keeping me up at night?"

For many people, the answer, after such a financially rocky year, is likely not one thing, but several, from not having enough money tucked away for emergencies to past-due bills to high-interest credit card debt. *Newsweek* spoke with financial experts about how to prioritize competing money needs and ensure that your stimulus check does the most good for your particular circumstances.

Take Care of Basics First

IF CASH IS TIGHT IN YOUR HOME AND YOU'RE struggling to pay the bills for your basic living expenses, there is no debate over where this stimulus check should go. Keeping the pantry stocked and a roof over your head always take top priority, so if you need to use this money to catch up on household bills for rent, utilities or food, know that you will be in good company.

BY

KERRI ANNE RENZULLI

[@kerenzulli](#)

The majority of the recipients of the \$600 stimulus checks, sent out at the end of December and beginning of January, targeted spending it on necessities, too. Six in 10 Americans planned to use the money to immediately pay household bills, such as utilities, cable/internet, rent, mortgage and mobile phone bills. Another 11 percent intended to use the payment to feed their families, according to a survey from bill pay service doxo.

Those struggling should, if they have not already done so, reach out to their landlords, utility companies, car lenders and credit card issuers to see if there are any financial hardship assistance programs they can enroll in that will allow them to reduce or defer payments temporarily to avoid being penalized for partial or late payments. “Worst case they tell you ‘no,’ but

maybe you buy some time, or better, get an abatement,” says Joshua Hargrove, a financial planner at Insight Wealth Partners in Plano, Texas.

Biden’s plan also calls for extending the current eviction and foreclosure protections through September 30, which could provide some additional relief to those struggling with late rent or mortgage payments.

Or they could try accessing federal programs such as the Supplemental Nutrition Assistance Program, better

known as SNAP, for food assistance, or the Low Income Home Energy Assistance Program (LIHEAP) for help with energy bills, or reaching out to charity groups such as Feeding America, a network of 200 food banks and 60,000 food pantries.

Stash it Away

AFTER MORE THAN 10 MONTHS OF living through a pandemic, most Americans have burned through the emergency savings they had in reserve coming into 2020. Back in September, three in five people already felt it unlikely their rainy day fund would last the remainder of the year or had already run out of savings, according to a survey by Clever. And 21 percent of Americans admitted to never even having emergency savings to begin with.

Overall, only 16 percent feel very comfortable with the amount they’ve squirreled away, according to a Bankrate survey conducted in summer.

If you won’t need your stimulus check to keep current on your bills and do not already have between three and six months’ worth of living expenses saved, financial experts recommend that you set aside this chunk of cash in an FDIC-insured high-yield savings account for a future rainy day. That’s especially true if you are worried about the stability of your job or the looming end of extended unemployment benefits, which is now scheduled to happen in March.

A study conducted in June by the Federal Reserve Bank of New York found that recipients of the first stimulus check devoted the largest share of the money they got—36 percent,

“The stimulus funds should be viewed as a way to lessen one’s financial stress, not as a windfall.”



STASH THAT CASH Financial advisers suggest saving a portion of the next stimulus payment for emergencies—but in a safe bank account, not your closet.



CLEAN UP YOUR CREDIT Using the full \$1,400 stimulus check to pay off debt could cut nearly a year off your repayment time and save hundreds in interest, assuming an average balance.

month on this average balance at the average interest rate, it will take you 34 months to clear the debt and cost you \$1,320 in interest charges. But applying a one-time payment of \$600 will shave off five months and \$316 in interest. Using the full \$1,400 check cuts the repayment timeline by nearly a year to just 23 months and \$665 in total interest.

Putting your stimulus payment toward paying off debt could also provide a quick boost to your credit score, particularly if it is low. Credit Sesame ran simulations using data provided by more than one million of its members and found that 70 percent of those with credit scores between 300 and 500 could see at least a 21-point increase in their score within a month if they devoted the full \$1,400 stimulus payment to their credit card debt. Applying a portion of the check, say \$600, provides a 19-point bump to 70 percent of this same group.

Those with better credit scores will see less of a benefit. Repaying \$1,400 in debt will add only a four-point bump to 70 percent of those with scores in the 651 to 700 range and a zero- or one-point bump to those with scores above 700.

Invest in Your Future Self

WHEN *NEWSWEEK*, IN PARTNERSHIP with LendingTree, surveyed Americans this summer about their greatest concerns following the financial fallout of the pandemic, the most common fear was being unable to retire on time “or possibly ever.”

About 30 percent of Americans lowered the amount they set aside for retirement or stopped saving

on average—to savings. When asked about how they would use a second stimulus payment, respondents indicated they’d increase the portion directed toward savings to 45 percent.

Those torn between rebuilding a dwindling or nonexistent savings balance and paying off credit card debt, should shore up their emergency reserve first, recommends financial planner Scott Hammel, of Atlas Wealth Advisors in Dallas. “Incurring debt is never fun, but there are some things you can’t pay with a credit card,” Hammel says. “If you have to keep a revolving balance in the short term, accept it and move on.”

Alternatively, you can shave off a portion of your stimulus payment and devote that to paying off high-interest debt while simultaneously building up your savings, as “both are equally important,” according to Hofer.

Pay off Debt

ECHOING HOFER’S FEELINGS, MANY Americans seem to have split their first stimulus payments evenly between bulking up savings and paying down debt, as about 35 percent of each check went to repaying lenders—only one percentage point less than the share that went to savings, according to the Federal Reserve Bank of New York study. Respondents anticipated they’d spend about a third of the second stimulus payment this way as well.

It is a smart move considering even just a portion of this \$1,400 stimulus payment could put a significant dent in the average \$5,313 Americans owe on credit cards. And, with the average card rate recently at 16.28 percent, it will also drastically lower the total interest you’ll pay as well.

For example, if you pay \$200 a



altogether in 2020 thanks to layoffs and economic uncertainty, according to a FinanceBuzz survey published in August. And almost a third tapped their retirement accounts, sometime in 2020, pulling out \$6,757 on average, to cover expenses and job loss, a MagnifyMoney survey found.

If you're now on sounder financial footing and don't have high-interest debt, consider using the stimulus to bring your savings rate back up to where it was before COVID-19 or as a way to replace the funds you had to withdraw.

You can still contribute up to \$6,000 (or \$7,000 if you're age 50 or older), to a traditional IRA or Roth IRA until April 15 of this year and have it count on your 2020 tax as a way to reduce your taxable income. However, 401(k) and 403(b) contributions will count for the 2021 tax year.

Help out Others

IF YOU HAVE YOUR CURRENT BILLS covered, little or no debt and ample savings, consider helping others get on such enviable financial footing by

donating all or a portion of your stimulus payment to a worthy nonprofit that is providing pandemic relief to struggling families.

"If you haven't really been financially impacted by this pandemic, consider helping others with these funds," says financial planner Michael H. Baker, co-owner of Vertex Capital Advisors in Fort Mill, South Carolina. "Find a family or two that could use groceries or help with some bills. Support your favorite local business."

In the first half of 2020 alone, more than \$11.9 billion in global donations went to COVID-19 related causes, according to a report by the Center for Disaster Philanthropy and Candid.

“The first question to ask is, what is causing me the most anxiety? What is keeping me up at night?”


While that number exceeds philanthropic efforts for previous disasters, help is still needed. Only 5 percent of such fundraising was directed to persons and communities of color, despite being disproportionately affected by COVID-19, the CDP report found.

Charities across the nation are struggling as donations drop and demand for their services rise thanks to pandemic-fueled layoffs. Half of charities anticipate donation drops of at least 20 percent from May 2020 to May 2021, according to a survey by the Charities Aid Foundation of America. At the same time, Feeding America reports there has been a 60 percent increase in the number of people seeking assistance from its food banks and that an additional 8 billion meals will be needed through June 2021.

Maximize the impact of your giving by selecting nonprofits that apply 60 percent or more of each donation to their programs and services, rather than administrative or other costs, according to the watchdog group CharityWatch. Use websites like Charity Navigator, CharityWatch or BBB Wise Giving Alliance to review the charities you're considering giving to and avoid potential scams or bad actors.

If you need help finding a worthy organization, Charity Navigator has compiled a list of well-reviewed nonprofits providing different forms of pandemic assistance from medical services to providing health supplies to helping communities deal with the stress of COVID-19.

Finally, if employed, check with HR, your company's employee handbook or workplace intranet, to see whether your company offers a donation matching program, allowing you to quickly double the impact of your gift.

Says Baker, "This is an amazing opportunity to care for each other as neighbors and Americans." 

Talking Points

THE WALL STREET JOURNAL

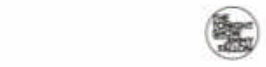
"It went from an intelligent decision to gambling."

—ANUBHAV GUHA, A 24-YEAR-OLD STUDENT WHOSE \$500 INVESTMENT IN GAMESTOP GREW MORE TO THAN \$200,000

Bloomberg

"Trump was burning the house down and we attorneys general were putting out the fire. It was an administration that can best be described by chaos and confusion and outright hate."

—NEW YORK AG LETITIA JAMES



"I'M JUST SO HAPPY BECAUSE NOW I GET TO SHARE WHAT MAKES ME THE HAPPIEST WITH THE WORLD, AND IT MAKES MY HEART SO HAPPY."

—Dancer Jojo Siwa on coming out as a member of the LGBTQ community



Jojo Siwa

CNN

"I'M EMBARRASSED AND SORRY. I USED AN UNACCEPTABLE AND INAPPROPRIATE RACIAL SLUR THAT I WISH I COULD TAKE BACK"

—COUNTRY STAR MORGAN WALLEN



Morgan Wallen

The New York Times

"It's embarrassing."

—ASHLEY SHELTON OF SUMMERVILLE, GEORGIA, WHO VOTED FOR MARJORIE TAYLOR GREENE, ON GREENE'S CONTROVERSIAL VIEWS



"Reporting that a politician believes in/flirts with conspiracy theories is legit, but the attention they get should be proportional to their ability to influence actual public policy. Don't make them famous, help them raise money or elevate conspiracy theories"

—SENATOR MARCO RUBIO

The New York Times

"I'VE ALWAYS BEEN ABOUT FREE SPEECH AND EVERYONE BEING WELCOME. I'VE NEVER BEEN ABOUT CONSERVATIVE POLITICAL ACTIVISM."

—Former Parler CEO John Matze who says he was fired from the company



Letitia James

FROM LEFT: JASON KEMPIN/CMA/GETTY; BONNIE BIESS/SIRIUSXM/GETTY; RODIN ECKENROTH/GETTY

OPINION

Reimagining Diplomacy in the Post-COVID World: An Indian Perspective

The pandemic is redefining the nature of globalization

▶ WE ENTER 2021, HOPING TO PUT the COVID-19 pandemic behind us. While each society has dealt with it uniquely, global diplomacy will nevertheless focus on common concerns and shared lessons. Much of that revolves around the nature of globalization.

Our generation has been conditioned to think of that largely in economic terms. The general sense is one of trade, finance, services, communication, technology and mobility. This expresses the interdependence and interpenetration of our era. What COVID-19, however, brought out was the deeper indivisibility of our existence.

Real globalization is more about pandemics, climate change and terrorism. They must constitute the core of diplomatic deliberations. As we saw in 2020, overlooking such challenges comes at a huge cost.

Despite its many benefits, the world has also seen strong reactions to globalization. Much of that arises from unequal benefits, between and within societies. Regimes and dispensations that are oblivious to such happenings are therefore being challenged. We must ensure that this is not about winners and losers, but about nurturing sustainable communities everywhere.

COVID-19 has also redefined our understanding of security. Until now, nations thought largely in military, intelligence, economic and perhaps, cultural terms. Today, they will not only assign greater weight to health security but increasingly worry about trusted and resilient supply chains. The stresses of the COVID-19 era brought out the fragility of our current situation. Additional engines of growth are needed to de-risk the global economy, as indeed is more transparency and market-viability.

BY

DR. S. JAISHANKAR

 @DrSJaishankar

Multilateral institutions have not come out well from this experience. Quite apart from controversies surrounding them, there was not even a pretense of a collective response to the most serious global crisis since 1945. This is cause for serious introspection. Reforming multilateralism is essential to creating effective solutions.

Fashioning a robust response to the COVID-19 challenge is set to dominate global diplomacy in 2021. In its own way, India has set an example. That it has done by defying prophets of doom and creating the health wherewithal to minimize its fatality rate and maximize its recovery rate. An international comparison of these

numbers tells its own story. Not just that, India also stepped forward as the pharmacy of the world, supplying medicines to more than 150 countries, many as grants.

As our nation embarks on a mass vaccination effort, Prime Minister Narendra Modi's assurance that it would help make vaccines accessible and affordable to the world is already being implemented. The first consignments of Made in India vaccines have reached not only our neighbors like Bhutan, Maldives, Bangladesh, Nepal, Mauritius, Seychelles and Sri Lanka, but partners far beyond like Brazil and Morocco.

Other key global challenges today deserve similar attention. As a central participant in reaching the Paris agreement, India has stood firm with regard to combating climate change. Its renewable energy targets have multiplied, its forest cover has grown, its biodiversity has expanded and its focus on water utilization has increased. Practices honed at home are now applied to its development partnerships in Africa and elsewhere. By example and energy, Indian diplomacy is leading the way, including through the International Solar Alliance and the Coalition for Disaster Resilient Infrastructure initiatives.

The challenge of countering terrorism and radicalization is also a

Despite its many benefits, the world has also seen strong reactions to globalization. Much of that arises from unequal benefits, between and within societies.

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INDIA NOW Above: Prime Minister Narendra Modi. Right: Foreign Minister Subrahmanyam Jaishankar. Below: A temporary isolation ward in a hospital on India's Sagar Island, a pilgrimage site.



formidable one. As a society, long subjected to cross-border terrorist attacks, India has been active in enhancing global awareness and encouraging coordinated action. It will be a major focus in India's diplomacy as a non-permanent member of the Security Council and in forums like FATF and G20.

Among the takeaways from the COVID-19 experience has been the power of the digital domain. Whether it was contact tracing or the provision of financial and food support, India's digital focus after 2014 has yielded impressive results. The "work from anywhere" practice was as strongly enhanced by COVID-19 as the "study from home" one. All these will help expand the toolkit of India's development programs abroad and assist the recovery of many partners.

2020 also saw the largest repatriation exercise in history—the return home of more than 4 million Indians. This alone brings out the importance of mobility in contemporary times. As smart manufacturing and the knowledge economy take deeper root, the need for trusted talent will surely grow. Facilitating its movement through diplomacy is in the global interest.

A return to normalcy in 2021 will mean safer travel, better health, economic revival and digitally driven services. They will be expressed in new conversations and fresh understandings. The world after COVID-19 will be more multi-polar, pluralistic and rebalanced. And India, with its experiences, will help make a difference. **N**

→ **Dr. S. Jaishankar** is the minister of external affairs of India and author of *THE INDIA WAY: STRATEGIES FOR AN UNCERTAIN WORLD* (HarperCollins). The views expressed in this article are the writer's own.

BUSINESS

Breaking Through the Noise

In a world constantly flooded with social media posts on multiple platforms, these five strategies will help you stand out from the crowd

➔ IN THE EARLY DAYS OF COVID, racking up social media views was easy—after all, everyone’s schedule had suddenly cleared. But, as the pandemic has worn on, social media expert Shama Hyder notes, “People are becoming more choosy about their [media] consumption. The first webinar’s cool, the second’s cool...the 80th webinar better really bring it, right?”

Every Thursday at 12 p.m. ET/9 a.m. PT, I host *Better*, a *Newsweek* video interview program streaming on LinkedIn, Twitter, Facebook and YouTube. Hyder—founder and CEO of Zen Media, a digital marketing and PR firm, and author of *The Zen of Social Media Marketing and Momentum: How to Propel Your Marketing and Transform Your Brand in the Digital Age*—was a recent guest. During the interview, she shared these five strategies about how to break through the noise on social media, when it seems noisier than ever.

Follow the Three Cs

Hyder believes the most impactful social content these days has three key characteristics: It’s compact, consistent and creative.

“Micro is winning right now,” says Hyder, because of short attention spans and general media overload.

For instance, if you’re giving a virtual talk, she suggests scheduling it for 30 or 45 minutes, rather than the traditional 60-minute presentation, because audiences will be better able to pay attention.

Consistency—building a relationship with your audience by sharing content at regular, predetermined intervals—also matters. For instance, in my book *Entrepreneurial You*, I profile popular men’s fashion video blogger Antonio Centeno, who believes frequent, consistent posting has been the secret to his massive subscriber growth.

Finally, Hyder says, we have to be creative in order to stand out. That means continually experimenting and trying new ways to connect with your audience. Among the switch-it-up tactics she suggests you might try: talking about topics you don’t usually cover, varying the length of your posts or your videos or creating some content that’s more personal in nature.

Don’t Be Everywhere

“It’s very easy for me to sit here and say, ‘Be on every [social channel],’” says Hyder. “I know a lot of gurus do that. But it’s such terrible advice because it all depends on your bandwidth. Do you have a team of 20 you

BY

DORIE CLARK

 @dorieclark


can deploy?” Most of us don’t.

The solution, according to Hyder: “Get on the platform where you can be consistent.” That usually means the intersection of the platform where your audience congregates and where you most enjoy posting. For instance, Hyder and I work with professional clients, and therefore we both put most of our online efforts into LinkedIn, where I also offer a weekly e-newsletter.

Create Pillar Content

Hyder is a believer in what she calls “pillar content”—meaning, creating rich material on a particular topic and then leveraging that content in multiple ways.

An example: “When trade shows



BETTER

A LinkedIn Live Series
with Dorie Clark
Thursdays at 12 p.m. ET
at [newsweek.com/
linkedinlive](https://newsweek.com/linkedinlive)

At the enterprise level, for instance, “You have to have leadership that’s open and willing to experiment and try new things,” says Hyder. As the post-COVID economy shakes out and employees start eyeing other opportunities, Hyder believes that the ability of companies to retain talent will depend on their agility, flexibility and willingness to say, “Hey, let’s do it. We’re game.”

The same holds true for us as individuals experimenting with social media. “There are times I put something out there that I’m like, ‘Whew, best work ever, Hyder, great job!’” she says. But the audience isn’t always interested, so she learns from it and moves on.

Most companies—and by now, most professionals—recognize the importance of building a strong brand on social media to achieve their business and career goals. Connecting with engaged followers enables you to gain valuable consumer insights, recruit talent and sell your products more quickly, and to have a bigger impact in your field and beyond.

But as I describe in my book *Stand Out: How to Find Your Breakthrough Idea and Build a Following Around It*, breaking through the noise is more of a challenge than ever, as millions of homebound professionals sit glued to their computers, often creating content of their own. By following these strategies, you’ll have a far better chance of getting your ideas noticed and heard in a crowded world. **N**

→ **Dorie Clark**, author of *ENTREPRENEURIAL YOU* and Duke University Fuqua School of Business professor, hosts NEWSWEEK’s weekly interview series, *BETTER*, on Thursdays at 12 p.m. ET/9 a.m. PT at newsweek.com/linkedinlive. Sign up for updates at dorieclark.com.

were canceled [at the start of COVID],” she recalls, “we did a macro topic of ‘what to do now that your trade show has been canceled.’” She also created a video and an article on that theme, and then deployed her team to mine them for tweets, a related Instagram post and additional places to share the video (such as LinkedIn and YouTube).

Play the Long Game

Since the dawn of social media, the quest to “go viral” has become a cultural obsession. But Hyder says that shouldn’t be the goal. “What’s more true is that [growing a following is] much slower than that. It really needs time to build. You have to look at it as a long game.”

Viral hits are rare, Hyder notes,

and lasting success doesn’t stem from a one-hit wonder. “If you’re really looking to build something long term—your business, your brand, your career, whatever it is—you have to realize that it’s not that one thing that matters,” Hyder says. “It’s that thing that you do every single day.”

Be Willing to Experiment

Not every piece of social content you share is going to be a hit. So you have to be willing to take chances and accept that failure is part of the process.

Be compact, consistent and creative: “Micro is winning right now.”

Sirius Telecom - Mobile innovator

Senegal's rapid recent economic growth has been supported by its burgeoning telecoms sector, which maintained a steady upwards trajectory in 2020. The total number of mobile subscribers rose by 5.7% in the year to March 2020, and companies are investing millions to expand next-generation broadband services. Sirius Telecom stands to benefit.

Led by CEO Hamadou Mbackiou Faye, a legendary politician, religious dignitary, media mogul, and businessman, Sirius Telecom is making major waves in Senegal's telecoms industry. Faye was already famous in the 1990s, having launched Charbons du Sénégal, a well-known charcoal company, after spending years in politics. He went on to become a prominent and successful real estate developer, expanding into media after trips to Europe. His portfolio grew again with the launch of Sirius Telecom, which was granted a mobile virtual network operator (MVNO) license in early 2019.

"We do have a real value proposition to offer our clients. MVNO is the real



Hamadou Mbackiou Faye
CEO - Sirius Telecom

opportunity and it's very strategic, as we need to develop our offer based on the communities. We offer tailor-made services to elderly people, that are different than younger people and other segments. We don't have to reinvent the wheel. It's really about taking good service and pricing it to them," Faye explained.

Sirius' development dates back 10 years, when Faye invested in an assurance company offering services to expatriates.

Clients needed payment solutions, leading him to launch a virtual wallet product, following which he partnered with incumbent operator Sonatel, officially launching MVNO services in September this year. Today Sirius buys data and airtime in bulk, selling it on to a fast-growing subscriber base. The company currently has 100,000 clients, but expects that number to reach between 300,000 and 500,000 in the coming months.

As it looks to further expand operations and capacity, Faye is looking abroad to potential new partners and investors. Senegal's mobile market offers enormous untapped opportunities, he argued:

"The telecom sector is one of the most important in the Senegalese economy. We are looking to expand in the region, but it's going to take a bit of time and we will need partnerships. Partnerships will define our success, and Africa is an emerging continent, so now is the time to invest in it."



Sonacos Senegal's agriculture powerhouse

Senegal's agriculture sector remains an economic mainstay, supported by rapid recent growth in peanut production. Senegal is the world's seventh-largest peanut producer, with the market expected to continue growing on the back of rising demand in China. This means Société nationale de commercialisation des oléagineux du Sénégal (Sonacos), a flagship national oilseed marketing company, is in prime position to capitalize on new growth in peanut production.

2019 was a turnaround year for Sonacos, which is active mainly in the procurement and production of peanuts. Under the leadership of CEO Modou Diagne Fada, the company returned to profitability for the first time in years in 2019, with revenues soaring from €21.4 million to €62.6 million. He explained that Sonacos had oil and seed that had been in its stocks for years, and his first priority after he took charge was to access a network he'd built while servicing as minister of health, ministry of youth, and minister of



Modou Diagne Fada
CEO - Sonacos

environment to bring buyers on board. Government support for the company really helped:

"We had a good campaign this year, but above that President Macky Sall ordered a €30.5 million injection into the agriculture sector. The president also directed a cash injection in Sonacos, and that should motivate investors to see that the sector is moving and soon domestic demand will be

completely met. There is a political will to improve the sector, but of course the private sector must also get involved."

As he looks to 2021 and beyond, Fada said there are opportunities for investment in a fast-growing segment of global agriculture. Sonacos will continue to play an important role in the domestic industry, but Fada has also set his sights on value-added production and new export growth,

"Last year we processed 1.4 million tons of seeds. Next year we expect to process 2 million tons of seeds. If our installations can be modernized and updated, which requires investment, partnerships, and strategic investors, we would increase our production and processing consistently, and in turn provide thousands of jobs across the country while offering attractive returns to investors," he concluded.



GETRAN Group

Senegal's trusted construction leader

While Europe and North America grapple with crippling pandemic recessions, Senegal's macroeconomic growth is set to continue at a brisk pace in 2020. Fitch Solutions projects GDP growth will hit 3.1% in 2020 and rise again to 5.5% in 2021, a remarkable recovery after a difficult year. Resurging activity will bolster the country's fast-growing construction sector, putting regional leader Générale de travaux publics et de négoce, or GETRAN Group, in the perfect position to capitalize on new opportunities at home and abroad.



Mar Thiam
CEO - GETRAN Group

CEO Mar Thiam is unfazed by the pandemic. A well-known figure in Senegalese business and political circles, he has earned his reputation as a visionary strategist. Thiam argued 2020 marked an important and positive turning point for Senegal:

"It's true that Covid-19 held back our ambitions and our desires to build more and faster, but 2020 also marked 60 years of independence for Senegal. It was a milestone year, marking a certainty that it is truly on its way becoming a diversified, modern economy. From reforms to attract investment in the oil and gas sector to new raw materials processing, we are moving away from being an agricultural economy. Sixty years is the age of wisdom, and Senegal's changing mindset reflects that."

Established in 1998, GETRAN Group has risen to become a leader in Senegal's construction industry, offering services including construction, engineering, building, public works, transportation, and contract negotiations. The group's portfolio includes quarrying firm SAGEC, offering 3000 tons of daily laterite and basalt production capacity, Start Afrique, for earthworks, sanitation, road and transport works, and GETRAN SA for civil engineering. Last but not least, GETRAN Industrie, manufactures and supplies construction materials. It owns and operates 13 concrete plants and seven concrete and prestressed concrete production units. Thiam has also been busily building the group's real estate arm, GETRAN Immo.

But he hasn't limited his activity to the domestic industry - the bulk of GETRAN's business now comes from international operations, and the group is also a regional leader in engineering, construction, and project management. Civil engineering is GETRAN's specialty, and its strong track record of project delivery has enabled the company to expand from its home base in Dakar to neighbors including Côte d'Ivoire, Gambia, Chad, and Congo.

GETRAN has a number of high-profile projects under its belt, including the Elbo building in Brazzaville, Abidjan's Francophone Games Village, the BCEAO headquarters in Guinea Bissau, the Arch of the Fiftieth Anniversary in N'Djamena, and the Dakar's Ministry of Environment building. For Thiam, a flexible, comprehensive approach to new projects and business lines is the secret for success.

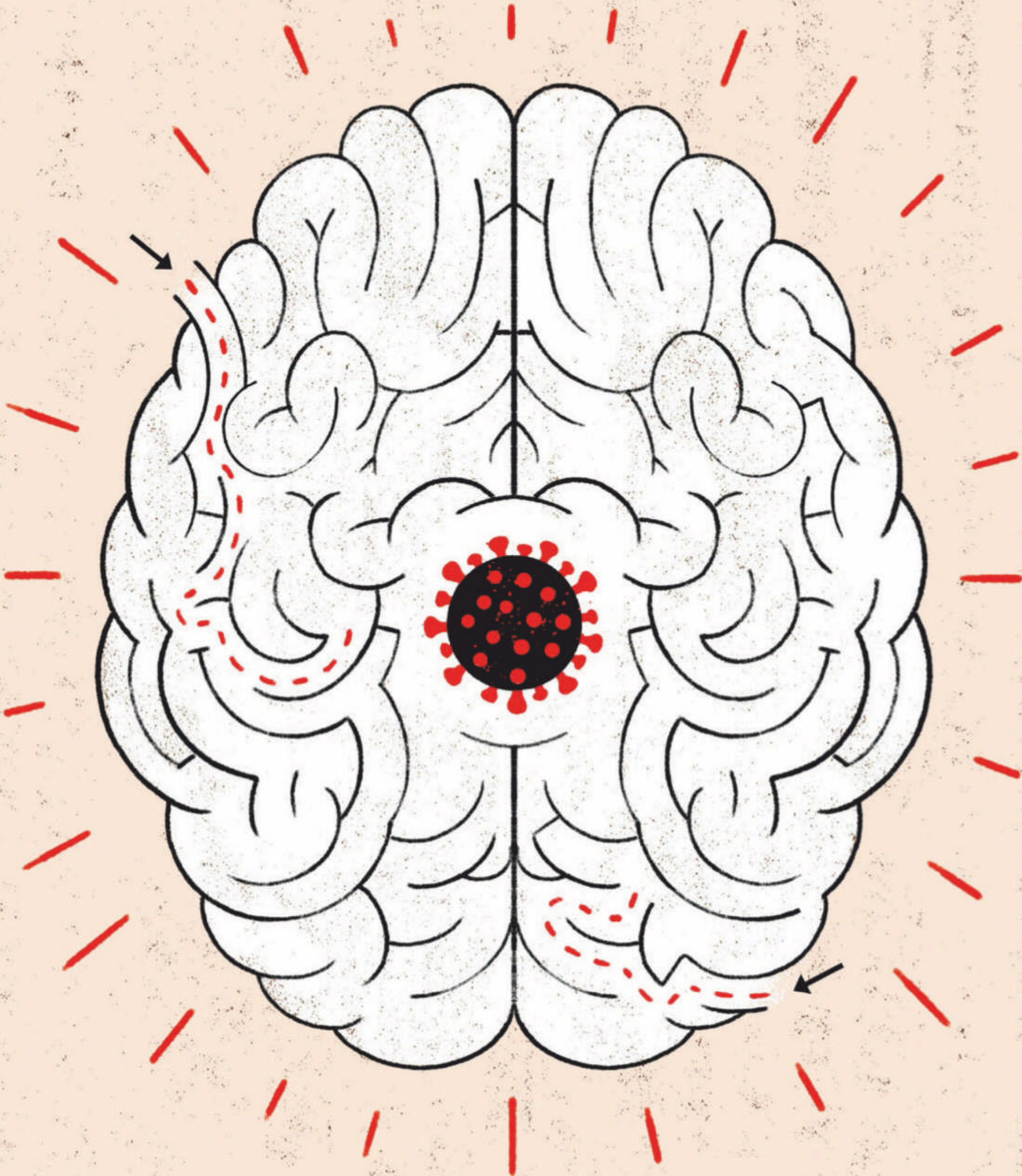
"We are not just in construction, but also in development concepts and real estate management. We are involved in mining activities, and other variants related to real estate activities such as architecture and design. We produce and use our own concrete, but also sell, to other builders, our excess concrete production. Our production methods are modern, providing for example robust and lightweight building blocks," he explained.

GETRAN group has remained agile and resilient despite the pandemic, and Thiam is laser-focused on reaching his next milestone: growing group turnover to €500

million annually by 2035 with projects including the Diamniadio Shopping Center, located just outside of Dakar, and a new hotel in Tarn Sarene. As West Africa's economies continue to outpace the rest of the world, a burgeoning middle class, growing housing demand, and the rise of integrated, modern cities will ensure steady long-term growth.

This presents considerable opportunities to potential investors. Thiam is looking for new strategic partners who share his vision of first-class construction both within Senegal and across the wider region, and could help bolster the group's access to financing as it takes on bigger and more ground-breaking projects for all manner of clients.

"At GETRAN we are constantly bidding for both public and private sector tenders to offer our construction services. We are developing new real estate activities through GETRAN Immo, and we are increasingly initiating our own projects. We aim, for example, to develop Senegal's largest commercial center in the coming years. Our 2035 target is very challenging and ambitious, but we are very capable of doing it. The base is set up and we have all the talent to make it happen. The challenge remains to access good financing, but I am confident that as we continue raising our corporate profile, we will attract more and more attention," he concluded.



HOW COVID ATTACKS

“Brain fog” and other **lingering effects** beset survivors of COVID-19 and could fuel a spike in dementia and other neurodegenerative diseases in the coming decades. Scientists are starting to unravel the mystery.

by
ADAM PIORE

THE BRAIN

Illustration by
ALEX FINE

G

ABRIEL DE ERAUSQUIN FIRST BEGAN to worry about the long-term impact of COVID on the brain when he read early reports out of Wuhan, China last January that survivors had lost their ability to smell and taste. To a neuroscientist like de Erausquin, the sudden loss of two of the five senses was a “red flag.”

His worry soon turned to alarm. One of his medical residents, a young mother in her early 30s diagnosed with COVID-19 who’d experienced respiratory complications, fever and exhaustion, was forced to quarantine away from her young children in a hotel room for a month. As her acute symptoms began to fade, what troubled her most about the experience was not the separation itself, she told de Erausquin, but how she felt about it—she felt entirely detached.

“Cognitively, she realized that she should have been more concerned about her children, she should have been more concerned about her work,” recalls de Erausquin. “But she couldn’t care less. She had the lack of smell, the lack of taste and this profound emotional distancing, which bothered her a lot. It’s very hard to explain that kind of emotional detachment, emotional dissociation, without having something going on in the amygdala.”

The amygdala is a region deep inside the brain that’s considered the seat of emotions. For de Erausquin, an expert in neurodegenerative disorders at the University of Texas Health Center at San Antonio, these and other observations about the link between COVID-19 and brain disorders has become more urgent over the past year. Patients who had seemingly recovered from COVID-19 and were long past the age at which schizophrenia would be expected to manifest were experiencing psychotic breaks. Other patients reported strange neurological symptoms—tremors, extreme fatigue, phantom smells, dizziness and bouts of profound confusion, a condition known as “brain fog.” Reports in medical journals began piling up, showing these problems extend far beyond Texas. In one early study of more than 200 patients in Wuhan, neurological complications were identified in 36 percent of all cases and in 45 percent of severe cases. Another study in France in the *New England Journal of Medicine* reported neurological symptoms in 67 percent of patients.

It’s too early to tell what the long-term effects of COVID-19 will be on the cognitive health of survivors. But scientists fear the disease’s lingering effects



could feed a spike in dementia and other neurodegenerative diseases in the decades ahead. In addition, a growing number of COVID long-haulers already meet the clinical criteria for Chronic Fatigue Syndrome (CFS), a mysterious condition, also called myalgic encephalomyelitis, characterized by extreme fatigue, exercise intolerance and a whole host of other strange and debilitating neurological symptoms. Prior to COVID-19, CFS afflicted 2 million Americans.

If COVID long-haulers follow the trajectory of those who suffer from CFS, anywhere from 10-to-30 percent of those infected by SARS-CoV-2 may eventually experience long-term symptoms—a vast pool of additional millions with the condition who will place a new strain on our healthcare burden, says Avindra Nath, clinical director of the National Institute of Neurological Disorders and Stroke (NINDS).

In recent months, the medical establishment has belatedly begun to respond to the crisis. Whereas COVID-19 was in early months considered mainly a respiratory virus, there’s now a growing appreciation for its effect on other organs, including the brain. In addition, the media has increasingly begun



FROM LEFT: SCIENCE PHOTO LIBRARY/SCIENCEPRO/GETTY; PABLO BLAZQUEZ DOMINGUEZ/GETTY; NIH

HEAD START

Neuroscientists seek early treatments that minimize long-term damage to the brain.

Left: The amygdala, in red, is an area of interest to scientists. Below: An occupational therapist congratulates a COVID-19 survivor in a rehab facility that treats COVID-19 victims with brain injury in Spain.

to draw attention to the plight of long-haulers and their cognitive symptoms.

“The realization that there’s a neurological effect has been really recent,” says Nath. “I’ve been trying to beat that drum for quite some time. Patients have been complaining about it for months, but the scientists were not doing anything about it.”

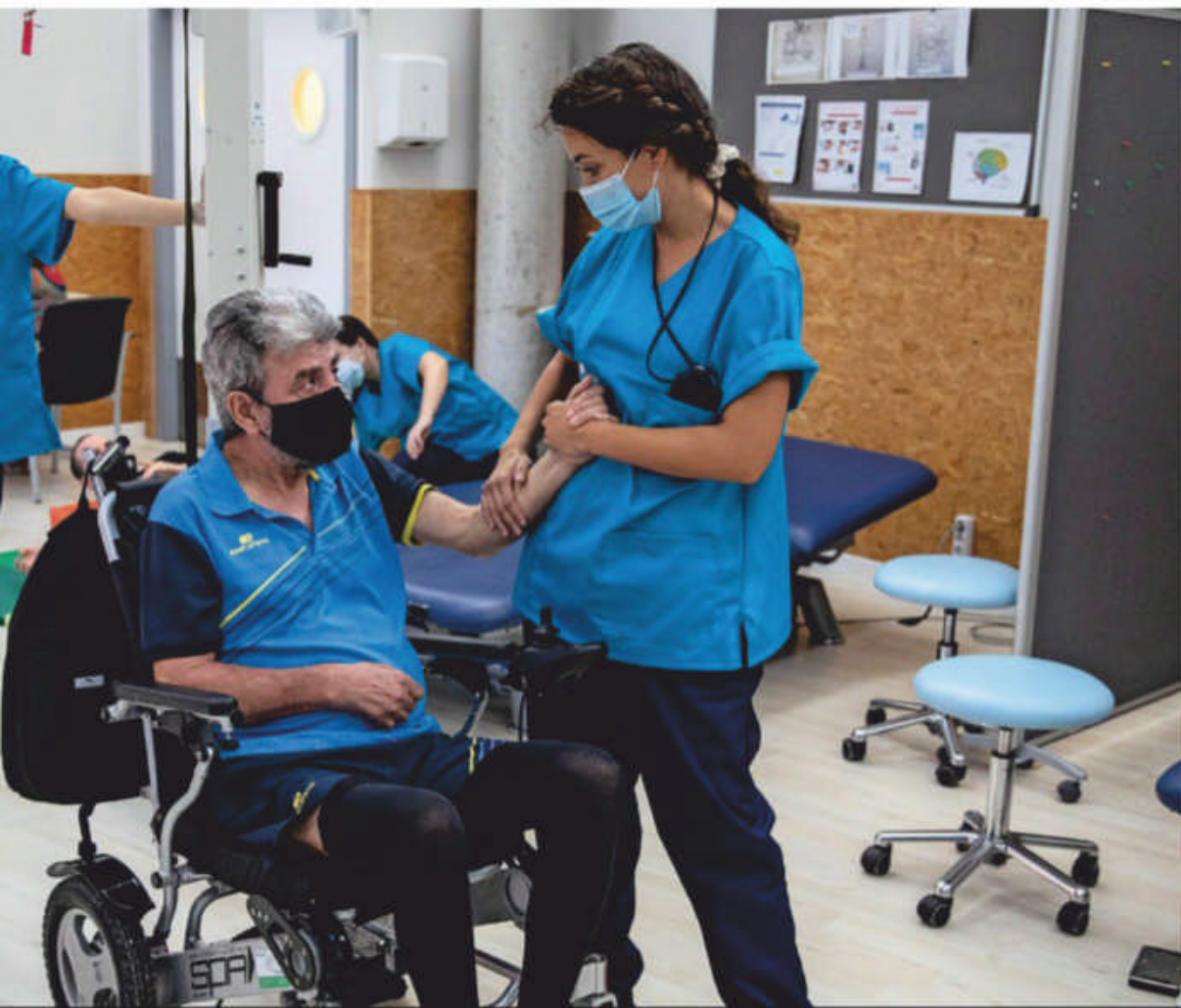
That is changing. Several large-scale initiatives to study the problem have been announced in recent weeks. The biggest question is how much money the National Institutes of Health (NIH) will devote to them. In December, Congress allocated roughly

\$1.5 billion to the agency for COVID-19 research, to be spent at the discretion of director Francis Collins. Although he has not yet stated whether he intends to fund brain research, agency officials told *Newsweek* that NIH will likely support large-scale studies that examine different recovery trajectories. (They spoke without attribution and declined to give specifics because the plans are still being hashed out.) An NIH spokesperson confirmed that NIH will “expand efforts to determine the scope of the post-acute COVID-19 symptoms, understand the biological processes involved and, ultimately, test methods to prevent and treat such symptoms.”

Neuroscientists, meanwhile, are doing what they can and focusing their efforts on ways of intervening early in the onset of COVID-19 with treatments that minimize long-term damage to the brain. Once patients have lived for months or even years with the syndrome, treatment is more difficult. “That’s what we’d like to avoid,” says Dr. Walter Koroshetz, director of NINDS. “The sooner you can intervene, the greater effect your intervention is likely to have. People who are two and three years out and are still sick, it’s a tougher road to get better.”

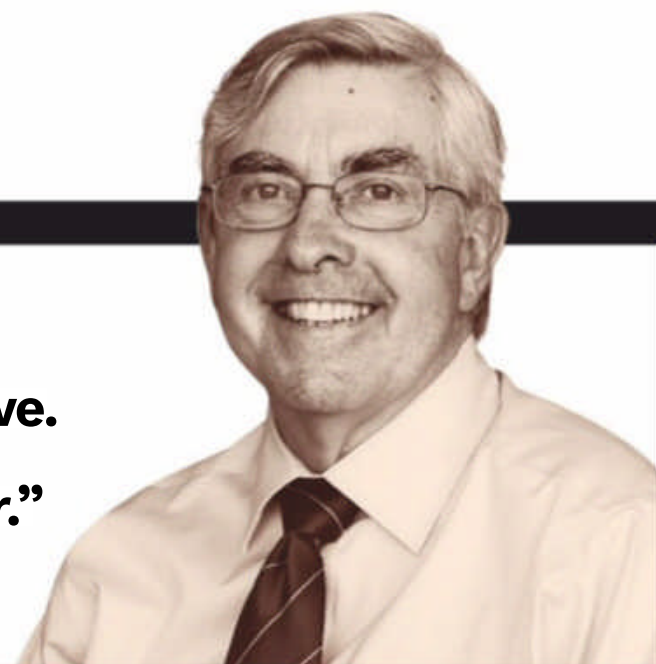
A Landscape of Devastation

THE CONNECTION BETWEEN CHRONIC NEUROLOGICAL conditions and infectious viruses has long mystified scientists. In the wake of the 1918 Spanish Flu, an estimated 1 million people worldwide developed a mysterious, degenerative neurological syndrome known as encephalitis lethargica, which caused



“The sooner you can intervene, the greater effect your intervention is likely to have. People who are two and three years out and are still sick, it’s a tougher road to get better.”

— DR. WALTER KOROSHETZ



Parkinson-like muscle rigidity, psychosis and, in some cases, a zombie-like state. Neurologist-author Oliver Sacks featured the syndrome in a book that was the basis for the 1990 film *Awakenings*. The cause of this condition, which lingers for decades, is still not fully understood.

Prior to the introduction of antiviral therapies for HIV in the 1980s, dementia was observed in about 25 percent of infected patients. The AIDS virus often invaded the brain within the first two weeks of

Medicine at Mount Sinai, is part of a team that has so far managed to examine the brains of 63 autopsied patients. They work in a specially-sealed room, equipped with a ventilation system designed to keep air from escaping, accessible only to a single pathologist at a time clothed in a full-body protective suit and face shield.

In April, Bryce and her colleagues detailed the case of a 74-year-old Hispanic male who had arrived in the ER confused after experiencing several falls at

“Sometimes there was a large area territory of dead tissue, but more commonly they’re quite small and patchy within the periphery of the cortex, and also in the deep surfaces in the brain. Some looked like they were anemic, some lacked oxygen, and others had hemorrhages.” — DR. CLARE BRYCE



infection, smuggling itself in through infected immune cells and flooding the brain with neurotoxic proteins capable of laying waste to broad patches of neural real estate, according to Lena Al-Hartha of Chicago’s Rush Medical College.

In the wake of the 2003 SARS and the 2012 MERS outbreaks, autopsies found that pathogens had penetrated the brains of some victims. NINDS’ Nath, meanwhile, is currently following 200 former Ebola patients in Liberia still suffering from a mysterious set of chronic neurological symptoms that don’t seem to be getting any better with time.

Early efforts to investigate the strange effect COVID-19 seems to have on the brain of some victims have been hampered by the dangers of performing autopsies on deceased patients infected with a deadly pathogen that spreads through the air. In the first nine months of the pandemic, doctors performed only 24 studies involving brain autopsies of 149 individuals, according to one review.

Even so, those early studies, along with more recent ones, are beginning to provide clues.

Clare Bryce, a pathologist at Icahn School of



STEALTH DISEASE

Many long-haul COVID-19 patients, who are relatively young and experienced only mild symptoms, are now dealing with headaches, numbness, confusion, memory loss, difficulty focusing, and an intolerance for physical activity, where climbing stairs can result in dizziness and heart palpitations. Chronic neurological symptoms have also been observed in Ebola patients. Below: health workers in Congo move a patient to hospital during a 2018 Ebola outbreak.



home and, over the course of the following days, was variably “alert, agitated and combative.” He died on day 11. When Bryce and her team examined his brain, it was shot through with dead patches of shrunken, discolored, oxygen-starved neurons, which were so fresh they had yet to be broken down by the brain’s cellular maintenance crews—conditions they would see in roughly a quarter of the other 62 brains they examined in the months that followed. In an additional 11 patients, Bryce and her team found evidence of areas of devastation and cell death that were at least a couple weeks old. Some brains were swollen or shot through with clotted blood vessels.

“Sometimes there was a large area territory of dead tissue, but more commonly they’re quite small and patchy within the periphery of the cortex, and also in the deep surfaces in the brain,” Bryce says. “Some looked like they were anemic, some lacked oxygen and others had hemorrhages.”

NINDS’ Nath found similar damage in the fixed brain tissues of 16 deceased individuals shipped to him by the New York City Medical Examiner’s office, which he examined through high-powered microscopes. He published the results in the *New England Journal of Medicine*.

Many of the patients Nath examined had died suddenly prior to seeking medical attention—one was found on the subway, another had been playing with his little sister—leading Nath to conclude their symptoms were so mild that they were unaware of being sick. Nevertheless, Nath also found their brains to be shot through with neuronal damage, inflammation and broken blood vessels.

The exact cause of this devastation remains a subject of vigorous debate among neuroscientists. It’s also unclear whether the damage found in the brains of those who died from acute COVID-19 is mirrored in those who suffered milder cases and have since been hit with mysterious neurological aftereffects. The answers to those two questions could have major implications for future treatment.

An Invasion of the Brain

THERE ARE COMPETING THEORIES AS TO WHAT MIGHT be causing the damage to the brain in COVID-19, but so far scientists are most concerned about two: viral infection and autoimmune reactions. The two are not mutually exclusive, and there could be other causes that vary from case to case.

The most ominous possibility is that SARS-CoV-2 takes up residence in brain cells, which appears to be the case in other viral diseases associated with chronic neurological problems. That would make it more likely that, over the long run, the COVID-19 virus might contribute to neurodegenerative conditions. Studies of large populations of people suggest a link between common viral infections, such as herpes simplex virus and the molecular level processes seen in Alzheimer’s disease and dementia, says neuroscientist De Erausquin. Studies also show that some viruses burrow into the brain, lie dormant for a time and eventually reemerge.

That’s why de Erausquin was so alarmed early on—he feared that the perplexing clinical symptoms he was encountering might be explained by brain anatomy. A loss of smell suggested a possible infection of the olfactory bulb, a small region of the brain accessed through the nose. The olfactory bulb happens to be located near those areas of the brain involved in memory and emotional processing, which could explain “brain fog” and the strange emotional disassociation described by his medical trainee in the early days of the pandemic.

Since then, scientists have found another reason to fear the brain effects of COVID-19. Although it was originally thought to be primarily a respiratory disease, it’s now known to share some similarities with cancer in that it has the ability to metastasize, says Dr. Carlos Cordon-Cardo, director of the department of pathology at Mount Sinai Health System in New York City. It uses its famous spike-like proteins like grappling hooks to glom onto ACE2 receptors that are present in many types of human cells.

“The virus, even though it enters through the nose, can reach the lungs, the kidney, the liver, and now the brain because it goes into the blood vessels, it circulates, it travels into these tunnels,” says Cordon-Cardo. “And then it can meet in a specific site to produce an extent of organ damage.”

One alarming illustration of the potential destruction this might cause comes from the lab of Akiiko Iwasaki, an immunobiologist at Yale. She and her collaborators created tiny colonies of stem-cell-derived neurons and the cells that support them, then exposed these “organoids” to the COVID-19 virus. It quickly infected some of the neurons, which then went into metabolic overdrive, and commandeered the cellular machinery to churn out copies of itself.





MARIO TAMAGETTY

HEADS UP

As COVID-19 cases have risen and the vaccine rollout has begun, the media has begun to turn the spotlight on to the plight of COVID-19 long haulers and their strange neurological symptoms. Left: motorists line up to be vaccinated at Dodger Stadium in Los Angeles.

In this frenzy of viral reproduction, the infected cells “sucked out all the oxygen” in the area, slowly starving the surrounding neurons of essential nutrients and sending them into a death spiral.

This “bystander” effect was also observed in experiments in brain organoids conducted by Alysson Muotri, a professor of pediatrics and cellular and molecular medicine at the University of California, San Diego. When he exposed his colonies of organoids to SARS-CoV-2, he found that the virus infected only a handful of neurons but had a dramatic impact. Within 48 hours, it had killed off 50 percent of the synaptic connections between various cells, which could wreak havoc in a living brain.

Virus that hides in brain cells might account for the delayed onset of some neurological symptoms. These infected cells, he suspects, may release some kind of neurotoxic or pro-inflammatory molecules capable of damaging the cells around them.

The evidence for the brain-infection hypothesis is inconsistent, however. In an autopsy of three patients with brain damage, Iwasaki and her collaborators found, only one had clearly been infiltrated by the pathogen. In the 63 brains that Bryce examined, she found viral fragments in only one, belonging to the initial Hispanic patient. And at NINDS, Nath has so far been unable to find any signs of brain infections, an outcome he calls a “major mystery.”

“My expertise is in infection of the nervous system, so every pandemic I have studied the brain,” Nath says. “I was very surprised was there was no virus that I could detect.”

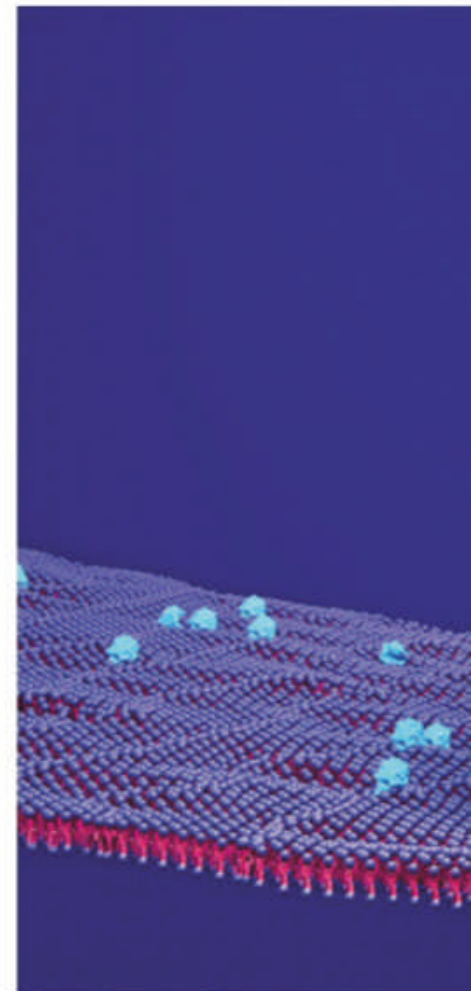
Immune Systems Run Amok

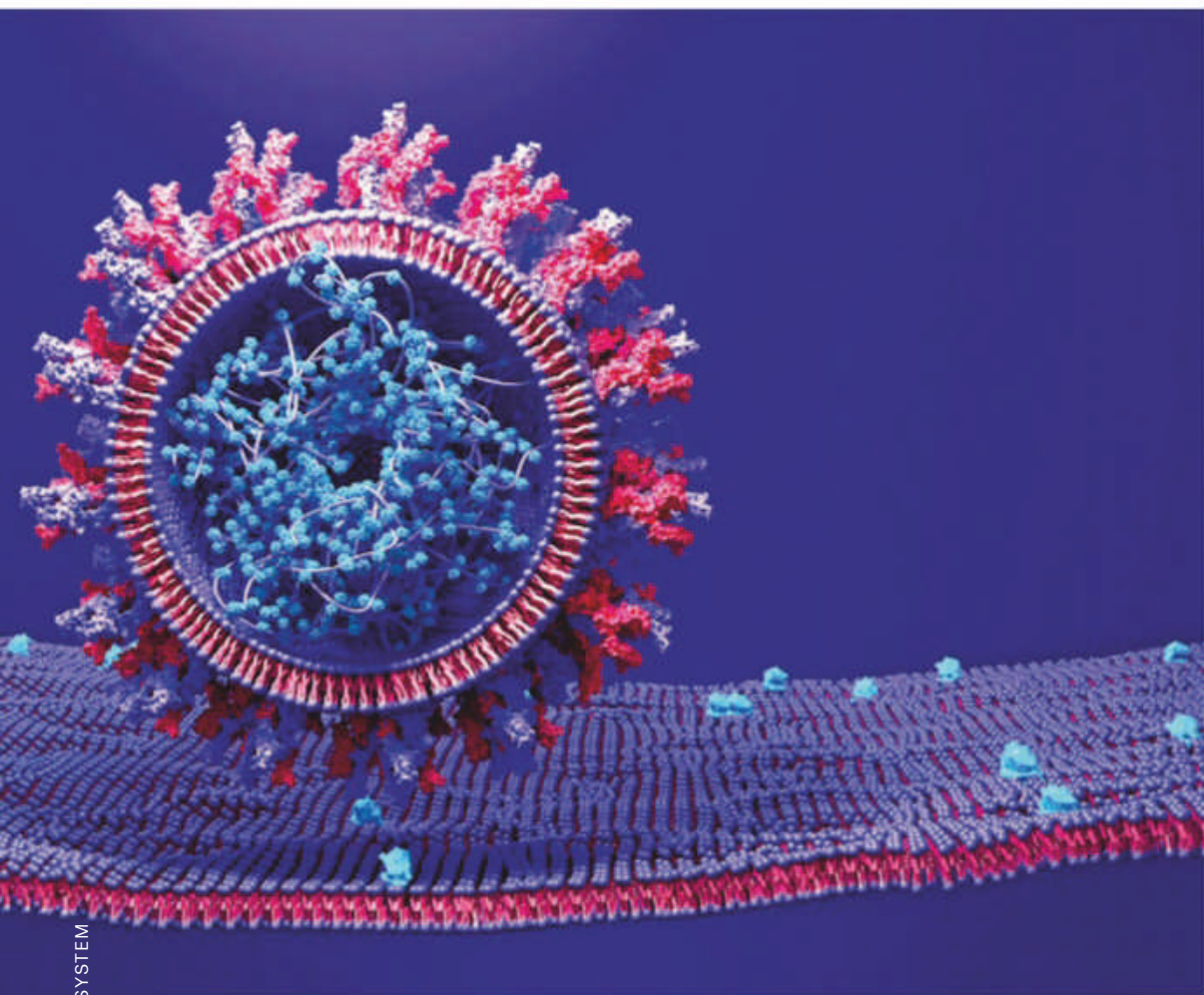
NATH SUSPECTS SOME LONG-HAUL SYMPTOMS MIGHT be explained by a hypothesis he favors for the cause of Chronic Fatigue Syndrome: The infection has left its victims with a persistent activation of the immune system, which has pushed the body into a low-level state of war with itself. Indeed, the many ways acute COVID-19 manifests in patients can be explained by how each individual’s immune system reacts to the disease. The same may well be true in those suffering from chronic symptoms.

These two hypotheses for long-haul COVID-19—autoimmunity and direct brain infection—are “not mutually exclusive,” Yale’s Iwasaki notes.

She examined the impact of a special class of immune cells called “autoantibodies”—molecular-level

cellular assassins that appear to be specially-designed and directed to seek out and attack proteins produced by the patient’s own body. After analyzing autoantibodies based on blood samples culled from 194 patients and healthcare workers infected with the virus, and comparing them to blood drawn from 30 uninfected healthcare workers, she found the COVID-19 patients exhibited “dramatic increases” in autoantibody activity, with the specialized cells in many cases targeting other immune cells. Of the 15 patients who died during the study, all but one were found to have unleashed autoantibodies on other elements of the immune system needed to effectively fight off the disease. The autoantibodies also appeared to be attacking molecules involved in blood clotting, connective tissue and cells in the brain and central nervous system, mistakenly identifying them as invading pathogens that needed to be eliminated. Iwasaki published a report in the British Medical Association’s flagship journal in December.





CLOCKWISE FROM LEFT: JEAN-CHRISTOPHE VERHAEGEN/AFP/GETTY; DESIGN CELLS/GETTY; MOUNT SINAI HEALTH SYSTEM

“The realization that there’s a neurological effect has been really recent. Patients have been complaining about it for months, but the scientists were not doing anything about it.” — DR. AVINDRA NATH



HEAD CASES
The lingering effects of COVID-19, scientists fear, will feed a spike in dementia and other neurodegenerative diseases in the decades ahead. Above: A model of SARS-CoV-2, with spike proteins. Left: A doctor in Nancy, France, administers an olfactory test.

Indirect attacks may account for the cellular damage to brain tissue seen in autopsies. By some estimates, the human body is lined with 60,000 miles of blood vessels, and ACE2 receptors, which SARS-CoV-2’s spike proteins target, are ubiquitous on the “endothelial” cells that line the outer surface of these blood vessels.

“The brain,” notes NINDS’ Koroshetz, “is the most vascularized organ in the body. It’s basically like a gigantic complicated tangle of blood vessels.”

Destruction of the outer lining of tiny capillaries in the brain, which has been spotted in a number of autopsies, could break down the blood-brain barrier, cause leakage, lead to blood clots and cause the whole

brain to swell up “almost like a sponge put in water.”

“That in itself is a problem because that allows things that are not supposed to go into the brain and the blood to actually get in, and that can set up problems in terms of the function of the brain tissue,” Koroshetz says. “It also brings in an inflammatory response to kind of sop up the injury or sop up the proteins that are getting in that shouldn’t be there.”

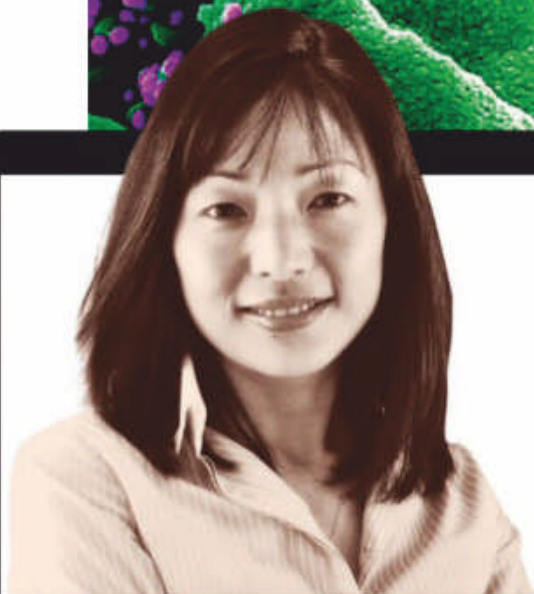
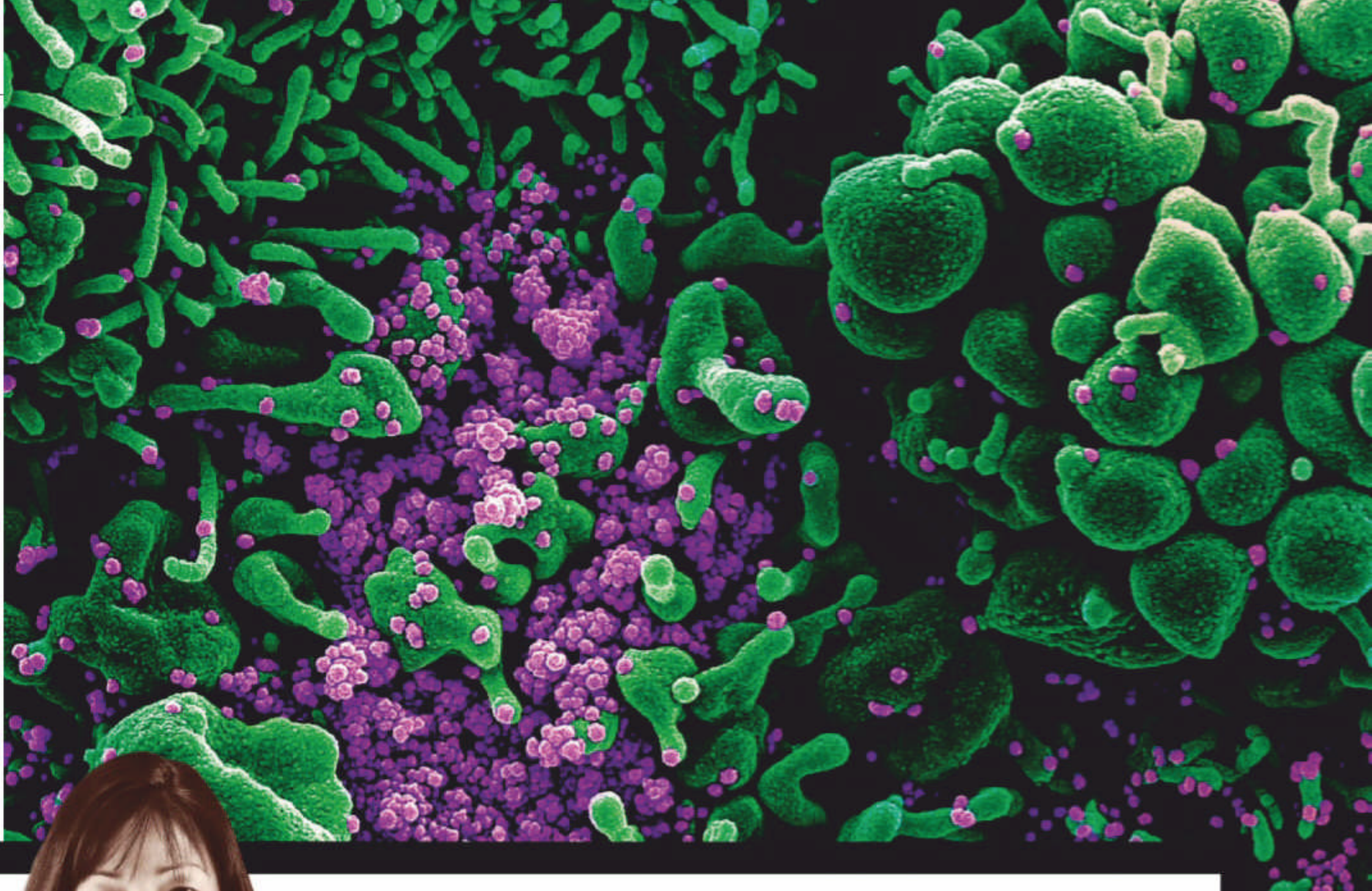
In addition to pathogens, this breakdown can allow the unchecked infiltration of white blood cells, which Koroshetz describes as the “tanks” of the immune system, because they attack infected areas with far more firepower and far less specificity than the COVID-specific antibodies, which are the “guided missiles” of the immune arsenal.

The process of verifying these hypotheses, and myriad others to emerge from the study of the disease, is only just beginning.

More Work to Do

DE ERAUSQUIN AND OTHER BRAIN SPECIALISTS LIKE him have been largely unable to get people to listen to their concerns and pony up the money needed to answer what they see a series of urgent questions. These entail not only the long-term effects COVID-19 will have on the brains of survivors, but also to what extent chronic neurological symptoms will add to the burden the world’s rapidly aging population is already expected to have on health-care systems in the decades ahead.

That may be changing. In recent weeks, the media has turned the spotlight onto COVID-19 long haulers and the strange neurological symptoms that persist



**Cells infected with the COVID-19 virus
“sucked out all the oxygen” in the
area, slowly starving the surrounding neurons
and sending them into a death spiral.**

—AKIKO IWASAKI


after the virus is cleared from their bodies.

Last month, de Erausquin and colleagues around the world unveiled the blueprint for a massive, international research study involving researchers from more than 30 nations, with as many as 40,000 participants that will follow survivors in the years ahead. The study, which will initially receive funding from the Alzheimer’s Association and support from the World Health Organization and, hopefully, from national health authorities around the world, aims to explore the cause of the mysterious effects COVID-19 often seems to have on the brain, and track its long-term impact.

Others studies may follow. The NIH has allocated roughly \$1.5 billion in COVID-related funds through the last COVID-19 relief bill and is likely to fund a major study aimed at examining the question of what constitutes a “normal recovery” and what

differentiates that from the experience of so-called “long haulers,” says NINDS’ Koroshetz. And researchers are in the process of setting up collection methods and standardizing procedures between four different groups treating hundreds of long-haul patients, including at Mount Sinai Hospital, that will examine the neurological symptoms in the hopes of finding the causes, according to Iwasaki.

Research that starts with observations at early stages of the disease could be “an excellent opportunity” to increase understanding of chronic fatigue syndrome and other brain diseases, says Nath. But, he warns, insights won’t necessarily come easy.

“Look at Alzheimer’s, we put billions of dollars in it every year, we’ve been studying it for decades, and we don’t even know how to diagnose the disease, let alone treat it,” he says. “Cracking neurological disease is not an easy task. It takes time.” 

GOING FOR THE KILL

Iwasaki and her Yale colleagues have observed in the lab how SARS-CoV-2 infects brain cells. The virus causes the neurons to go into metabolic overdrive and commandeers the cellular machinery to churn out copies of itself in a frenzy of viral reproduction. Above: A cell (green) infected with SARS-CoV-2 (purple). Right: Dr. Allison Navis at the Mount Sinai’s post-COVID Center in New York City.

CLOCKWISE FROM BOTTOM LEFT: KIKE CALVO/AP/HHMI; NIAID; ANDREW LICHTENSTEIN/MOUNT SINAI HEALTH SYSTEM

COVID Long-Haulers: Waiting for Relief

For the growing ranks of patients suffering from lingering neurological effects of COVID-19, the recent attention, and the prospect of new research, are welcome developments. The answers can't come soon enough.

Cassandra Hernandez, a 37-year-old, registered nurse working in Methodist Hospital in San Antonio, Texas, came down with the virus around the same time four coworkers got sick last June. After 40 days of COVID-19, she tested negative. But she is still reeling from its effects. Her legs often feel like they are "on fire," though she is not sure why. She's experienced seizure-like convulsions, profound exhaustion and short-term memory problems, and sometimes passes out. Sometimes it comes on so fast and strong, she can't remember how to brush her teeth or walk.

"I have times when I couldn't remember how to write. I didn't know how to add. I didn't know how to subtract," she says. "I have five degrees. To not be able to add or subtract just blows my mind. I felt like a child."

Though she has experienced some progress, the symptoms often come in waves, and she has had many setbacks. "My face and lips still go numb," she says. "My hair falls out. I feel like someone has robbed me of my life, of my career, of everything."

"I'm still technically in rehab. But I've asked them, how long is it going to take for me to get better? At first they were saying six months to a year, and now they're just like, 'We don't know.'"

Her experience is not unique. Dr. Allison Navis, lead clinical neurologist at Mount Sinai Hospital's post-COVID-19 center and an expert in neuro-infectious diseases, says the vast majority of long-haul patients she is seeing experienced only mild symptoms, were not hospitalized and are far younger than the patients you typically see on the news. Many are dealing with significant neurological issues.

These include headaches, tingling numbness and burning sensations throughout the body, confusion, memory problems, difficulty focusing, profound exhaustion and an

intolerance for physical activity, where something as simple as climbing the stairs can result in dizziness, heart palpitations and light headedness. The severity varies widely. Some people can only work limited hours, while others are entirely incapacitated. Brain imaging studies have not revealed any abnormalities.

There is no treatment for the underlying condition. All Navis can do is treat the individual symptoms.

Many of her patients, for instance, meet the diagnostic criteria for Postural Orthostatic Tachycardia syndrome or POTS, a dysregulation of the autonomic nervous system, that can contribute to "dysautonomia symptoms," such as lightheadedness, heart palpitations, heart racing, and fatigue.

This is treated with hydration, salt intake and compression stockings. She estimates that about one third of the patients she sees meet the diagnostic criteria for Chronic Fatigue Syndrome. Many have headaches. Some who have trouble focusing or directing attention have been prescribed medication for Attention Deficit Disorder.

Some patients are improving, others are not. "We wish we had more options, but we really don't," says Navis. "It's really just kind of working things up, making sure we're not missing anything else. A lot of what we do is just reassurance. Even if we don't have an answer, the normal test results are reassuring and it's a lot of just managing the symptoms."

One of the biggest challenges is keeping up people's spirits. "It's very frustrating for the patients, understandably, that they don't know what's going on and feel so horrible," she says.

After working with CFS patients for years, Dr. Avindra Nath, clinical director of the National Institute of Neurological Disorders and Stroke, also knows well how frustrating unexplained chronic illnesses can be.

"It's very important to not take away hope from people," he says. "The person afflicted with the disease has a very different perspective on timescale than a scientist does." ■



Newsweek



AMERICA'S BEST LOYALTY PROGRAMS

ILLUSTRATIONS BY BAD BROTHER/GETTY

We shoppers all have our favorite stores or websites, and it's satisfying when the places we're loyal to, are loyal to us in return. A birthday present from Sephora? I'm not going to say no. As part of our commitment to reader service, *Newsweek* partnered with global data research firm Statista to rank America's Best Loyalty Programs 2021. Our rankings highlight 241 loyalty programs in 43 categories. You'll probably find some of your favorites on this list, and you may discover some attractive new reward programs as well.



We wish you an enjoyable—and rewarding—shopping trip.



METHODOLOGY

The 2021 ranking of America's Best Loyalty Programs was compiled based on the results of an independent survey of more than 4,000 U.S. customers who are members of loyalty programs of retailers or service providers in the United States. Customers were given the opportunity to evaluate various loyalty programs: in total, around 16,000 evaluations were collected. The survey period ran from October to November 2020.

We defined loyalty programs as all reward programs that provided the customer with a benefit when purchasing or using the products or services of the associated brands.

The survey was conducted on retailers and service providers from 43 categories, providing results for a broad spectrum of loyalty programs in traditional retail, online retail and service segments.

The awarded loyalty programs each received an above average overall score. The final assessment and rankings were based on six evaluation criteria:

1. Ease and Enjoyment:

measures the value of the perks of being in the rewards program.

2. Benefit: measures whether the rewards are, in the customer's perception, worth being part of the program.

3. Overall satisfaction:

measures whether personal expectations were fulfilled and whether the customer is satisfied with the experience of the loyalty program overall.

4. Customer support:

measures the level of assistance provided to customers when signing up for the program or having trouble redeeming benefits.

5. Trust:

measures the trust in the loyalty program around how they use the personal data provided through the program.

6. Recommendation:

measures the likelihood of recommending the program to friends and family.

CLOTHING

Apparel

RANK	SCORE	PROGRAM, BRAND
1	8.20	Buckle Rewards Buckle
2	7.98	The Zumiez Stash Zumiez
3	7.98	Club Cali Hollister
4	7.81	UO Rewards Urban Outfitters
5	7.67	Navyist Rewards Old Navy
6	7.60	Lids Access Pass Lids
7	7.50	Banana Republic Rewards Banana Republic
8	7.49	Forever 21 Credit Card Forever 21
9	7.40	M Points Modlily
10	7.38	Gap Good Rewards GAP
11	7.35	RealRewards American Eagle Outfitters
12	7.24	Express Insider Rewards Express
13	7.21	Rue Rewards rue21
14	7.21	Burlington Loyalty Program Burlington

15 **7.04** **H&M Member Program**
H&M

Baby & Children's Products

RANK SCORE PROGRAM, BRAND

1 **8.60** **My Place Reward\$**
The Children's Place

2 **8.15** **Rewarding Moments**
Carter's, OshKosh B'gosh, ...

3 **7.01** **Club Justice**
Justice

4 **6.53** **The Key Rewards**
Pottery Barn Kids

5 **6.23** **Burlington Loyalty Program**
Burlington

Department Stores

RANK SCORE PROGRAM, BRAND

1 **8.18** **Coast 2 Coast Rewards**
Bealls

2 **8.03** **Kohl's Rewards**
Kohl's

3 **8.03** **MORE rewards**
Burkes Outlet

4 **7.92** **Loyallist**
Bloomingdale's

5 **7.80** **Dillard's Rewards**
Dillard's

6 **7.75** **The Nordy Club**
Nordstrom

7 **7.75** **Shop Your Way**
Sears

8 **7.64** **Macy's Card**
Macy's

9 **7.45** **Belk Rewards Card Program**
Belk

10 **7.44** **TJX Rewards Credit Card**
T.J. Maxx, Marshalls, ...

11 **7.29** **JCPenney Rewards**
JCPenney

12 **7.16** **Ollie's Army**
Ollie's Bargain Outlet

13 **7.12** **Fred Meyer Rewards Card**
Fred Meyer

14 **7.00** **DG Rewards**
Dollar General

15 **6.69** **Rewards Club**
Boscov's

Footwear

RANK SCORE PROGRAM, BRAND

1 **8.35** **Vans Family**
Vans

2 **7.88** **DSW VIP**
DSW

3 **7.79** **FLX Rewards**
Foot Locker

4 **7.43** **Shoe Perks**
Shoe Carnival

5 **7.39** **Zappos VIP**
Zappos

6 **7.32** **Famously You Rewards**
Famous Footwear

7 **7.23** **Reward Points**
Taos Footwear

8 **7.19** **Sole Circle Rewards**
Vionic

9 **6.56** **Skechers Elite**
Skechers

10 **6.44** **ShoeFan Rewards**
Shoes.com

Luxury Fashion & Accessories

RANK SCORE PROGRAM, BRAND

1 **7.34** **Luisaviaroma Privilege**
LuisaViaRoma

2 **7.24** **InCircle**
Bergdorf Goodman

3 **6.97** **Moda Rewards**
Moda Operandi

Outdoor & Athletic Apparel

RANK SCORE PROGRAM, BRAND

1 **8.13** **Reebok Unlocked**
Reebok

2 **7.97** **Moosejaw Rewards Program**
Moosejaw

3 **7.52** **Nike Member Community**
Nike

4 **7.45** **my NB rewards**
New Balance

5 **7.32** **Creators Club**
Adidas

Plus-Size Fashion

RANK SCORE PROGRAM, BRAND

1 **7.78** **Torrid Rewards**
Torrid

2 **7.50** **XL Rewards Club**
DXL Big + Tall

3 **7.28** **Lane Rewards**
Lane Bryant

Premium Apparel

RANK	SCORE	PROGRAM, BRAND
1	7.55	J. Crew Rewards J. Crew
2	6.85	Preferred Loyalty Program Calvin Klein
3	6.72	myAbercrombie Abercrombie & Fitch

Sporting Goods Retailer

RANK	SCORE	PROGRAM, BRAND
1	7.89	Hibbett Rewards Hibbett Sports
2	7.57	Scheels Visa Card Scheels
3	7.37	FLX Rewards Champs Sports
4	7.23	Status Finish Line
5	7.22	ScoreRewards Dick's Sporting Goods

Women's Apparel

RANK	SCORE	PROGRAM, BRAND
1	8.12	MyMaurices Rewards Maurices
2	8.02	Runwayrewards New York & Company
3	7.59	Rewards Loyalty Program Loft
4	7.11	Madewell Insider Madewell
5	5.93	InspiredRewards J.Jill

FOOD, HEALTH & BEAUTY

Convenience Stores

RANK	SCORE	PROGRAM, BRAND
1	9.63	Holiday Rewards Holiday Stationstores
2	8.56	My Love Rewards Love's
3	8.47	Sheetz Rewardz Program Sheetz
4	8.38	Kwik Rewards Kwik Trip
5	7.88	QT Rewards QuikTrip
6	7.57	7Rewards 7-Eleven
7	7.46	SmartPay Rewards Cumberland Farms

8	7.36	Casey's Rewards Casey's
9	7.26	Easy Rewards Circle K
10	6.20	EG Rewards KwikShop

Perfume & Cosmetics

RANK	SCORE	PROGRAM, BRAND
1	7.78	My Rewards The Perfume Spot
2	7.69	teamtarte Tarte
3	7.62	Beauty Insider Program Sephora
4	7.59	Ultimate Rewards Ulta Beauty
5	7.53	M·A·C Lover M·A·C
6	7.50	Sally Beauty Rewards Sally Beauty
7	7.29	Estée E-List Estée Lauder
8	7.03	Love Your Body Club The Body Shop
9	6.91	be. Points Beauty Encounter
10	6.91	Aveda Pure Privilege Aveda

Pharmacies & Drugstores

RANK	SCORE	PROGRAM, BRAND
1	7.93	Giant Eagle Advantage Card Giant Eagle





2	7.70	ExtraCare Pharmacy & Health Rewards® CVS Pharmacy
3	7.63	myWalgreens Walgreen

Supermarkets

RANK	SCORE	PROGRAM, BRAND
1	9.15	Points Club Rewards H-E-B
2	8.82	Max Card County Market
3	8.46	Schnucks Rewards Schnuck Markets
4	8.43	Redner's Rewards Redner's
5	8.37	Winn-Dixie Rewards Winn-Dixie
6	8.24	Kroger Rewards World Mastercard Kroger
7	8.20	Pick 'n Save / Metro Market Rewards World Mastercard Pick 'n Save
8	8.16	Mariano's Rewards World Mastercard Mariano's
9	8.06	Smith's Rewards World Mastercard Smith's
10	7.94	Weis Rewards Points Weis Markets
11	7.91	Martin's Choice Rewards Martin's
12	7.89	Dillons Rewards World Mastercard Dillons
13	7.88	Sprouts app Sprouts
14	7.82	myThyme Fresh Rewards Fresh Thyme

15	7.81	Price Plus® Club ShopRite
16	7.80	GO Rewards Stop & Shop
17	7.80	Club Publix Publix
18	7.78	Flexible Rewards Giant
19	7.61	MVP Customer Rewards Food Lion
20	7.53	AdvantEdge Card Price Chopper

Superstores & Warehouse Club Stores

RANK	SCORE	PROGRAM, BRAND
1	8.23	Costco membership Costco
2	8.19	Sam's Club family Sam's Club
3	8.13	mPerks Meijer
4	7.93	Target Circle Target
5	7.61	Walmart Rewards® Card Walmart

HOME GOODS

Bookstores

RANK	SCORE	PROGRAM, BRAND
1	7.38	Millionaire's Club BAM Books-A-Million
2	6.95	B&N Membership Barnes & Noble
3	6.47	Platinum Rewards Deseret Book

Consumer Electronics

RANK	SCORE	PROGRAM, BRAND
1	7.92	EggPoints Newegg
2	7.64	My Best Buy Benefits Best Buy
3	7.47	Samsung Rewards Samsung

Home Goods & Decor

RANK	SCORE	PROGRAM, BRAND
1	8.43	K-club loyalty program Kirkland's
2	7.74	My Funds Bed Bath & Beyond
3	7.43	insider perks At Home
4	7.21	The Key Member Rewards west elm
5	7.10	TJX Rewards Credit Card HomeGoods

Home Improvement Stores

RANK	SCORE	PROGRAM, BRAND
1	8.08	Menards Big Card Menards
2	7.68	Lowe's Advantage Card Lowe's
3	7.18	True Value Rewards True Value
4	7.10	Ace Rewards Ace Hardware
5	5.80	Neighbor's Club Tractor Supply Co.

Home Stores

RANK	SCORE	PROGRAM, BRAND
1	8.78	AllModern Credit Card AllModern
2	7.66	Wayfair Credit Card Wayfair

3 **7.20** **Houzz Credit Card**
Houzz

Outdoor Sporting Goods

RANK	SCORE	PROGRAM, BRAND
1	8.39	ScoreCard Field & Stream
2	8.06	L.L.Bean® Mastercard® L.L. Bean
3	7.90	Outdoor Rewards Cabela's
4	7.72	Backcountry Summit Club Backcountry
5	7.39	REI Co-op Membership REI

CATERING, RESTAURANTS & LEISURE

Bagel & Sandwich Chains

RANK	SCORE	PROGRAM, BRAND
1	8.32	Firehouse Rewards Firehouse Subs
2	8.03	Deli Dollars Jason's Deli
3	7.96	Bruegger's Bagels Inner Circle Bruegger's
4	7.96	my Mike's Jersey Mike's Subs
5	7.87	Freaky Fast Rewards Jimmy John's



Casual Dining Restaurant Chains

RANK	SCORE	PROGRAM, BRAND
1	9.52	Huddle Perks Huddle House
2	9.05	Beef's Rewards Beef'O'brady's
3	8.46	P.F. Chang's Rewards P.F. Chang's
4	8.24	Steak 'n Shake Rewards Club Steak 'n Shake
5	8.05	Frequent Diner Club Lettuce entertain you
6	7.99	Fridays Rewards TGI Fridays
7	7.78	Dine Rewards Bonefish Grill, Carrabba's Italian Grill, Outback Steakhouse, ...
8	7.76	My Red Lobster Rewards Red Lobster
9	7.76	My Chili's Rewards Chili's
10	7.70	Red Robin Royalty Red Robin



Coffeehouse Chains

RANK	SCORE	PROGRAM, BRAND
1	8.09	Caribou Perks Caribou Coffee
2	8.09	DDperks Dunkin' Donuts
3	7.98	Starbucks® Rewards Starbucks
4	7.90	Tims Reward Tim Hortons
5	7.48	McCafé Rewards McDonald's

Fast-Casual Restaurant Chains

RANK	SCORE	PROGRAM, BRAND
1	9.03	Tijuana Flats Rewards Tijuana Flats
2	8.72	Noodles Rewards Noodles & Company
3	8.30	Freddy's Rewards Freddy's Frozen Custard & Steakburgers

4 **8.13** **McAlister's Rewards**
McAlister's Deli

5 **7.86** **Chipotle Rewards**
Chipotle

6 **7.83** **Moe Rewards**
Moe's Southwest Grill

7 **7.68** **SmashClub**
Smashburger

8 **7.26** **Rotisserie Rewards**
Boston Market

9 **7.20** **Qdoba Rewards**
Qdoba

10 **7.07** **Club Baja**
Baja Fresh

Fast-Food Restaurant Chains

RANK	SCORE	PROGRAM, BRAND
1	8.69	Loco Rewards El Pollo Loco
2	8.61	Chick-fil-A One Chick-fil-A
3	8.15	Popeyes App Popeyes

4 **8.04** **Dairy Queen App**
Dairy Queen

5 **7.74** **Subway MyWay Rewards**
Subway

Ice Cream & Frozen Yogurt Stores

RANK	SCORE	PROGRAM, BRAND
1	7.98	My Cold Stone Club Rewards Cold Stone Creamery
2	7.66	Sweet Rewards Bruster's Real Ice Cream
3	6.64	Dot Crazy! Rewards Club Dippin' Dots

Pizza Chains

RANK	SCORE	PROGRAM, BRAND
1	8.35	MOD Rewards MOD Pizza
2	7.98	Papa Rewards Papa John's Pizza
3	7.82	Hut Rewards Pizza Hut





4 **7.77** **Piece of the Pie Rewards**
Dominos Pizza

5 **7.61** **CPK Rewards**
California Pizza Kitchen

SPORTS, LEISURE & TRANSPORTATION

Auto Parts Retailer

RANK	SCORE	PROGRAM, BRAND
1	7.57	AutoZone Rewards AutoZone
2	7.47	Speedpeaks Advance Auto Parts
3	7.27	Car Parts Warehouse Professional Installer Rewards Program CarParts.com

Bicycles

RANK	SCORE	PROGRAM, BRAND
1	8.12	Western Bikeworks Rewards Program Western Bikeworks
2	6.80	VIP Rewards Program Nashbar
3	6.68	VIP Club Bike Tires Direct

Hobby Store, Model Making

RANK	SCORE	PROGRAM, BRAND
1	7.43	Model Railroad Reward Society Model Train Stuff
2	7.39	Mega Rewards Megahobby.com

3 **6.98** **Hobbylinc.com Rewards Program**
Hobbylinc.com

Sports & Fitness Nutrition

RANK	SCORE	PROGRAM, BRAND
1	8.49	A1 Plus + Rewards A1Supplements.com
2	7.48	Healthy Awards Vitamin Shoppe
3	6.94	GNC Rewards GNC

GENERAL REWARD PROGRAMS

General Reward Programs

RANK	SCORE	PROGRAM, BRAND
1	7.72	Ibotta Ibotta
2	6.93	OpenTable Points OpenTable
3	6.48	Rakuten Rakuten

SERVICES

Spas, Wellness & Beauty

RANK	SCORE	PROGRAM, BRAND
1	7.64	Hand & Stone Rewards Points Hand & Stone Massage and Facial Spa

2 **7.11** **Rewards**
The Woodhouse day spa

3 **6.21** **MyHEIGHTSrewards**
Massage Heights

Automotive Repair

RANK	SCORE	PROGRAM, BRAND
1	7.62	Brake Masters Customer Loyalty Card Brake Masters
2	7.12	O'Rewards O'Reilly Auto Parts
3	6.99	Meineke Rewards Meineke

Commercial Banks

RANK	SCORE	PROGRAM, BRAND
1	8.13	Credit Card Rewards Capital One
2	8.12	Citi ThankYou® Rewards Citi Bank
3	8.03	PNC points PNC
4	7.95	Real Life Rewards Fifth Third Bank
5	7.80	Preferred Rewards Bank of America

Bus Carriers

RANK	SCORE	PROGRAM, BRAND
1	8.04	Driven Rewards Program Trailways
2	7.97	Road Rewards Greyhound

3 **7.35** **Amtrak Guest Rewards**
Amtrak

Car Rental

RANK	SCORE	PROGRAM, BRAND
1	7.96	The Emerald Club National Car Rental
2	7.43	Enterprise Plus Enterprise Rent-A-Car
3	7.20	Rental Genius Ace Rent-A-Car
4	7.03	Hertz Gold Plus Rewards Hertz
5	6.95	Avis Preferred Car Rental Program Avis

Flights, Hotels & Holiday Deals Search Engines

RANK	SCORE	PROGRAM, BRAND
1	9.05	priceline Rewards Signature Visa Card priceline.com
2	8.45	Orbitz Rewards Orbitz
3	6.95	Genius Booking.com

Full-Service Airlines

RANK	SCORE	PROGRAM, BRAND
1	8.10	Mileage Plan Alaska Airlines



2 **7.64** **Sky Miles**
Delta

3 **7.53** **Aeroplan**
Air Canada

4 **7.26** **AAdvantage program**
American Airlines

5 **7.18** **MileagePlus program**
United Airlines

Gas Stations

RANK	SCORE	PROGRAM, BRAND
1	8.20	Murphy Drive Rewards Murphy USA
2	8.19	Speedy Rewards Speedway
3	7.94	Fuel Rewards® Shell
4	6.94	BPme Rewards bp
5	6.23	Exxon Mobil Rewards + Premium™ Exxon Mobil

Hotel & Hospitality Reward Programs

RANK	SCORE	PROGRAM, BRAND
1	7.81	Choice Privileges Choice Hotels and all other participating hotel brands
2	7.79	IHG Rewards Club IHG and all participating hotel brands
3	7.79	Landry's Select Club Landry's and all participating brands
4	7.74	Hilton Honors Member Reward Program Hilton and all other participating hotel brands
5	7.54	Wyndham Rewards Wyndham Hotels and all other participating hotel brands

Low-Cost Airlines

RANK	SCORE	PROGRAM, BRAND
1	8.46	TrueBlue jetBlue
2	8.17	Rapid Rewards® Southwest
3	8.17	Virgin Red Virgin
4	7.64	Frontier Miles Frontier
5	7.56	Free Spirit® Spirit

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PARTING SHOT

Rebecca Breeds

↑ CLARICE STARLING FROM *THE SILENCE OF THE LAMBS* IS ONE OF CINEMA'S MOST iconic heroines, made famous by Jodie Foster's Oscar-winning performance. You might think taking on that role would be intimidating, but not for Rebecca Breeds, who will put her own spin on the character in the CBS drama *Clarice*, premiering February 11. Breeds calls it an "honor...she's one of the most well-written characters in history—not just female[s]." The series picks up where the film left off, diving deep into Clarice's complicated world after her encounters with Hannibal Lecter and the terrifying discovery in Buffalo Bill's basement. "The movie wasn't long enough to really delve into who this character is." Breeds is excited to show more of the complexities of Clarice's life as one of the few female agents in the 1990s FBI. "Don't be fooled by Clarice being this beacon of light, she is absolutely shrouded by the darkness." But it's the darkness of both Clarice's life and the serial killers she's hunting that make the show so exciting for Breeds. "The show is very dark and very juicy. So if you like that, you will not be disappointed."

“The movie wasn't long enough to really delve into who this character is.”

Was it intimidating taking on such an iconic role?

It's not something that freaks me out as much as I feel charged with an honor in a very positive way.

How does the show reveal what happened to Clarice after her encounters with Hannibal Lecter and Buffalo Bill?

Going into the basement of Buffalo Bill's physical house kind of forced her to go into the basement of her own trauma. She's got a lot of her own monsters in her closet that I think is part of what makes her good at her job.

Will the series focus on the complexities of Clarice working in a '90s era male-dominated FBI?

It's a big part of our series. Clarice is in her early 20s. So to come into this world of men that was the FBI, you just want to be taken seriously. You don't want to be the skirt. As you walk with her in the series, you can see it more from her point of view.

The series is set in 1993. How do the '90's play into the story?

My favorite thing is I have a beeper. And the outfits are amazing. A lot of boxy suits for women. It's so fun to just be long enough out in time that we're looking back with nostalgia and love.

What about the true-crime genre makes it so popular?

We want to make it make sense. We want to know that there's some kind of justice in this world. —H. Alan Scott

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