The Washington Post
Democracy Dies in Darkness

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By Jessica Contrera

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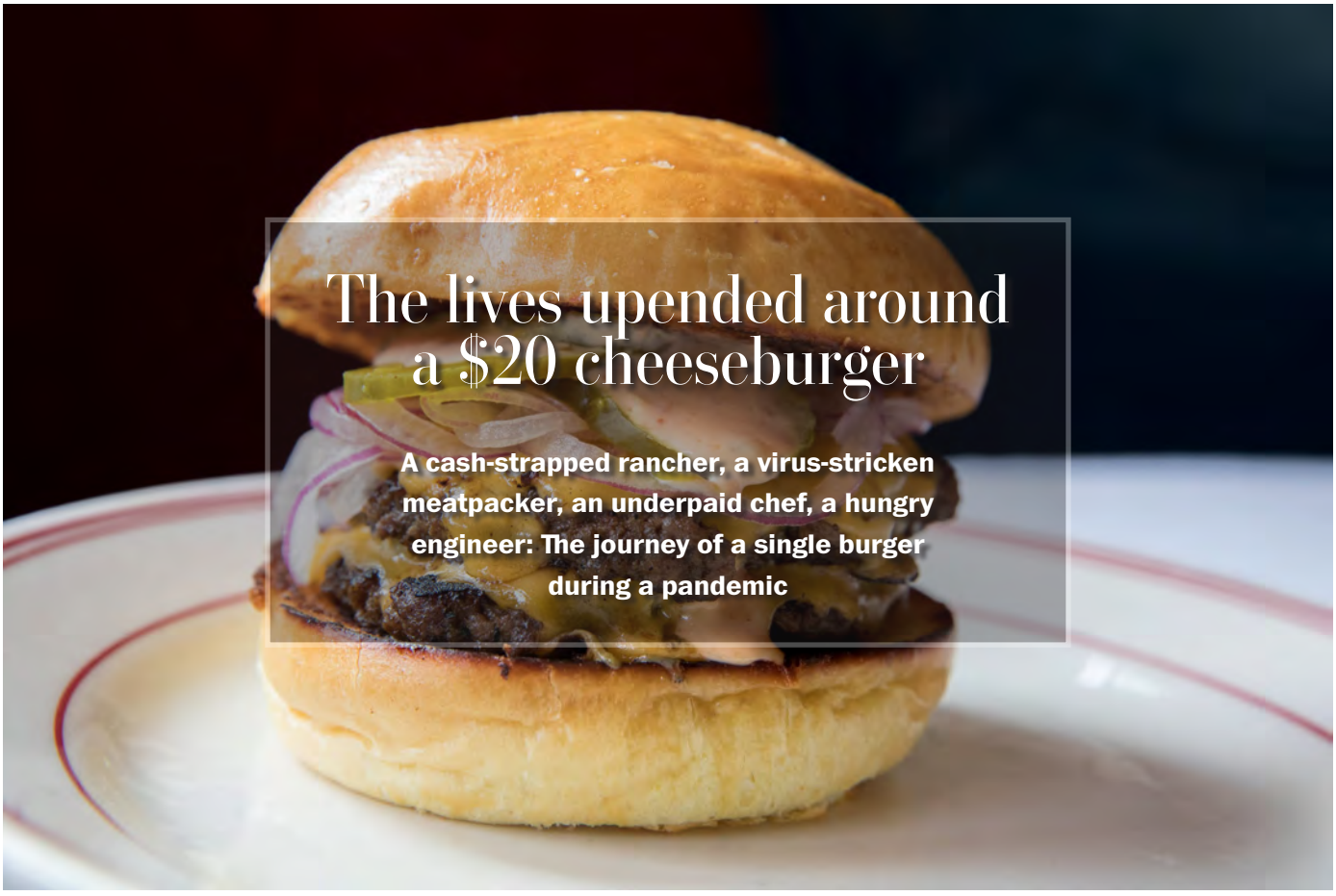


The lives upended around a $20 cheeseburger

A cash-strapped rancher, a virus-stricken meatpacker, an underpaid chef, a hungry engineer: The journey of a single burger during a pandemic

The burger met Maximiliano Solano in the middle of its journey. Solano plucked it from a chilled drawer and plunked it onto a griddle. He breathed in its greasy smoke through his now-mandated mask. He sprinkled it with salt using a gloved hand. He had made dozens of burgers already on a Friday evening and had hundreds more to go. This part of the burger's story hadn't changed. Fat bubbled. Edges crisped. It was going to be delicious.

But for months, the burger had been traveling through a complex supply chain crippled by the novel coronavirus. Now it was about to end up in a takeout box.

Before the pandemic, the most popular French bistro in the nation's capital didn't offer to-go orders. Le Diplomate was the kind of place where reservations were bragging rights, special occasions were nightly occurrences and a double-patty cheeseburger was a $20 menu item, the Burger Américain. Since April, the restaurant has gone through more than 3,500 pounds of beef to meet the demand for the burger, sometimes selling 450 of them in a day — the equivalent of almost a burger a minute. When the mayor declared in late May that Le Diplomate could serve diners again, first at tables six feet apart outside and then, in June, at a reduced capacity inside, the to-go burger orders kept coming.

Maximiliano Solano grills burgers at Le Diplomate. (Evelyn Hockstein for The Washington Post)

Solano pressed the patty with the back of his spatula and watched it ooze. This particular burger was on its way to an engineer who'd

just finished another day of working from home — an option Solano and his nearly 200 laid-off co-workers never had. Instead, the 26-year-old took a pay cut and a demotion from sous chef to line cook just to be one of the few dozen employees able to return to Le Diplomate's kitchen.

On the burger's journey from a Kansas farm to the engineer's dinner plate, every person had a story like Solano's. A rancher with five children who lost thousands every week. A factory worker who brought the virus home to her son. A courier who calculated the true cost of every delivery not in profit, but in the risk it required her to take.

To follow the burger is to glimpse the lasting toll of this pandemic: on the beef supply chain, on the restaurant industry, on the people who were struggling before this catastrophe began, kept going to work throughout it and are still waiting to see what their lives will become when it ends.

Solano tucked the spatula under the patty. It spiraled into the air, one moment closer to a destiny that was set in motion two years ago.

Cattle commingle at Tiffany Cattle Co. in Herington, Kan. (Christopher Smith for The Washington Post)

Before the burger was a burger, or a slab of beef, or an animal that mooed, there was a frozen plastic straw of sperm on a sprawling pasture outside of Eureka, Kan. Matt Perrier thawed it in a water bath for 45 seconds and examined the cow that would become a mother.

His great-grandfather bred cattle starting in 1904, then his grandfather and his father took over the ranch, and in the spring of 2018, Perrier was carrying on the family business. Science had transformed the breeding process, but the result was just the same:

The arrival nine months later of a Black Angus calf, weighing as much as an 8-year-old child.

The calf grew fast, but not fast enough to become one of the bulls (a father, in cattle-speak) that Perrier, 46, sells to other ranchers who are breeding their own herds. Instead, the calf would become a steer, and then, dinner. And though the supply chain leading to Le Diplomate is really more of a supply web, with each burger composed of

Tiffany Cattle Co. co-owners Shane, left, and Shawn Tiffany.

Travis Burns and Seth Bieler move Tiffany cattle to a truck to be transported for processing at National Beef. (Photos by Christopher Smith for The Washington Post)

multiple cuts of meat from multiple parts of the country, one thread leads back to the place where Perrier's steers often ended up: Tiffany Cattle Co.

Some 60,000 cattle come to the Tiffany ranch every year to "finish," to eat and drink and grow for four to six months until they are ready for their grisly end. This particular hoofed purgatory is for what co-owner Shawn Tiffany calls "white tablecloth" cattle — beef that ends up with pricey stickers on grocery store shelves, or on plates at expensive restaurants like Le Diplomate.

The steer arrived in the fall of 2019, riding on a truck with around 60 of his 700-pound-and-growing brethren. The ranch, built on a World War II-era base for Army Air Corps bombers, was a destination for top-dollar cattle from across the country.

Tiffany, 42, knew going into this business that high-end beef prices didn't translate into high-end profits for ranchers like him and his

brother Shane. This life was long hours, small margins, squeezing in time with his five kids when he wasn't with the cattle. But Tiffany never expected what happened in April.

The only doors out of cattle purgatory are the ones to the slaughterhouses, the big, powerful meatpacking facilities referred to as "harvesters" by those in the business. With only 26 major plants across the country that process steers, just one going dark can have a significant impact on the supply chain. In April and May, 16 of them shut down, some for a few days, some for a week or more, according to industry analyst Cassandra Fish. Covid-19 was spreading through the people-packed assembly lines, prompting President Trump to declare the plants essential businesses and order them to remain open.

When they came back online, the production lines ran more slowly than usual.

Will Williams, a cowboy at Tiffany, works the feed lots. (Christopher Smith for The Washington Post)

Tiffany couldn't get the plants to buy cattle they'd contracted to purchase. For those they did take, every pound of cattle was priced around 25 cents lower than in the year before. Multiply that by the weight the steer grew to be — 1,400 pounds — and suddenly, Tiffany and the ranchers whose cattle he raised were out thousands of dollars every week.

"These ranchers, their livelihood is in jeopardy," Tiffany said. "I spent every day trying to assuage their own fears."

The longer his cattle kept growing past their "due date," the more they cost to feed. The fatter they got, the less valuable their meat became. Tiffany's wife tried to gently point out to him just how stressed he was.

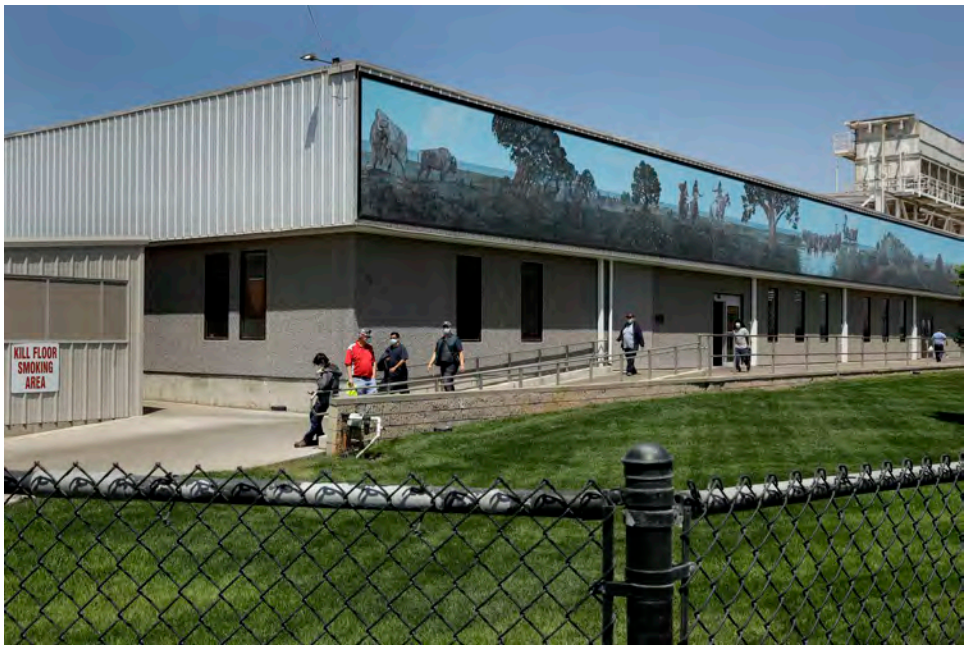
By the last week of April, the beef-packing industry reached a once unthinkable low: 318,000 steers and heifers slaughtered, down 42 percent from the year before.

Tiffany cattle enter a truck bound for the National Beef meat-packing plant in Dodge City, Kan. (Christopher Smith for The Washington Post)

But the steer from Tiffany Cattle Co. had already left the ranch. He was sent up a ramp, onto a truck and 220 miles west to Dodge City, a Kansas town of 27,000 with two major meatpacking plants: Cargill and National Beef, the slaughterhouse where the steer met his end.

He arrived at a plant that had been transformed with steel partitions installed between work stations, temperature checks at the door, scattered break times and paid leave for sick employees. But in a town where a largely Hispanic population lives in close quarters at home and labors in close quarters at work, the virus's spread was relentless. The Dodge City plant had one of the state's largest outbreaks, with 550 cases by June, according to National Beef.

By the time the steer began making its way through what employees call the "kill floor," Marisela Garman, 45, had already gotten sick.



Workers outside the National Beef plant in Dodge City, the source of one of Kansas's largest coronavirus outbreaks. (Charlie Riedel/AP)

She'd been taking the coronavirus seriously since the moment she heard about it. Before immigrating to the United States in 2018, she was a nurse at a hospital near Guadalajara, Mexico. Back then, she was rushing to leave her husband after years of psychological abuse. Only when she and her son arrived in Kansas and moved into her aunt's trailer did she realize that her nursing license was useless in the state.

She started working as a babysitter and pet sitter, then she found out how much it would cost her to hire a divorce lawyer. National Beef paid nearly $16 an hour.

She worked on the kill floor, then moved to fabrication, where she learned about meat hooks and grinders and packaging, and how to stand almost shoulder to shoulder with her co-workers and move her hands as fast as the conveyor belt demanded. Her fingers always hurt, but on a Tuesday in April, she knew something was wrong when it was her head that started to ache.

Marisela Garman and son Diego. (Family photo)

National Beef sent Garman home for two weeks, with pay, as soon as she tested positive. But the virus went home with her. Her aunt got sick first. Then her 14-year-old son stopped being able to smell.

"It's my fault," Garman told him, lying in the room they shared. "My fault."

She told him where she had hidden all of the cash she'd been able to save. "If I die," she said on the worst day, "your grandma must call my friend, and she is going to take care of you."

Garman was still aching and exhausted on May 6, the day before she was supposed to return to work. She asked for more time. She said she was told she could take the days off, but she wouldn't get paid.

She stayed home on May 7, but felt as guilty as she felt sick. To persuade workers to come in, National Beef had increased its hourly rate by $2 and, Garman said, was offering $500 bonuses to anyone who worked six days in a week. The next day, she reported for duty at 5:30 a.m.

By then, the steer had arrived in fabrication, where it was sliced down to 30- and 40-pound slabs of beef. That beef was loaded into temperature-controlled tractor-trailers that fanned out across the Midwest, where statehouses had become the scenes of protests demanding governors reopen businesses. One trailer's destination was a New Jersey warehouse just across the Hudson River from New York City, an epicenter of the virus.

The warehouse belonged to Pat LaFrieda, whose name is spoken with reverence by foodies and restaurateurs. They love the lore of his origin story, a butcher's son who went to Wall Street, quit and

came home to grow his family's business into one of the best-known meat purveyors in the country. They love his burgers, which are the result of top-secret recipes individually concocted for each restaurant he serves, so no two establishments' burgers taste the same.

Meat ages at Pat LaFrieda Meat Purveyors. (Pat LaFrieda Meat Purveyors)

So high was the demand for LaFrieda meat that the 49-year-old and his 73-year-old father, Pat Sr., were about to open a $20 million facility — right when all the restaurants they served started shutting down. Chefs who'd ordered thousands of pounds of beef suddenly couldn't pay for any of it.

Those that tried to stay open for carryout faced beef prices that were at new highs. Although meatpackers were paying less for cattle, they were charging more for the beef shipped to grocery stores and butchers. LaFrieda, in turn, was charging more, too. And trying to increase his ability to ship meat directly to homes. And trying to get his employees to wear N95 respirator masks. And trying to persuade his father to stay home.

“I have never worked as hard to lose as much,” LaFrieda said.

He spent his days on the phone with chefs and restaurant owners across the country, feeling like their financial adviser, their sanitation expert and their therapist. He didn’t know how many of them would still be his customers when all of this was over.

He spent his nights in a 36-degree room turning slabs of beef into steaks and burgers beside his employees. He wore a paintball mask to show them how seriously he was taking the precautions. He gave speeches about being on one of the overlooked and underappreciated front lines of this pandemic: the people ensuring Americans had food to eat.

“A virus cannot destroy civilization, but panic can,” he liked to say.

LaFrieda burger patties wait to be shipped across the country. (Pat LaFrieda Meat Purveyors)

On May 21, there was another order from Le Diplomate for Burger Américain patties. Cuts of hanger and flatiron steaks, short ribs and

— secret recipes never tell — were ground down to noodle-shaped pieces, mixed and ground again before being poured into a hamburger-making machine.

By 5 a.m., hundreds of 4-ounce patties were loaded into boxes and onto another refrigerated truck, this one headed to Northwest Washington.

At 9:50 a.m. on May 22, the burger arrived on Q Street. Executive Chef Greg Lloyd, 40, watched the truck pull in, the boxes come out and the stacks of meat pile high in the walk-in refrigerators. This was one of few parts of his routine still intact.

Lloyd used to describe the kitchen as an orchestra and the customers as an audience. He got to play conductor every night. He believed that every little choice, from the dimness of the lighting to the garnish on a steak, could make a diner feel, at least for a moment, that all was right in the world.

A burger delivery arrives at Le Diplomate in Northwest Washington. (Evelyn Hockstein for The Washington Post)

But now the food was in plastic. Most of the customers were on their couches. The few staff members he could bring back were standing two yards apart from each other, their banter in Spanish muffled by masks.

They'd all spent five weeks out of work. Starr restaurants, a Philadelphia-based group that owns 42 restaurants across the country, completely closed Le Diplomate at the beginning of the pandemic. Lloyd, who'd cooked lobster risotto for the Bidens and steak frites for Bill Murray, was stuck at home, making meatloaf. He applied for unemployment benefits. The company still paid employees' health insurance through April, and Lloyd had his wife's income from her government job to lean on.

Restaurateur Stephen Starr, the group's namesake, was criticized online for shuttering so quickly and not following in the footsteps of chefs who set up community kitchens and donated to food banks. Paper covered Le Diplomate's windows, a visual reminder to the bustling neighborhood around 14th Street that all was wrong in the world.

(Video by Erin Patrick O'Connor / The Washington Post)

The paper came down on April 20. Lloyd, who'd also agreed to a pay cut, placed an order for burgers. He wound up needing three times the amount of his usual order. The burgers, he realized, were as comforting to his customers as the meatloaf was to him. Warm, juicy, reminiscent of the before times.

The patties cost the restaurant almost double what they used to. The price of beef still hadn't come down in mid-May, and though $7 per pound seemed outrageous, Le Diplomate wouldn't be Le Diplomate without the Burger Américain on the menu. Eventually, the restaurant group would decide it had no choice but to temporarily switch to a different supplier of Black Angus patties.

But first, the burger that had made its way from the Midwest was flipping through the air and landing on the griddle. Line cook Maximiliano Solano watched it sizzle, then layered a slice of American cheese on top.

Maximiliano Solano prepares a burger for takeout. (Evelyn Hockstein for The Washington Post)

Solano began working in restaurants at 16, two years after he'd immigrated from Mexico. He started as a dishwasher. Becoming a sous chef at one of the city's most beloved restaurants and bringing home a salary of $1,700 every other week sometimes made him feel like he was living someone else's life. This spring, with a 7-month-old baby at home, he decided to buy a Toyota Highlander, the kind of car he thought a family man should have.

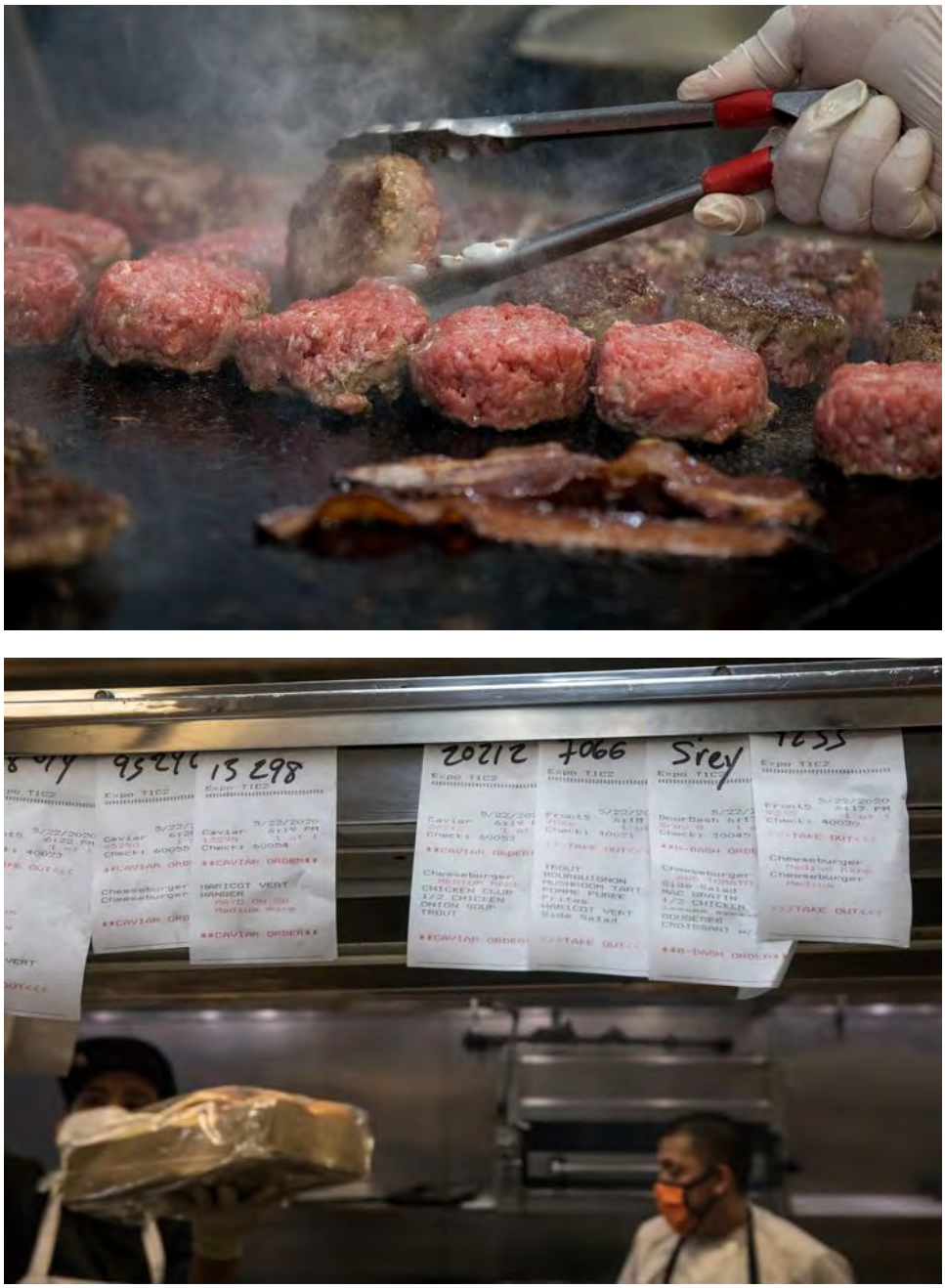
Le Diplomate closed the next week. His wife lost her restaurant job at the same time. So did his sister, his brother-in-law, his cousins and so many of his friends. His family already lived so close to the margins, there was little he could cut back on. He canceled his cable and his Amazon Prime account. He refused to miss a car payment.

"I was the only one responsible for the rent, for the bills, everything," he said.

He felt lucky to get the call in April to return to work, to take a pay cut and make $16 an hour to cook $20 burgers. Somehow the griddle felt so much hotter with the mask and gloves, which he knew he would be keeping on for a very long time. Customers starting to come back to eat at the restaurant meant that more of his co-workers would get their jobs back. But he just couldn't shake the feeling that if things went badly, they'd all be out of work once again.

Solano popped two patties off the griddle and nestled them onto a brioche bun. Pickles and red onions topped the cheese. The sauce went into a plastic container. The fries went on the side, and then came the lid and a brown paper bag.

The burger, along with a chicken club sandwich, a half chicken, a french onion soup and trout amandine was now a part of order number 20212.



The kitchen at Le Diplomate. (Evelyn Hockstein for The Washington Post)

The bag was picked up by Gabriel Guevara, whose job was to hustle the orders to the delivery drivers and customers waiting outside.

As a food runner, Guevara, 33, used to make $25 an hour once the staff divvied up the tips. When he finished his shift at 11 p.m., he'd drive straight to his second job, cleaning restaurants on Capitol Hill until 3 or 4 a.m.

He slept until it was time to take his 7-year-old son to school. His wife began another day of caring for their daughter who has Rett syndrome, a rare genetic neurological disorder. At 4 years old, she can't speak or feed herself or walk without struggling. While Guevara is working, her life is a series of medicines and doctor appointments and trying, all the time, to communicate in her own way, often through tears.

She was Guevara's first thought when his boss at Le Diplomate called to ask whether he would come back. He said yes right away. He'd only be making $10 an hour, plus a cut of the tips that came in from customers who picked up their own meals. He wouldn't be able start sending money to his family in El Salvador again, but his family here would find a way to get by.

Gabriel Guevara hands order number 20212 to Caviar driver Tiffany Poindexter. (Evelyn Hockstein for The Washington Post)

"I thanked God for everything," Guevara said. "I paid the rent, and we have food in the house, and my daughter needs her medicine."

By then, both of his wife's parents were hospitalized in the District with the virus. Only his mother-in-law would survive.

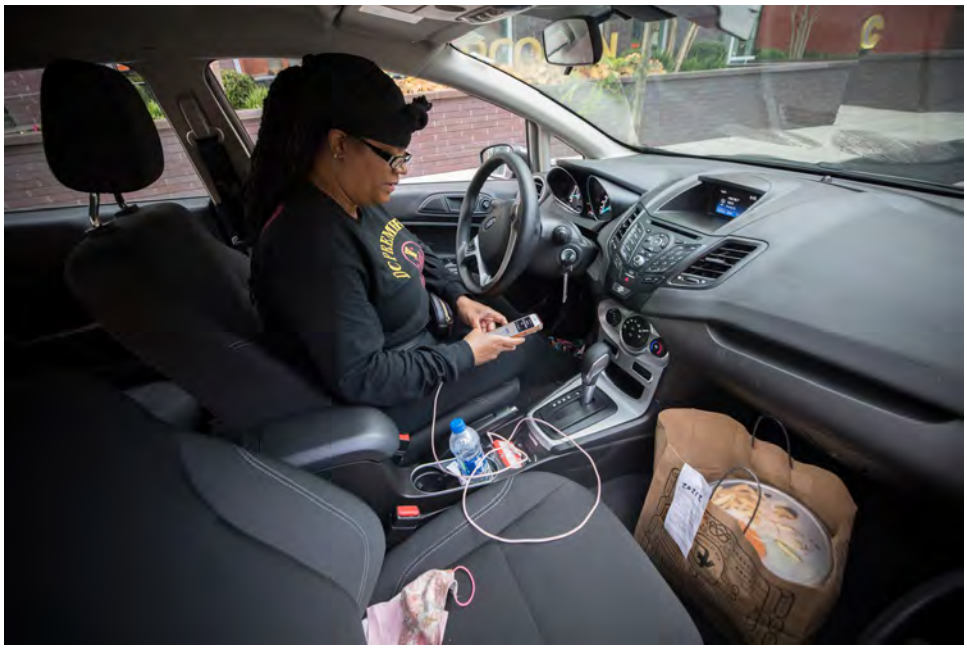
She moved into their apartment in Anacostia. Guevara and his wife gave up their bedroom so that she could have her own bathroom. She was still contagious. She'd just lost her husband, but they couldn't hug her. They had to keep their daughter from getting the virus. And Guevara had to be able to go to work.

Outside the delivery window, a woman in a "basketball mom" T-shirt arrived asking for order number 20212. Guevara picked up the bag with the burger inside and passed it through a makeshift takeout window.

"Thank you," Tiffany Poindexter said before turning to get back to her rental car as fast as possible. Every week of the pandemic, she has picked up a car from the Avis in Bowie, Md., to drive to the District, turn on her Caviar or Doordash app and wait for someone to decide they would like their meal brought to their door.

She is an accountant for a nonprofit research firm. She started working as a delivery courier in February, when she realized just how expensive travel basketball for her 14-year-old son and 12-year-old daughter was going to be this year.

Then basketball practices stopped, and her employer told her to work from home, and suddenly she could see the financial potential in all that new time. One of her customers left two cloth masks in a plastic bag on the doorstep. Poindexter, 48, put them on and kept driving.



Poindexter prepares to deliver the Le Diplomate order. (Evelyn Hockstein for The Washington Post)

The accounting of this work went like this: For each delivery she completed, she received a base rate of around $3 to $5. Sometimes Caviar offered bonuses to motivate drivers to work during busy times, like $12 for every three deliveries completed. Most tips were $4 or $5. Sometimes she would be shocked to see a $20 tip. More often, she'd be unsurprised to see no tip at all.

She drove north through Logan Circle, passing million-dollar condos and shops still shuttered by the pandemic.

If she works five hours after her accounting job, and nine or 10 hours on the weekends, she can make about $600 in five days. She subtracts around $100 for the rental car.

But then there are the other costs: losing time with her children, who were at home warming up leftovers as she drove into Petworth. She hoped ditching her clothes at the door and showering was enough, that if she was carrying the virus, it wouldn't spread to them.

She had to stop spending time with her parents, who have heart conditions. When she stopped at their house just for a few minutes, her mother sprayed her down with Lysol.

Just before 7 p.m., she turned down a leafy street and parked in front of a rowhouse where a group of 30-somethings were on the porch. She stepped out of her car, carrying the bag with $160 worth of food inside.

Two years after a cow became pregnant in Kansas, the burger had reached its final destination.

Marcus Bagnell bites into his Le Diplomate burger. (Evelyn Hockstein for The Washington Post)

The roommates turned away from their laptops, where they were in the middle of a Zoom happy hour.

"Be safe," Poindexter told them through her mask. She hurried back to her rental car, on her way to pick up another delivery from another restaurant.

The roommates went inside, where a candlelit table was set with blue china and wineglasses beside a game of Scrabble they'd been playing on and off since the pandemic began. Marcus Bagnell, 34, transferred the burger from its plastic container to his plate.

He'd been to Le Diplomate before but never ordered the burger. On this Friday night, his roommates suggested they order French food and watch "Casablanca." Bagnell dressed in a striped shirt, leaning into the theme.

This was how much of the pandemic had been for him. Board games, Zoom calls, ordering from restaurants fancier than he would usually frequent. Back in March, he was spending hours on the coronavirus subreddit and taking his temperature every day. But his laser engineering job transitioned easily to work-from-home. His employer paid for him to order two monitors, a headset and a keyboard. He didn't get sick, and neither did anyone in his family. He didn't know anyone who had lost their jobs.

His roommate poured glasses of red wine. Someone shut off the Zoom call, setting the laptop beside a sourdough loaf rising on the counter.

In Kansas, Shawn Tiffany was preparing dinner with his children on his ranch, where the cattle were still backed up for weeks. Marisela Garman was getting ready for her sixth shift of the week at the meatpacking plant. In the kitchen of Le Diplomate, Maximiliano Solano was dropping more beef patties on the griddle, with two hours to go in his shift.

Bagnell picked up the burger with both hands. He took a bite.

"It's pretty good," he said. A few minutes later, the burger was gone.

Bagnell enjoys his Le Diplomate dinner with his housemates. (Evelyn Hockstein for The Washington Post)

Samantha Schmidt and Tom Sietsema contributed to this report.

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By Jessica Contrera

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The N95 shortage America can't seem to fix

Nurses and doctors depend on respirator masks to protect them from covid-19. So why are we still running low on an item that once cost around $1?

Johns Hopkins Hospital nurse Kelly Williams

BALTIMORE — The patient exhaled. She lifted her tongue for a thermometer. She raised her finger for a blood sugar test, and that's when she started coughing. One cough can send 3,000 droplets into the air, one droplet can contain hundreds of coronavirus particles, and now some of those particles were heading for the face of emergency department nurse Kelly Williams.

The nurse inhaled. Strapped over her mouth and nose was an N95

respirator, the disposable filtering mask that has become the world's most reliable and coveted defense against the virus.

N95s were designed to be thrown away after every patient. By this July afternoon, Williams had been wearing the same one for more than two months.

To get to her, the N95 had traveled from a British factory to a Baltimore warehouse, in a supply chain as tangled and layered as the web of microscopic fibers inside the mask's filter.

It was purchased by Johns Hopkins Hospital, the famed medical institution that has tracked cases of the novel coronavirus around the world since the pandemic's start. When its map of dots marking clusters of infections began to show pools of red across the United States, Hopkins was quietly unpacking a stock of personal protective equipment it had been building for over a year — a literal lifesaver when the onslaught of covid-19 cases led to a massive shortage of N95s.

Six months later, that shortage persists, leaving health-care workers exposed, patients at risk and public health experts flummoxed over a seemingly simple question: Why is the world's richest country still struggling to meet the demand for an item that once cost around $1 apiece?

At Hopkins, nurses are asked to keep wearing their N95s until the masks are broken or visibly dirty. Williams, a 30-year-old from Georgia with a marathoner's endurance and a nurse's practicality, went into health care after working for three years in the corporate offices of retailers Abercrombie & Fitch and Under Armour. She understood supply chains. She believed that the makers of N95s, anticipating the pandemic's eventual end, would invest only so much in expanding production. She believed it was her duty, on top

of risking her life for her patients, to make her disposable respirator mask last through as many 12-hour shifts as she could.

This N95 was made in Aycliffe Village, England and worn by emergency department nurse Kelly Williams for weeks of treating coronavirus patients. 3M is now manufacturing a similar model of this respirator in the U.S. (Amanda Voisard/for The Washington Post)

When the country was short of ventilators, the companies that made them shared their trade secrets with other manufacturers. Through the powers of the Defense Production Act, President Trump ordered General Motors to make ventilators. Other companies followed, many supported by the government, until the terrifying problem of not enough ventilators wasn't a problem at all.

But for N95s and other respirators, Trump has used this authority far less, allowing major manufacturers to scale up as they see fit and potential new manufacturers to go untapped and underfunded. The organizations that represent millions of nurses, doctors, hospitals and clinics are pleading for more federal intervention, while the administration maintains that the government has already done enough and that the PPE industry has stepped up on its own.

As the weather cools and the death toll climbs, America's health-care workers fear that when winter comes, they still won't have enough respirators. And the longer the shortage lasts, the longer N95s will remain largely out of reach for millions of others who could be protected by them — teachers and day-care workers, factory employees and flight attendants, restaurant servers and grocery store clerks.

Williams prepares to administer a coronavirus test to a patient in the Hopkins emergency department. (Will Kirk/Johns Hopkins)

While the pandemic that has killed at least 200,000 Americans drags on, Williams will keep trying to conserve her respirator, wearing it as she rushes in and out of virus-filled rooms, touches virus-shedding patients, and now, comforts a covid-positive woman who is having a coughing fit.

"How can I help you feel a little more comfortable?" Williams asked her patient, who was in her 80s. The woman was about to be admitted to the hospital. Her oxygen level was too low, so they had to

run tubes of air into her nostrils. If her situation didn't improve, a ventilator could come next.

This was the routine in the part of the emergency department Williams called "Covidland." She'd just risked exposure to care for this woman, but she would never get to find out what happened to her.

She could only take a deep breath through her N95, roll her patients upstairs and hope that she would never become one of them.

Burton Fuller, the chief supply chain officer for the Johns Hopkins Health System, was responsible for finding a way to conserve Hopkins's stock of N95s and other PPE. (Johns Hopkins)

'The gauntlet'

Before the N95 was on her face, it was in a plastic wrapper, in a box, on a shelf inside an East Baltimore warehouse four miles from the hospital. The 165,000-square-foot building had concrete floors, rolling doors, overhead lighting — unremarkable, except to a man named Burton Fuller.

Fuller, a 38-year-old father of three, had once planned on becoming a doctor. Instead, he went into hospital supply chains. It was the kind of job that didn't earn many follow-up questions at dinner parties. But six months after Fuller was hired at Hopkins, the pandemic made him the person everyone relied on and no one envied. It was up to him to keep 40,000 employees in six hospitals safe.

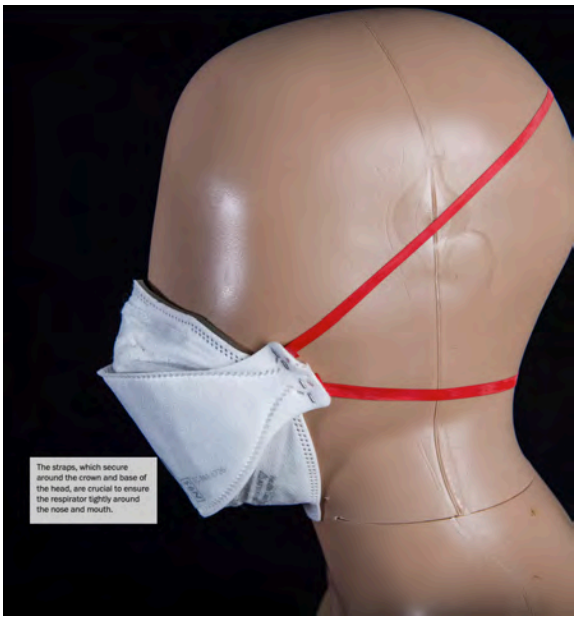
Even before covid-19, masks were key to that equation. There are surgical masks, which protect a patient from a nurse's germs, and respirator masks, which protect a nurse from the patient. Humans have recognized the need for protective masks since at least A.D. 77, when Pliny the Elder wrote about wearing animal bladders as face coverings to make breathing easier in lead-filled mines.

LEFT: An engraving, circa 1656, shows a beak mask, which would have been filled with herbs and straw in the belief that the wearer would be protected against the plague. (Hulton Archive/Getty Images). RIGHT: A 1917 photo shows a German officer wearing a gas mask as protection against chemical agents. (Stefan Sauer/picture-alliance/dp) .

The evolution of early masks brought leather beaks stuffed with straw and herbs to ward off the bubonic plague, and long beards that firefighters would wet and clamp between their teeth. Once the far more effective gas mask became standard for coal miners breathing in silica and soldiers facing chemical weapons, engineers at the Minnesota Mining and Manufacturing Company, better known as 3M, started trying to make a protective respirator that wasn't so bulky. They realized in the 1960s that the technology used to make pre-made gift bows could also make a mask that was a lightweight, molded cup. And so began the single-use respirator as it exists today.

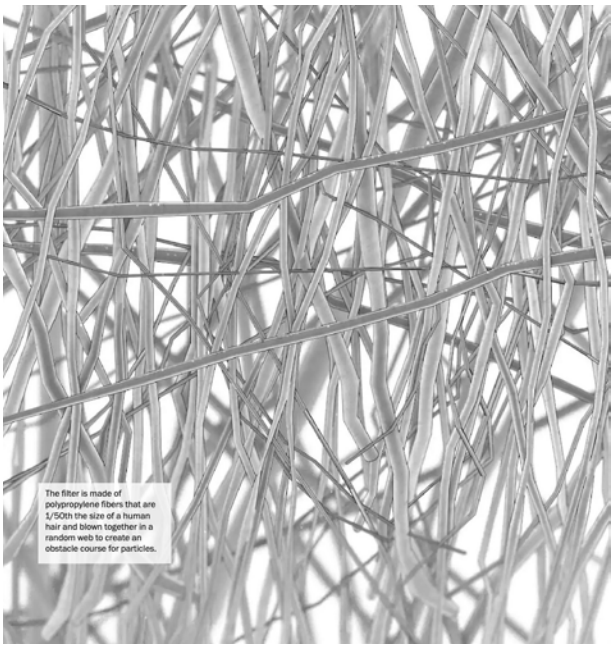
Inside that cup, and more recently, inside the flat-fold versions, is the key component: fibers 1/50th the width of a human hair, blown together in an intricate web that creates an obstacle course for dangerous particles. An electrostatic charge works like a magnet to trap the floating menaces and attach them to the fibers. If an N95 is fitted properly — a metal nose piece folded snugly, no beard in the way — less than 5 percent of even the most difficult-to-catch particles will make it into the lungs.

This flat-fold, three-panel N95 respirator is a type popular in hospitals, where it is used to protect doctors and nurses from inhaling virus-filled droplets.

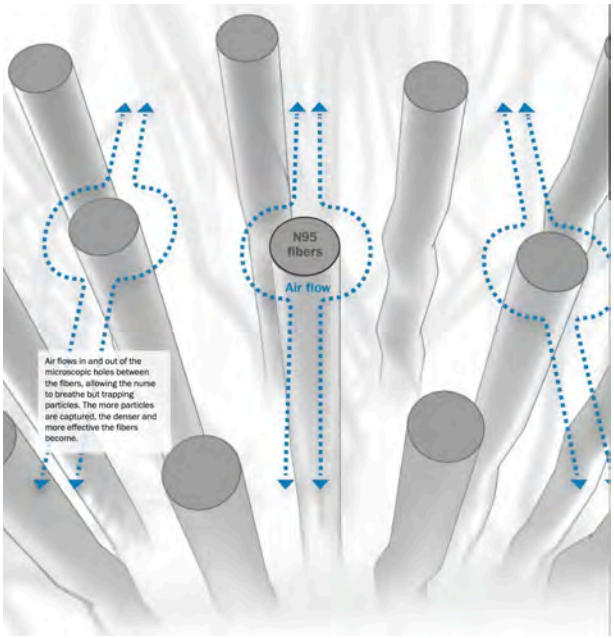


The straps, which secure around the crown and base of the head, are crucial to ensure the respirator tightly around the nose and mouth.

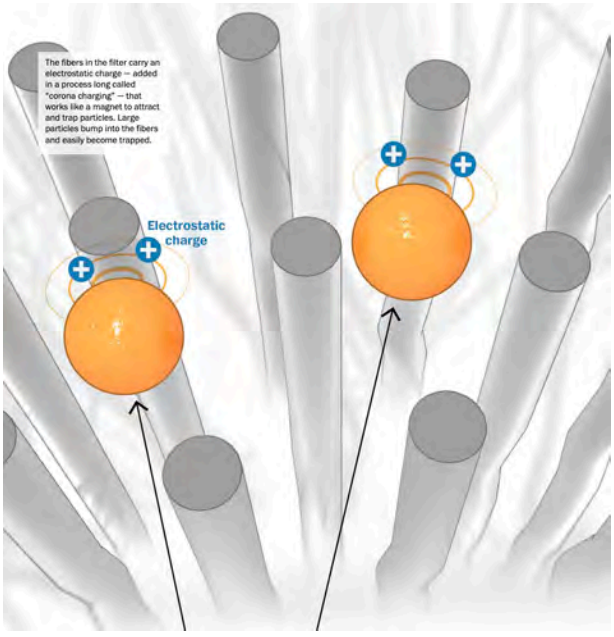
A nose clamp helps to form a tight seal. All workers who wear N95s are required to undergo a test to ensure the respirator fits properly.
The soft, flexible outer layers of the mask are designed to protect the most important part of the respirator: the filter inside. Under a microscope, you can see what makes the filter unique.



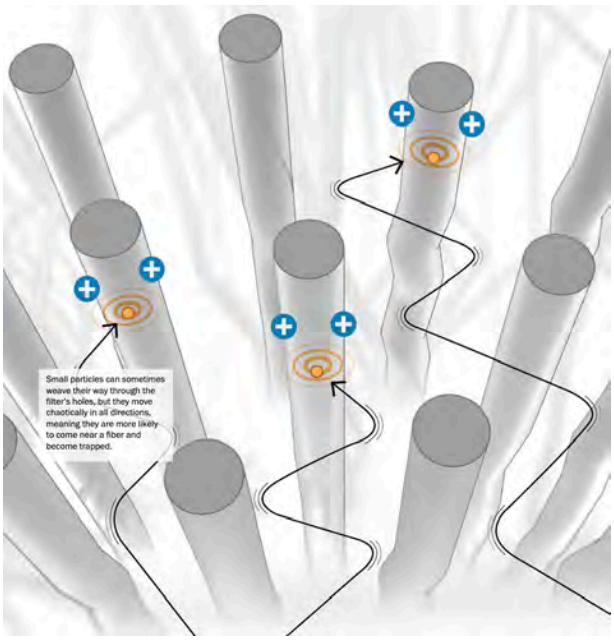
The filter is made of polypropylene fibers that are 1/50th the size of a human hair and blown together in a random web to create an obstacle course for particles.



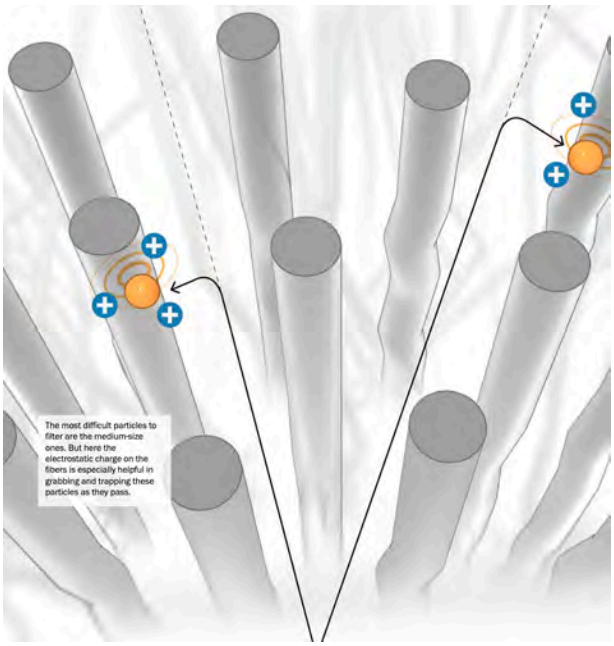
Air flows in and out of the microscopic holes between the fibers, allowing the nurse to breathe but trapping particles. The more particles are captured, the denser and more effective the fibers become.



The fibers in the filter carry an electrostatic charge — added in a process long called “corona charging” — that works like a magnet to attract and trap particles. Large particles bump into the fibers and easily become trapped.



Small particles can sometimes weave their way through the filter's holes, but they move chaotically in all directions, meaning they are more likely to come near a fiber and become trapped.



The most difficult particles to filter are the medium-size ones. But here the electrostatic charge on the fibers is especially helpful in grabbing and trapping these particles as they pass.

At Hopkins, Fuller's job was to get manufacturers to deliver N95s and other equipment directly to the warehouse, rather than through a distributor. In 2019, the shelves started to fill up, and on one of them was the N95 that would make its way to nurse Kelly Williams. The respirator had been made by 3M at a plant in Aycliffe, a town of 7,000 in northern England.

But this Hopkins stockpile was rare in the world of hospitals, where costs were cut by using medical supply companies to provide equipment when it was needed, rather than letting PPE pile up.

Hospital administrators knew that in cases of natural disaster, chemical warfare or what global health officials used to call "Disease X," the federal government had its own warehouses in secret locations, filled with PPE.

Except that in 2009, while Fuller was in his first job out of college, the H1N1 flu epidemic depleted 85 million N95s from the national stockpile — and the supply was never replenished. In 2013, 2014, 2016 and 2017, public health officials published alarming reports warning of a "massive gap" in what remained. Even more concerning, they said, the vast majority of N95s and the materials needed to manufacture them were now being made in Asia.

How this story was reported: This story is the result of interviews with three dozen people who wear, make, sell, distribute, buy, regulate and want N95 respirators. Nurses Kelly Williams and Shanika Young frequently recounted their experiences to a reporter for four months. Because of coronavirus safety restrictions, The Post was not permitted to enter Johns Hopkins Hospital or 3M's South Dakota manufacturing plant, and relied on photography provided by those institutions.

The Department of Health and Human Services did fund the invention of a "one-of-a-kind, high-speed machine" that could make 1.5 million N95s per day. But when the design was completed in 2018, the Trump administration did not purchase it.

This year, as the virus spread from Wuhan to Washington state, HHS turned down a January offer from a manufacturer that could make millions of N95s. The agency didn't start ordering N95s from multiple companies until March 21. Paul Mango, deputy chief of staff for policy at HHS, would later call that timeline "friggin' light speed ... the fastest this has ever been done."

By then, the United States had 8,000 reported coronavirus cases and 85 deaths, and health-care workers were panicking over PPE shortages.

Fuller's orders began being canceled. As the Hopkins emergency department was being readied for covid-19 patients, and Williams was being told she would need to start wearing an N95, the hospi-

3M is the largest manufacturer of N95 respirators in the United States. (Justin Chin/ Bloomberg)

tal's administration decided not to reveal how many N95s were in the warehouse.

"Only a half a dozen people know," Fuller said. "Behavioral economics say that if we communicate a number someone perceives as high, they will use the supply more gratuitously. If we communicate a number they perceive as low, they may hoard to ensure there is enough."

As the boxes of N95s were loaded into trucks headed for Hopkins hospitals, Fuller and a dozen staff members entered what he would come to call "the gauntlet." Every hospital and health department in the country was competing for N95s and other PPE, a mess of bidding wars, price gouging and worthless knockoff masks. Fuller uncovered one scam when a company CEO, claiming to be based in Indianapolis, didn't recognize the name of the city's most famous steakhouse.

“For every mask shipment we have been able to bring in,” Fuller said, “there are 10 or 15 transactions we have had to terminate.”

He worked so much that his wife, home with their children, received flowers from Hopkins executives. He joked about the other crucial stockpile in his life, his wine collection.

Fuller was desperate to make the stockpiled N95s last as long as possible. He wanted every employee wearing one to also wear a face shield, but those, too, were impossible to find.

So at the end of March, the warehouse filled with folding tables spaced six feet apart. Volunteers were given foam strips, elastic straps and sheets of plastic to make homemade shields. At one of the most prestigious medical institutions in the country, they were trying to fix the problem for themselves, with scissors, staplers and hot glue guns.

Williams dons a protective gown with the help of Brittany Miller before entering the room of a covid-19 patient. Along with her N95, she wears protective glasses, a face shield and two sets of gloves. (Will Kirk/Johns Hopkins)

‘Bracing yourself’

A face shield was clipped to Williams’s belt in the middle of May, when for only the fourth time during the pandemic, she unwrapped a new N95.

After nine weeks in and out of Covidland, she had come to trust in her disposable respirator. It hurt her nose, gave her acne and made breathing hard. But the power of its protection was starting to give her back the feeling of safety she’d lost in March when she and the dozens of colleagues who worked alongside her each shift watched the areas where they’d cared for gunshot victims and heart attack patients turn into isolation rooms. They were tested to make sure the N95s fit their faces and taught to use other respirators that looked like gas masks or blew clean air into a hood.

And then, they were slammed. The first covid patient to go on a ventilator at Hopkins was a 40-year-old who worked out every day. The ambulance bay became a testing center. Williams’s co-workers were crying in the break room. Her patients couldn’t breathe, and then tubes were going down their throats, and then it felt like she couldn’t breathe, like everything she knew about nursing would never be enough.

“Our lives changed overnight,” she said. “You’re bracing yourself for people to die.”

She started silently saying a prayer she knew, every morning, every few hours, then sometimes 20 times a day in Covidland.

God, grant me the serenity to accept the things I cannot change, it began. She said it before her patient started violently shaking and flailing, seizing in his bed. She couldn’t run out the door to ask for

help, because to leave the room without potentially taking the virus out, she had to sanitize her gloves, trash them, take her gown off, trash it, exit into an antechamber, take off her first layer of gloves, sanitize her hands and wipe down her face shield. So she ran to the window and banged on it, then ran back to her patient, trying to hold him down, her face inches from his.

Courage, to change the things I can, the prayer continued. Williams said it in the car that she drove to work and wouldn't let any member of her family touch. Its speakers blared Lizzo-filled playlists she used to pump herself up for what she told her friends was an "awesome learning experience." She had been a nurse for only two years. Her job in merchandising at Under Armour had brought her to Baltimore, where she met her husband, Sean, and his two children. They were the ones to make her realize that she wanted a job where she could actually see the impact of all those hours she worked. Now, every day might be the day she took the virus home to them.

Williams is greeted by her stepchildren, Alle Forbes, 19, and Kellen Forbes, 13, on arriving home after work on a Friday night. (Amanda Voisard/for The Washington Post)

LEFT: Williams washes her hands dozens of times a day at work and at home. She lives in fear of taking the virus home to her family. (Amanda Voisard/for The Washington Post). RIGHT: Williams, 30, sanitizes her hospital identification card, part of her extensive cleaning routine. (Amanda Voisard/for The Washington Post).

Grant me the serenity to accept the things I cannot change, courage, to change the things I can, and wisdom to know the difference. Another day in Covidland, and Williams was wearing her new N95, pumping her palms into an unconscious man's chest, not thinking of all the particles flying out of his airways. Another, and her face shield popped off and clattered to the floor. Another, and a young Latina mother told Williams she couldn't self-quarantine because she could not afford to stay home from work.

Another, and Williams was watching the chest of a middle-aged man rise and fall by the force of a ventilator. Outside the walls of the hospital on this day in July, America seemed to have moved on from the conversation about the shortage of N95s. Instead, people were fighting over simple cloth masks.

Maybe this patient had worn one. Maybe he'd said he didn't believe in them. Either way, it was her job to take care of him. Williams suctioned virus-filled fluid from his airways, and breathed in again.

N95 masks are manufactured by 3M inside an Aberdeen, S.D., plant. Six months into the pandemic, there continues to be a shortage of these respirators. (3M)

'Not profitable'

The radio advertisements could be heard across South Dakota, playing inside cars passing billboards plastered with the same message: 3M is hiring in Aberdeen. In a state that hosted 460,000 people at an August motorcycle rally and requires no one to wear a mask sits the largest respirator plant in the United States.

Its N95 manufacturing lines have been running 24 hours a day, seven days a week since Jan. 21, the same day public health officials announced the arrival of the coronavirus in Washington state.

Plant manager Andy Rehder hired 200 new employees this year and was still looking for more this summer so he could staff another N95 line being built. Rehder, whose wife wears an N95 as a hospital social worker, had a Bloomberg Magazine article from March displayed in his office. The headline asked, "How do you make more masks yesterday?"

The question still hangs over the plant, and the entire country, nearly six months after that article was published.

Ask the Trump administration, and the N95 shortage is nearly solved. Rear Adm. John Polowczyk, whom Trump put in charge of securing PPE, said that by December, 160 million N95s will be made in the United States per month. By his calculations, that will be enough to handle a "peak surge" from hospitals, clinics, independent physicians, nursing homes, dentists and first responders. The Strategic National Stockpile has 60 million N95s on hand, and states are rebuilding their stockpiles.

"I've got production up to what we think is the limits of what we need," Polowczyk said. "I believe now that hospital systems are making management decisions that might lead to an appearance that we still don't have masks, which is the farthest from the truth."

Plant manager Andy Rehder wears an N95 respirator at work in the 3M facility in Aberdeen, S.D. (3M Corporation)

But ask the people inside hospitals, and the shortage is far from over. An August survey of 21,500 nurses showed 68 percent of them are required to reuse respirators, many for more than the five times

recommended by the CDC, and some even more than Kelly Williams. One Texas nurse reported she's still wearing the same five N95s she was given in March.

Many health-care facilities that ordered KN95s, Chinese-made masks meant to have a similar filtering efficiency, gave up on them after realizing that the looser fit left workers in danger. The N95 shortage is more acute for primary care physicians, home health aides and hospice workers. But even for many hospital systems, the situation remains "fragile and challenging," the American Hospital Association said this month.

"Maddening, frustrating, mind-blowing, aggravating, that's the polite language for it," said American Medical Association President Susan Bailey, who still hears from doctors who do not have respirators. "There has been such an outpouring for support for 'health-care heroes.' Everybody knows now how important it is for our front-line health-care workers to be able to work in a safe environment. ... And yet, that desire doesn't seem to be turning into a reality."

The AMA, AHA, American Nurses Association and the AFL-CIO all point to the same solution: broader use of the Defense Production Act, which gives the president power over funding for the production and distribution of critical supplies during crises.

In August, Trump stood before a group of socially distanced reporters, praising himself for using the DPA "more comprehensively than any president in history."

"There was a time," he said, "when the media would say, 'Why aren't you using it? Why aren't you using it?' Well, we have used it a lot, where necessary. Only where necessary."

LEFT: Nurses from the National Nurses United union demonstrate in front of the White House in April. (Patrick Semansky/AP). RIGHT: President Trump tours an Arizona Honeywell International plant that makes N95s in May. (Evan Vucci/AP).

That's not what it looks like to the man who used to run Trump's DPA program within the Federal Emergency Management Agency. Larry Hall, who retired last year, said the authority has been executed in an "ad hoc, haphazard fashion."

Along with ordering 3M to import 166.5 million masks from China, the administration has used the DPA to invest $296.9 million in bolstering the N95 and filter-making supply chains. The Defense Department, which oversees that funding, spends more per year on instruments, uniforms and travel for military bands.

"By not having a national strategy," Hall said, "we have fewer masks."

Ask the PPE industry and the refrain is that without long-term guarantees that the government will keep buying respirators, N95 manufacturers are wary of investing too much, and other companies that could start making respirators or the filters for them are hesitant to do so.

Peter Tsai, the scientist who invented a method to charge the fibers inside the respirator filter, knows why: "It is not profitable to make

respirators in the United States," he said. It can take six months just to create one manufacturing line that makes the N95′ s filter.

But there is a workaround, Tsai said. Companies that already make similar filters — for vehicle emissions, air pollution and water systems — can modify their equipment to make N95 filters.

While Tsai, 68, has been fielding hundreds of calls from hospitals and researchers trying to sanitize N95s with heat and ultraviolet light, he has been working with Oak Ridge National Laboratory in Tennessee to woo the 15 to 20 American companies that have the potential to produce respirator filters more quickly.

The government has funded just three of these companies through the DPA.

Scientist Peter Tsai tests N95 filter material at the Oak Ridge National Laboratory in Tennessee. (Carlos Jones/ORNL, U.S. Dept. of Energy)

Others have gradually joined in on their own. But then those filters have to be made into respirators, and those respirators have to be approved by NIOSH, the National Institute for Occupational Safety and Health.

The entire process has moved at a glacial pace in comparison with the flurry of activity that rid the country of its ventilator shortage. Ventec, a company known for its efficient, toaster-size ventilators, handed its plans over to General Motors so that the auto company, under the DPA, could mass produce a product that was known to work. Other ventilator companies followed, handing over their trade secrets to Ford, Foxconn and other major manufacturers.

But when GM started making N95s, engineers with expertise in car interiors and air bags were charged with figuring out the process from scratch, the company said. Although they received advice from major mask makers, there were no groundbreaking corporate partnerships this time. The first N95s GM made were rejected by NIOSH. The second design didn't correctly fit most people.

Other potential manufacturers went through the same challenges as GM, failing tests and making flat-fold N95s that experts worry do not offer a tight enough seal.

"If there was some kind of intellectual sharing, they wouldn't be doing that," said Christopher Coffey, who was the associate direc-

LEFT: At a manufacturing plant in Warren, Mich., General Motors designed and produced its own flat-fold N95. GM has made 25,000 masks for its employees and hospitals in Michigan. (John F. Martin for General Motors) . RIGHT: In early January, 3M was making 22 million respirators per month in the United States. By October, the company says, it will have increased production to 95 million respirators per month. (Amanda Voisard/for The Washington Post).

tor for science in the NIOSH approvals program before retiring in January.

The DPA does have a provision that would allow manufacturers to work together without being subject to antitrust laws. But it has yet to be used for N95s.

Instead, established U.S. makers of N95s, whose products have been successfully protecting miners, construction workers and health-care professionals for decades, have continued to protect their processes as intellectual property.

Though 3M helped Ford make the far more expensive powered respirators, which blow clean air into a hood, the company has not entered into any major partnerships with outside manufacturers to make N95s. Asked why, 3M declined to explain, instead pointing to its other pandemic partnerships.

Ford gained its own approval to manufacture disposable respirators but has made just 16,000 of them while focusing instead on face shields and surgical masks. Other major U.S. manufacturers of N95s, including Honeywell and Moldex, have kept their manufacturing in-house, too.

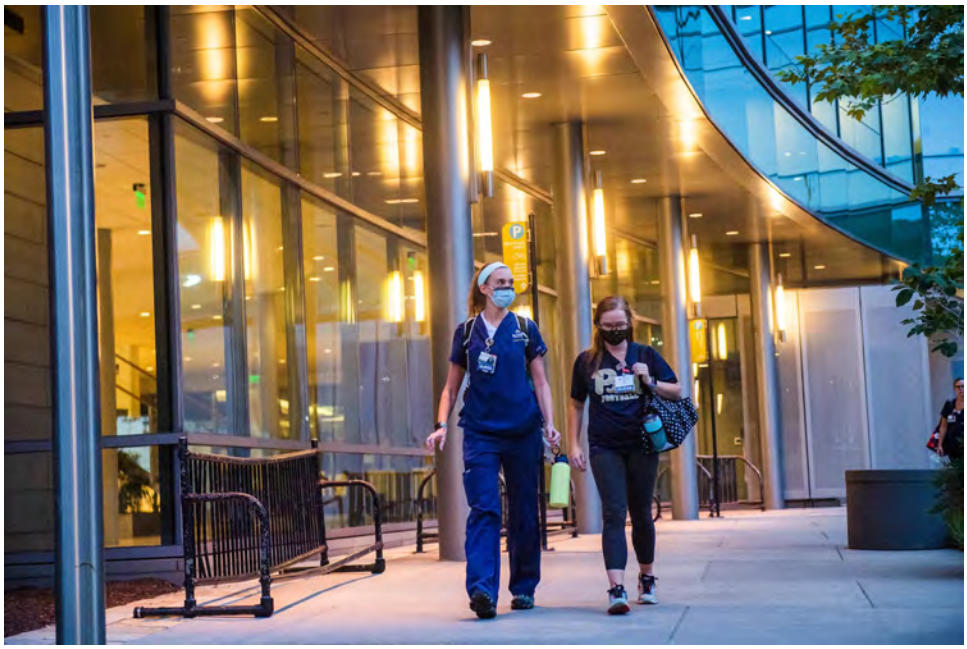
“Folks aren’t likely to share that information outside of their own company,” said Jeff Peterson, who now oversees NIOSH approvals. NIOSH employees may know how 3M makes its respirators and the filters inside them. But by contract, they can’t tell other manufacturers how to do the same.

Meanwhile, 3M continues to dominate the American N95 market. While other parts of its business, such as office supplies and industrial adhesives, have struggled during the pandemic, 3M has invested $100 million to expand domestic production of respirators

from 22 million to 50 million per month. Once the new production line is up and running in South Dakota in October, that number is expected to reach 95 million per month in the United States.

It still won't be enough.

"Even though we are making more respirators than ever before and have dramatically increased production," 3M spokeswoman Jennifer Ehrlich said, "the demand is more than we, and the entire industry, can supply for the foreseeable future."



Williams, left, and a co-worker, nurse Emma Cranston, leave the hospital. (Amanda Voisard/for The Washington Post)

'I just don't get it'

Her N95 was already on, but Williams's hands were slipping as she tried to force on a pair of gloves. She could hear the alarms going off. One of her patients was crashing, and she had to get into the room.

She should be able to just go, her runner's legs carrying her to the bedside. But in Covidland, there were two closed doors standing in her way. She had started wearing her N95 all day so she could be ready for this moment. She pulled on her gown and another set of gloves and her face shield, reached for the door — and realized the patient inside was her 13-year-old stepson Kellen.

She jolted awake. She was in her bed. Her husband was asleep beside her. She slid out from her sheets and went downstairs to check on her stepchildren. Kellen and 19-year-old Alle were sleeping, too.

The nurse inhaled. She could still hear the alarms.

This is what it meant now, to be a health-care worker: Across the country, nurses and doctors were reporting increased sleeplessness, anxiety, depression and post-traumatic stress.

Williams reminded herself that she'd always had an N95, and the heavier, more protective respirators she sometimes wore instead.

But she knew, too, that covid-19 had taken the lives of more than 1,000 health-care workers, including a New Jersey primary care doctor who, determined to keep his practice open, doubled up on surgical masks when his N95 orders didn't come. And a California nurse who rushed into a covid patient's room to perform chest compressions. She saved his life, then doused her hair in hand sanitizer. She hadn't been given an N95 at the beginning of her shift.

And then there was the news that shook every health-care worker Williams knew: Less than two miles from Hopkins, the head of the ICU at Mercy Hospital died after contracting the virus in July.

Joseph Costa, right, and his husband, David Hart. Costa, who was the head of the ICU at Baltimore's Mercy Hospital, died after becoming ill with the novel coronavirus in July. (David Hart)

Joseph Costa was one of the people who'd guided the hospital through its PPE shortage early in the pandemic. His husband, David Hart, remembered him coming home and saying, "This is my mask for the week." Neighbors pushed N95s through their mailbox slot.

"This is the United States of America, and we can't seem to get factories built to deliver this stuff? I just don't get it," Hart said.

He will never know exactly how his husband, who insisted on caring for covid patients alongside his staff, became infected. Costa died in the ICU, the gloved hands of his colleagues on him as he went. Minutes later, they returned to caring for other patients.

At Mercy, at Hopkins, at every hospital that had found a way to get N95s, health-care workers wore their PPE to try to save the lives of people who contracted the virus because they had none.

Williams and her colleagues didn't need to see the statistics to know that the pandemic was disproportionately affecting Black and Brown people, especially those deemed essential workers. They saw it in their patients and heard it from their families and friends.

Johns Hopkins emergency department nurse Shanika Young conducts coronavirus testing at Sacred Heart of Jesus Church in East Baltimore. (Amanda Voisard/for The Washington Post)

Williams worked side by side with Shanika Young, a nurse whose brother seemed to have every known covid-19 symptom before he started to recover.

Afraid of infecting anyone in her community, Young went weeks without seeing her parents and newborn niece. She adopted a hound-mix puppy to have a friend when she couldn't see her own. In the weeks that followed the killing of George Floyd, she agonized over her decision to stay away from the protests. She knew there wouldn't be N95s there.

On a sweltering August morning, she left her dog in her apartment

and packed her respirator in her car. She, too, re-wore her mask, but usually for four or five 12-hour shifts.

Now Young was taking it across Baltimore, not toward the hospital, but to a predominantly Hispanic neighborhood with one of the worst infection rates in the city.

Young volunteered on her day off to help a team of Hopkins doctors and nurses do testing in the community. (Amanda Voisard/for The Washington Post)

During the pandemic, Baltimore has seen outbreaks in its homeless shelters, its trash-collecting facility and its jail. Now every place Young drove by fell on one side or the other of a new dividing line in America: those who have PPE and those who don't. Bodegas, restaurants, nail salons and funeral homes. Downtown, a nonprofit's dental clinic remained shuttered. She passed a mental health counseling center where sessions were still conducted only by video, and a physical therapist who wore KN95s to see clients. She parked near a school that, without N95s, had no way of ensuring its teachers were protected. It serves primarily Latino children, all of whom would be forced to learn online.

In the parking lot of the church, a booth that used to sell $1 snow cones had been transformed into a coronavirus testing center run by a team of Hopkins doctors and nurses.

On her day off, Young volunteered to work with them, spending hours sweating in her scrubs, sending swabs deep into nose after nose. She wore a surgical mask on top of her N95.

“I don’t think there’s any science that says this is actually safer,” she said. “But it’s just a mental thing.”

The line of people sweating on the asphalt was so long, Young couldn’t see the people at the end: a man in painter’s clothes, a mother pushing a stroller and a woman who, like Young, was wearing scrubs. Stitched onto the chest was the name of a retirement home.

With her N95 in her locker, Williams switches to a surgical or cloth mask whenever she’s not at the hospital. (Amanda Voisard/for The Washington Post)

‘Hazard’

The coughing patient was starting to fall asleep when Williams left her in the covid unit. Her shift had been over for more than 30 minutes. She checked in to make sure there was no one else who needed her help and headed for the locker room. She washed her hands twice. She used alcohol wipes to sanitize her phone, glasses, ID badges and pens.

She took off her N95, and she inhaled.

For the first time in two months, she decided that this respirator was done. Its straps were starting to feel too stretched. The shape of it looked just a little too warped.

Instead of hanging the N95 from a hook in her locker to air dry, she stuffed it in a bag marked “hazard.”

Williams makes it home after another 12-hour shift. (Amanda Voisard/for The Washington Post)

A new mask, still in its plastic packaging, was waiting for her next shift. She would wear it as long as possible, especially after learning that the Hopkins stockpile had run out of the British-made mask she wore and couldn't get any more. She needed to change to a different type of N95, one that felt unfamiliar once again. She told herself that she was grateful just to have it. She told herself that it would protect her just the same.

Correction: A previous version of this story misstated the potential number of coronavirus particles in a droplet from a cough. It is hundreds.

The Washington Post
Democracy Dies in Darkness

www.washingtonpost.com | November 18, 2020

By Jessica Contrera

https://wapo.st/3rQMPDP

Desperately trying to wipe the virus away

As covid-19 threatened a group home for disabled women, their caregivers opened a stash of Clorox wipes, hoping to stop the infection from spreading

They'd always checked temperatures inside this house. Twice a day the thermometer was moved from bedroom to bedroom, tucked under five arms, offering five beeps and five numbers, assurances that the women who lived here were, for now, okay.

A beep for Andrea Outman, whose oxygen tubes curved around her wheelchair, the only resident of the house who could fully communicate through speech. For Carolyn Davis, the only one who could

walk, her graying braids bouncing as she paced. For Ericka Yates, who kept being taken back to the hospital, the complications of her medical history complicating her life again.

A beep for Wah Der Yee, who had spent nearly her entire life in a Virginia-run institution before moving to this suburban ranch in Dumfries, one of America's more than 76,000 group homes for adults and children with disabilities. Here, medical care was mixed with dance parties and craft classes, grocery runs and dinner outings, neighborhood walks and park picnics. Or it was, until the coronavirus pandemic hit.

By that Tuesday in May, the women had spent 56 days inside their Northern Virginia home, as their caregivers tried to keep the coronavirus out. Now it was Day 57, and the fifth resident, whose guardian asked that she not be named, was getting her vital signs checked. Blood pressure, oxygen level and then, the beep of the thermometer.

"Too high," a nurse said, watching the little digital number go up. She cleared it and tried again. She shook her head.

She dialed a supervisor and a doctor, while her co-worker, Angela Reaves, knelt beside the wheelchair of the resident, a 52-year-old woman who rarely made facial expressions or moved much at all.

"You're okay," said Angela, who, like everyone in the house, went by her first name here. For two years, Angela had cared for this resident five days a week. She cooked for the women who didn't need liquid meals and gastronomy tubes to eat. At 62, Angela heaved them onto shower chairs, washed their aging skin and changed their incontinence pads. She talked to them as if they understood everything and were able to reply.

"You're going to be fine," she promised beside the wheelchair. "I know that."

Angela Reaves became a direct support professional, caring for five disabled women, after working in a restaurant and at an insurance company. She loved the group home's residents. (Family photo)

Angela was wearing a mask and gloves, but in her work, social distancing would simply be neglect. She was a "direct support professional," the caregivers who made it possible for tens of thousands of people with disabilities to be moved out of large, impersonal institutions and into humane, home-based care.

The pandemic had transformed these poorly paid caregivers into essential workers who risked their lives to protect the disabled from a virus that could easily kill them. But while state and federal funding has poured into hospitals and nursing homes, those who care for the disabled have been repeatedly snubbed. The agencies they work for have had to cut staff, end programming, beg for promised Medicaid reimbursements and scramble for personal protective

equipment. No one is keeping track of how many direct support professionals across the country have become infected or how many have died.

And still these caregivers — mostly women of color making near minimum wage — showed up each day, hoping they wouldn't have to make the call that Angela and her colleague were placing now.

"911, what's your emergency?" a dispatcher answered.

In her mask, Angela drove the group home's wheelchair transport van to Sentara Hospital in Woodbridge, the feverish resident strapped in behind her, medically unable to wear a face covering. Hours later, still unsure whether the resident had the coronavirus, Angela drove her back home.

The nonprofit that ran the group home, the Arc of Greater Prince William County, dropped off the supplies they had stockpiled for

Clorox wipes became one of the most difficult products to find during the early months of the pandemic. (Amanda Voisard for The Washington Post)

a moment like this. They had no N95 masks, only KN95s, the less-reliable Chinese-made filtering masks that didn't fit as tightly. They had so few gowns that the caregivers would eventually wear 55-gallon garbage bags instead. But they did have one item that the pandemic had made near impossible to find: canisters of Clorox Disinfecting Wipes.

On eBay and Amazon, wipes that once cost $2.49 were selling for up to $40. Grocery store shelves had been bare for months as Clorox tried to recover from demand that had increased 500 percent. People were wiping their groceries, their mail, their cellphones and their steering wheels. They bragged about finding wipes on social media, or hoarded the wipes they had, comforted by the mere sight of them. The week after Angela drove the feverish resident to the emergency room, the Centers for Disease Control and Prevention would announce that surfaces were actually less of a threat than initially believed. But still people would keep wiping, desperate for a sense of control.

With the sick woman tucked into bed, Angela and her colleagues popped open a canister of wipes, releasing a fragrance branded "Fresh Scent." They cleaned doorknobs and light switches and countertops and toilets. Andrea, Carolyn and Ericka, already quarantined inside the house for two months, were confined to their bedrooms. Wah, who shared a room with the fifth resident, had her bed rolled into the living room.

There was nowhere else for the women to go, and no one else to watch over them. There was no way for them to fully understand what was happening. The caregivers could only keep the women isolated and attempt to stop infection from spreading inside the house. Angela reached for the canister again and tried to wipe the virus away.

Jackie Miles, another direct support professional, wipes a table used for changing and caring for residents of the group home. (Amanda Voisard for The Washington Post)

‘This is clean now’

Before the wipes were opened, they were wrapped in plastic film and marked with a serial code, a number that tracked their entire journey. To follow the wipes is to watch the pandemic unfold in slow motion, making its way to all the places the canisters, and the crisis, would eventually go: airports trying to reassure travelers, day cares teetering on bankruptcy, parking lots turning into testing sites.

The wipes that wound up at the Virginia group home were manufactured on Dec. 30, 2019, the same day authorities in Wuhan, China, first warned local hospitals of a “pneumonia of an unknown cause.”

Inside a Midwestern factory, rolls of a material made of microscopic plastic fibers and wood pulp were stuffed into canisters and

squirted with cleaning liquid and fragrance, at a rate of several hundred every minute.

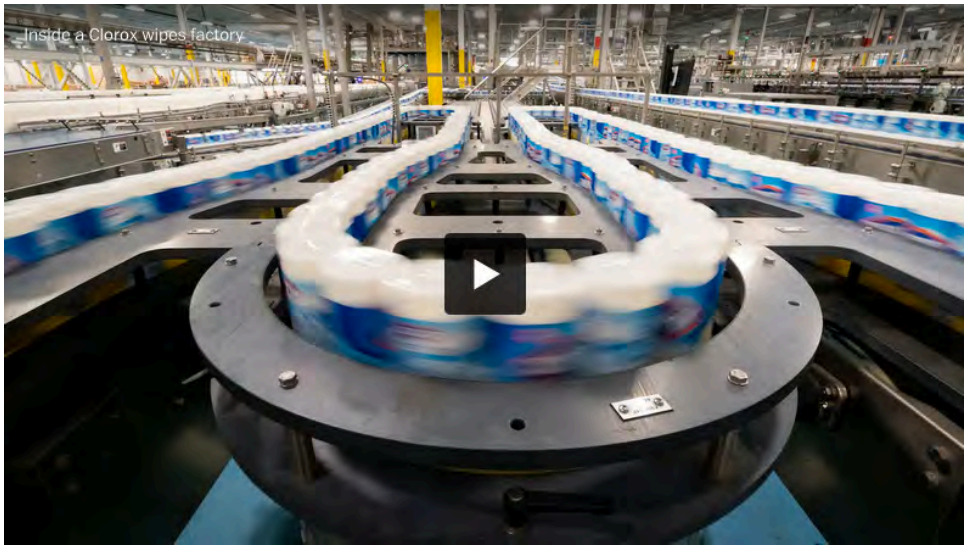
Add a lid and a label, and the result is a product whose purpose is the same as hundreds of other disinfecting products. And yet, the convenience of eliminating messes and "99.9 percent of germs" with one simple swipe, the satisfaction of disappearing those problems into the trash, has proved irresistible to American shoppers since Clorox, Lysol and Mr. Clean all debuted disinfecting wipes two decades ago.

As the group home's canisters were leaving the factory, the World Health Organization was investigating the mysterious illness that had sickened at least 27 people in China. By the time the first coronavirus case was confirmed in the United States three weeks later, the canisters had already passed through two warehouses in Illinois and Maryland.

As they arrived at Schenck Foods, a distributor in Northern Virginia, on Feb. 12, much of the world was coming to understand that it was in the midst of a mess that could not be so easily wiped away. Clorox started running its manufacturing plants 24 hours a day. The company had been bracing its shareholders for a mediocre year. Instead, in sales, stock price and surveys of whom Americans trust, Clorox would become one of the pandemic's biggest winners, and wipes its most coveted trophy.

On March 6, 240 of those canisters were loaded into a box truck, along with $1,945 worth of disinfecting spray, hand soap and jugs of bleach, all bound for the Arc of Greater Prince William County. President Trump was a week away from declaring a national emergency. But at the nonprofit, Donna Shipman was already preparing for chaos.

Before she became a supervisor, Donna had worked as a direct support professional like Angela. She understood that to someone with intellectual disabilities, even the slightest change in routine could feel like their world had imploded.



Soon, every day would bring the cancellation of something the nonprofit's 2,200 clients depended on. Then came weeks of comforting caregivers who'd been kicked and bitten by group home residents in distress, calming parents who'd been barred from visiting their children, apologizing to staff members they couldn't afford to keep.

By the time Clorox was warning Americans not to ingest bleach as Trump had suggested, disabled communities were battling outbreaks. At a state-run facility in Illinois where half of the 336 residents are nonverbal, 237 of them and 160 of their caregivers had tested positive by mid-November. Four employees and seven residents there have died.

Though large facilities like it still exist in at least 36 states, decades of abuse allegations, lawsuits, court decisions and Justice Department interventions have whittled away at their numbers. In Vir-

ginia, just one remains. The Trump administration has refused to track outbreaks at such institutions or in group homes, meaning there is no national count of how many people with disabilities have become infected or died of the virus.

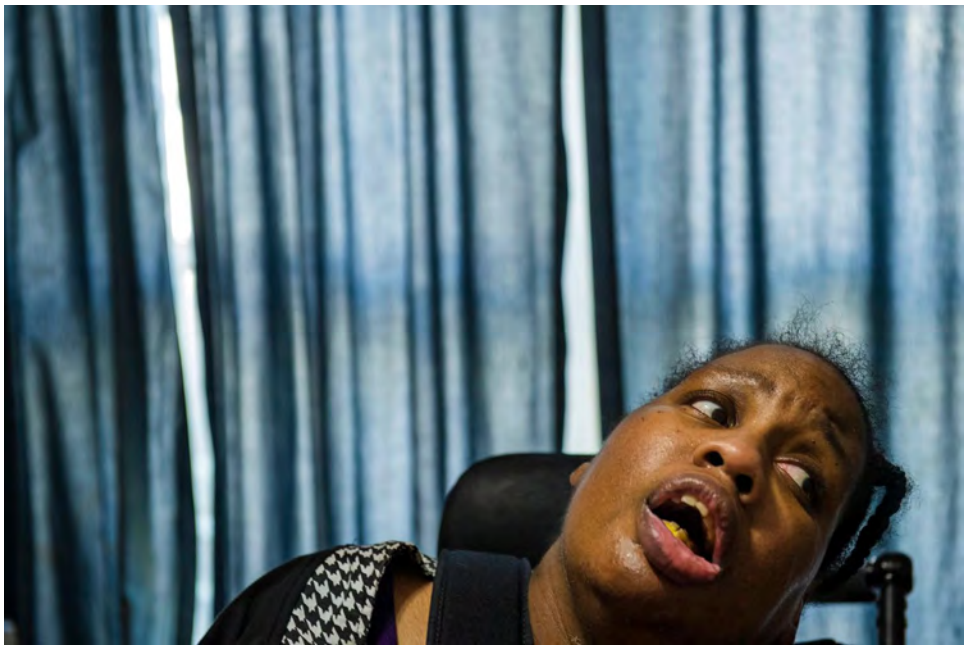
But on May 13, the Virginia group home learned its fifth resident had indeed tested positive. Donna unlocked the closet where she'd stashed the Clorox wipes and other supplies and carried them to her car. Unaware that she, too, would soon be showing symptoms, she delivered the wipes to their final destination.

She could see the anxiety in the caregivers, who in the days ahead were going to be exposed again and again. They knew they could not stop the virus from spreading through the air. But she hoped the canisters would, in some small way, ease their fears about surfaces.

"I wanted to give them a sense of comfort," Donna said. "They can wipe the wheelchairs, the tables, the doorknobs, anything, and know, okay, this is clean now."

With no specialized access to testing, the staff drove Andrea, Carolyn, Ericka and Wah to their doctors to have their nostrils swabbed.

The caregivers were told to find their own way of getting tested. Angela, who'd had the most contact with the sick resident, opted for a drive-through testing site in a Walmart parking lot. She rolled down her window, administered her own swab and returned to work.



Ericka Yates, 44, had to be quarantined in her room when another resident of her group home contracted the coronavirus. (Amanda Voisard for The Washington Post)

‘How many more days?’

Angela had a routine so boisterous, she sometimes annoyed the other caregivers. At 6 a.m., she’d start her shift in the room where Wah and the fifth resident slept under the watchful eyes of their stuffed animals. She’d flip on the radio and sing along, even when she didn’t know the words.

Wah, a 56-year-old whose tongue was permanently protruding, rarely made noise of any kind. But for Angela, she would let out long, guttural wails, almost as if she was singing along.

Since Wah had left the Northern Virginia Training Center, where she’d lived since age 5, her caregivers had marveled at all the little changes that, for her, were big. Rather than stare in the same direction all day, Wah began turning toward people she wanted to see and away when she wanted to be left alone. Though her fingers

rarely moved, she started to wave her arms. With specialized shoes made for her uneven legs, she used a supportive box to stand, her head bobbing to the classical music they played for her. But no one could get Wah to interact quite like Angela, for whom she would even lift her arms as she slid into a new shirt.

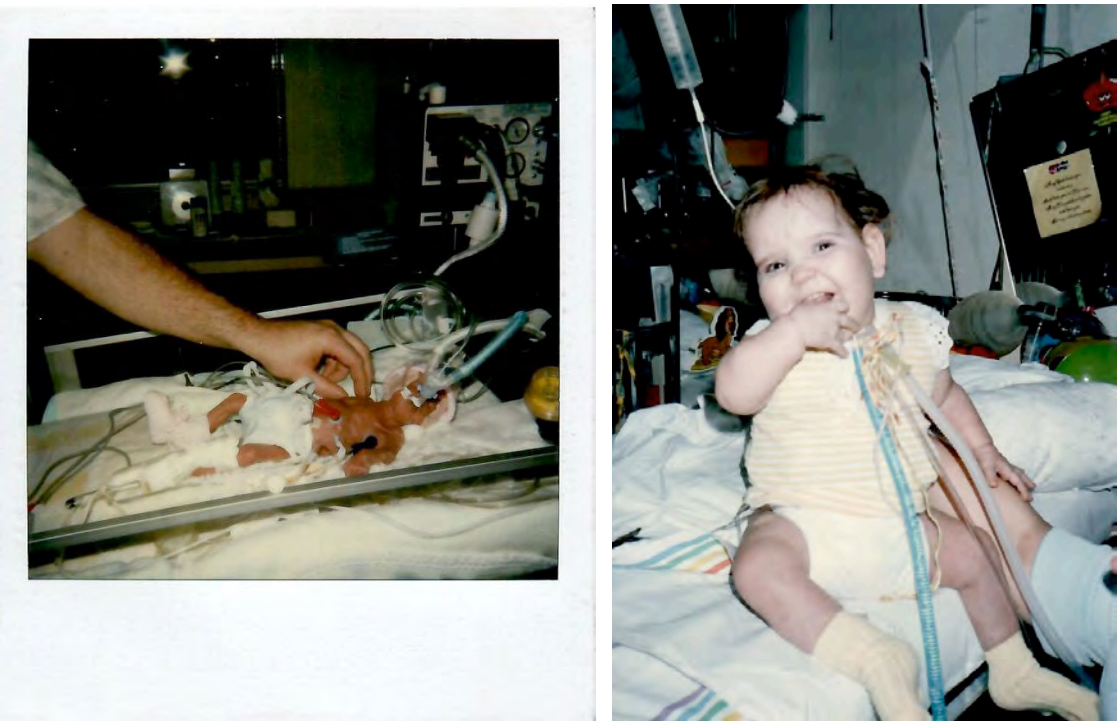
That was Angela's job: knowing what each resident needed to be fully herself. That Ericka, 44, would stop crying mid-meltdown if she could watch paper be shredded. That Carolyn, 62, loved to hold her hand and take her on a tour of the house's lightbulbs, which Angela would switch on and off. That Andrea, 37, preferred "Dora the Explorer" to "Bob the Builder."

"I used to live with my parents, but I changed to the group home because Mom can't take care of me," Andrea explained. Her parents, now in their 70s, spent the first two years of her life visiting their premature daughter at Children's National Hospital, where she breathed through a tube coming out of her neck. For decades they navigated surgeries and scares and doctors' prognoses that Andrea wouldn't survive another year, until they began to worry that it was they who wouldn't be around much longer. They placed Andrea on Virginia's wait list for services, which currently numbers 13,000 people. Nineteen years passed before a spot opened up in a house for the "medically complex," where Andrea would have no one to talk to but the people who cared for her.

At the Dumfries group home, they understood that Andrea could have the cognitive level of a 5- to 7- year-old and still be a grown woman. Angela drove Andrea to her parents' house for visits, treated her to Dunkin' Donuts after her doctor's appointments and chaperoned her Applebee's dates with Mark, who lived at another group home. The pair had once exchanged rings at an unofficial wedding ceremony orchestrated by the staff.

"Did you know I got married to Mark?" Andrea said. "It feels nice to be married. As much as we bicker, we still love each other."

Andrea Outman, 37, brushes her teeth while Margaret Acheampong helps her get ready for bed. (Amanda Voisard for The Washington Post)



Andrea spent the first two years of her life in a hospital, and her parents have been told multiple times throughout her life that she wouldn't survive much longer. She is now 37. (Family photo)

But now, Andrea wasn't allowed to leave her room. She could hear Ericka crying across the hall. Carolyn couldn't walk around the house. Wah was stuck in the living room. They had all tested negative for the coronavirus, and by Sunday, their 62nd day in the house and their fourth in a house with covid-19, their vital signs showed that so far, they seemed to be okay.

Every time the staff checked on the sick resident, who wasn't showing any more symptoms, they wore gloves, a gown or trash bag, shoe coverings, a face shield and a KN95.

Angela, who still hadn't received her test results, wiped every surface, checked on the other residents, then wiped again.

"How many more days?" asked Andrea, tired of cutting up magazines to pass the time.

The next day, she asked again. But Angela wasn't there to answer her. She didn't come back the next day, either. No one had to explain to Andrea what that meant.

Carolyn Davis, 62, eats dinner with the help of her caregivers, who work in the group home at all hours. (Amanda Voisard for The Washington Post)

‘What’s incubation?’

The test results came back negative, but Angela felt as if she’d been Velcroed to her couch whenever she wasn’t hunched over in the bathroom. Her sister poured her a can of chicken soup, and knew just how sick Angela was when she returned the next day to find the half-empty bowl still sitting out.

At another time, Angela would have acted as if disregarding a dish was an insult to her moral code. She ranted about co-workers who didn’t keep the group house or its residents impeccably clean. If she discovered another caregiver had left a resident soiled for too long, Angela would call her son Merritt and ask, “Can you believe this motherf----r?”

What Merritt couldn’t believe, at first, was the tenderness his mother showered on the people she cared for, so different from the tough-love approach she’d taken with him. Angela had become a mother at 15 and raised Merritt on her own. After working at her mom’s soul food restaurant, Ann’s Wings and Things in Stafford, and at an insurance company, Angela was 50 when she signed up for a two-week course to become a direct support professional. Soon she was calling the residents “my individuals,” frying fish for them on her days off and wheeling them into her own family’s gatherings.

“When she was working, it was like, I never knew she had that love in her,” said Merritt, now 47. “It was unreal, her care for them. It almost made me a little bit jealous.”

For all the messes cleaned and meals cooked, Angela’s starting salary was $11 an hour. More than half of direct support professionals quit within a year, with 88 percent citing inadequate pay as a reason for leaving in a recent national survey. But Angela kept at it

for more than a decade. Her son lived with her and helped pay her mortgage.

Tension over money gnawed at their relationship for years, until, after one of their biggest fights about who was paying for what, they stopped talking. He moved out. Their relatives thought it would pass.

But three years later, Merritt's Aunt Bertha was the one to phone him with news. "Your mom's really not feeling good," she said. "You need to call her."

A week after the symptoms started for Angela, Bertha Johnson drove her back to Sentara Hospital. She had to use a wheelchair to get her inside. She made sure Angela's bosses knew she wouldn't be back at work. By then, another caregiver from the house had tested positive. So had Donna, who'd delivered the Clorox Wipes.

Angela's sister Bertha Johnson and son, Merritt Johnson, couldn't visit her in the hospital. (Amanda Voisard for The Washington Post)

And hours after Angela was admitted to the hospital, she learned that her first test was wrong. She had tested positive, too.

This disease was devastating Black families like hers. But Angela had no intention of becoming another statistic. She didn't have underlying conditions. She walked her pit bull Raven miles every day. She was strong enough to lift 200-pound residents.

"Please call me," her sister texted, a week into her hospital stay. "I am really worried. You know I already have a ton of gray hair. Don't need any more."

"Girl, I look so good," Angela told her, two weeks in. "My legs are so skinny!"

Left: Angela with her son when he was a teenager. (Family photo) Above: Angela kept a photo of herself with her sister on her refrigerator. (Amanda Voisard for The Washington Post)

"I talked to Merritt," Angela revealed on Week 3, after her son called and told her, "When you get out of there, we are going to make up for all the lost time. We shouldn't have went this long." He thought her voice sounded slow and slurred as she asked him, "Do you mean it?"

He called again on June 21, to tell his mother, as he once did every year, "Happy Father's Day." To him, she'd always been both.

"What's incubation?" Angela asked her sister two days later. Bertha didn't know, but said she would research it. When she called Angela's hospital room the next day, to tell her the word was *intubation*, another patient answered the phone. Angela had been moved to the ICU.

Only at the very end did the hospital allow Bertha and her sister Dorothy to come see Angela, and only through a glass window.

In her last hours, Angela's sisters were able to visit her in the hospital and take this photo of her through a glass window. (Family photo)

There she was, the woman who cared for people who couldn't care for themselves, with tubes running down her airways, her chest puffed up from a ventilator, unable to speak, unable to understand.

Bertha stood listening to a machine's beeps grow further apart. She watched the little digital number go down.

Angela's heart rate was slowing, and slowing, and then, it was stopped.

'Deserve that respect'

"Every year, they tell us how much they support us," a woman on the Zoom call declared, her face slightly pixelated. Donna Shipman leaned onto her desk, trying to listen. The covid-19 symptoms she'd developed after delivering the Clorox wipes to the group house had kept her out of work for almost two months.

Donna Shipman, right, and her 11-year-old daughter Madison. (Family photo)

She didn't know for sure where she'd gotten infected, but she knew she'd passed the virus to her 11-year-old daughter. The girl had no sense of taste for weeks, and after recovering, became so nervous about getting infected again that she had to see a therapist. Now Donna was back at the nonprofit, begging the state's lawmakers for more support at a virtual rally in early October.

Kim Goodloe, board president of the Arc of Virginia, was on her screen, talking to the handful of legislators who'd logged in.

"They tell us how much they really want to do for us," Goodloe continued, "And what do they do? They do 1 percent."

One percent: the cut of the $3.1 billion in Cares Act funding that Virginia initially gave to programs for people with intellectual and developmental disabilities. The state's nursing homes were receiving an extra $20 per resident, per day. Group homes spending hundreds of thousands on staff overtime got nothing. Disability advocates pressuring Congress for more support had little success too.

Donna turned off her mute button and took a deep breath, her lungs still not filling the way they should.

Faustina Baiden, a direct support professional, cleans after helping Andrea get in bed. (Amanda Voisard for The Washington Post)

"We watch the news every day and we see the acknowledgment and the respect, consideration and funding that is given to hospitals,

nursing homes and assisted-living facilities," she told the lawmakers. "I do not ever want to slight them because they are our health provider brethren. But we also deserve that respect."

A few weeks later, disability service providers that run group homes and other programs in Virginia were told they would receive increases in Medicaid payments that the pandemic had halted. Gov. Ralph Northam (D) announced $1,500 bonuses for 43,500 home health workers, who care for the elderly and others in private homes, in appreciation of the risks they have taken. But direct support professionals in group homes wouldn't be included.

A local grant made it easier for Donna to buy more protective equipment and supplies, but she hadn't been able to order any more Clorox wipes. Her supplier could never restock them. Grocery stores limited how many canisters customers could buy.

Clorox had hoped that by contracting with 10 additional manufacturers, there would be enough wipes by late summer. It wasn't enough. By fall, the company predicted it could not meet the demand for wipes until 2021, even though it was shipping nearly 1 million packages of wipes per day.

Companies were using the presence of wipes to give employees confidence to return to work. Teachers were being told to disinfect entire classrooms every hour. Sitting beside Amy Coney Barrett at the hearings for her Supreme Court nomination was an industrial-sized canister of Clorox Disinfecting Wipes, Fresh Scent.

But at the group home where Angela once worked, the caregivers had long since returned to killing germs with spray and paper towels.

Andrea waves to Idmatu Ayoub, a nurse who looks after her at the Arc of Greater Prince William day program. (Amanda Voisard for The Washington Post)

‘We loved each other’

The hum of Andrea’s oxygen machine was the only sound in the early morning darkness. She’d never gotten sick, and neither had her housemates. The fifth resident’s fever went away after a week. Charles Traore, the other caregiver who became infected but recovered, was now the one to wake the women up each day.

He didn’t flip on the radio. There was no singing. He helped them into their clothes, fed them breakfast and on this day in October, rolled them down a ramp in the garage. After 203 days in the house, they finally had somewhere to go.

With ponchos draped over their wheels, they were lifted into the transport van for a 20-minute ride. Then a caregiver boarded the bus with a thermometer. Four beeps later, they were guided into

the Arc's day program, which had decided that Andrea, Carolyn, Ericka and Wah could try to return, slowly, to the life they once recognized.

Before entering their day program, Carolyn and the other residents had to have their temperatures checked. Inside, physical therapist Sherry Mielnicki helps them exercise by dancing. (Amanda Voisard for The Washington Post)

Another staff member's positive test would send them back home in a few weeks. But for now, they could spend the day in a bleach-scented classroom with crafts taped to every wall. Carolyn reached for her caregiver's hands, asking to go for a walk. Ericka, seemingly confused at the change in scenery, cried for two hours, as Andrea raised her voice to be heard over the noise.

"I'm going to keep coming back here?" she asked. "Tomorrow, too?"

"Yeah, we're going to keep coming back," the day program director told her. "Or, until we tell you not to, how about that?"

No one had told Andrea about Angela's death. Her parents had asked the staff not to, wanting to explain themselves. But by the time they tried, Andrea already knew; she had seen the other caregivers crying.

Wah is lifted into her bed inside the group home. (Amanda Voisard for The Washington Post)

“She would take me everywhere, but now I can’t go because there is no one to take me except Charles, but he won’t do it because I have to be in here,” Andrea said, reaching for a “Paw Patrol” DVD. “We loved each other. Oh God, I don’t want to talk about it. I don’t. I don’t.”

Wah sat with her hands clamped in her lap. No one had told her about Angela, either.

They said nothing because they believed that somehow, even before Angela’s sister texted the news, the always quiet Wah already knew her favorite caregiver was gone. For hours that day, her long, loud wails filled the house.

Now, she was silent again. People at the day program came to greet her through their masks. She turned her head away.