



## *Stuck on the Streets of San Francisco in a Driverless Car*

A reporter and a photographer went for a ride in an experimental autonomous vehicle operated by the General Motors subsidiary Cruise. There were bumps in the road.



**By Cade Metz**

Cade Metz reported this story from the back seat of a driverless car in San Francisco.

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It was about 9 p.m. on a cool Tuesday evening in San Francisco this month when I hailed a car outside a restaurant a few blocks from Golden Gate Park.

A few minutes later, as I waited at a stoplight, a white Mercedes pulled up next to me. Three teenagers were sitting on the edges of its open windows, their heads bobbing above the roof. One of them pointed at the empty front seat of my car.

“Who’s driving?” he yelled.

“No one,” I yelled back.

I was riding in a driverless car operated by Cruise, a company backed by General Motors that is now offering low-cost rides to a limited number of lucky and notably brave people in San Francisco.

For a good decade now, a number of companies have been promising that, in just a few years, driverless cars that can be hailed with the tap of an app will hit city streets. Those few years, it seems, are always a few more years. And, as these companies struggle to perfect their vehicles, I can’t help but to wonder if they’ll ever actually turn their work into viable businesses given the enormous cost of building and operating the cars.

Our car that evening, a small Chevy Bolt with a roof rack full of sensors, changed lanes on its own. It waited for pedestrians and their dogs to amble past before accelerating through a crosswalk. It wove around cars parked in the middle of the street with their hazard lights blinking.

Remember the iconic, tire-squealing chase scene in “Bullitt,” the Steve McQueen movie from the 1960s? Now, imagine the opposite, and you’ll have a sense of how the car cautiously drove up and down San Francisco’s hills, gingerly navigated four-way stops and angled around double-parked cars.

Still, even for someone like me — a reporter who has spent a fair amount of time with this kind of technology over the past few years — riding through a major city in a car without a driver was an eye-opener.



The roof of a driverless Cruise vehicle. For years, companies have been promising that self-driving cars will soon populate city streets. Jason Henry for The New York Times

Not to say there weren’t issues. As the car passed the joyriding teenagers a second time, it swerved sharply to the right, presumably because it mistook them for pedestrians. At another intersection, it hit the brakes just as the light changed to red, skidding to a stop in the middle of a crosswalk, its nose sticking out into the intersection. A pedestrian yelled at my robot driver and flipped it off as he walked by. I couldn’t say if that was more or less satisfying than flipping off a human.

And then, just as we hit some nighttime traffic, the car detected a possible accident and pulled over. It was a false alarm, but the car wouldn’t budge. My ride was over.

Someday, you, too, could ride in a truly driverless car. Cruise, which expects to expand its services to Austin, Texas, and Phoenix by the end of the year, is among the companies now developing robot taxi services in major American cities. Waymo, which is owned by Google’s parent company, is preparing a second service in San Francisco. Argo AI, backed by Ford and Volkswagen, is at work in Austin and Miami. Motional, backed by Hyundai, is focused on Las Vegas.

But the technology remains a work in progress. Waymo has operated a truly driverless service since the end of 2019 in the suburbs of Phoenix, where the roads are wide and pedestrians are few. San Francisco, with its steep hills and narrow, congested streets — well, except for maybe in Times Square, it doesn’t get more difficult.

Right now, Cruise provides passenger service with only about 30 cars, on only certain San Francisco streets and only between 10 p.m. and 5:30 a.m., when traffic is relatively light. Its cars do not exceed about 30 miles per hour, and they shut down in heavy rain, fog and snow.

Cruise and Waymo are expected to expand their services in San Francisco to more people in more neighborhoods at more convenient times of day. And driverless services will eventually open up in cities across the Sun Belt, where snow is rare and regulators are typically kind to driverless car companies. But this will take time.

Each new service requires months of preparation and testing — not to mention negotiations with state officials. And, even after extensive testing, these cars are bound to encounter situations that they just don't know how to handle. For Cruise and other companies, the question is: What happens then?

## The cars might get 'confused'

Earlier in the evening, Cruise held a small event for reporters at its headquarters in downtown San Francisco.

Cruise's chief executive, Kyle Vogt, was set to offer reporters truly driverless rides for the first time — driverless car tests usually have so-called safety drivers riding along, ready to take over in case something goes wrong. He warned that the cars might get "confused" in certain situations and that, if they did, the company, monitoring from a remote operations center, might need to deploy technicians to retrieve them. Those incidents are extremely rare, he said.

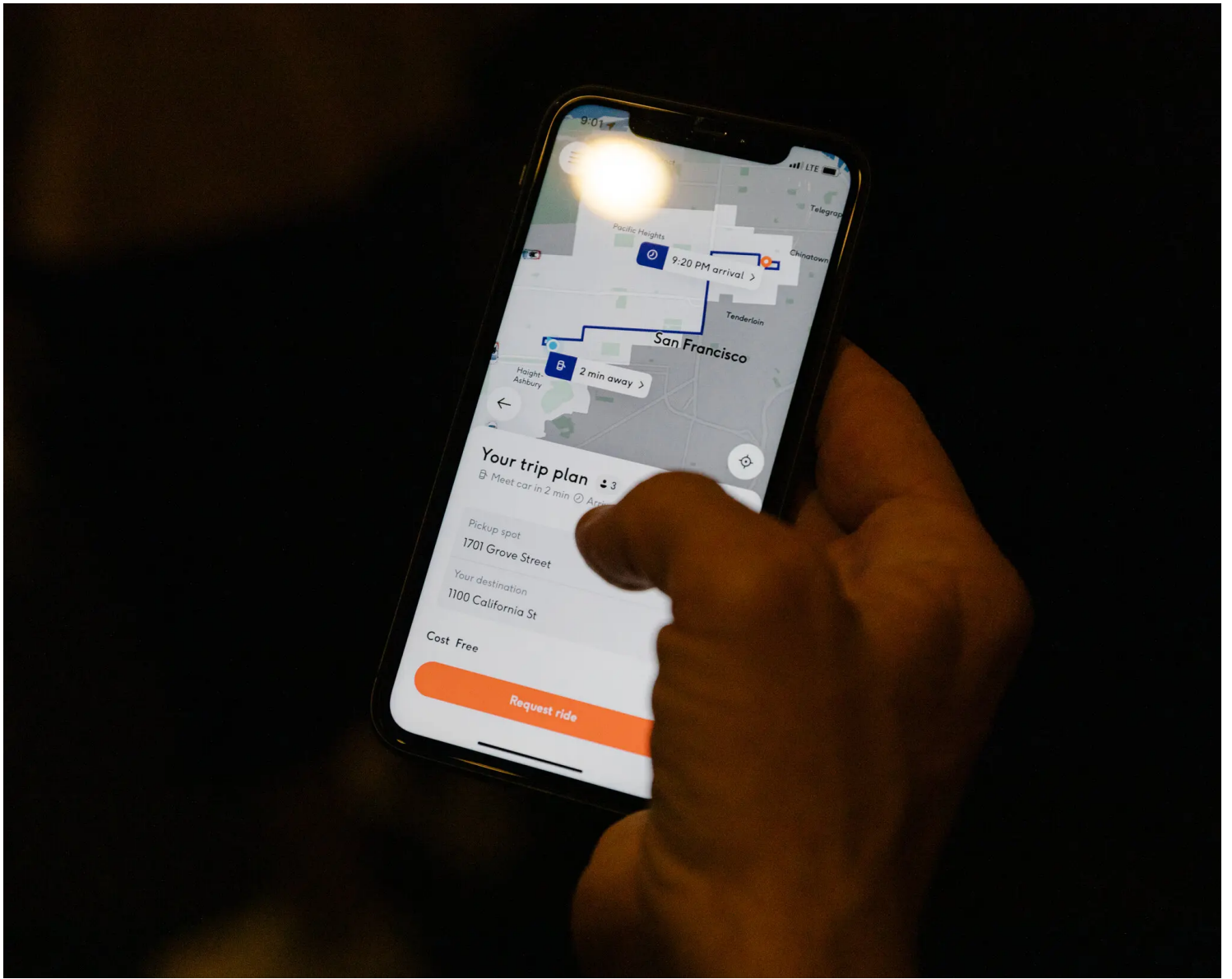
The cars are pretty good at dealing with most of what happens on the road — stop-and-go traffic, lane changes, right-hand turns. But other situations are more difficult: an unprotected left-hand turn, jaywalkers and, it turns out, a tiny camera tripod poking out of the window.

But I'm getting ahead of myself.

On June 3, two days after regulators in California granted Cruise a permit for commercial rides without a driver, one of its cars was carrying a passenger down Geary Boulevard in the Richmond District of San Francisco — not too far from where I got my robot ride — when it reached an intersection. The traffic light was green, and the car began turning left onto a side street.

A Toyota Prius approached the intersection from the other direction, and Cruise's car stopped, assuming the Prius would also turn. But the Prius continued through the intersection. Two cars collided.

The Prius, which was traveling at about 40 miles an hour in a 25-miles-per-hour zone, was partly responsible for the collision, according to an accident report. (Occupants of both vehicles received medical treatment for apparently minor injuries.) The incident showed the kind of sticky situation that driverless cars inevitably face on urban streets. Federal regulators recalled Cruise's software, while Cruise suspended unprotected left-hand turns across its fleet and updated its technology designed to handle similar situations



An iPhone app allows riders to hail Cruise's driverless vehicles. Jason Henry for The New York Times



A Cruise car makes a left turn in San Francisco. Jason Henry for The New York Times

## Spooky, impressive, perplexing and stressful

My trip began at a neighborhood restaurant called Bistro Central Parc. A Cruise employee told me that I would need to download the company's app to hail a car. But I couldn't. I have an Android phone — yes, my daughters make fun of me — and the app works only on iPhones. So the company gave me a loaner.

Cruise opened the window for riding an hour early for reporters. Right at 9 p.m., I hailed a car for a round trip to Grace Cathedral on Nob Hill, about three miles away. Jason Henry, a photographer, would join me for the ride, which the app said would take about 21 minutes, or about 50 percent longer than what an Uber with a human driver would typically take. Life is slower when you can't go over 30 miles an hour.

When the car arrived a few minutes later, we climbed into the back seat (riders aren't allowed in the front), and, soon enough, a disembodied voice greeted us. The voice belonged to a tech support specialist asking if we needed help getting the ride going (it seems we were taking our sweet time as Mr. Henry photographed the car inside and out).

We declined the offer, pressed a big red button on one of the tablet computers in front of us and rolled forward at a law-abiding pace that seemed incredibly slow compared with the average Uber driver. An automated message warned us to keep our hands and arms inside the car at all times.

The ride was by turns spooky, impressive, perplexing and a little stressful. It was kind of like being in the car with my 16-year-old daughter when she was learning to drive — but more unnerving because my daughter could at least respond to my moments of panic.

When you are sitting behind a plexiglass shield like you would find in an old-fashioned New York City taxi cab, the front seat of a Cruise car looks like the front seat of any car — except there is no one in it. In the back, above the two tablet computers, there's a button that lets you call tech support for help and a speaker through which that disembodied voice can talk to you.

That's about it.

The car was a dutiful driver. When pedestrians strolled through a crosswalk in front of it, it responded with what seemed like confidence, inching forward patiently before accelerating at the very moment its path was open.

When it approached a construction zone marked off with orange cones and a giant yellow arrow, it smoothly navigated around it, waiting for another car to pass on the right before proceeding. It snaked around a truck illegally parked at a sharp angle against the curb. And it stopped more than once for pedestrians who seemed as though they were about to cross the street, although this often came with a jolt to the passengers in the back seat. It also had a habit of slowing in the middle of an empty block for no apparent reason. Maybe it saw something that I didn't — again and again.

Then, on the way back to the restaurant, about five miles into our ride, we drove west on Geary Boulevard, hoping to take a left onto Van Ness Avenue, a main thoroughfare.

We were interested to see how the car would handle the intersection, one of the busier corners in the city — and one, it turned out, with serious foot traffic for close to 9:30 p.m. on a Tuesday. For much of the ride, the car seemed to take side streets rather than main roads, steering well clear of heavy traffic and unprotected left-hand turns. But, as we approached Van Ness, vehicles lined up both in front and behind us. Suddenly, the car called off its turn and pulled to the side of the street.

"A potential collision was detected," the disembodied voice said.

Just before the car pulled over, Mr. Henry had rolled down his window halfway and perched his iPhone on the edge of the glass using a small tripod. The idea had been to get a better angle on what was happening in front of the car. After the ride, a Cruise spokesman said the move had spooked the car. One leg of the tripod had been on the outside of the glass.

The company said its cars pulled to the curb if an object was "protruding unsafely" from the vehicle, or if someone tried to climb out of the window. But this typically will not happen, the company said, if a passenger puts his hand a short distance outside the window and waves to a friend.

The cars are designed to pull over when things go wrong. In April, police officers stopped a Cruise car after noticing its headlights weren't on, and the car seemed to pull away from the officers as they walked to its window. It was pulling to the curb — much as it does when it spots an iPhone on a tripod.



Cruise vehicles will pull over and call a tech support specialist if something goes wrong. Jason Henry for The New York Times

After our car had stopped, the disembodied voice asked if we were all right, and said the ride would resume momentarily. But it never did. A few minutes later, the voice said we would need to leave the car. A Cruise technician would have to come and check it out.

Cruise says this is standard protocol, but it has struggled with stalled cars before. At the end of June, the company had trouble communicating with many of the cars in its fleet, and, as they gathered in one spot like some sort of caravan gone wrong, they jammed traffic in the heart of the city. After my ride, the cars continued to cause similar incidents across the city.