Busting Myths & Building Futures:

The real story of autonomous vehicles



May Mobility

In a world where science fiction often blurs the lines between imagination and reality, autonomous vehicles (AVs) have long been surrounded by myths. From visions of futuristic robotaxis dominating city streets to where and how they drive, misconceptions have clouded the understanding of this transformative technology. It's time to set the record straight.

In this whitepaper, we'll shine a light on some of the biggest myths about AVs. From tracing their origins to exploring their diverse uses and even their potential to ease traffic jams, we're going to separate fact from fiction. Get ready for a ride through the fascinating world of autonomous mobility that improves accessibility, safety and transit equity for all.





AV Myth Buster #1:

It’s science fiction

Chances are, you’ve never seen an autonomous vehicle in real life. You may not even know someone who’s seen one. AVs still seem like something that belongs in science fiction literature, a part of the far future, but that’s where we find our myth. Because autonomous vehicles aren’t just navigating city streets right now—**they’ve actually been in the making for more than 20 years.**

The Grand Challenge

In 2002, the Defense Advanced Research Projects Agency (DARPA) announced the first-ever autonomous vehicle race. Looking to leading robotics engineers across the country to bring fact from fiction, DARPA offered $1 million to the group that could successfully finish its 132-mile desert obstacle course first. And so the Grand Challenge began.

On Saturday, March 13, 2004, at 6:30 a.m., 15 teams and their vehicles met at the starting line. Less than three hours later, not a single vehicle had passed the finish line. For that matter, the most accomplished AV only made it 7.4 miles before the terrain became too difficult to navigate effectively. In the midst of this loss, one thing was certain: Autonomous vehicles were possible and some of the brightest minds in the U.S. weren't about to give up on them. A year and a half later, five teams successfully developed vehicles that could autonomously navigate the Grand Challenge. But finishing the race was just the beginning. The next step was to conquer city streets and give people a new method of transportation that they could rely on.

YEAR 1

None of the AVs finished. The most accomplished vehicle only made it 7.4 miles.

YEAR 2

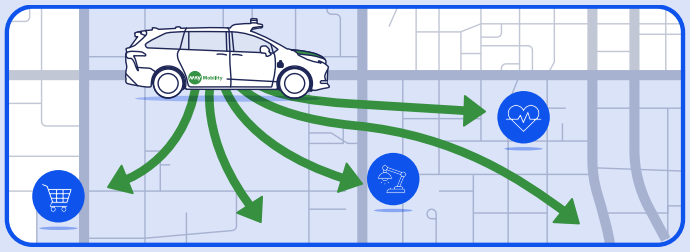
Five teams successfully developed vehicles that could navigate the challenge.

YEAR 3

Next step was to conquer city streets and provide a new method of transportation.



The road to autonomy



Now, almost two decades later, you can find a variety of autonomous vehicles navigating urban roads and serving a variety of purposes. As private companies (instead of government and scholastic entities) began to lead efforts in AV development, innovation sped up and the robotaxi was born. In certain markets, you can hail a rideshare AV with the use of an app and without having to wait for a driver to accept your request. And AV coverage is expanding rapidly into additional locations and markets across the globe.

Autonomous vehicle technology also opens the door to other exciting applications, including long-haul trucking, mining, agriculture and industrial use cases. But we at May Mobility are most excited about the opportunity to use autonomous vehicles as a microtransit service, an updated form of shared, on-demand public transportation that uses an app to book rides in selected service zones.

May Mobility CEO and co-founder Edwin Olson has worked on many approaches to AV technology over the last 20 years. Coming out of autonomous robotics programs at MIT, Ford, Toyota and the University of Michigan, Olson founded May Mobility because he saw a problem that autonomous vehicles could solve: transportation inequity. Since 2017, when we launched our first AVs, we've partnered with cities, businesses and transit agencies to fill transit gaps with our autonomous vehicles. Our microtransit solutions makes it easier to focus on the needs of specific areas and, by doing so, help underserved communities find safe, accessible and reliable transportation. Anyone can ride our affordable, on-demand service by downloading our app or making a call. And when we say anyone, we mean it—we also provide wheelchair-accessible AVs at each site, serving an often-overlooked population when it comes to transportation.

14
COMMUNITIES

2
COUNTRIES

350,000+
TOTAL RIDES

While not yet commonplace, AVs are here and the technology is only getting better. Over the last seven years, our AVs have been deployed in 14 communities across two countries and given more than 350,000 rides in urban, suburban and rural settings. We are excited about the impact our vehicles have on quality of life across the globe and hope we can improve mobility in your community too.

AV Myth Buster #2:

Nothing but robotaxis

For many, it's still hard to believe that self-driving cars are currently traveling down city streets and have been there for years. For those who reside in cities with access to autonomous vehicles, it may seem like they all serve the same purpose: automated taxis. But robotaxis are just the tip of the iceberg. In reality, AVs serve communities in a variety of ways. Here are just a few:



Robotaxis

This is your traditional ride-hailing service with an autonomous twist. Pull open an app and request a ride to wherever you need to go within the city limits. You will typically pay an amount based on the distance traveled, as you would with a traditional taxi or ride-hailing service. Robotaxis serve as a convenient way to get anywhere you need to at the time you need to go, and the vehicle comes to you.

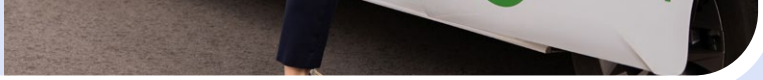
Freight & Delivery

From local delivery to crossing state borders, autonomous technology has helped to facilitate the transfer of goods. In the face of a driver shortage, autonomous semi-trucks are under development that can take to the highway to carry the products we rely on across the country. On a smaller scale, autonomous vehicles have also been integrated into some communities to help with restaurant and grocery deliveries.

Microtransit

As mentioned earlier, microtransit is a form of public transportation that focuses on on-demand, shared rides within a designated zone using small or large vans that can go into residential areas more easily than buses. AV microtransit is our specialty.





INCREASED
SAFETY

ENHANCED
MOBILITY

REDUCED
EMISSIONS

STRENGTHENED
ECONOMY

We partner with cities, transit agencies and businesses to pinpoint specific zones with unmet transportation needs and cater our AV service to address them. Riders use an app to book a ride that will meet them at a designated stop at or near their location. A city can contain multiple microtransit zones and each will often help communities have more reliable and affordable access to jobs, medical facilities and stores and serve as a first- and last-mile connection to other public transportation options.

As we turn to level 4 autonomous vehicles to do more of the driving for us, our hope is that cities can be positively impacted in a variety of ways. A recent report by the U.S. Chamber of Commerce found that if AVs comprised just 25 percent of the U.S. motor vehicle fleet, we could see significantly increased safety, enhanced mobility and access, reduced emissions and strengthened economic competitiveness.

At May Mobility, we are actively working to achieve each of those key results by developing cutting-edge autonomous microtransit technology. Through autonomy innovation, our AV fleet can solve real-world problems, improve people's quality of life and create more livable communities made for people, not cars. For example, by using our AV microtransit solution, we can help transit agencies serve people with disabilities and make transportation more inclusive overall. And if we can help reduce the number of cars on the road by increasing public transit usage, we will have done our part to build a greener and healthier world.



AV Myth Buster #3:

Big tech is only for big cities

If you're looking to take an autonomous vehicle ride, you might think you'll need to take a trip to a big city near you. That's because autonomous vehicle businesses have often captured headlines for deployments in densely populated areas. These big and affluent city deployments may be motivated by the thought that more people equates to more rides, which leads to better revenue generation. Or that large cities such as San Francisco and Phoenix are easy places to set up shop because, in addition to population, sunny skies make it easier to operate AVs. But neither sunny skies nor dense populations are actually requirements, that's just a myth.

At May Mobility, we've realized that the best places to deploy our autonomous vehicle fleets are anywhere there is a need for improved mobility. We believe cutting-edge technology belongs wherever it is most beneficial—from airports and university campuses to rural communities with just around 10,000 people to suburban neighborhoods to bustling city centers. Here's why.

Filling transit gaps

It's not the size of the community that matters. What matters most to us is that we can help communities to develop more equitable transportation solutions. Since our founding, we've deployed AVs in 14 communities (and counting) ranging from 1 to 17 square miles and given more than 350,000 rides in urban, suburban and rural settings. Key to our success has been working with city officials and transit authorities to pinpoint specific pain points and then developing a plan to address them using our autonomous vehicles.

> And because our focus is on a problem to solve instead of an area to fill, we are willing to **go anywhere we are needed.**

Does your community have a student population that needs affordable or free transportation to class? We've got the capability to cover your university campus. What about a large senior community that needs reliable, on-demand transportation to recreational, shopping and medical centers? We can provide the service to help get them where they need to at the time they want to. Or maybe you need city-wide, accessible transportation for hard-to-reach areas where and when a bus just doesn't make sense? You can count on our autonomous microtransit solution to help fill in the gaps, big or small.

Turnkey deployments

Bringing in a new high-tech transit system may seem complicated, but we take pride in our ability to make the process seamless. Once the scope of the transit project has been agreed upon, our field autonomy engineers will map the city streets and plan potential stops around the areas our AVs will be traveling. We then work with one of our transit tech partners to make sure our on-demand service is easily accessible via an app or phone call.

When it comes to vehicle operations and maintenance, we can take care of those logistics too. We will look to hire and train personnel from the local community to support our fleet as it grows. And speaking of community, we make it our mission to engage with and educate them so that everyone understands how to best benefit from our services.

The first thing you should be asking yourself is not if your community is big enough but rather, who stands to benefit most from on-demand AV microtransit. Working together, we can create positive change and improve mobility for everybody.

AV Myth Buster #4:

Sunshine or bust

When you read news about autonomous vehicles, it's easy to notice a trend: most of the AVs are handling city streets within the Sunbelt, such as in California and Arizona. And there's a good reason for that. It's a lot easier to drive on a clear, sunny day. When the weather goes sour, many drivers don't even want to get behind the wheel if they don't have to. Because of that, many people assume that AVs can only handle clear skies and dry streets. But that is a myth we are ready to bust.

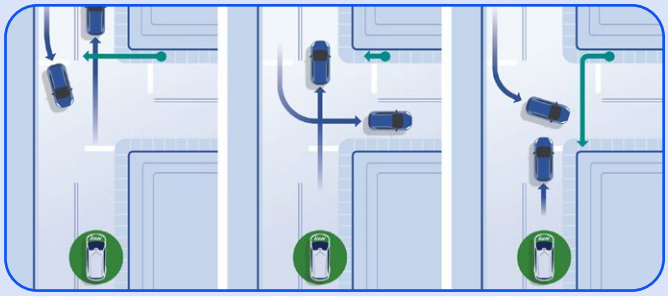
By deploying our vehicles outside of the Sunbelt, we've been able to train our AVs to navigate various weather patterns. Here's how it works.





Rain, snow and shine

Even though a sunny day is the ideal time for anyone to drive, it's not the only time AVs can navigate successfully. We aim to build the best autonomous technology and make it accessible to everybody. And to make sure everybody can benefit from the technology, we can't let a little bit of weather get in the way. Rain, snow or shine, our goal is to get you to where you're going and back again.



One reason why our autonomous vehicles are ready to handle a variety of climates is because of our Multi-Policy Decision Making (MPDM) autonomous technology. A combined sensor stack made up of multiple lidar, radar and cameras detects objects, motion and velocity all around the vehicle. It then sends this data to the vehicle's computer where the perception stack can form lists of objects used to create an understanding of the vehicle's surroundings. This information is then sent to our MPDM system so that it can make educated decisions from the data received.

One reason our MPDM is unique from other AV tech is because of its ability to process thousands of scenarios every second, picking out the best option to keep its riders safe. So, even when there is rain or snow, our sensors can deliver detailed data points that help our MPDM software to accurately analyze the situation and minimize risk while the AV travels to its destination. By allowing our vehicles to experience changes in weather and climate, we've been able to consistently test MPDM's ability to navigate various weather patterns, which helps our platform continuously learn and improve.



CASE IN POINT:

Grand Rapids, MN

Our deployment in Grand Rapids, Minnesota is a great example of the work we are doing in locations with varying climates. In Grand Rapids, our AVs face a variety of weather conditions throughout the year and we strive to tackle them all. We don't want to shut down our autonomous operations or drop our speed limits unnecessarily. So we need to be able to adapt.

For example, our Grand Rapids deployment experiences adjustments based on the time of year. Our field autonomy engineers are key to making this happen. By mapping out the area during different seasons, a better understanding of road conditions can be achieved and transit routes adjusted to best accommodate our riders due to potential changes in weather. Using that data, our AVs will always be able to take the optimal route to their destinations, even when it's snowing outside.

And no, we aren't planning to drive in a blizzard. We hope you don't either. But because of our unique approach and proprietary technology, our AVs don't need to move at a snail's pace in the rain or snow.

As seen in Grand Rapids, and some of our other deployments, May Mobility AVs are able to monitor road conditions, snow banks, and more.

Depending on the situation, our MPDM will adjust the vehicle's speed on a case-by-case basis to get riders to their destinations efficiently and safely.



AV Myth Buster #5:

Autonomous vehicles will cause more traffic

Nobody enjoys getting stuck in traffic, yet the problem just seems to get worse. In 2022, U.S. drivers lost, on average, 51 hours stuck in traffic, costing each of them over $1,000 in lost time and fuel. As city populations continue to grow, there will be more cars on the road making the problem worse. Now, autonomous vehicles are hitting the streets too. But that isn't the problem you may expect it to be—it could actually be the solution.

More autonomy, less ownership

One of humanity's greatest treasures is autonomy: the freedom to act for oneself. And one of America's greatest symbols of autonomy is car ownership. With a car, you can travel almost anywhere at any time. So it's no surprise that 91.7 percent of U.S. households own at least one vehicle and 22.1 percent have three or more. Yet, the focus on car ownership has negative consequences on the way we live. We find ourselves stuck in traffic and our cities are built more for the vehicles that traverse them than for the people that live in them. Next time you drive around, pay attention to the number of parking lots and parking garages taking up valuable real estate.



US Households own at least one vehicle



US Households own three or more vehicles

We believe level 4 and 5 autonomous technology has the potential to improve the way we live, starting with our streets and eventually revolutionizing our cities.

> We're strong advocates of cities **developing strong and reliable public transportation systems.**

That's why we've made it our business to develop first-class autonomous microtransit. On-demand, shared rides within a specific zone provide communities big and small with easier first- and last-mile transportation, meaning whether they're trying to get to the store, connect to other transit options or get anywhere in between, we've got them covered.

How does this help with traffic congestion? Well, if we can make public transportation more accessible and affordable to everyone, then we can hopefully help three-car households drop to two cars and two-car households drop to one. As people are less reliant on owning cars, we will see fewer vehicles on the streets. This will result in less time traveling and more time doing the things that matter. Through our autonomous microtransit, autonomous vehicles can actually help decrease congestion instead of adding to it.



Improving our cities with autonomous vehicles

Reducing traffic would be a dream come true but our vision goes much farther than that. Colombian president and economist Gustavo Petro once said that a "developed country is not a place where the poor have cars. It's where the rich use public transportation." May Mobility CEO, Edwin Olson, took those words to heart when he founded the company. Through autonomous modes of transportation, May Mobility can develop the ideal city where everybody takes shared transportation options such as buses, trains and microtransit vehicles. And by ideal city, we're talking about the city as a whole, not just its streets.

Parking lots and garages take up so much space that could be better utilized. A small parking lot for up to 10 cars can be around 1,000 square feet. But if a city needs to accommodate 100 to 200 vehicles, it could be 10,000-20,000 square feet at the very least. But what if we didn't need all of those parking spaces anymore? We could instead build more parks, recreational spaces, restaurants and gyms. Those are just a few alternatives that would drastically improve the quality of life of the people who live nearby.

At May Mobility, we believe that incorporating our autonomous microtransit system into communities across the world is an important step toward promoting greater use of public transportation and making this ideal a reality.

> Our AVs can reach places that are difficult for traditional transit systems to reach reliably and then bring people directly to where they need to go or give them wider access to those other transit options.

It's time we stop wasting away the hours sitting in traffic. It's time we do something that will beautify and diversify our cities for our long-term benefit. Autonomous technology can do so much more than change mobility, it can improve the way we live and that's a future worth fighting for.



Clearing the way for the road ahead

From the bumpy beginnings of the Grand Challenge to the rural roads of Grand Rapids, AVs have proven themselves more than just a sci-fi dream—they're a reality reshaping the way we move.

So, as we bid farewell to the myths of yesterday, let's look ahead to a future filled with endless possibilities. Together, let's pave the way for a brighter, more inclusive tomorrow, where the promise of AVs knows no bounds.

If you'd like to learn more about our variety of deployments or how we can help address specific transportation issues within your community, reach out and let's schedule a time to chat.
