

# How to Make Huge Profits From the Shift to Transportation 2.0

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INVESTORPLACE  
WHITE PAPER

# From the First Car...

Life was not easy for young Karl Benz.

He was born on November 25, 1844 in Karlsruhe, Baden, which is now part of Germany. His father died in a railway accident when he was just two. He and his mother were forced to live on very little money. His first business nearly went bankrupt in its first year.

Karl may not have had much luck, but he did have smarts. He graduated high school at the age of 15, and he was just 19 when he received his mechanical engineering degree from the University of Karlsruhe.

Young Benz worked at various companies over the next seven years of his life before he and a partner, August Ritter, started an iron foundry and mechanical workshop. His partner turned out to be unreliable, and all of their tools were impounded by the end of the first year.

Fortunately, Benz had met and was engaged to marry Bertha Ringer, who used her dowry to buy out his partner. The business survived, and Karl was able to focus his smarts on new patents.

While riding his bicycle in his younger years, Benz had the idea of a “horseless carriage” – a vehicle that could power itself. That vision led to him working especially hard on a gasoline-powered engine. He received his first patent in 1879, and in 1885 he completed what’s widely credited as the first vehicle that could move on its own using an internal combustion engine.

In other words... the first car.

His name is recognizable even today. Benz went on to found the Benz Company, the forerunner of Daimler-Benz, Mercedes-Benz, and Daimler Chrysler. And while there weren’t as many cars on

the road in 1929 as there are today, he did witness the car's early growth and the fruit of his hard work and brilliance.

Even so, he surely did not fully grasp how his invention was a major pivot point in human history. Cars made us much more mobile. They led us to scour the world in search of iron ore deposits, oil deposits, copper deposits, and rubber resources. They led us to build millions of miles of highways. They led to muscle cars, the Daytona 500, commuter traffic, trucking, the suburbs, drive-through restaurants – I could go on and on.

We have society before cars. We have society after cars.

And now, we are on the cusp of a similar demarcation line.

The very beginning of a new chapter that will again [reshape the world we live in](#). What's coming is big. That's why Intel bet \$15 billion on it. It's why Alphabet, Apple, Tesla, General Motors, Ford, Toyota, and more are also betting bit on it.

What is coming will create one of the [five biggest investment opportunities you'll ever see](#) in your life, no matter when you were born. I'm talking about an opportunity to earn 10 times... 50 times... even 100 times your original investment.

# ...To The Car of the Future

The car as we know it is on the verge of a transformative change not seen since Karl Benz invented it nearly 135 years ago. In fact, the whole transportation sector is now poised for its version of 2.0. I'm not exaggerating when I say this will lead to *trillions of dollars* in money sloshing around in the coming decades.

For most of the more than one billion cars on the road around the world, people still have to fill up the engine with petrol before they drive – just as people did a century ago. The introduction of electric vehicles (EVs) is starting to change that.

It started with hybrid cars that combined a typical gasoline engine with electric batteries to power the vehicle. Believe it or not, the first such vehicle to be mass produced, the Toyota Prius, has been out for more than 20 years. More recently, completely electric vehicles such as those from Tesla have been hitting the markets.

The key for investors is that even with a 20-year history, penetration of EVs remains very low. Only 1.3% of all new vehicles sold around the globe are EVs – and this includes both hybrids and pure EVs.

That's still a small number, which shows us the enormous growth potential in the coming decades. In fact, it is already underway. In 2017, the number of new EVs sold globally hit one million for the first time, up from just a few thousand less than 10 years ago. In 2018, sales topped two million. This growth will only increase for decades.

But as exciting as EVs are, **self-driving cars will make smart investors even more money.**

Self-driving cars, also referred to as autonomous vehicles (AVs), are already on our roads in limited numbers, but the story is just now

beginning. This is one of those rare opportunities to get into a [powerful investment theme on the ground floor](#).

AVs use advanced electronics and computers to drive themselves. The concept has been around for decades – you’ve probably seen plenty of them in sci-fi television shows and movies – but it’s only in the past 10 years or so that technology has advanced to the point that it’s possible to build and operate a viable AV.

This innovation has enormous ramifications across all aspects of life:

- Elderly folks who can’t drive will become much more mobile.
- You’ll be able to read a book or watch a movie on the way to work (or even do work!).
- The number of car crashes related to drunk, distracted, or sleepy drivers will plummet.
- Your car will be able to work for you during the day, operating as a taxi and making you money.
- If you choose, you won’t have to own a car at all. You can simply order rides from fleets of “robo taxis.”
- The cost of delivering things like packages and groceries will plummet.
- The billions of hours we spend driving will be “unlocked” and put toward productive use.

No wonder many of the world’s smartest, richest, most powerful entrepreneurs and investors are working day and night to dominate the enormous self-driving car market. The companies trying to get their share of this market represent a “who’s who” of the technology and manufacturing world.

I have no doubt the winners of this race will see their stock market values advance 10-fold... 20-fold... even 100-fold over the coming decade, taking investors along for the ride of their lives.

# Unprecedented Growth

Transportation 2.0 has the ability to create a multi-trillion-dollar industry.

I guarantee whatever you can envision right now is only the tip of the iceberg. It's just like 10 years ago when the first iPhone was released. Very few people imagined how much that device would change our world.

Innovation is often difficult to imagine beyond a few years. Those who can grasp where the world will be in the next decade are the innovators disrupting industries around the globe.

AVs certainly qualify as disruptive. We're looking at an industry that is going to go from basically zero sales to an estimated 33 million units sold in 2040.

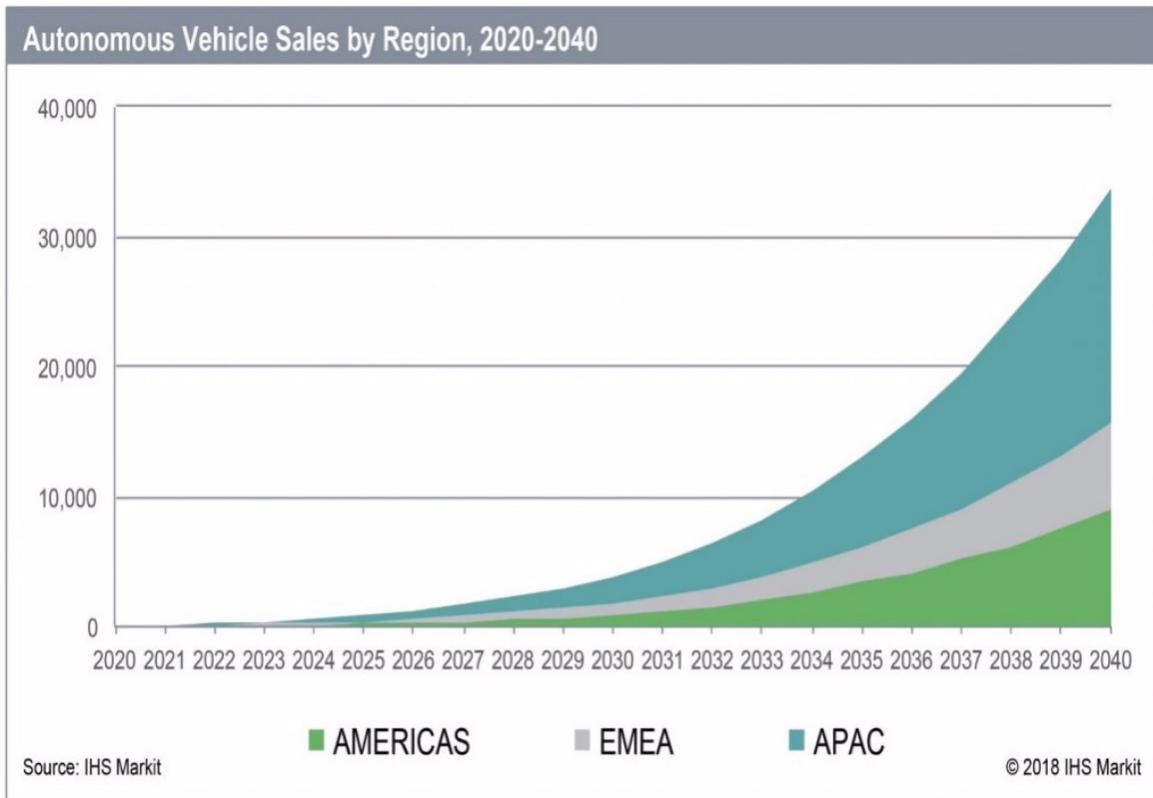
The process should kick off in 2021. That will be a banner year because individual buyers like you and me will be able to buy an automated vehicle, making it the first year of measurable AV sales. IHS Markit predicts 51,000 AVs will be bought that year.

As AVs spread around the globe, projections are for 20X growth in a matter of only four more years. By 2025, the number should expand to one million unit sales annually.

Over the following 15 years, the number of AVs available for personal use, car sharing, public transportation, delivery, and just about any other purpose you can think of will lead to 33 million units sold in 2040.

Add it all up and the 19 years between 2021 and 2040 will see annual sales of AVs grow 660-fold!

Now let's talk about the huge amounts of money, which is where



it gets interesting. UBS estimates that global revenue from self-driving technology could reach \$2.8 trillion by 2030. That number is massive, and considering it is currently next to nothing, more than \$2 trillion will change hands in the next 12 years if UBS is correct.

ARK Investments goes even bigger. It sees the autonomous platform industry being worth more than \$4 trillion by 2030. That's more than the entire global energy sector today.

# How AVs Work

Imagine going home from work in crawling rush hour traffic on a Friday afternoon. Instead of your blood pressure boiling, you can sit back and relax in the privacy of your own vehicle. Maybe even have a friend or two with you for an early start on happy hour. After all... you're not driving.

Or perhaps you can enjoy a fun day with the family inside your car as it drives you to the beach.

To help you further understand where the self-driving vehicle market is today and where it will be in the future, let's look at the levels of automation. There are currently five.

**Level 1:** Humans are almost fully responsible for the control of the car, but there are some autonomous features including acceleration (cruise control) and park assist. The vehicle is only able to perform one function at a time.

**Level 2:** Partial automation. The major difference in level two is that more than one automated function can be performed simultaneously. For example, the car can control speed and steering via cruise control with lane centering. The driver must still be on alert to take back control.

**Level 3:** The vehicle can control most driving functions. Human drivers are still necessary but they are able to let the vehicle control speed, steering, and road monitoring without assistance. The driver will only be needed in certain situations.

**Level 4:** Near full automation, often referred to as high automation. The vehicle is able to start and stop, drive itself, park, and complete a trip. This is the level at which the vehicle will be able to drive you to work and back. However, it will not be equipped to cover every possible situation. No napping or happy hours yet,

as the driver may have to assist in some instances such as severe weather or an unmapped location.

**Level 5:** Full automation. [No human is needed](#). The vehicle will pick you up, take you where you need to go, and find a parking spot or head off to its next pickup. This is the race currently under way, and we should see the first these AVs as early as 2021.



The levels of vehicle automation according to the Society of Automotive Engineers (SAE) 2018.

# Big Money Already on the Move

What makes the move to Transportation 2.0 such a unique opportunity is the plethora of ways to invest. There are auto manufacturers, auto parts makers, sensor companies, semiconductors, connectivity companies (5G), auto sharing companies, and the list goes on.

When a massive industry like transportation is disrupted, it will lead to trillions of dollars moving from the old to the new. You want to invest in the companies on the *receiving* end of these trillions of dollars.

The race is fast and furious with the automakers, as all the major global players want to be the first to mass produce AVs.

General Motors spent \$581 million in 2016 to purchase Cruise Automation. And in 2018 it expanded the self-driving startup by adding 1,100 new jobs and building a new research facility. General Motors also has plans to roll out some AVs as soon as this year through its affiliate, Lyft. In 2016, General Motors invested \$500 million in the ride-sharing business for a 9% stake, but the two companies appear to be growing more competitive with each other. That's how high the stakes are.

Not to be outdone by its rival, Ford invested \$1 billion in robotics company Argo AI in 2018. The startup was created by former Uber and Alphabet employees. Ford has announced that it plans to have fully autonomous vehicles by 2021 to be used for ride-sharing.

Volvo has promised that by 2020 nobody will be killed or seriously injured in a new Volvo, thanks to self-driving technology. And it said it will release a car in 2021 that will allow you to “eat, sleep, work, watch a movie, and relax” while commuting on the highway.

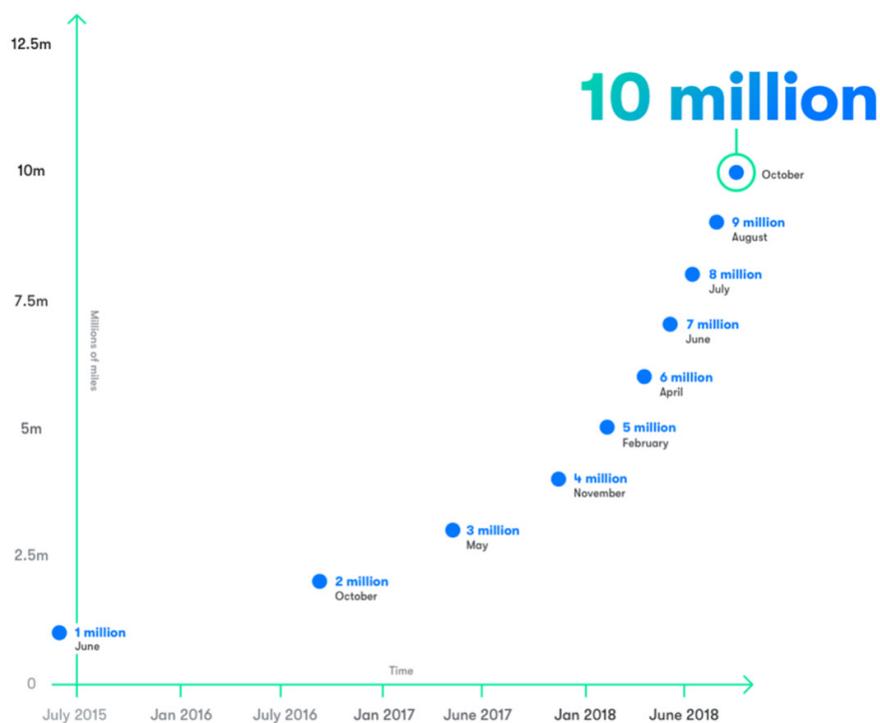
Other automakers could have these vehicles on the road

even sooner.

Honda, Nissan, Hyundai, and Toyota say they will have AVs on roads by 2020.

Of course, we can't talk about AVs without talking about Tesla. I'm staying away from the stock for now, but by manufacturing its vehicles with the hardware needed to be fully autonomous, the company is a clear leader in the AV race. Having the hardware already in place and the ability to update its vehicle's software via Wi-Fi is a game-changer. As soon as the software is developed and tested, it theoretically could be uploaded to the vehicle, making it *instantly* autonomous. There are a wide range of predictions of when this will occur. Right now my own expectation is somewhere around the early part of 2020.

Neck and neck with Tesla is Waymo, which is lesser known because it is not in the news as much as Tesla and is a subsidiary of Alphabet, the parent company of Google. Even so, what Waymo has accomplished and is working toward are impressive.



**10 million miles and counting**

Source: Waymo

Since 2009, Waymo's AVs have driven 10 million miles and is up to nearly one million miles per month. The next closest competitor is Uber at three million total miles. While 10 million miles would take you across the United States and back more than 1,600 times, a lot more miles still must be driven before AVs are rolled out in masses.

Arizona is a major test market for Waymo, and so far so good. The company's AVs pick up Walmart customers in Phoenix, drive them to the store to get their groceries, and then take them back home. Waymo has another agreement with a shopping center in Chandler to transport customers back and forth. And partnerships with AutoNation and Avis Budget Group allow customers to use AVs when getting their car fixed or renting a car.

Waymo is in its very early stages. Morgan Stanley thinks it should be valued at \$175 million, with nearly half of that coming from the company's ride-hailing services. Alphabet currently has a market cap of more than \$800 billion, and investors are definitely not factoring \$175 billion from Waymo into that number.

# The Picks and Shovels

It's still too early to say which auto manufacturer will ultimately become the AV leader. At the same time, some of the biggest money is made when you invest early in a massive trend. You can do that with owning the auto parts makers. It's the classic "picks and shovels" strategy, and [it can make you a fortune](#).

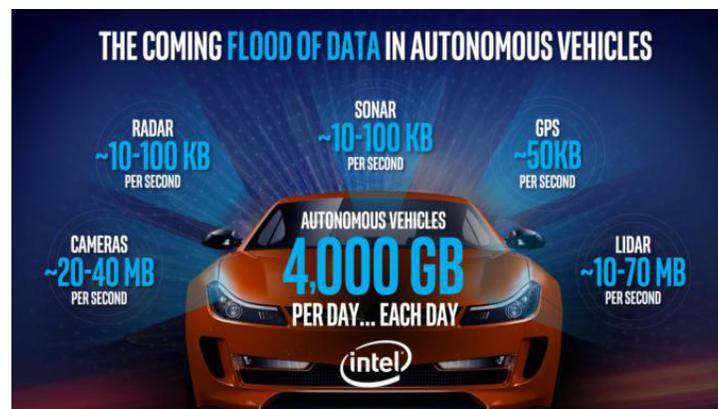
It's quite simple, really. You invest in the leading companies that make the parts that go into the vehicles. Most auto parts makers supply all of the big names in the industry, and many should become big winners regardless of who wins the race among manufacturers.

Let's take a look at some of the parts that will be needed in the cars of the future.

**Semiconductors:** Computer chips may not be the first thing you think of when it comes to cars, but they will be absolutely necessary. In fact, cars of the future will be chock full of semis to gather data, process it, share it, and connect to the rest of the world.

Waymo's driverless car gathers nearly 1 gigabyte (GB) of data *per second*. To put that into perspective, that is about 100 times faster than a typical computer can download a file. Intel predicts AVs will use 4,000 GB of data over the course of a day. Just imagine the power and speed required for this to occur.

**Data:** As you can see in the Intel image on the right, data is king in AVs. In order for it to move quickly enough, the network needs to be faster. That's why the 5G revolution is so important.



Source: Intel

**Sensors:** If an AV is going to drive itself, it must be equipped with a bunch of sensors to “see” the environment around it. There could be up to 30 different sensors on every single AV to accurately gain a 360-degree view.

You’re probably already familiar with sensors for changing lanes and backing out of parking spaces. In the future, sensors will be more numerous and much more powerful. They will be act as the eyes of the vehicle.

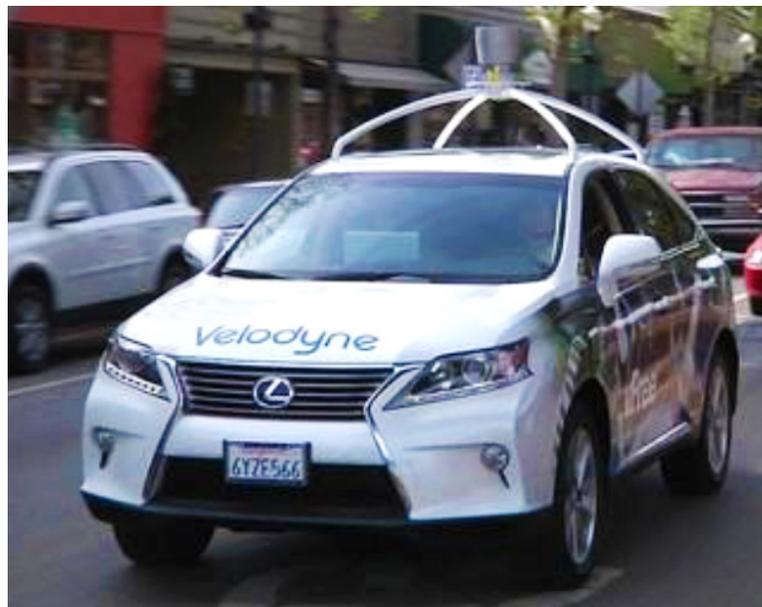
**Cameras:** In addition to sensors, there will also be cameras both inside and outside of vehicles. One of the most important of these technologies is LiDAR, which is short for “Light Detection and Ranging.”

LiDAR is similar to radar, except it uses light from a laser pulse instead of radio waves. The funny looking circle object on top of AVs (see the picture below) is the LiDAR system.

The system measures how long it takes for lasers to come back after hitting an object. The continuous pulses help create a 3D map of everything that is around the vehicle.

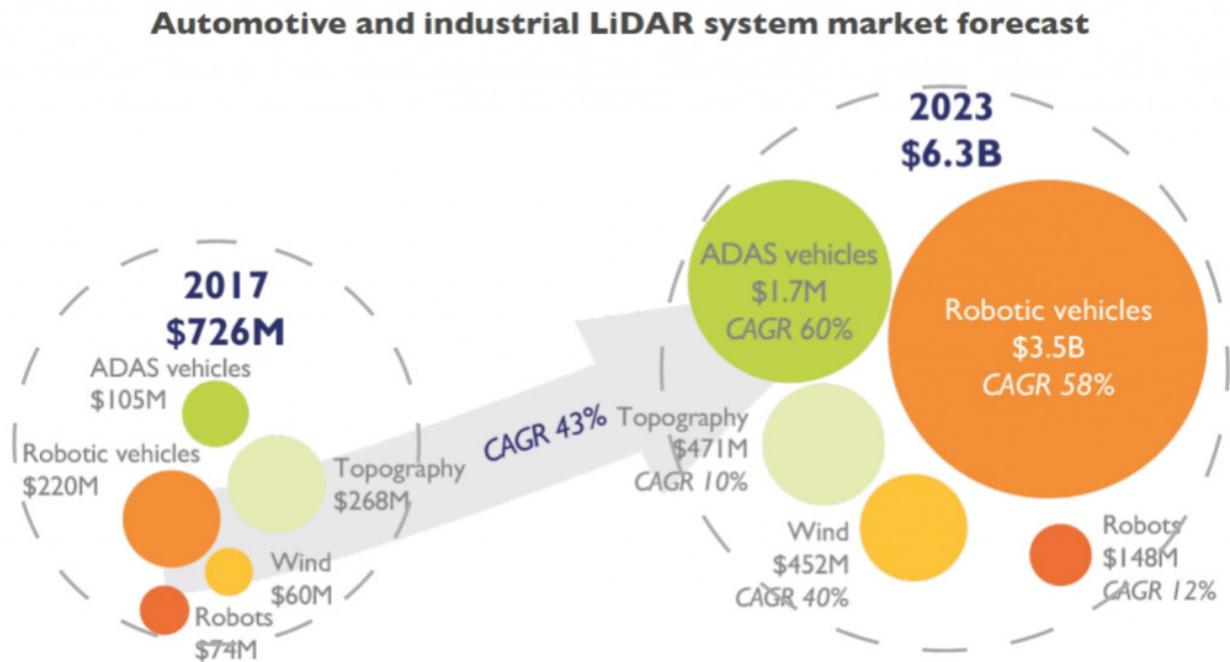
In 2017, the automotive LiDAR market was estimated to be \$325 million. By 2023, the

same market is expected to balloon to \$5.2 billion. That results in a compound annual growth rate (CAGR) of 59%. And it won’t stop there. Continued annual growth of over 20% will push the automotive LiDAR market to \$28 billion by 2032.



Source: Velodyne

That equates to **an 86-bagger** for automotive LiDAR growth in less than 15 years.



Source: Yole Développement

**Mapping:** Alphabet and its Waymo division have a big lead in the mapping sector, which could be a treasure trove of information for the company in the future.

**Software and hardware:** There are also a number of large global companies working in software and hardware development for AVs. The leaders in the space include Intel, Nvidia, NXP Semiconductors, Samsung, Bosch, and others.

This is just a partial list of what will go into the cars of the future, which will be here sooner than you might think. Investing in the disruption of the transportation industry is similar to investing in anything Apple-related 10 years ago. Investors who figured out what went into the iPhone and invested the suppliers made fortunes.

The same will be said in 10 years for investors who smartly put their money in AV suppliers and hold on for big gains.

# Where to Start

Countless companies are getting in on the race to autonomous vehicles. Not all will be winners, so it is important that we put our moneys in the early leaders of the trend.

Let me give you some ideas to consider as you get started.

**Adient** (ADNT), which was spun off from Johnson Controls in 2016, is a global leader in automotive seating and part of the development of the first generation of AVs. Its focus is all about recreating a car's seating to provide increased safety – think telehealth capabilities and sensors built into seats – and better use of its interior if there is no driver. In other words, in the future of interior of AVs will look more similar to a living room than today's cars.

**Alphabet** (GOOGL) is a name you should be familiar with. It's part of the infamous group of FANG stocks and the parent company of Google. As we've already talked about, Waymo, Alphabet's AV subsidiary, is well positioned in the industry. In April 2017, Waymo introduced its "Early Rider Program" in Phoenix. It offered self-driving car services to about 400 volunteer families in the area. As you read this, "robo taxis" are hauling "Phoenicians" to school, soccer practice, and the grocery store. The experiment has been very successful. The company has logged more self-driving miles than any of its peers, and I look for many more great things to come from this company.

**Ambarella** (AMBA) supplies computer vision chips for driver assistant systems. It is currently working on chips that can be used in all levels of AVs. This company was a popular investment several years ago when it made its name by supplying chips for portable camera company GoPro. Ambarella has since reinvented itself and is well positioned to take advantage of the booming AV market.

**Aptiv** (APTV) is the closest thing you'll find to a pure play on the

industry as it provides both the hardware and software needed to make a fully autonomous vehicle. In fact, it is the world leader in automotive software, shipping 40 billion lines of code per day. The company projects that number will increase 400% to over 200 billion lines per day as autos become more technologically advanced. Aptiv's driving platform is already being used on the roads, and early in 2019 it announced it had provided more than 30,000 self-driving public rides in its test market of Las Vegas.

**Baidu** (BIDU) is the owner of China's largest search engine. Think Alphabet and Google in the United States. The \$64 billion company has been developing software systems for AVs for several years now. Its goal is to get its software in electric busses by 2020 and eventually supply the software for Level 4 AVs through its partnership with BAIC Group.

**Ford Motor** (F) remains the best-selling truck and van brand in the world, and now it plans to extend its reach to smart vehicles. It moved into the AV industry in 2018 when it invested \$1 billion in robotics company Argo AI, and it plans to invest an additional \$3 billion into a subsidiary through 2023. Its goal is to launch its first commercial grade self-driving vehicle in 2021. Ford is currently testing its technology in Miami and plans to expand those tests to additional cities around the country.

**General Motor** (GM) is a name you likely already associate with the auto industry, and in recent years it has begun to dip its toes into the self-driving pool. In 2016, it invested \$50 million in Lyft and today owns more than 18.6 million shares in the company. General Motors also owns self-driving car company Cruise Automation, one of more than 50 businesses with a permit to test AVs on public roads in California. Together, Cruise and General Motors are ramping up to launch Cruise Anywhere, their own version of a ride-hailing app. General Motor's goal is to launch AVs for ride-sharing services as early as 2019.

**Intel** (INTC) is a key player in the Transportation 2.0 revolution because it develops advanced driver assistance systems, which it calls the “building blocks for the future of autonomous driving.” The company’s exposure to the space accelerated when it purchased Mobileye in 2017. Today, it is partnered with auto manufacturers and other leaders within the industry – including Waymo – to build the cars of tomorrow.

**Lear** (LEA) is a global leader in automotive technology, with operations in 39 countries around the world. It has a special focus in intelligent seating that provides added comfort, entertainment, and safety. In addition, the company has developed a vehicle positioning technology that has been tested in extreme weather and urban canyon environments. The technology is accurate to within one centimeter all around the world.

**Lyft** (LYFT) was the first ride-sharing giant to make its market debut on March 29. I believe auto sharing will be the next-generation way to “own” cars. You will use an app to request that a car come pick you up and take you to your desired location – just like you do today. The difference is that the car will arrive without a human driver. In other words, robo taxis.

Lyft has partnered with Aptiv to test robo taxis in the Phoenix market, and so far the numbers are impressive. This company is one of the best positioned to benefit from the future of ride-sharing.

**Magna** (MGA) is a mobility technology company and one of the largest auto suppliers in the world – with a specific focus on autonomy. It has a partnership with Lyft to develop self-driving vehicle software, and one of its key products, the MAX4 autonomous driving platform, allows for up to Level 4 driving capabilities in urban and highway environments. The company joined a self-driving tech alliance with companies such as BMW and Intel with a goal of developing technology that could put AVs on the road by 2021.

**Nvidia** (NVDA) is a well-known company that is a global leader in semiconductors, which as you know will be a key component of AVs. The company is focused on building a complete AV system – both hardware and software – it can sell to automakers. At the 2019 Consumer Electronics Show, Nvidia announced the world's first commercially available Level 2+ automated driving system. And several major global auto suppliers have said they will integrate the system into their self-driving solutions beginning in 2020. By offering the full system to auto suppliers and automaker, Nvidia is positioning itself to be a major player in the future of AVs.

**Tesla** (TSLA) is almost synonymous with the self-driving car industry. The company manufactures its vehicles with the hardware needed to be fully autonomous, so when the technology does become available it will be able to simply update the car's software via Wi-Fi. I expect this to occur around 2020. And in the meantime, the company continues to lead the market in fully electric vehicles.

**Toyota Motor** (TM) is the leader in the development of solid state battery technology. Currently, lithium-ion batteries are used to power electric vehicles, but in the future I expect solid state batteries to take their place. The Japanese automaker expects solid state batteries to be introduced in the early 2020s and for them to be commercialized for EVs by 2022. If that goal is met, Toyota would be the first to market.

# The Race is On

We've talked in this report about [the coming disruption in transportation](#) with electric power and self-driving vehicles. Many of the world's richest, most powerful companies are competing in this historic race to get their first.

This race will completely reshape the way we work and live. [The stakes could hardly be higher](#). They are well into the trillions of dollars.

I hope you have a better sense of just how big this opportunity is. I also hope you see how the smart way to invest right now is in the picks and shovels companies supplying this transportation transformation. These suppliers have the potential to double... triple... or more in the coming years.

Sincerely,



Matt McCall