

ELECTRIC VEHICLE BUYERS SURVEY IS SOUTH AFRICA READY FOR ELECTRIC VEHICLES?

REPORT 2020

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PURPOSE OF THE SURVEY

As Electric Vehicles (EVs) gain popularity globally and locally, the question of are we ready as a nation to facilitate the adoption of the technology, as well as if the automotive industry is doing everything it can ensure the efficient transition is spotlighted.

The reality is that globally and within the borders of South Africa, there is demand for electric vehicles as a result of environmental concerns, the requirement of greener mobility and impending global regulations which impact the local automotive market.

AutoTrader - South Africa's biggest automotive marketplace - in partnership with Generation.e, has produced this study, which provides insights into consumer perception, expectation, purchase intent, awareness and trust of EVs.

AutoTrader reaches in-market car shoppers on a monthly basis at scale and is perfectly positioned to serve as a sound proxy for consumer car shopping, purchase intent and buying behaviour. Being able to draw on demand, supply and pricing data from



millions of consumers AutoTrader is now able to tap into the minds of car shoppers around the future of EVs in South Africa. This, combined with one of Generation.e's objectives to catalyse the efficient adoption of electric vehicles globally, formed the basis for the EV survey.

AutoTrader and Generation.e strongly believe that an important step in the process of steam-rolling electric mobility is to understand what the current perception and intention of consumers are, as well as what gaps exist, for the adoption of electric vehicles to happen.

The survey intends to bridge any gap between consumer perceptions & industry assumptions to assist stakeholders such as dealers. manufacturers, marketeers and bodies to drive government action-based discourses. The hope is that these insights lead to a tomorrow that is greener, cleaner and mutually beneficial to the automotive industry, the South African economy, and most importantly, the South African car buying consumers.

METHODOLOGY

The study for this year's 2020 Electric Vehicle Buyers Survey, was produced to understand the potential buyers' willingness to purchase an electric vehicle(EV) in South Africa. The data was obtained via an online questionnaire on AutoTrader's website having been exposed to over 8 million visits, resulting in a sample size of 3 105.

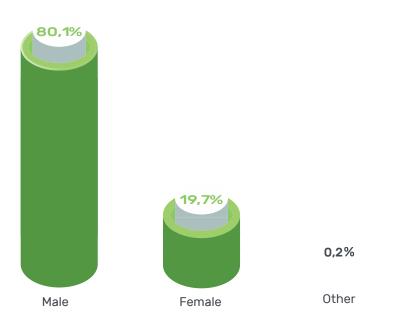


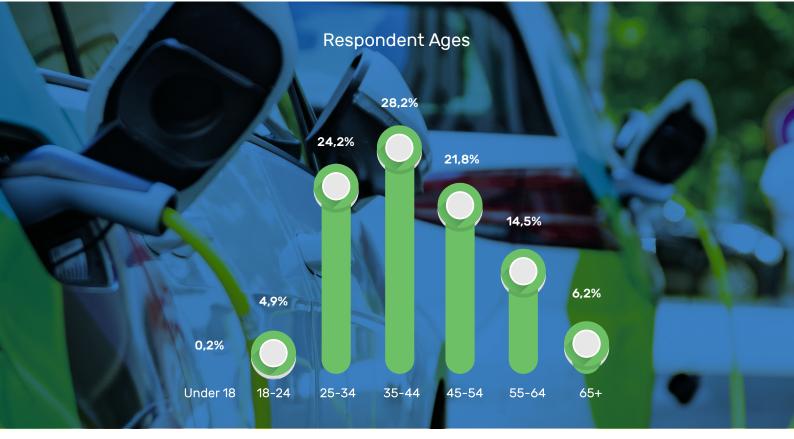
3,105

TOTAL RESPONSES WERE CAPTURED ACROSS AUTOTRADER TOUCH-POINTS BETWEEN AUGUST 2020 & SEPTEMBER 2020.

STUDY DEMOGRAPHICS

Respondent Gender Split





STUDY DEMOGRAPHICS



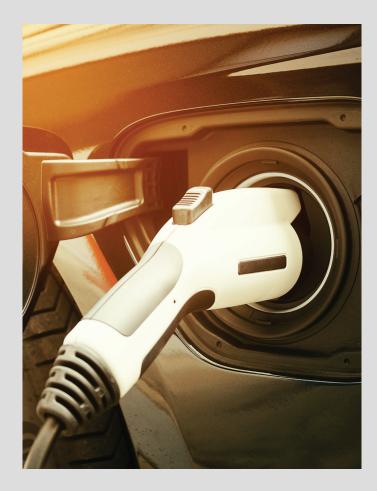
THOUGHT LEADERSHIP

George Mienie AutoTrader CEO Consumer search data reveals that there is demand for electric vehicles, however, the price of an electric vehicle, appears to be the biggest hurdle for the car buying consumer.

Based on current activity, South Africans are still a long way off on the adoption of electric vehicles, not because we don't want to own electric vehicles, but because of affordability. High import duties as well as the lack of government subsidies, make electric vehicles substantially more expensive than the average ICE (Internal combustion engine) vehicle. This places EVs out of the reach for many South Africans.

However, there are things we can do to address this challenge. As a nation, we do have the technological capabilities to manufacture and assemble our own electric vehicles. This would already significantly reduce the price of an EV.

In terms of the state of the automotive industry and its adoption of EVs, there are a few key things to consider and understand.



Charging infrastructure exists

Contrary to popular belief, motorists can drive from Johannesburg to Cape Town in a 3rd or even 2nd generation electric car with the ability to charge along the way. On the N1, N2, N3, and N4 there is no distance between charging stations larger than 200km.

Also, the industry currently has a drive to manufacture 60% of its cars on our roads locally, which in retrospect should be extended to EVs. The number of charging points per EV in South Africa is one of the highest in the world. To put that in perspective, internationally there are 25 cars per charging station. In South Africa there only 6 cars per charging station. If we could quadruple EVs on the roads in South Africa we would still not be at international ratios - There are just over 1 000 EVs on SA roads vs a fleet of over 10 million cars.

Electric vehicle range anxiety is an important factor to address

Older electric cars in South Africa had a range of only 100km. 2nd generation cars are able to travel up to 300km with the latest EV range of over 400km on a single charge. Despite this the public predominantly still suffers from "range anxiety" which is the fear that the EV battery will run out of charge before they can reach a suitable charging point or your destination. Until we as an industry address this misconception and inform consumers, the adoption of electric vehicles will be hindered.

Consumers and industry stakeholders need to think different

A mindshift needs to take place and is vital for adoption of EVs to take place. EVs need to be treated more like a smartphone than the traditional ICE motor vehicle. With EVs, "destination filling" no longer exists as charging takes place over night at off peak times. This is a lifestyle change just like the one we had moving from fixed line telephones to mobile phones.

Consumers also need to consider whether they need a "full" charge just to drive to work, probably not.

For industry stakeholders, consumer education is essential to bridge the gap between the perception of EVs versus the reality.

Summary

The automotive industry is incredibly important as it contributes almost +7% to South Africa's GDP. Unfortunately, the policy framework has not been able to keep up with the ever changing



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environment which has led to a dis-incentive on electric vehicles. EVs attract a 25% Import Tax while internal combustion engines (ICE) attract only 18%. This before other taxes which could bring import taxes and duties close to a staggering 50%. This directly impacts consumer financial expectations and is probably the foremost problem/ challenge.

We need to stop accepting the notion that infrastructure and other concerns are the problem, and as an industry start collaborating and taking accountability to work and provide solutions that will facilitate the adoption of electric vehicles.

The price / tax dis-incentive also affects the demand curve as the country's future is in the hands of Japan, China, India, and Europe. The more we wait, the steeper the adoption curve gets. Ultimately, their end game is our end game and therefore we are required to operate in conjunction with global changes. If the EU has a deadline on moving away from ICE to 100% EVs, what would happen to South Africa if we didn't act soon enough? 2 things come to mind:

1. If we don't move faster, our fleet of ICE vehicles will age.

This will force us to have to import as we wouldn't have enough time to train and build businesses and services around EVs. Imports directly and negatively impact the price of EVs, reducing consumer demand for EVs, further ageing the ICE fleet. The second hand ICE vehicle market will be buoyant, but in the long term this is bad for the consumer and economy.

2. The government can't control the rate of change

It's going to happen to us. We shouldn't be trying to control this beast, we need to ride the wave and as an industry mobilise to facilitate the change and not wait for it to happen to us. If we wait, it will cost more as the adoption curve steepens.

EVs are coming whether we like it or not and this report aims to assist industry stakeholders into having discourses which lead to the informed strategic mobilisation of actions to future-proof the industry and provide greener, cleaner and economically viable solutions to provide value to consumers and grow the industry.

George Mienie

THOUGHT LEADERSHIP

Ben Pullen Generation.e CEO

The WOW factor!

It's no secret, that we at Generation.ehavebeenconfident that electric vehicles will become the dominant technoloav around the world within the next decade. We've believed this since we launched the first electric vehicle road trip (EVRT) in Europe in 2015 - in that year there were 450.000 electric vehicles sold . Since then, we've launched the EVRT, along with our 'Smarter Mobility' summits in other parts of the world including in the Middle East with our United Arab Emirates events, and in 2019 we launched in Africa with our South Africa based events – as a point of reference by 2019 there were 2.1 million electric vehicles sold. that's a growth of over 250% in just 4 years! If the same growth rate continues during the next 4 vears, we would see around 9.5 million electric vehicles sold in the year 2024. Bloomberg New Energy Finance forecasts 8.5m electric vehicles will be sold in 2025).

One of the sometimes overlooked reasons that we're so bullish on electric vehicles is due to the WOW feeling when we first stepped into an EV. This is literally the silence of power. Even modest models catapult the driver with the instant torque delivered by electric engines. Moreover, the safety feeling is enhanced thanks to batteries laid down throughout the car floor enabling a low centre of gravity. If you haven't tried an EV yet, you'll have to take my word for granted. My tip? Go and book a test drive with an electric vehicle as soon as possible... it's incredible! Or you can also watch one of the AutoTrader reviews.

We are pleased to notice that EV drivers and riders in general share the same positive opinion about EVs. Regardless of the environmental benefits the discussions and around the cost, the range or the charging time, people love to drive electric vehicles and we expect this experience to keep pushing up the demand. Both existing and new vehicle manufacturers - Hyundai, Nissan or BMW or new players such as BYD, Tesla, or BAIC - have heard the call for more EV models. Around 250 electric vehicle models are available around the world today, with over 500 different models set to be available by 2022!

However, in addition to rely on our general experiences of working with 1000s of people across the world, I know we do need to collect data from active car buyers who have no particular interest in electric vehicles other than that they are looking to buy a car. That is why this survey with AutoTrader is so important. We need data, numbers that show clearly what the people of South Africa really think when it comes to electric vehicles. This will help business and government to build policy and plan their strategy for the years to come.

The wider factors driving electric vehicle demand

On top of the performance benefits of electric vehicles, there is a bigger picture here. Wider factors that drive the trend towards electric vehicles. Whilst I won't go into too many details, I will leave it here as food for thought:

- Reduction of oil imports

 which is South Africa's largest import cost standing at USD 11bn in 2017
- The reduction of air pollution which is harmful to human health – Johannesburg was ranked worst for air quality in South Africa



- 3. The reduction of greenhouse gas emissions – currently in South Africa road transport accounts for 94% of transport greenhouse gas emissions
- 4. The potential to drive electricity security through the addition of electric vehicles which act as creativeformsofdemand, and through the creation of new investments and business opportunities to roll out and monetise charging stations. This can drive investment grid into development as well and new renewable energy sources of electricity.

Page

Furthermore, the advent of vehicle to grid technology (V2G) - which is a bi-directional flow of electricity meaning that the car can both give and receive energy - results in the ability to power a household with the EV battery in case of grid issues. Take that one step further and when adding tens of thousands of electric vehicles to the gird, you end up with utility scale battery storage which can help to balance supply and demand and remove the issues of load shedding due to power supply issues.

The Summary

I think we can all agree, the writing is on the wall for mass adoption of electric vehicles. This survey highlights that car buyer perceptions are leaning towards electric vehicle use – whether new or used cars. I often hear the words '4th Industrial Revolution'... well I think there is a clear industrial revolution taking place right now with electrification of cars, bikes, boats, vans, trucks, and planes. The benefits of this revolution will be taken by those that embrace, plan, and execute a world with electric vehicles.



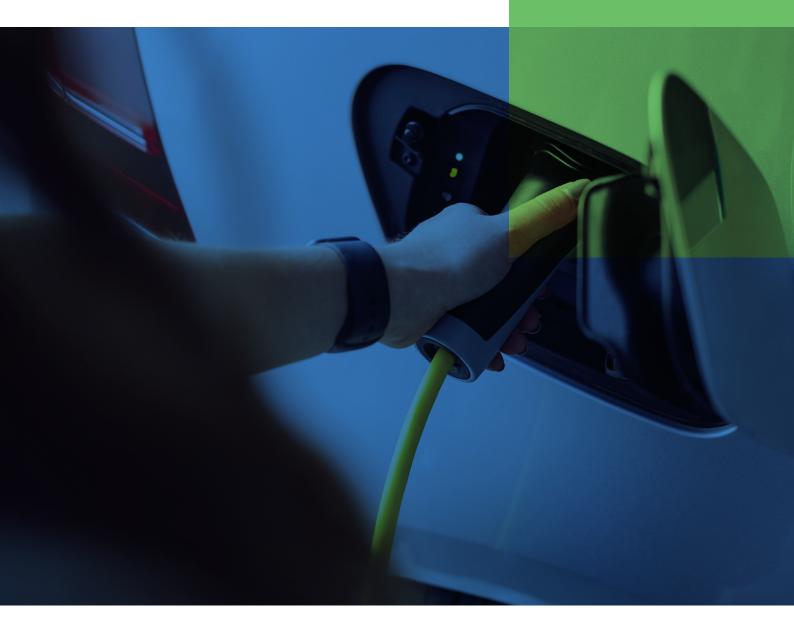
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SURVEY RESULTS & INSIGHTS



ELECTRIC VEHICLE PENETRATION

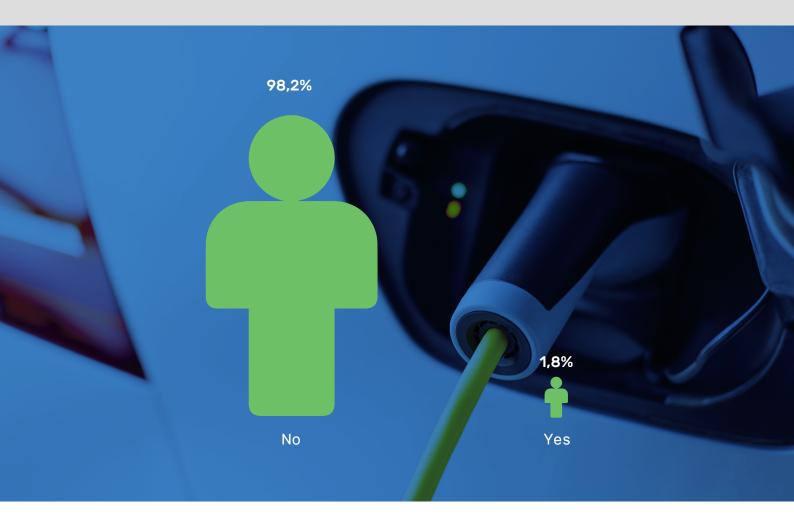
Electric Vehicle penetration in the form of ownership and driving opportunities set the stage for understanding what portion of in-market car shoppers had experienced an electric vehicle and therefore were exposed to the benefits and potential limitations of electric mobility in South Africa.



HAVE YOU EVER OWNED AN ELECTRIC VEHICLE?

One of the largest barriers to entry of any new technology is the cost of production in the early stages as a result of research and development costs. Electric Vehicles in South Africa have had the added disadvantage of incurring substantial taxes (ICE imports 18% vs EV Imports 25%) which has aided in driving the cost of an EV to more than 2X that of the average price of a new ICE vehicle in South Africa. Besides the need to reduce high taxes on EVs through tax incentives, the cost of EVs will begin reducing in the coming years with:

- An increase in the rate of adoption
- Technology innovation, particularly battery technology
- Local manufacturing

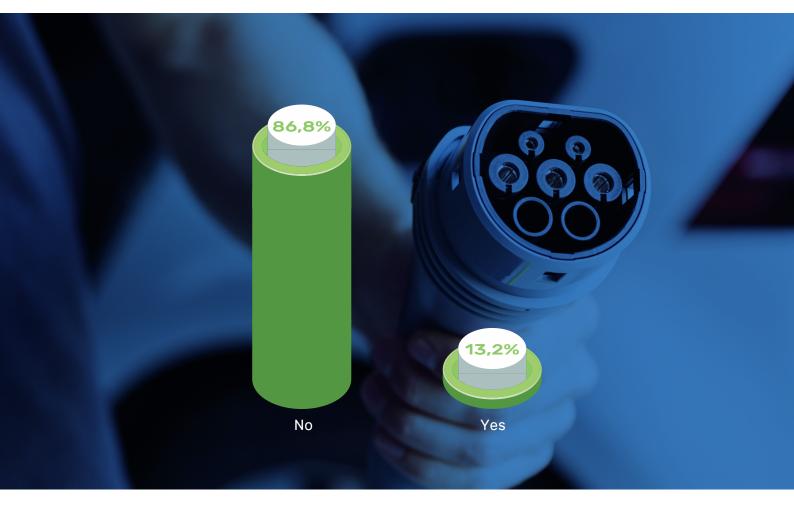


HAVE YOU EVER DRIVEN AN ELECTRIC VEHICLE?

One of the most common responses of people who have either driven or have been driven in an electric vehicle, is the instant torque and power of the vehicle. Actually driving one is a great way to educate consumers about electric vehicles.

87%

of survey respondents stated that they had never driven an electric vehicle.



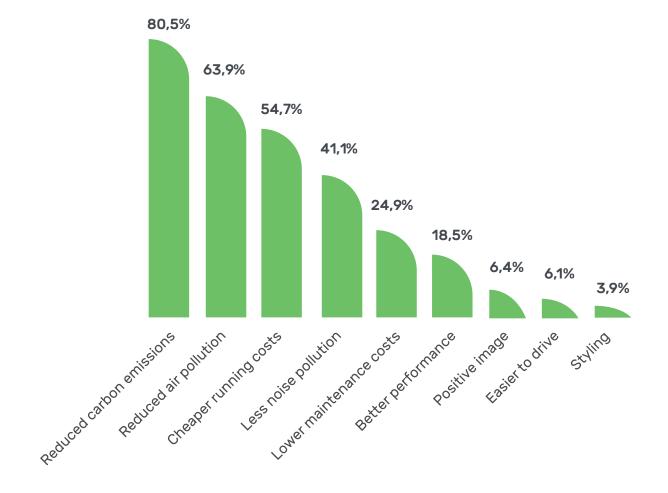
ELECTRIC VEHICLE CONSUMER PERCEPTION

Consumer perception aims to understand what consumers expect and demand from electric vehicles as well as give insight into what consumers believe are the advantages and disadvantages of an EV.



WHAT ARE THE ADVANTAGES OF AN ELECTRIC VEHICLE?

Consumers were asked what the 3 main advantages of electric vehicles are, to understand what attributes were most important. Options ranged from pricing, sustainable environmental concerns, performance to driveability. Interestingly, EV education ranked in the top 5 most important answers. However, environmental factors ranked at the top of consumers stated advantages.



52.7% of over 55's felt that less noise pollution was more important vs. 36.6% from respondents aged 18 - 44.



18 - 34 year olds felt strong performance was more of an advantage than other age groups.

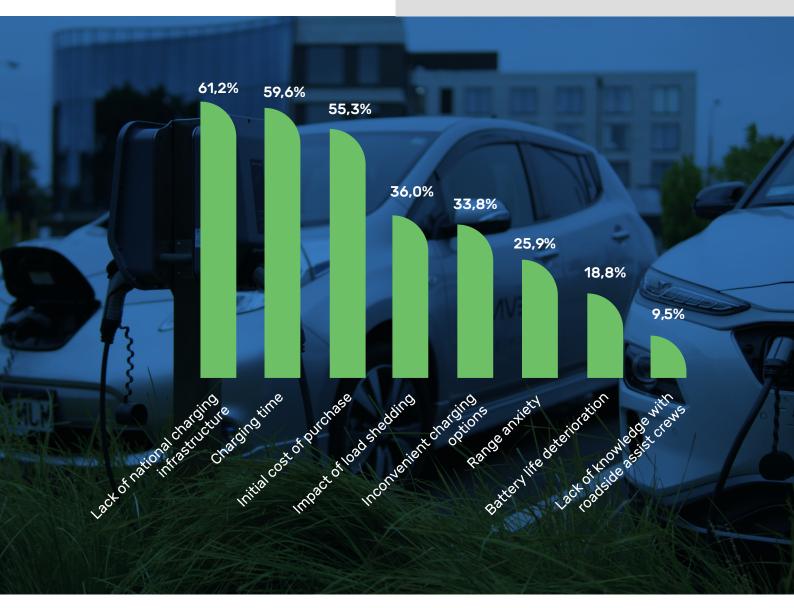
11.1% of respondents aged 18 - 24 rated easier to drive as more of an advantage compared to other age groups.



Female respondents were 2x more concerned about styling than male respondents.

WHAT ARE THE DISADVANTAGES OF AN ELECTRIC VEHICLE?

Just as important as understanding the advantages that consumers find in electric vehicles, respondents were also asked what they believed to be the disadvantages of electric vehicles. Options ranged from charging, macro-economic factors to understanding of technology. While charging time has been cited as the second biggest disadvantage of an EV, this may be as a result of the need for behaviour change in "destination filling" as opposed to regular charging, similar to a mobile phone.



WHAT ARE THE ADVANTAGES OF AN ELECTRIC VEHICLE?



64.9% of over 65's rated the initial cost of purchase of an EV as a disadvantage whereas only 47.7% of 18 - 34 saw it as a disadvantage.

Over 55's are not as worried about the impact of load shedding compared younger people.

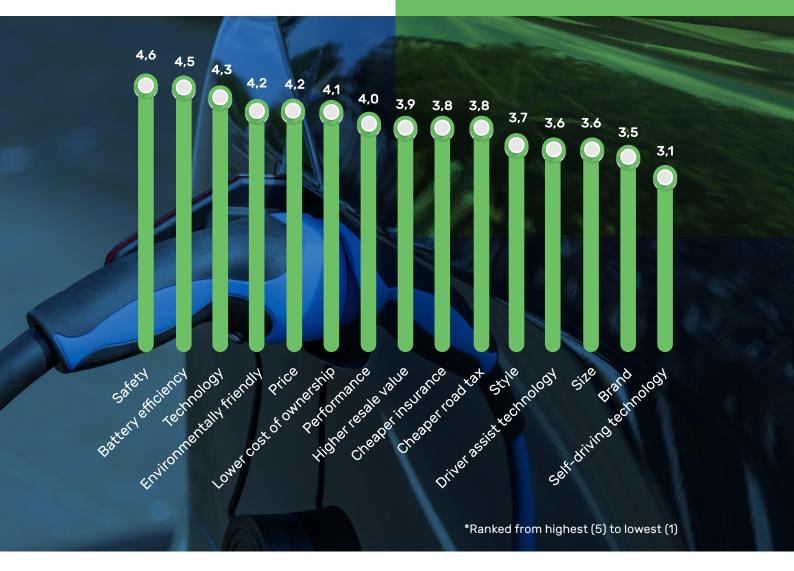
Younger people (18 - 34) are less worried about range anxiety. 54% of females were concerned about impact of load shedding whilst only 32% male respondents had a similar concerns.

HOW INFLUENTIAL WOULD THE FOLLOWING FACTORS BE WHEN BUYING AN ELECTRIC VEHICLE?

Understanding the factors that impact purchasing an electric vehicle in South Africa is critical for South African OEM's from a product specification and marketing point of view. Respondents were asked which factors were most influential in the purchasing consideration of an electric vehicle.

78%

of females rated safety as extremely important compared to 67% of male respondents.

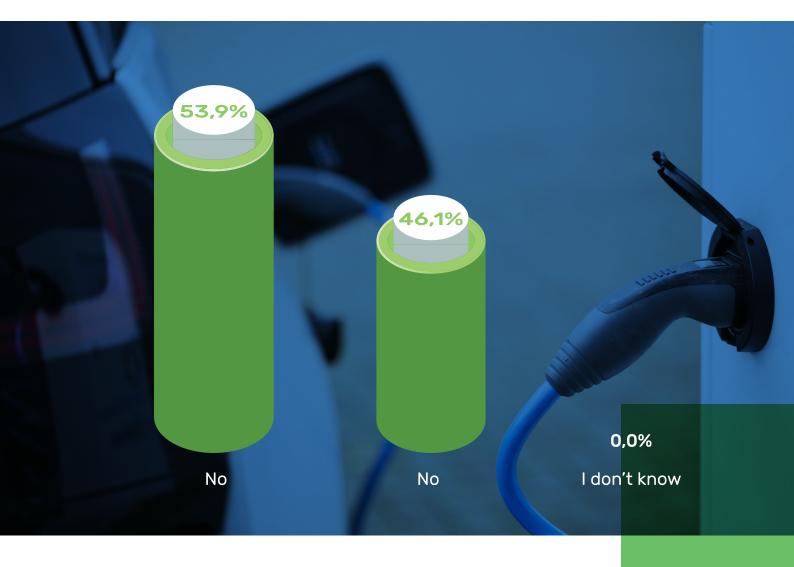


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DO YOU THINK AN ELECTRIC VEHICLE WOULD DEPRECIATE SLOWER THAN A PETROL/DIESEL VEHICLE?

Resale value is affected by a wide range of factors including live market demand and supply. Historically, some makes have held a relatively good resale value while others depreciate much quicker. Consumers were asked about their perception on how fast electric vehicles may depreciate vs current ICE vehicles. It remains to be seen the world over whether EVs hold their value better than ICE vehicles, given:

- EVs have fewer moving parts
- Longer service intervals
- "Over the air" software updates

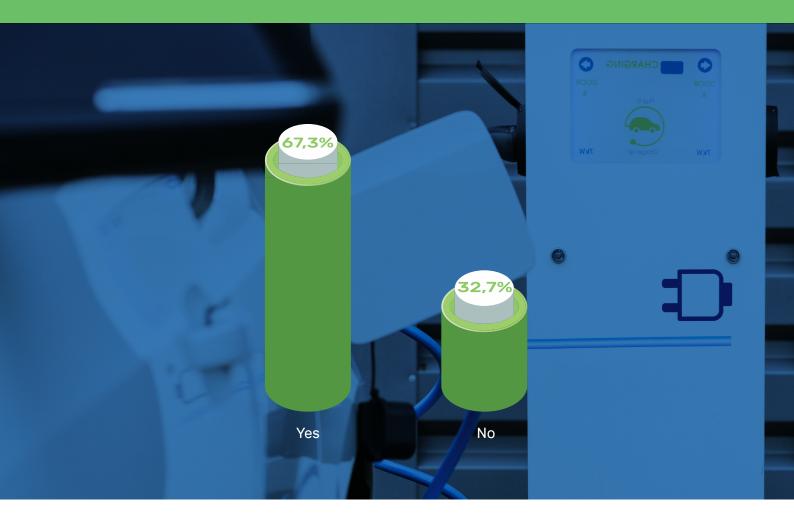


ASSUMING THAT THE RUNNING COSTS OF AN ELECTRIC VEHICLE ARE LESS THAN A PETROL/ DIESEL VEHICLE, WOULD YOU PAY MORE FOR AN ELECTRIC VEHICLE?

Consumers are sometimes willing to pay a premium on vehicles based on various attributes such as scarcity, added features, perceived reliability and technology. Respondents were asked if assuming they knew that running costs for an EV were lower than a petrol/diesel vehicle, would they be willing to pay more up front?

18 - 34 year olds

are happier to pay more upfront for an EV (assuming reduced maintenance costs) compared to 55-64 year olds.



ELECTRIC VEHICLE CONSUMER EXPECTATIONS

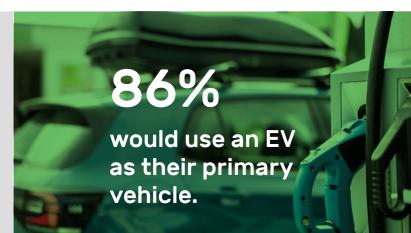
This section aims to understand what consumers expect and demand from electric vehicles in order for them to consider buying one. Respondents were asked questions around range, charging expectations and frequency of use.

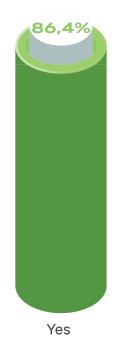




IF YOU WERE TO BUY AN ELECTRIC VEHICLE, WOULD YOU USE IT AS YOUR PRIMARY VEHICLE?

Primary vehicle use shows the opportunity for mass adoption rather than a secondary "Sunday drive" vehicle. While the answer to this question was an overwhelming yes for South Africa, it is interestingly a lot higher than other countries.



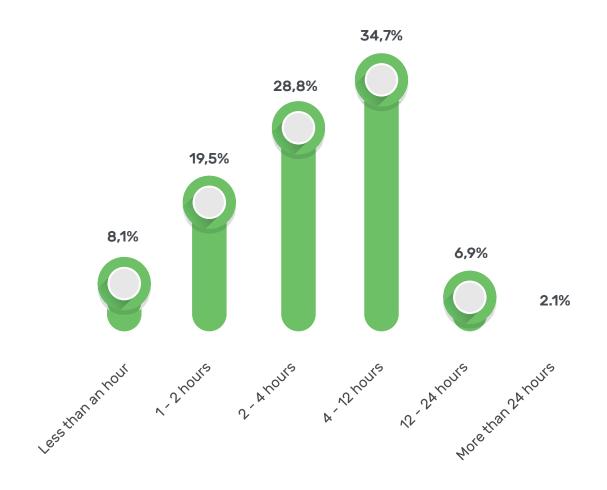




HOW MANY HOURS WOULD YOU EXPECT IT TO TAKE TO FULLY CHARGE AN ELECTRIC VEHICLE WHILST PARKED AT YOUR HOME?

The time it takes to charge an electric vehicle depends heavily on the kilowatt output of the supply point. Consumers were asked how long they believe it currently takes to fully charge an EC at home.





Almost all consumers (91%) currently believe it takes an EV less than 12 hours to charge.

HOW MANY HOURS SHOULD IT TAKE TO FULLY CHARGE AN ELECTRIC VEHICLE WHILST PARKED AT YOUR HOME FOR YOU TO CONSIDER BUYING ONE?

Respondents were asked how long it should take to fully charge and electric vehicle for them to consider buying one -This is important, as the ability to address consumer aspirations will assist to increase the rate of adoption.

35 - 54 year olds

want EVs to charge at home within 4 hours in order to consider buying one.

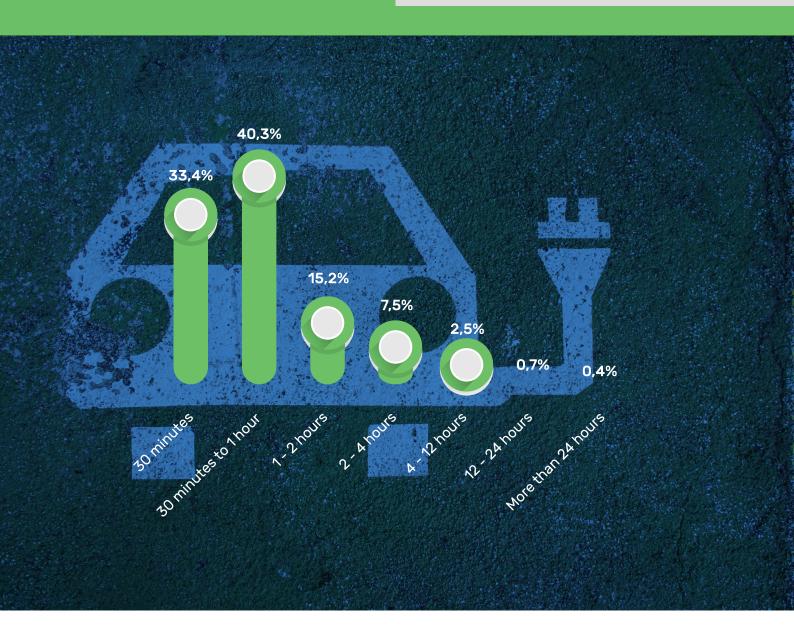


HOW MANY HOURS WOULD YOU EXPECT IT TO TAKE TO FULLY CHARGE AN ELECTRIC VEHICLE AT A PUBLIC FAST-CHARGING STATION?

Quick charging at filling stations now allows for a very powerful terminal to charge an electrical battery to 80% in half an hour. Consumers were asked how long they currently believe it takes to fully charge an EV at a public fast-charging station.

74%

of respondents expect an EV to be charged in under 1 hour at a public fast charging station.

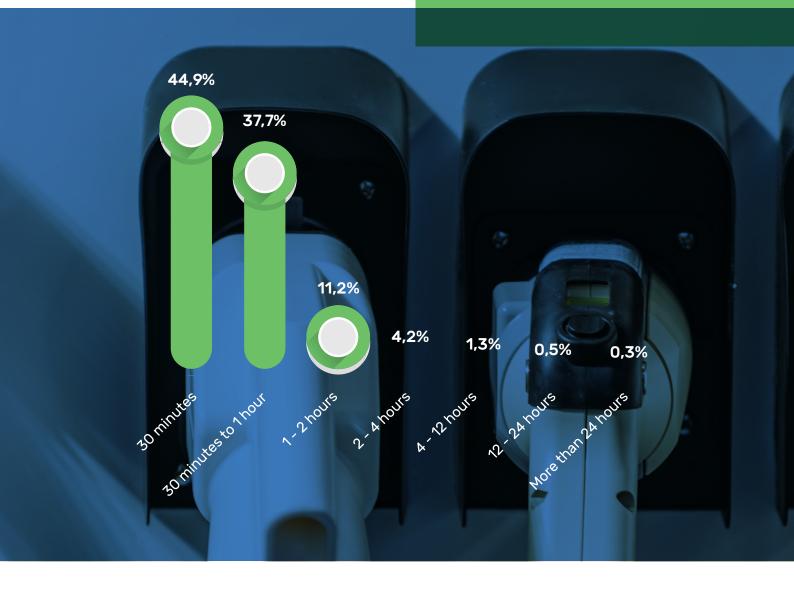


HOW LONG SHOULD IT TAKE TO FULLY CHARGE AN ELECTRIC VEHICLE AT A PUBLIC FAST-CHARGING STATION, FOR YOU TO CONSIDER BUYING ONE?

More consumers stated that they would require faster charging times at public-charging stations in order to consider buying an electric vehicle.

83%

of respondents stated that if an EV could charge in under 1 hour at a fast charging station, they would consider buying one.



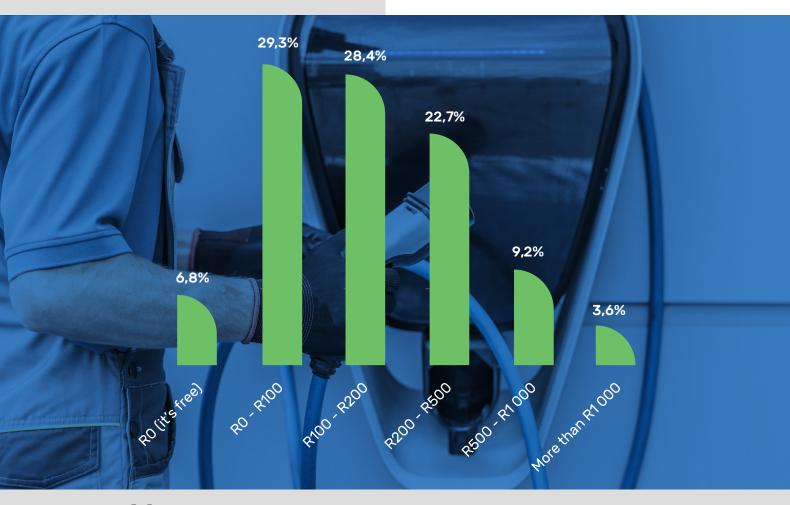
HOW MUCH DO YOU THINK IT COSTS TO FULLY CHARGE AN ELECTRIC VEHICLE?

In South Africa, refueling your ICE vehicle costs about cR910.80 (average 60ltrs of 95 octane in GP at R15.18p/I). On average, a c60 litre tank of ICE fuel will take you about c600km (10ltrs per 100km). Therefore in comparison, the cost per km is:

- · cR1.52 per km for an ICE vehicle
- cR0.23 per km for an electric vehicle

A fully charged iPace (with a 90kWh battery) will take you c400km (on an urban cycle with AC on) and costs approximately 100cents per kWh to charge in South Africa bringing a full charge to cR90. Therefore, it is c7X cheaper to drive an electric car from a fuel cost point of view, not taking into account maintenance costs which for an EV will also be very low.

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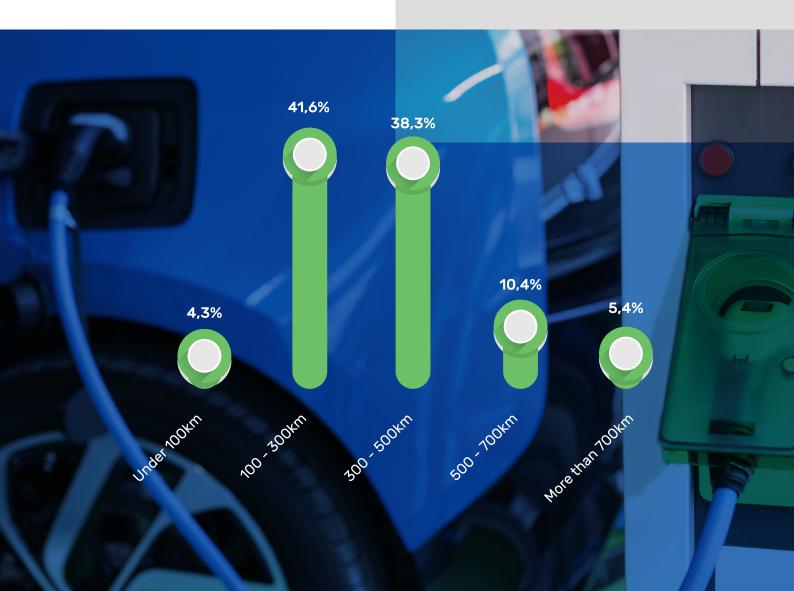


53% of female respondents believe it costs up to R200 to fully charge an EV at home compared to 67% of males.

HOW FAR DO YOU THINK THE AVERAGE ELECTRIC VEHICLE CAN TRAVEL ON A SINGLE CHARGE?

Battery technology is on an incredible growth path and is predicted to continue exponentially into the future. Manufacturers now produce EVs that go further than 640km on a single charge (Tesla Model S Long Range). In South Africa, available EVs are providing consumers with vehicles that can travel up to 470km on a single charge (Jaguar I-Pace on WLTP cycle).

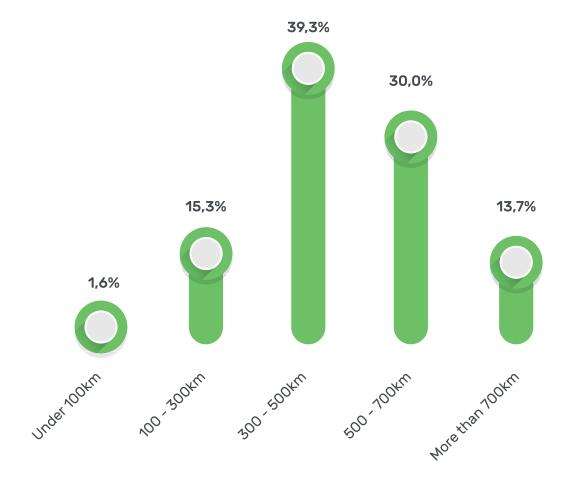
Age 55+ are more realistic about range (300km - 500km) compared to younger generations under 35 years old (less than 300km).



HOW FAR WOULD AN ELECTRIC VEHICLE NEED TO TRAVEL ON A SINGLE CHARGE FOR YOU TO CONSIDER BUYING ONE?

Consumers want an additional 200km of range in order to consider buying an Electric Vehicle.





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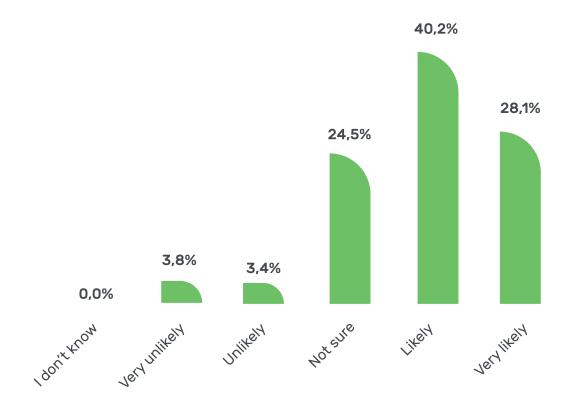
ELECTRIC VEHICLE PURCHASE INTENT

While consumer perception vs electric vehicle reality is important, this section aims to understand the timelines, propensity to spend and other circumstances for consumers to consider buying an electric vehicle in the future.



HOW LIKELY ARE YOU TO CONSIDER BUYING AN ELECTRIC VEHICLE IN THE FUTURE?

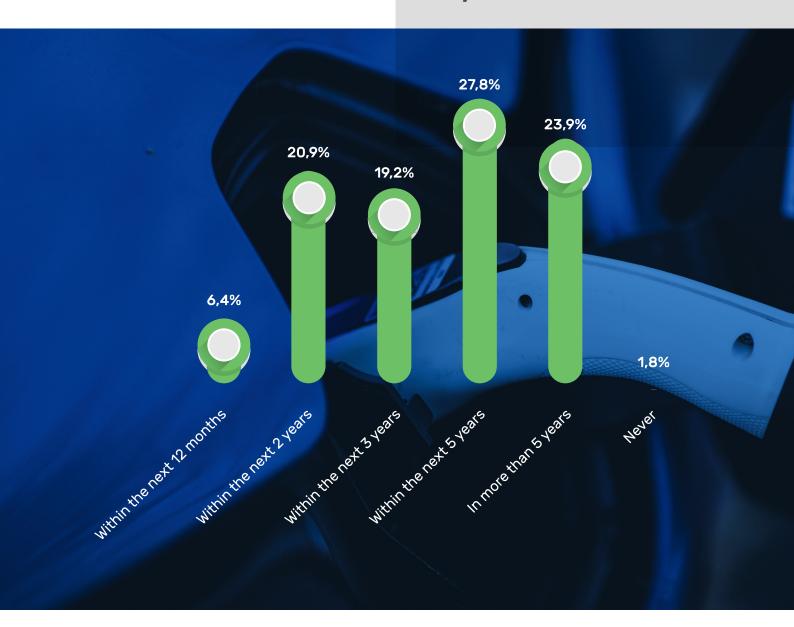
Most consumers appear to already be in the frame of mind of owning an EV in the future. Manufacturers and Governments have done a great job in driving clean energy as a principle the world over. While it is clear from the study that South African consumers have learnt from international markets, locally there is a long road ahead when it comes to incentives and EV charging infrastructure. Once incentives and infrastructure are addressed, the big differentiator is education and providing consumers with the necessary knowledge to inform their transition into the use of an electric vehicle.



WHEN DO YOU THINK YOU WOULD BUY AN ELECTRIC VEHICLE?

Following on from the previous question, respondents were asked when they would consider purchasing an electric vehicle to better understand future demand for EVs in South Africa. It is encouraging to see that most South Africans expect to purchase an EV by 2027.

Age 18 - 34 are more likelytopurchaseanEV after 5 years whereas age +55 are thinking about purchasing an EV within the next 3 years.



UP TO HOW MUCH WOULD YOU WILLINGLY SPEND ON AN ELECTRIC VEHICLE?

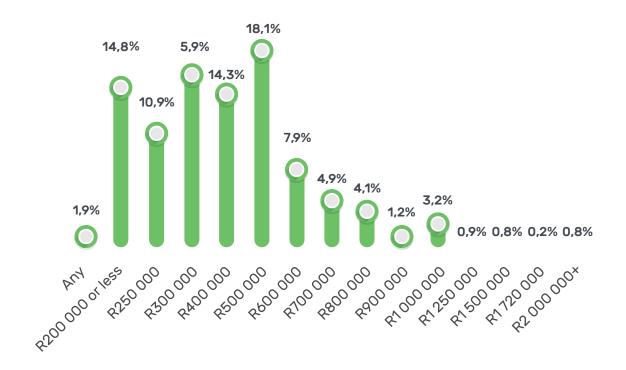
Survey respondents were asked what was the leading influencer in the purchasing consideration of an electric vehicle revealing that price was one of the most cited influencers. As a result, understanding what they were willing to spend was important. Interestingly, the study shows that electric vehicles in South Africa are out of reach for $\frac{2}{3}$ of consumers.

249/0 of female respondents are willing to spend more than

R500K on an EV.

47%

male respondents are willing to spend more than R500k on and EV.



WOULD YOU CONSIDER BUYING A USED ELECTRIC VEHICLE OVER A NEW ELECTRIC VEHICLE?

With the entry price for a new EV being higher than what most consumers are willing to spend, respondents were asked if they would consider a used electric vehicle and why. There was no significant skew to new or used.



Out of all the age groups, only one age category preferred a brand new EV (45 - 54). The balance of the age categories were skewed to consider used.

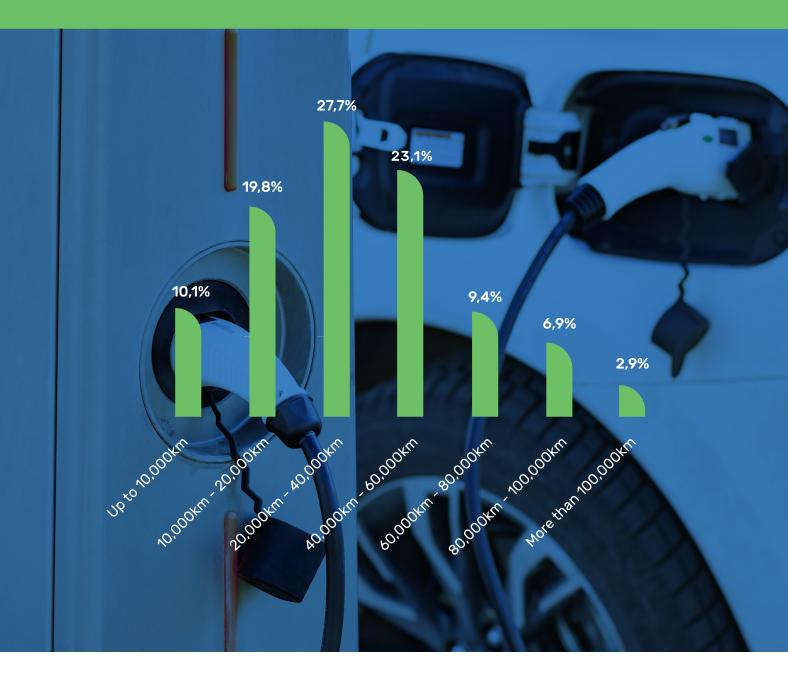
No to used - 52%

Yes to used - 48%

WHAT IS THE MAXIMUM MILEAGE YOU WOULD BE **OKAY WITH ON A USED ELECTRIC VEHICLE?**

willing to consider a used electric 60 000km as a sharp drop off shows vehicle, were asked what the in the study. maximum mileage was they would be okay with. Interestingly, consumers

Respondents who stated they are seem to be against vehicles over



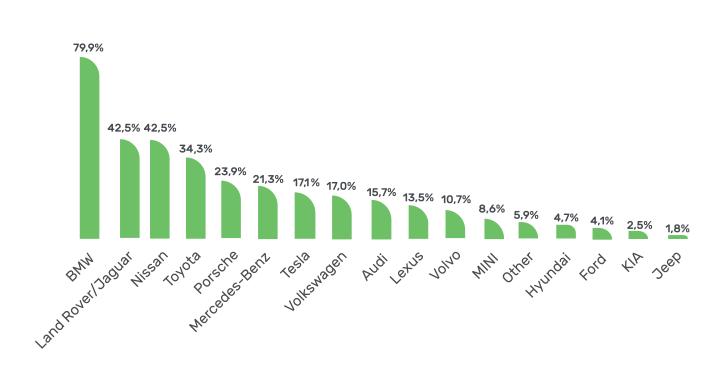
ELECTRIC VEHICLE AWARENESS AND TRUST

To understand manufacturer perceptions and understanding, the questions in this section aim to understand where consumers have benchmarked manufacturers from an availability and trust perspective.



WHICH OF THE FOLLOWING BRANDS HAVE LAUNCHED AN ELECTRIC VEHICLE IN SOUTH AFRICA?

To better understand how effective South African OEMs have been at communicating their EV product range, survey respondents were asked which brands had electric vehicles in the country. Interestingly, Tesla has more EV brand recognition in SA than established brands such as Volkswagen and Mini which either have EV products or who's EVs are imminent on SA roads.

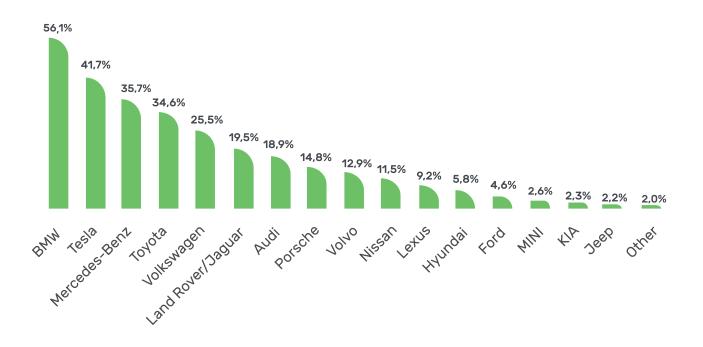


WHICH 3 BRANDS WOULD YOU TRUST THE MOST AS AN ELECTRIC VEHICLE MANUFACTURER?





Females selected BMW as the most trusted EV brand with Mercedes-Benz selected second.



CONCLUSION

As automotive manufacturers introduce more electric vehicle options to the South African public, other industry stakeholders need to do their part to secure the future of the industry and not expect governments to facilitate the change. Instead, marketplaces, dealers, manufacturers and industry bodies must take it upon themselves to educate, promote, and adopt activities to allow consumers to experience electric vehicles.

Interesting insights and findings came out of this study which can be used to assist in these activities with special attention needed in creating awareness & education campaigns that address the perceptions, expectations and intent of South African consumers.

It's evident that South Africa is still in the starting blocks when it comes to EV adoption with only 2% of consumers owning an EV and 13% having driven one. Misconceptions around EVs need to be considered when driving consumer education to bridge the gap between perception and reality. With 68,31% of respondents in the survey likely to purchase an electric vehicle in the future, it is clear the demand exists.

With this information, AutoTrader and Generation.e welcome industry stakeholders to work in collaboration to ensure that South Africa embraces electric mobility and provides consumers with automotive solutions that improve lives.