



Innovation
that excites

NISSAN FUTURES

The Nissan Social Index



**Consumer Attitudes to
Autonomous Drive**

Future... a small word with a huge number of theories, possibilities and opportunities revolving all around it

People have been dreaming about what the future of the car would look like since we moved from four legs to four wheels as our primary mode of transport. From jet-powered speed racers to flying DeLoreans, from cartoon rockets to the talking corvette with a mind of its own...many have dreamed of what this breakthrough intelligent vehicle would look like, what it could do, and perhaps most importantly, what it would mean for us as drivers, consumers and human beings.

The dreaming at Nissan began over a decade ago, just after the turn of the millennium, when a team of Research & Development engineers were tasked with a new project to create a vehicle that can drive itself. It must have sounded like science fiction. But then, before the invention of the car, so did the ability to travel from town to town in a matter of minutes.

Today, as we are well aware, the stuff of science fiction is fast becoming solid scientific fact. From the quantum leaps of Quantum Physics to the discovery of ultra-light, ultra-tough new materials such as graphene, the pace of change in scientific discovery is transforming our world.

This is why we are pleased to unveil the results of what we believe is the most comprehensive analysis of attitudes towards the future of driving that has ever been undertaken.

The future of mobility is one of immense possibility, innovation and excitement for all, and that's why we believe this study is so important. It marks an important snapshot in time that distils the interest, excitement, and questions that the European consumer of the early 21st century has about one of the world's most ground-breaking technological advances.

The results of this report will continue to help us shape the way we educate consumers about Nissan Intelligent Mobility – our vision of the future which encompasses the way people drive, how they power their cars, and how our inventions will integrate into the wider world.

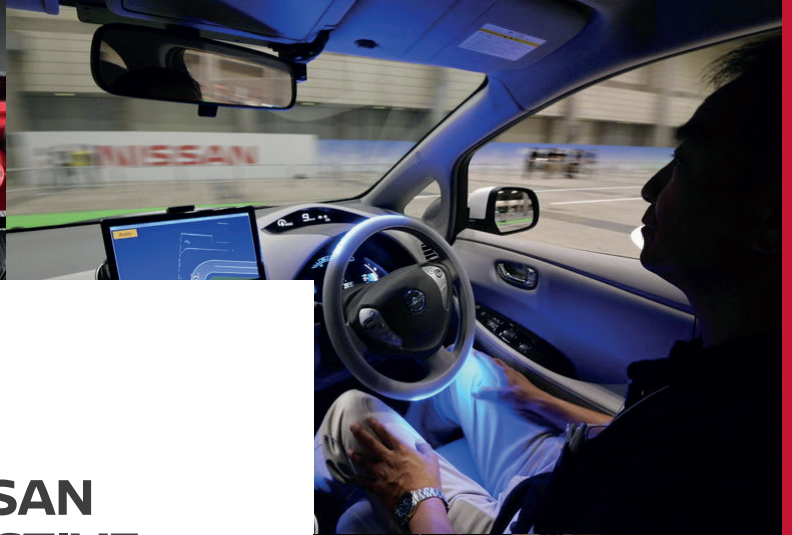
We hope you find it insightful and interesting.



Paul Willcox
Chairman, Nissan Europe

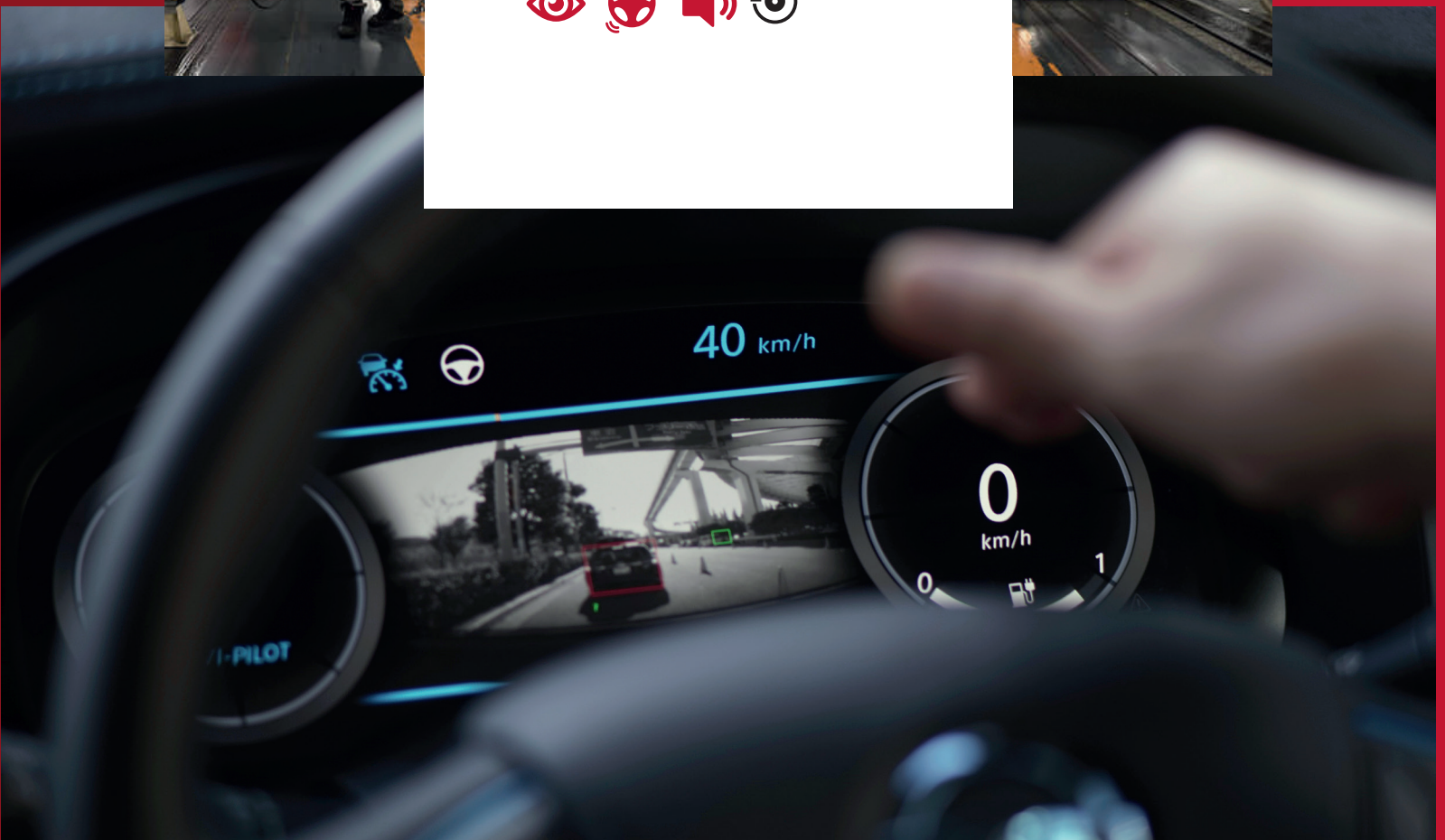
“Now that’s Nissan
Intelligent Mobility.”





THE NISSAN PERSPECTIVE INTELLIGENT MOBILITY

At Nissan, we are focused on providing accessible autonomous drive technologies that will help to build a cleaner, safer and smarter future for everyone.



As a responsible, progressive automaker, we're not only interested in making real improvements to people's lives now, but we remain in pursuit of a cleaner, safer world for future generations to come. We believe a zero emission zero fatality future is an achievable goal, not a pipedream.

To achieve this goal, we're focused on three core areas of innovation: how cars are powered, how they are integrated into society and how they are driven. This is what we at Nissan call Nissan Intelligent Mobility – an approach to designing and building cars that is our roadmap for the future. A future where driving is intelligent.

Through Nissan Intelligent Mobility, we are building a better future for people everywhere. A future that is distinctly more confident, more exciting and more connected. A future that delivers on our promise of Innovation and Excitement for Everyone.

The benefits of this Intelligent Driving vision are clear:



Improving safety by helping the driver to see, think, and react fast



Improving the driving experience through increased safety, control and comfort

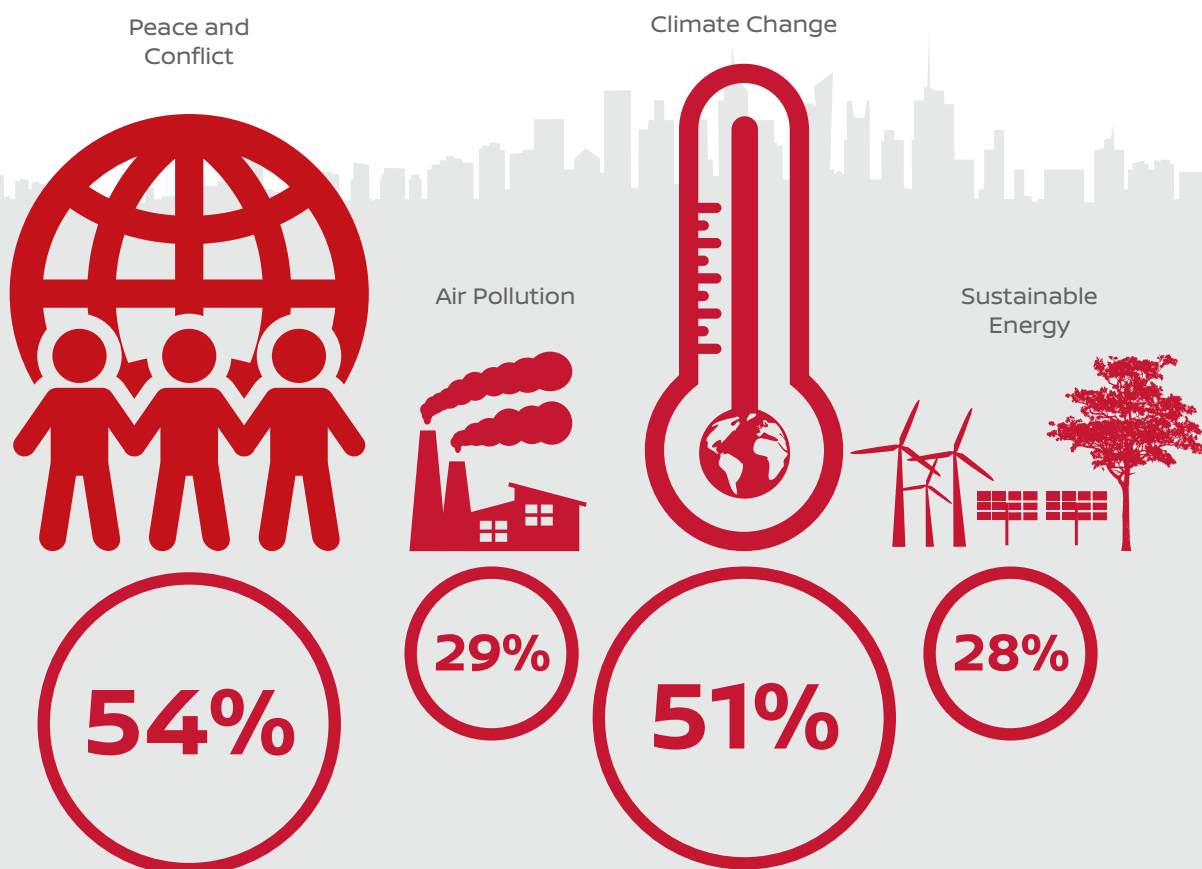


Improving access by ensuring everyone can benefit from these technologies

THE ROLE OF TECHNOLOGY AND INNOVATION IN TODAY'S SOCIETY

There is no question that the pace of innovation and change is moving more quickly than at any other time in our history. Innovations and technology that were considered science fiction just 20 years ago have now become the norm of everyday life, from video calling, to connected devices that monitor and optimise our health, to green and renewable energy sources powering some of our cities. These technologies have changed the way we communicate, manage our well-being and engage with society. They have also shifted our expectations about what is possible, both now and in the not too distant future.

So what will the world look like in 20 to 30 years' time? To answer that question clearly, first we must explore how people view the role of technology and innovation in today's society. Our research found that for Europeans – from the UK, France, Italy, Germany, Spain and Norway – the biggest challenges our society faces in the decades to come are peace and conflict (54%), climate change (51%), air pollution (29%), and sustainable energy (28%). Each of these challenges speak to the need for stakeholders to focus on investing in and developing innovations that build a sustainable future, for the environment, for our cities and most importantly, for our people.



“We are working at the heart, the guts of the core technology and bringing insights and the kind of understanding that we have about human practices and human experience right into the fundamental design of the system.”

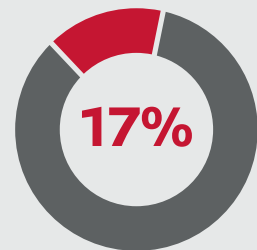
Melissa Cefkin

Principal Scientist and Design Anthropologist, Nissan Research Center, Silicon Valley

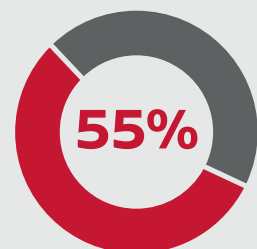


The innovations of the future that will address these challenges are expected to come from the ground up: more than half (55%) of Europeans expect start-ups and entrepreneurs to lead the way, signalling a belief that agility is more important than scale. The French (63%) and Spanish (60%) have the strongest belief in start-ups and entrepreneurs to lead the way. Interestingly, just 17 percent say they expect national governments to develop the best innovations of the future.

Europeans that believe Governments to lead the way



Europeans that believe Start-ups & Entrepreneurs to lead the way

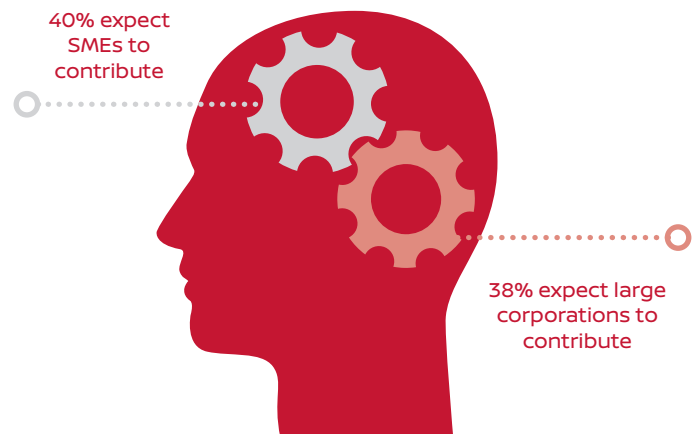


Developing innovations

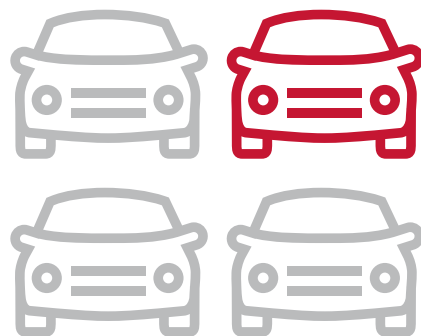
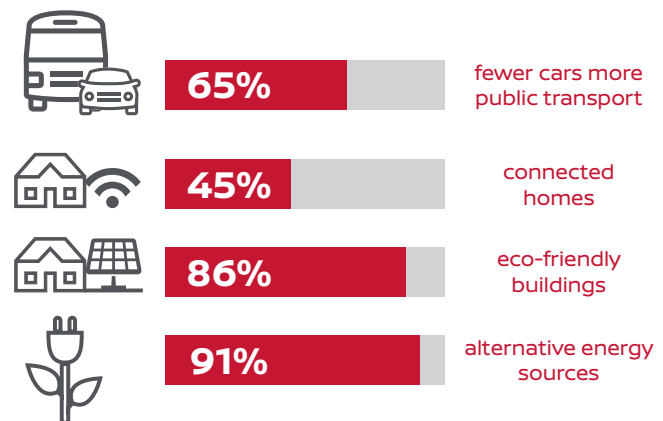
Still, small and medium sized business (40%) and large corporations (38%) are expected to play a role in developing these innovations to improve the way we live, particularly those involved in the medical (61%), technology (57%), or energy industries (50%). All of which points to a future that is more sustainable, responsible and progressive ...and the research shows that it's a future that Europeans are excited about.

They look forward to a world where there are more alternative energy sources developed (91%), recycled materials being used in more innovative ways (89%), more eco-friendly buildings built (86%), and fewer cars with more public transport (65%). In fact, nearly half (45%) are excited by connected homes, a concept that is fairly new to society but one that is on the rise both in terms of awareness and adoption.

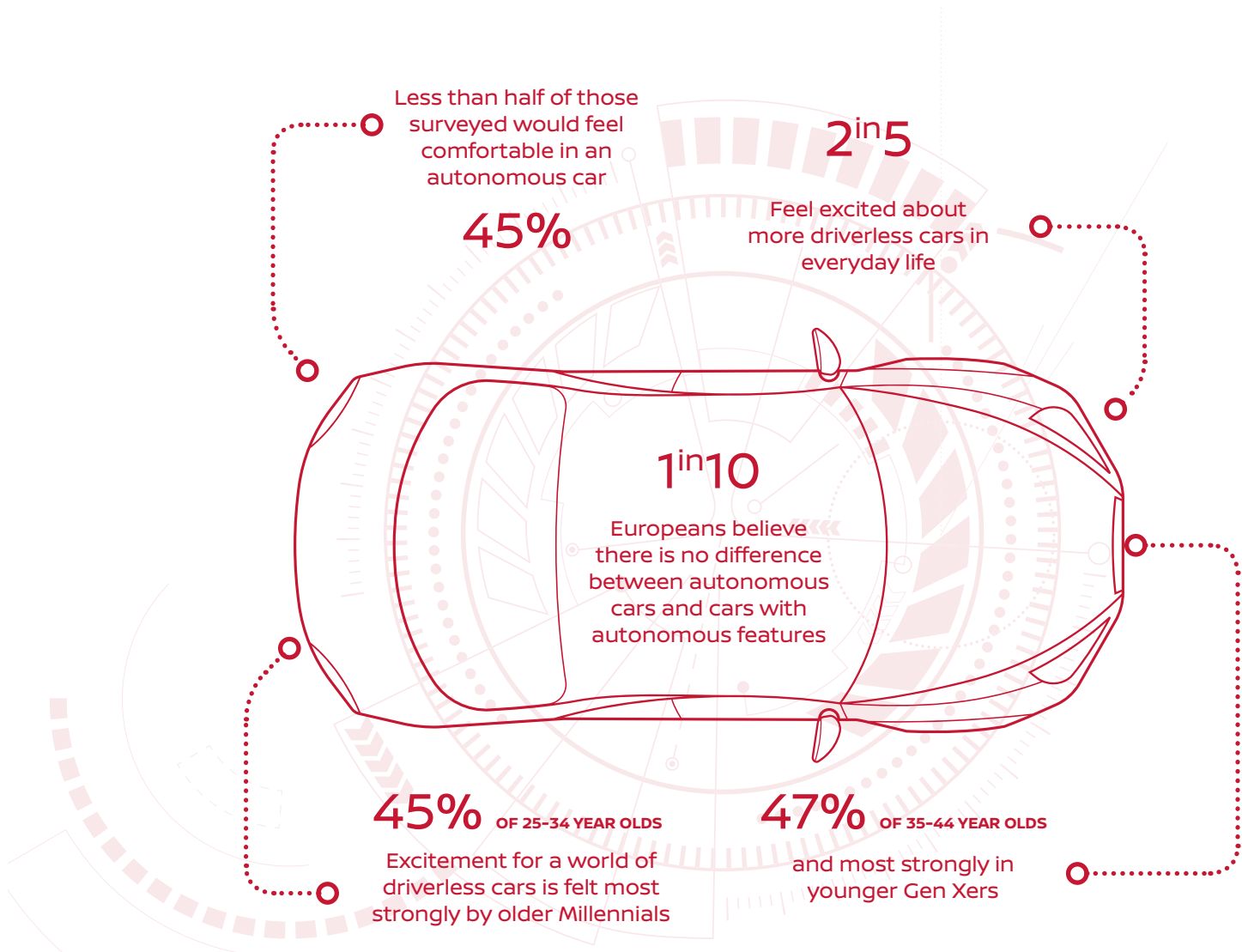
But what about innovations in driving technology? While only one in four (26%) of Europeans said they expect the auto industry to deliver innovations to improve the way we live, over the last several years the industry has begun to develop and integrate technologies that make cars not only more energy efficient, but also more intelligent. These innovations signal a recognition of the role the industry has to play in working towards a smarter and more sustainable future.



% of Europeans are excited by:



Expect the auto industry to deliver innovations to improve the way we live



For many stakeholders within the auto industry, that future is one in which driving is more autonomous. And while the industry can see this future on the horizon, for the everyday consumer the concept of autonomous driving, or driverless cars, is one they are still learning about and growing comfortable with. Less than half of those surveyed (45%) admitted they would feel comfortable riding in an autonomous car. And while comfort levels with autonomous cars is relatively low among respondents, nearly two in five (37%) admitted they are excited about the prospect of more driverless cars in everyday life. Excitement for a world of driverless cars is felt most strongly by older Millennials (45% of 25-34 year-olds) and younger Gen Xers (47% of 35-44 year-olds). Additionally, consumers living in Norway (46%) are most excited by a society with more driverless cars.

The results show that, as the auto industry continues to innovate, it is essential to communicate and ensure everyday consumers are fully educated about how these changes impact not only the cars they drive, but also how those cars integrate into an increasingly connected world. Indeed, our research points to a need for increased communication and education on the both the concept of autonomous cars as well as their innovations, from laying the groundwork of ideas to realising their potential.

A NEW DRIVING EXPERIENCE THAT BENEFITS SOCIETY

The biggest advantage Europeans expect to see with the introduction of autonomous cars is improved mobility for everyone (58%) – and they primarily see autonomous cars benefiting those who are disabled (57%), elderly (34%), and visually impaired (33%). Although access and mobility sits at the bottom of the list of challenges to be addressed in the next two to three decades, it is seen as the biggest societal advantage of autonomous cars, and can therefore be considered a key issue for autonomous car manufacturers to address.

Drivers also see autonomous cars as a way to get unsafe or poor drivers off the road (43%), and to ensure fewer drunken drivers are on the road (34%), thereby making the road a safer place for everyone, regardless of whether they're a driver, passenger, cyclist, or pedestrian.

Our research shows that there is still work to be done to close the gap between our exposure, understanding and acceptance of autonomous cars. And while for many the idea of accepting and using this technology seems distant, the quickest way to close that gap is through education and experience. While less than half of respondents reported they would feel comfortable riding in an autonomous car, they would feel more comfortable with it if they could try it first to see what it's like (47%). A sentiment that was felt strongly across markets, most notably in Germany (56%).

And while for many, expressing comfort with the technology must wait until they've had a chance to try it themselves, large numbers of respondents report they recognise the benefits to autonomous cars – both from a lifestyle and health perspective. Overall, about half of Europeans agree that autonomous cars could improve their lifestyle by reducing stress (48%). After all, one in five (21%) admit they feel stressed driving others somewhere and a similar percentage (18%) feel stressed driving themselves somewhere.

Biggest advantage Europeans expect to see is improved mobility in:



34%
Elderly



57%
Disabled



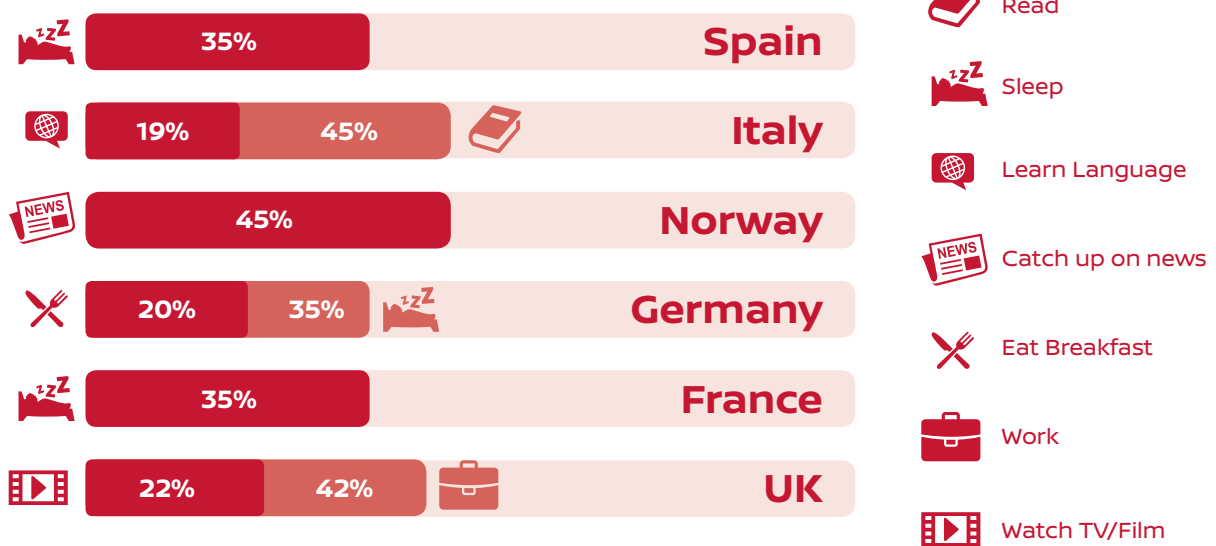
33%
Visually Impaired

Beyond the potential lifestyle benefits, Europeans identify lower stress levels (56%) as the main health benefit of autonomous cars, along with fewer car accidents (56%). Recognition of both these benefits points towards the fact that many Europeans recognise that there are health benefits to autonomous cars, even without ever having experienced them. Once they experience autonomous cars for themselves, they will likely have an even better understanding of the health benefits that accompany a world in which autonomous cars exist.

In addition to lowering stress, Europeans believe that future autonomous cars could give them the ability to do something other than drive (50%), and could give them the health benefit of having more free time (30%). With the extra time that riding in an autonomous car would give them, many people would choose to be productive, spending the extra time in the car but not driving by reading books (37%), catching up on the news (37%), or getting work done (30%). That said, one in three say they'd spend that time sleeping (33%).

Beyond activities, some drivers even see autonomous cars as a way to keep more money in their own pocket (28%), as they may not need car insurance, make car payments, or pay parking fees. A similar percentage see it as a way to reduce traffic (25%), also giving them the flexibility not to own a car (26%).

The freedom they love when they hit the road won't disappear with the advent of autonomous cars. If anything, it will give them even more freedom - to spend their time in the best way possible, to spend their money the way that they like, and to go wherever they desire without the stress that often accompanies driving.

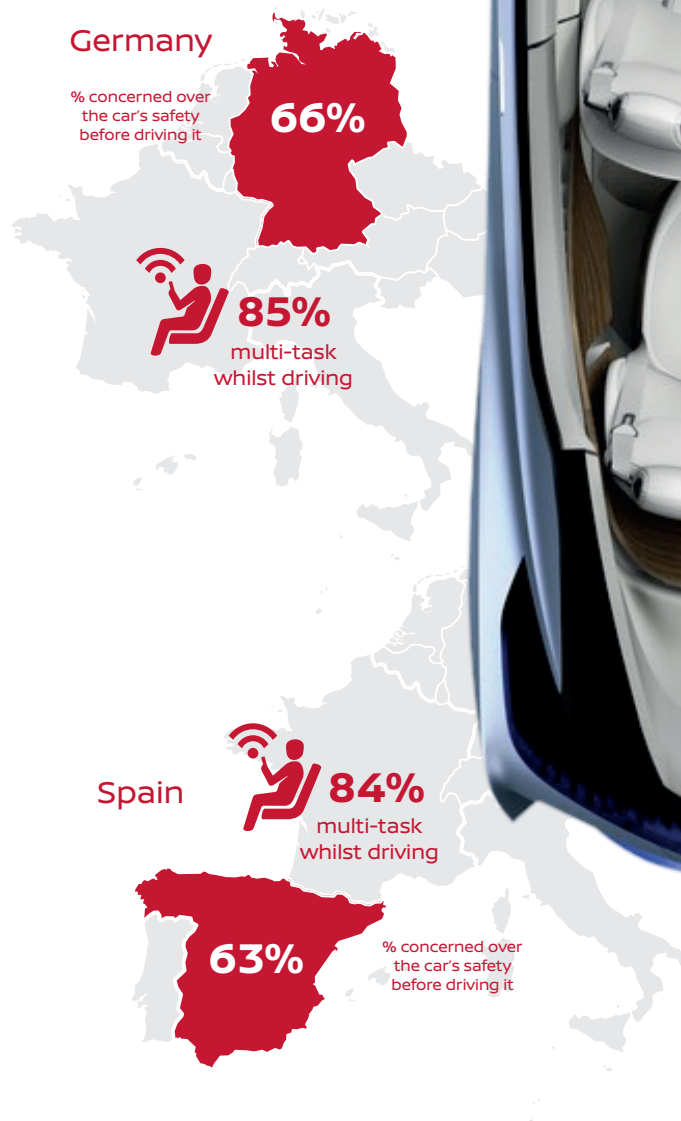


TECHNOLOGY'S ROLE IN ADDRESSING CAR SAFETY

Car safety is top of mind for Europeans, and sits first in a list of concerns they have when they drive a car that's unfamiliar to them. Car safety (57%) is closely followed by two other safety-related concerns: locating the lights (52%) and making sure they can see well out the rear window (51%).

Despite this concern for the safety of the car, four out of five drivers (81%) admit that they've performed multitasking activities while driving, with most admitting that they have changed the radio station (68%), eaten a meal or snack (42%), or drunk a hot beverage (25%) while driving. Among the most dangerous behaviours? Texting, which one in five (18%) admit to have done while driving.

Autonomous cars could limit the amount of unsafe multitasking performed while driving, with half of Europeans (50%) believing the main lifestyle benefit to autonomous cars is the ability to do something other than drive while in the car – allowing them to do the tasks that could otherwise cause accidents. Although the ability to do other things while driving tops the list of lifestyle benefits of autonomous cars, the safety of such cars is a significant concern for Europeans.



Although Germany (66%) and Spain (63%) are the markets most concerned with how safe the car is before they drive it, they are also the markets most likely to say they've multi-tasked while driving – 85% in Germany, and 84% in Spain.



In fact, about half (48%) believe that the main disadvantage of autonomous cars would be the possibility of the technology not working, which, like multitasking, may lead to an accident. And when it comes to lifestyle drawbacks of autonomous cars, a majority of Europeans identify the heavy reliance on technology as the biggest drawback (65%).

“Autonomously-equipped vehicles will improve the safety and well-being of drivers, with fewer collisions and reduced traffic congestion. The UK economy can also benefit, by playing a pivotal role in a global industry estimated to be worth £900 billion by 2025.”

Paul Willcox

Chairman, Nissan Europe



The technology industry will play an important role in the development and adoption of autonomous cars. The tech industry will not only be responsible for working with car manufacturers to ensure that technology addresses every aspect of an autonomous car's safety, but it will also need to interact with drivers to allay their concerns about the safety of such cars from a technological perspective. Indeed, among those who are uncomfortable with the idea of riding in an autonomous car, one in three (32%) say that more advanced technology would help them feel more comfortable with the idea, and among all Europeans the same percentage (32%) worry about the car's computer being hacked.

In 2016, cybersecurity is a very real concern for many consumers, whether they drive or not. Protecting privacy is very important to consumers, and the fact that a car essentially runs on technology worries them. In Germany, concern around cybersecurity is highest (42%), followed by France (35%) and Norway (34%). Least concerned? Spain (25%), Italy (28%), and the UK (30%). Transparency around how their cybersecurity is protected will be important for potential users of autonomous cars to understand.

The percentage of Europeans that worry about the car's computer being hacked

32%

The percentage of Europeans that ranked fewer accidents and lower stress levels equally as the top health benefits of autonomous cars

56%

The percentage of Europeans that are concerned about human error causing an accident in an autonomous car

14%



Despite safety concerns around autonomous cars, Europeans certainly also see safety benefits to them. They can most clearly identify the benefits to autonomous cars when it comes to the possibility for these cars to help reduce the number of accidents caused by human error (52%). In terms of concerns about autonomous cars, only 14% worry about human error causing an accident – which shows they understand that many accidents are caused by human error, and that autonomous cars could help to reduce this cause of accidents. Beyond improved

safety, Europeans also see how autonomous cars can improve health, citing fewer accidents as a top health benefit (56%).

While there is a large role for the technology industry to play in creating the safest possible autonomous car, Europeans' biggest safety concern of autonomous cars actually revolves around control – or lack thereof – in such a vehicle.

Individual countries' concern over autonomous cybersecurity



42%
Germany

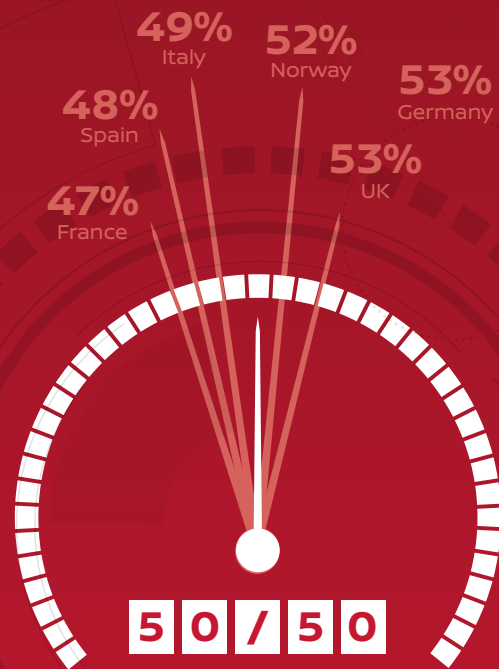
34%
Norway

35%
France

25%
Spain

30%
UK

28%
Italy



Europeans 50/50 on concern over losing control to autonomous vehicles

Staying In Control

Part of the appeal of driving is the sense of control it gives people - they are in complete control of where they go, when they want to go, and which route they will take to get there. While many Europeans say their favourite thing about driving is being in control (46%), even more say that their biggest safety concern about autonomous cars is not having control of the vehicle themselves (50%). It seems there are still concerns around relinquishing this control. Although 45% of Europeans say they are comfortable with the idea of riding in an autonomous car, for the remaining 55%, it will take time to overcome the idea of letting go of this control and driving in a new way that's safer for everyone.

Some of Europeans' least favourite things about driving are things over which they have little to no control - sitting in traffic (62%), finding parking (55%), and other drivers (35%). One in four Europeans (25%) believe that autonomous cars will reduce traffic overall.

Europeans' least favourite things about driving



For Europeans, the best things about driving includes the freedom to go wherever they want (73%) and having a means of transportation at any time (60%), followed by being in control (46%). In the forthcoming autonomous revolution, people will be just as mobile as ever – if not more so – as autonomous cars democratise transportation and

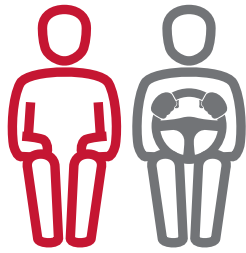
allow those who never learned to drive, don't hold a licence, or are unable to drive, to get where they want to go in a convenient manner. And, as previously stated, a huge benefit that many Europeans see with autonomous cars is a reduction in accidents, especially those caused by human error.

“The key to getting people comfortable with the idea of autonomous driving is to make drivers feel at one with their cars, yet still in control. You’re building this intelligent entity that has to cooperate, coordinate, and collaborate with humans. That’s why we won’t yank away the driver’s steering wheel, and why we’re adding features bit by bit.”

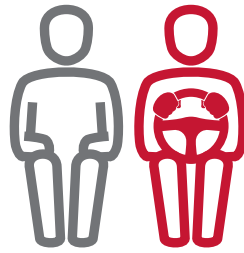
Maarten Sierhuis

Director, Nissan Research Center
Silicon Valley





26%
Europeans feel stressed when a passenger



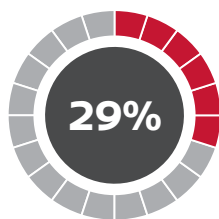
18%
Europeans feel stressed when driving

However, one of the biggest hesitations that people have is around who - or what - would be at fault in the event of an accident with an autonomous car. Drivers want assurance that they won't be to blame in the event of an accident, but are split on who or what would be.

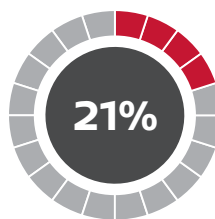
Among those who feel uncomfortable with the thought of riding in an autonomous car, one in three (33%) admit that they would feel better if there was assurance they wouldn't be held accountable. Across all markets at the total level, many believe that the car manufacturer (29%) or the software company (25%) would most be at fault in the event of an autonomous car hitting a person on the road. One in five Europeans (21%) believe that they would be at fault if such an event were to occur.

It will be important for autonomous car manufacturers to speak directly to consumers and address the improvement in car and road safety that autonomous cars will have, while simultaneously soothing drivers' fears of giving up control to a machine. While it is an unfamiliar idea, it is not dissimilar to when they are a passenger in a car or flying in a plane - a situation in which one in four Europeans feels stressed (26% and 24%, respectively). Indeed, only one in five (18%) admit to feeling stressed when they are driving themselves somewhere - highlighting that while driving and riding in a car can be stressful, far fewer feel stressed when they're in control.

The percentage of Europeans that believe car manufacturers would be most at fault in the event of an autonomous car hitting a person



One in five Europeans believe that they would be at fault in the event of an autonomous car hitting a person



The percentage of Europeans that believe software companies would be most at fault in the event of an autonomous car hitting a person



But autonomous cars won't be fully autonomous for some time – drivers will still hold some physical control of the vehicle, and will primarily be assisted by the technology rather than controlled by the technology. Although only one in three Europeans say they know the difference between a self-driving car and a car with autonomous features, they are more familiar with autonomous driving features than they realise.

Overall, 66% are familiar with at least one autonomous feature, and tend to believe that they are designed to assist rather than replace the driver, and that they can make driving safer.

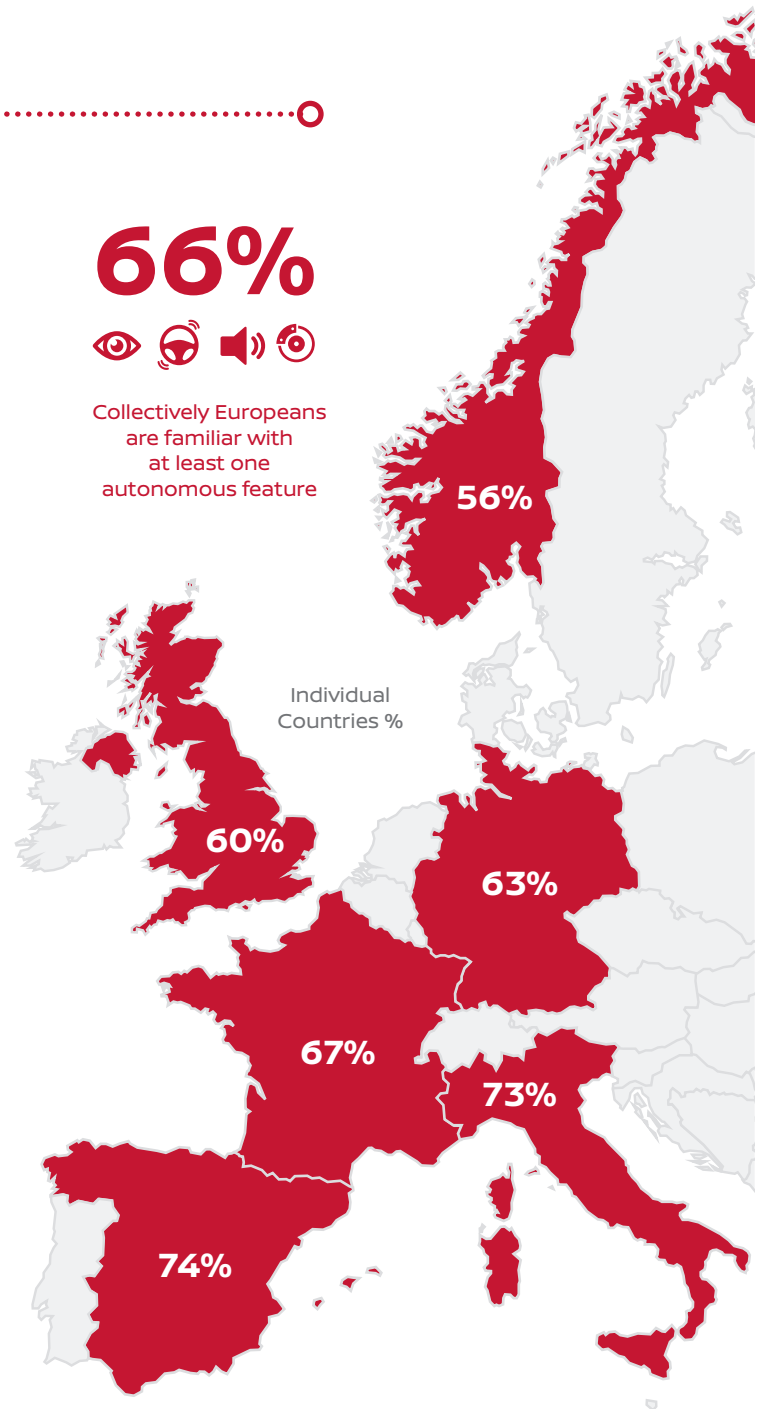
In terms of specific autonomous features, half are familiar with parking assist (50%), and realise that it is designed to assist rather than replace the driver (42%). One in three are familiar with intelligent emergency braking (35%), and believe it makes driving safer (52%).

Safer driving conditions will have benefits for all – whether in the driver's seat, passenger's seat, or on the road as a cyclist or pedestrian. Safer driving conditions also mean fewer accidents, a top concern for Europeans when it comes to driving. Autonomous cars will help decrease accidents, and have many other societal benefits as well.

66%



Collectively Europeans are familiar with at least one autonomous feature



Conclusion

Overall, this study shows that consumers are beginning to understand the benefits of autonomous cars, from reducing the number of accidents caused by human error to lowering stress levels, saving time and improving access to mobility for everyone. As with any new technology however, there are still some concerns and these are mainly related to the idea of relinquishing control to technology, as well as who would be liable in the event of an accident – which is already a complicated business for drivers today.

There is of course still more work to be done to lay the groundwork for autonomous technology – by regulators, carmakers and the technology companies we work with. Clearly, car makers need to continue to communicate and educate in order to ensure that consumers truly trust this technology and the companies that provide it.

As with most innovations, autonomous drive technology will improve people's lives, and create a safer, more enjoyable driving experience. But to achieve that, the technology itself needs to be accepted, understood and embraced.

The Nissan Social Index

Consumer Attitudes to Autonomous Drive

Nissan Europe commissioned a survey in October 2016 examining people's attitudes towards autonomous drive technologies and the future of mobility. In total, approximately 6,000 people were polled across six European countries – UK, France, Germany, Spain, Italy and Norway.