

Electric vehicles can't compete with the emotional roar of an engine—but does that matter?

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Credit: AI-generated image ([disclaimer](#))

Electric vehicle (EV) sales have been growing at a rapid pace. Their [share of the global car market](#) has risen from around 4% in 2020 to 14% in 2022. However, this means internal combustion engine (ICE) cars still dominate global vehicle sales.

The fear of running out of [battery power](#) while on the road (known as "[range anxiety](#)") is one reason why people are hesitant to adopt EVs. But research raises another interesting question: could the appeal of car sounds be a factor influencing drivers to choose environmentally harmful cars?

Unless an ICE is switched off, it will always produce some noise as a byproduct of converting fuel into motion. Electric motors also make some noise, but one of the first things you notice when getting behind the wheel is that their dull whine is significantly quieter than the roar of an engine.

While EVs are associated with far [fewer greenhouse gas emissions](#) than their ICE counterparts, the sound they make lacks the emotive pull that draws people towards traditional ICE vehicles. Nowhere can this be seen more clearly than in motorsports. During overrun—when droplets of fuel escape onto hot exhaust pipes—these vehicles produce a loud series of pops and cracks that [ignite the passion](#) of fans.

Emotional response and car culture

By examining research in this field, we can break down the reasons behind the emotive influence engines hold over people. For many people the sound of a car's engine elicits a thrilling and exciting emotional response. It can also trigger a deep sense of nostalgia

The authors of the 2002 book "[Autopia, Cars and Culture](#)", Peter Wollen and Joe Kerr, note that car sounds seem to "evoke ancient associations with primeval creatures, be they mythical monsters or beastly animals, beings of and by which we are in equal measures terrified and fascinated".

The appeal of loud car exhaust noise can also be influenced by cultural

factors, reflecting the significance of cars and car culture in many societies.

Japan, for example, has a widely celebrated street-racing culture. Initial D, a [classic Japanese manga cartoon](#) which became a popular animated story, described street racing taking place at night in the mountainous Gunma prefecture of central Japan. The story influenced a subculture within Japan of people taking part in [illegal nighttime races along winding mountain passes](#).

Acoustic characteristics

The specific acoustic characteristics of a car's exhaust noise also play a role in its appeal. [Research](#) from 2006 found that certain frequencies and harmonics are more pleasing to the ear than others.

Often it is these preferred characteristics that are present in the exhaust notes of sporty cars. In fact, many modern ICE cars have exhaust notes tuned, [sometimes even artificially](#), to sound more pleasing.

[Separate research](#) has explored the impact of engine sounds on our brains. The results of this study indicated that the particular characteristics of engine sounds have a significant effect on [neuronal activity](#) in the [auditory cortex](#)—the part of the brain responsible for processing sound.

When exposed to a preferred engine sound, neuronal activity lasted longer, suggesting that people's auditory and neurological responses to car engine sounds can shape their subjective preferences for those sounds.

What about quieter EVs?

The powerful roar of a petrol engine stirs our emotions, is firmly embedded in car culture and perhaps even stimulates our brains. But EVs hold their own unique appeal, albeit in a more subdued manner.

Research suggests that the quiet sound of EVs is calmer for drivers. In 2018, psychoacoustician Duncan Williams [monitored the brain activity](#) of four London taxi drivers as they drove both electric and diesel black cabs. Those driving EVs were found to be more focused, calmer and happier than those driving cars with a diesel engine.

[Another study](#), which surveyed EV drivers' driving behavior in the US, arrived at a similar conclusion. It found that EV drivers tend to adopt a calmer driving style, with smoother acceleration and braking. Even the routes they took differed compared to ICE drivers in the same study.

This more relaxed driving style may, at least in part, be motivated by the desire of EV drivers to maximize the environmental benefits of their vehicle. But the implications of calm driving like this extend beyond personal comfort and protecting the planet.

It can potentially lead to less road rage, fewer accidents and generally better well-being. These advantages are especially significant considering car accidents kill or seriously injure, for example, [one person in the UK every 16 minutes](#).

Yet, for those that love the sound of a noisy car [engine](#), all is not lost. Some car manufacturers, such as [BMW](#) and [Porsche](#), have experimented with acoustic synthesizers in EVs to make them [sound](#) more like petrol engines. Nevertheless, to lower dangerous greenhouse gas emissions and create safer roads, quieter EVs emerge as the better choice for everyone's sake.

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