

INSURANCE OF ELECTRIC VEHICLES

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In September 2021 Tesla Model 3 became the first electric vehicle to lead the best-selling cars chart in Europe. This could have been a seasonal effect of Tesla production timelines, but non-European Market share of battery electric vehicles went from 0,7% in 2017 to 7,5% of all new cars sold in Q2 2021 (source: ACEA).

This development of the electric vehicles (EVs) market raised a question in the P&C actuarial departments: is the risk of an EV similar to an equivalent Internal Combustion Engine Vehicle (ICEV)?

At first, it was difficult to arrive at a proper view of the intrinsic risk level of EV, since volumes were not big enough. Some people were afraid of fire risk related to the batteries, others underlined the dangerousness of a silent car for pedestrians crossing streets in a city. Car manufacturers tried to tackle these specific issues, and even if it is still worth to monitor such events, they appear to be quite rare.

But it is not always easy to compare EVs and ICEVs: how shall we define the equivalence in terms of vehicles when the framework (data collection) has been defined historically for ICEVs? For example, what is the power of a hybrid vehicle? The sum of combustion engine power and electric motor one? Or the maximum of the two values? Any other combination? It

of course depends on the structure of the hybrid vehicle (mild hybrid, full or strong hybrid...). But this shows that a simple and classic variable, often used in vehicles classification such as the power of the car, can become problematic when paradigm is changing.

The usage of EVs may also differ quite significantly from ICEVs: parked in a secured area, less kilometers driven, et cetera. All this has an influence on the risk level, and the information is not always well collected or monitored. In addition, in the 'EVs' category, very dissimilar vehicles can be found: there are only few similarities between a very high-powered, long-range Tesla and a small, urban vehicle like a Renault Zoé.

Therefore, pricing models are not always sharp enough to isolate the pure effect of energy in risk level. However, it seems now quite clear that during the 2010s, as compared with ICE vehicles, EVs had a higher insurance risk, driven by the cost of the vehicle, availability of spare parts, or global delays for repair works. >

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Is it still true today? There is no clear evidence, but it seems that the trend in pricing has recently switched: in some European Union countries, such as the United Kingdom or France, press releases are announcing that EVs insurance premiums are now cheaper than for other vehicles.

Why would insurers offer lower prices for EVs, if they don't know the associated risk level, and thus, the profitability they can expect?

There may be two main reasons for this: either this reflects opportunistic behavior on the part of economic agents, or it is a genuine commitment on their part to reducing greenhouse effects.

The first reason is quite simple: offering a discount is an efficient, and not that expensive, move to gain market share, especially in a growing segment. Adopting

an aggressive pricing strategy can also be a way for traditional insurers to secure a portfolio in a very competitive environment, where they are in addition facing new threats: Tesla started for example to offer auto insurance in the U.S., and in some states the pricing relies on an advanced telematics program, based on data extracted from the original equipment of the vehicles.

The second reason can be slightly more complex, since it's deeply linked to the following question: how green are EVs?

In fact, there are some concerns concerning EVs capacity to meet the environment goals of a sustainable development scenario. Where does the electricity to charge EVs come from? How are raw materials used for building the cars extracted? There are significant environmental and human rights concerns on this point: the mining industry is one of the most polluting, and child labor has been reported in cobalt extraction in the Democratic Republic of Congo.

But, all things considered, if the social movement, through government policies, institutional statements, and regulations imposed on car manufacturers, promotes the EV as one of the keys to the ecological transition, some P&C insurers may also be convinced of the advantages of such a move because they're truly sensitive to green activism.



This may be particularly the case for the companies which, beyond their simple corporate purpose, seek to leave a positive mark on society by taking up social and environmental challenges, while keeping their economic performance at the same time (see Benefit Corporations in the U.S, 'société à mission' in France).

For these insurers, promoting EVs achieves the objective of increasing market share and contributing to the common good via the transition to a greener future.

Above all, the role of actuaries will remain central as they will have to refine their vision of the risk for these vehicles and anticipate fluctuations as the market (supply and demand, but also usage) and the underlying technologies evolve. It will also be their responsibility to monitor these risks over time, as professionals in these central issues for insurers. <



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