

The Economic Viability of Electric Cars in Ireland

Introduction

The purpose of our project is to assess the progress of electric cars in Ireland and to determine whether they are financially viable to purchase in our current state of economy.

The substitution of electric cars in place of standard petrol & diesel cars is a very pressing matter. As we look more and more towards creating a world of renewable energy, it becomes more apparent that we must begin with our cars. This has been echoed by many leading manufacturers such as BMW, Hyundai and Tesla, who continue to develop the technology to make the clean, energy conscious cars of the future.

But before this, if electric cars are more cost than benefit they will struggle to gain traction nationwide. We aim to investigate whether the electric cars of today are viable in our current economy, and whether they are a sensible choice when purchasing a new car.

Research

Due to the nature of the question being asked, we found it would be difficult to obtain sufficient or meaningful data through primary research. We decided to focus mainly on secondary research, through obtaining data & information from many online sources.

We decided to exclude hybrid vehicles from our research as the nature of their systems results in an often un-uniform performance when discussing fuel, taxation & daily use. And so we chose any non-commercial electric vehicles which were eligible for grants from the Sustainable Energy Authority of Ireland (SEAI) and compared their performance & use to that of the non-commercial petrol vehicles with the highest rates of registration in the year of 2018.

By comparing the fuel consumption, fuel costs, taxation, and general cost of each of these two categories, we hope to decide if the idea of electric cars holds any ground in our current Irish economy. We will observe these factors over a number of fixed time periods, one, five, and ten years. It would be useful to look any further into the future due to technological advancements.

We made the decision to assess the costs as an upfront full purchase without purchasing on credit, with loan or hire purchase. The car, both petrol engine and electric was said to be brand new and not second-hand / preowned.

Data obtained from

- <https://www.seai.ie/sustainable-solutions/electric-vehicles>
- <https://www.cso.ie/en>
- <https://esb.ie>
- <https://energy.eu/>
- <http://etoll.ie/>
- <http://ireland2050.ie/>

ELECTRIC		PETROL	
BMW	i3	Dacia	Duster
Citroën	C-Zero	Ford	Focus
Hyundai	Ioniq BEV		Fiesta
	Kona BEV		Kuga
Jaguar	I-Pace	Hyundai	Tucson
			Kona
Mitsubishi	iMiEV		i30
Nissan	Leaf	Kia	Sportage
	Leaf	Nissan	Qashqai
	Zoe Intense		Micra
	Zoe Signature	Peugeot	3008
Renault	Fluence	Skoda	Octavia
		Toyota	Yaris
			Auris
Tesla	Model S 85D		Corolla
	Model X 90D	Volkswagen	Tiguan
			Polo
Volkswagen	e-Golf		Passat
			Golf

Fig. 1 List of cars used as data points.



Fig. 2 Average market price of electric cars. Obtained from a mean value of second-hand-listings.

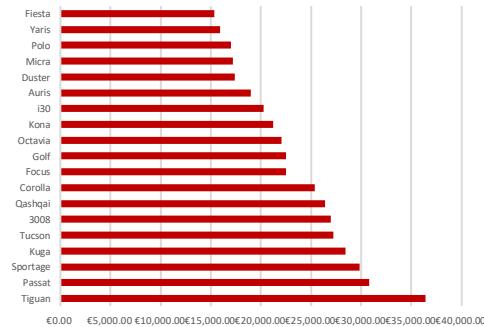


Fig. 3 Average market price of petrol cars.



Fig. 4 Comparison of mean and median price of listed cars.

Results

We calculated the initial cost of purchasing each car, and the running costs for one, five & ten years. We then compared the mean & median of all cars of each fuel source to each other, in order to compare overall costs.

Costs considered included operating costs (e.g. fuel, servicing, maintenance), Depreciation, and Taxation. Initial costs included VRT (Vehicle registration Tax), and in the case of electric cars the installation of a home charger. All costs were calculated at the beginning of 2019.

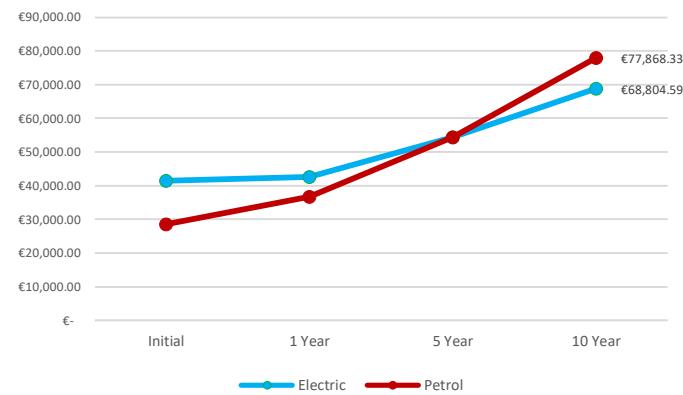


Fig. 5 Mean cost of owning an electric car against a petrol car over specific fixed time periods.

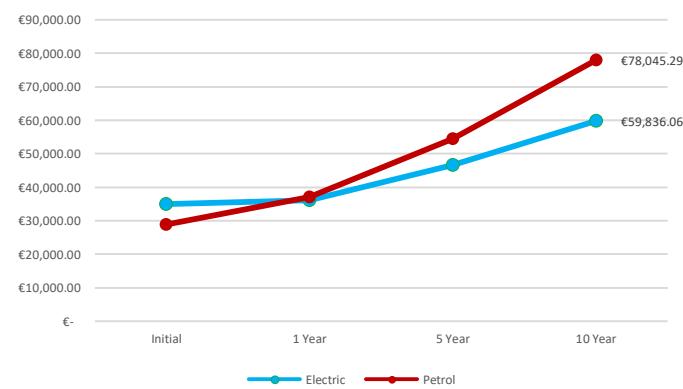


Fig. 6 Weighted mean of the costs of owning an electric car against the cost of a petrol car.

The purpose of the weighted mean was to find a more accurate average value for the data range. Weights were assigned according to percentage of the units registered in 2018 & 2019 compared to the overall units registered in 2018 & 2019 in the same category. Hence the more popular cars received more weight and thus affected the mean value more so than other cars.

Registration statistics obtained from SIMI (Society of the Irish Motor Industry) and the Irish EV Owners Association.

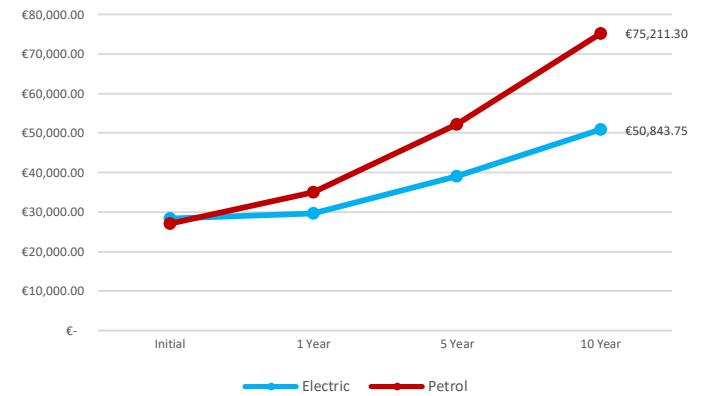


Fig. 7 Median cost of an electric car against a petrol car over specific fixed time periods.

Issues

We did face some issues while conducting this project that inhibited our ability to make more accurate predictions regarding the costs associated with owning each of these types of cars.

Many of our figures required us to use averages and “typical citizen” outlooks to be obtained. This could result in a significant variation in results for each individual due to the generalised nature of this topic. While we would have loved to explore a wide range of variables and alternative scenarios, we decided to choose a mould that would fit the majority.

Unfortunately we simply do not know how the government will approach the topic of electric cars in the future in terms of financial benefits. Because of this we were restricted to any knowledge that is already publicly available, most of which is inconclusive and doesn't paint a clear picture for the future of buying electric cars in Ireland.

Finally, there is a lot of uncertainty within the electric car industry as a whole when discussing where the technology is heading. We don't know what cars are going to be capable of in 10 years time and we are unsure as to the substantiality of any improvements that might be made to the country's charging infrastructure as a whole.

Conclusion

When setting out to do this project we wanted to find out if electric cars are economically viable in the current Irish economic climate. We compiled large quantities of data ranging from costs of cars to taxes to depreciation etc. After doing so we have come out with 3 main results; a mean, a weighted mean and a median of the costs of owning each of the types of vehicles. We analysed these statistics and came to a final conclusion.

If you buy an electric car today, it will not be economical initially. Up until a year after owning it you will be paying more money than if you had bought a traditional petrol car. However, according to our most accurate results, after this 1 year stint many of the electric cars will have fallen below their petrol counterparts in total running costs. After 5 years almost all electric vehicles considered will have cost you less money than their petrol counterparts. According to our study, if you buy any of the named electric cars, they will cost you less money overall over a 10 year period.

We have found that in the short term, electric cars will cost you more. But as proven by our findings if you can hold out for even just 1 year, electric cars prove their economic viability and worth.