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FINAL REPORT

DATA SCIENCE - CAPSTONE PROJECT

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Evaluation of the purchase of electric vehicles in Spain

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Introduction

On climate change, there are many actions that scientists and the entire population are taking, trying to improve efforts seeking a change and everything that contributes to reduce the carbon footprint.

An interesting initiative is to change vehicles that run on combustion engines. This type of transport contributes greatly to the pollution of the planet.

Electric cars are combustion-free vehicles and could even be less expensive because some of their components are maintenance-free.

However, the production of electric cars is recent and their costs are still high, as research and tests are still in progress.

In addition, charging stations for this type of vehicle could be scarce and this reason can make a difference when making a decision.

Interest

This research allows people residing in Spain who may be interested in buying an electric vehicle as an alternative to the level of pollution generated by a combustion vehicle and which in turn allows a reduction in maintenance costs. It also gives an orientation to the manufacturers of this new line of cars to establish new points of sale and service in more cities in Spain.

Data acquisition

The data set is obtained from the following source:

https://datos.alcobendas.org/dataset/puntos-de-recarga-electrica-para-vehiculos/resource/5b14a79a-9c80-4d5f-9c6a-017c83e5d7fe

Data Dictionary

Columna	Tipo	Etiqueta	Descripción
Titular	text		
Situación	text		
Longitud	numeric		
Latitud	numeric		
Número de conectdores	text		
Tipo de conectores	text		
Precio	text		
Cables y adaptadores	text		
Reservar	text		
Horario	text		
Límite de tiempo	text		

Additional Information

Campo	Valor
Última actualización de los datos	Mayo 11, 2021
Última actualización de los metadatos	desconocido
Creado	desconocido
Formato	CSV
Licencia	Open Data Commons Attribution License

Data Cleaning

The data has been adjusted and refined according to the activities to deliver the final report and to achieve the desired objective.

Exploratory Data Analysis

According to figures presented by specialized automobile media in Spain for 2019, there were 29.46 million registered units in circulation.

According to data from the General Directorate of Traffic collected in the 2019 Annual Report of the Spanish Association of Automobile and Truck Manufacturers (Anfac), the number of passenger cars at the end of 2019 stood at 532 units per 1,000 inhabitants, which This is 1.3% more compared to the previous year and an increase of 12.5% compared to the 2010 figures.

Spain is the European country that is currently lagging behind compared to others that have made great progress in the acquisition of zero-emission vehicles.

There are different reasons why the Spanish population has not been fully persuaded of the virtues that this new technology represents not only for its users but also for the environment.

Below are some figures that show this situation and allow us to understand this behavior:
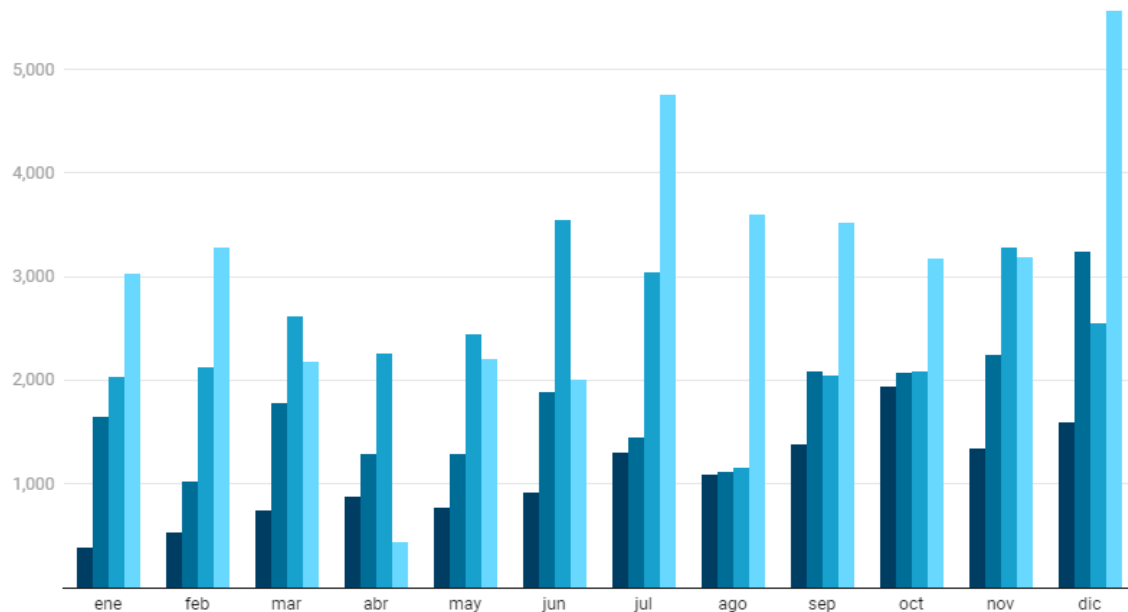
- Electric vehicle registrations

- Number of registered electric cars, country by country

- Percentage of electric cars, by country

- Public access charging points

- Price difference between combustion and electric cars

Electric vehicle registrations

Matriculaciones de vehículos eléctricos

Durante 2020 han aumentado las matriculaciones de coches eléctricos en España respecto a años anteriores.
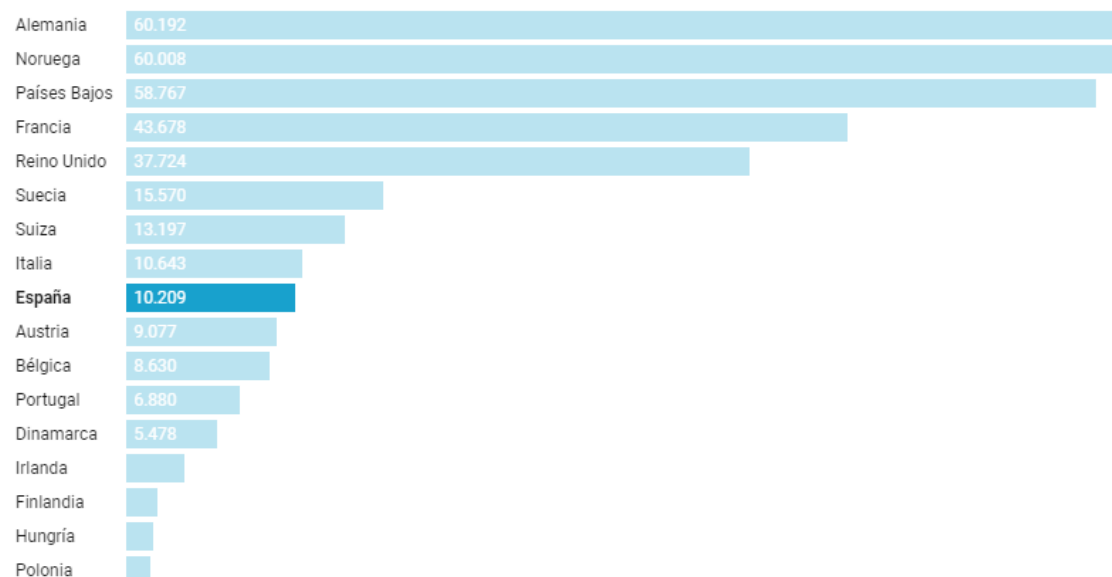
■ 2017 ■ 2018 ■ 2019 ■ 2020

Source: Ovems a través de EAFO · Get the data · Created with Datawrapper

Number of registered electric cars, country by country

Número de coches eléctricos registrados, país por país

Alemania y Noruega son los dos países europeos con mayor número de coches eléctricos registrados, según datos de 2019 y 2020.
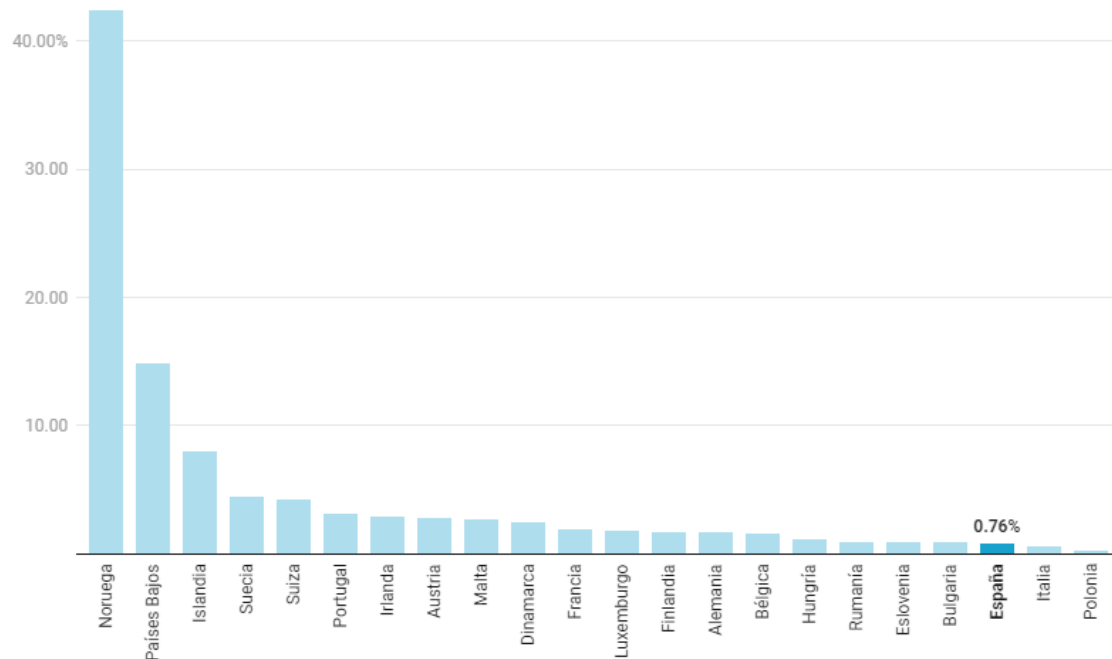

Alemania	60.192
Noruega	60.008
Países Bajos	58.767
Francia	43.678
Reino Unido	37.724
Suecia	15.570
Suiza	13.197
Italia	10.643
España	**10.209**
Austria	9.077
Bélgica	8.630
Portugal	6.880
Dinamarca	5.478
Irlanda	
Finlandia	
Hungría	
Polonia	

Source: European Environment Agency · Get the data · Created with Datawrapper

Percentage of electric cars, by country

Porcentaje de coches eléctricos, por país

A pesar de que en algunos países ha aumentado la venta de coches eléctricos, en muchos países sigue representando un porcentaje mínimo de las ventas respecto a los vehículos de combustión.
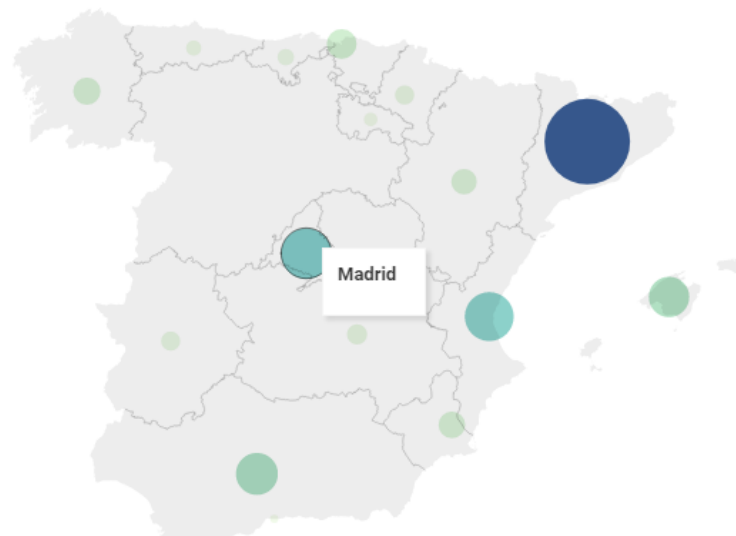
Public access charging points

Puntos de carga de acceso público

Las comunidades autónomas que tienen una mayor infraestructura de recarga son Cataluña, Madrid y la Comunidad Valenciana.

Número de puntos de carga

12   2,961

Price difference between combustion and electric cars

Marca	Modelo Gasolina	Modelo Eléctrico	Precio Gasolina	Precio Eléctrico	Diferencia	Ahorro a 10 años
Kia	Niro	e-Niro	20.326,00€	20.395,00€	-69,00€	6,931,00€
Peugeot	208	e-208	12.607,00€	17.835,00€	-5.228,00€	1,772,00€
Opel	Corsa	Corsa-e	13.148,00€	17.672,00€	-4.524,00€	2.476,00€
Mazda	CX-30	MX-30	22.667,00€	23.320,00€	-653,00€	6.347,00€
Citroen	C4	e-C4	16.916,00€	22.075,00€	-5.159,00€	1.841,00€
Opel	Mokka	Mokka-e	18.868,00€	22.212,00€	-3.344,00€	3.656,00€
Mini	3-puertas	Cooper-se	19.770,00€	25.154,00€	-5.384,00€	1.616,00€
Hyundai	Ioniq	Ioniq-ev	20.973,00€	22.644,00€	-1.671,00€	5.329,00€
Fiat	500	500-electrico	11.342,00€	16.600,00€	-5.258,00€	1.742,00€

Source: Carwow · Get the data · Created with Datawrapper

Conclusions

The figures and the analysis carried out show that there has been a slow growth in the purchase of electric vehicles and the adoption of this new technology is surrounded by causes other than the technology itself. It is evident that the purchase costs between electric vehicles and combustion vehicles are increasingly closer and that greater impetus is required from the Spanish government for the implementation of more charging points and service stations available for this type of vehicles. Currently the decision to buy an electric vehicle is correct for the cities of Madrid and Catalonia according to the analysis carried out, which coincides with the figures obtained in the study loaded in the notebook.

References

https://hipertextual.com/2021/05/coches-electricos-espana-plan-moves-iii

https://www.autocasion.com/actualidad/noticias/cuantos-coches-hay-espana-mas-viejos