# EV MARKET SEGMENTATION ANALYSIS

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 - TEAM - 2**

Summary Considering the low power consumption and low power consumption, the use of electric vehicles should increase in the future, which will attract a lot of attention in future educational research. The findings show that three distinct groups of young consumers turning electric vehicle buyers are identified and labeled as “caregivers,” “indifferents,” and “enthusiasts.” What this means is that this would provide academics and policy makers with some relevant information to promote the use of electric vehicles in the context of the transport sector.  
  
**Data collection :**  
  
Data was collected manually and the sources used for this process are as follows:  
 https://www.kaggle.com/datasets  
 **Electricity Market Segmentation :**  
In practice, there are two ways to segment a market: a priori and ex post. On the other hand, in the post hoc partitioning process, partitions are defined based on the relationship between various variables. What the two methods have in common is the difference in measurement that determines the "subject of segmentation". This study uses an a priori classification method to divide potential energy consumers into groups.  
It is argued that a hybrid approach to market segmentation consisting of psychographics and socioeconomic behavior can create submarket strategies that meet the specific tastes and preferences of users' goods.  
They stated that psychological factors are more effective than cultural and economic factors in explaining consumers' environmental behavior, and therefore the study recommends the use of psychological characteristics in environmental protection analysis. We group the products. This study adds promising results from the combination of psychology and socio-economics to segment the consumer market.  
Application

**Materials/tools:**  
  
1. Numpy: Performs many calculations on arrays.  
2. Pandas: Read or load data.  
3. SKLearn: We use LabelEncoder() to encode our values.  
 **Data Preprocessing :  
  
Data Cleaning :**  
  
Using Python libraries such as NumPy, Pandas, Scikit-Learn and SciPy to perform operations and obtain results to replicate.  
 **EDA :**  
We start with data analysis, extract some statistical data from the data without PCA and do some PCA on the data obtained from the combination of all the information  
The information we have. PCA is a statistical method that transforms observations of relationships into a set of non-parallel features with the help of orthogonal transformation. These updated features are called core features.  
  
  
**ML Algorithm**:

For EV market segmentation, a popular algorithm could be **K-Means Clustering**. This unsupervised learning technique can identify groups of consumers with similar characteristics, aiding in market segmentation.

**Improvement of Market Segmentation Project:**

Given additional time and budget for data acquisition, you can consider the following improvements:

**Dataset Collection:**

Geographic Data: Include data related to geographic location, as regional preferences may play a crucial role in market segmentation.

Purchase Behavior: Gather data on consumers' purchasing behaviors and patterns.

Brand Loyalty: Include information on brand loyalty, as it can be a significant factor in consumer decision-making.

**Additional ML Models:**

K-Means Clustering: A popular unsupervised learning algorithm for segmentation.

Ensemble Models: Combine multiple models (e.g., Random Forest) for more accurate predictions.

Neural Networks: Particularly useful for complex, non-linear relationships in the data.

**Estimated Market Size:**

Estimating the market size requires specific market research and data analysis. Factors such as the total number of potential consumers, market penetration, and growth rates need to be considered. This information is typically obtained through surveys, industry reports, and analysis of available market data.

**Top 4 Variables/Features for Market Segments:**

Identifying the most optimal market segments involves understanding the factors that significantly influence consumer behavior. Common variables/features include:

Demographics: Age, gender, income, education level.

Psychographics: Lifestyle, values, attitudes.

Geographic Location: Region, urban/rural setting.

Behavioral Patterns: Purchase history, brand preferences, usage patterns.

These variables help in creating segments that share similar characteristics and are likely to respond similarly to marketing efforts.

For a more detailed response, I would need specific details about the second project and its goals. If you can provide more information, I'll be happy to give a more tailored response.