# **A DATA REPORT ON ELECTRIC CAR SHARING IN PARIS**

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# **BUSINESS UNDERSTANDING**

An electric car also known as EV’s are a growing trend in the world, they are vehicles that get energy stored in rechargeable batteries that can be charged. Electric cars are of an advantage as they will be able to prevent the continued pollution of the environment caused by combustion engine vehicles.

Electric cars have been around since the 1880’s until the advances of the internal combustion engines which were more cheaper to the electric cars thus caused electric cars to decline at that time. In recent years the advancement in battery technology and the need to reduce greenhouse technology has led to the resurgence of electric cars. Companies like Tesla, BMW,Jaguar and even VolksWagen among other car companies have begun the production of electric cars with Tesla being at the forefront of the technology.

## **1.1 Business objective**

The main objective of this report is to understand the electric car usage over time for an electric car sharing company.

## **1.2 Assessing the Situation**

1. **Resources Inventory**

Google collaboratory [[python notebook](https://drive.google.com/open?id=1T3-ZDQXZZAG6-WQHMh4zh7t346_LtD9-)]

1. **Datasets**

Autolib\_dataset (2)

1. **Software**

Google collaboratory (Python notebook)

Kanban for project management

Github

1. **Assumptions**

We are going to make an assumption that the data is accurate and has not been tampered with .

1. **Constraints**

During the collection of the data in some occasions there was interference with the download which created some gaps in the data..

# **2. DATA MINING GOALS**

Our data mining goals for this project are as follows:

1. Finding the most popular hour of the day for picking of electric cars in the city Paris
2. Finding out the most popular hour for returning cars
3. The most popular station overal and the most popular picking hour at that station
4. The most popular postal code for picking the electric cars and does the most popular station belong to the postal code.
5. To check if the results change if you consider Utilib counter and Utilib counter 1.4

## **2.1 Data mining success criteria**

Our success criteria will be measured by finding out the most popular time of the day when the Blues cars are actively being used.

# **3. DATA UNDERSTANDING**

## **3.1 Data understating overview**

For this project, we are going to use the availed dataset that was extracted from opendataparis.com, where the Autolib availability information was available in real-time. The data set is;

Autolib Dataset.

## **3.2 Data Description**

The sample data contains data from April 1st to April 9th for the year 2018.

The dataset has the following columns:

* Address
* Cars
* Bluecar counter
* Utilib counter
* Utilib 1.4 counter
* Charge Slots
* Charging Status
* City
* Displayed comment
* ID
* Kind
* Geo point
* Postal code
* Public name
* Rental status
* Scheduled at
* Slots
* Station type
* Status
* Subscription status
* Year
* Month
* Day
* Hour
* minute

## **3.3 Verifying the data.**

We had a lot of missing values in the column names “scheduled at” so we dropped the entire column as we didn't find it necessary to keep it.

# **4. DATA PREPARATION**

We are going to describe how we prepared our data .

## **4.1 Loading Data**

We loaded our data from a csv file which is described as (Autolib\_dataset (2))

## **4.2 Cleaning the Data**

We only had one dataset but when we were exploring our data we noticed that the year,month,day,hour and minute were separated into five different columns. We decided to merge these five columns into one column and named it (‘Date\_time”).

We also found out that “schedule at” columns had so many null values:(Scheduled at 4953), we decided to drop the entire column because of the many missing values that it had.

# **5. ANALYSIS**

During our analysis we were able to answer the following questions from the city of Paris.

1. Identify the most popular hour of the day for picking up a shared electric car (Bluecar) in the city of Paris over the month of April 2018.

2018-04-06 15:07:00 12

2018-04-05 07:34:00 12

1. What is the most popular time for returning cars?

2018-04-06 05:52:00 4

1. What station is the most popular?

Paris/Porte de Montrouge/8

1. What postal code is the most popular for picking up Blue Cars? Does the most popular station belong to that postal code?

Postal code is 75015 which belongs to paris-suffren-2 , therefore it does not belong to the most popular station.

1. Do the results change if you consider Utilib and Utility 1.4 instead of Blue cars? yes

Answering the Blue cars question but now using the utilib counter.

1. Identify the most popular hour of the day for picking up a shared electric car (Utilib) in the city of Paris over the month of April 2018.

2018-04-08 08:19:00 2

2018-04-05 18:10:00 2

2018-04-04 08:04:00 2

2018-04-05 06:39:00 2

2018-04-02 07:52:00 2

1. Identify the most popular hour of the day for picking up a shared electric car (Utilib 1.4) in the city of Paris over the month of April 2018.

2018-04-06 13:55:00

# **6. RECOMMENDATIONS**

**MOST POPULAR HOUR FOR BLUE CARS.**

From our analysis we would recommend that the electric cars should be fully charged before noon because most people use it from 3pm to 5pm that's the time that.

**MOST POPULAR HOUR FOR UTILIB.**

From our analysis we recommend the most suitable hour for utilib should be in the early mornings from 7am

**MOST POPULAR HOUR FOR UTILIB 1.4**

From our analysis we recommend the most suitable hour for utilib should be in the afternoon from 1pm.