**AUTOLIB CAR SHARING COMPANY.**

# **BUSINESS UNDERSTANDING.**

***Business Overview***

Autolib' is an electric car-sharing service that was inaugurated in Paris, France, in December 2011.

It is operated by the Bollore industrial group and complements the city's bike[-](https://en.wikipedia.org/wiki/Bike_sharing)sharing scheme, Velib, which was set up in 2007. Their scheme maintains a fleet of all[-](https://en.wikipedia.org/wiki/Electric_car)electric BolloreBlue cars for public use on a paid subscription basis, employing a citywide network of parking and chargingstations.

A total of 3,980 Blue cars have been registered for the service, and they have more than 126,900 registered subscribers; Autolib' furthermore offers 1,084 electric car stations in Paris agglomeration with 5,935 charging points.

Since beginning operations in Paris, Autolib' expanded its business to the cities of Lyon and Bordeaux. Bolloré also signed deals to begin operating offshoots of Autolib' in London and Indianapolis in 2015 Turin in 2016 and Singapore in 2017.

The Autolib’ Bluecar is available to anyone aged 18 or older with a valid French driving license, or a valid foreign license plus the international driving license, who takes out a paid subscription. Users can choose between 2 rental packages, with 30-minute fees varying from €6 to €9 depending on the rental plan. An available car can be collected for use from any rental station and returned to any other rental station. Each car has onboard GPS capabilities and can be tracked by the system's operations center.

Autolib' charges an additional variable rate for each half an hour of use, but billing for each rental is calculated on a *PRO TA* basis, which takes into account the actual duration of use rounded up to the nearest minute (except for the first 20 minutes, for which there is a minimum charge).

***Business Objective***

The main objective is to understand electric car usage over time.

The objective is achievable by answering the following research questions;

* 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.
* What is the most popular hour for returning cars?
* What station is the most popular?
  + Overall?
  + At the most popular picking hour?
* What postal code is the most popular for picking up Blue cars? Does the most popular station belong to that postal code?
  + Overall?
  + At the most popular picking hour?
* Do the results change if you consider Utilib and Utilib 1.4 instead of Blue cars?

***Business Success***

By the end of the research, the company should be able to tell which is the most popular station, at what hour the cars are rented most and from which station. In general, the Autolib company should be able to learn more about the usage of electric cars.

**ASSESSING THE SITUATION**

**Resources**

**Dataset;**

The dataset description for this research study [http://bit.ly/autolib\_dataset (Links to an external site.)](http://bit.ly/autolib_dataset) and data [[Link] (Links to an external site.)](https://drive.google.com/a/moringaschool.com/file/d/13DXF2CFWQLeYxxHFekng8HJnH_jtbfpN/view?usp=sharing).

The dataset contains data collected for a period of 9 days.

**Software;**

Google collabs - To clean, and analyze our dataset

Jira software - To manage my project flow

**ASSUMPTION**

We assume that the data contains the correct entries and the date and time are correctly recorded.

**CONSTRAINS :**

A lot of columns contained similar entries. The data description was not clear to work with.

**DATA MINING GOALS;**

By the end of the data mining exercise we should be able to :

* Rank the hours and see the most popular hour.
* Find the total cars shared per hour, per postal code and station
* Identify the most used station.
* Identify the most popular postal code.

**PROJECT PLAN**

|  |  |  |
| --- | --- | --- |
| **PHASE** | **TIME** | **RESOURCE** |
| BUSINESS UNDERSTANDING | 1 DAY | DATA ANALYST |
| DATA UNDERSTANDING | 1 DAY | DATA ANALYST |
| DATA PREPARATION | 1 DAY | DATA ANALYST |
| DATA ANALYSIS | 1 DAY | DATA ANALYST |
| RECOMMENDATION AND EVALUATION | 1 DAY | DATA ANALYST |

# **DATA UNDERSTANDING.**

We have one dataset that was provided by the company, it is an overview of the usage of shared electric cars in France, for a period of 9 days.

***Data Description***

Our data contain 27 columns that represent variables for this study, 5000 rows that represent the entries of the data.

1. The address is the address of the station, cars are the Number of cars available at the station - redundant with Bluecar counter, always the same value,
2. Bluecar is the number of blue cars at the station,utilib is the number of utilibs in the station, Utilib 1.4 is the number of utilib 1.4 in the station.
3. Charging Status is the Number of Charging slots available at the station. Whether the station is operational for recharging. Mainly "nonexistent", "operational" or "broken": charge slots can only be greater than 0 when "operational"; slots and vehicles can be available in all situations (except future stations that have 0 resources).
4. City is the city where the car is operating in,
5. Postal code is the postal code of the station,
6. Public name is the name of the station,
7. Rental status is Whether the station is available for renting vehicles.
8. Resources are only available when "operational", except for "broken" which can have Slots, but none of the other resources.
9. Slots are the number of slots available at the station,
10. Station type is the No resources available for "subs\_center" - which is just one location. Was that actually a selling point for Autolib subscriptions

**VERIFICATION OF THE DATA.**

In our dataset, I found no missing values or duplicates.

**DATA PREPARATION**

**LOADING DATA**

The dataset was downloaded from the link to my drive as a CSV file. Google collabs was used for analysis.

**CLEANING DATA**

I used the data cleaning procedure to clean the dataset and make suitable for analysis;

**VALIDITY**

I dropped columns that were not needed for analysis e.g. displaying comment, ID, Subscription status, Scheduled at, Geo point, Kind, Charging Status and Address.

In some cases, I also created Total as a column, to sum up, the number of resources available in a station

**COMPLETENESS**

I looked for missing values, But our dataset was complete and did not have any null values.

**CONSISTENCY**

Our data had no duplicates.

**UNIFORMITY**

I renamed the columns for uniformity and easily called them when analyzing data with no error.

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# **DATA ANALYSIS**

1). The best hours of the day for picking up a shared electric car, in the city of Paris over

the month of April 2018

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| HOUR | BLUE CAR | UTILIB | UTILIB 1.4 | TOTAL CARS AVAILABLE AT THE STATION |
| 21ST HOUR | 268 | 8 | 20 | 296 |
| 6TH HOUR | 260 | 13 | 15 | 288 |

The best time to pick up a car is when there are a lot of cars at the station that are rental operational and that are at the 21st hour and 6th hour.

2). The most popular hour for returning cars.

|  |  |
| --- | --- |
| HOUR | AVAILABLE SLOTS |
| 14TH HOUR | 441 |
| 2 HOUR | 440 |
| 21TH HOUR | 438 |

The best time to return a car is when we have ample slots in the station and not for charging or broken, and that is the 14th hour,2nd hour and 21st.

3 ). What station is the most popular

|  |  |
| --- | --- |
| **Station name** | Total resources available |
| **Fontenay-aux-Roses/Robert Marchand/3** | 50 |
| **Paris/Porte de Montrouge/8** | 50 |

The above stations were the most popular

4). The station that is the most popular for picking a car at the most popular hour?

|  |  |  |
| --- | --- | --- |
| Station name | Station type | Total resources available |
| **Garches/Raymond PoincarÃ©/102** | station | 11 |
| **Clichy-la-Garenne/Jean JaureÌs/12** | station | 11 |

Our most popular hour is the 6th hour, hence **Garches/Raymond PoincarÃ©/102 station**

It is the most popular station at that particular hour.

5). Postal code and station that is the most popular for picking a blue car and do the stations and postal address change when you consider utilib and utilib 1.4

|  |  |  |  |
| --- | --- | --- | --- |
| POSTAL CODE | STATION NAME | BLUE CAR |  |
| **92260** | **Fontenay-aux-Roses/Robert Marchand/32** | 50 |  |
| **92350** | **Le Plessis-Robinson/GalilÃ©e/16** | 49 |  |
| **92260** | **Fontenay-aux-Roses/Lombard/20** | 47 |  |

|  |  |  |
| --- | --- | --- |
| POSTAL CODE | STATION NAME | TOTAL UTILIB CARS |
| 92310 | **SÃ¨vres/Grande Rue/123** | 12 |
| 75014 | **Paris/Porte de Montrouge/8** | 11 |
| 75017 | **Paris/Mac Mahon/5** | 8 |

From the above tables, we can see the stations and postal code are not the same for utilib cars and for picking a blue car.

# **RECOMMENDATION.**

The above information is very key when marketing the cars to the customers, Also the riders can be advised on the best time to return the cars when to rent. Now we know the most popular Postal code and station, the company can put more resources on the stations and ensure there are no broken cars, to serve more customers.

# **EVALUATION.**

I have done an evaluation of the popular station and postal code using blue car and utilib cars. The stations are different. The popular station for picking up a blue car is not the same for picking up a utilib car or a utilib 1.4

For more information about my analysis visit my Github:

https://github.com/jahraydennis/moringa.wk4.ip.git