

# Relation between bars and Velo'v transport mode

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## 1 INTRODUCTION

The representation of datas, usually called Data Visualization is a large topic that can be treated in different ways. Based on the mode of transport called *Velo'v* in Lyon, we wanted to create a specific visualization of these bikes. The system of *velo'v* works like this, there are some stations in the city with bicycle and you can rent it for the price of 1 euros for 1 hour. When you finish to use the bicycle, you have to deposit it in another station which is not full. That's why, we thought that users of *velo'v* need informations about stations, in order to see quickly the number of free spot.

The first approach we wanted to do was a representation in real time, of each station in Lyon. However, we will see in this article that this application already exist. That's why we asked ourselves the following questions: What does impact the use of *velo'v* ? What can modify the disponibility of *velo'v* in a station? What kind of visualization can show informations about this? Finally, we decided to study the impact of affluence in bars on *velo'v* station. Why is it interesting ? For example, bars close at 1 a.m and last public transport are generally at midnight, so if we can see that the situation of *velo'v* stations evolved at closing times of bars, we can suppose that people take *velo'v* after drinking.

For this visualization, we will need to get a lot of data about *velo'v* stations. To do that, we will stock two weeks of data in order to compare the *velo'v* station situation between an ordinary week and an popular week (*Fête des Lumieres*). That is why we will see if a major event may impact on bar influence and thus on *velo'v* stations. On the other side, we will get some data about affluence of peoples in bar of Lyon with the Google API. It will give us a number of peoples for each hour between bar's opening and closing.

The final project will be a comparison between two visualization. The first representing the situation of *velo'v* station during a normal week and the second during a popular week. This article will first describe some related work, and then a modelisation of our visualization.

## 2 RELATED WORK

The main problematic of this project is to be able to represent in the best possible way, some data which impacts *velo'v* transport mode. The panel of choices was very large and we made our choice based on available data.

### 2.1 Velo'v application

The first one is a released project [1]. This website contains a tab called Les Stations and provides multiple kinds of visualization (figure 1). On the first visualization, we observed a map which uses zoom interactions to focus on *velo'v* stations in a certain area. When there are many stations to display it is represented by a gray circle with the number of stations inside. To see in detail one of the station, the user have to click on it. Theses stations are represented with markers. When a marker is red, this means that a station is full of *velo'v* while when a marker is white, the station does

not contain any *velo'v*. When you click on one of theses markers, further informations are given like the number of available *velo'v*, the number of available stands, and an availability forecast for example. The others visualization in this website are almost the same. One of them displays where to rent a *velo'v*, another where to return one. Its also possible to create an itinerary.

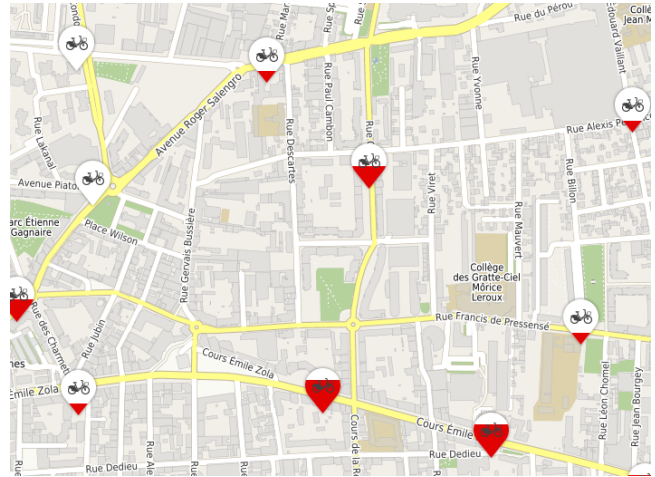


Figure 1: Sample of official Velo'v application

### 2.2 Links between metro and velo'v

The second project deal with the influence of public transport over *velo'v*. This project was done last year in the context of the course Data Visualization at Lyon 1 [2]. The purpose was to observe the impact of *velo'v* stations near the metro one (figure 2). This project use a map representation to show the different metro lines and the different stations.

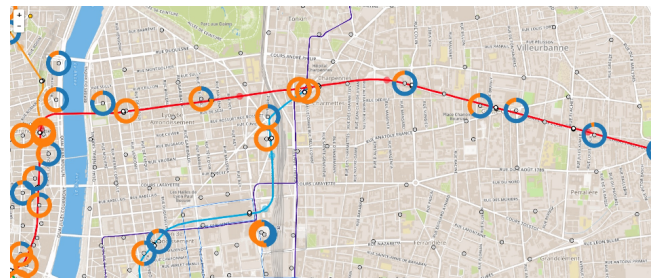


Figure 2: Simple of visualization between subways and velo'v

### 3 DESIGN

#### 3.1 Datasets

We choose to work on the state of each *velo'v* station and each bar from Lyon. We will use two open dataset. The first one from Open Data Lyon website which contains some important informations like the availability of *velo'v* and the geographical coordinates for example [3]. For the second one, we will use an API to collect bars. This API is provided by FourthSquare and contains the name of the bar and its position [4]. We will try to discover if there is any relation between theses two entries.

#### 3.2 Visualization

Another kind of representation could be two visualizations of *velo'v* stations during an ordinary week and a popular week (*Fête des Lumieres*) and compare them. Indeed, we can expect more activity on stations the second one. To do that, we decided to base our modelization on some ideas of both related work. Here we can see a first example of our future visualization (figure 3)

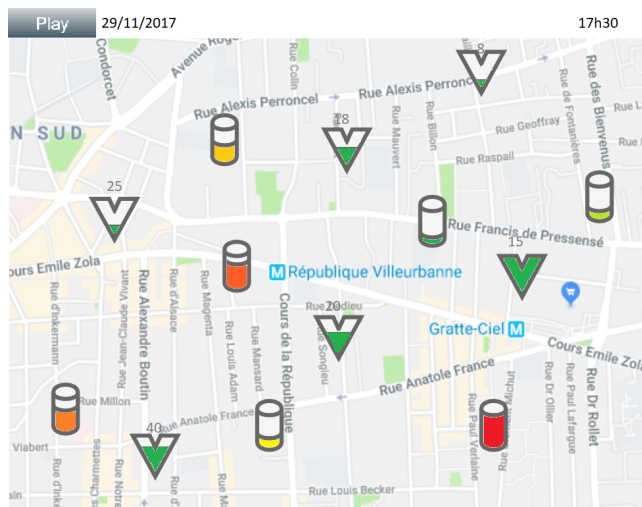


Figure 3: Simple sketch of our representation

To choose what would be viewed and how, we used as advised, the Five Design Sheets. Theses views are available in our git repository [5]. We decided to visualize the affluence of each *velo'v* station in evening at Lyon. We were inspired by the two projects mentions before. We will use a map representation that shows each *velo'v* station and each bar in Lyon. The bar is represented by a cylinder. When a cylinder is red, it means that the bar is full, when a cylinder is green, that means that the bar have few peoples. The *velo'v* stations are represented by the symbol V, have volume indicator inside the symbol based on availability, and a text display of the total number of bikes. When we press the button "Play", the different elements change through the time. Our objective is to first see if we can see something within a normal week and the see the differencies with a comparison with the "Fêtes des Lumieres" week.

### 4 CONCLUSION

In this article, a new visualization which link *velo'v* and bars have been planed. We showed projects from where the inspiration was find and it explains the global idea of our visualization. The next goal is to get all the data and then start to create this. After that, maybe we will try to add more specific spot like nightclub, or just restaurants.

### REFERENCES

- [1] V. G. Lyon, "Location de vlos en libre service dans lyon et villeurbanne." <https://velov.grandlyon.com/fr/les-stations.html>.
- [2] L. S. et PICARD Colas, "Visualisation de l'impact des arrives de rames de mro sur les stations vlo'v." <https://stanislasleroy.github.io/DataVizProject/>.
- [3] O. D. Lyon. <https://data.grandlyon.com/>.
- [4] Foursquare. <https://fr.foursquare.com/>.
- [5] B. A. e. D. C. T. HASSANI Kassim, "Five design sketches." <https://github.com/hassanidk/velovParty-dataviz/tree/master/avancements/img>.