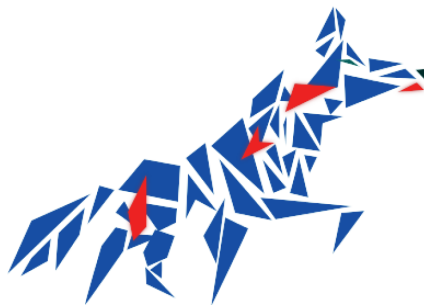


PTP INNOVATIVE SMART SYSTEMS - DATA PROCESSING AND
ANALYSIS FOR BIG DATA

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The Place of Sport in the French Society



INNOVATIVE SMART SYSTEMS

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Introduction

This document is a report done for the course of "Data processing and analysis for Big Data", provided as part of the 5th year Innovative Smart System (ISS) formation at INSA of Toulouse.

In this report, we show the results we obtained after studying the place of sports in the French society.

To do that, we focused on the average number of people per sportive equipment in each department, the investment done, the life expectancy, and the attractiveness of each department. The computing of data was done with R programming.

We finally chose to work only with metropolitan France cause the data for overseas territorial departments were not available.

1 Sportive infrastructures per department

We started our study by analysing the average number of sportive infrastructures per inhabitant in each department. Here is the first result we obtained:

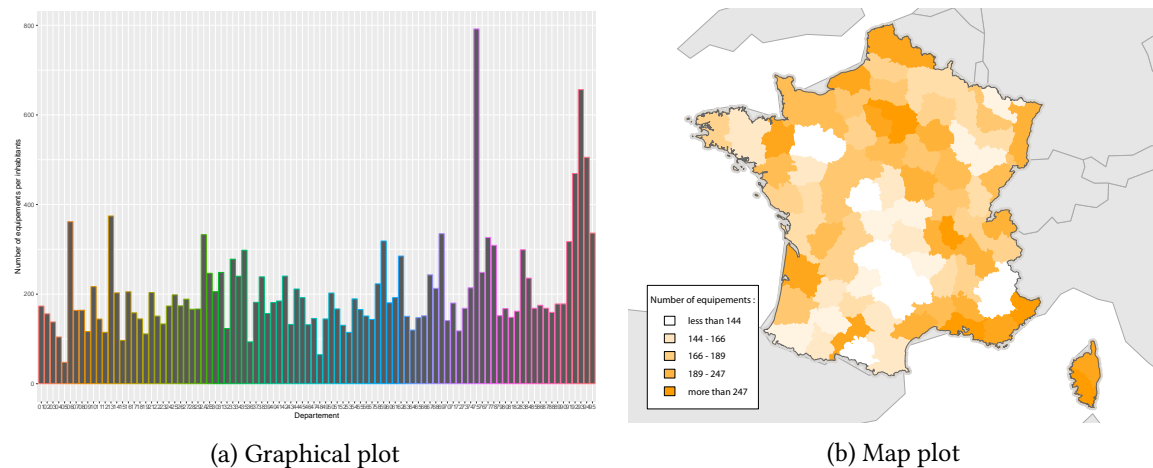
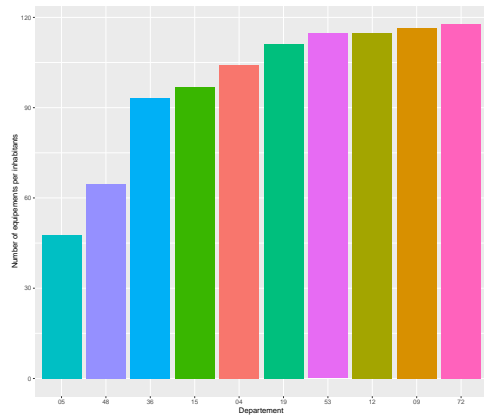
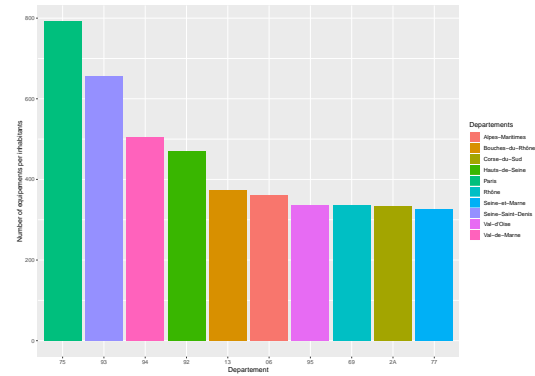


Figure 1: Average population per equipment in each department

We can see huge discrepancies in the number of inhabitants per sportive equipments, so we chose to plot the 10 best départements and the 10 worst in this sector. Then, we will try to correlate those figures with other factors such as the life expectancy, the attractiveness of a department,... You can find these figures below :



(a) 10 bests departments



(b) 10 worsts departments

Figure 2: Departments ranking by number of sportive equipments per inhabitants

According to these plots, Paris is the departments for this criteria, this could be explained by the very high density of population in the french capital city. In the other hand, the best departement regarding this yardstick is Hautes-Alpes but this is probably due to a low density of population and the massive presence of skiu equipment. Besides those two, the plots are quite interesting and show the availability and accessibility of sports equipmments depending the location.

2 Life expectancy in each department

One of our thoughts was to compare the life expectancy and the average number of inhabitants per sportive equipments to determine if there is any relationship between them.

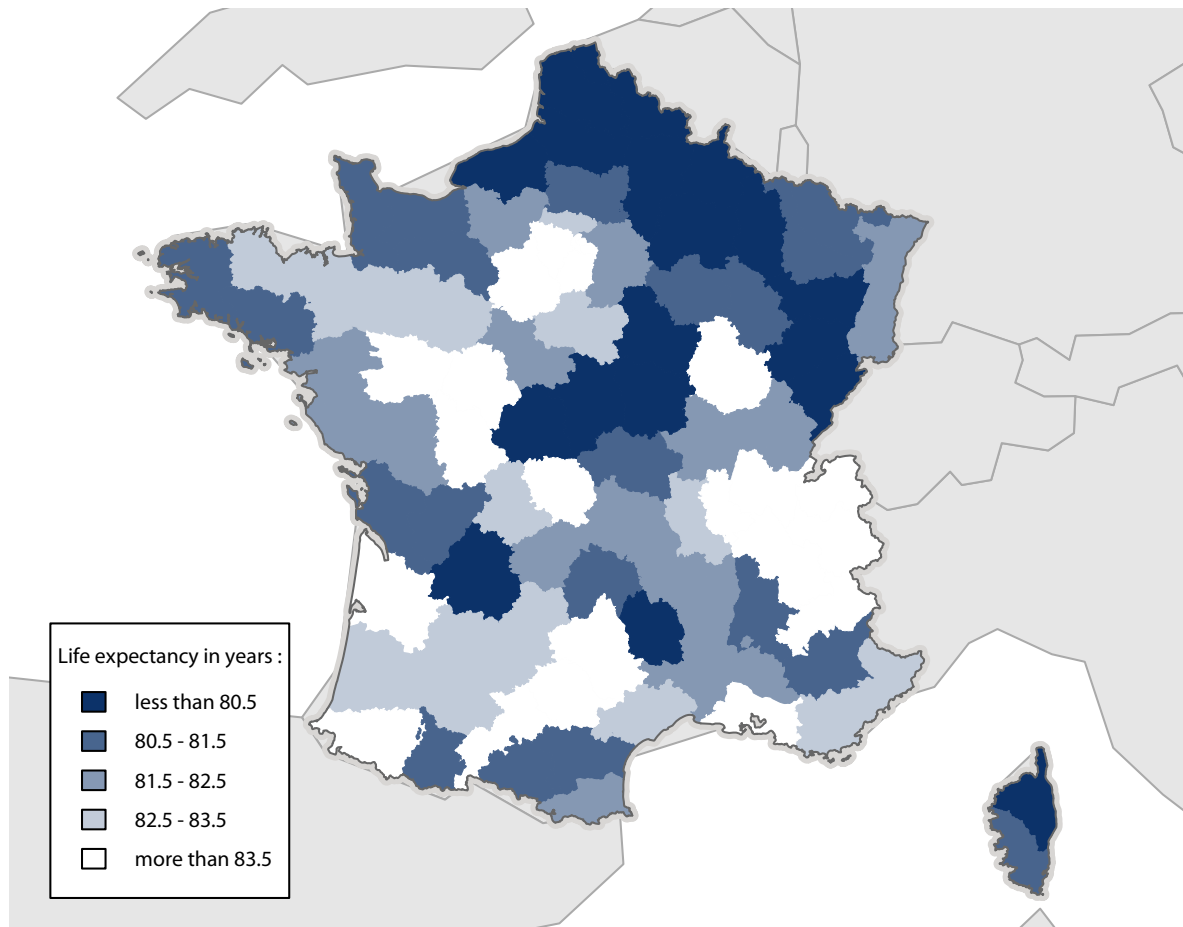


Figure 3: Graphical plot

In this map, we can see that the life expectancy is lower in the Parisian region, in the north of France, and near the Vosges. It is also the case in Dordogne, Lozère and Corse.

Among these departments, the Corse-du-Sud, Paris, Seine-et-Marne, Seine-Saint-Denis, Val-d'Oise and Val-de-Marne are part of the less equipped departments.

However, the Alpes-de-Haute-Provence, the Aveyron, the Corrèze, the Hautes-Alpes, the Mayenne and the Sarthe are the most equipped departments and have high life expectancy.

Finally, there is still departments for which the data is not correlated. It is the case for example for the Ariège, the Cantal, the Indre, the Lozère, the Alpes-Maritimes, the Bouches-du-Rhône and the Rhône. This shows us that a lot of parameters have to be taken into consideration if we want to demonstrate the differences in life expectancy, not only the number of sportive equipments.

3 Total investment in each department

We chose to study the investment in each department to see if it is correlated to the number of inhabitants per sportive equipment. Here are the national results we obtained:

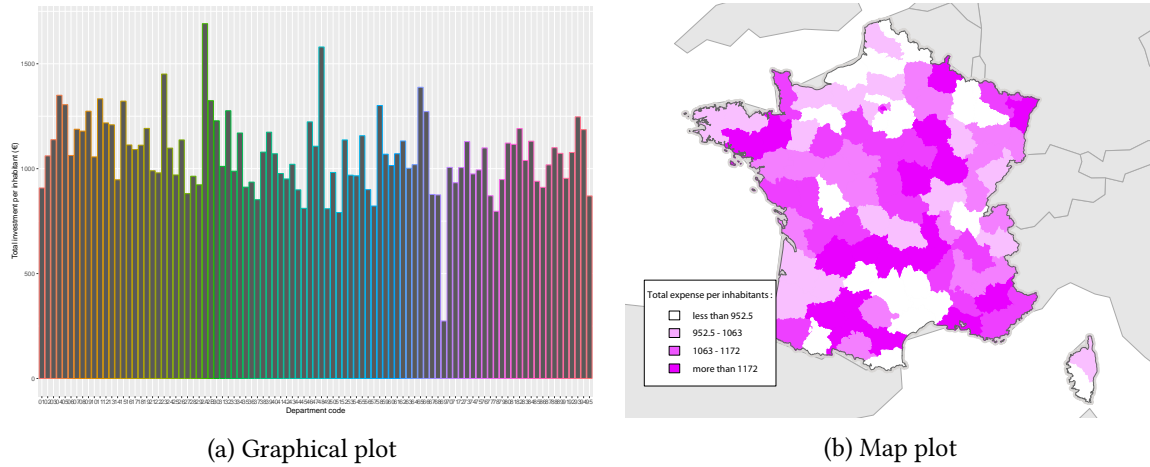


Figure 4: Total investment in each department

However, one more time the data is difficult to analyse at a national scale. That's why we plotted the ten highest and the ten lowest investors. Here are the results we obtained:

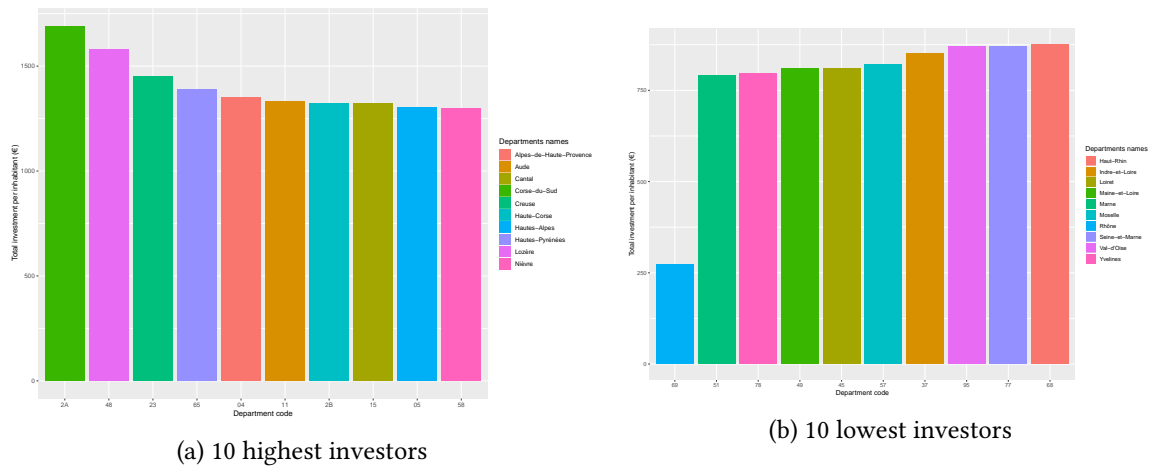


Figure 5: Departments ranking by investment per inhabitant

The results are pretty good compared to what we expected. On one side, the departments "Alpes-de-Haute-Provence", "Cantal", "Hautes-Alpes" and "Lozère" are both in the 10 highest investors and the 10 departments which provide the most equipments per inhabitant. On the other side, the departments "Rhône", "Seine-et-Marne" and "Val-d'Oise" are both in the 10 lowest investors and the 10 which provide the less equipments per inhabitant. Finally, the "Corse-du-Sud" is one of the best investors, but is part of the 10 departments which has the less infrastructures per inhabitant. It demonstrates that this department invests a lot, but not in sport infrastructures.

4 Population variations in each department

Finally, we studied the variations of population in each department to see if sport influences the migratory flows inside the country. Here are the results we obtained:

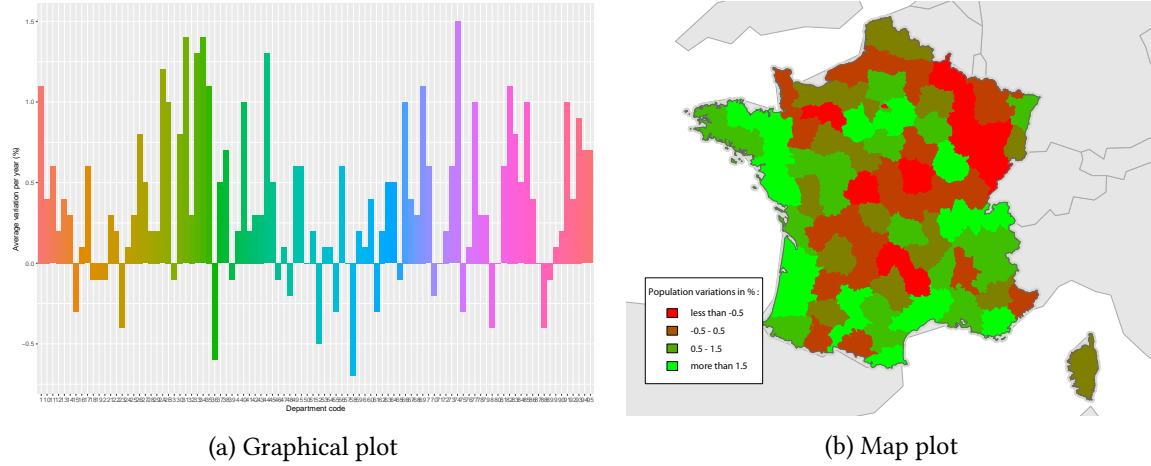


Figure 6: Population variations in each department

We isolated the 10 most attractive and less attractive departments based on this data:

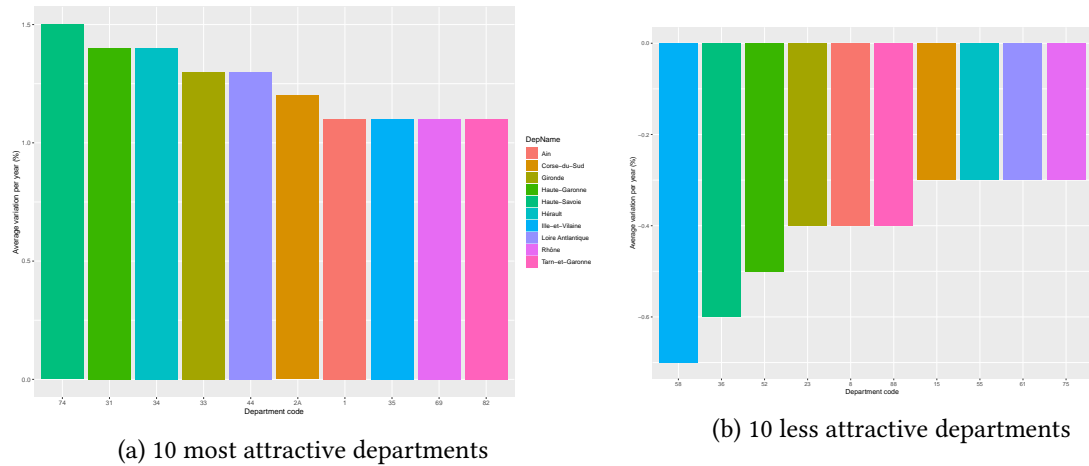


Figure 7: Departments ranking by population variations

The results obtained are completely different from what we expected. First, the "Cantal", "Creuse", "Indre" and "Nièvre" departments are part of the less attractive departments, even if they are part of the best investors or the most equipped sportively. Moreover, the "Corse-du-Sud" and the "Rhône" are in the 10 most attractive departments, but the "Rhône" has one of the highest rate of inhabitants per equipment, is in the 10 lowest investors, and the "Corse-du-Sud" is one of the best investors but does not have a lot of equipments for these inhabitants.

5 Conclusion

Our study allowed us to conclude that the number of sportive equipments does not influence directly the migratory flows in France. In fact, the less attractive departments can be part of those which offer the most of sportive equipment per inhabitant, and conversely.

However, the number of sportive equipments seems to be correlated to the amount of investment in most of the departments. Consequently, we can assume that sport takes a non-negligible place in the french society, even if it is not the case for all the departments. This is the consequence of the politic applied in each department.

Finally, the life expectancy can be correlated to the number of sportive equipments per inhabitants, but this parameter is not sufficient to explain the differencies of life expectancy between the departments. For example, the main professional activities (agriculture, coal mines, etc.) of each department can be an important parameter to take into consideration.

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