

# Comparative visualization of different factors involved in road transport accidents in France

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## 1 INTRODUCTION

Road transport is the favorite and most frequent way for people all over the world to travel. There are more than one billion vehicles in the whole planet, and this number never stops to rise even though increase levels have dramatically drop since the Transport Revolution in the 20th century [1].

In France alone, until January the 1st 2015, more than 38 million of vehicles travel the roads of this country, and studies have proved that 83% of the total passenger traffic count is ensured by road transport, as well as 80% of freight transport. (INSEE, 08/2007).

There are obviously many positive aspects in the fact that road transport is available for everyone. But there is also a darker side, which is the increase of road accidents. In 2016, there have been around 3500 people killed on the road, and mortality statistics don't seem to go down fast enough.

Therefore, we have decided to focus our project on this subject. We consider that road safety is an essential element in our society, but unfortunately it doesn't seem that people are aware enough on this matter. In order to decrease the number of accidents, people need better and more visual ways to realize the dangers. Hence, our goal is to create interactive and interesting visualizations which allow people to easily come across information about accident-related factors. For example, in which French departments accident counts are higher, or what is the most dangerous type of vehicle, and so on.

## 2 RELATED WORK

### 2.1 Interactive visualization of the seriousness of accidents in France [2]

This visualization shows the same information that we want to show in our first conception idea. Nevertheless, we consider it is incomplete and doesn't show many important details such as the vehicle involved or other statistics.

### 2.2 Interactive map of France showing the seriousness of accidents in France in the period 2006-2011 [3]

This visualization is very interesting, as it uses different shades of colors to indicate the seriousness of accidents in not only French

departments but also towns and cities. Clicking on a town or city will show statistics related to exact accident counts and the seriousness of the accident in number of people killed, severely injured and slightly injured. Nevertheless, the statistics are written and not plotted in a graphic which could be more explicit and help comprehension.

## 2.3 Available Data

After choosing the subject pour our project, we have searched for open data online, and we have found a data base containing information about road transport accidents in France [4].

A useful description of this data is available online as well [5].

Several parameters are available for public exploitation, which allows us to come up with many different possible representations.

## 3 CONCEPTION IDEAS

### 3.1 Accident visualization in terms of geographic localization in the France map

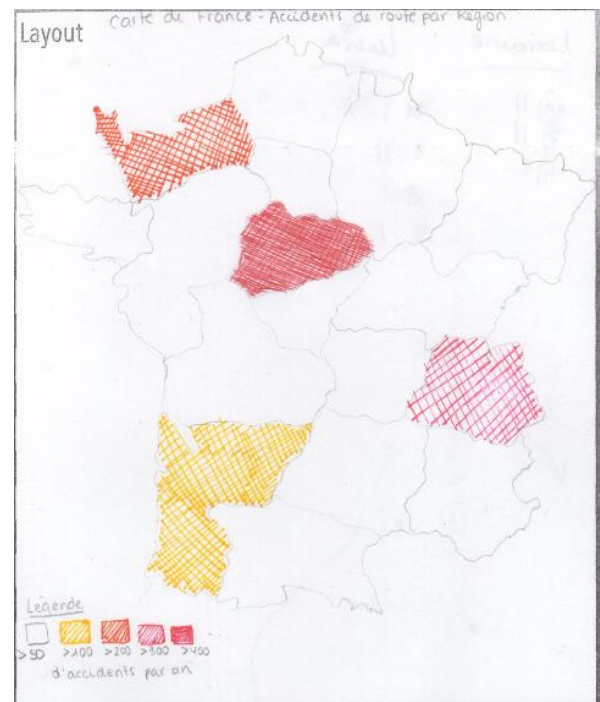


Figure 1: Map of France colored in shades of red according to accident prevalence.

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This visualization is designed to raise awareness about the most dangerous French departments in terms of road accident prevalence. We assign different shades of red (from red to white) to different accident level intervals, and we color each department with its corresponding shade according to the accident counts in that specific department. It is possible to zoom into a certain department and visualize graphics representing statistics about the types of vehicles involved and weather conditions.

### 3.2 Accident visualization in terms of the biological sex of individuals involved

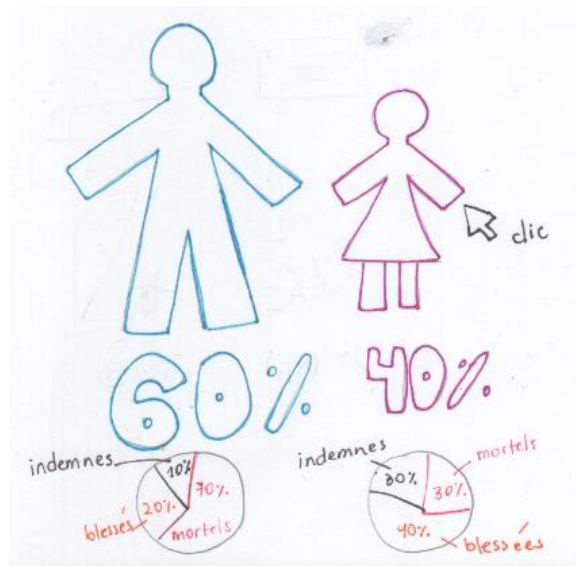


Figure 2: Visualization of accidents linked to a certain biological sex.

This visualization is designed to corroborate or refute a global prejudice which states that women are responsible for more accidents than men. It is interesting as well to aim a certain group of people (men or women) and create more specific accident awareness publicity. Clicking on the man or woman figures will “zoom” into this biological sex and show graphics informing about which age-groups are the most susceptible to be involved in an accident.

### 3.3 Accident visualization in terms of the type of vehicle involved

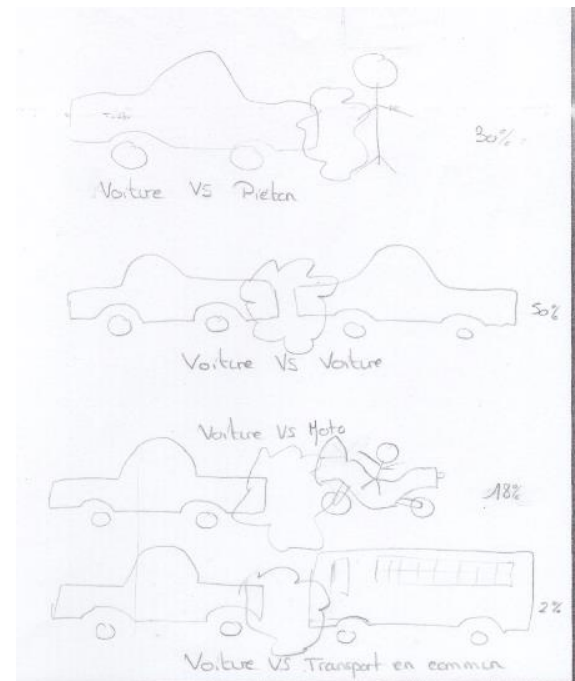


Figure 3: Visualization of accidents linked to a certain type of vehicle.

This final conception is designed to show specifically which types of vehicles are the most susceptible to be involved in an accident, according to statistics. The “home page” shows 4 different accident types (car-car, car-bus, car-pedestrian, car-motorcycle), and by clicking on each of them we zoom into a certain type and different statistics graphics are shown. The user will learn about the seriousness of the accident for example (% of injured, % of killed, % of uninjured).

#### REFERENCES

- [1] Christophe Magdelaine. Novembre 24, 2016. <https://www.notre-planete.info/ecologie/transport/placeauto.php>
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