SAE2.04

2023-04-07

The Provence-Alpes-Côte d'Azur region located in the south of France, is made up of 6 departments: Alpes-de-Haute-Provence (04), Alpes-Maritimes (05), Bouches-du-Rhône (13), Var (83), Vaucluse (84).

In 2021, this region will have more than 5.08 million inhabitants, or 8% of the population of metropolitan France. The Bouches-du-Rhône is the most populated department in the region with a total of 2.05 million inhabitants. (source Insee and Wikipedia)

Our study will focus on accident statistics in the PACA region over a 15-year period, from 2006 to 2021. We will be particularly interested in accidents involving elderly people (65 years old minimum). The objective of this study is to analyze the trends and factors contributing to accidents, as well as the consequences on road safety for the elderly. We will examine data such as the number of crashes, types of crashes, locations, conditions, and days of the week.

Evolution of the number of accidents on the roads in PACA region

This first table shows us for each department of the region, the number of accidents in 2006, the number of accidents in 2013, the number of accidents in 2021 and in a last column the difference in the number of accidents between 2006 and 2021.

Then, the curves in Figure 2 will show that the evolution of the number of accidents per department has globally decreased.

Table 1:

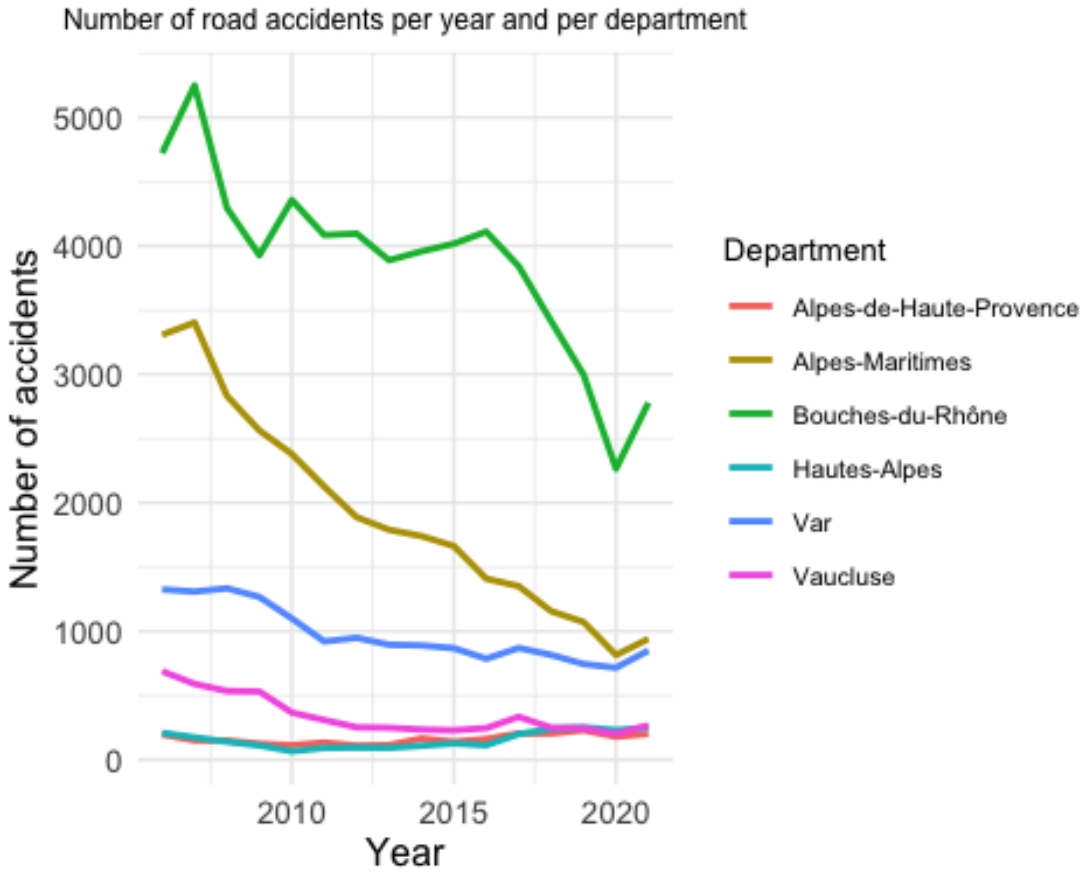
nom <chr>	nb_acc_2006 <int>	nb_acc_2013 <int>	nb_acc_2021 <int>
Alpes-Maritimes	3307	1790	941
Alpes-de-Haute-Provence	197	114	202
Bouches-du-Rhône	4722	3888	2779
Hautes-Alpes	209	92	250
Var	1326	895	850
Vaucluse	689	249	267

We can observe in Table 1 that the number of accidents in each department of the PACA region is decreasing between 2006 and 2021, except for the Hautes-Alpes and the Alpes-de-Haute-Provence.

This decrease is certainly due to the great evolution of safety devices in vehicles and on roads.

The department in which the evolution is the most important between 2006 and 2021 is the Alpes-Maritimes with a decrease of 2366 accidents, while the Hautes-Alpes has suffered an increase of 41 accidents.

Figure 1



In this graph, we can see that in the Bouches-du-Rhône department, the number of accidents is much higher than in the other departments of the region.

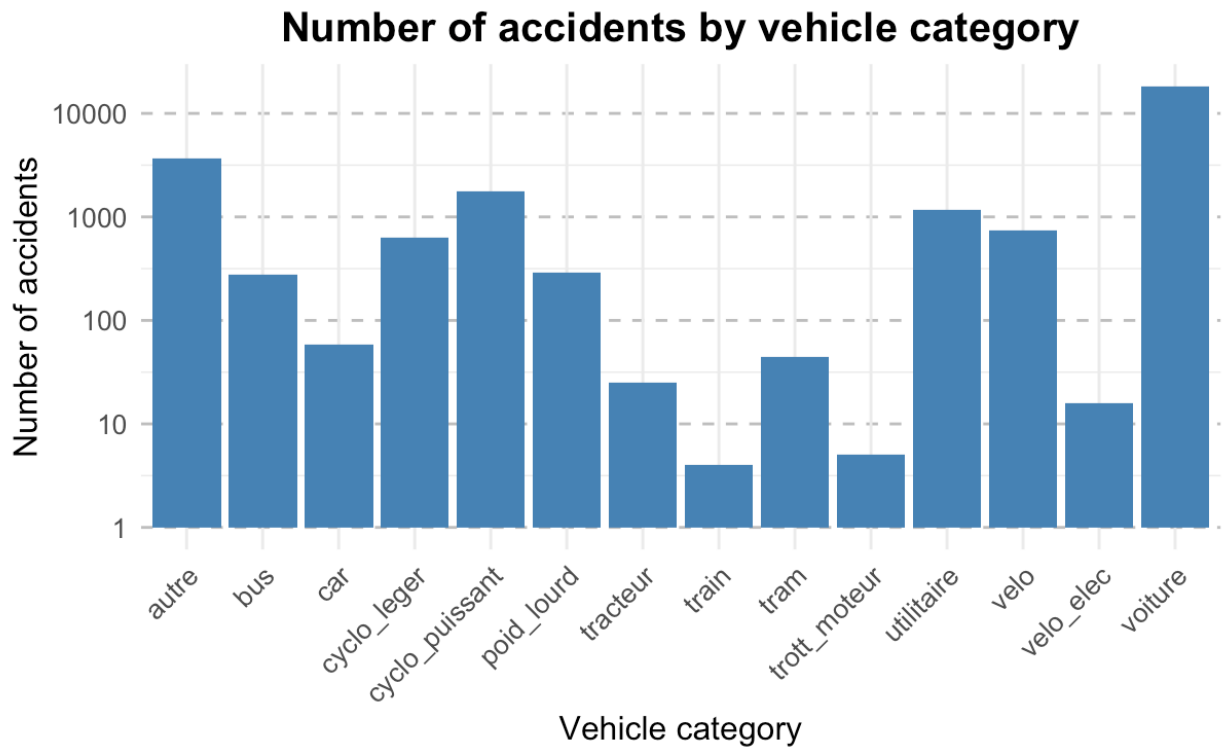
This is due to the large cities in the region such as Marseille, Aubagne or Aix-en-Provence. However, the number of accidents has greatly decreased.

Number of accidents by vehicle category

In this section, we will look at the 14 different vehicle categories: cars, bicycles, e-bikes, buses, light mopeds, heavy mopeds, buses, trucks, tractors, trains, streetcars, scooters with motors, utilities and other road users.

Figure 2 below is a bar chart representing the number of accidents according to the different vehicle categories from the year 2006 to 2021.

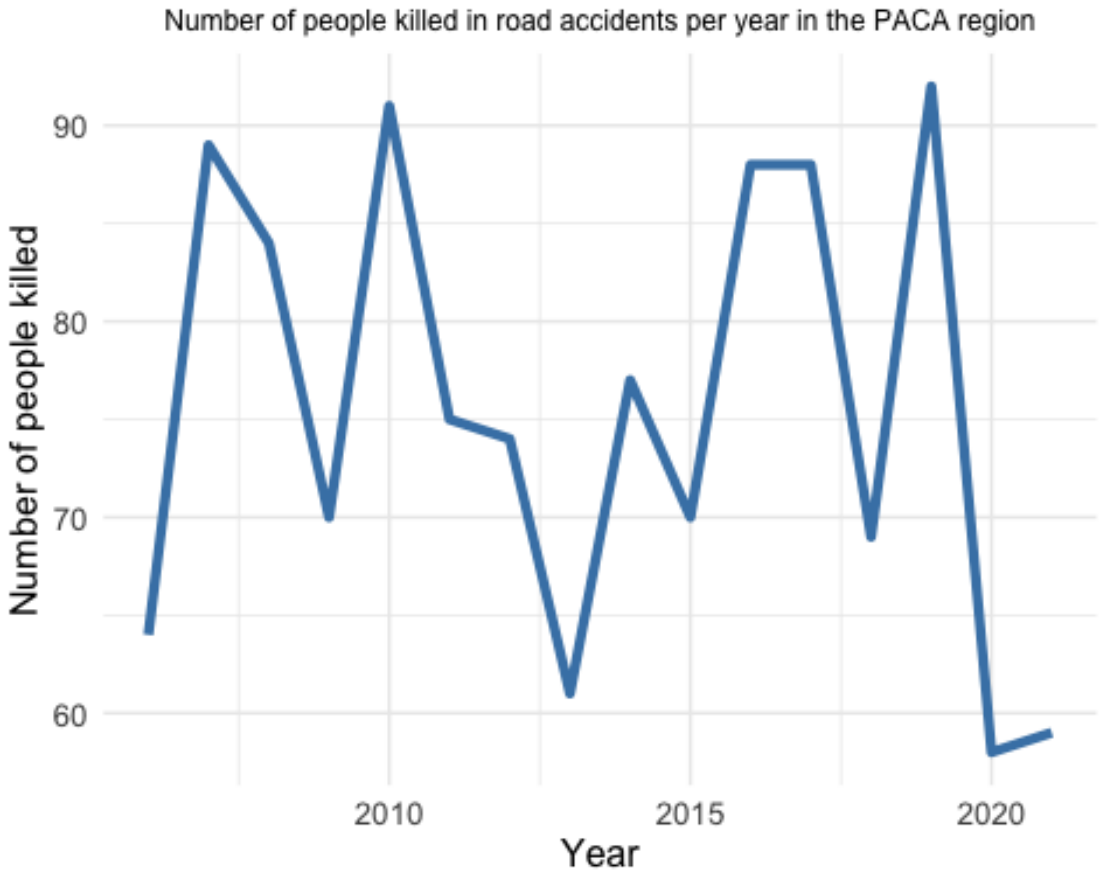
Figure 2:



In this graph, we can see that, as we could imagine, the vehicle category with the most accidents from 2006 to 2021 is the car with more than 10,000 accidents in this period. In addition, two-wheeled vehicles, such as bicycles, are also highly impacted, certainly due to the fact that these vehicles can be complicated to handle and difficult for drivers to see.

From now on, we will talk about people who died as a result of road accidents. The curve of the graph in Figure 3 will reveal the evolution of the number of deaths related to road accidents between 2006 and 2015.

Figure 3:

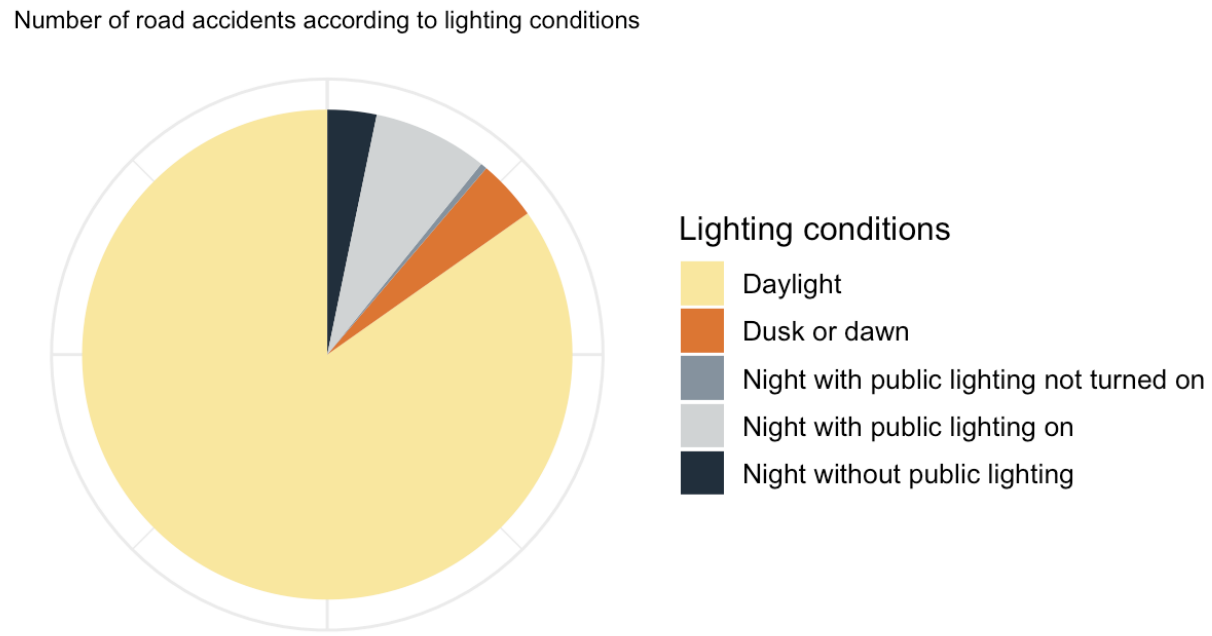


On this curve shows the evolution of the number of people killed in accidents by years in PACA region. This one shows us that the number of deaths fluctuates enormously each year. The peak of deaths was in 2018 with more than 90 deaths, then, following the containment during the year 2020, the number of people killed dropped to below 60 deaths.

Number of road accident according to lighting conditions

In this section, we will be concerned with the conditions under which accidents occur. This pie chart shows the lighting conditions for the accidents of the last 15 years. The conditions can be: daylight, dusk or dawn, night with street lights, night with street lights off, and night with street lights on.

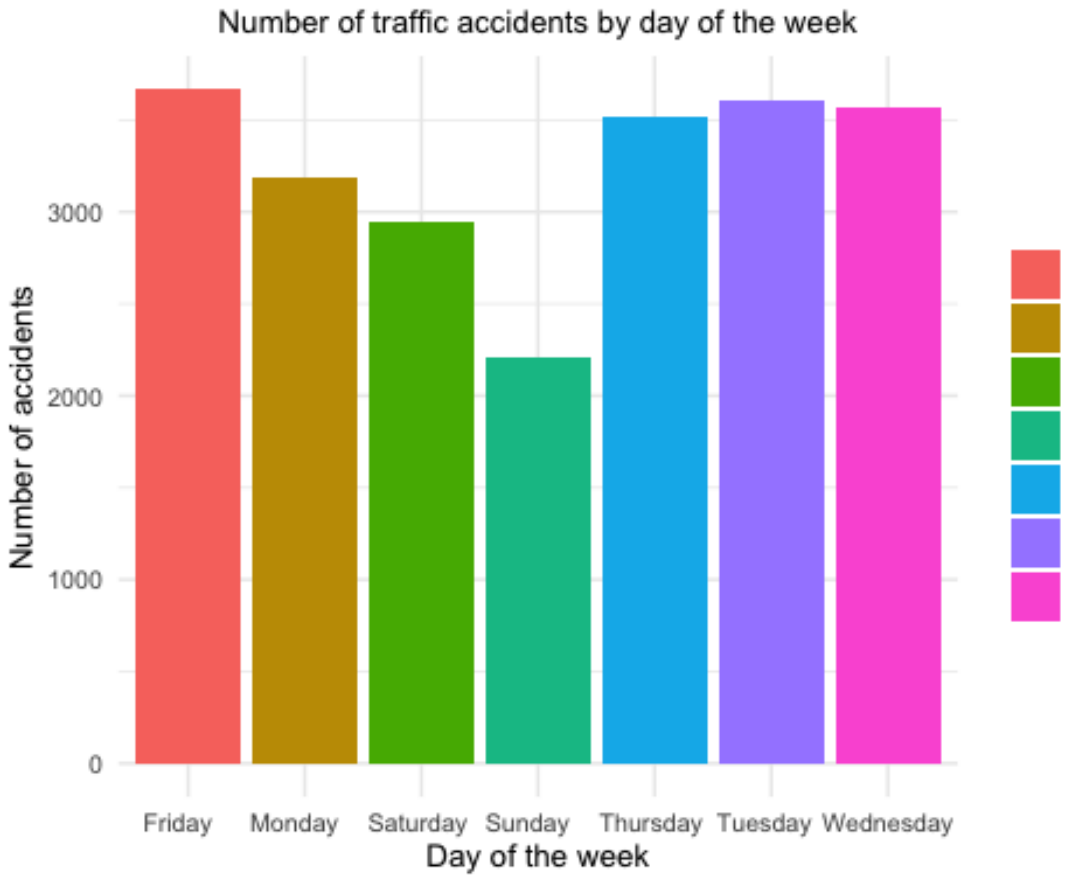
Figure 4:



The diagram in Figure 4 explains that the vast majority of accidents in elderly people in the PACA region occur in daylight. This may be surprising since it is the part of the day when conditions are best, but it is also the time when there are the most vehicles on the roads. Also, there are more accidents at night when the lights are on than when they are off since most roads are lit at night.

Figure 5 is a bar graph that shows us the number of traffic accidents since 2006, according to the day of the week (Monday, Tuesday, Wednesday, Thursday, Friday, Saturday and Sunday).

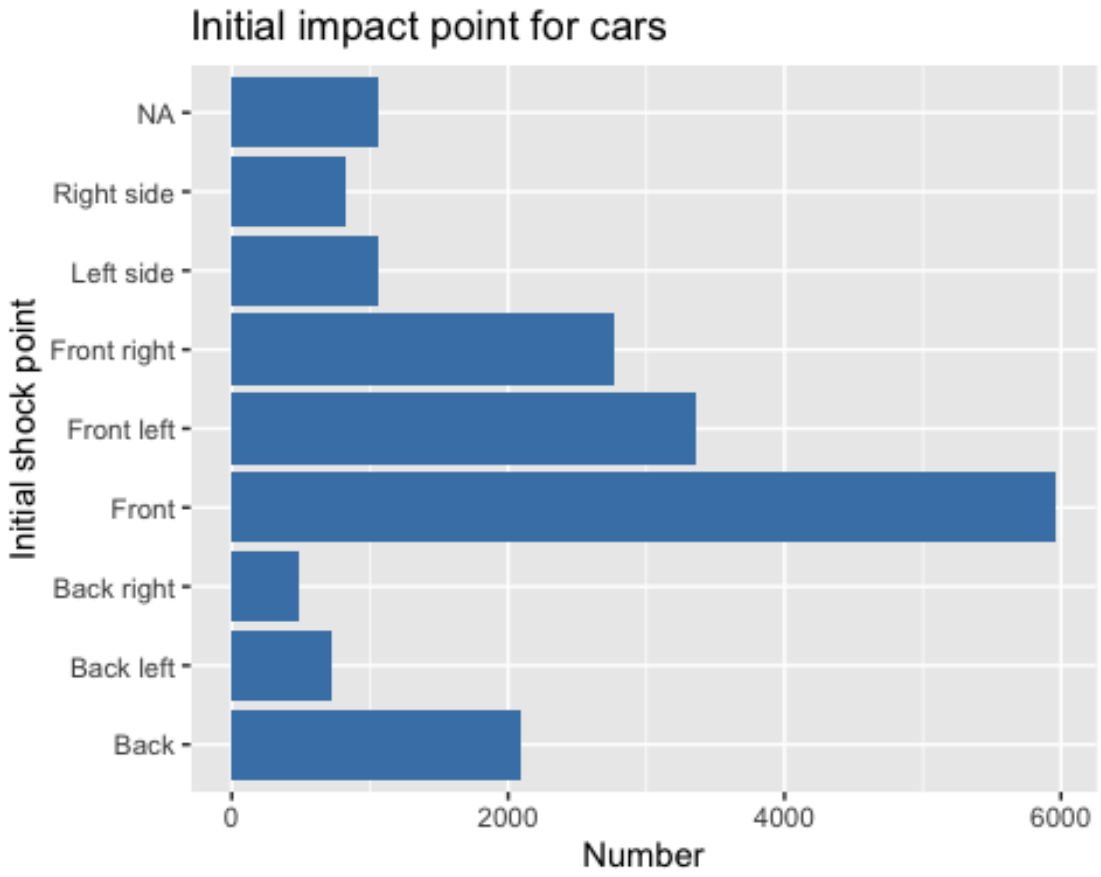
Figure 5:



The data from this graph that seems interesting to analyze is that the weekend days are the days where there are the fewest accidents in the Provence-Alpes-Côte d'Azur region, especially on Sunday. On the other days of the week, the average number of accidents varies between 3,200 and about 3,600 accidents, whereas Saturday has only 2,900 and Sunday 2,200. The reason for this significant decrease is that the elderly population does not leave their homes on weekends.

In this last section, we will discuss the impact that an accident can have on cars. This bar graph shows the number of different initial impact points in accidents (left side, right side, left front, right front, front, left rear, right rear, rear).

Figure 6:



We can notice that for most of the accidents involving a car and damaging it, the initial impact point was the front of the vehicle (6,000 accidents). This is the case for the majority of the accidents since many of them are frontal impacts.