ROAD SAFETY OBSERVATORY

FRENCH

Increasing the Speed Limit to 90 km/h on certain departmental roads

Report for the years 2020 - 2021

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Observatoire national interministériel de la sécurité routière

ONISR

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Glossary

APAM: Presumed Responsible of Fatal Accidents

BAAC: Traffic Accident Analysis Bulletins

DC: Departmental Council

CDSR: Departmental Road Safety Commission

Cerema: Centre for studies and expertise on risks, the environment, mobility and planning

LRSI: Local Road Safety Indicators

LOM: Mobility Orientation Law

ONISR: French Road Safety Observatory

DR: Departmental Road

SDES: Data and Statistical Studies Department

SL: Speed limit

PV: Passenger vehicles

I. Introduction

I.1. History and impact of the 80 km/h speed limit and context to increasing the speed limit back to 90 km/h

During the Interministerial Road Safety Committee of January 9, 2018, 18 measures were decided, including measure no. 5, the purpose of which was to reduce the speed limit outside built-up areas and off motorways. After an experiment carried out between 2015 and 2017, and according to the terms of decree no. 2018-487 of June 15, 2018 relating to the speed limit (SL) of vehicles, which implements this measure, on two-way roads without a central separator, the speed limit was lowered from 90 to 80 km/h on July 1, 2018.

The Road Safety Directorate entrusted Cerema with the evaluation of this measure. The results, described in the report Lowering the speed limit to 80 km/h - Final evaluation report[1] published in July 2020, report a drop of 331 fatalities on the network outside built-up areas excluding motorways compared to the reference period 2013-2017 over the first 18 months of implementation of the measure and up to 349 over 20 month.

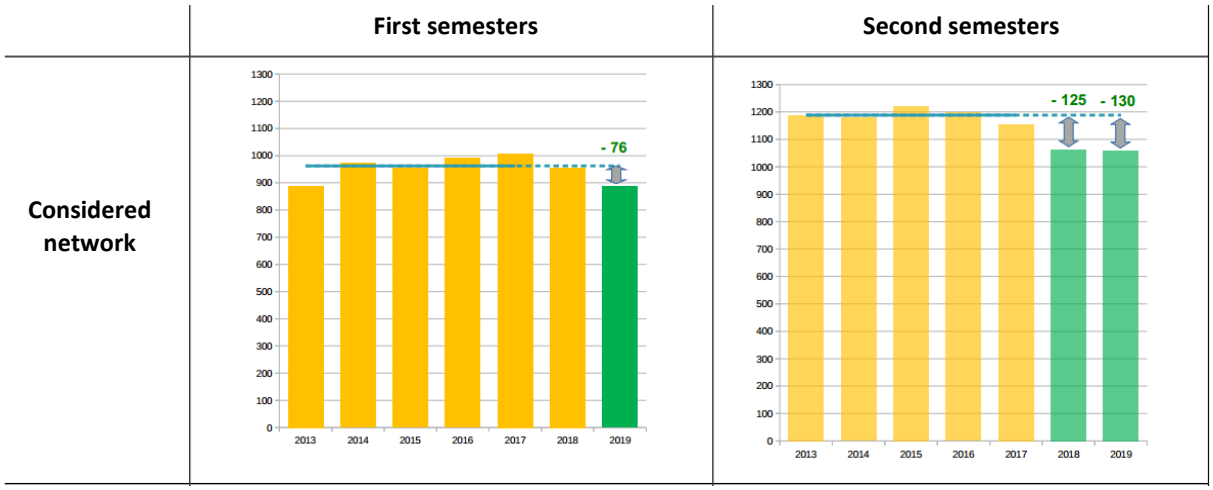


Figure 1 : Comparison of the number of fatalities per semester on the network considered (excluding built-up areas excluding motorways) between the period 2013-2017 and the period 2018-2019, Cerema, 2020

On December 23, 2019, the mobility orientation law, known as the LOM law, was promulgated, in which article 15 bis B introduces the possibility of returning to 90 km/h on two-way roads outside built-up areas. "for sections of roads outside the built-up area falling under [the] jurisdiction [of] the president of the county council or, when he is the authority holding the power of traffic police, the mayor or the president of the public establishment of inter-municipal cooperation] and not comprising at least two lanes assigned to the same direction of traffic". This decision must be taken after consulting the Departmental Road Safety Commission (CDSR), based on an accident study covering each of the sections of road concerned.

[1] The report is available on the ONISR website: https://www.onisr.securite-routiere.gouv.fr/en/knowledge-centre/evaluation/evaluation-of-the-measures/80-kmh-speed-limit-on-rural-single-carriageways

I.2. Departments and share of the network concerned by the new speed limit

Key points:

- Over the two years, 2020 and 2021, 39 departments have decided to raise the speed limit to 90 km/h on all or part of their network[1]. 5 departments have raised the speed limit on more than 80 % of their network ; 26 on less than 15 %.
- The departments that have chosen to raise the speed limit to 90 km/h are mainly rural and sparsely populated or mountainous. The proportion of fatalities outside built-up areas (on non-motorway roads) is higher than the national average.

On January 9, 2020, the Haute-Marne department was the first to raise part of its departmental network to a speed limit of 90 km/h (766 km).

Departments have made varying decisions regarding the scope of application of the new Speed Limit. Haut-Rhin, for example, only raised 16 km, i.e. less than 1 % of its departmental network when Allier decided to raise the entire 5,284 km of its network to 90 km/h. However, the objective of the departments was to raise the speed limit first on the busiest roads, whereas the preparatory studies[2] for the lowering of the speed limit had shown that the busiest network in fact concentrated most of the accidents since it carried most of the traffic.

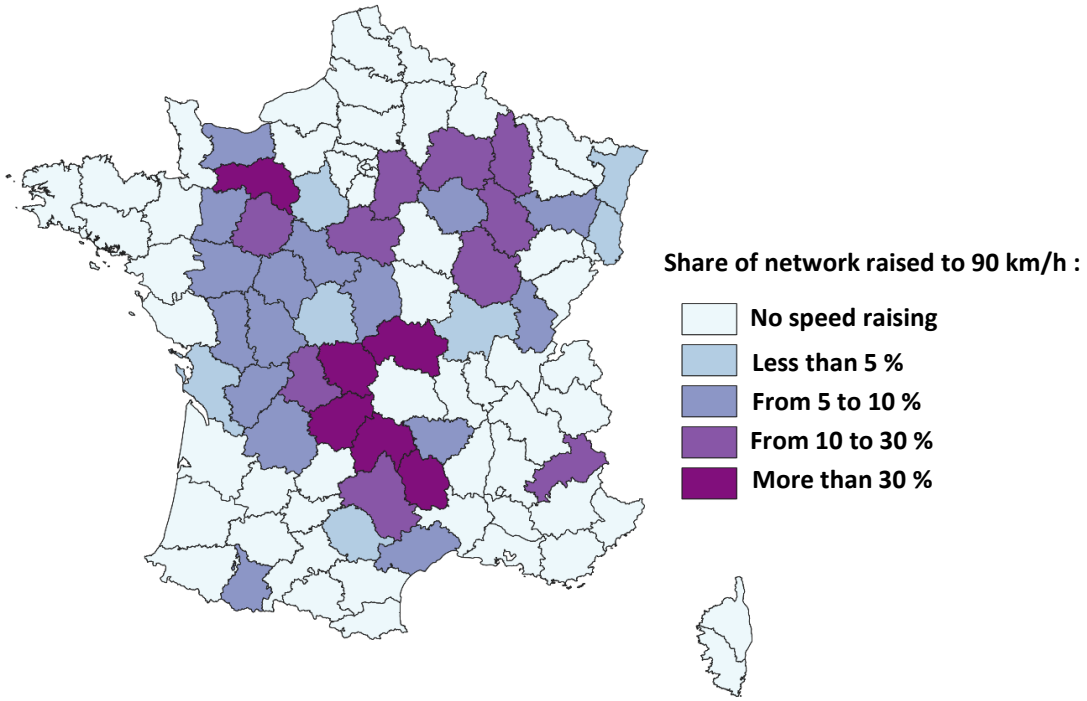


Figure 2 : Share of the network recorded at 90 km/h in 2020 and 2021 according to the department

[2] Prioritization of departmental road networks and accidents – Cerema/ONISR. https://www.onisr.securite-routiere.gouv.fr/etudes-et-recherches/environnement-et-infrastructures/reseaux-ruraux/hierarchisation-des-reseaux-routiers-departementaux-et-accidentalite

In total, as of December 31, 2021, just over 34,000 km of departmental roads were raised to a speed limit of 90 km/h out of the 370,000 km of departmental network in France mainland [3], i.e. a little over 9 % of the departmental network.

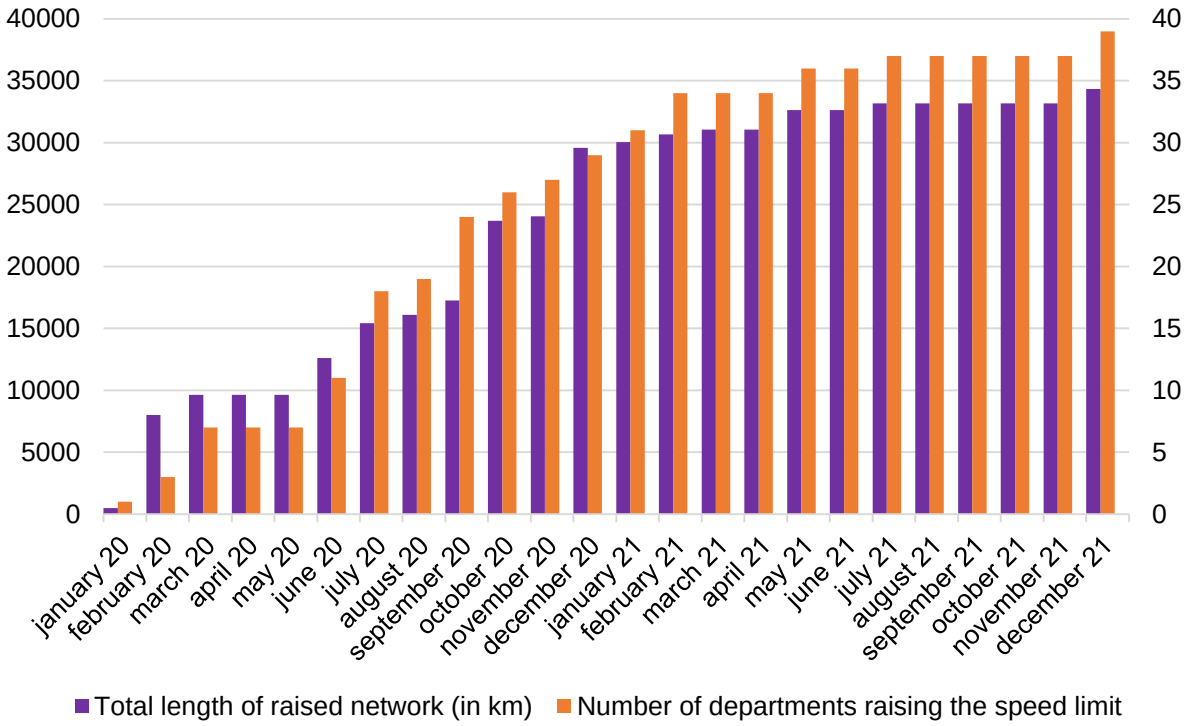


Figure 3 : Evolution of the number of departments having recorded the speed limit (right scale) and of the total national length of the network recorded at 90 km/h (left scale), total on the last day of each month

However, the length and proportion of the network measured at 90 km/h are indicators to be used with caution when it comes to estimating their impact on road accidents.

In 2018, ONISR conducted a study on fatalities on two-way roads outside built-up areas over the period 2012-2016[4]. The study confirms that on average **10 % of the main roads** (DR and NR) **concentrate 41 % of the mortality on this network**, if we consider 20 % of the same network, we reach 60 % of the mortality on the national roads and departmental roads, i.e. 55 % of mortality on two-way roads outside built-up areas. In particular, in highly density or even mountainous departments, the main roads represent a small proportion of the road length but they are the only ones where it is possible to reach the speed limit; thus, the changes of speed limit on this network have a major impact on departments road safety performance.

[3] Source: SDES, Memento of transports, 2019
[4] ONISR 2018 report, page 39

I.3. Scope of study

To analyse the impact of the new speed limit, two topics are presented here:

- **Mortality,** using data from BAAC files (Traffic Accident Analysis Bulletins) between 2013 and 2021.
- **Recorded free-flow speeds,** using data from the ONISR Speed Observatory between 2017 and 2021.

The comparisons are made on a given network between several groups of departments defined below.

I.3.1. Selecting the network

In order to analyse the impact of the 90 km/h increase on road mortality, the study perimeter was defined according to the characteristics of location in the BAAC files, from the variables "outside built-up areas" and "outside motorways". This scope, identical to that chosen by Cerema for its assessment of the impact of the 80 km/h speed limit, has the advantage of presenting figures that are both precise enough and reliable enough to carry out a robust analysis. In the rest of the report, it will be referred to as the "**network considered**".

For Part II.1. **Recorded free-flow speeds***, all the measurement points are located on the same network.*

I.3.2. Selecting the groups of departments

To make a relevant comparison, the figures of different groups of departments are compared:

- The group known as "**80 group**" with all the departments that did not raise the speed limit to 90 km / h on any road or portion of road between January 1, 2020 and December 31, 2021, i.e. **57 departments** of France mainland.
- The group called "**90_{total} group**" with all the departments having raised all or part of their network to a speed limit of 90 km/h between January 1, 2020 and December 31, 2021, i.e. **39 departments**, broken down into two sub-groups:
    - The group called " **90_{2020} group** " with all the departments having raised all or part of their network to a speed limit of 90 km/h between January 1 and December 31, 2020, i.e. **28 departments**.
    - The group called "**90_{2021} group**" with all the departments having raised all or part of their network to a speed limit of 90 km/h between January 1 and December 31, 2021, i.e. **11 departments**.

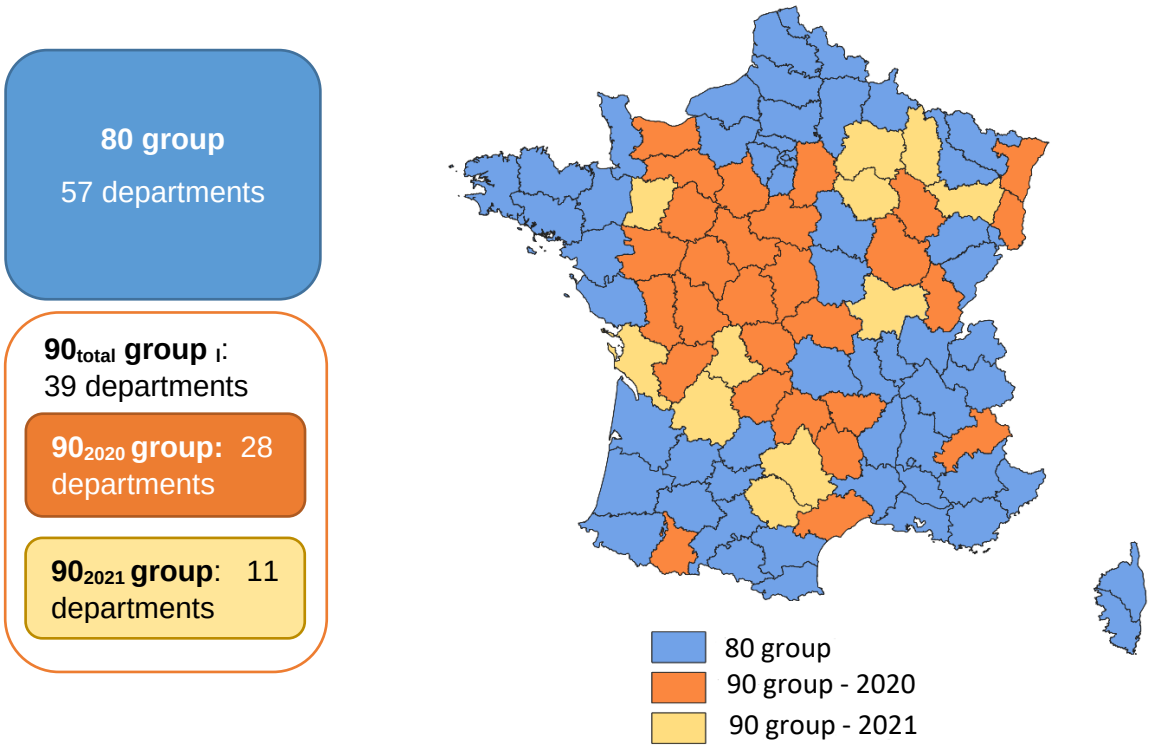


Figure 4 : Distribution of departments by group and nesting of groups

I.3.3. Characteristics of the groups of departments

The departments of the different groups have distinct profiles, which can be characterized by several indicators.

	Nb of travel.	Density of population (inhab / km²)	Density of DR network (m/km²)	Length of DR per inhabitant (km/1000hab)	Share of killed outside built-up area off motorway in 2019
80 group	**57**	**162**	**683**	**4,2**	**57,2%**
90_{total} group	**39**	**71**	**694**	**9,7**	**65,8%**
90_{2020} group	28	78	711	9,2	64,8%
90_{2021} group	10	58	655	11,4	68,2%
France mainland	**96**	**121**	**688**	**5,7**	**59,9%**

Table 1: Main characteristics of department groups[5]

In general, the groups of departments differ on the following points:

- The 90_{total} group has a **population density more than twice as low** as the 80 group. This density varies within the subgroups with a 90_{2021} group whose density is almost 1.3 times lower than that of the 90_{2020} group.
- The **departmental network densities are similar** regardless of the group. On the other hand, the heterogeneity of population density leads to a much greater availability of departmental roads per inhabitant in the 90 group and in particular in the 90_{2021} group.

[5] Sources : SDES, Memento of transports, 2019, INSEE

- The 90 group , which is predominantly more rural, has a **higher share of deaths** on non-motorways roads outside built-up areas in 2019 than the 80 group.

A comparison can also be carried out based on an approach by family of departments (local road safety indicators / LRSI – See details in Appendix 2).

The results of the operations are reflected in the graph below.

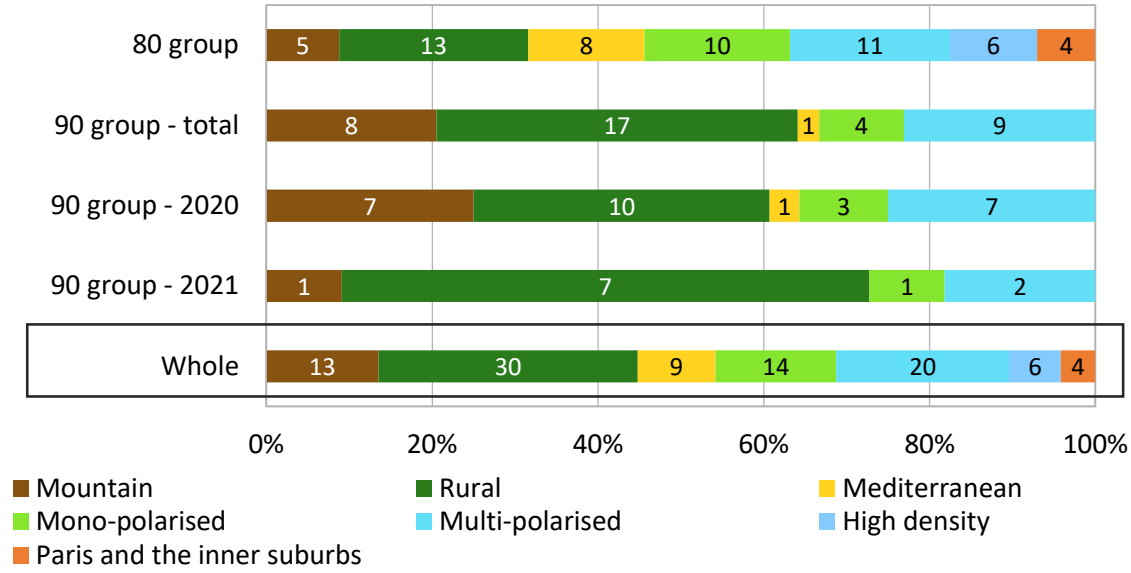


Figure 5 : Composition of study groups according to the family of departments (LRSI) constituting them, in number of departments

The 80 and 90 groups differ quite clearly:

- **The 90_{total} group** generally shows a very strong over-representation of “mountain” and “rural” departments. Together, these two categories represent 64 % of the departments of the 90_{total} group, compared to 45 % for the entire mainland territory. The “rural” departments notably represent 64 % of the 90_{2021} group. The “multi-polarized” departments are also strongly represented (9 departments out of 39).

- **The 80 group is more heterogeneous** in its composition, and is significantly similar to the image of the whole of France mainland. It is noted, however :
  - a slight under-representation of the “mountain” and “rural” departments: the latter represent a third of the group for 45% in France mainland;
  - a slight overrepresentation of the “Mediterranean”, “mono-polarized” and “multi-polarized” departments as well as all the “high density” LRSI and Paris and the inner suburbs.

II. Indicators evolution

II.1. Recorded free-flow speeds

Key points:

- When lowering the speed limit to 80 km/h, the drop in speeds had been greater on the 90_{total} group than on the 80 group.
- The recorded speeds on the roads whose speed limit was raised to 90 km/h from 2020 are higher in 2020 and 2021 than in 2017. The number of vehicles exceeding the speed limit on these roads are higher in 2020 and 2021 than in 2017.

The data used for the study of the evolution of the recorded speeds come from the ONISR speed observatory. The data collection methodology evolved between 2019 and 2020: automated recording makes it possible to collect a much larger volume of data while being more discreet[6]. Speed measurements are taken during two waves in the year: a first between March and June, and a second between September and December.

The increase in the speed limit having been made on various dates depending on the departments, the table presented in Appendix 3 shows the number of points observed according to the speed simit and the group, by wave of measurements and by year between 2017 and 2021. Only the points observed during all years between 2017 and 2021 (including when only one wave is observed) and whose location has not changed are counted there (**40 measuring points in total**).

If we consider all the measurement points, regardless of their group, Figure 6 below shows that the drop in speed observed during the initial evaluation persisted on average, even if the standard deviation tends to increase in 2020 and 2021.

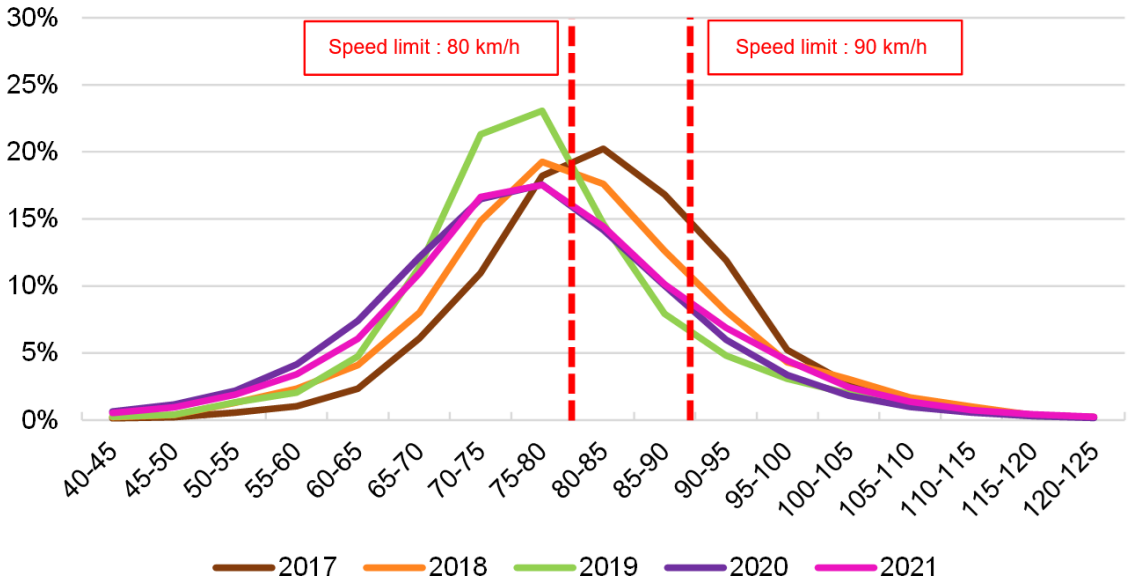


Figure 6 : Evolution of the distribution in 5 km/h increments of the recorded speeds (%) by day passenger vehicles per year on the 40 counting points of the panel

[6] Drivers who do not detect the measuring device are not encouraged to reduce their speed. This may have been the case before.

In order to examine whether this greater dispersion coincides with the increase in speed on certain roads, we looked at the evolution according to the groups.

II.1.1. Changes by group of departments

Firstly, to allow comparison with the above data, the recorded speeds by passenger vehicles (PV) by day by group of departments are analysed. So that the numbers of the groups do not become too small for a statistical analysis, the 90 group is studied in its entirety, without distinguishing the departments having raised the speed limit in 2020 from those having raised it in 2021.

Mortality on the network concerned of the groups of departments having been analysed without distinction of speed limit, the recorded speeds on the different groups are also analysed without distinction of speed simit initially. Some group speed measurement points 90_{total} thus concern networks whose speed limit has remained at 80 km/h (see Appendix 3). The effect of increasing the speed limit on speeds, as on accidents, is therefore slightly attenuated.

The panel for the 80 group has 28 measurement points, while that for 90_{total} group has 12, at speed limits of 80 or 90 km/h.

Assuming that the evolution of the speeds on these panels are representative of the evolutions of the speeds of daytime passenger vehicles on all of these two networks, we represent below the evolution of the distribution of speeds by year on the two networks concerned.

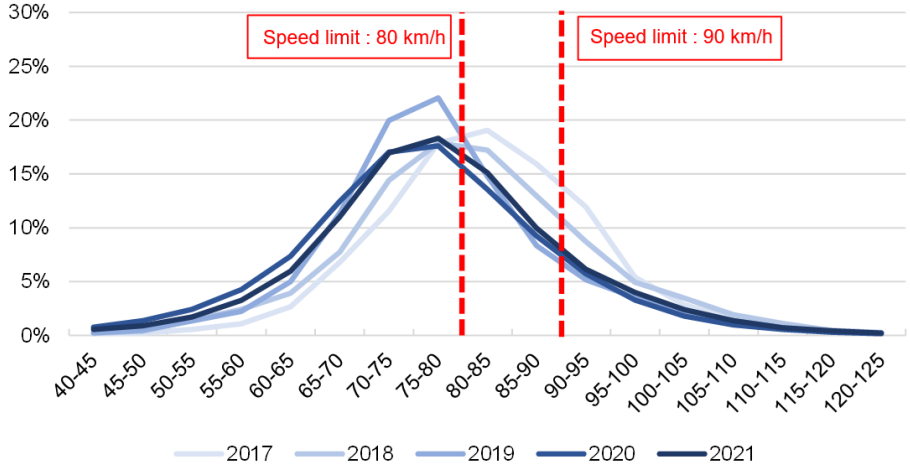


Figure 7 : Evolution of the distribution in 5 km/h increasing of recorded speeds (%) by day passenger vehicles per year on the 28 counting points of 80 group

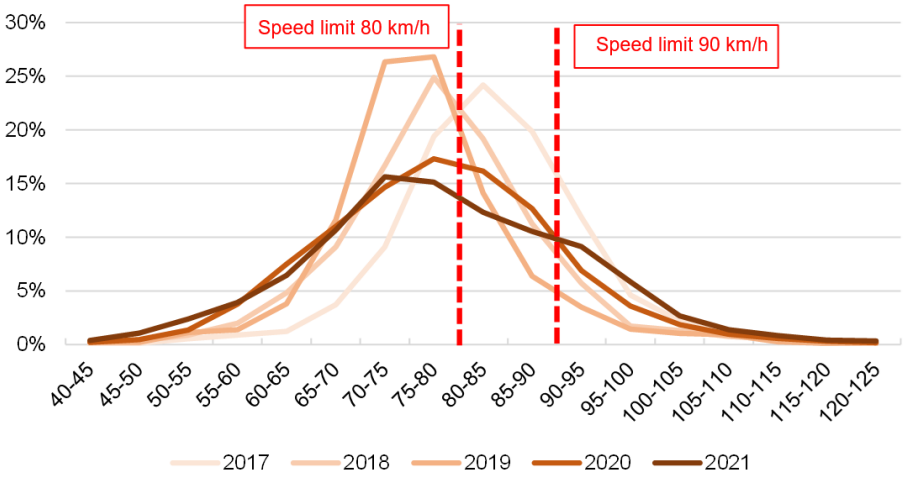


Figure 8 : Evolution of the distribution in 5 km/h increasing of the recorded speeds (%) by day passenger vehicles per year on the 12 counting points of 90total group

Between 2017 and 2019, the distribution curve of the recorded speeds on the panel of the 90_{total} group experienced a flattening and presented a peak between 70 and 80 km/h clearly perceptible in 2019 in particular.

In 2020, this curve flattened, highlighting the different speed limit of this network. In 2021, the distribution of speeds is no longer normal and almost reveals 2 "bumps": the first between 70 and 75 km/h and the second between 90 and 95 km/h. This distribution highlights significant differences in behaviour between users according to the speed limit.

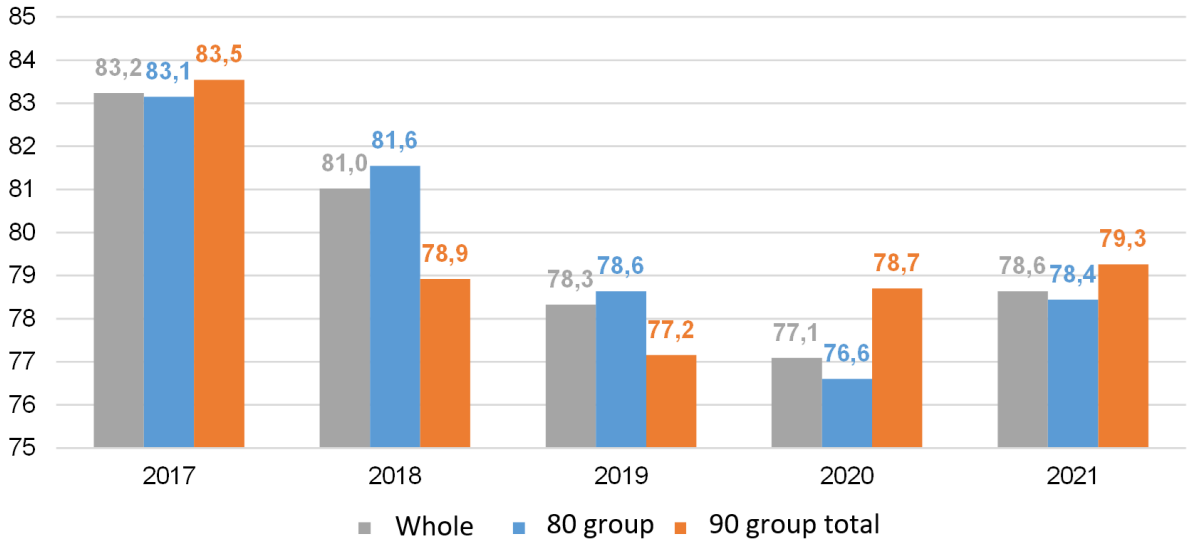


Figure 9 : Evolution of the average speed practiced by day passenger vehicles according to the year and the department groups

The panel of the 90_{total} group experienced the largest drop in speeds following the implementation of the 80 km/h speed limit measure. Between 2017 (last complete year with a generalized speed limit at 90 km/h) and 2019 (first complete year with a generalized speed limit at 80 km/h), the average speed of this observation panel fell by 7.6 % (- 6.3 km/h) against 5.4 % (- 4.5 km/h) for the panel of the 80 group. Mortality evolves in an identical way with a marked decrease, respectively of - 14.5 % and 7.3 % between 2017 and 2019.

In 2020, the reduction in the average daytime speed of PV continues for the panel of 80 group compared to 2019 (- 2.0 km/h), while the speed increases for the panel of 90_{total} group (+ 1.5 km/h).

In 2021, the average speed practiced by passenger vehicles increases compared to 2020 on all networks outside built-up areas, excluding motorways: + 0.6 km/h on the panel of the 90_{total} group, + 1.8 km/h on the panel of the 80 group. The average recorded speeds are similar between the 80 and 90_{total} groups, but it was seen previously that the speed distributions are quite different, resulting in a greater proportion of vehicles at high speeds in the 90_{total} group.

II.1.2. Evolution according to the speed limit

In a second step, we analyse the recorded speeds at the measurement points whose speed limit is 90 km/h by comparing them to the points for which the speed limit remained at 80 km/h.

To do this we identify two panels of points:

- **The speed limit 80 panel** containing all the points of the 80 group, whose speed limit is therefore at 80 km/h, identical to the panel of the 80 group of II.1.1: 28 measurement points, more than 200,000 vehicles observed at each wave in 2020 and 2021.
- **The speed limit 90 panel** containing the only points **of the 90 group measured at a speed limit of 90 km/h on at least one wave in 2020**, and therefore with the two waves at 90 km/h in 2021. On this panel, the speeds displayed will also take taking into account, if applicable, the first waves of the year 2020 measured at a speed limit of 80 km/h (see Appendix 3): **5 measurement points**, approximately 30,000 vehicles observed at each wave of 2020 and 2021.

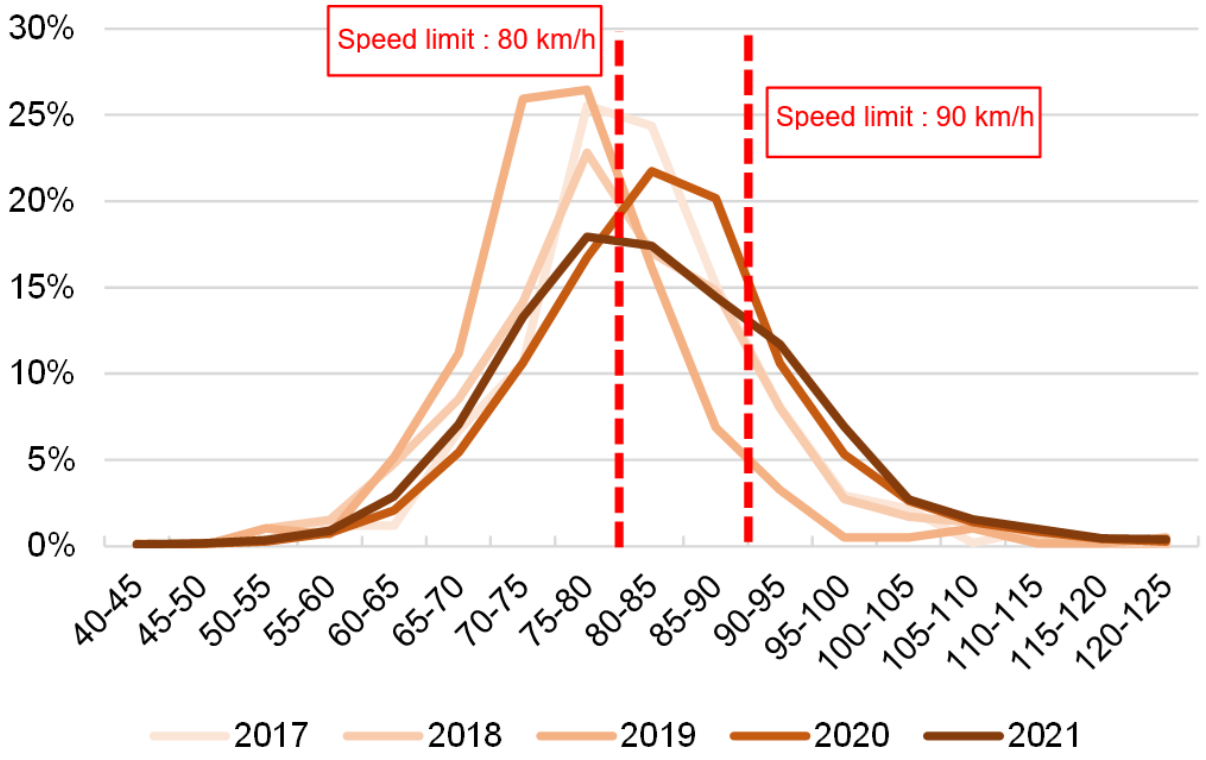


Figure 10 : Evolution of the distribution of recorded speeds by day passenger vehicles per year on the 5 counting

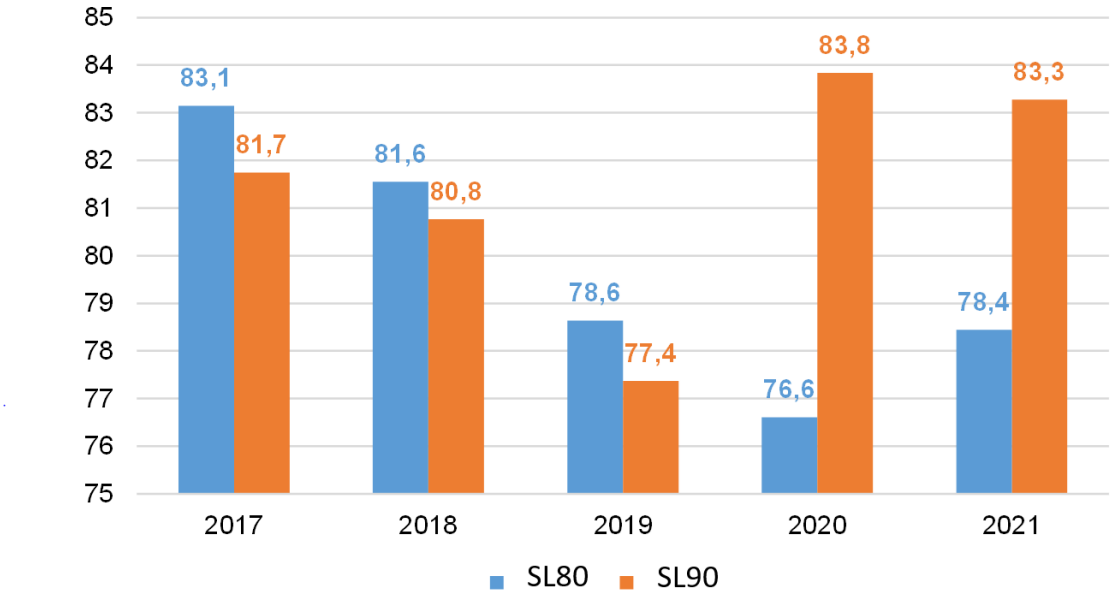
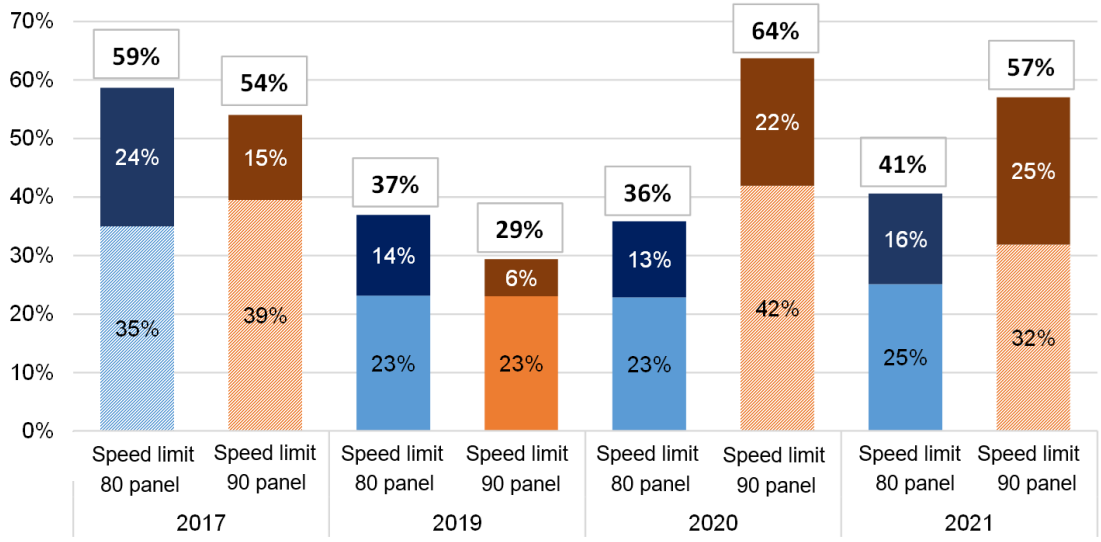


Figure 11 : Evolution of the average speed practiced by day passenger vehicles according to the year and the speed limit group

In comparison with the speed limit 80 panel, we note here that the speeds of the speed limit 90 panel experienced relatively similar decreases between 2017 and 2019. On the other hand, we note a spectacular increase in the average speed observed on this panel in 2020 (from 77.4 km/h to 83.8 km/h i.e. +6.4 km/h) to a level **3.0 km/h higher than what was observed in 2017**, the last year with the generalized speed limit at 90 km/h, even though only one of the 5 points (6,000 vehicles) of the speed limit 90 panel was observed at a speed limit of 90 km/h during the two waves of the year.

The year 2021, on the other hand, shows more moderate speeds than in 2020 for the speed limit 90 group (- 0.5 km/h) even though the points are observed more generally at a speed limit of 90 km/h. **The recorded speeds in 2021 on the speed limit 90 panel remain at higher levels than those practiced in 2017.**



Dark colours: Percentage of vehicles observed whose speed is greater than 90 km/h
Light colours: Percentage of vehicles observed whose speed is between 80 and 90 km/h
Hatched: Percentage of vehicles observed whose speed is below the speed limit of the year and group in question

Figure 12 : Share (in %) of vehicles between 80 and 90 km/h and above 90 km/h according to speed limit group

In terms of speed limit overrun rates, several elements should be noted:

- The speed limit 80 panel has a stable rate of exceeding the speed limit between 2019 and 2020 (36 and 37 %) then a slight increase in 2021 (41 %).
- The speed limit 90 panel, on the other hand, has speed limit overrun rates that vary depending on the year. In particular, we can note that this overrun rate increases between 2017 and 2020-2021 (+ 7 to + 10 points). It should nevertheless be remembered that the change in survey method between 2019 and 2020 undoubtedly had an impact on speeds, the sensors being less visible.

II.2. Fatalities results

Key points:

- The drop in the number of fatalities at the end of 2021 compared to the 2013-2017 period is greater for the 80 group than for the 90_{total} group on the network in question.
- Within the same families of departments, mortality experienced a greater drop in the departments that remained at 80 km/h than in those that raised the speed limit.

Road accidents in 2020 and 2021 will remain very atypical due to the impact of the Covid-19 pandemic and the resulting government measures, aimed in particular at reducing citizen travel.

These restrictive measures have naturally led to a drop in road traffic and therefore in accidents. Thus, the vast majority of networks were affected by a drop in accidents. The mortality study looks at the comparative declines in these numbers.

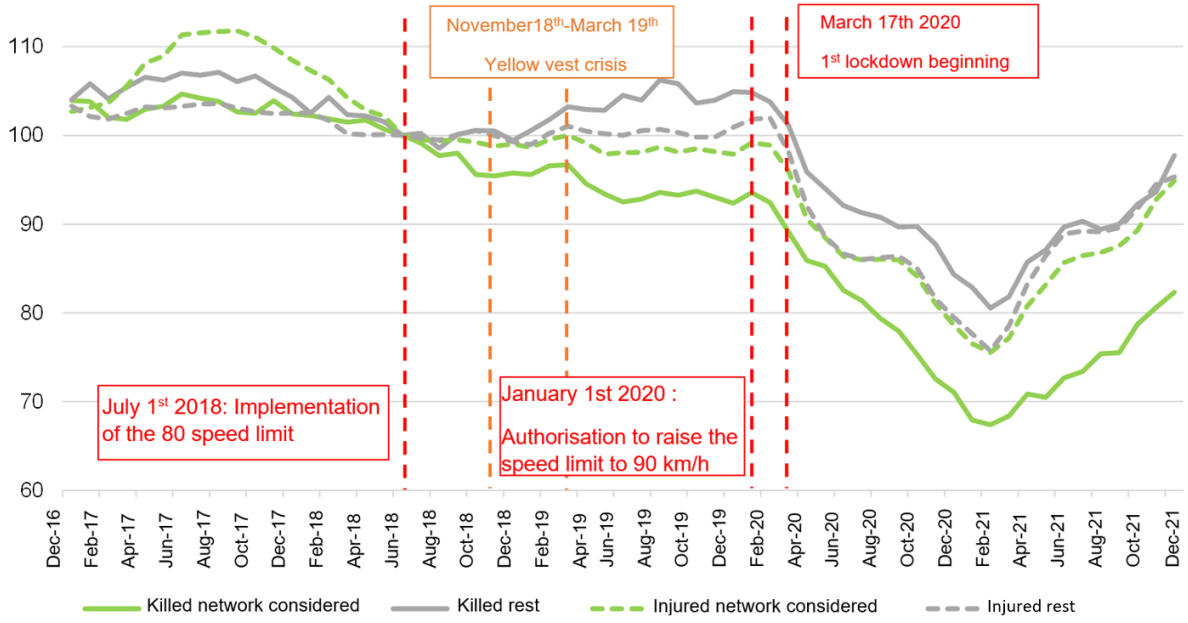


Figure 13 : Evolution of claims on the network considered and on the rest of the network over 12 rolling months between December 2016 and December 2021, base 100 in June 2018

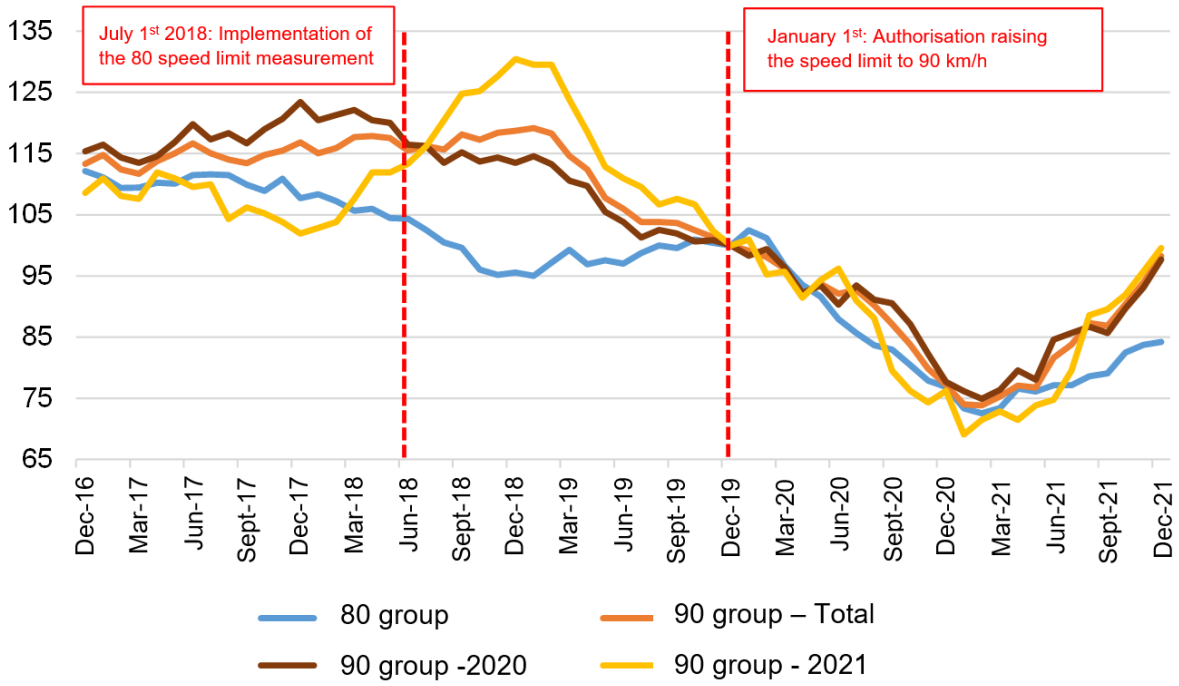


Figure 14 : Evolution of the number of fatalities on the network considered over 12 rolling months according to the department groups (base 100 in December 2019)

The use of the reference of the 5 years 2013-2017 as the initial period for the analysis of the evolution of the indicators has the advantage of representing a significant number compared to a comparison with a single year. In addition, it was also this period that had been chosen for the analyses carried out in the final evaluation report of Cerema.

Furthermore, although less reliable because it represents smaller figures, the year 2019 has the advantage of allowing comparisons with the only full year with the 80 km/h speed limit on the entire network.

Concerning the figures for the year 2020, the results appear in the following tables, the conclusions that can be drawn from them need to take into account the very atypical profile of the year in connection with the pandemic and the necessary travel restrictions measures.

II.2.1. Changes by study group

Given the travel restriction measures taken during the management of the pandemic, the year 2020 appears atypical in terms of mortality, which does not allow an analysis of the effects of the speed limit 90 measure. For all practical purposes, the table concerning the figures for 2020 is displayed in Appendix 4.

Table 2: Number and share of fatalities on the considered network according to the group of departments and the period, evolution in 2021

Killed on the conceded network	Average 2013-2017		2019		2021			
	Nb	Part	Nb	Part	Nb	Part	Evol Avg.-21	Evol 2019-21
80 group	**1 349**	**62,8%**	**1 260**	**64,8 %**	**1 061**	**61,2 %**	**-21,3%**	**-15,8 %**
90_{total} group	**800**	**37,2%**	**684**	**35,2 %**	**672**	**38,8 %**	**-16,0%**	**-1,8 %**
90_{2020} group	564	26,3%	474	24,4 %	463	26,7 %	-18,0%	-2,3 %
90_{2021} group	236	11,0%	210	10,8 %	209	12,1 %	-11,4%	-0,5 %
Total	**2 149**		**1 944**		**1 733**		**-19,4%**	**-10,9 %**

Compared to the 2013-2017 reference, there is a greater drop in mortality in 2021 for the 80 group (- 21.3 %) than for the 90_{total} group (- 16.0 %). This drop is particularly low for 90_{2021} group, 1.6 times less significant than for 90_{2020} group.

On the other hand, compared to 2019, the observation is more contrasted:

- in relative share of the total accident rate of the network considered, the share of the 90_{total} group in the mortality of the entire network considered increased from 35.2 % to 38.8 % (+ 3.6). As for the 90_{2021} share, although only having effects over less than a year, it increased from 10.8 % to 12.1 % (+ 1.3).
- in absolute values, the number of fatalities compared to the 2019 value decreased for the 80 group from 1,260 fatalities to 1,061 fatalities, i.e. - 15.8 %. On the other hand, that observed for 90_{2021} group remained stable from 210 killed to 209 killed (- 0.5 %), contributing to the very slight decrease (- 1.8 %) for the whole 90_{total} group.

II.2.2. Changes by family of departments

In order to allow comparisons between groups of departments with similar characteristics, a comparative analysis of changes in accident rates between the departments of the 80 group and those of the 90_{total} group within the same families of departments is carried out. To allow a statistically significant analysis, these comparisons are only made within the LRSI families of the "rural", "mountain", "mono-polarised" and "multi-polarised" departments, which include at least 4 departments in each group. (80 and 90_{total}).

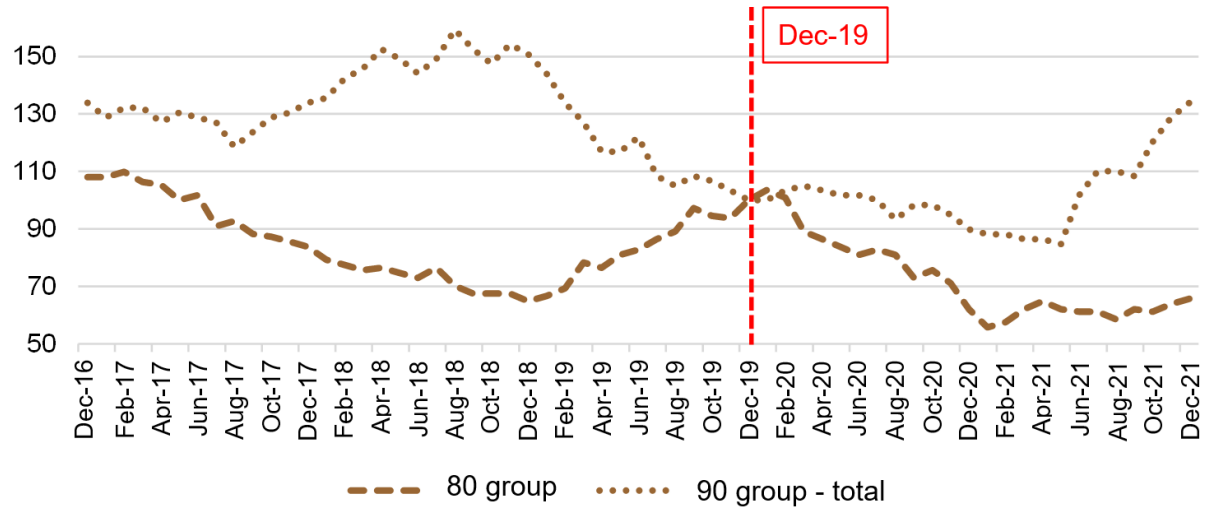


Figure 15 : Evolution of the number of fatalities on the network considered over 12 rolling months according to the study group in the "mountain" LRSI family, base 100 in December 2019

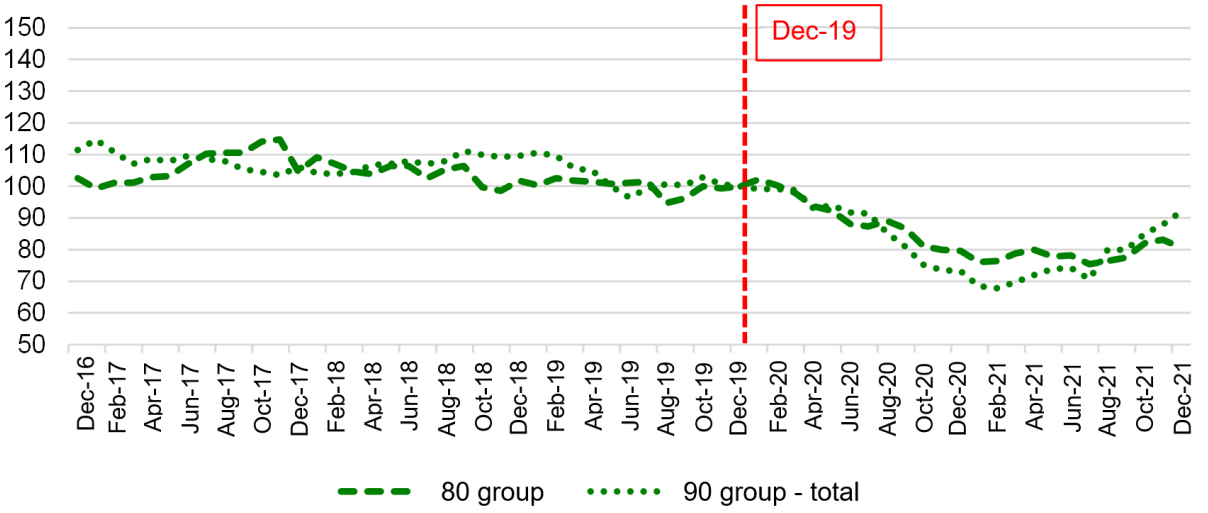


Figure 16 : Evolution of the number of fatalities on the network considered over 12 rolling months according to the study group in the "rural" LRSI family, base 100 in December 2019

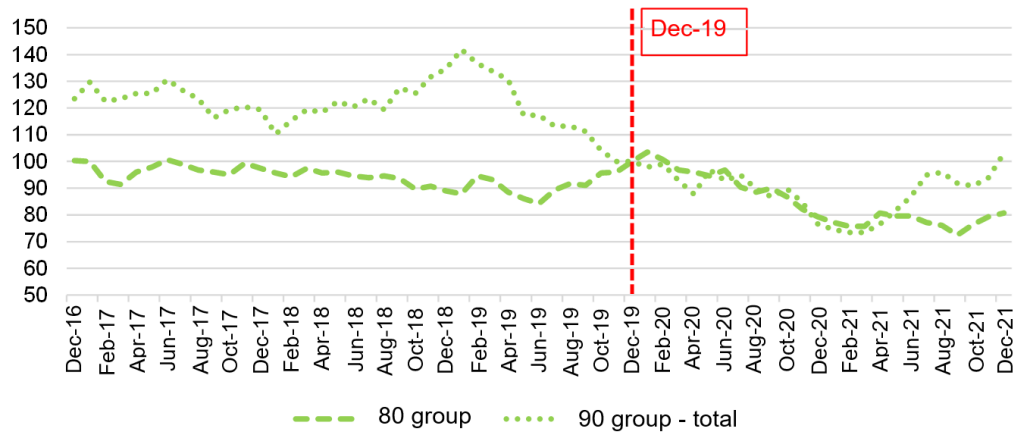


Figure 17 : Evolution of the number of fatalities on the network considered over 12 rolling months according to the study group in the "mono-polarised" LRSI family, base 100 in December 2019

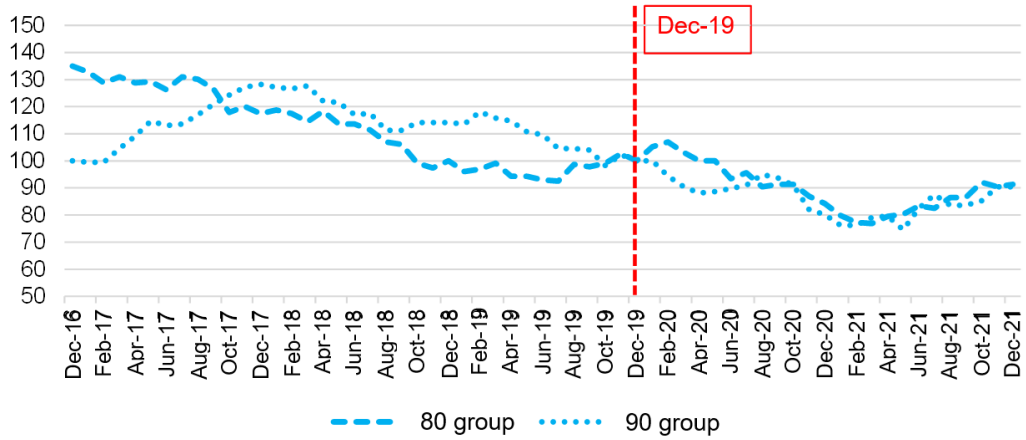


Figure 18 : Evolution of the number of fatalities on the network considered over 12 rolling months according to the study group in the "multi-polarised" LRSI family, base 100 in December 2019

Table 3: Number of fatalities and evolution according to the group of departments and the family of LRSI departments

Department families LRSI	Killed on considered network	Average 2013-2017	2021	Change 2021/2013-17
Mountain	80 group	92	74	-19,4%
	90_{total} group	89	79	-11,2%
Rural	80 group	285	229	-19,6%
	90_{total} group	345	289	-16,3%
Mono-polarised	80 group	281	225	-19,8%
	90_{total} group	119	101	-15,4%
Multi-polarised	80 group	271	207	-23,6%
	90_{total} group	200	160	-19,8%

The comparison using the LRSI shows us that within each family of departments studied, the fall in mortality between the reference period (2013-2017) and 2021 was greater in the 80 group.

This is particularly visible for the family of “mountain” departments, where the drop in mortality was - 19.4 % for the 80 group compared to - 11.2 % for the 90_{total} group. This difference is more blurred for the family of “multi-polarised” departments (- 23.6 % for the 80 group against - 19.8 % for the 90_{total} group).

III. Estimates of casualties due to the 90 km/h

- Increasing the speed limit to 90 km/h in 39 departments will have cost 74 lives in 2021 according to an estimate based on the month of implementation of this decision. This corresponds to an increase in mortality of + 13.1 %.
- In a “normal” year, increasing the speed limit to 90 km/h in 39 departments could lead to an additional number of fatalities of around 89.
- A + 13.1 % increase to the fatalities recorded in 2019 on all non-motorway roads outside built-up areas in France mainland would correspond to 254 additional deaths.

The purpose of this part consists in evaluating what was the impact in 2021 and what would be the impact on the so-called "normal" year of the increase to 90 km/h of the speed limit on certain departments, according to two methodologies.

The results displayed in this part do not represent a precise assessment of the impact of the measure on mortality but give some elements on impacts according to the methodology used.

As explained in part II.2.1, the period 2013-2017 was chosen as a reference to establish the impact of the new 90 km/h speed limit. Human losses are not assessed for the year 2020, travel having been very disrupted by the management of the pandemic.

In this part, two methods of estimating human losses were used:

- an estimate based on the year of the speed limit increase in each department, known as the « annual method » ;
- a finer estimate based on the month in which the speed limit is raised in each department, known as the « monthly method ».

III.1. Estimate according to the year of the speed limit increase

III.1.1. Estimated impact for the year 2021

As a reminder, the two groups compared for this estimate are as follows:

- The group known as “**80 group**” comprising all the departments that did not raise the speed limit to 90 km/h on any road or section of road between January 1, 2020 and December 31, 2021, i.e. **57 departments** of France mainland;
- The group called "**90_{total} group**" comprising all the departments having raised all or part of their network to a speed limit of 90 km / h between January 1, 2020 and December 31, 2021, i.e. **39 departments**.

- **Estimation method:** We assume here that in the absence of an increase in the speed limit, the evolution of mortality on the network considered for the 90_{total} group between the 2013-2017 average and the year 2021 would have been similar to that of the 80 group.

Between the period 2013-2017 and 2021, the 90_{total} group experienced a decrease in mortality of - 16.0 %. If this drop had been similar to that of the 80 group, i.e. - 21.3 %, the death toll for the group would have been 630 compared to the 672 deaths actually recorded. **This difference represents a surplus of + 6.7 % in the mortality of the 90_{total} group over the year 2021** compared to what should have been observed**, i.e. an additional number of deaths** due to the **increase of 42.**

III.1.2. Potential impact on a « normal » year

For estimates of human losses over a so-called "normal" year such as 2019, we will take two assumptions.

- **Estimation method**: We assume here that the excess mortality of the 90_{total} group on the network considered in 2021 is representative of the excess mortality linked to the increase of these 39 departments over one year.

By applying this **+ 6.7 % increase in mortality in the 90_{total} group** to a “normal” year, such as 2019, there would then be **46 more deaths each year in the 90_{total} group**.

However, 11 departments in this group only raised the speed limit during the year, thus benefiting in part from the protection linked to the 80 km/h speed limit at the start of the year. The mortality-increasing effect associated with increasing to 90 km/h is therefore underestimated. It is therefore necessary to refine the impact by taking into account the dates on which the speed limit were noted, according to the department.

III.2. Estimate according to the month of the speed limit increase

For this estimation, new comparison groups are defined, according to a spatial perimeter (departments) but also temporal (months). Therefore, the two groups compared are:

- The group known as “**Month 80 Group**” comprising all the months of the departments where the speed limit has not been raised to 90 km/h (in 2021), i.e. **725 months** out of 66 departments;
- The group known as “**Month 90 Group**” comprising all the months of the departments where the speed limit applied is 90 km/h on all or part of the network (in 2021), i.e. **427 months** in 39 departments;

	2021 01	2021 02	2021 03	2021 04	2021 05	2021 06	2021 07	2021 08	2021 09	2021 10	2021 11	2021 12
Marne	1	1	1	0	0	2	2	1	2	3	2	1
Haute-Marne	0	1	1	0	2	0	1	1	1	2	3	2
Mayenne	0	1	2	0	2	0	3	1	4	1	2	6
Meurthe-et-Moselle	2	2	1	1	2	0	2	3	2	4	0	0
Meuse	0	0	0	0	1	0	2	0	1	0	0	3
Morbihan	1	3	5	3	4	1	7	2	3	2	2	0

Figure 19 : Example table for comparison by month

In Figure 19, the “at 90 km/h” months are represented in light red, and the “at 80 km/h” months in light blue. Thus, for the Marne department for example, the first six months of the year are counted in the Month 80 group while the following six months are in the Month 90 group. The same is true for each of the departments.

III.2.1. Estimated impact for the year 2021

- **Estimation method**: We assume here that in the absence of an increase in the speed limit, the evolution of mortality on the considered network of the Month 90 group would have been equal to the evolution of the Month 80 group between the average 2013-2017 and 2021.

Between the period 2013-2017 and 2021, the Month 90 group experienced a decrease in mortality of - 12.3 %. If this drop had been similar to that of the Month 80 group, i.e. - 23.0 %, the death toll for the group would have been 568 compared to the 642 deaths actually recorded. **This difference represents a surplus of + 13.1 % in the mortality of the Month 90 group over the year 2021 compared to what should have been observed, i.e. an additional number of deaths of 74** due to the new speed limit.

III.2.2. Potential impact on a « normal » year

- **Estimation method:** We assume here that the excess mortality of the Month 90 group on the network considered in 2021 is representative of the excess mortality linked to the increase in the 39 departments of the 90total group over one year

By applying this excess mortality of **13.1 %** to a "normal" year, such as 2019, there would then be **89 more deaths for the 90_{total} group**.

The application of a + 13.1 % increase in road fatalities to the result of a “normal” year such as 2019 on all roads outside built-up areas excluding motorways in France mainland would represent an excess mortality of 254 killed.

Appendix

- **<u>Appendix 1:</u> List of departments according to their choice of increasing or not increasing the speed limit**

	80 group
	90_{2020} group
	90_{2021} group

N° Department	Department name	Date of first speed limit increasing	Length of network measured at 90 km/h (km)	DC network length (km)*	Share of main DR identified**
1	Ain			4453	0%
2	Aisne			5431	0%
3	Allier	11/12/2020	5284	5284	100%
4	Alpes-de-Haute-Provence			2545	0%
5	Hautes-Alpes	15/06/2020	308	1933	44%
6	Alpes-Maritimes			1713	0%
7	Ardèche			3801	0%
8	Ardennes			3376	0%
9	Ariège			2669	0%
10	Aube	04/01/2021	225	4497	35%
11	Aude			4300	0%
12	Aveyron	20/05/2021	1040	5910	100%
13	Bouches-du-Rhône			3001	0%
14	Calvados	17/08/2020	393	5742	40%
15	Cantal	01/02/2020	3520	3970	100%
16	Charente	15/07/2020	449	5142	31%
17	Charente-Maritime	01/02/2021	228	6080	13%
18	Cher	31/07/2020	337	4604	61%
19	Corrèze	01/02/2020	4000	4754	100%
2A	Corse-du-Sud				0%
2B	Haute-Corse				0%
21	Côte-d'Or	02/03/2020	1135	5813	51%
22	Côtes d'Armor			4499	0%
23	Creuse	17/10/2020	4394	4395	100%
24	Dordogne	15/03/2021	287	4990	20%
25	Doubs			3690	0%
26	Drôme			4213	0%

27	Eure			4328	0%
28	Eure-et-Loir	01/12/2020	240	7440	17%
29	Finistère			3503	0%
30	Gard			4727	0%
31	Haute-Garonne			6141	0%
32	Gers			3558	0%
33	Gironde			6354	0%
34	Hérault	01/09/2020	350	4722	56%
35	Ille-et-Vilaine			4651	0%
36	Indre	01/07/2020	220	4982	15%
37	Indre-et-Loire	07/09/2020	292	3653	25%
38	Isère			4659	0%
39	Jura	01/09/2020	300	3543	31%
40	Landes			4294	0%
41	Loir-et-Cher	02/06/2020	330	3424	29%
42	Loire			3799	0%
43	Haute-Loire	30/06/2020	270	3411	33%
44	Loire-Atlantique			4294	0%
45	Loiret	02/11/2020	363	3604	35%
46	Lot			4017	0%
47	Lot-et-Garonne			2956	0%
48	Lozère	01/10/2020	2050	2262	100%
49	Maine-et-Loire	21/07/2020	410	4771	54%
50	Manche			7762	0%
51	Marne	02/07/2021	530	4172	58%
52	Haute-Marne	09/01/2020	766	3893	100%
53	Mayenne	01/02/2021	228	3675	18%
54	Meurthe-et-Moselle			3218	0%
55	Meuse	01/12/2021	1000	3529	94%
56	Morbihan			4175	0%
57	Moselle			4299	0%
58	Nièvre			4359	0%
59	Nord			4438	0%
60	Oise			4267	0%
61	Orne	12/06/2020	2046	5861	100%
62	Pas-de-Calais			6207	0%
63	Puy-de-Dôme			6965	0%

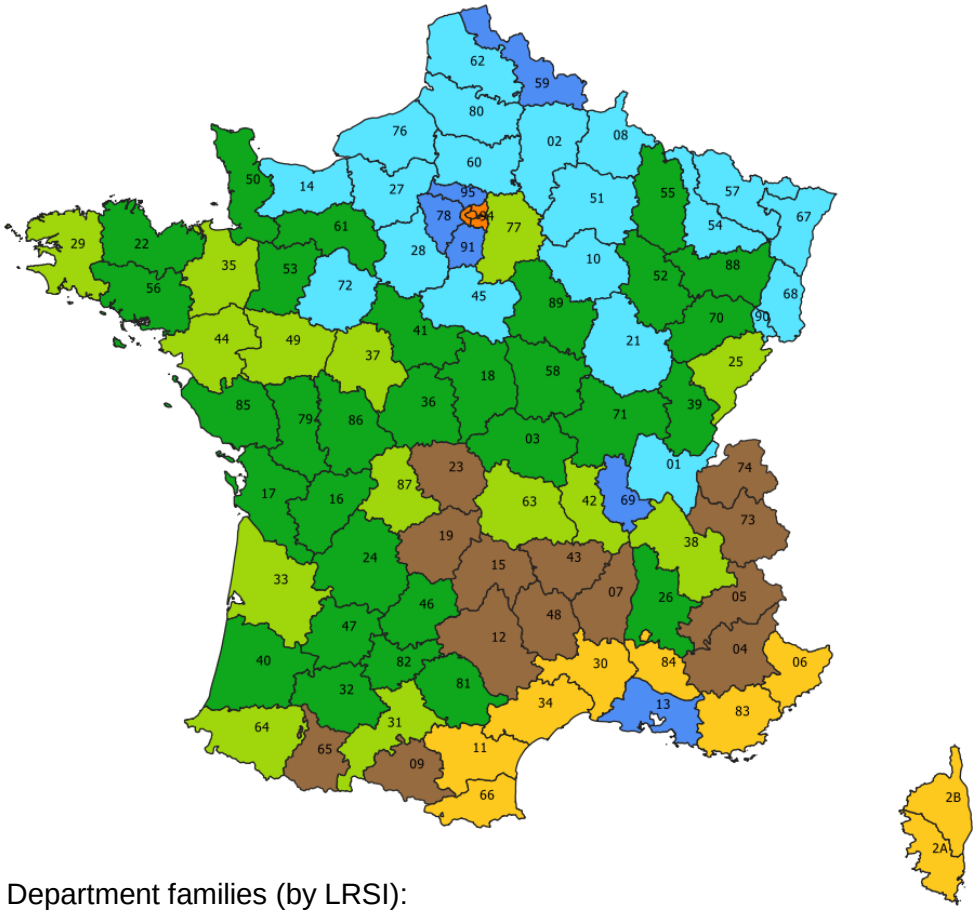
64	Pyrénées-Atlantiques			4447	0%
65	Hautes-Pyrénées	03/07/2020	227	2961	27%
66	Pyrénées-Orientales			2154	0%
67	Bas-Rhin	08/03/2020	54	3446	5%
68	Haut-Rhin	15/09/2020	16	2602	2%
69	Rhône			2863	0%
70	Haute-Saône			3423	0%
71	Saône-et-Loire	22/12/2021	157	5479	10%
72	Sarthe	04/07/2020	930	4267	57%
73	Savoie			3121	0%
74	Haute-Savoie			2983	0%
75	Paris			1625	0%
76	Seine-Maritime			5829	0%
77	Seine-et-Marne	09/03/2020	459	4321	46%
78	Yvelines			1579	0%
79	Deux-Sèvres	10/07/2020	247	4010	26%
80	Somme			4523	0%
81	Tarn	01/02/2021	177	4154	11%
82	Tarn-et-Garonne			2528	0%
83	Var			2966	0%
84	Vaucluse			2322	0%
85	Vendée			4680	0%
86	Vienne	18/09/2020	429	4780	94%
87	Haute-Vienne	25/05/2021	400	3998	38%
88	Vosges	20/01/2021	235	3240	34%
89	Yonne			4860	0%
90	Territoire de Belfort			547	0%
91	Essonne			1490	0%
92	Hauts-de-Seine			332	0%
93	Seine-St-Denis			344	0%
94	Val-de-Marne			407	0%
95	Val-D'Oise			1080	0%

*Source: memento SDES 2019

**Assuming that the DR identified by the departments are primarily the main DR (Definition and number of km of main DR per department taken from the 2018 ONISR report, page 38).

- **<u>Appendix 2:</u> Map of Local Road Safety Indicators (LRSI)**

Statistical work has defined seven families of homogeneous departments for accident studies based on a classification based on numerous variables such as the number of inhabitants, population density, and distribution of traffic according to the networks, the transit functions ensured or not by the main axes as well as the socio-economic context, and the climate. This classification makes it possible to compare each department with the other departments of its reference family, taking into account their dispersion. It thus makes it possible to better interpret and compare the figures and trends observed.



Department families (by LRSI):

Mountain	Rural	Mediterranean	Mono-polarised	Multi-polarised	High density	Paris and inner suburbs

- **<u>Appendix 3:</u> Number of points and numbers observed per year and per wave (Speed Observatory, ONISR)**

Number of points		80 group		90_{total} group		90_{2020} group		90_{2021} group	
		SL 80	**SL 90**	**SL 80**	**SL 90**	SL 80	SL 90	SL 80	SL 90
2017	**Wave 1**		25/28		11/12		8/9		3/3
	Wave 2		24/28		12/12		9/9		3/3
2018	**Wave 1**		28/28		12/12		9/9		3/3
	Wave 2	27/28		12/12		9/9		3/3	
2019	**Wave 1**	28/28		12/12		9/9		3/3	
	Wave 2	28/28		12/12		9/9		3/3	
2020	**Wave 1**	26/28		11/11	1/1	8/8	1/1	3/3	
	Wave 2	25/28		6/6	5/6	3/3	5/6	3/3	
2021	**Wave 1**	27/28		6/6	6/6	3/3	6/6	3/3	0/0
	Wave 2	27/28		4/4	8/8	3/3	6/6	1/1	2/2

* Number of points observed/number of points of the panel considered

Numbers		80 group		90_{total} group		90_{2020} group		90_{2021} group	
		SL 80	**SL 90**	**SL 80**	**SL 90**	SL 80	SL 90	SL 80	SL 90
2017	**Whole**		4 904		1 451		1 200		251
2018	**Wave 1**		2 999		720		604		116
	Wave 2	2 790		730		612		118	
2019	**Whole**	5 748		1 523		1 234		289	
2020	**Wave 1**	282 377		72 391	6 613	61 974	6 613	10 417	
	Wave 2	229 539		39 077	34 840	26 362	34 840	12 715	
2021	**Wave 1**	275 615		53 284	53 661	38 196	53 661	15 088	0
	Wave 2	333 422		36 482	49 097	26 490	41 690	9 992	7 407

<u>Appendix 4:</u> Number and share of fatalities on the considered network according to the group of departments and the period, evolution in 2020

Killed on conceded network	Moy. 2013-2017		2019		2020			
	Nb	Part	Nb	Part	Nb	Part	Evol. / 13-17	Evol. / 19
80 group	**1 349**	**62,8%**	**1 260**	**64,8 %**	**968**	**64,7%**	**-28,2%**	**-23,2 %**
90_{total} group	**800**	**37,2%**	**684**	**35,2 %**	**528**	**35,3%**	**-34,0%**	**-22,8 %**
90_{2020} group	564	26,3%	474	24,4 %	368	24,6%	-34,8%	-22,4 %
90_{2021} group	236	11,0%	210	10,8 %	160	10,7%	-32,2%	-23,8 %
Total	**2 149**		**1 944**		**1 496**		**-30,4%**	**-23,0 %**