Calculation of department families and LRSI

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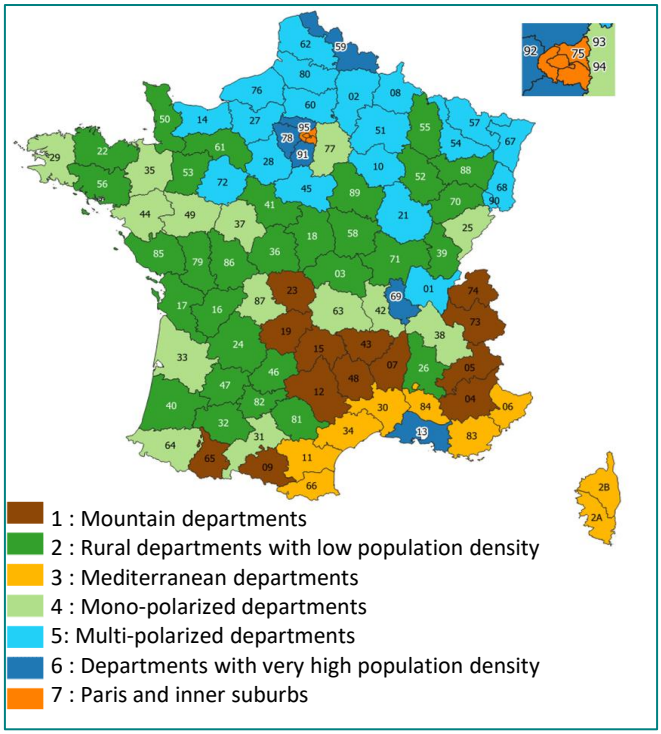
Methodology	Correlation study, principal component analysis, ascending hierarchical classification
Perimeter	France
Key-words	Classification, typology, departments

Typology of departments in France mainland



21 variables to design the typology

- Population of the department
- Percentage of the population aged 18-24
- Unemployment rate
- Sale of fuel per person
- Number of vehicles per person
- Number of PTW per person
- Share of public transport fleet
- Share of R&D among the linear road
- Proportion of motorway among the linear road
- Share of the population living in an urban unit
- Share of the number of municipalities with more than 100,000 inhabitants
- Share of the area of the department classified as being a peri-urban municipality
- Share of the area of the department classified as being a multipolar municipality
- Population density
- Mountain area
- Average altitude of residences
- Precipitation
- Sunshine
- Minimum temperature
- Hotel nights per person
- Percentage of secondary residences

Cerema has constructed a typology of French departments to allow **departments with common characteristics** to be compared with each other in order to identify points of strength or improvement via performance indicators.

Methodology

The classification of departments into families follows the following principle:

– The departments of the same family have similar characteristics;
– The departments of different families have distant characteristics.

Proximity is established statistically according to all the variables.

The method used consists in finding the most discriminating variables to differentiate the departments. **21 variables** were selected after initial work on the correlations between 72 initial variables. These variables represent **demography, economy, meteorology, mobility, urban/rural distribution, relief** or even **tourism**.

Statistical methods of analysis into main components, then hierarchical ascending classification led to retain a classification into 6 metropolitan families, to which must be added Paris and the inner suburbs which were not taken into account for the classification into due to methodological issues, as well as the overseas departments which constitute two specific classes. The most discriminating variables observed are the population, the proportion of secondary residences, sunshine, minimum temperatures and the number of PTWs reduced to the population.

Results

The main result is the classification itself. The map on the left shows the distribution between the **seven families** of departments identified in metropolitan France. This typology can be used in many areas, particularly in terms of travel and road safety.

Local road safety indicators (LRSI)

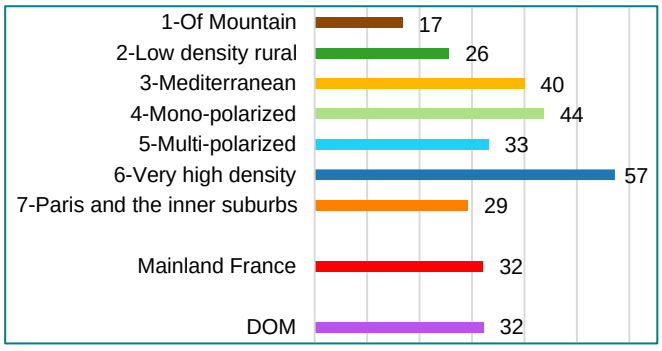
As part of the study, many local road safety indicators (**LRSI**) were calculated in order to allow each department to have references related to its family. We observe that the families of departments with a low number of deaths present, on the contrary, a number of death people related to the population among the highest.

Regarding the modal distribution of the people killed, the differences are marked. The specificities of Paris and the inner suburbs are clearly identified, where 12 % of fatalities are motorists and 42 % pedestrians. On the other hand, departments with low population density are characterized by 59 % motorist deaths and 11 % pedestrians.

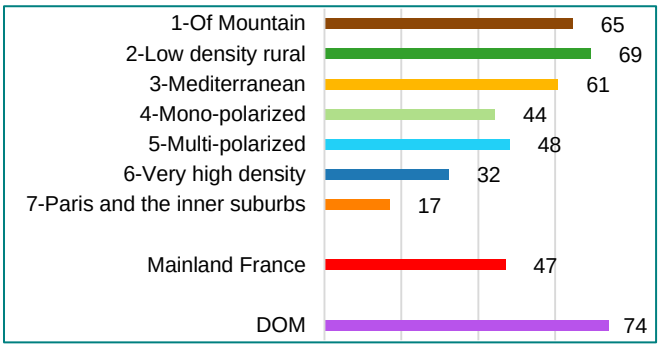
Breakdown of people killed 2017-2021	Family 1	Family 2	Family 3	Family 4	Family 5	Family 6	Family 7	DOM	COM-NC	Mainland France
Pedestrians	11%	11%	16%	13%	13%	20%	38%	23%	11%	15%
Cyclists	8%	7%	5%	7%	5%	6%	8%	5%	4%	6%
PMD motorized	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%
Moped riders	3%	4%	4%	4%	4%	3%	6%	13%	10%	4%
Motorcyclists	24%	15%	26%	18%	16%	25%	30%	24%	16%	19%
Motorists	49%	57%	45%	52%	54%	40%	15%	30%	45%	50%
UV users	2%	3%	3%	3%	3%	3%	1%	3%	12%	3%
HGV users	1%	1%	1%	1%	2%	1%	0%	0%	1%	1%
Public transport	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Carts	0%	1%	0%	1%	1%	0%	0%	1%	1%	1%
Others	1%	1%	1%	1%	1%	1%	1%	1%	0%	1%
0-13 y.o.	2%	2%	2%	3%	3%	2%	3%	4%	6%	2%
14-17 y.o.	4%	3%	3%	3%	3%	3%	2%	4%	5%	3%
18-24 y.o.	15%	17%	16%	17%	16%	18%	15%	19%	22%	17%
25-34 y.o.	14%	14%	15%	15%	16%	18%	21%	23%	28%	16%
35-44 y.o.	11%	11%	13%	12%	13%	12%	12%	15%	11%	12%
45-54 y.o.	12%	12%	12%	12%	13%	12%	11%	12%	13%	12%
55-64 y.o.	12%	12%	12%	12%	12%	12%	11%	11%	9%	12%
65-74 y.o.	13%	11%	10%	10%	10%	9%	9%	7%	5%	10%
75 and over	17%	17%	16%	15%	14%	13%	17%	5%	3%	15%
Motorw ays	4%	5%	8%	8%	10%	15%	14%	1%	6%	8%
Roads outside urban areas	71%	74%	58%	64%	61%	40%	3%	63%	63%	61%
Urban area	25%	22%	34%	29%	29%	45%	83%	36%	31%	31%
Men	78%	77%	77%	77%	78%	80%	78%	85%	81%	77%
Women	22%	23%	23%	23%	22%	20%	22%	15%	19%	23%
Drivers	74%	74%	68%	72%	72%	68%	54%	63%	58%	71%
Passengers	15%	15%	16%	14%	15%	12%	9%	14%	31%	14%
With pedestrian	11%	11%	16%	14%	14%	21%	40%	24%	12%	15%
Single veh w ithout pedestrian	44%	43%	40%	41%	39%	34%	23%	31%	54%	40%
2 veh, w ithout pedestrian	38%	40%	36%	39%	41%	37%	31%	38%	30%	39%
3 veh +, w ithout pedestrian	7%	6%	8%	6%	7%	8%	6%	8%	4%	7%
Indicators (per year)										
Killed by dep	17	26	40	44	33	57	29	32	15	32
Injured by dep, in u. area	106	124	373	471	279	1 205	3 255	327	62	426
Injured by dep, outside u.area	129	151	239	291	190	402	73	227	47	197
Killed per million inhabitants	65	69	61	44	48	32	17	74	144	47

Source: BAAC data 2017-2021 and INSEE data for the population

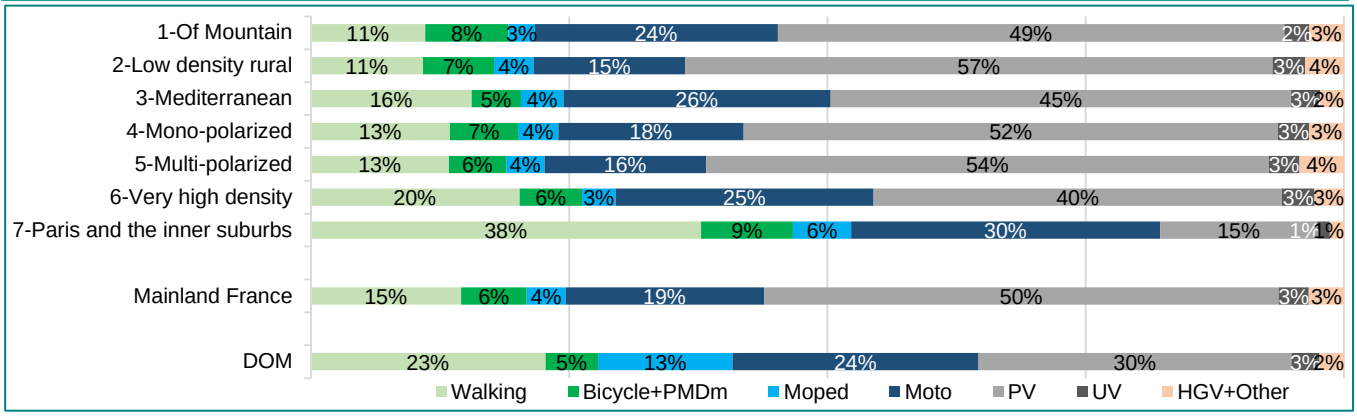
Killed by department and by year (2017-2021)



Killed per million inhabitants per year (2017-2021)



Breakdown of people killed by mode of travel and family of departments (2017-2021)



Studies – Calculation of department families and LRSI