

Road safety risk indicator: method and results

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Why calculate risk indicators?

- Publish these figures in the annual accident reports published by CEREMA and ONISR in order to better guide national road safety policy
- Better understanding of the real risks associated with each mode of transport and the type of person

➤ What is a risk indicator?

This is the number of injured / deaths in relation to mobility (number of trips, distance, time spent moving)

➤ What is the objective of this study ?

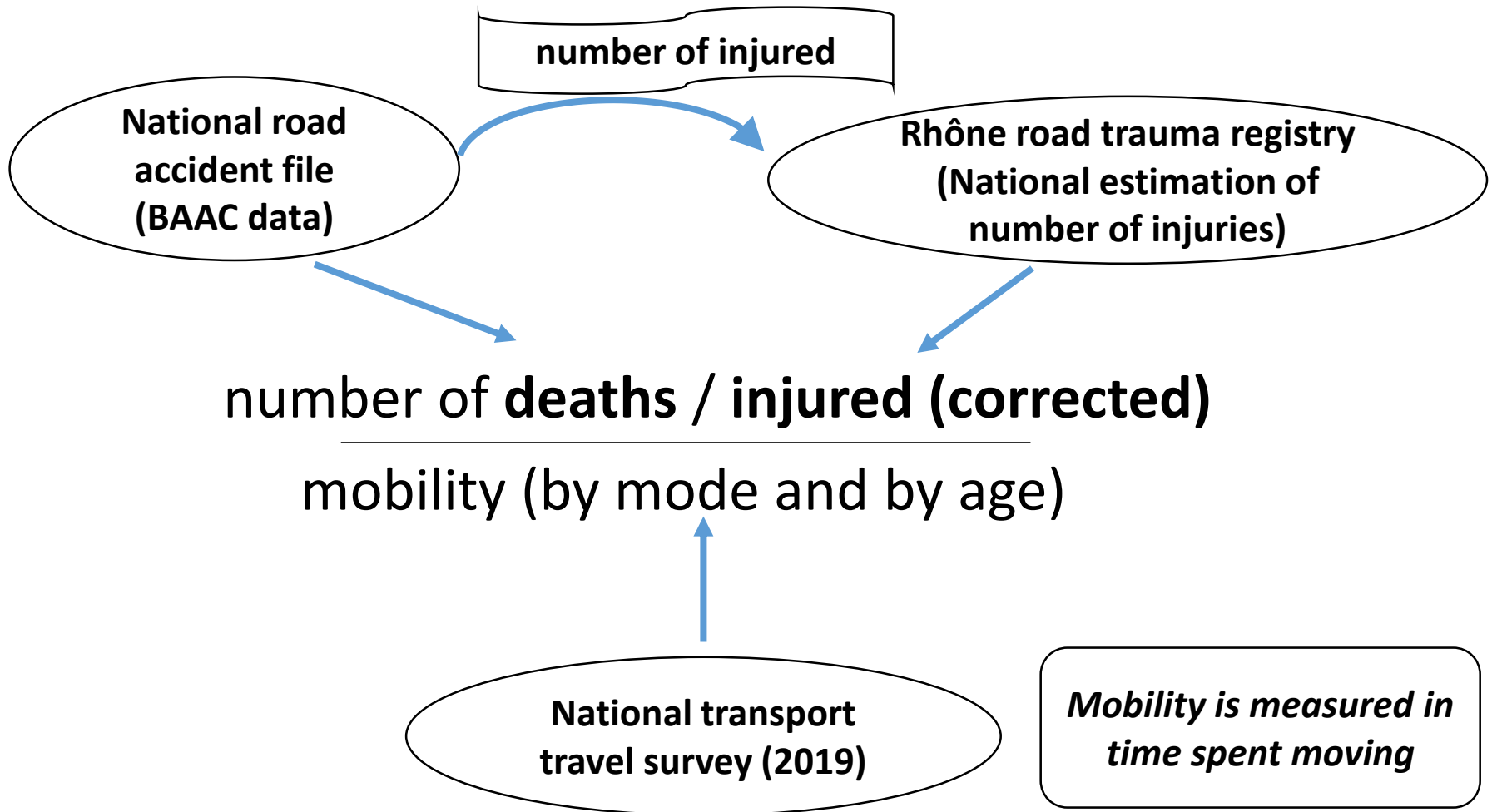
Calculate these risk indicators according to the mode of transport and the age of the individuals



I - Data and methodology

I – Data and methodology

- Database used



I – Data and methodology

- Data details

- **The national road traffic accident database known as "BAAC"**

- For each injury accident, information describing the accident is entered by the police unit (police, gendarmerie, etc.) that intervened at the accident site. All these accident files constitute the national road traffic accident database known as "BAAC"
- Informations about the accident, roads, vehicles and people involved
- This database does identify fatal accidents **but underestimates non-fatal accidents, in particular accidents with minor injuries.**

- **Rhône road trauma registry**

- This database from French hospitals makes it possible to exhaustively identify those injured in road accidents
- Bias correction coefficients are used for the number of injuries / estimated figures by ONISR from UGE Method (Amoros and al. 2020)
- We used the corrected figures of injuries according to the categories MAIS1+ (light) and MAIS3+ (serious)

I – Data and methodology

- Data details

- **National transport travel survey (2019)**

- 21,000 households surveyed on their local mobility (travel less than 80 km) and their long-distance mobility
- Socio-demographic data of households, data on the vehicle fleet, and on mobility practices

➤ **This survey makes it possible to calculate mobility practices according to the mode used and the age of the individual**

I – Data and methodology

- Method

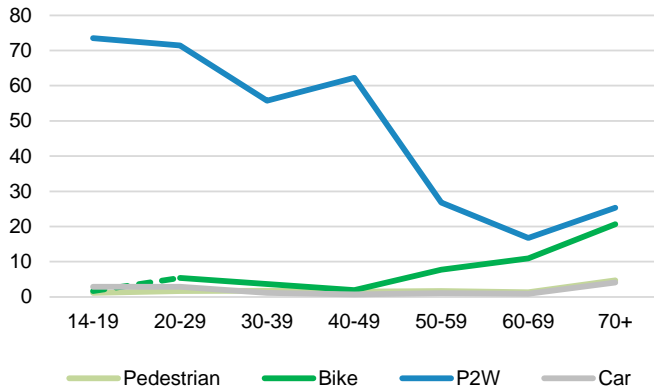
- Calculate from these bases the ratios of killed and injured (**seriously** and minor) in relation to 3 measures of exposure to risk:
 - By number of trips made
 - Per kilometers traveled
 - **By time spent traveling**
- Calculate this indicator according to mode of travel and age of individual
- Modes : Pedestrians, cyclists, motorized two-wheelers, car
- Age : [14-19], [20-29], [30-39], [40-49], [50-59], [60-69], [70+] (constraints related to the crossing of databases)

II - Results

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• General results

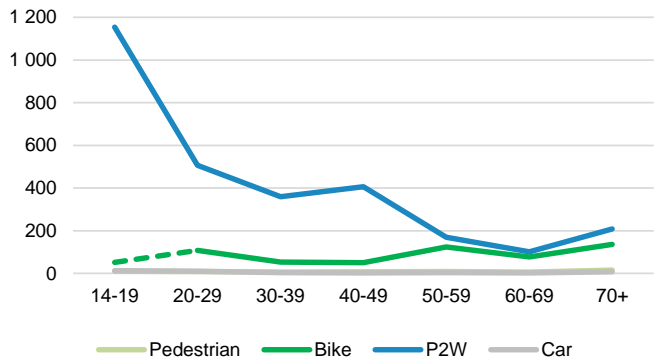
Risk to be killed (killed/bln.min)



Risk to be killed (killed/bln.min)

	Pedestrian	Bike	P2W	Car	Total
14-19 y.o.	1,1	1,7	73,5	2,9	2,6
20-29 y.o.	1,7	5,4	71,5	2,9	3,7
30-39 y.o.	1,8	3,7	55,8	1,2	2,0
40-49 y.o.	1,5	2,0	62,2	0,7	1,4
50-59 y.o.	1,7	7,7	26,8	1,1	2,0
60-69 y.o.	1,3	11,0	16,7	0,9	1,5
70 y.o. +	4,7	20,6	25,3	4,1	4,5
Total	2,2	6,5	43,2	1,6	2,4

Risk to be seriously injured (Injured M.AIS 3+/bln.min)

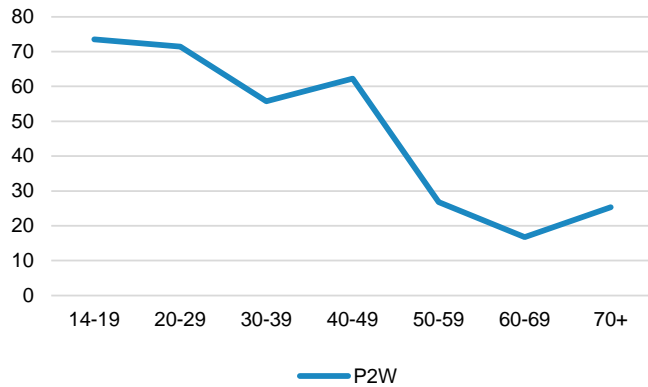


- The biggest risk to be killed is for the P2W users : **27 times more** than for the car users
- The bike risk is the second biggest, **especially for elder people**
- 70+ and 14-29 y.o. people are **the riskiest age classes**

II - Results

- Focus on P2Ws

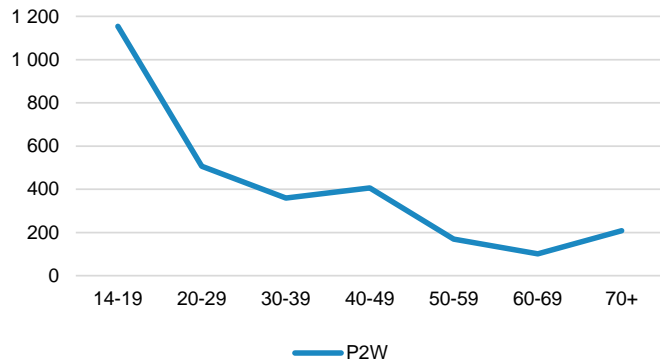
Risk to be killed (killed/bln.min)



Risk, by billion of minutes, to be...

	Injured M.AIS 3+			Killed		
	Bike	P2W	Car	Bike	P2W	Car
14-19 y.o.	51,7	1154,0	13,1	1,7	73,5	2,9
20-29 y.o.	107,6	506,9	9,8	5,4	71,5	2,9
30-39 y.o.	52,7	359,4	4,2	3,7	55,8	1,2
40-49 y.o.	49,9	406,0	2,6	2,0	62,2	0,7
50-59 y.o.	124,5	168,9	3,2	7,7	26,8	1,1
60-69 y.o.	77,5	101,0	2,8	11,0	16,7	0,9
70 y.o. +	136,4	207,9	7,8	20,6	25,3	4,1
Total	76,9	329,0	5,0	6,5	43,2	1,6

Risk to be seriously injured (Injured M.AIS 3+/bln.min)

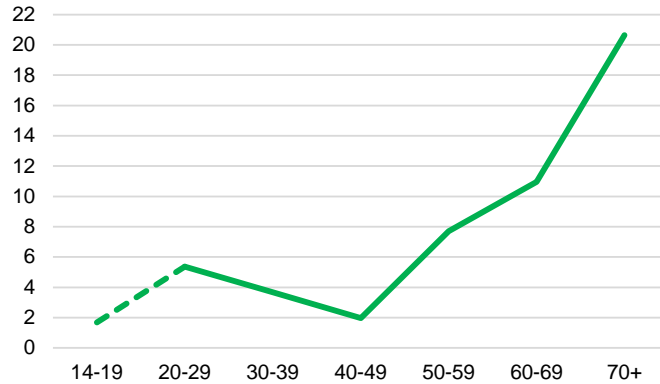


- Risk to be killed **27 times bigger than car** and **7 times bigger than bike**
- Risk to be seriously injured **65 times bigger than car** and **4 times bigger than bike**
- Bigger risks for 14-29 and 40-49 age groups

II - Results

- Focus on bikes

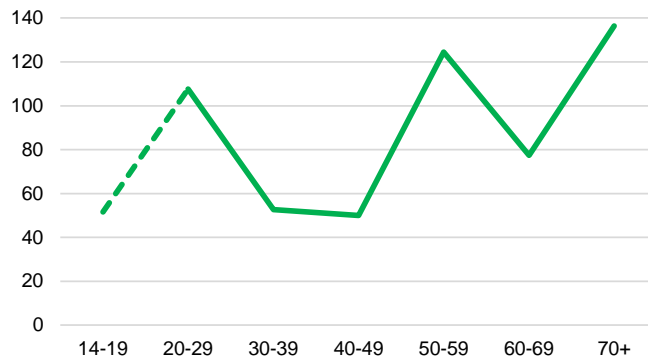
Risk to be killed (killed/bln.min)



Risk, by billion of minutes, to be...

	Injured M.AIS 3+			Killed		
	Bike	Ped.	Car	Bike	Ped.	Car
14-19 y.o.	51,7	9,8	13,1	1,7	1,1	2,9
20-29 y.o.	107,6	9,6	9,8	5,4	1,7	2,9
30-39 y.o.	52,7	6,8	4,2	3,7	1,8	1,2
40-49 y.o.	49,9	7,1	2,6	2,0	1,5	0,7
50-59 y.o.	124,5	8,4	3,2	7,7	1,7	1,1
60-69 y.o.	77,5	6,4	2,8	11,0	1,3	0,9
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Total	76,9	9,4	5,0	6,5	2,2	1,6

Risk to be seriously injured (Injured M.AIS 3+/bln.min)

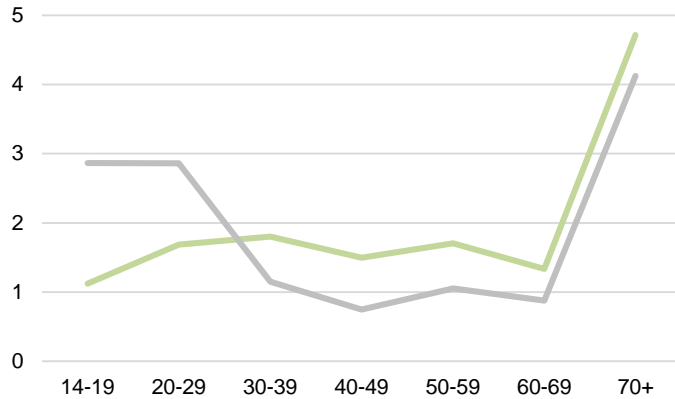


- Risk to be killed **4 times bigger than car** and **3 times bigger than pedestrian**
- Risk to be seriously injured **15 times bigger than car** and 8 times bigger than pedestrian
- **Bigger risks for oldest age groups** : 4 times bigger for 70+ than 20-29
- Risk to be killed close to the P2W for 70+ : 20,6 vs 25,3

II - Results

- Focus on pedestrians and cars

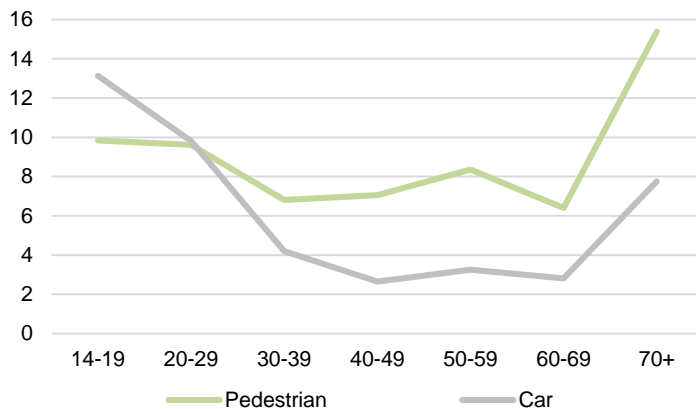
Risk to be killed



Injured M.AIS 3+

	Injured M.AIS 3+			Killed		
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Risk to be injured MAIS 3+



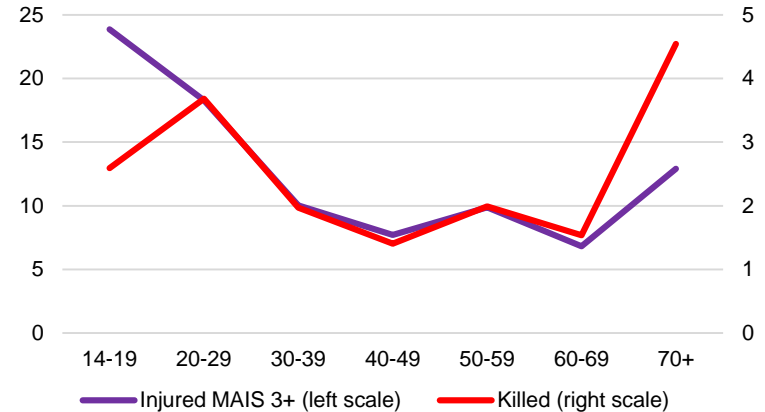
- Smaller risks than P2W and bikes but differences by age groups :
 - Bigger risk for car users for the youngest people
 - From 30-39 y.o. bigger risk for pedestrians
- Pedestrians : risky age group 70+
- Car users : risky age group 14-29

II - Results

- Focus on risky age groups

Risk to be killed

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Risk to be injured MAIS 3+

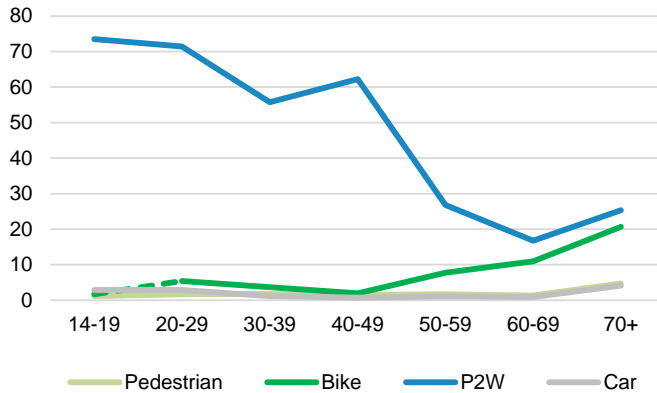
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- Riskiest age groups : 14-29 y.o. and 70+ y.o.
- Risk to be killed bigger for seniors
- Risk to be seriously injured bigger for youngest groups
- Walking and biking riskier for oldest people
- P2W riskier for youngest people

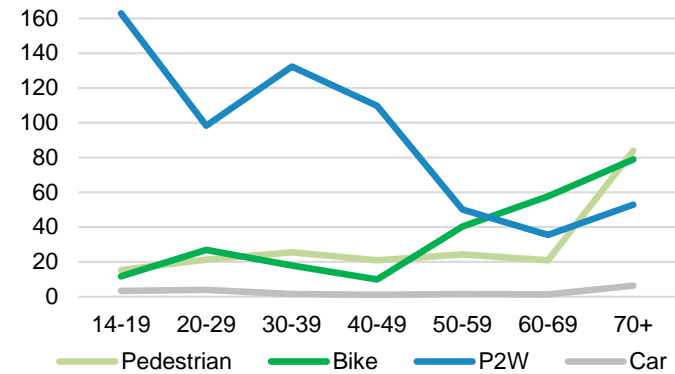
II - Results

- Risk by distance

Risk to be killed by billion of minutes



Risk to be killed by billion of kilometers



- Bigger risk for non-motorized modes
 - Slowest modes get a bigger risk
 - Pedestrians has a similar risk as bikes
 - Pedestrian and bike risks are bigger than P2W for oldest people
- P2W/car ratio is similar than for minutes
- Underestimating of P2W risk with distance estimation

Conclusion

- Main issues :
 - P2W : bigger risk and 23% of the fatalities in 2021
 - Bike : big risk and rising of its use : aim to get the share of its use from 3 to 9% in 2024.
 - Cars : Still half (48%) of the road fatalities in 2021 : biggest figure even if the risk is low
 - Old age groups : over-risk for active modes and demographic increasing
- Interest in deepening certain modalities
- National transport survey done every 10 years: need for more recurrent studies