

Raw results from RUI

Let's review the three examples of usages analyzed in the main document. As a reminder, we selected these usages based on the ratio between the number of usage-impact links and the number of indicators for each usage ($r = \frac{n_{\text{impacts}}}{n_{\text{indicators}}}$). They are presented in the Table 1.

Table 1. Three examples of usage.

Id	Usage	Impacts	Indicators	r
S2U04	The passenger communicates with the passengers of nearby vehicles during transportation	6	3	2
S2U10	The passenger performs personal tasks during transportation (e.g. a shopping list)	3	2	1.5
S1U09	A person from outside the vehicle kills someone by taking control of the vehicle	6	4	1.5

The impacts related to these three usages are presented in the following three tables. These tables include extracts from the output of the RUI model, which was interrogated with the three aforementioned usages.

Usage ID: S2U04

Table 2. Impacts for the usage S2U04.

Impacts	Trend	Intensity	Occurrence	Depth	Certainty	Expert ID	Theme	Impact ID
Ease of reporting a problem	↑	2	3	2	3	D	Networks and communication	S2-002b
Insults and threats between road users	↑	3	2	2	3	S	Conflicts and crimes	S2-001
Social interactions	↑	2	3	2	3	D	Networks and communication	S2-002a
Social interactions	↑	3	3	3	3	O	Networks and communication	S2-003
Social interactions	→	1	1	2	3	V	Networks and communication	S2-004
Social interactions	↑	1	1	2	1	S	Networks and communication	S2-005

Usage ID: S2U10

Table 3. Impacts for the usage S2U10.

Impacts	Trend	Intensity	Occurrence	Depth	Certainty	Expert ID	Theme	Impact ID
Pressure to increase the number of activities	↑	3	2	2	3	Q	Health and welfare	S2-011
Pressure to increase the number of activities	↑	3	2	2	2	V	Health and welfare	S1-027k
Free time	↑	3	3	3	2	D	Health and welfare	S2-010

Usage ID: S1U09

Table 4. Impacts for the usage S1U09.

Impacts	Trend	Intensity	Occurrence	Depth	Certainty	Expert ID	Theme	Impact ID
Mobility access	↑	2	2	2	2	U	Human rights, population change, identity and cultural heritage	S3-032
Ability / Sense of direction	↓	3	2	2	3	S	Identity and cultural heritage, education	S2-013
Ability / Sense of direction	↓	3	2	2	3	V	Identity and cultural heritage, education	S2-014
Ability / Sense of direction	↓	3	2	2	3	V	Identity and cultural heritage, education	S2-015a
Movement awareness	↓	3	2	2	3	V	Health and welfare	S2-015c
Risk of kidnapping	↑	3	1	3	2	Q	Conflicts and crimes	S2-031
Mental health	↓	3	2	2	3	V	Health and welfare	S2-015b

Below are some examples of statements obtained by reading the table.

- If the AV allows the passenger to communicate with nearby vehicles during transport, then it could be easier to report a problem (according to the expert D, sociologist and urban planner who has worked on automobile attachment).
- If the AV allows the passenger to communicate with nearby vehicles during transport, then it could significantly increase insults and threats between road users (according to the expert S, innovation ergonomics and ADAS pilot at Stellantis).
- If the AV allows the passenger to communicate with nearby vehicles during transport, then the number of social interactions could moderately increase (according to the experts D, S, and O, sociologists at EDF). To qualify, the expert V (doctor of law / DEA in sociology) believes that the number of social interactions will not be affected.
- If the AV allows the passenger to perform personal tasks during transport (e.g. a shopping list), then it is likely to significantly increase the pressure on them to perform more activities (according to the experts V and Q, pilot of a study on the place of autonomous vehicles in ecological transition).
- If the AV allows the passenger to perform personal tasks during transport (e.g. a shopping list), then the available free time will be considerably and systematically increased (according to the expert D).
- If an external person can kill someone by taking control of the vehicle, then there will be a significant increase in the number of accidents (according to the expert H, psycho-ergonomist and specialist in mobility innovations).

These statements are given solely based on the attributes *Indicator*, *Trend*, *Intensity*, *Occurrence*, and *Expert*. But it is possible to go much further by taking into account, for example, the level of certainty (*Certainty*), the scope (*Depth*), or the textual details given by the participants (*Change*, *Subject*, *Conditions*).

Full example

Let's take back the following statement:

If the AV allows the passenger to communicate with nearby vehicles during transport, then it could be easier to report a problem (according to the expert D, sociologist and urban planner who has worked on automobile attachment).

To add details, we can browse the *IMPACT* database by displaying more attributes. The corresponding line for this impact is shown in Table 5 (for the usage: *The passenger communicates with the passengers of nearby vehicles during transportation*).

Table 5. Extract of the *IMPACT* database.

Impact	Trend	Intensity, Occurrence, Depth, Certainty	Expert ID	Impact ID	What will change?	Conditions	Subject
Ease of reporting a problem	↑	2, 3, 3, 3	D	S2-002b	It is possible that such an application would only be useful in case of emergency (reporting a problem in the vehicle, calling a doctor...)	Technically feasible, there will surely be a demand: talkative people who no longer have the activity of driving to occupy them during the journey, a safety reason may require that the communication system be installed anyway, the autonomous vehicle is communicative by default, might as well use it to entertain passengers.	Passengers of vehicles that can make or receive calls from crews of other vehicles

Expanding on the previous statement, we could thus obtain this level of detail:

If the AV allows passengers to communicate with other vehicles' passengers during transport, then it could be easier to report a problem regardless of the problematic situation (according to the expert D, sociologist and urban planner who has worked on automobile attachment). He is rather confident that such an application would only be useful in case of a problem (reporting a problem in the vehicle, calling a doctor...). He estimates that this impact would be moderately important and would concern several people among those who would have access to this usage.