SIG-TP03
Movement time
Test report 24/01576

SIGTP03 - Movement time

Goal: define movement time after car stop in secure area

| 15 m | 5 m | 0 m |
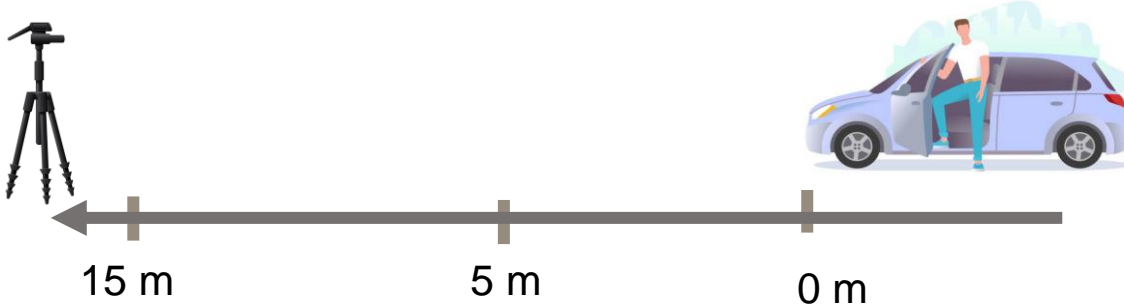
Test condition:

2 scenario with 2 vehicles in each category:

a) Evacuation by the driver until 15 m.
b) Evacuation by ty the driver until 5 m then until 15m.
→ 20 trials in total

Additional scenario
c) Evacuation by driver w/o help (fumigant 1 min, instinctive scenery)
d) Evacuation (1x) (Free scenario)

Vehicles A1, A2 3 passengers in the front (utility): **Peugeot expert** **Renault Master**	
Vehicles B1, B2 3 doors with 4 passengers **Renault Twingo** **Renault Clio**	
Vehicles C1, C2 5 doors with 5 passengers **Scenic 7 seats** **Dacia Lodgy**	
Vehicles D1, D2 5 doors with 6 passengers **Scenic 7 seats** **Dacia Lodgy**	
Vehicles E1, E2 1 sliding side door with 9 passengers **Peugeot expert** **Renault Trafic**	

Conclusion of worth case (only driver in charge of evacuation)

Vehicle					
Egress time 15 m	1mn 40 - 2 mn (1 by 1)	2 mn 18 - 3 mn10* *reassemble wheelchair	2 mn 11 - 2 mn 50	2mn30 - 3 mn 20	02mn29 - 3mn50

Global estimation:
6 seconds to get out of the car for driver
6 seconds to open other door
20-50 seconds to remove baby with seat from belt
20 seconds to install PRM in wheelchair
1 second by walk 1 meter

Free scenario (E vehicle, 1 PMR, 3 baby seats, 5 passengers):

~1mn16 to go to 15 meters
Simultaneous actions

www.utac.com

Highlights

Values similar with all vehicles:

Driver: 6 second to get out of the car (release seatbelt, open the door, get out)
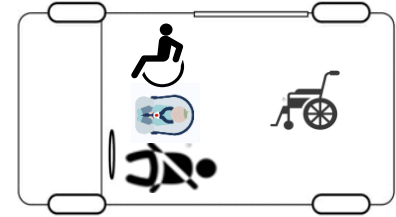4 seconds to go to car trunk
5 seconds to get out the wheelchair from car trunk
10 seconds to open the wheelchair and go to passenger door
12 seconds to install PRM
5 seconds to go 5 m far from the car
20-50 seconds to release seatbelt the baby seat

A1

A1

Highlights:
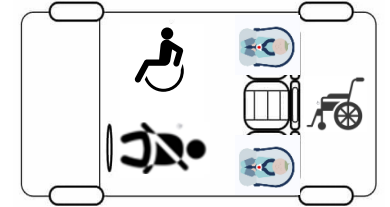
Same time to evacuate 1 baby and 1 PRM at 15m than A vehicle.

Need to fix wheel to wheelchair with small car trunk (only for B2 vehicle).

Driver: 6 seconds to get out of the car (release seatbelt, open the door, get out)
5 seconds to remove front seat
20-25 seconds to release seatbelt the baby seat
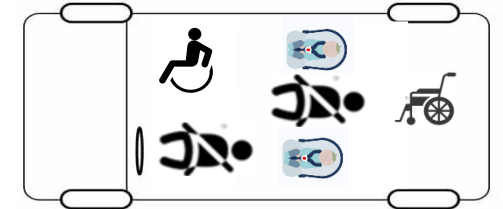50 seconds to get out/reassemble the wheelchair/open passenger door

B1

B2

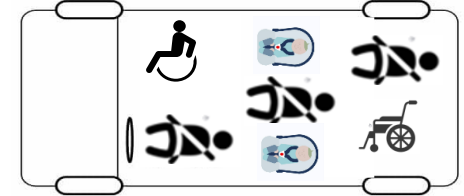**Highlights/feelings:**

Same duration, no difference regarding vehicles.

C1

C2

Highlights:

No impact of age (80 years for old people)
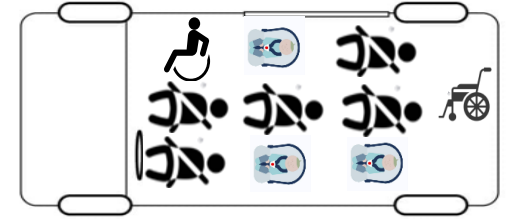People in the 3 range get out by the trunk for configuration 2 D2

D1

D2

Highlights / feeling:

20 seconds to get out baby seat from 2nd seat range
20 seconds to get out baby seat from 3rd seat range
4 seconds to access to 3 seat range

E1

E2

Highlights instinctive test with smoke grenade 1 min

Test instinct C1: --

Test instinct C2

Smoke at the bottom of the car is more annoying for passengers.
Driver try to evacuate from the car all members before going far away and let baby seat close to the car.
Different flow of smoke. Baby seat is in smoke area.

Test Instinct E1:

Driver shows smoke from the beginning and prevent him to open car trunk immediately.
2 safe area define instinctively

E1

Test Instinct E2:
Total evacuation will all participants for evacuation: 1min 16

E2

C1

C2

E1

• Context/Goal of the study

UN-R100.03 :

> *6.15.1. The REESS or vehicle system shall provide a signal to activate the advance warning indication in the vehicle ==to allow egress== or 5 minutes prior to the presence of a hazardous situation inside the passenger compartment caused by thermal propagation which is triggered by an internal short circuit leading to a single cell thermal runaway such as fire, explosion or smoke.*

Egress time could be define in several test :

- Te0 : warning at dashboard
- Te1 : time to stop car and open the door
- Te2 : time to evacuate toevacuate all passengers at 15 meters from vehicle

Te1 a été estimé à has been estimated at 1 minute

Goal of this study is to estimate duration to evacuate passenger from stopped car in secured area.

Te0   1 minute   Te1   ? : study   Te2
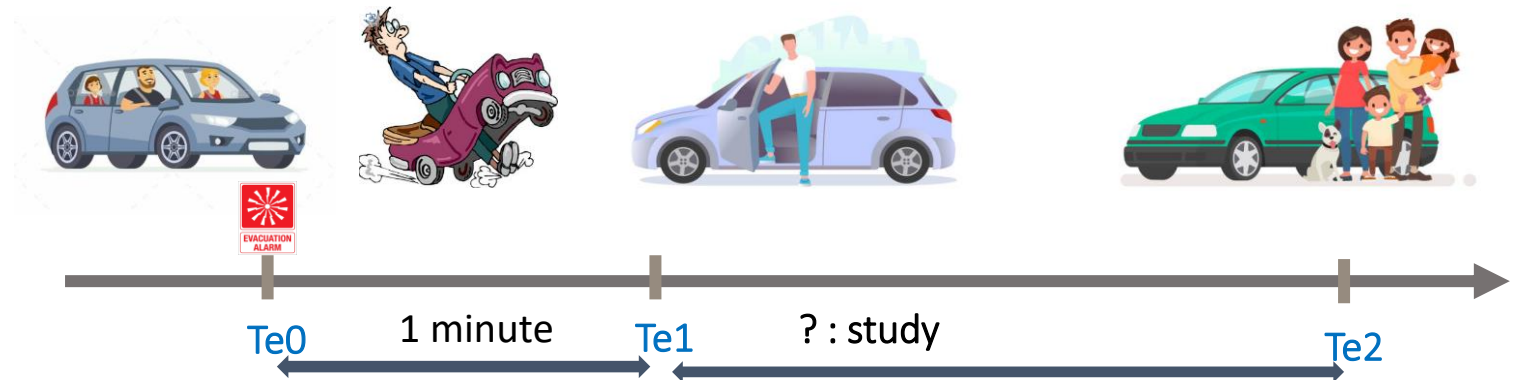
Vehicles configuration :

Egress time is dépend of kind of vehicle. So, **5 Configurations are studied to use 4/5 different cars.**
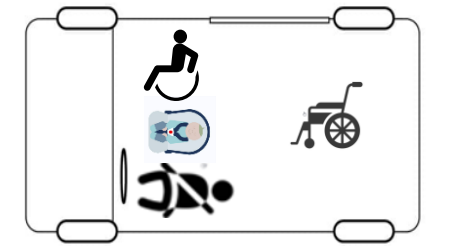
C and D could be the same.

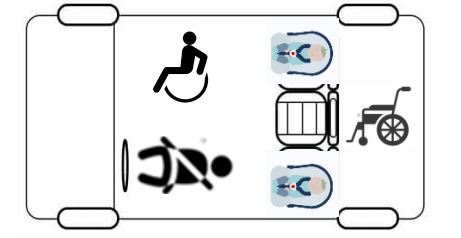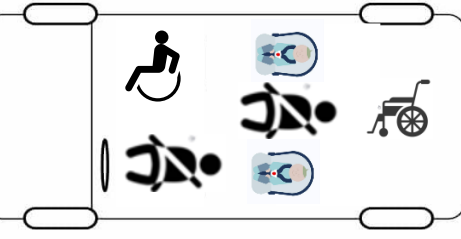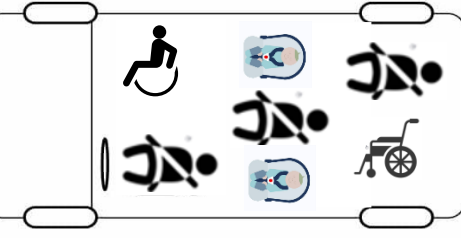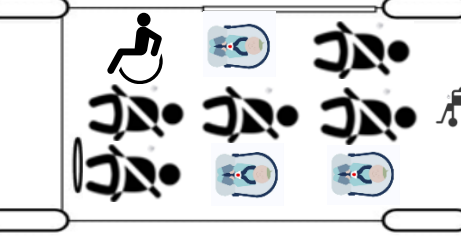Each test is made 2 times: 2 different cars per configuration.

Test are made with stopped vehicle

Several occupants could be considered:

Adult (small gabarit pour le conducteur)

Person with reduced mobility (PRM)

Lest + baby seat (Isofix or not)

wheelchair

Véhicules A1, A2 3 passengers at front seats	
Véhicules B1, B2 3 doors, 4 passengers	
Véhicules C1, C2 5 doors, 5 passengers	
Véhicules D1, D2 5 doors , 6 passengers	
Véhicules E1, E2 1 sliding side door, 9 passengers	

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- Evacuation process

Case 0 : pour le cas 5 portes, 5 passagers
Without rules
- Installation of passenger in the car
- Smoke grenade under the car and evacuation request
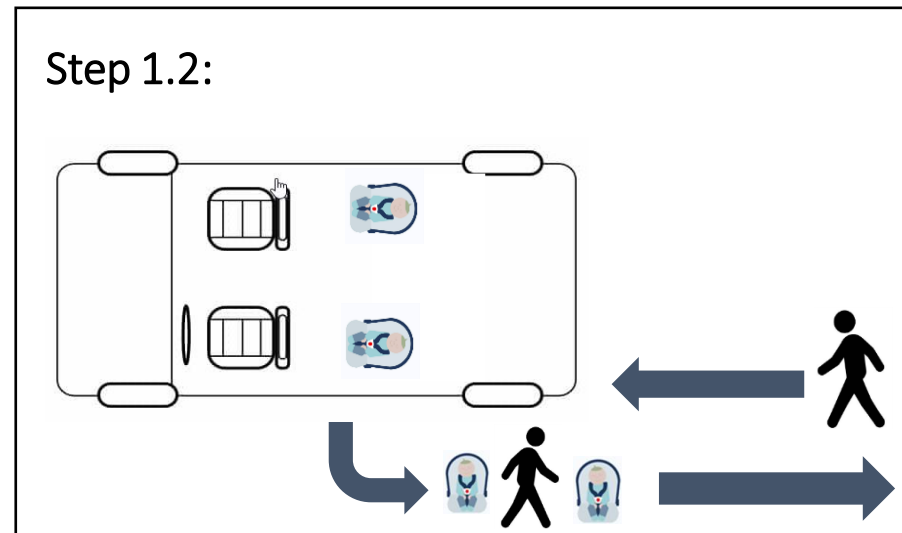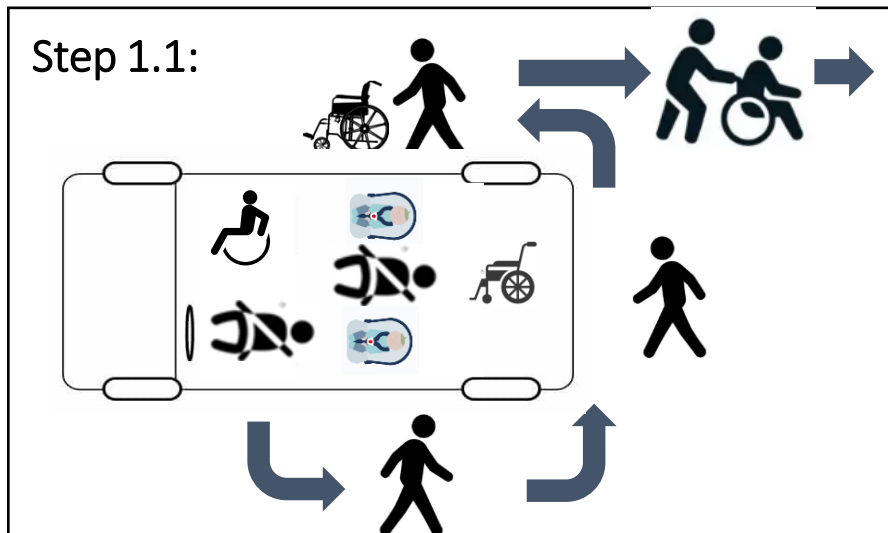- Time measurement when all people at are 15 m
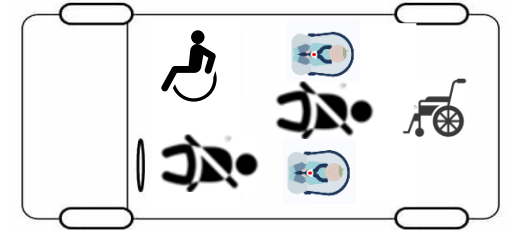
Case 1 : for all configurations (2 * 5)
Test w/o smoke, evacuation process defined:
1. **Step 1.1:** driver get out the wheelchair, and evacuate PRM at 15 m by walking
2. **Step 1.2:** Driver come back and take baby + seat one by one and walk until 15 m.

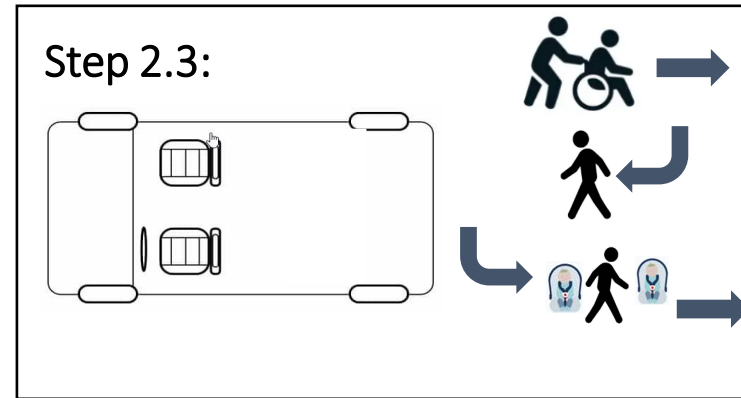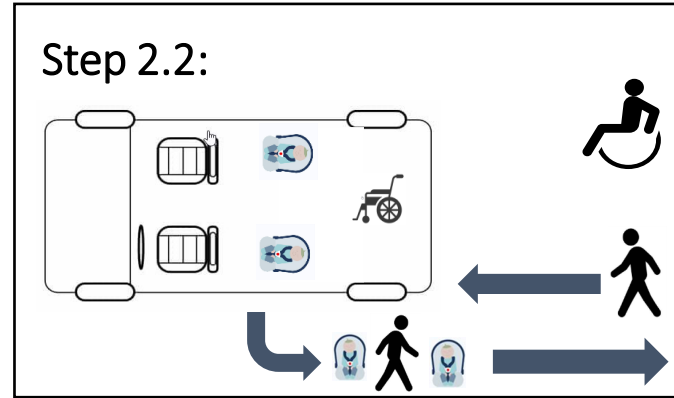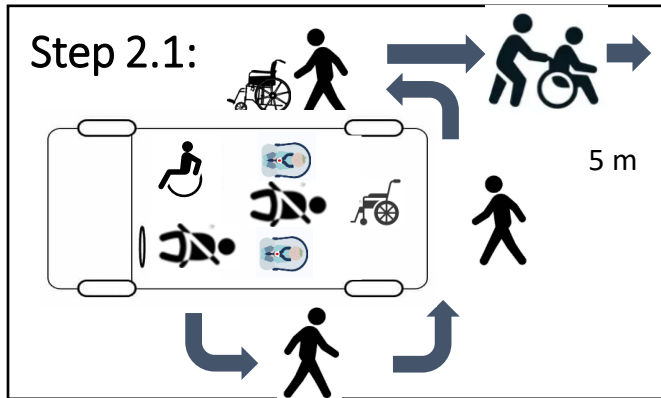Others person can evacuate by themselves by walking

Step 1.1:

Step 1.2:

Fin du test : tous les occupants sont à 15 mètres du véhicule

- # Evacuation process

Case 2 : for all configurations (2 * 5)
Test w/o smoke, evacuation process defined:

1. **Step 2.1:** driver get out the wheelchair, and evacuate PRM at 5 m by walking
2. **Step 2.2:** Driver come back and take baby + seat one by one and walk until 5 m.
3. **Step 2.3 :** Driver come back and take PRM, baby + seat one by one and walk until 5 m

   Others person can evacuate by themselves by walking

Step 2.1:   5 m

Step 2.2:

Step 2.3:

Fin du test : tous les occupants sont à 15 mètres du véhicule