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Assessment of a Driver Distraction Warning device in urban driving

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ABSTRACT

In recent years, statistics indicate that distraction and drowsiness of drivers are the main causes of collision. In 2019, the European Parliament and the Council approved a law (Regulation (EU) 2019/2144) which indicates that by 2026 new vehicles must be equipped with the so-called advanced Driver Distraction Warning (DDW) device.

This study aims at evaluating the effectiveness of a DDW device in an urban environment, with drivers operating in three different events: (i) interaction with a pedestrian at a mid-block crosswalk, (ii) driving in free-flow conditions, and (iii) interaction with a slow vehicle. Thirty participants, fifteen males and fifteen females, aged between 25 and 35, drove in three different distraction levels: (i) without distraction (baseline), (ii) with distraction and (iii) with distraction but supported by the DDW device. The distraction consisted in a secondary task, with drivers that responded to text messages on their own mobile phone.

The experimental hypothesis is that the DDW device improves the driver's behavior and contrasts the negative impact of distraction when performing the secondary task. The distraction level was considered as a within-subject factor, with the same person testing all the three conditions of distraction in a random order.

Surrogate safety measures, e.g., minimum instantaneous time to collision (MTTC) and post encroachment time (PET), were considered to evaluate the driver response during the interaction with pedestrians. The longitudinal (i.e., speed and deceleration) and transversal (i.e., lateral position) driver behaviors were evaluated in the other two interactions. The headway was also considered as a surrogate measure in the case of the car following section. The Repeated Measures ANalysis Of VAriance (RM-ANOVA) was used to analyze the data and interpret the effect of the experimental factors.

Results confirmed the negative effects of distraction on the driver's behavior, that was improved by the use of the DDW device. Although drivers judged the device annoying and useless during the driving session, it was proved that the MTTC in the pedestrian-vehicle interactions were higher, thus safer. During the distracting task, drivers tended to reduce their speed to mitigate risks. However, when supported by the DDW device, they adopted higher speeds. The effectiveness of the DDW device was also confirmed by the lateral behavior. Mean and standard deviation of lateral position were considerably higher when drivers were distracted without the support of the DDW device. Moreover, drivers were also induced in a better steering control when interacting with a slow vehicle in front.

KEYWORDS: Driver distraction, driving simulation, anti-distraction device, traffic safety, urban environment, texting and driving

1. INTRODUCTION

The World Health Organization (2021) lists road traffic injuries as the main cause of death for children and young adults aged between 5 and 29. This can be attributable to several factors, e.g., driving under the influence of alcohol and other psychoactive substances, speeding, improper use of helmets and seat belts, unsafe road infrastructures, and distracted driving. Interest in driving distraction arose in recent years and technological growth related to road safety to contrast and mitigate its effect has been exponential.

Driver distraction is defined as "the diversion of attention away from activities critical for safe driving toward a competing activity, which may result in insufficient or no attention to activities critical for safe driving" (Regan *et al*, 2011). The distraction can be divided into four categories: visual, auditory, physical, and cognitive. Young and Regan (2007) defined visual distraction as the moment when the driver neglects to look at the road for an extended period. Auditory distraction arises when drivers focus their attention on auditory signals rather than on the road environment. Biomechanical or physical distraction occurs when drivers remove one or both hands from the steering wheel for an extended time to physically manipulate an object. Cognitive distraction includes any thoughts that absorb the driver's attention to the point that they are no longer able to drive safely.

Among the biggest causes of distracted driving, cell phone use and texting while driving have a great impact (NHTSA, April 2021). According to the Annual Report File (ARF) from the Fatality Analysis Reporting System (FARS) 2019, 13% of crashes and fatalities due to distracted drivers was attributable to cell phone use.

Drivers using mobile phones are approximately four times more likely to be involved in a crash than drivers not using it, making reaction times shorter and keeping the correct following distances difficult (WHO, 2021). Figure 1 shows a significant number of distracted drivers in the age group between 25 and 34 years involved in fatal crashes. Among them, 13% was using the cellphone while driving. Regarding the 21-24 age group, the number of distracted drivers was lower, but the percentage of people using cell phones while driving was the highest.

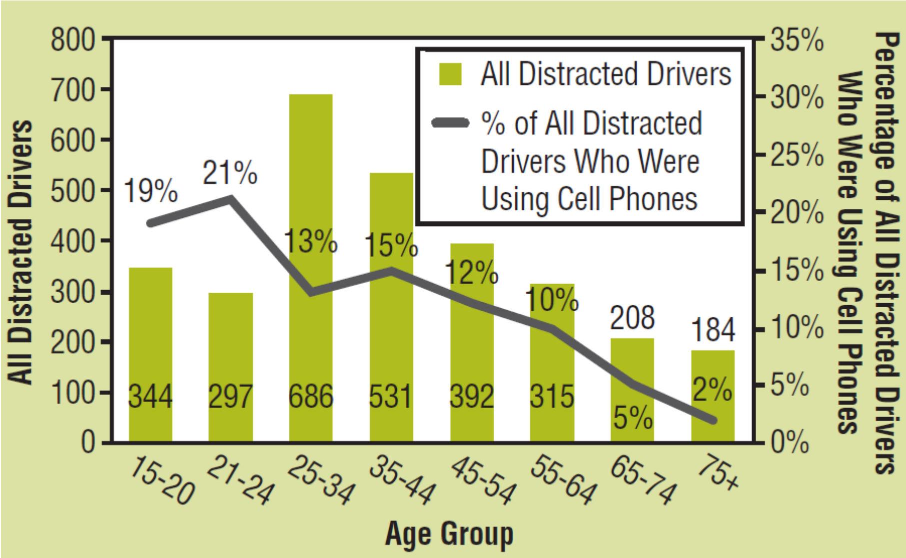

Figure 1. Distracted drivers and percentage of distracted drivers involved in fatal crashes who were using cell phones, by age group, 2019 (NHTSA, April 2021)

The National Highway Traffic Safety Administration (September 2021) researched the driver electronic device use in 2020. Three different types of driving distraction related to the use of cell phones were analyzed: drivers (i) holding the phone to their ears, (ii) talking with visible headphones on, and (iii) visibly manipulating handheld devices while driving, considering electronic devices such as cellphones, smartphones, tablets, videogames, or other devices. During the period 2011-2020, the use of phones held to the ears decreased, especially in this last year. On the other hand, the use of handheld devices increased. Concerning age groups, the percentage of drivers using handheld devices is higher among people aged between 16 and 24 years old rather than older drivers.

The Italian National Institute of Statistics (2021) states that road accidents resulting in death or injury are more likely to occur in urban areas, with a proportion of more than a half concerning rural areas and motorways. These statistics may be due to factors such as driving distraction, which can arise more easily in the urban area, because of different events which the driver may encounter when driving (e.g., interaction with vulnerable road users, vehicles braking unexpectedly, constantly changing driving and steering pattern). In second research by the NHTSA (November 2021), observations in urban and rural environments were carried out to compare motor vehicle traffic fatalities. In 2019, 45% of the total amount of road fatalities occurred in rural areas, 54% in urban areas, and 0.5%. in areas of unknown land use. Regarding urban traffic, from 2010 to 2019, fatalities increased by 34%, and since 2016 the percentage in urban environments exceeded the value for the rural environment (Figure 2). Moreover, in 2019 a notable increase in drivers killed in urban traffic crashes occurred among younger drivers aged between 21 and 34.

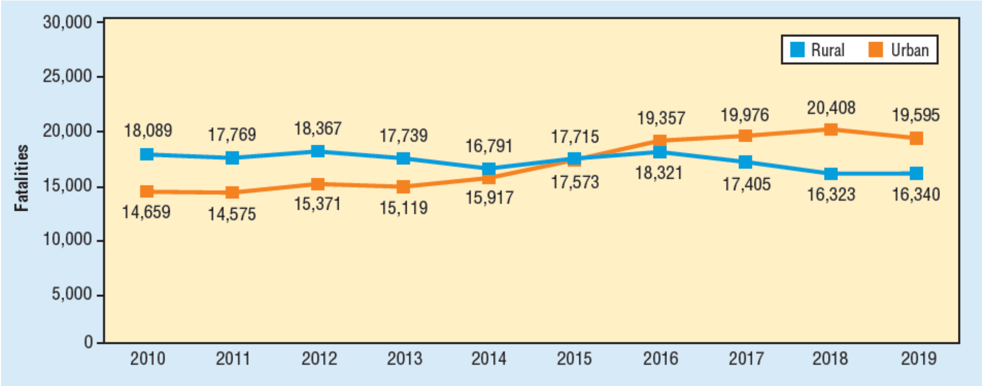

Figure 2. Fatalities, by land use, 2010–2019 (NHTSA, November 2021).

In rural roads, drowsiness and fatigue are the most common causes of car accidents, but significant investments in the market for supporting devices are being financed to mitigate these habits. In the last decade, different technologies and in-vehicle devices have been developed to improve the driving quality, e.g., Advanced Driving Assistance Systems (ADAS), and location devices on a map location server (GPS).

The European Parliament and the Council (Regulation (EU) 2019/2144, 2019) has imposed that by 2026 new vehicles on the market must be equipped with new safety systems. These include the so-called Driver Drowsiness and Attention Warning (DDAW) device, that evaluates the driver's alertness through vehicle systems analysis, and warns the driver if needed. In addition, the Advanced Driver Distraction Warning (ADDW) device must be implemented in the new car fleet, helping the driver to keep the attention to the traffic situation, and warning him/her when distracted. The usefulness of these devices has been demonstrated in motorway driving and their use is recommended for vehicles traveling at 70 km/h, but it is not easy to define their usefulness and efficiency in the urban environment (Regulation (EU) 2021/1341, 2021).

2. PROBLEM STATEMENT AND OBJECTIVES

The urban environment is a crucial issue in terms of crashes fatalities, mainly among young drivers. As mentioned above, statistical data revealed that it is four times more likely that a driver is involved in a collision, especially if using the cell phone while driving. There is a gap in knowledge in the literature about using an anti-distraction device to mitigate distraction in an urban environment. More research is needed, since this device will become mandatory by 2026 in new vehicles launched on the market, and it has so far been used satisfactorily in the motorway driving.

2.1. Distraction in urban environment

Driving in an urban environment is a more challenging activity than driving in a rural environment, due to the different events and circumstances for which the driver must be more cautious, e.g., constantly changing driving and steering pattern. Moreover, car accidents in the urban environment increased due to driving distraction and when performing a secondary task. This topic has been widely studied with different methodologies, whether using driver simulators, and in field and observational studies, to understand the effect on the driver's behavior.

Anttila and Luoma (2005) carried out a field study to evaluate the effects on drivers of visual and cognitive distraction due to an information system inside the vehicle. They concluded that visual distraction leads drivers to strongly change their behavior in terms of speed and lateral position in the road. Performances get even worse with cognitive distraction, when they were interacting with a pedestrian, causing them to brake unexpectedly.

Driving simulation is preferred to field or observational studies, for safety issues related to the unfavorable effect of distraction. These studies are performed in a laboratory where a properly validated driving simulator is used, so the results obtained are comparable to reality. Some driving simulation experiments are described below.

Young *et. al.* (2017) used in-vehicle devices for evaluating visual and cognitive distraction, with mathematical problems as a secondary task. They used two well-known tests: the lane-change test and the visual occlusion technique, to find out the extent of driver distraction. Results revealed that, when performing the visual distraction task, drivers exhibited a worse behavior for both speed and lateral position, compared to the results of the cognitive distraction task.

Boets *et al.* (2017) carried out a driving simulation study in an urban environment, where they measured the driver behavior when a pedestrian crossed the street unexpectedly, while the drivers were performing a secondary task (reading/writing texts, hand-held/hands-free phoning, or eating/drinking). The speed significantly decreased during the text writing task, and it was shown that women, middle age and older age drivers tended to drive slower in all secondary tasks. Furthermore, the crashes, mostly hitting pedestrians, occurred mainly during the reading task.

Törnros and Bolling (2006) evaluated the effects of mental workload and driving speed in simulated rural and urban environments using peripheral detection task (PDT) and reaction times measures, when the driver was hands-free and hands-held phoning. Results showed that the reaction time in the urban environment was longer than in all other environments, even without performing the secondary task. The speed was affected mostly during the hands-free phoning, because test drivers considered this activity with low mental workload and effort and tended to drive faster.

In Spain, Prat *et al.* (2014) performed an observational study in nine randomly selected urban locations in Girona. Here, the distraction was already assumed, knowing that the participant was not fully involved in the driving task. They found that the use of the cell phone was the third secondary task most performed by drivers, after talking with passengers and smoking. Since both men and women had the same tendency to be distracted while driving, gender was not considered as an important factor. On the other hand, they observed that young drivers (< 30 years) used the cell phone for texting or talking in a percentage that is more than double compared to old drivers.

According to previous research, anti-distraction devices have not been studied for cases related to driving distraction in urban environment. Texting while driving has become more concurrent in recent times, especially among young adults. Hence, previous studies on secondary tasks while driving were focused on young participants, who have greater skills in doing two tasks at the same time, and consequently, are less affected by this kind of distraction, when compared to more adult drivers (Rumschlag, et al., 2015). However, their driving experience is shorter, so the reaction to avoid a collision is usually riskier and more unexpected concerning older drivers.

2.2. Distracted driving and gender

Although the effect of gender on driving behavior has not been the most widely evaluated factor in research, such as age and years of experience, some studies have stated that results on distracted driving have been mixed, i.e., sometimes claimed that driving impairment occurs more in female drivers, other times in male drivers, results are not unanimous (Young *et al.,* 2008).

Sullman & Baas (2005) investigated the characteristics of drivers using mobile phones while driving and the frequency of its use on New Zealand's roads. Males residing in the urban area resulted to use more often the mobile phone. On the other hand, Wogalter and Mayhorn (2005) conducted another survey study examining the perception of cell phone use in distracted driving. In this case, more women (73%) than men (50%) reported using the cell phone while driving.

In Portugal, drivers answered a web-based survey developed by Ferreira *et al.* (2013) to investigate the mobile phone use patterns while driving. The results showed that men used cell phones more frequently than women. Furthermore, male drivers were more prone to use mobile phone in the highway. Regarding the type of activities that drivers undertake with the mobile phone, females seemed to read and write messages while driving more often than males.

Reed and Robbins (2008) carried out a simulator study to investigate the effect of texting on driver behavior on motorway roads. It was shown that females tend to reduce their speed when performing the secondary task while driving, indicating that they were more careful, knowing that their driving was impaired. Nevertheless, their lateral position was greatly affected. More variability in trajectory was detected when texting with respect to men's lateral behavior.

Bakowski *et al.* (2015) studied the efficiency of Forward Collision Warning (FCW) systems intended to alert distracted drivers to an imminent forward collision when they were visually distracting scrolling text messages displayed on a monitor. The study was based on the training that drivers had for using the device, thus measuring their behavior. It was concluded that the women were faster in pressing the brake and had a larger minimum time to collision when they received FCW system training than men. However, females were slower than men to press the brake and had a shorter minimum time to collision in no-training conditions. This means that the proper use of the device can lead to improvements in female driving performance.

2.3. Anti-distraction devices

In the literature, different countermeasures were mentioned to mitigate and contrast distraction related to the use of cell phones when driving. One of the most famous actions is reinforcing state laws that ban this behavior and implementing campaigns to show the significant risk and fatalities that it could cause (McCartt, Kidd, & Teoh, 2014). Another mentioned countermeasure is the use of new technologies that help to call the driver's attention when he/she is distracted, asleep, or fatigued.

Doudou *et al.* (2020) classified devices to measure drowsiness into three types: (i) driving behavioral vehicle-based, (ii) driver behavioral video-based, and (iii) driver physiological signals monitoring technologies. Figure 3 shows a summary of these technologies that have been used in different studies to assess their effectiveness. Vehicle-based technologies monitor the driving activity considering speed, lateral performances of the vehicle and the surrounding environment. Video-based technologies measure the driver's movements (eyes, face and head) to detect fatigue and drowsiness signs and symptoms. Physiological signals monitor the cognitive state of drivers. Despite the effectiveness of psychological technologies, they are very intrusive and impractical in real driving. Vehicle-based technologies do not perform well in case of absence or degradation of road signals, and video-based technologies depend on environmental and driver conditions, which can represent a real challenge. In general, driver behavioral measure was the best option chosen by Doudou to measure distraction in terms of intrusiveness, detection accuracy, and ease of use.

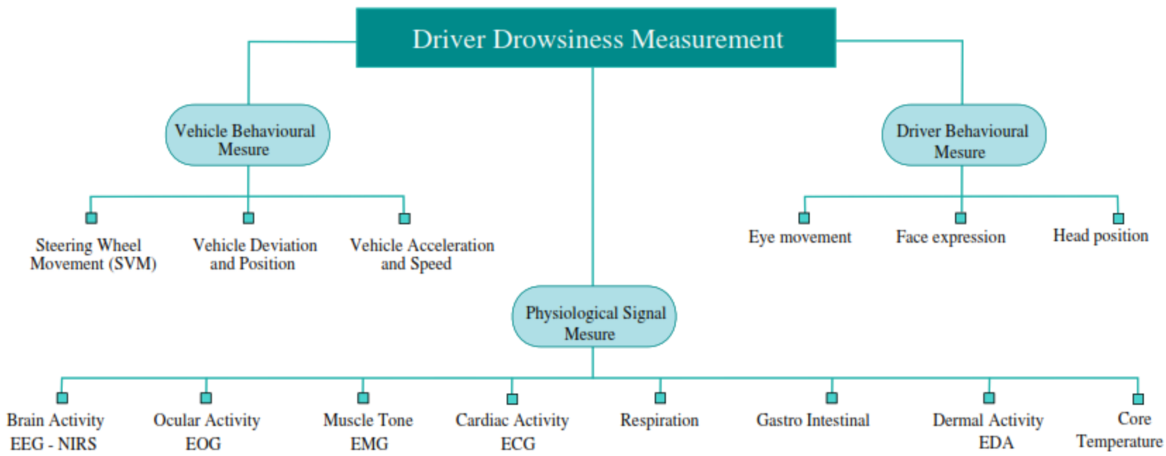

Figure 3. Summary of measurement approaches used for driver drowsiness detection (Doudou et al., 2020).

The Virginia Driving Safety Laboratory (Gallahan, et al., 2013) developed a noninvasive system to detect and warn drivers about distraction monitoring and tracking head and skeletal movements. They used a custom software application that gives back audio alerts. The system correctly identified (i) reaching for a moving object in 100% of cases, (ii) talking on a cell phone at 33%, (iii) personal hygiene issues at 50%, and (iv) looking at an external object at 66%. Nevertheless, the team could not create algorithms to measure reading and texting distracted behavior because facial tracking did not work properly if the driver was not centered directly in the field of view. Moreover, Dimitru *et al.* (2018) investigated the driver's behavior when distracted by using social networking applications employing an in-vehicle smartphone-based ADAS. This application helped to reduce driving infractions, the number of lane departures, and the number of space cushions.

Drowsiness is the most common feature evaluated by the anti-distraction devices. A quarter of all serious motorway accidents are attributable to sleepy drivers, who cause more rural road accidents than drunk drivers (Saini & Saini, 2014). Positive results on driver behavior were demonstrated with the use of warning devices in highway and rural environments (McDonald *et al.,* 2018)

As mentioned in previous paragraphs, DDAW and ADDW systems will be mandatory in the market from 2024 and 2026, respectively. The DDAW systems assess the human physical state through indirect measures based on the recognition of the trajectory, and in the case of ADDW systems, with face detection. It is important to notice that these systems only continuously record and collect data necessary for the system to work and operate within a closed-loop system (Regulation (EU) 2021/1341, 2021).

However, considering the driver's interaction with these devices, even ADAS and anti-distraction systems use can lead the driver to distracting conditions, as each tool demands a certain level of the driver's attention (Brooks & Rakotonirainy, 2005). In other words, new technology increases the potential driving distraction, so it was recommended to minimize these effects, restricting these devices ability to interact with the driver.

2.4. Surrogate safety measures for driving distraction

Traffic safety indicators are usually represented in terms of crashes and fatalities in statistical accident data (Archer, 2005). However, collecting a sufficient amount of accident data to produce reliable estimates of traffic safety takes a long time (Laureshyn, 2010). For this reason, interest in finding measures for traffic safety not based on accidents data has increased. Gettman and Head (2003) named indirect measures as Surrogate Safety Measures (SSM). These indicators aim to estimate the expected number of accidents, not to predict the current accidents.

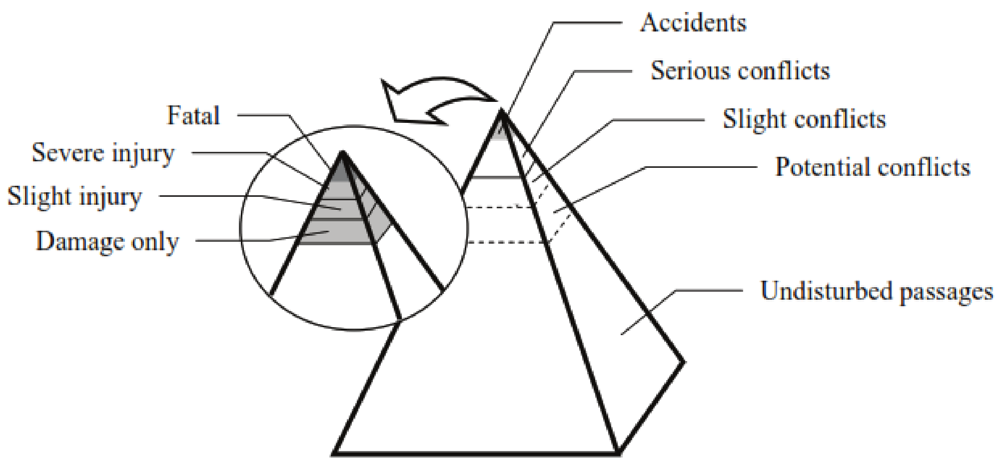

Figure 4. The safety pyramid according to Hydén (1987).

To evaluate these indicators, the knowledge of the conflict event is essential. However, not all conflicts end in a collision and can be classified depending on the event's severity. Hydén (1987) developed a safety hierarchy indicating the most several events at the top and undisturbed passages at the bottom of the pyramid (Figure 4).

Conflict occurs between two road users on a collision course (given in terms of time or space) but they do not collide, because at least one of the conflicting road users takes the decisive evasive action. Conflict events can be measured in terms of Minimum Time to Collision (MTTC), Post-Encroachment Time (PET), and time headway. Furthermore, transversal (lateral position) and longitudinal (speed and deceleration) behavior can be considered as well. MTTC, PET, headway, and deceleration are intended to indicate the severity of the conflict event. At the same time, speed is used to represent the severity of the crash (Gettman & Head, 2003).

2.4.1. Minimum Time to Collision (MTTC)

In conflict events, the MTTC is the most notable measure of the severity of a conflict and the accident proximity. This indicator is characterized by being the minimum time required for two road users to collide if they continue to travel at their present speed and on the same path (Minderhoud & Bovy, 2001). This analysis allows to understand the driver's behavior at the moment of a critical encounter, but also provides the knowledge of the driver's abilities to avoid the situation.

Figure 5 shows the trend of distance, speed, acceleration and time to collision during a conflict event. Under normal conditions, when drivers get closer to the critical event, they reduce their speed to avoid the collision. Thus, the TTC reaches its minimum value (point B), and then increases again (Van Der Horst & Hogema, 1994).

Several studies researched on how to distinguish critical from normal behavior, concluding that a MTTC less than 1.5 s would be considered as critical.

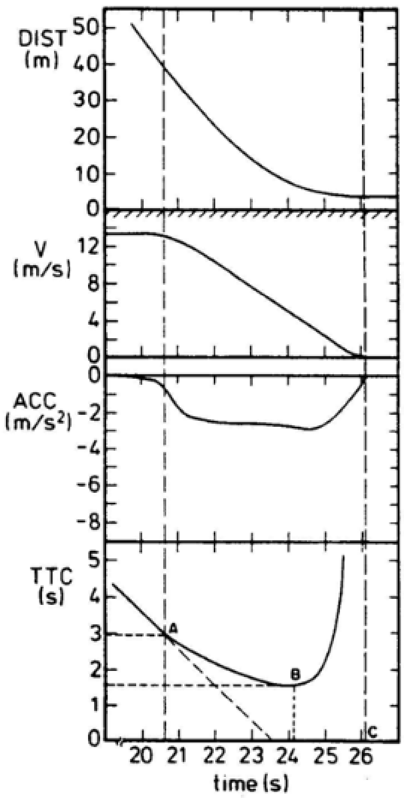

Figure 5. Time histories of braking by a car approaching a stationary object (Van Der Horst & Hogema, 1994).

2.4.2. Post Encroachment Time (PET)

PET directly measures the time difference between the two road users (pedestrian and vehicle) passing through a common spatial point or area. It is used to estimate the probability of a collision (Gettman, Pu, Sayed, & Shelby, 2008). Hence, the higher the time, the less likely are collisions. To extract this measurement, photometric analysis can be used. Unlike the TTC, PET does not need data related to distance or speed, so it is less resource-demanding concerning the data-extraction process. However, it is impossible to accurately calculate a useful measure to assess the PET event's severity (Archer, 2005).

Moreover, the PET indicator is more useful in critical events, where there are transverse trajectories, such as crossings, because the PET measurement requires a fixed point of collision instead of one that changes dynamically due to speed. Therefore, there will always be a collision course in longitudinal trajectory interactions.

2.4.3. Headway (HW)

Time headway is measured by taking the time between two vehicles' reaching the exact location. It is typically used to evaluate the capacity of a road, but also the severity of a traffic event. TTC in a car-following situation can be directly compared with the headway to assess safety (Table 1), where vehicles with small-time headway have undefined TTC values.

Furthermore, small TTC values are impossible for vehicles with long-time headways (Vogel, 2003).

Table 1. Relationship between TTC, headway and safety (Vogel, 2003).

		Headway	
		Small	*Large*
TTC	*Small*	Danger imminent	Impossible
	Large	Potential danger	Safe

The collision occurs when the time headway is equal to zero. To classify an event as critical or not, it is necessary to know if the user is in conditions of free-flow speed or car-following speed. However, the threshold value is still an unexplored topic in the literature. Various authors have proposed different values considering the road setting (urban, rural) and different measures (gap, tailway). Kloeden and Woolley (2012) considered a threshold headway of 4 s in urban and rural roads in Australia. Bassani *et al.* (2016) assumed a 6 s threshold in rural roads in Italy, and Silvano and Bang (2016) took a 10 s headway for urban roads in Sweden.

Ambros & Kyselý (2016) used the procedure for determining the threshold value proposed by Vogel (2003). He divided the vehicles into groups according to their headways and calculated correlations between the speeds of successive vehicles. He found that speed has significant safety consequences, and therefore the accident rate increases as threshold time headway increases (Figure 6).

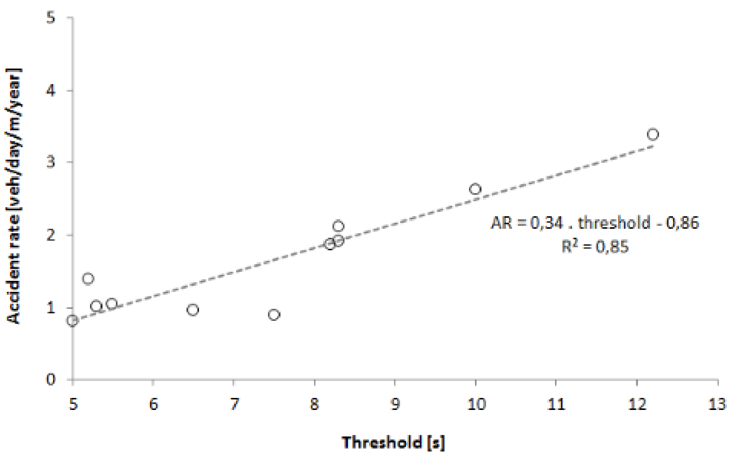

Figure 6. Relationship between TTC, headway and safety (Ambros & Kyselý, 2016).

2.5. Aim of the study

The purpose of this driving simulation study is to evaluate the effect of a Driver Distraction Warning (DDW) device in urban areas, considering three different events the driver can find in this type of environment: (i) interaction with a pedestrian at a mid-block crosswalk, (ii) driving in free-flow conditions, and (iii) interaction with a slow vehicle.

In this within-subject experimental design, participants drove in three scenarios with three levels of distraction: (i) without being distracted, (ii) distracted, when performing a secondary task, (ii) distracted but supported by the DDW device. As a secondary task for the distracted conditions, drivers were asked to read and respond to text messages on their phone in a specific road stretch to investigate the impact of the level of distraction (and so, of the DDW device interaction) on his/her driving performances. Both longitudinal behavior (speed and acceleration) and lateral control (position within the lane and trajectory) were analyzed to measure the driver behavior. When interacting with the other road users, the time-to-collision (TTC) and the post-encroachment time (PET) related to the pedestrian and the headway in car-following section were evaluated. Knowing the different driving attitudes between male and female drivers, gender was also considered as a factor in the study.

The hypothesis is that although distracted driving cannot be totally abolished, an anti-distraction device can help mitigate this issue and reduce fatalities in conflict events. The aim is to assess if the driver tends to have more control over driving when using the device even if he/she is distracted, either by having less trajectory dispersion or reducing deceleration and speed. Also, the aim is to assess if collision probability indicators can be reduced, such as MTTC, PET, or headway.

3. METHOD

3.1. Design of the experiment

In this multi-level mixed-factor design, the main independent variable of the experiment was the level of distraction: (i) baseline (i.e., no distraction), (ii) with distraction, performing a secondary task, (iii) with distraction but supported by the DDW device. The distraction level was considered as a within-subject and repeated-measures factor. Each participant drove under these three different conditions, with repeated measurements for each (Lane, 2003). The test driver's gender was considered a between-subjects factor since a behavior change is evidenced in literature when driving between females and males. According to Alonso *et al.* (2019), women show less aggressiveness in driving behaviors, which has been associated with feelings of fear, while men tend to underestimate the level of dangerousness of some driving actions.

Additionally, in each scenario drivers faced three different interactions where their performance was measured: (i) interaction with a pedestrian at a mid-block crosswalk, (ii) driving in free-flow conditions (i.e., no interaction), and (iii) interaction with a slow vehicle.

Table 2. Experimental factors.

Experimental factors	Levels		
Distraction type	Baseline	Distraction	Distraction + DDW
Gender	-	Males	Females

The baseline condition is the scenario in which no secondary task was asked to participants, and it was not necessarily the first one that the participants drove. Regarding distraction and distraction with DDW device, the test driver had to send messages while driving for a kilometer in three different sections on the entire track, (i) section 1: interaction with the pedestrian, (ii) section 2: free-flow conditions (i.e., without interaction), and (iii) section 3: interacting with a slow vehicle.

3.2. Road scenarios

The simulated scenario consisted of a track in an urban area (Figure 7), with pedestrians crossing the road at a sidewalk, bikes travelling on the street, parked cars and vehicle interactions, to make the urban environment as realistic as possible. The total track was 6.5 km long and drivers took approximately 7 minutes to complete it, with a speed limit of 50 km/h. It was divided into three sections, where drivers found the three different interaction events.

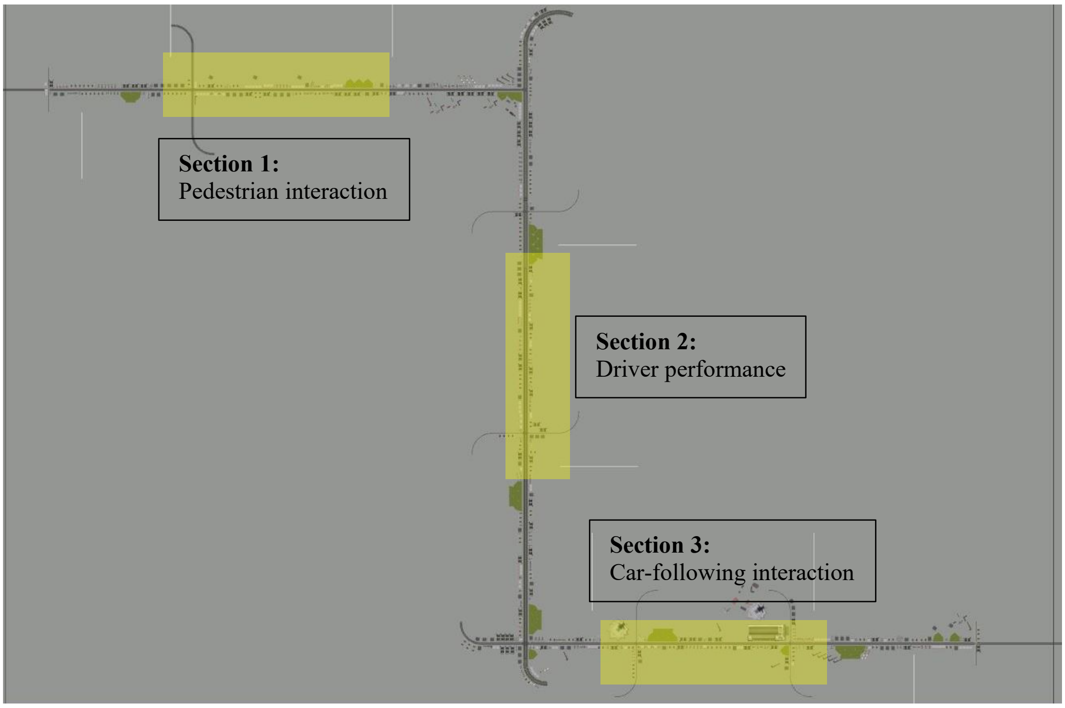

Figure 7. Top view of the experimental urban track.

A Renault car was considered to display its cockpit on the three screens of the simulator, making the driver feel more involved in the driving (Figure 8).

Figure 8. Participant driving in the simulator.

The most common characteristics of a typical urban setting were included in the alignment. Thus, more users had to be included in addition to those necessary for the experiment. A variety of pedestrians were included to walk along the sidewalk the entire driver's journey to simulate pedestrian traffic. Some of them were found by the participant crossing the street outside the distraction sections or in the distance, without interacting with him. All this guarantees no interactions other than those needed by the experiment in the sections of interest where the driver's behavior was measured. In order to avoid that, the participant would not change their driving performance anticipating the interaction event.

Furthermore, vehicle traffic was also considered adding some cars in the opposite lane and crossing at intersections, but always ensuring that the driver had no interaction with them. In general, the driven vehicle was isolated in the lane in the three sections.

Fifteen pedestrian crosswalks were considered throughout the alignment, but in only seven of them a pedestrian was crossing the road. Bus stops and traffic signs were also implemented along the route (e.g., stop, speed limit, yielding, allowed crossings). The 50 km/h speed limit sign was placed every 350 m so that the driver would not be persuaded by the wrong speed perception of a static simulator as the one used in this study. The section's details are found in the following subchapters.

3.2.1. Section 1

The first section had a length of 2 km, one lane (3 m wide) per direction and the pedestrian interaction occurs at the abscissa 1.5 km at a mid-block crosswalk (Figure 9). The section in which the test driver had to perform the secondary task was 1 km long, from 0.9 km to 1.9 km, as represented in Figure 10.

Figure 9. Pedestrian interaction in the simulation.

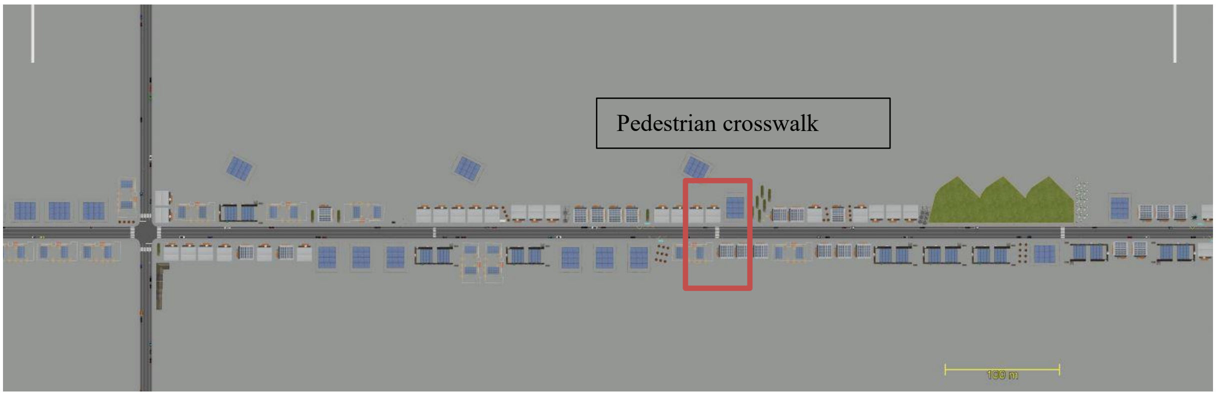

Figure 10. Top view of the pedestrian crosswalk interaction.

3.2.2. Section 2

After the first tangent, drivers had to perform a right-turning maneuver to reach the second road section. This second straight segment was 2.5 km long, with two lanes 3.5 m wide each per direction, where participants drove under free-flow conditions, without any interaction with other road users. Here, the distraction section was from 0.7 km to 1.7 km.

Figure 11. Free-flow driving section in the simulation.

As this section particularly had two lanes in each direction, five road users were included in the same direction as the driven vehicle (e.g., bike, motorcycle, vehicles) along the track where no measurement was made to give a more realistic feel. Still, they were set up at a higher speed so that the driver could only interact with them. Thus, this interaction would not affect the main objective to assess the driver's distraction. City traffic was also included in the opposite lanes along all the travel journey.

3.2.3. Section 3

At the end of the second tangent, drivers arrived at the third tangent by turning left at a traffic light intersection. It is 2 km long, with one lane (3 m wide) per direction. The distraction section where drivers were asked to perform the secondary task was 1 km long (from 0.5 km to 1.5 km). The car-following interaction starts from the first intersection to the next one, as shown in the Figure 12, where a vehicle suddenly appeared in front of the test driver, maintaining a speed of 40 km/h for 700 m. This vehicle was programmed to appear 160 m before the driven car reached the first intersection.

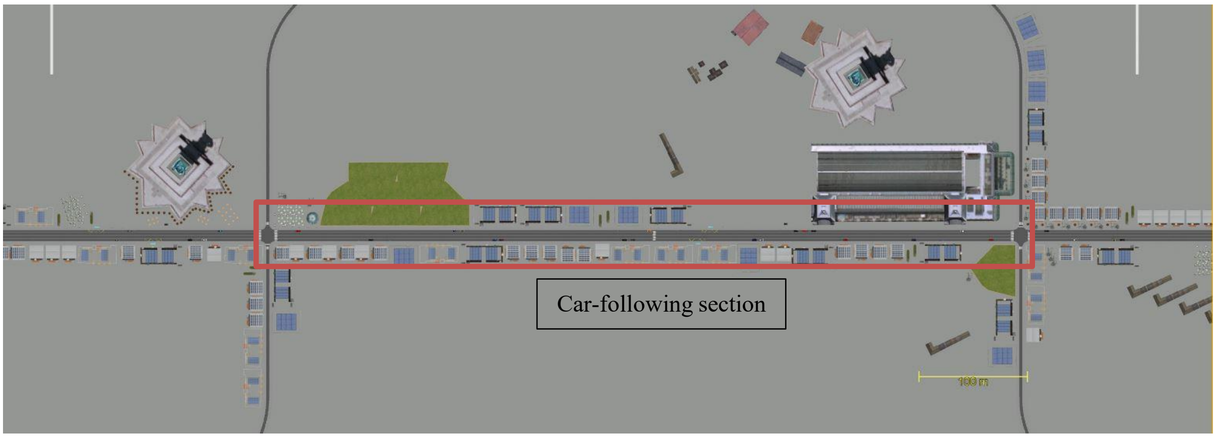

Figure 12. Vehicle interaction section.

Figure 13 shows the typical car-following interaction in the experiment where the black car is the a-head slow vehicle, and the red car is the one driven by the participant.

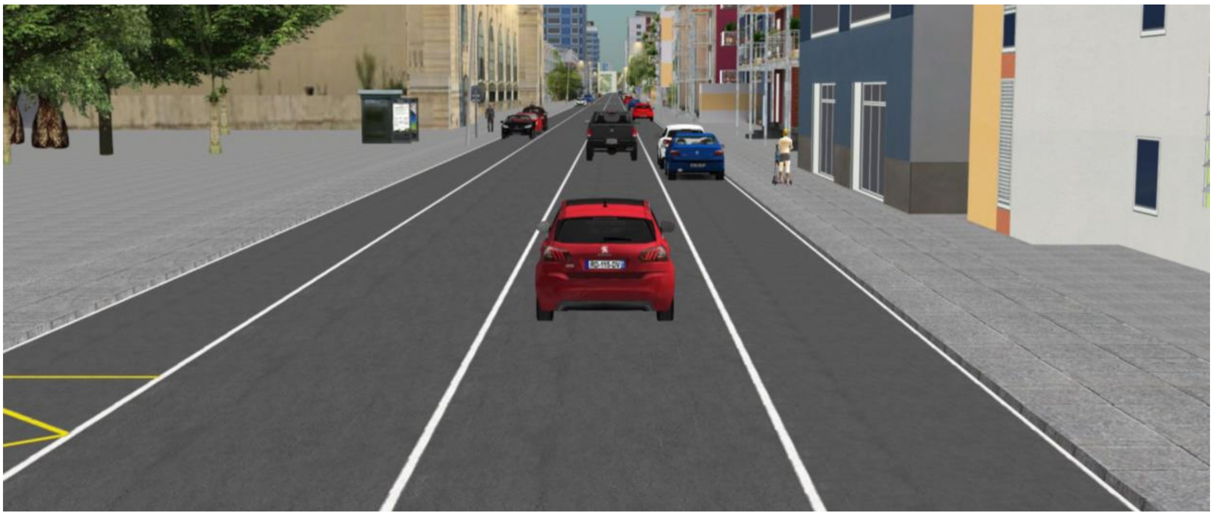

Figure 13. Car-following interaction in the simulation.

The sections described above were part of the scenario traveled in Direct direction (D), and a summary of the characteristics is shown in Table 3. Another road scenario was designed, including the same road characteristics but travelled in the Return direction (R), making the environment look different and minimizing the familiarity driving condition, because this issue could be potentially linked to inattention and over-confidence (Intini, Colonna, & Ryeng, 2019). Also, some surrounding vehicles and elements were changed in the three different distraction types, to make participants feel they were driving in three unique situations. Thus, participants drove three times either in the direct or return direction, for each level of distraction. All the configurations made for each participant are detailed in the Appendix 0.

Table 3. Road scenario characteristics.

Direct (D) road scenario								
Section N.	**Interaction event**	**Total length [km]**	**Lane width [m]**	**Number of lanes per direction**	**Stations of the distraction section**		**Stations of the conflict event**	
					Start [km]	**End [km]**	**Start [km]**	**End [km]**
1	Pedestrian interaction	2	3	1	0.9	1.9	1.5	
2	Free-flow condition	2.5	3.5	2	0.7	1.7	-	
3	Vehicle interaction	2	3	1	0.3	1.3	0.5	1.2

3.3. Secondary task

Texting while driving is one of the secondary tasks used in modern studies to assess the level of driving distraction. Some authors considered only visual distraction, since they used not very demanding questions for the driver, to avoid the cognitive distraction. Alosco *et al.* (2012) used the texting as the secondary task in their simulator study, in which the driver already knew how to answer the proposed question, such as the birth date, hometown, major, last name, and current day of the week. On the other hand, Thapa *et al.* (2015) studied the distraction with questions related to the driver's personal details and job, or school commitments.

Therefore, it was decided to implement questions related to personal information tastes and preferences (e.g., What kind of music do you like? How tall are you? Who is your favorite singer?). The list of questions administrated in the study are indicated in Appendix W. To each participant questions were asked randomly.

Bendak (2015) indicated that the driver chose the application to use in his study. In order not to have a new experimental factor, the most used instant messaging application in Italy, i.e., WhatsApp, was chosen. In the informative questionnaire (Appendix S), the participants were asked if they were familiar with it and if the application was already installed on their cell phones, as proposed by Dres *et al.* (2009).

Consistently with the Vollrath, Clifford, & Huemer (2021), participants were asked to answer the questions briefly, in no more than two words, emphasizing that they were not required to answer truthfully for privacy issues, and nothing was recorded. Drivers were also required to drive as safely as possible, but without ignoring the text message sent in their cell phones, answering quickly and in the most comfortable way.

Before starting the experiment, during the trail session, participants performed the secondary task, answering five questions, in order to get used to typing on the equipment; the questions are listed in Appendix W and they were similar those discussed earlier. During the experiment, participants drove under distracted conditions twice. They had to read and write messages on the cell phone in the three sections discussed above. The specific position in which the first message was sent is detailed in Table 3, where the starting and ending stations of the distraction sections are indicated. The driver had to respond to the series of messages sent throughout that kilometer until he/she was notified in a text on the screen, when they had to stop answering.

3.4. Experimental protocol

Participants were invited through an email (Appendix R), asking them to fill out an online google form with data such as age, years of driving experience, mean kilometers traveled in a year, and the number of crashes they were involved in. Besides, they were asked to honestly answer if they could do texting while driving and if they had the WhatsApp application (Appendix S). On the day of the experiment, the driver filled out a pre-drive questionnaire to know his/her health conditions (Appendix V) and, thus, if the output data could be considered reliable. Furthermore, participants had to sign a form for privacy (Appendix T) and COVID-19 policy (Appendix U). This entire protocol lasts approximately 6 minutes (Figure 14).

Before starting with the experimental driving session, the test driver performed a trial simulation, to get familiar with the driving simulator (approximately 8 minutes). The trial session was also useful to the driver to familiarize with the secondary task.

All participants drove each distraction type and the order was assigned randomly. When they had to drive distracted with DDW device, a calibration had to be performed first. This calibration consisted of the driver having to watch at the road so the device could scan the movement of their eyes. In addition, they were asked to remove their mask for the correct device performance in this distraction condition.

At the end of the experiment, participants were asked to fill out the post-simulation questionnaire (Appendix X). This form collected data about the driver's experience throughout the experiment, thus interpreting the sensations and the consequences they had (Appendix Q). Besides, we wanted to know the participant's perception of the anti-distraction device, such as mental, physical, and temporal demand, effort, performance, and frustration. The driver's opinion about the usefulness and help of the device was considered for judging how efficient it can be for the user.

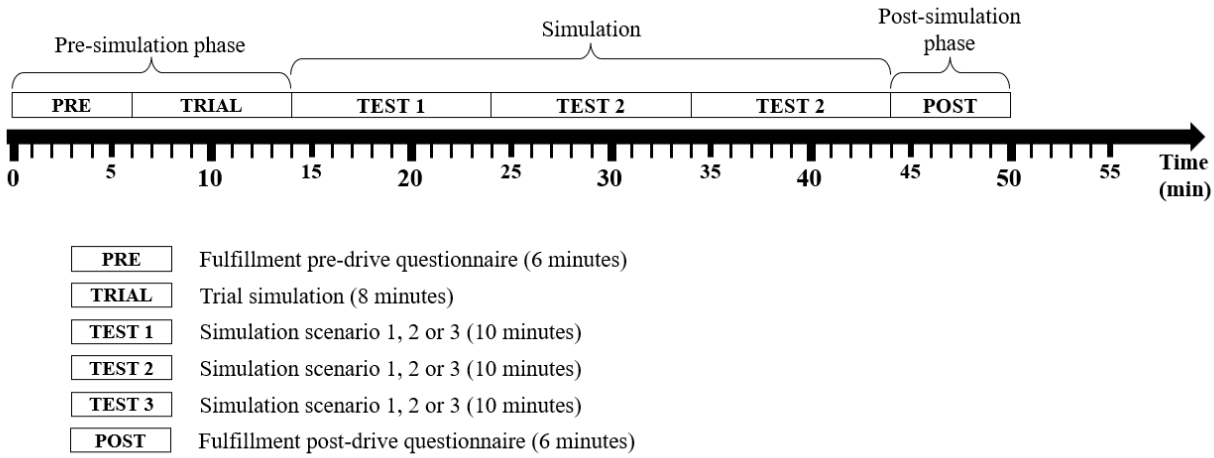

Figure 14. Outline of experimental protocol.

3.5. Participants

The experiment was carried out in accordance with the Code of Ethics of the World Medical Association (2018). Thirty test drivers were involved, i.e., fifteen males and fifteen females. The age range was between 25 and 35 years, considered as young drivers, to ensure the familiarity with the secondary task. As demonstrated, young people are more likely to be involved in a driving distraction regarding with the use of the cellphone (Prat *et al.,* 2014).

The participants were grouped by gender and age groups, as shown in Table 4. This to better understand the characteristics of the drivers, related to the gender that was considered as a factor, and smaller age groups, that the considered range from 25 to 35 years was vast. The first age group goes from 25 to 27 years old; the second goes from 28 to 31 and the third from 32 to 35 years old.

This helped confirm that age is directly related to the years of driving experience, but not to the mean kilometers traveled per year, considered as driving experience [Km/years] in this study. It is also evident that male drivers have been more involved in crashes than female drivers in the sample considered

Table 4. Mean and standard deviation of participants characteristics.

	N.	**Age [years]**			**Driving experience [km/years]**		**Driving experience [years]**		**Number of crashes**	
		Min	M	Max	M	SD	M	SD	M	SD
Males (M)	15	25	28.7	35	11386.7	8660.7	10.1	3.1	0.4	0.6
Females (F)	15	25	28.5	32	7033.3	5814.0	9.5	3.1	0.2	0.4
< 28 years	12	25	26.0	27	7691.7	5774.2	7.3	0.9	0.2	0.4
28 – 31 years	11	28	28.8	31	11590.9	8985.6	10.3	1.4	0.3	0.5
> 31 years	7	32	32.7	35	8071.4	8085.1	13.9	1.1	0.3	0.8
Total	**30**	**25**	**28.6**	**35**	**9210.0**	**7578.3**	**9.8**	**3.0**	**0.3**	**0.5**

The chosen sample of the participants were young drivers not necessarily used to being distracted while driving, or in this case, texting since all driver types are affected due to the implementation of the devices in new vehicles from 2026 (Regulation (EU) 2019/2144, 2019). In addition, only drivers with at least five years of driving experience were considered, thus preventing inexperience as a new factor influencing the results.

Two test drivers were excluded and later replaced with other two participants with the same characteristics. They were speeding over 50 km/h in an aggressive and unrealistic way.

3.6. Equipment

3.6.1. Driving simulator

This study was carried out at the fixed-base driving simulator (Oktal, now AVSimulation, France) of the Road Safety and Driving Simulation (RSDS) Laboratory at the Politecnico di Torino (DIATI department). Driving simulators are being used more and more in safety-related studies. Driver behavior can be monitored in a controlled environment, without any risks for people involved. The driving simulator used in this experiment was already relatively validated for longitudinal (Bassani *et al.*, 2018), lateral (Catani & Bassani, 2019) and passing (Karimi *et al.*, 2020) behaviors.

The driving simulator (Figure 15) is equipped with:

- a seat which can be adjusted horizontally and in the inclination of the backrest;
- a steering wheel, with the commands for the windshield wipers and lights;
- pedals set, with clutch, brake and accelerator;
- a seven-speed manual gearbox;
- three 32” Full HD Samsung LCD screens, with the lateral monitors inclined by 25° with respect to the central one, offering a field of vision of 130°;
- a 12” screen which shows the speedometer, the on-board warning lights and the gear engaged;
- a system of buttons to start the vehicle, handbrake and the horn;
- an audio system with four speakers for reproducing the sounds of engine and environment.

The hardware of the simulator consists of a complex of three computers. The main computer (*Superior*) is in charge of running and managing the simulation software and it is placed horizontally under the driver's seat. The computer is an Intel® Xeon® E5-1620 v2, with a 3.70 GHz processor, a graphic card NVIDIA GTX 780 Ti, 8 GB RAM, and 512 GB Hard Disk. The visual computer (*Visual*) works for reproducing the designed road scenario in the three screens and it is placed in the back of the simulator. The computer is an Intel® Xeon® E5-1620 v2, with a 3.50 GHz processor, a graphic card NVIDIA GTX 780 Ti, 8 GB RAM, and

512 GB Hard Disk. The virtual reality computer (*Vive*) can reproduce the road scenario through Virtual Reality (VR) technology, but it was not employed in this study.

SCANeR Studio® software was used to design the road scenario. It consists in five modules (Terrain, Vehicle, Scenario, Simulation, and Analysis), and provides all the tools necessary to build a highly realistic virtual scenario in which the road environment, the vehicle dynamics, traffic and weather conditions are modeled.

The Terrain module was used to design and create the alignment, the cross-sectional characteristics, and the surrounding environment. The vehicle module is dedicated to model and control vehicle characteristics. In the Scenario module, some specific events can be included using script execution with a MICE programming language. Some examples are presented in Appendix A. In addition, it allows to manage the setting for dynamic elements in the scenario, such as the autonomous vehicles forming the traffic, the pedestrians and cyclists.

Figure 15. Fixed-base driving simulator at RSDS laboratory (DIATI, Politecnico di Torino).

The Simulation module executes the scenario. Included sub-modules allow to manage specific features (e.g., visual mode, sound options, data acquisition) and record data. The Analysis section explores recorded data synchronously with 3D views and videos. Stored data can be extracted in CSV format.

3.6.2. Driver Distraction Warning (DDW) device

The Fatigue Driving Warning Device (F16) was used as the anti-distraction device. It is a facial recognition infrared camera that monitors human eyelid and retina status. Furthermore, it assesses the head position variation compared to the initial calibration. When one of these features change, the sensor warns the driver. A continuous sound informs the driver in less than 2 seconds when the gaze is turned down. After 3 seconds of persistent distraction, a warning message informs the driver that he/she must look ahead. The information about the facial detection is not stored in the device. The device was mounted on the simulator central screen, at 55 cm from the driver.

Figure 16. Fatigue Driving Warning Device F16 (Gearbest).

With the advanced non-contact mode and state-of-the-art algorithm, the warning device can accurately detect the fatigue or distract status of the driver, regardless of circumstances (day, night, wearing glasses, advised not to wear sunglasses). The F16 system is a non-intrusive device thanks to its relatively small size (Figure 16). The ease of installation makes this device able to work with all types of vehicles. Thanks to the innovative swivel ball suction, this DVR camcorder can be attached to the dashboard or any flat surface inside the vehicle. It is possible to record the whole journey without any interruption. Moreover, the included stabilizer makes the image much more fluid. The angle display is 60 degrees and is currently only suitable for private cars. It should be noted that, being an after-market product, the device can be turned on and off manually whenever the driver desires. Since the position and the characteristics of each person can vary, the device must be calibrated by each driver who uses it. The calibration button is located right next to the power button, on the top of the device (Gearbest).

3.7. Observed measures

Minimum time-to-collision (MTTC), Post-encroachment time (PET), and Headway (HW) were the three surrogate safety measures (SSM) previously mentioned and also considered in this study. In addition, the speed and deceleration were evaluated as longitudinal driver behavior and lateral position as transversal driver behavior.

Related to speed and lateral position, the mean value (Mean S, Mean LP), the maximum value (Max S, Max LP), and standard deviation (SD S, SD LP) were calculated to evaluate the driver's performance. For deceleration, the maximum value (MaxD) was considered.

3.7.1. Minimum instantaneous time-to-collision (MTTC)

Instantaneous time to collision (ITTC) is a continuous measure that indicates the closeness to a collision point when the vehicle is on a collision course (Laureshyn, 2010). Hayward (1971) defined this variable as "the time required for two vehicles to collide if they continue at their present speeds and on the same path". In this case, the two road users were the vehicle and the pedestrian (Figure 17). Minimum instantaneous time to collision (MTTC) indicates the minimum time that the two conflicting road users come closest in time to each other.

ITTC can be calculated by means of the equation:

$$ITTC(t)\ [s] = \frac{D}{\parallel \Delta V \parallel}$$

where D is the instantaneous distance between the potential collision points (car's bumper and pedestrian); $\|\Delta V\|$ is module of the instantaneous speed difference of the road users (v_1 - v_2).

The minimum point of this curve is the MTTC. When this value is equal to zero, it represents a collision. If the MTTC value is between 0 and 1.5 s, the event is classified as a conflict. If it is greater than 1.5 s, it is classified as an undisturbed passage, as shown in the Figure 18.

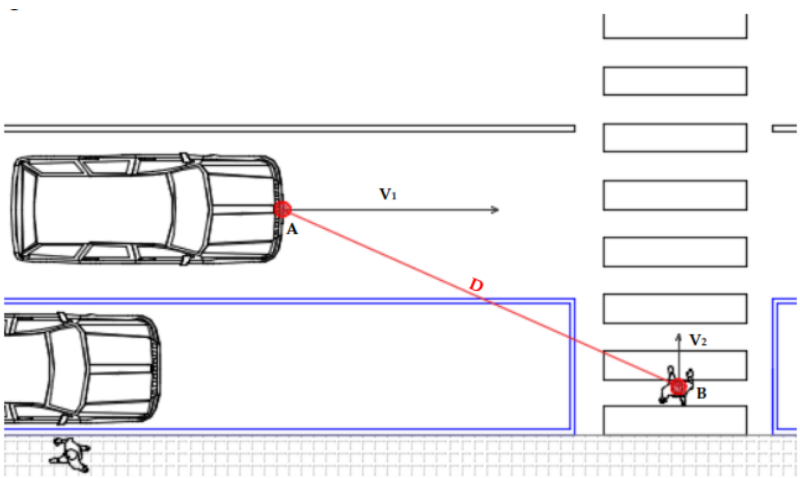

Figure 17. Schematic outline of pedestrian ITTC at crosswalk (Angioi, 2021).

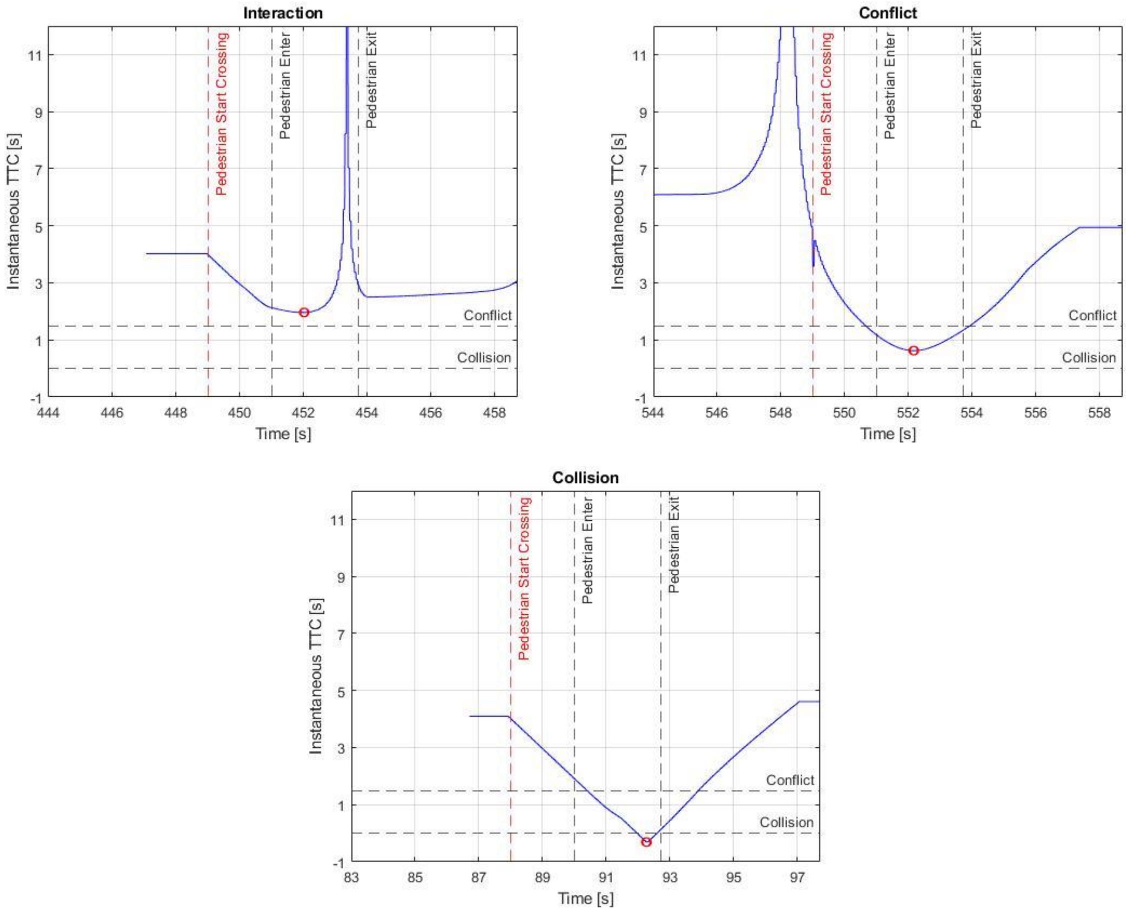

Figure 18. MTTC experimental graphs for undisturbed passage, conflict, and collision events.

The graph of the TTC (Figure 18) starts when the vehicle gets onto a collision course; in this study, the first value of the curve was the time equal to 4 s, which was the chosen Pedestrian Time Gap Acceptance (PTGA), found critical to perform a maneuver to avoid the collision, even without any distraction (Angioi, 2021). The MTTC graphs of all the participants for each type of distraction are found in the Appendix E.

PTGA is shown in Figure 19 as the distance S, which is the temporal difference between t_{p0} and t_{p1}, and in this case, when this value was 4 s the pedestrian started to cross the street.

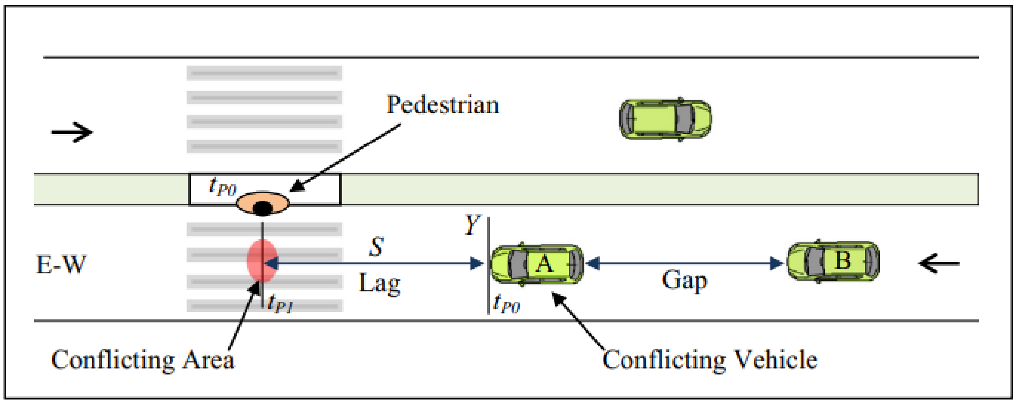

Figure 19. Description of pedestrian time gap (Pawar & Patil, 2016).

3.7.2. Post-encroachment time (PET)

PET (Post-Encroachment Time) is "the time difference between the moment an offending road user leaves an area of potential collision and the moment of arrival of a conflicted road user possessing the right of way" (Saunier, 2010). It can be calculated by the difference in time when the two road users pass in a chosen conflict point in post analysis. In particular,

$$PET = t_2 - t_1$$

where t_2 is the arrival time of the second user at the potential conflict point; t_1 is the time at which the first road user left the potential conflict point.

To evaluate the PET values for each test driver, time and position data of both vehicle and pedestrian were extracted with a sampling frequency of 10 Hz by using the Analysis module in SCANeR Studio® (details in Appendix F). If the PET value equals zero, the event can be classified as a collision. In this study, the PET threshold of 5 s was considered to be consistent with the same adopted by FHWA. If it is between 0 and 5 s, the event is considered as a conflict, while if greater than 5 s, it is classified as an undisturbed passage.

In addition to the time and position values, with the help of the software, it was possible to extract the instantaneous images of the vehicle and the pedestrian when reaching the conflict point; in this study, the midpoint of the lane was considered, and the superposition of both images is shown in Figure 21. Details of the PET results of each participant can be found in the Appendix F.

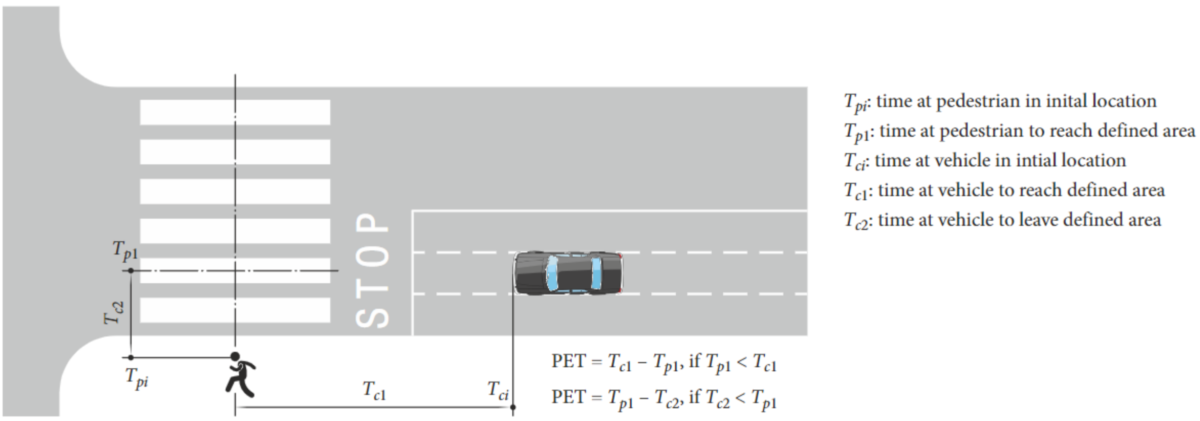

Figure 20. Schematic outline of pedestrian-vehicle PET at crosswalk (Marisamynathan & Vedagiri, 2020).

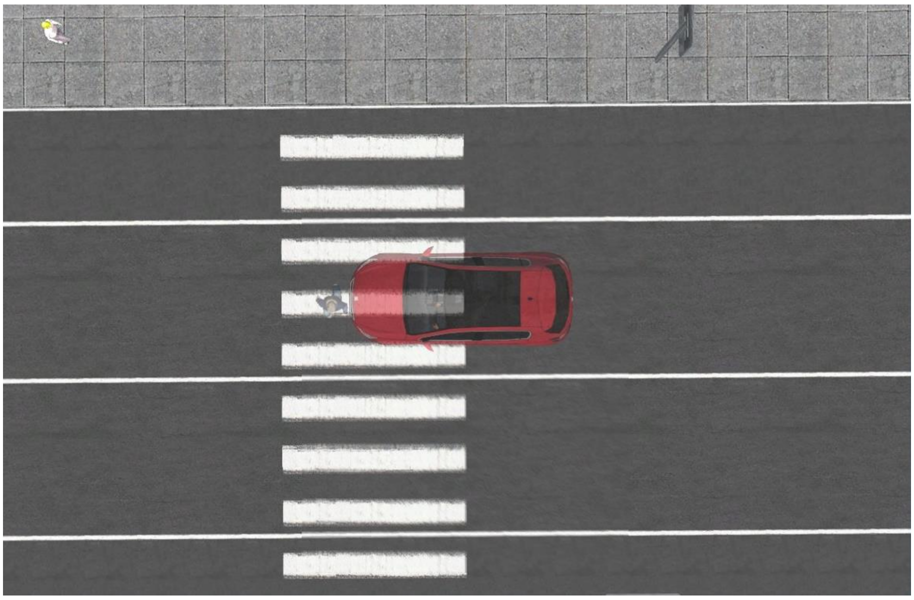

Figure 21. Superposition of pedestrian and vehicle arriving at the conflict point.

3.7.3. Headway (HW)

The Highway Capacity Manual (2010) defines the headway as "the time between successive vehicles as they pass a point on a lane or roadway, also measured from the same point on each vehicle." Microscopic measures are helpful for traffic analysis, since this variable can be obtained for every pair of vehicles.

Time headway (HW) is the most important microscopic flow variable. It is the difference between passage times t_i and t_{i-1} at a cross-section x of two consecutive vehicles, considering the same point (e.g., front bumper, front axle).

$$HW_i(x) = t_i(x) - t_{i-1}(x)$$

This difference can also be measured in terms of space and is called spacing (s). It is a physical distance usually reported in feet or meters. However, it is not the most mentioned in the literature. There are two other known measures, gap (g) and clearance. They are determined by the difference between the rear bumper of the leading vehicle and the front bumper of the following vehicle. The gap is expressed in terms of time, while the clearance is a distance. The speed of the vehicle in front (v) is used to pass from time units to space and vice versa.

$$g = \frac{s - L}{v} \quad or \quad g = h - \frac{L}{v}$$

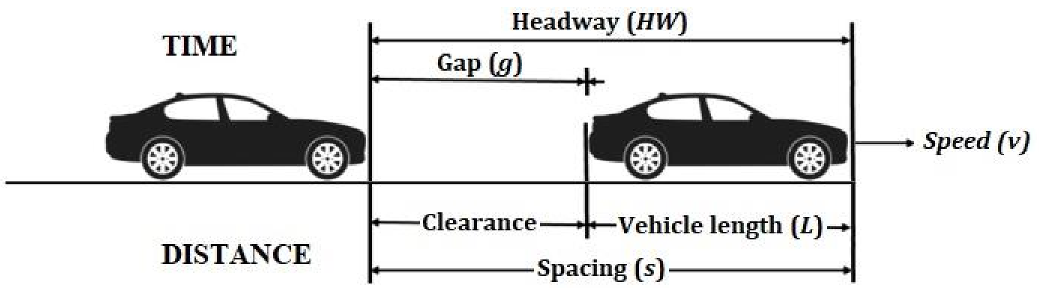

Figure 22. Description of headway in car-following.

In this study, the headway time was chosen (rather than gap o clearance) to measure the driver's behavior with a vehicle in front since, in the literature, this variable was the most applied to evaluate the car-following interaction, and a direct comparison of results from previous studies could be made. Besides, it was decided to assess the effect of HW depending on its variation in each distraction level because this measure was calculated regarding a single ahead vehicle at a known speed.

Typical behavior of HW depending on the distraction level is shown in Figure 23, where the values are lower and more constant in the baseline condition. In contrast, when the driver is distracted, the values are higher, but the values tend to vary more when using the DDW device. The time headway graphs of each test driver can be found in the Appendix K.

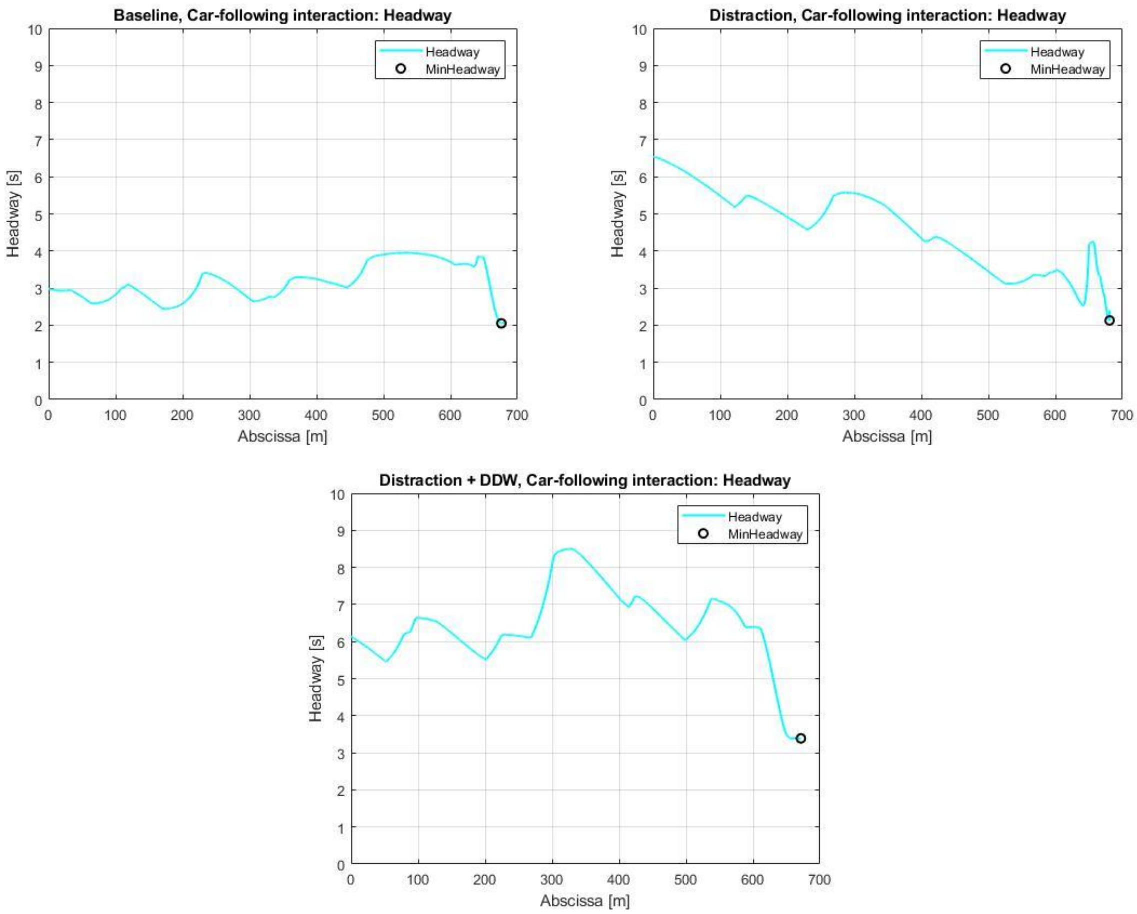

Figure 23. PET experimental graphs for baseline, distraction, and distraction + DDW conditions.

3.7.4. Maximum deceleration of the vehicle (Max D)

Deceleration is the evasive action performed by the driver to avoid a conflict event (Gettman & Head, 2003). The maximum deceleration is the maximum instantaneous deceleration value observed the vehicle started an evasive braking maneuver. It quantifies the magnitude of the probability of a collision. This variable is significant in determining the severity of a conflict (Archer, 2005).

This measure is used to evaluate the two interactions considered in our study (i.e., pedestrian and vehicle interaction), which provides information to the driver's braking maneuver when encountering these events. Figure 24 showed when a test driver began to decrease the acceleration, and the maximum deceleration is indicated in a circle; both graphs were considered when the participant was distracted.

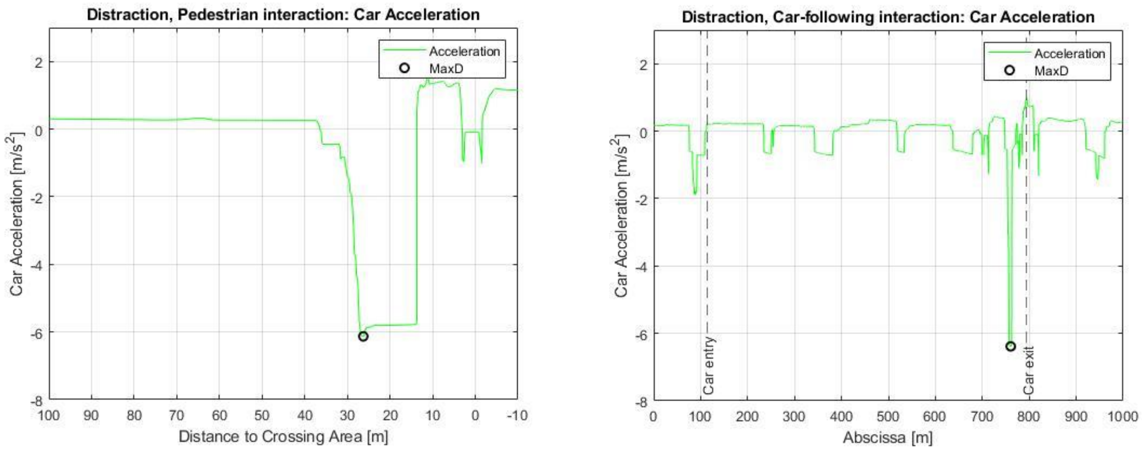

Figure 24. Max D experimental graphs for pedestrian and vehicle interaction in distraction condition.

3.7.5. Speed (S)

The speed is a microscopic traffic flow variable. HCM (2010) defined this variable as "a rate of motion expressed as distance per unit of time, generally as miles per hour (mi/h)." Three values were considered to assess the speed behavior, in km/h: (i) maximum speed (Max. S), (ii) mean speed (Mean S), and (iii) standard deviation of the speed (SD S). Higher values of these parameters represent the severity of the conflict in case of a collision (Gettman & Head, Surrogate Safety Measures From Traffic Simulation Models, 2003).

Speed measurement was taken in the three sections of interest; an example of these graphs in distraction conditions is shown in Figure 25. The change in speed was more significant in the pedestrian and vehicle interactions when encountering these events, reaching almost the total vehicle braking.

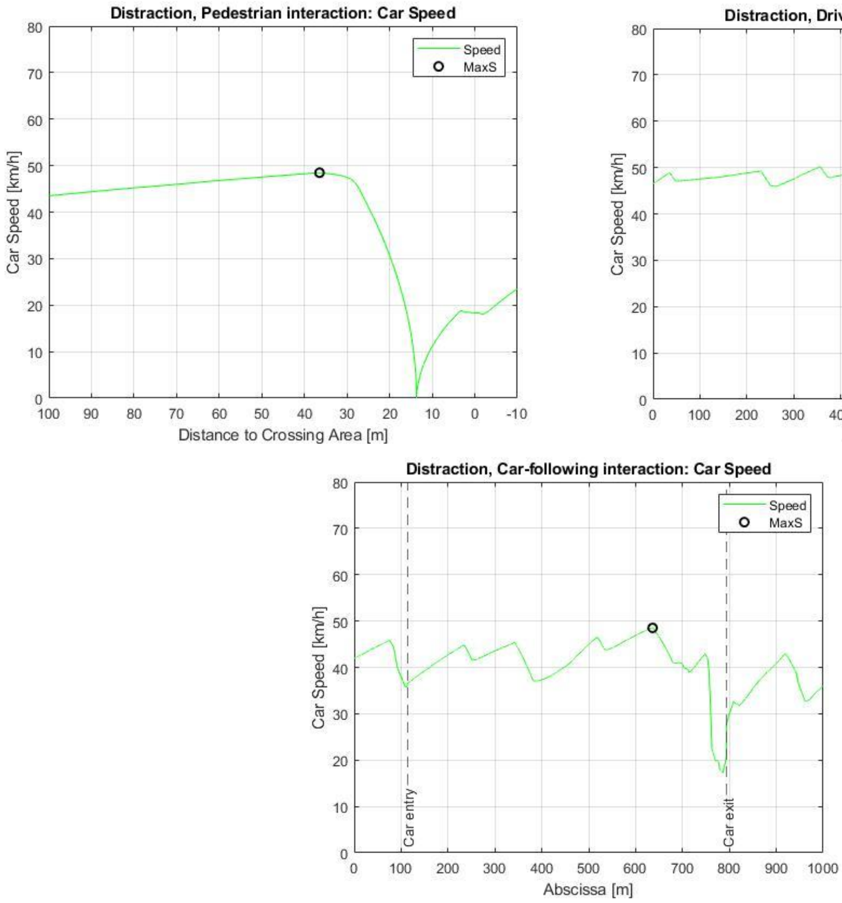

Figure 25. Speed experimental graphs in distraction condition.

3.7.6. Lateral position (LP)

Lateral position (LP) is the transversal distance of the vehicle center of gravity from lane centerline. The standard deviation of lateral position (SD LP) is an indicator that measures vehicle control. Higher SD LP values represent a lower lateral control (Verster & Roth, 2011). Figure 26 describes the amount of "weaving" of the car in SD LP terms. Values of maximum lateral position (Max. LP), mean lateral position (Mean LP), and SD LP were considered.

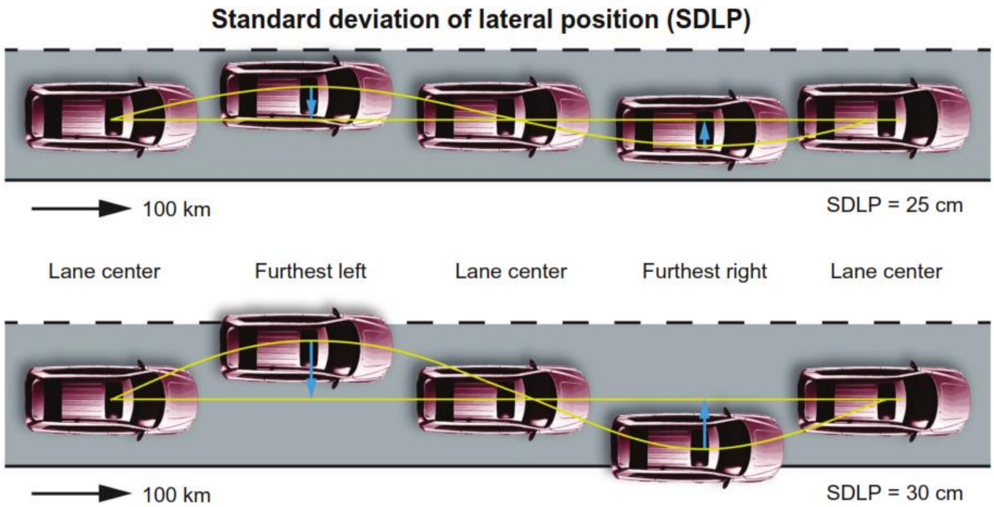

Figure 26. Schematic outline of SD LP of a vehicle (Verster & Roth, 2011).

Distracted driving is a remarkable example of how the driver has lower control of the vehicle, and the standard deviation of lateral position tends to fluctuate more, as shown in Figure 27.

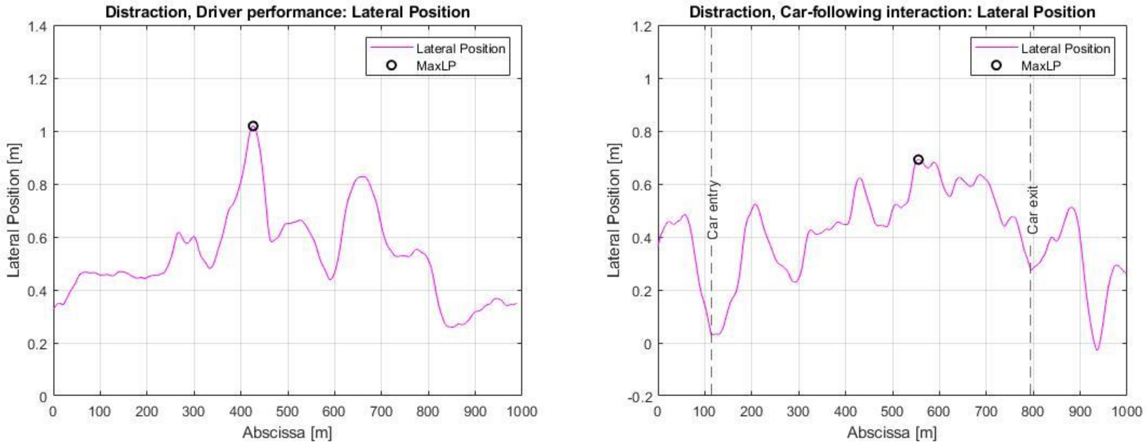

Figure 27. LP experimental graphs for driver performance and vehicle interaction in distraction condition.

3.7.7. Structure of the analysis

The measured variables are shown below, classified by sections to clarify those considered in each interaction.

Section 1

In the section with the pedestrian interaction, different variables were measured. A portion of 100 m before the crosswalk was considered to evaluate the driver response (Table 5). Two surrogate safety measures, i.e., the post-encroachment time (PET) and the minimum time-to-collision (MTTC), and two longitudinal variables i.e., speed and acceleration, were analyzed.

Table 5. Observed measures for pedestrian interaction.

Observed measures		**Acronym**
Minimum instantaneous time to collision	[s]	MTTC
Post encroachment time	[s]	PET
Maximum speed	[km/h]	Max S
Maximum deceleration	[m/s^2]	Max D

Section 2

For the free-flow condition section (i.e., no interaction with other road users), the longitudinal and transversal behavior was evaluated. In particular, maximum, average and standard deviation values of speed and the lateral position were measured (Table 6).

Table 6. Observed measures for no interaction section.

Observed measures		Acronym
Maximum speed	[km/h]	Max S
Mean speed	[km/h]	Mean S
Speed standard deviation	[km/h]	SD S
Maximum lateral position	[m]	Max LP
Mean lateral position	[m]	Mean LP
Lateral position standard deviation	[m]	SD LP

Section 3

In the third section, i.e. where drivers had to interact with a front vehicle, the headway measure was considered together with the speed (maximum, mean and standard deviation values) and the maximum deceleration for the longitudinal behavior, and lateral position in the lane (mean and standard deviation values) for the transversal behavior (Table 7).

Table 7. Observed measures for vehicle interaction.

Observed measures		Acronym
Maximum speed	[km/h]	Max S
Mean speed	[km/h]	Mean S
Speed standard deviation	[km/h]	SD S
Mean lateral position	[m]	Mean LP
Lateral position standard deviation	[m]	SD LP
Maximum deceleration	[m/s^2]	Max D
Minimum headway	[s]	Min HW

3.8. Analysis methods

Repeated-measure ANalysis Of VAriance (RM-ANOVA) was used as statistical procedure to determine the significance of the independent variables on driving performances. It was carried out with the software JAMOVI (2021).

In this study, the RM-ANOVA was chosen because the same participant drove all the three distraction conditions (i.e., levels of treatments): (i) no distraction, (ii) distraction, and (iii) distraction with DDW device. So, the considered repeated measure or independent variable was the distraction level, that represents the within-subjects factor (Laerd Statistics, 2011). Figure 28 shows a schematic structure of a repeated-measure design. To refer to this experiment, the treatments X, Y, and Z are the distraction levels and the measure variable ‘A’ can be, for example, the MTTC.

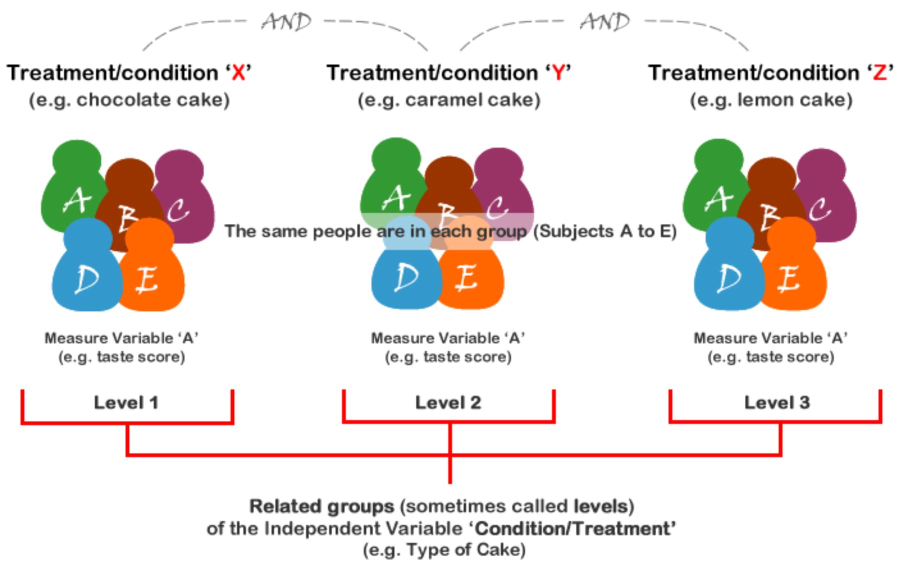

Figure 28. Schematic of treatments RM-ANOVA design (Laerd Statistics, 2011).

The gender was included as between-subject factor. The driving experience (in years and travelled kilometers per year), the age and the number of crashes were considered as covariates. The *p*-value is the statistical output is used to measure the level of significance of each factor. It is the ratio of the mean sum of squares for within-groups (MS_W) and within-group variability (SS_W):

$$p = \frac{MS_W}{SS_W}$$

Statistical analysis allowed to assess the effect of the within-subject factor (i.e., the level of distraction) as a single factor, or in interaction with the other considered independent variables.

Independent variables were considered significant when the *p*-value was lower than 0.05, and marginally significant when lower than 0.1. As regarded the corrections for sphericity, the Greenhouse-Geisser estimate epsilon ($\hat{\varepsilon}$) was chosen, rather than the Huynd-Feldt correction, that tends to overestimate epsilon.

4. RESULTS AND DISCUSSION

4.1. Descriptive statistics

Considering the distraction level factor, differences in results were quite evident. As shown in Table 8, *MTTC* values considered to evaluate the drivers' behavior reflected the expectations for the pedestrian interaction. In driving distraction condition, an evident impairment was shown compared to the baseline condition, where the *MTTC* was greater and represented a safer situation. However, distracted drivers using the DDW device showed a slight improvement in their behavior, with lower *MTTC* compared to drivers that were not using it. This difference could be attributable to the presence of the device, that alerted the test drivers when distracted, helping them refocus on the primary task.

MTTC in baseline conditions was higher than in the other levels of distraction. In the case of *PET*, the highest value was found when drivers were distracted, and also its standard deviation was relatively high. This could occur because the *PET* value was obtained photometrically and does not consider the speed as *MTTC*. Related to deceleration, non-distracted drivers showed higher values.

The lowest value of maximum speed during the pedestrian interaction was recorded for distracted drivers. Probably they felt less confident when performing the secondary task while driving and tended to drive with a lower speed.

Table 8. Mean and standard deviation of the outcomes for pedestrian interaction variables.

Pedestrian interaction					
Gender	**Distraction Level**	**Mean (Standard Deviation)**			
		MTTC [s]	**Max D [m/s^2]**	**Max S [km/h]**	**PET [s]**
F	**Baseline**	2.80 (1.33)	-6.40 (0.74)	54.6 (7.1)	5.58 (2.44)
	Distraction	2.48 (1.42)	-5.70 (1.48)	49.8 (8.1)	6.57 (3.03)
	Distraction + DDW	2.90 (2.30)	-6.02 (0.77)	51.0 (9.1)	5.95 (3.44)
M	**Baseline**	3.42 (1.65)	-6.23 (0.19)	54.8 (8.3)	4.82 (0.92)
	Distraction	2.41 (1.26)	-6.28 (0.33)	50.4 (4.5)	5.51 (2.94)
	Distraction + DDW	2.26 (1.50)	-6.19 (0.44)	49.8 (8.0)	4.39 (2.70)

Results regarding the conflict event for the three levels of classification (i.e., collision, conflict and undisturbed passages) for MTTC and PET are shown in Figure 29 and 30, respectively. Baseline condition was the case where more differences were detected. Although not having any distraction, a woman collided with the pedestrian. However, PET values demonstrated that male drivers performed more critical events than females.

When helped by the DDW device, males decided to ignore the warning message, resulting in having more crashes and critical events than females.

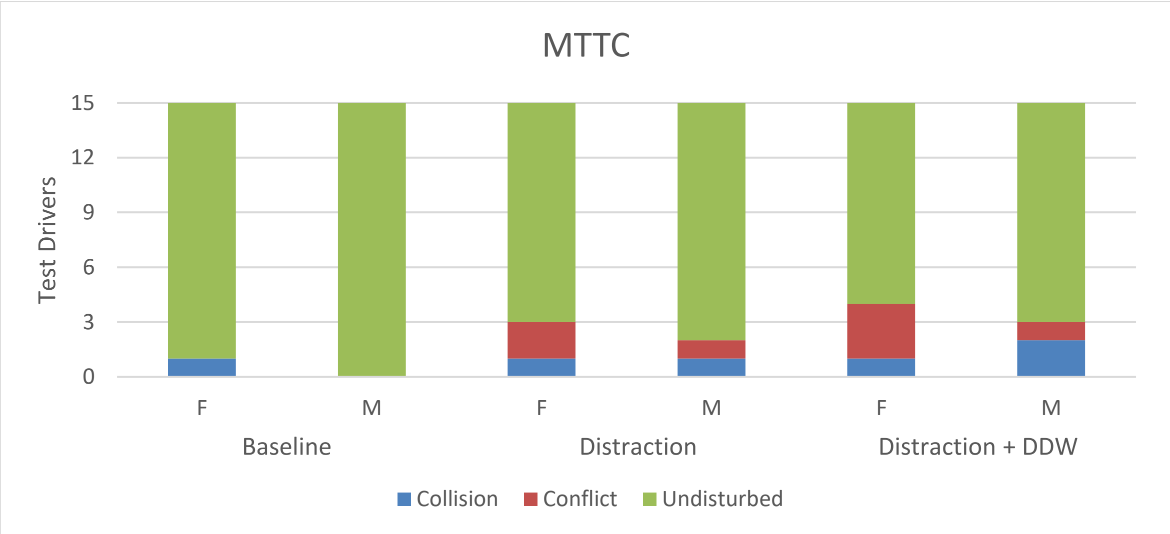

Figure 29. Traffic event classification according to the MTTC thresholds and gender.

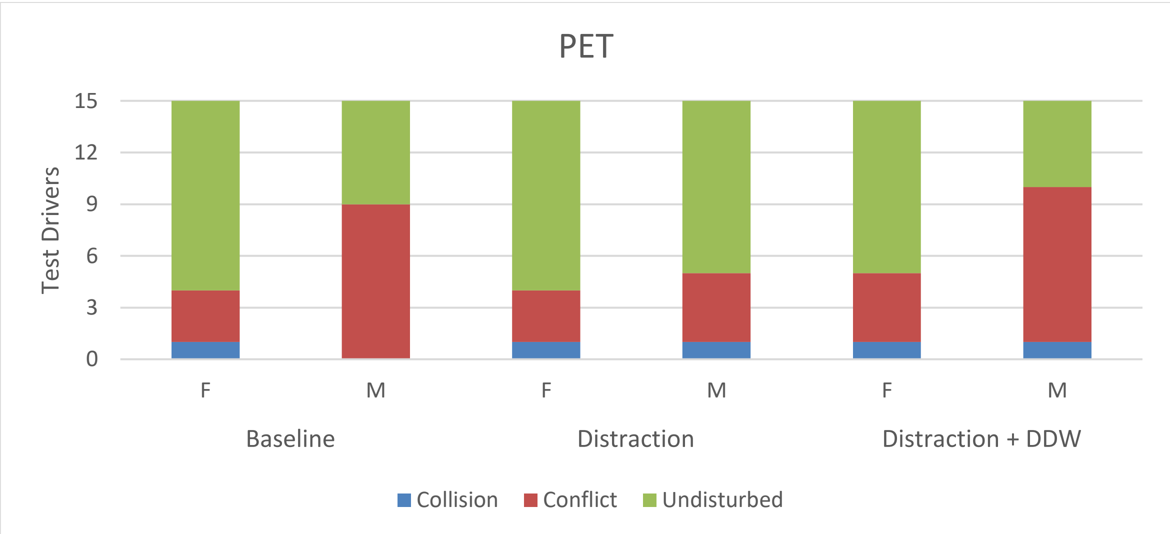

Figure 30. Traffic event classification according to the PET thresholds and gender.

When driving in free-flow condition, without facing any interaction with other road users, the maximum adopted speed was greater than the posted speed limit in urban area (50 km/h), even if the driver was distracted (Table 9). The mean speed of the vehicle tended to be more uniform in base condition, where its average also exceeded the maximum speed allowed. The mean speed was more variable in the distracted condition with the support of the DDW device, and its average value was lower than the other two conditions (Figure 31).

In the case of distraction and distraction with DDW device, the standard deviation of lateral position (*SD LP*) was higher, which means that the driver tried to correct his/her performance, being aware that it was inadequate (Figure 32).

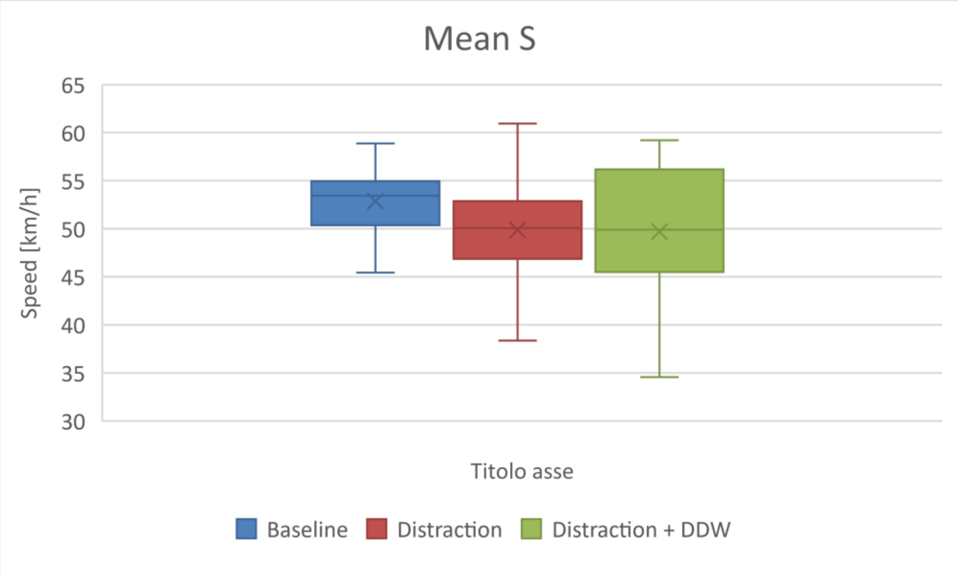

Figure 31. Box-plot for mean speed on driver performance.

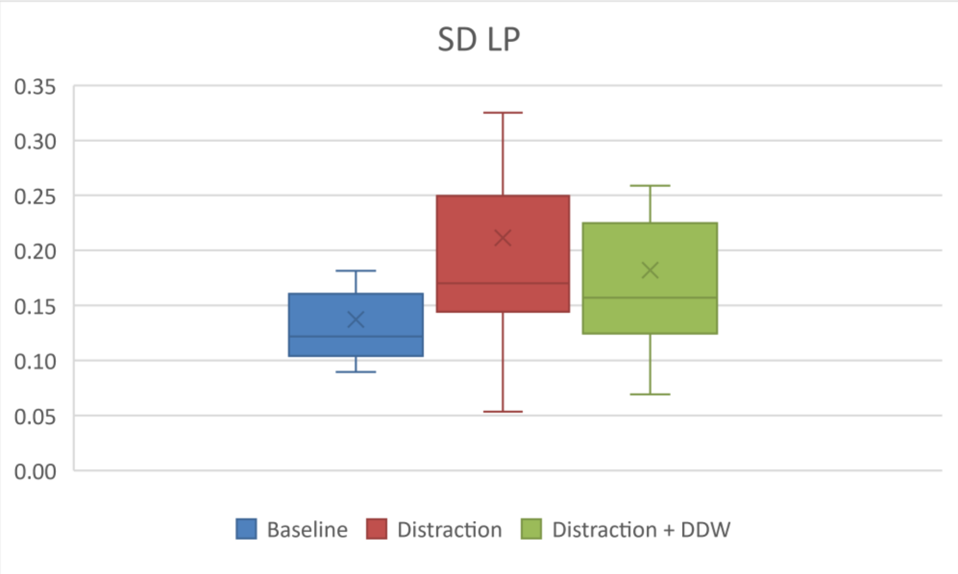

Figure 32. Box-plot for standard deviation of lateral position on driver performance.

As reported in Table 9, *SD LP* increased 54% in distraction scenario and 32% when using the DDW device, compared to the baseline. As mentioned before, the use of the device improved the driver behavior. Even the mean *LP* confirmed this theory, since the driver tended to maintain a more centered trajectory when not distracted rather than when texting.

Table 9. Mean and standard deviation of the outcomes for driver performance section variables.

Driver performance							
Gender	Distraction Level	Mean (Standard Deviation)					
		Max S [km/h]	Mean S [km/h]	SD S [km/h]	Max LP [m]	Mean LP [m]	SD LP [m]
F	Baseline	57.6 (6.2)	51.4 (3.8)	3.0 (2.0)	0.464 (0.212)	0.174 (0.184)	0.134 (0.057)
	Distraction	55.6 (4.5)	49.0 (5.2)	3.6 (1.3)	0.997 (0.539)	0.292 (0.238)	0.254 (0.135)
	Distraction + DDW	55.0 (5.4)	48.1 (6.6)	4.1 (2.3)	0.721 (0.358)	0.203 (0.164)	0.206 (0.114)
M	Baseline	58.9 (6.9)	54.4 (4.4)	2.6 (2.2)	0.501 (0.350)	0.157 (0.103)	0.141 (0.044)
	Distraction	55.6 (5.0)	50.8 (4.9)	2.8 (1.7)	0.623 (0.310)	0.210 (0.158)	0.169 (0.068)
	Distraction + DDW	57.9 (9.4)	51.3 (6.2)	3.7 (2.1)	0.546 (0.259)	0.133 (0.097)	0.158 (0.055)

Outcomes about the vehicle interaction showed in Table 10 demonstrated that the mean speed was lower than in the previous interaction events, because the following vehicle had a low speed. The maximum speed was always found at the beginning of the section when the followed car had not yet appeared.

Table 10. Mean and standard deviation of the outcomes for car-following interaction variables.

Car-following interaction								
Gender	Distraction Level	Mean (Standard Deviation)						
		Max S [km/h]	Mean S [km/h]	SD S [km/h]	Mean LP [m]	SD LP [m]	Max D [m/s^2]	Min HW [s]
F	Baseline	53.7 (4.5)	41.2 (1.4)	7.4 (2.8)	0.139 (0.107)	0.156 (0.089)	-4.72 (1.74)	1.95 (1.64)
	Distraction	50.1 (3.9)	40.1 (2.7)	5.7 (1.6)	0.168 (0.163)	0.205 (0.116)	-3.83 (2.39)	3.15 (4.05)
	Distraction + DDW	51.7 (5.1)	40.4 (2.7)	6.1 (2.0)	0.160 (0.114)	0.219 (0.169)	-3.25 (2.51)	2.32 (2.14)
M	Baseline	54.7 (5.0)	42.1 (0.6)	6.7 (1.5)	0.075 (0.067)	0.129 (0.025)	-4.50 (1.87)	1.35 (0.32)
	Distraction	52.5 (4.4)	41.1 (0.9)	5.6 (1.5)	0.143 (0.112)	0.172 (0.047)	-3.62 (1.85)	1.78 (1.10)
	Distraction + DDW	51.6 (4.6)	41.2 (1.0)	5.6 (1.2)	0.099 (0.066)	0.151 (0.032)	-4.09 (1.93)	1.46 (0.39)

The standard deviation of the speed (i.e., *SD S*) was lower when the driver was distracted or distracted using the device. It can be assumed that the driver was trying to reduce the risk of collision, knowing that he/she was following a car.

The headway value was significantly lower in baseline conditions rather than distracted scenarios. The driver was more attentive to perform the primary task (i.e., driving) and stayed close to the followed car, without provoking any crash. When the driver used the device but was still distracted, the headway value was also low, showing more confidence while driving. The headway measurement may be directly related to deceleration, since tnon-distracted drivers drove closer to the followed car, and therefore when decelerating, their decision was more immediate.

Figure 33 highlight the effect of gender and distraction level on the headway. Women in all conditions had a longer time headway than men, so females were more cautious when driving.

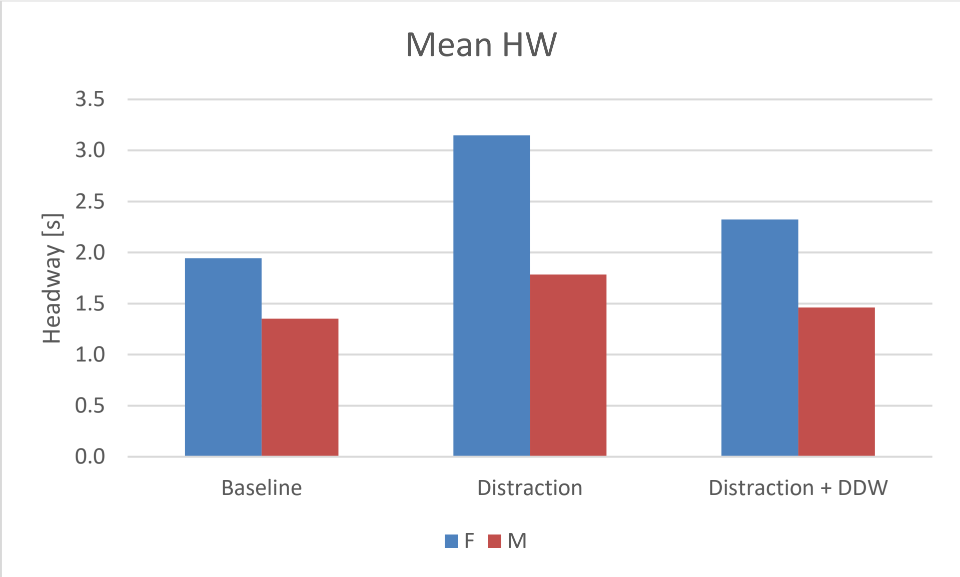

Figure 33. Mean headway considering distraction level and gender.

4.2. Effects of distraction on interaction with pedestrians

Graphs estimating the marginal means (Figure 34) were useful to distinguish the influence of driver distraction and gender in the considered dependent variables. The deceleration graph reveals that drivers adopted higher deceleration values in the baseline condition. This result is inconsistent with Haque & Washington's analysis (2015). They determined that distracted drivers before pedestrian crossing tended to increase deceleration.

Additionally, female drivers in distracted conditions did not perform the braking maneuver when they encounter the pedestrian conflict event, This can be related to the fact that they drove slower when they felt a driving impairment, and they did not have to perform an emergency maneuver to avoid the crash.

Related to maximum speed, it is shown that both men and women reduced their speed when distracted from their primary task. This result agrees with Haque & Washington's conclusion (2015), who assessed that generally distracted drivers appear to reduce the speed to compensate the perceived risk.

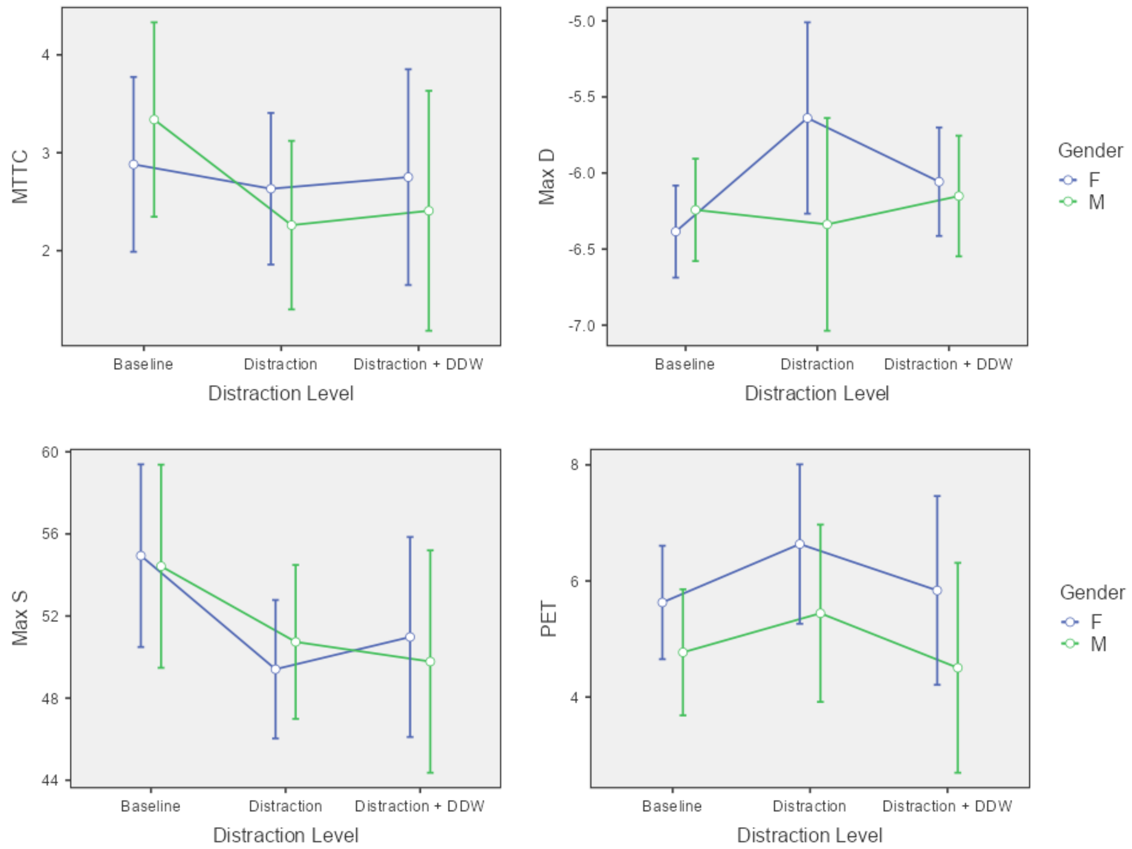

Figure 34. Marginal means variables for pedestrian interaction.

As mentioned above, the RM-ANOVA was used, considering the distraction level as within-subject factor and gender as between-subject factor. The level of distraction did not have any relevant influence on the dependent variables, except for the interaction with driving experience [km/years], but in a marginal way (Table 11).

*Table 11. Within Subject Effects for pedestrian interaction (Note. Significance level: * = p < .1, ** = p < .05, *** = p < .001).*

Within Subjects Effects	**F (df, df residuals) (*p*-value)**			
	MTTC [s]	**Max D [m/s²]**	**Max S [km/h]**	**PET [s]**
Distraction Level	0.195 (2, 47)	0.851 (2, 40)	1.574 (2, 44)	1.170 (2, 40)
Distraction Level ∗ Gender	0.536 (2, 47)	2.236 (2, 40)	0.312 (2, 44)	0.089 (2, 40)
Distraction Level ∗ Driving experience [km/years]	2.444 (2, 47) *	1.578 (2, 40)	0.845 (2, 44)	0.341 (2, 40)
Distraction Level ∗ Driving experience [years]	0.197 (2, 47)	0.216 (2, 40)	0.707 (2, 44)	0.394 (2, 40)
Distraction Level ∗ Age	0.229 (2, 47)	0.489 (2, 40)	1.305 (2, 44)	0.797 (2, 40)
Distraction Level ∗ Number of crashes	0.112 (2, 47)	0.446 (2, 40)	0.547 (2, 44)	1.311 (2, 40)

On the other hand, the between-subject factor analysis showed that for the PET variable, the driving experience [years], the age, and the number of crashes affected in a significant way the results (Table 12). Young drivers had lower values of PET since they had more collisions with the pedestrian. It was concluded that age and driving experience in years was also directly related. Regarding the number of crashes, it cannot be determined if it was influenced due to the low number of drivers that have been involved in an incident. Notably, this minority did not hit the pedestrian.

*Table 12. Between Subject Effects for pedestrian interaction (Note. Significance level: * = p < .1, ** = p < .05, *** = p < .001).*

Between Subjects Effects	**F (df, df residuals) (*p*-value)**			
	MTTC [s]	**Max D [m/s²]**	**Max S [km/h]**	**PET [s]**
Gender	0.055 (1, 24)	1.167 (1, 24)	0.003 (1, 24)	3.029 (1, 24) *
Driving experience [km/years]	0.011 (1, 24)	0.144 (1, 24)	0.945 (1, 24)	0.138 (1, 24)
Driving experience [years]	0.274 (1, 24)	0.017 (1, 24)	0.028 (1, 24)	10.943 (1, 24) **
Age	0.727 (1, 24)	0.196 (1, 24)	0.360 (1, 24)	4.711 (1, 24) **
Number of crashes	0.424 (1, 24)	0.032 (1, 24)	0.975 (1, 24)	8.538 (1, 24) **

4.3. Effects of distraction on free-flow conditions

A study carried out by Hosking & Young (2009) stated that lateral position is mainly affected by visual-manual tasks. As a result, drivers had a variance in their performance of approximately 50% more when distracted. Similar behavior was evident in this study for the standard deviation of the lateral position (i.e., SD LP) in distracted conditions. But also, this variable has more significance in female drivers (Figure 35).

Additionally, Hosking & Young's research (2009) did not show the effect of text messaging on driving speed, which can be attributable to the previous instruction given to participants. They were asked to drive as closely as possible to the signed speed limit. The same occurred here, as mean speed was not affected by any level of distraction, but it was affected by the gender factor. Marginally high values were shown in male drivers for each distraction type (Figure 35).

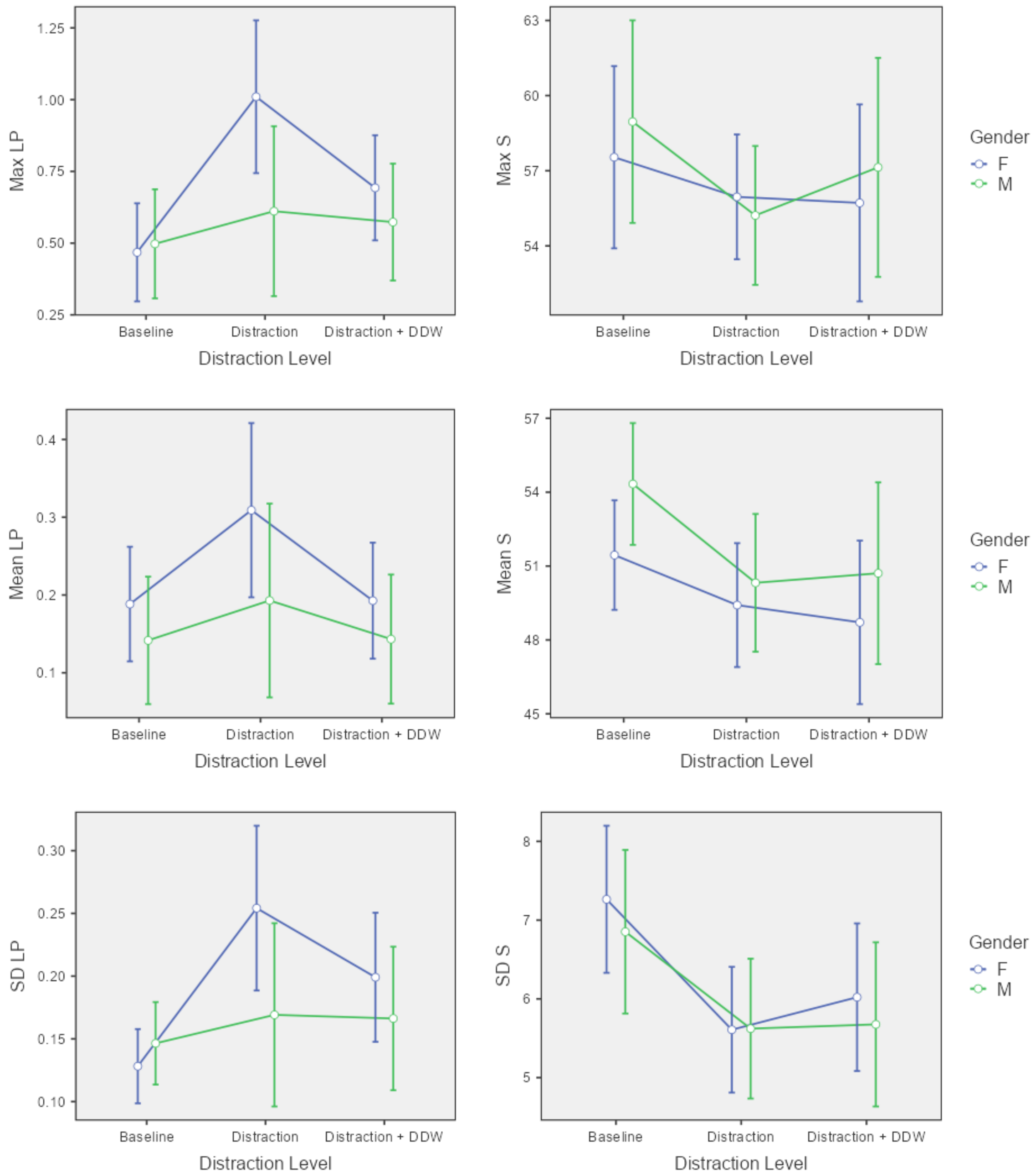

Figure 35. Marginal means variables on driver performance.

RM-ANOVA results in free-flow conditions showed that the distraction level combined with the gender variable affected significantly the results concerning to the transversal behavior of the driver in the within-subject analysis (Table 13 and 14). Post Hoc test for maximum lateral position was performed to compare the effect of distraction level and gender. A notable significance between non-distracted women and distracted women was shown. In the case of distraction, *LP* values were evidently greater than baseline condition ($Max\ LP_{F,1} - Max\ LP_{F,2} = -0.5422$, $t_{24} = -4.04$, $p_{Holm} = 0.007$). In contrast, when comparing distracted conditions, the use of the device hugely improved their behavior ($Max\ LP_{F,2} - Max\ LP_{F,3} = 0.3174$, $t_{24} = 3.473$, $p_{Holm} = 0.028$).

*Table 13. Within Subject Effects on driver performance for longitudinal behavior (Note. Significance level: * = p < .1, ** = p < .05, *** = p < .001).*

Within Subjects Effects	F (df, df residuals) (*p*-value)		
	Max S [km/h]	**Mean S [km/h]**	**SD S [km/h]**
Distraction Level	1.027 (2, 47)	0.275 (2, 42)	0.892 (2, 46)
Distraction Level ✻ Gender	0.482 (2, 47)	0.447 (2, 42)	0.150 (2, 46)
Distraction Level ✻ Driving experience [km/years]	3.299 (2, 47) **	2.054 (2, 42)	0.850 (2, 46)
Distraction Level ✻ Driving experience [years]	0.639 (2, 47)	0.311 (2, 42)	0.051 (2, 46)
Distraction Level ✻ Age	0.725 (2, 47)	0.144 (2, 42)	0.630 (2, 46)
Distraction Level ✻ Number of crashes	0.443 (2, 47)	0.602 (2, 42)	0.007 (2, 46)

*Table 14. Within Subject Effects on driver performance for lateral behavior (Note. Significance level: * = p < .1, ** = p < .05, *** = p < .001).*

Within Subjects Effects	F (df, df residuals) (*p*-value)		
	Max LP [m]	**Mean LP [m]**	**SD LP [m]**
Distraction Level	0.563 (2, 40)	0.612 (2, 46)	0.760 (2, 40)
Distraction Level ✻ Gender	3.716 (2, 40) **	0.693 (2, 46)	4.763 (2, 40) **
Distraction Level ✻ Driving experience [km/years]	0.831 (2, 40)	3.192 (2, 46) *	0.868 (2, 40)
Distraction Level ✻ Driving experience [years]	0.544 (2, 40)	0.860 (2, 46)	0.435 (2, 40)
Distraction Level ✻ Age	0.425 (2, 40)	0.502 (2, 46)	0.519 (2, 40)
Distraction Level ✻ Number of crashes	0.346 (2, 40)	0.734 (2, 46)	0.046 (2, 40)

In the between-subject analysis, it was observed that longitudinal driver behavior was also affected by factors such as driving experience [km/years]. In the transversal behavior (especially, *Mean LP*), driving experience [years] and age had a significant effect. Participants with fewer kilometers traveled per year tended to drive slower, being more cautious when performing the driving session. Whereas, those with more kilometers traveled managed to drive faster (Table 15 and Table 16). This is clearly associated with the driver's experience. On the other hand, middle-aged drivers had the greatest dispersion in the trajectory in this free-flow driving.

*Table 15. Between Subject Effects on driver performance for longitudinal behavior (Note. Significance level: * = p < .1, ** = p < .05, *** = p < .001).*

Between Subjects Effects	F (df, df residuals) (*p*-value)		
	Max S [km/h]	**Mean S [km/h]**	**SD S [km/h]**
Gender	0.147 (1, 24)	1.830 (1, 24)	0.464 (1, 24)
Driving experience [km/years]	4.345 (1, 24) **	7.835 (1, 24) **	0.050 (1, 24)
Driving experience [years]	0.006 (1, 24)	0.046 (1, 24)	0.052 (1, 24)
Age	0.739 (1, 24)	0.576 (1, 24)	0.428 (1, 24)
Number of crashes	0.577 (1, 24)	0.928 (1, 24)	0.212 (1, 24)

*Table 16. Between Subject Effects on driver performance for lateral behavior (Note. Significance level: * = p < .1, ** = p < .05, *** = p < .001).*

Between Subjects Effects	**F (df, df residuals) (*p*-value)**		
	Max LP [m]	**Mean LP [m]**	**SD LP [m]**
Gender	2.117 (1, 24)	2.260 (1, 24)	1.286 (1, 24)
Driving experience [km/years]	0.148 (1, 24)	4.143 (1, 24) *	1.115 (1, 24)
Driving experience [years]	0.226 (1, 24)	4.861 (1, 24) **	0.400 (1, 24)
Age	0.146 (1, 24)	4.158 (1, 24) *	0.373 (1, 24)
Number of crashes	0.356 (1, 24)	0.202 (1, 24)	0.160 (1, 24)

4.4. Effects of distractions on car-following interaction

For the vehicle interaction section, RM-ANOVA showed a significant effect in the combination of the distraction level and driving experience [years] on *Mean S* and *SD S*.

Distraction level also affected in large-scale longitudinal measures as mean speed and standard deviation of speed. The Post Hoc test indicates that the mean speed was lower when the driver was not performing any secondary task. Nevertheless, thanks to the DDW device, people felt more confident and tended to increase their speed compared to distracted conditions where the device was not used. Same results are shown for speed variations (Table 17).

Regarding the effect of age and driving experience on variation in speed, it was shown that young drivers had a more significant variation in speed. In contrast, more experienced drivers tended to control more their speed. Conversely, for *Mean LP*, young drivers maintained a lower trajectory dispersion and middle-aged participants had a higher *SD LP* (Table 18).

*Table 17. Within Subject Factor for vehicle interaction for longitudinal behavior (Note. Significance level: * = p < .1, ** = p < .05, *** = p < .001).*

Within Subjects Effects	**F (df, df residuals) (p-value)**			
	Max S [km/h]	**Mean S [km/h]**	**SD S [km/h]**	**Max D [m/s²]**
Distraction Level	1.004 (2, 38)	3.568 (2, 41) **	8.200 (2, 46) **	0.545 (2, 48)
Distraction Level ∗ Gender	0.658 (2, 38)	0.020 (2, 41)	0.204 (2, 46)	0.898 (2, 48)
Distraction Level ∗ Driving experience [km/years]	0.726 (2, 38)	0.410 (2, 41)	0.343 (2, 46)	0.693 (2, 48)
Distraction Level ∗ Driving experience [years]	1.040 (2, 38)	3.496 (2, 41) **	15.156 (2, 46) ***	0.254 (2, 48)
Distraction Level ∗ Age	1.047 (2, 38)	3.408 (2, 41) *	11.909 (2, 46) ***	0.443 (2, 48)
Distraction Level ∗ Number of crashes	0.046 (2, 38)	0.144 (2, 41)	0.121 (2, 46)	0.020 (2, 48)

*Table 18. Within Subject Factor for vehicle interaction for lateral behavior (Note. Significance level: * = p < .1, ** = p < .05, *** = p < .001).*

Within Subjects Effects	F (df, df residuals) (p-value)		
	Mean LP [m]	**SD LP [m]**	**Min HW [s]**
Distraction Level	2.635 (2, 41) *	1.269 (1, 32)	2.217 (1, 31)
Distraction Level ∗ Gender	0.269 (2, 41)	0.687 (1, 32)	0.310 (1, 31)
Distraction Level ∗ Driving experience [km/years]	0.026 (2, 41)	2.039 (1, 32)	0.533 (1, 31)
Distraction Level ∗ Driving experience [years]	6.012 (2, 41) **	0.560 (1, 32)	3.584 (1, 31) *
Distraction Level ∗ Age	3.576 (2, 41) **	0.789 (1, 32)	2.481 (1, 31)
Distraction Level ∗ Number of crashes	1.439 (2, 41)	0.008 (1, 32)	0.005 (1, 31)

Regarding the longitudinal behavior, the number of crashes had an important effect on the variation of speed and deceleration. Speed variation (i.e., *SD S*) tended to be higher in people not involved in any crash (Table 19). Additionally, they tended to decelerate more suddenly.

The headway was affected by the gender of the driver, as shown in Table 20. The Post Hoc test demonstrated that women tended to drive with a greater headway than men ($Min\ HW_F - Min\ HW_M = 0.9960$, $t_{24} = 1.990$, $p_{Holm} = 0.058$). They drove in a safer way, keeping a discreet distance from the vehicle ahead. This disagrees with Saifuzzaman *et al.* analysis (2015), where female drivers maintained shorter time headways than male drivers.

*Table 19. Between Subject Factor for vehicle interaction for longitudinal behavior (Note. Significance level: * = p < .1, ** = p < .05, *** = p < .001).*

Between Subjects Effects	F (df, df residuals) (p-value)			
	Max S [km/h]	**Mean S [km/h]**	**SD S [km/h]**	**Max D [m/s²]**
Gender	0.687 (1, 24)	4.776 (1, 24) **	0.300 (1, 24)	0.284 (1, 24)
Driving experience [km/years]	1.070 (1, 24)	0.124 (1, 24)	0.353 (1, 24)	1.022 (1, 24)
Driving experience [years]	0.086 (1, 24)	0.069 (1, 24)	2.258 (1, 24)	1.412 (1, 24)
Age	0.271 (1, 24)	0.001 (1, 24)	0.876 (1, 24)	0.796 (1, 24)
Number of crashes	1.382 (1, 24)	0.661 (1, 24)	4.704 (1, 24) **	5.080 (1, 24) **

*Table 20. Between Subject Factor for vehicle interaction for lateral behavior (Note. Significance level: * = p < .1, ** = p < .05, *** = p < .001).*

Between Subjects Effects	F (df, df residuals) (p-value)		
	Mean LP [m]	**SD LP [m]**	**Min HW [s]**
Gender	3.568 (1, 24) *	0.710 (1, 24)	3.954 (1, 24) *
Driving experience [km/years]	1.693 (1, 24)	1.908 (1, 24)	0.001 (1, 24)
Driving experience [years]	3.850 (1, 24) *	0.785 (1, 24)	0.613 (1, 24)
Age	3.262 (1, 24) *	0.597 (1, 24)	1.692 (1, 24)
Number of crashes	0.263 (1, 24)	0.384 (1, 24)	0.496 (1, 24)

The marginal mean graphs on car-following interaction (Figure 36) show that mean speed (i.e., *Mean S*) was also affected by gender factor. Once again, men drove faster than women, regardless of the level of distraction. Time headway was influenced not only by gender but also by the level of distraction. Distracted drivers tended to be more cautious if they have a vehicle in front, subsequently they maintained a higher headway. This outcomes agree with Saifuzzaman *et al.* (2015), who stated that time headway increases by 0.75 s when using handheld mobile phones while driving.

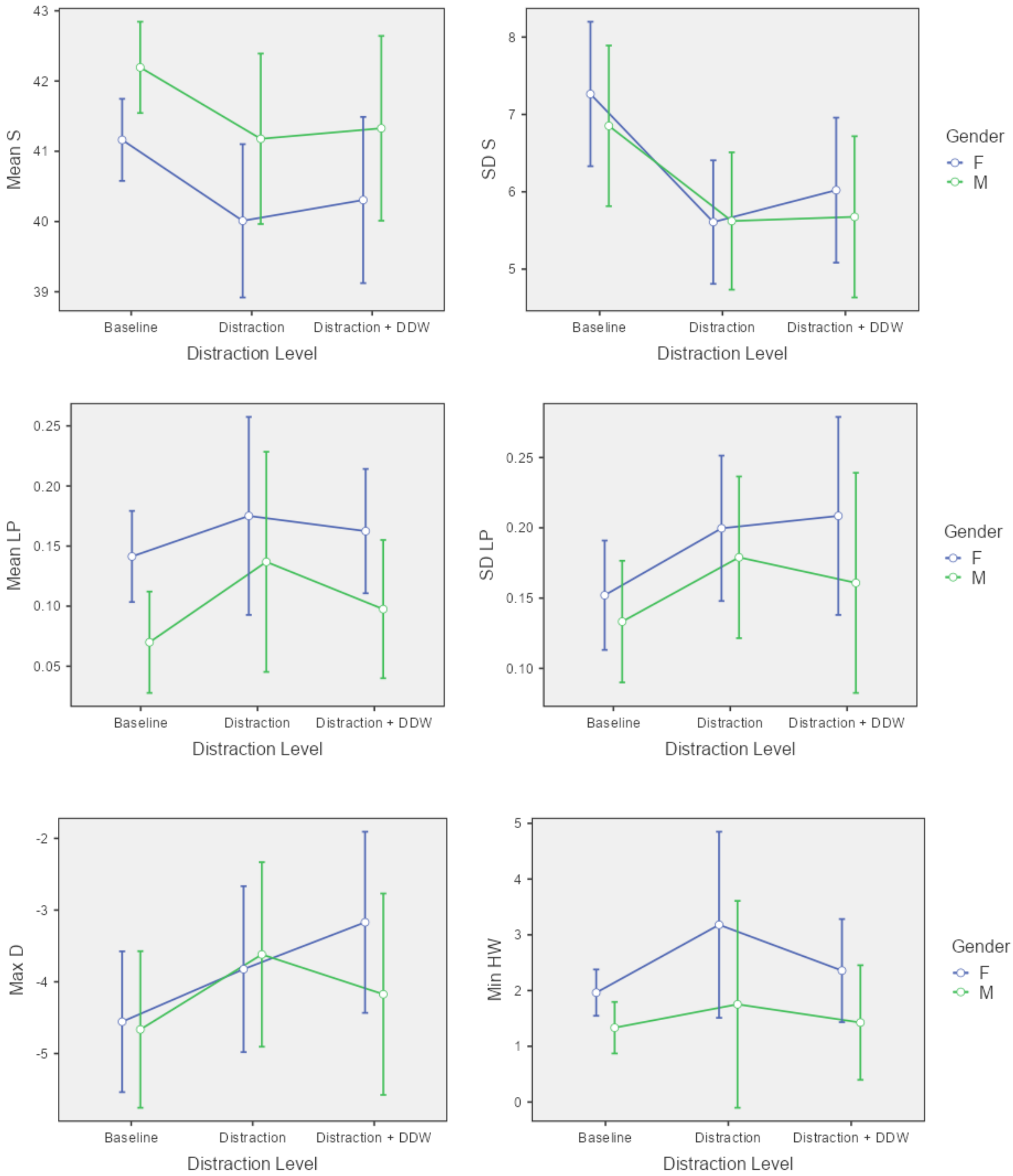

Figure 36. Marginal means variables for car-following interaction.

4.5. Post-drive questionnaire results

The post-drive questionnaire was carried out to collect information about the driver's experience during the driving session, and check the onset of the commonly known simulation sickness. Furthermore, the user acceptance level of the DDW system was asked (Appendix X).

The form was divided into five sections, two related to the use of the simulator (feelings and consequences of the experience) and the other three related to the DDW device (experience, reaction, and judgment of the device). The graphs related to feelings and consequences are presented in Appendix Q.

Related to the sensation of the driving experience, 93% of the participants felt comfortable, and 97% indicated being in control of the situation. On the other hand, the majority expressed that they were not nervous (87%) or with their minds wandering (83%).

The test had no negative consequences concerning the simulator, since no participant had to stop the experiment due to simulation sickness.

According to the driver's experience, the evaluation is presented in Figure 37. In the post-drive questionnaire, they were asked to indicate the demand implied by the device in a range from 1 to 10 (1 was low, and 10 was high). Regarding the mean results of the participants, relatively high values were shown in the evaluation of their performance, showing satisfaction for having achieved the proposed objectives. On the other hand, drivers considered low physical activity required and a slight feeling of frustration.

Figure 38 show the results concerning the driver's reaction to the device. The numbers indicate the statements listed in Table 21 that the participants assessed from 1 to 5 how much they were in favor or against them.

In general, they considered that the device is straightforward to use, and they believe that anyone can use it without requiring professional help. This procedure agrees with the study carried out by Barr *et al.* (2009), where they evaluate the user's acceptance of various types of fatigue and drowsiness devices. Users cataloged facial recognition infrared camera as very easy to use, which did not require a minimum of training due to its simplicity.

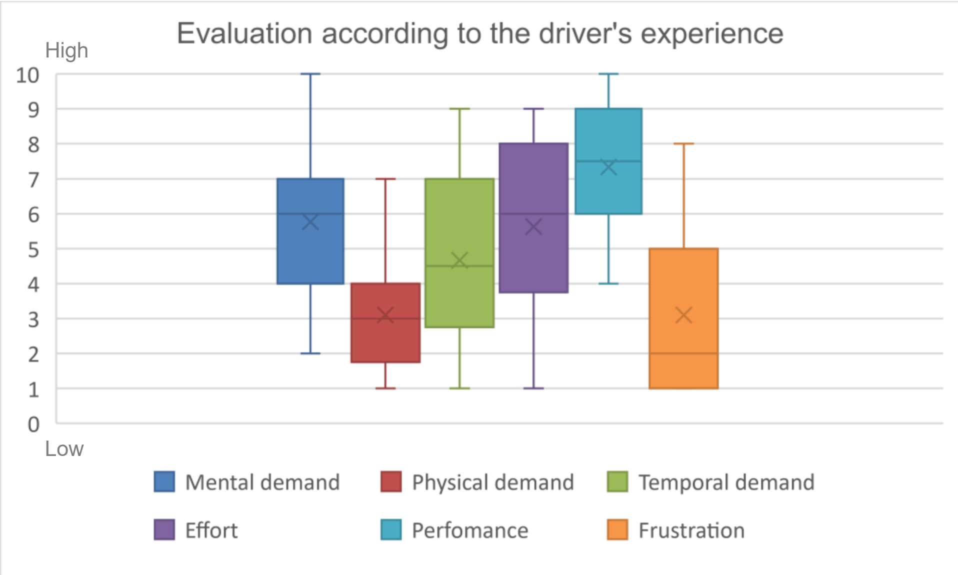

Figure 37. Box-plot evaluation according to the driver's experience.

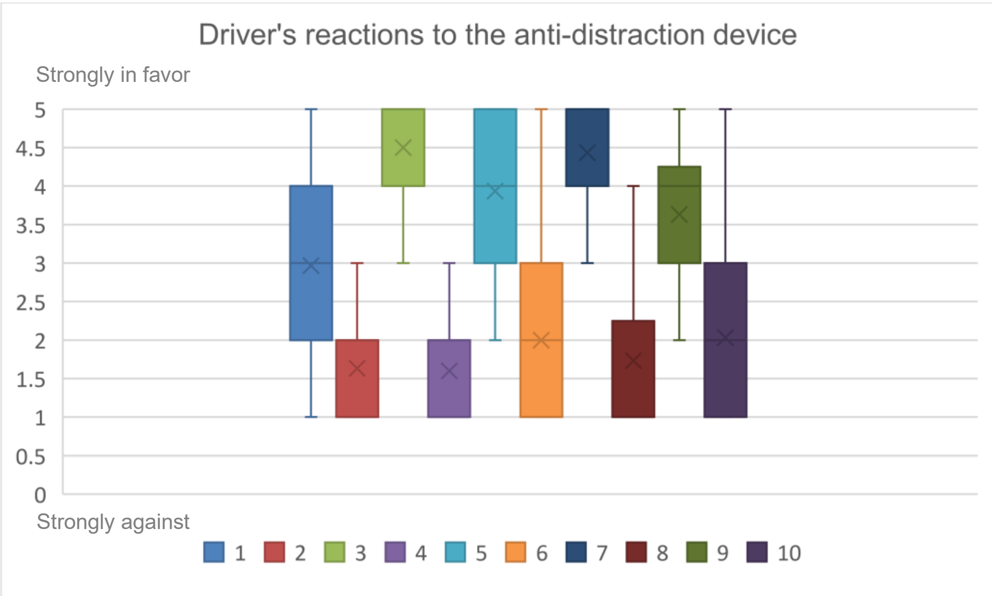

Figure 38. Box-plot driver's reactions to the device.

Table 21. Statements assessed by test drivers in post-drive questionnaire.

1. I would like to use the device frequently
2. I found the device complex without the need of him
3. The device is very simple to use
4. I need a technician's support to better use this device.
5. The various functions of the device are well integrated.
6. There is too much inconsistency between the various functions offered by the device applied during the driving
7. In my opinion, most people are able to quickly learn how to use the device used
8. The device is very complicated to use in ordinary driving.
9. During the driving experience, I perceived a high level of confidence in the use of the device.
10. I need to learn more before using the device used effectively.

In addition, test drivers perceived a high level of confidence while driving. These opinions are similar to those presented by Dumitru *et al.* (2018), where the participants indicated that the ADAS application used in their study was beneficial in improving their driving behavior. However, they reported the device warnings as annoying.

When judging the device, the participants perceived an improvement in their performance, indicating it as a useful and supportive system, increasing alertness when distracted. However, they classified the device as annoying and irritating due to the emitted warning sounds, as shown in Figure 39.

Test drivers also indicated that, if necessary, they would pay around 157€ for the DDW device, although 67% responded that they would not be willing to pay it voluntarily. According to Barr *et al.* (2009), if the safety potential of the device is not perceived to outweigh its cost, it is most likely that the user will not consider buying it because they have to feel that their driving performance enhance with the system and feel comfortable using it.

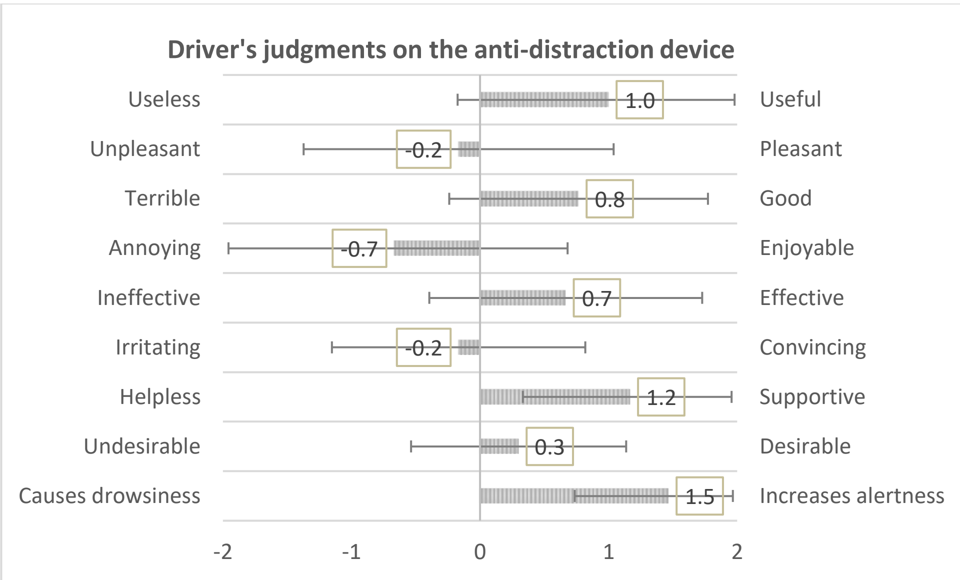

Figure 39. Driver's judgments on the device.

5. CONCLUSIONS

This study deals with one of the biggest issues for road safety, which is the use of cell phone while driving. In this thesis work, the effectiveness of a Driver Distraction Warning (DDW) was assessed. In particular, the study aimed at evaluating the driver behavior change resulting from the presence or the absence of a DDW system, when a secondary task is performed by the driver. It is worth noting that since 2026 in Europe all new vehicles will be equipped with DDW systems.

The investigation took into consideration three levels of distraction: driver had to drive (i) without being distracted, (ii) distracted and (iii) distracted with the presence of a DDW device. Furthermore, three different interacting scenarios were assessed: (i) pedestrian interaction, (ii) free-flow conditions and (iii) car-following. The gender factor was also considered in the study.

The experimental hypothesis was that the DDW device can help distracted drivers to behave in a similar way to those who drive without performing secondary tasks. Furthermore, it was hypothesized that distracted drivers who use DDW drive more safely than when they are simply distracted.

Although the participants rated the device as annoying and irritating, the improvement in driving performance was quite evident. They even reported confidence when using the device and rated it as a useful and supportive system. As already said, DDW systems will no longer be an option in future cars since the system will be integrated into new vehicles from 2026.

Although the device used was mainly designed for fatigue on rural roads, it showed satisfactory performance in urban driving. The system is a non-intrusive device that works with facial recognition by infrared cameras. In future research, the effective performance of other devices that can help mitigate distraction due to texting can be analyzed.

5.1. Pedestrian interaction

Post encroachment time (*PET*) and minimum instantaneous time to collision (*MTTC*) were assumed as surrogate safety measures. The use of the DDW device showed an increase in confidence in the drivers to the point that they appeared not to be involved in a secondary task. MTTC and PET values were even almost as low as in the baseline condition; in other words, the situation was riskier with respect to the distracted condition, where drivers assumed a more prudent behaviour.

For the longitudinal behavior, the maximum speed (*Max S*) among undistracted drivers tended to be slightly higher than the allowed speed. When involved in a secondary task, they reduced speed to perform both activities correctly, thus minimizing the risk of an accident (Reed & Robbins, 2008). The deceleration was directly related to this tendence. The minimum value of *Max D* occurred when drivers were distracted, attributing that the deceleration maneuver was not so sudden, as they drove slowly.

Regarding gender, in the baseline conditions, *MTTC* was higher among men than women. It was the opposite when they were distracted. Women showed a significant driving improvement, with a higher time. Moreover, female drivers' *PET* values were consistently higher in all three distraction levels. *Max S* for male drivers was always lower than for female drivers except when distracted, which is precisely the condition where women showed a significantly low *Max D*. On the other hand, the highest *Max D* occurred in baseline conditions and among female drivers.

Other factors that also influenced driver performance (especially PET variable) were age and driving experience [years]. Young drivers had lower PET, since they were the ones who had more collisions with the pedestrian. It was concluded that age and driving experience in years are directly related.

5.2. Free-flow conditions

Speed was assessed in terms of maximum (*Max S*), mean (*Mean S*), and standard deviation values (*SD S*). The highest *Max S* and *Mean S* values were shown when drivers were not distracted. Using the DDW device when they were distracted led the participants to increase the speed, compared to when they were not using it. *SD S* was variable in all levels of distraction. The lowest variation was evidenced in baseline conditions, and the highest was noted in distracted conditions using the device, which showed a greater effort to improve driving impairment.

Transversal behavior allowed to measure the control of the driver's vehicle and the amount of weaving. The maximum (*Max LP*), mean (*Mean LP*), and standard deviation of lateral position (*SD LP*) had the same trend throughout this section, which revealed the highest values when drivers were distracted and the lowest when they were non-distracted.

Max S and *Mean S* in female drivers were evidently lower, and the *SD S* was higher than male drivers in the three levels of distraction. Considering the lateral position, women always showed higher values than men, except in base conditions where their *Max LP* and *SD LP* were lower.

Factors such as years of driving experience affected the speed results, as drivers with more experience tended to drive faster than those with less experience. Additionally, in the transversal behavior, drivers between 28 and 31 years old had a greater mean lane dispersion.

5.3. Car-following interaction

Time headway (*HW*) was assumed as surrogate safety measure for car-following interaction. The minimum HW values were relatively similar in baseline conditions and distraction with the DDW device, which shows overconfidence in the drivers for the support provided by the system, when they were distracted while driving.

For this section, the longitudinal behavior was evaluated in terms of speed and deceleration. As in the previous sections, the speed was higher when the driver was not distracted. When performing a secondary task, they reduced their speed to control the situation. However, the presence of the DDW device generated a lower perceived risk in participants, causing them to increase their speed but not to the point of the baseline condition. Regarding *Max D*, as expected, the lowest values occurred when the driver was non-distracted. However, using the device did not appear to have a significant effect. This was because participants were forced to drive at 40 km/h, since the a-head vehicle was set at this speed.

In terms of transversal behavior, the distraction condition was the level that presented a higher value of *Mean LP* and *SD LP* in driver performance. The use of the device provided a significant improvement since the values were relatively low, revealing a better driving control.

Related to the gender influence, *Min HW* values were consistently higher among female drivers. Additionally, they drove at a relatively lower speed than male drivers in all distraction levels. Both men’s and women’s acceleration had the same tendency in baseline and distracting conditions, decreasing deceleration when texting. When using the device, female drivers showed a lower deceleration than when not using it, while in men, the deceleration increased. This demonstrates the DDW device confidence in men, even having almost the same behavior as in baseline conditions.

The assessment of gender in the driver transversal behavior showed that female drivers always had a higher *SD LP* for the three levels of distraction. In particular, *SD LP* slightly increased when distracted using the device rather than when not using it. On the other hand, men showed more control of the vehicle, and when they used the device, the *SD LP* decreased.

Factors such as age, driving experience, and number of crashes had a significant influence on longitudinal behavior since young drivers, and less driving experienced indicated a greater variation in speed compared to more experienced drivers, i.e., less vehicle control. Additionally, it was shown that participants who had not been involved in any crash presented the highest values of *SD S*.

Regarding the transversal behavior, young drivers (between 25 and 27 years old) had a lower amount of vehicle weaving when driving, i.e., lower *SD LP*. Conversely, participants between 28 and 31 years old showed greater *SD LP*.

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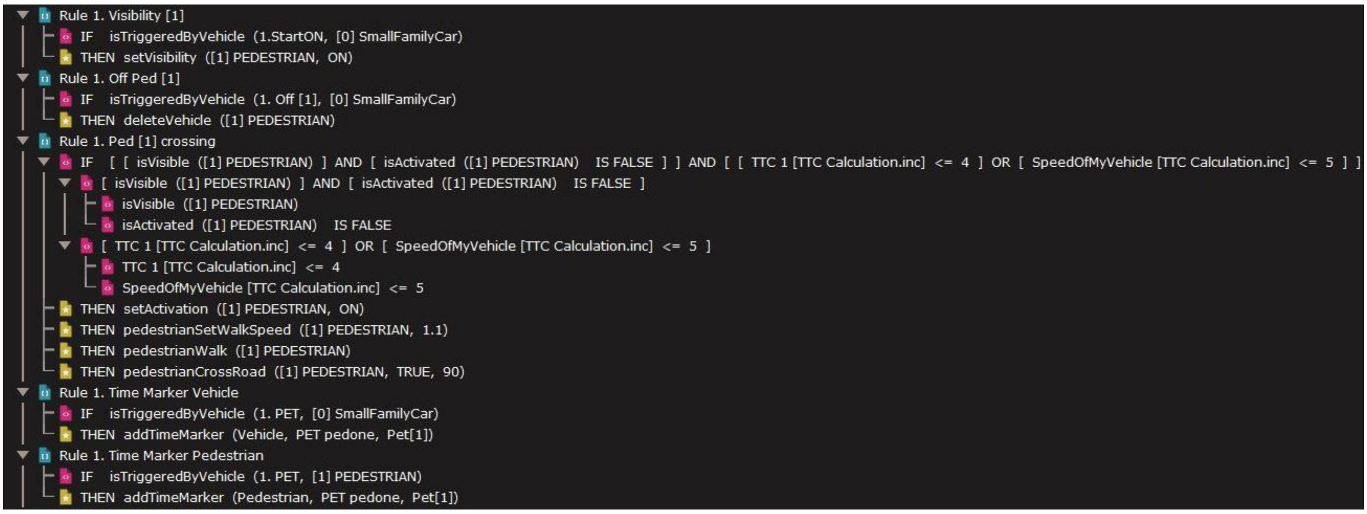
APPENDIX

A. Scenario codes (MICE language)

To program in SCANeR Studio® software, a "rule" must be executed for each action that we wanted to reproduce on the scenario. The "rule" function in MICE language always starts with an "if" and ends with a "then.”

In the pedestrian interaction section, a series of rules were included to activate the visibility of the pedestrian and that he could cross the road when the time when the PTGA was equal to 4 s.

For the PET, two time markers had to be included, one for pedestrian and another for the vehicle, necessary to extract the data for both in the conflict area and thus calculate the value when both reached the conflict point.



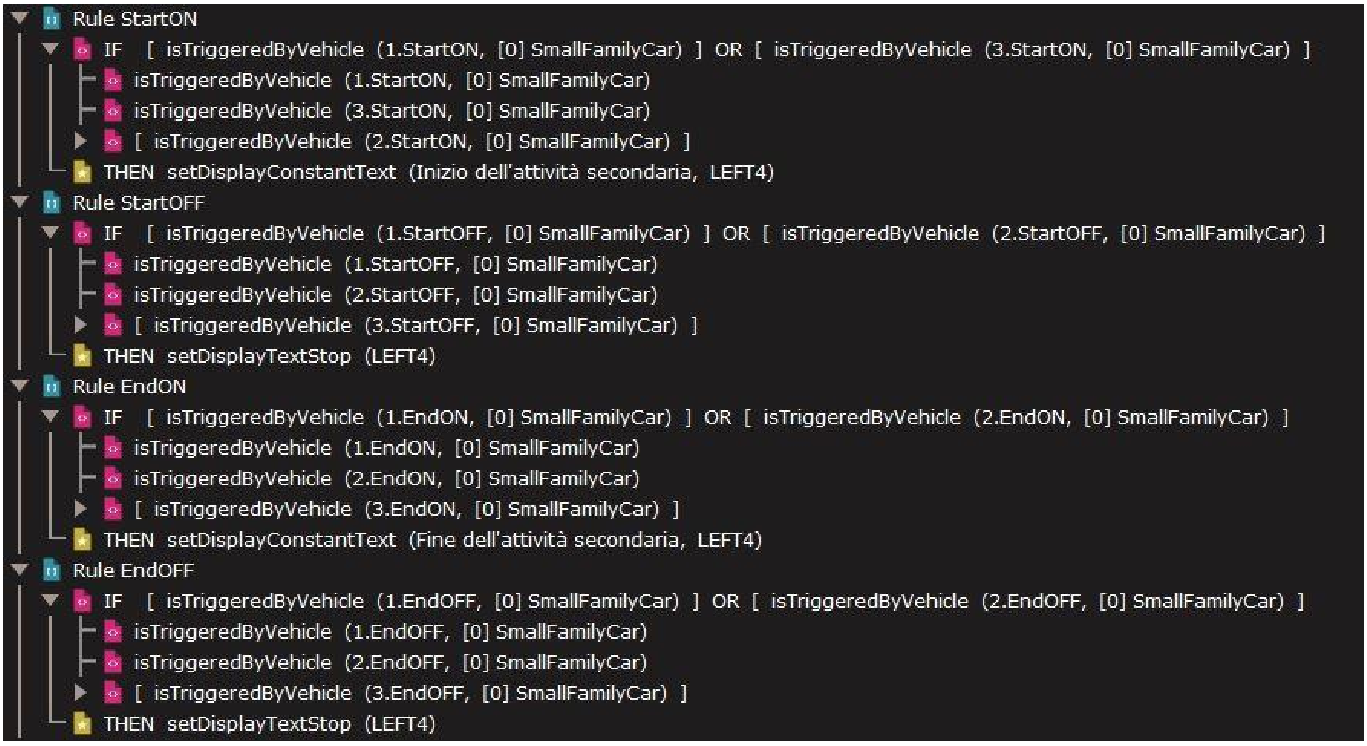
Regarding car-following interaction, a rule was included to activate the vehicle visibility and later, with another rule, remove it from circulation.

```
▼ Rule 3. Visibility [68]
  ├ IF   isTriggeredByVehicle  (3. Visibility [68],  [0] SmallFamilyCar)
  ├ THEN  setVisibility  ([68] CarDistraction,  ON)
  └ THEN  setActivation  ([68] CarDistraction,  ON)
▼ Rule 3. Off Veh [68]
  ├ IF   isTriggeredByVehicle  (3. Off [68],  [68] CarDistraction)
  └ THEN  deleteVehicle  ([68] CarDistraction)
```

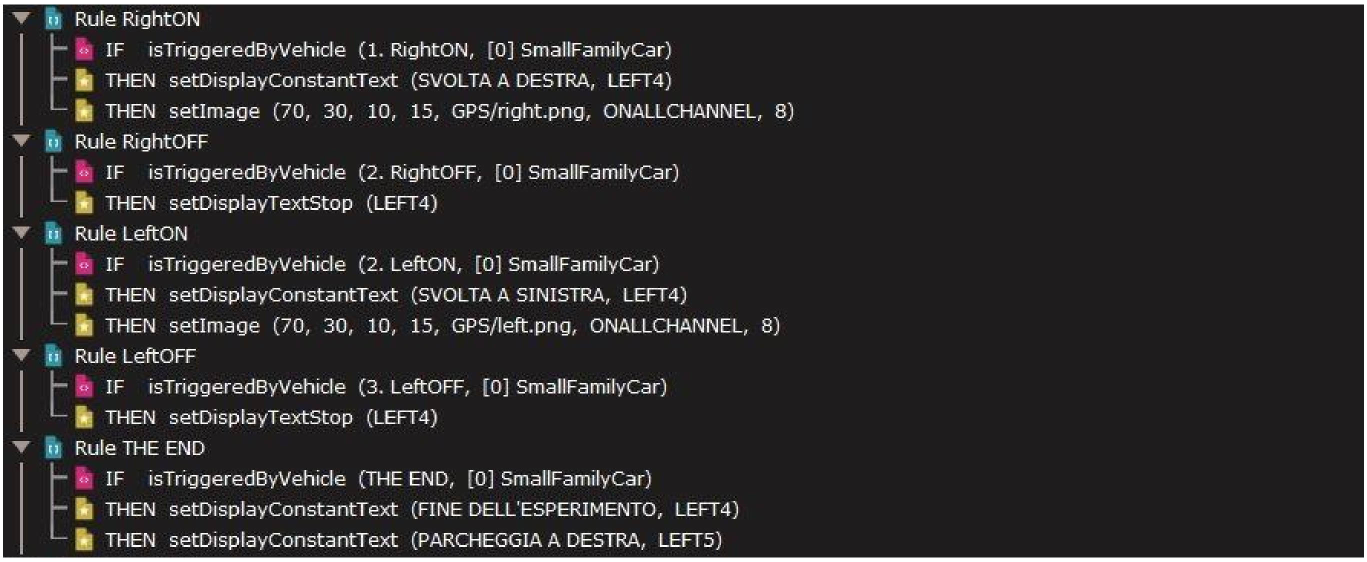
In addition to the pedestrian interaction, other pedestrians were added along the track crossing the road by activating triggers

```
▼ Rule 1.PedCross1
  ├ IF   isTriggeredByVehicle  (1. PedCross1,  [0] SmallFamilyCar)
  ├ THEN  setActivation  ([32] PedCross1,  ON)
  ├ THEN  pedestrianSetWalkSpeed  ([32] PedCross1,  10)
  └ THEN  pedestrianCrossRoad  ([32] PedCross1,  TRUE,  90)
▼ Rule 1.PedCross1A
  ├ IF   isTriggeredByVehicle  (1. PedCross1A,  [0] SmallFamilyCar)
  ├ THEN  setActivation  ([63] PedCross1.1,  ON)
  ├ THEN  pedestrianSetWalkSpeed  ([63] PedCross1.1,  8)
  └ THEN  pedestrianCrossRoad  ([63] PedCross1.1,  TRUE,  90)
▼ Rule 2.PedCross3
  ├ IF   isTriggeredByVehicle  (2. PedCross3,  [0] SmallFamilyCar)
  ├ THEN  setActivation  ([71] Kid_Gril_Summer_01 2,  ON)
  ├ THEN  pedestrianSetWalkSpeed  ([71] Kid_Gril_Summer_01 2,  8)
  └ THEN  pedestrianCrossRoad  ([71] Kid_Gril_Summer_01 2,  TRUE,  90)
▼ Rule 2.PedCross4
  ├ IF   isTriggeredByVehicle  (2. PedCross4,  [0] SmallFamilyCar)
  ├ THEN  setActivation  ([72] Man_Casual_03,  ON)
  ├ THEN  pedestrianSetWalkSpeed  ([72] Man_Casual_03,  .9)
  └ THEN  pedestrianCrossRoad  ([72] Man_Casual_03,  TRUE,  90)
```

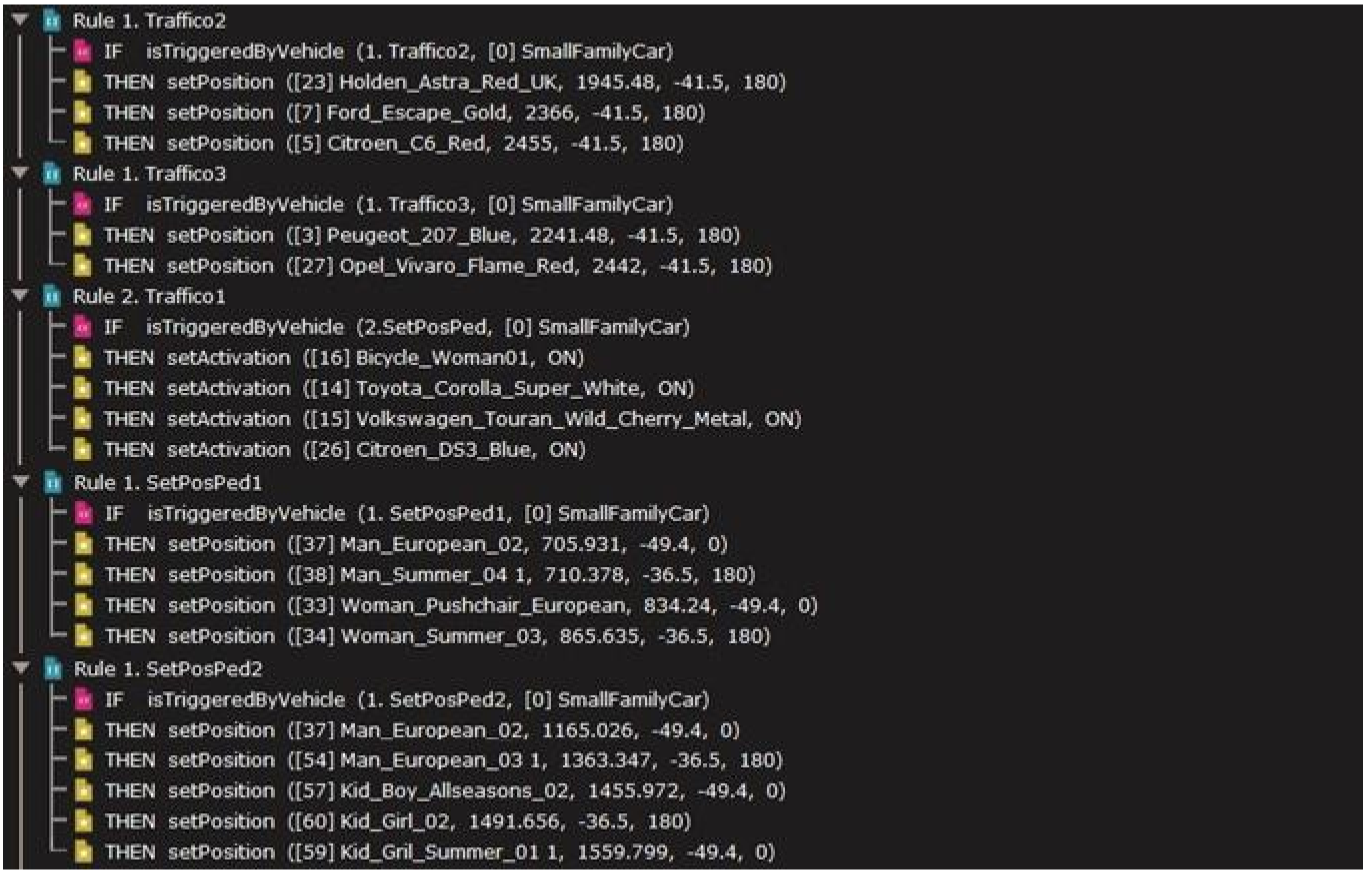
For the distraction conditions, a rule was included to project a written text on the screen to notify the driver when the secondary task began (StartON) and ended (EndON). Still, the text was set to only appear for 5 s on the screen (StartOFF and EndOFF).



In the same way, at each intersection, the driver was notified when to turn right or left by displaying text and green arrows on the screen that indicated the direction. Also, at the end of the experiment, the driver was informed when to park the vehicle with the "THE END" rule.



A rule had to be made for each section to simulate city (Traffico) and pedestrian (SetPosPed) traffic. The road users who were already positioned in the scenario were activated. Still, it only started to move when indicated, or their position was set to move those already in circulation.



```
Rule 1. Traffico2
  IF   isTriggeredByVehicle  (1. Traffico2,  [0] SmallFamilyCar)
  THEN  setPosition  ([23] Holden_Astra_Red_UK,  1945.48,  -41.5,  180)
  THEN  setPosition  ([7] Ford_Escape_Gold,  2366,  -41.5,  180)
  THEN  setPosition  ([5] Citroen_C6_Red,  2455,  -41.5,  180)
Rule 1. Traffico3
  IF   isTriggeredByVehicle  (1. Traffico3,  [0] SmallFamilyCar)
  THEN  setPosition  ([3] Peugeot_207_Blue,  2241.48,  -41.5,  180)
  THEN  setPosition  ([27] Opel_Vivaro_Flame_Red,  2442,  -41.5,  180)
Rule 2. Traffico1
  IF   isTriggeredByVehicle  (2.SetPosPed,  [0] SmallFamilyCar)
  THEN  setActivation  ([16] Bicycle_Woman01,  ON)
  THEN  setActivation  ([14] Toyota_Corolla_Super_White,  ON)
  THEN  setActivation  ([15] Volkswagen_Touran_Wild_Cherry_Metal,  ON)
  THEN  setActivation  ([26] Citroen_DS3_Blue,  ON)
Rule 1. SetPosPed1
  IF   isTriggeredByVehicle  (1. SetPosPed1,  [0] SmallFamilyCar)
  THEN  setPosition  ([37] Man_European_02,  705.931,  -49.4,  0)
  THEN  setPosition  ([38] Man_Summer_04 1,  710.378,  -36.5,  180)
  THEN  setPosition  ([33] Woman_Pushchair_European,  834.24,  -49.4,  0)
  THEN  setPosition  ([34] Woman_Summer_03,  865.635,  -36.5,  180)
Rule 1. SetPosPed2
  IF   isTriggeredByVehicle  (1. SetPosPed2,  [0] SmallFamilyCar)
  THEN  setPosition  ([37] Man_European_02,  1165.026,  -49.4,  0)
  THEN  setPosition  ([54] Man_European_03 1,  1363.347,  -36.5,  180)
  THEN  setPosition  ([57] Kid_Boy_Allseasons_02,  1455.972,  -49.4,  0)
  THEN  setPosition  ([60] Kid_Girl_02,  1491.656,  -36.5,  180)
  THEN  setPosition  ([59] Kid_Gril_Summer_01 1,  1559.799,  -49.4,  0)
```

B. MATLAB® code

For the post-analysis process, MATLAB® software was used to facilitate the extraction of data and graphics for the results study.

Below is an example of a driver's script that is repeated almost in the same way for all participants. For this, the excel files given by SCANeR Studio® were used for each section.

```
% load excel file
XLXS=xlsread('C:\TESI\DATI SCANER\TD_1\Sc2_Section1\TD1_section1.xlsx',1);
XLXS2=xlsread('C:\TESI\DATI SCANER\TD_1\Sc2_Section2\TD1_section2.xlsx',1);
XLXS3=xlsread('C:\ TESI\DATI SCANER\TD_1\Sc2_Section3\TD1_section3.xlsx',1);
```

All observed variables are listed in this code in a general way, since this variable can be repeated in one or more sections.

To calculate the MTTC, it was first necessary to consider some input data regarding the pedestrian crossing the road also set the PGTA. Only the time window where the pedestrian is in the same lane as the driven vehicle was considered, considering the minimum value.

```
%MINIMUM TIME TO COLLISION
PedSpeed=1.1; %m/s
ParkLen=2.2; %m
LaneWid=3; %m
ParkTime=ParkLen/PedSpeed; % Time taken by the pedestrian from the sidewalk
to the end of the parking area
LaneTime=LaneWid/PedSpeed; % Time taken by the pedestrian to cross the entire
lane
TTC_PTGA=4; %s

Pos_Start=find(TTC(:,2)<TTC_PTGA & TTC(:,2)~=0);
Tempo_Start=TTC(Pos_Start(1,1),1);
Tempo_Enter=Tempo_Start+ParkTime;
Tempo_End=Tempo_Enter+LaneTime;
Pos_Enter=find(TTC(:,1)<=Tempo_Enter);
Pos_End=find(TTC(:,1)<=Tempo_End);

TTC2=TTC(Pos_Enter(end,1):Pos_End(end,1),2);
minTTC2=min(TTC2);
Pos_Min2=find(TTC2==minTTC2);
x_min2=TTC(Pos_Min2,1)+TTC(Pos_Enter(end,1),1);
```

Below is shown the graphical representation code for MTTC, where the minimum value is marked with a red circle.

```
%rappresentazione grafica MTTC
figure (3)
plot(TTC(:,1),TTC(:,2),"b")
hold on
plot(x_min2,minTTC2,"or")
xline(Tempo_Start,"--r","Pedestrian Start Crossing")
xline(Tempo_Enter,"--","Pedestrian Enter")
xline(Tempo_End,"--","Pedestrian Exit") %--Dashed, -.Dash-dot, :Dotted
xtickformat('%.f')
xlabel('Time [s]')
ylabel('Instantaneous TTC [s]')
xlim([Tempo_Start-5 Tempo_End+5])
ylim([-1 12])
hold off
title ("Scenario 1, Section: Pedestrian interaction, TTC (TD #30)")
grid on
set(gca,'xtick',[Tempo_Start-5:2:Tempo_End+5])
set(gca,'ytick',[-1:2:12])
```

As acceleration measures the driver's braking maneuver, the values taken must be in terms of distance in order to better assess the driver's performance. Thus, it was possible to find the minimum acceleration value (i.e., maximum deceleration).

```
%%%%%%%%% ACCELERATION %%%%%%%%%%%
Acceleration=XLXS3(PosRoadID,11);
Acceleration=Acceleration(PosAbs);

%%%%%%%%% MIN. ACCELERATION %%%%%%%%%%%
MinAcceleration=min(Acceleration);
Pos_Min=find(Acceleration==MinAcceleration);
Pos_Min=Pos_Min(end);
x_Min=Abscissa_NEW(Pos_Min);
```

Below is shown the graphical representation code for acceleration, where the minimum value is marked with a black circle.

```
%rappresentazione grafica ACCELERATION
figure (1)
plot(Abscissa_NEW,Acceleration,'g')
hold on
plot(x_Min,MinAcceleration,'ok','LineWidth',1.5)
set(gca,'Xdir','reverse')
xlabel('Distance to Crossing Area [m]')
ylabel('Car Acceleration [m/s^2]')
title('No distraction, Pedestrian interaction: Car Acceleration')
xlim([-10 100])
ylim([-8 3])
legend('Acceleration','MaxD')
grid on
set(gca,'ytick',[-8:2:3])
hold off
```

Speed was also considered in terms of space, and this time the values desired were the mean, maximum, and standard deviation. This variable was estimated in the three sections of interest.

```
%%%%%%%%% SPEED %%%%%%%%%%%
CarSpeed=XLXS(PosRoadID,2);

%%%%%%%%% MAX. SPEED %%%%%%%%%%%
MaxSpeed=max(CarSpeed);
Pos_Max=find(CarSpeed==MaxSpeed);
x_MaxV=Abscissa(Pos_Max);

%%%%%%%%% MEAN & SD SPEED %%%%%%%%%%%
MeanSpeed=mean(CarSpeed);
SDSpeed=std(CarSpeed);
```

Below is shown the graphical representation code for speed, where the maximum value is marked with a black circle.

```
%rappresentazione grafica SPEED
figure (1)
plot(Abscissa,CarSpeed,'g')
hold on
plot(x_MaxV,MaxSpeed,'ok','LineWidth',1.5)
%set(gca,'Xdir','reverse')
xlabel('Abscissa [m]')
ylabel('Car Speed [km/h]')
title('No distraction, No interaction: Car Speed')
xlim([0 1000])
ylim([0 80])
legend('Speed','MaxS')
grid on
hold off
```

Vehicle lateral position was evaluated in the driver performance and car-following interaction section. It was also necessary to find the mean, maximum, and standard deviation values.

```
%%%%%%%%% LATERAL POSITION %%%%%%%%%%
LaneGap=XLXS(PosRoadID,5);

%%%%%%%%% MAX. LANE GAP %%%%%%%%%%%%
MinLaneGap=min(LaneGap);
MaxLaneGap=max(LaneGap);
Pos_Min=find(LaneGap==MinLaneGap);
Pos_Max=find(LaneGap==MaxLaneGap);
x_Min=Abscissa(Pos_Min);
x_Max=Abscissa(Pos_Max);
MAXLG=max(MaxLaneGap, abs(MinLaneGap));

%%%%%%%%% MEAN & SD LANE GAP %%%%%%%%%%%%
MeanLaneGap=mean(LaneGap);
SDLaneGap=std(LaneGap);
```

Below is shown the graphical representation code for lateral position, where the maximum value is marked with a black circle.

```
%rappresentazione grafica LATERAL POSITION
figure (2)
plot(Abscissa,LaneGap,'m')
hold on
plot(x_Max,MaxLaneGap,'ok','LineWidth',1.5)
xlabel('Abscissa [m]')
ylabel('Lateral Position [m]')
title('No distraction, No interaction: Lateral Position')
xlim([0 1000])
ylim([-0.2 1.2])
legend('Lateral Position','MaxLP')
grid on
hold off
```

Time headway was evaluated only in the car-following interaction, which only considered the space window of 700 m, where the test driver had the slow vehicle in front.

```
%%%%%%%%% HEADWAY %%%%%%%%%%%%
Headway_1=XLXS(PosRoadID_1,6);
Headway_2=XLXS(PosRoadID_2,6);
Headway=[Headway_1; Headway_2];

%%%%%%%%% Min. HEADWAY %%%%%%%%%%%%
MinHeadway=min(Headway);
Pos_Max=find(Headway==MinHeadway);
Pos_Max=Pos_Max(end);
x_MaxHW=AbscissaHW(Pos_Max);
```

Below is shown the graphical representation code for headway, where the minimum value is marked with a black circle.

```
%rappresentazione grafica HEADWAY
figure(4)
plot(AbscissaHW,Headway,'c','LineWidth',1.5)
hold on
plot(x_MaxHW,MinHeadway,'ok','LineWidth',1.5)
xlabel('Abscissa [m]')
ylabel('Headway [s]')
title('No distraction, Car interaction: Headway')
xlim([0 700])
ylim([0 10])
legend('Headway','MinHeadway')
grid on
hold off
```

C. List of participants

#TD	Gender	Driving experience [km/year]	Driving experience [years]	Age	Number of crashes
1	F	10000	9	28	0
2	M	12000	8	27	0
3	M	10000	7	26	0
4	M	5000	13	32	0
5	M	15000	8	26	0
6	F	10000	8	26	0
7	M	1300	8	26	1
8	M	15000	7	26	0
9	F	500	9	28	1
10	M	8000	10	29	0
11	M	1000	7	26	0
12	M	30000	10	28	0
13	M	15000	9	28	0
14	F	5000	13	32	0
15	M	3000	14	33	0
16	M	15000	13	31	1
17	M	25000	16	35	1
18	F	20000	12	30	1
19	F	2000	5	27	0
20	F	5000	7	26	0
21	F	10000	14	32	0
22	M	500	14	33	2
23	F	15000	12	31	0
24	F	1000	7	25	0
25	M	15000	7	25	1
26	F	1000	9	28	0
27	F	12000	10	28	0
28	F	8000	13	32	1
29	F	1000	10	28	0
30	F	5000	8	26	0

D. Driving scenarios

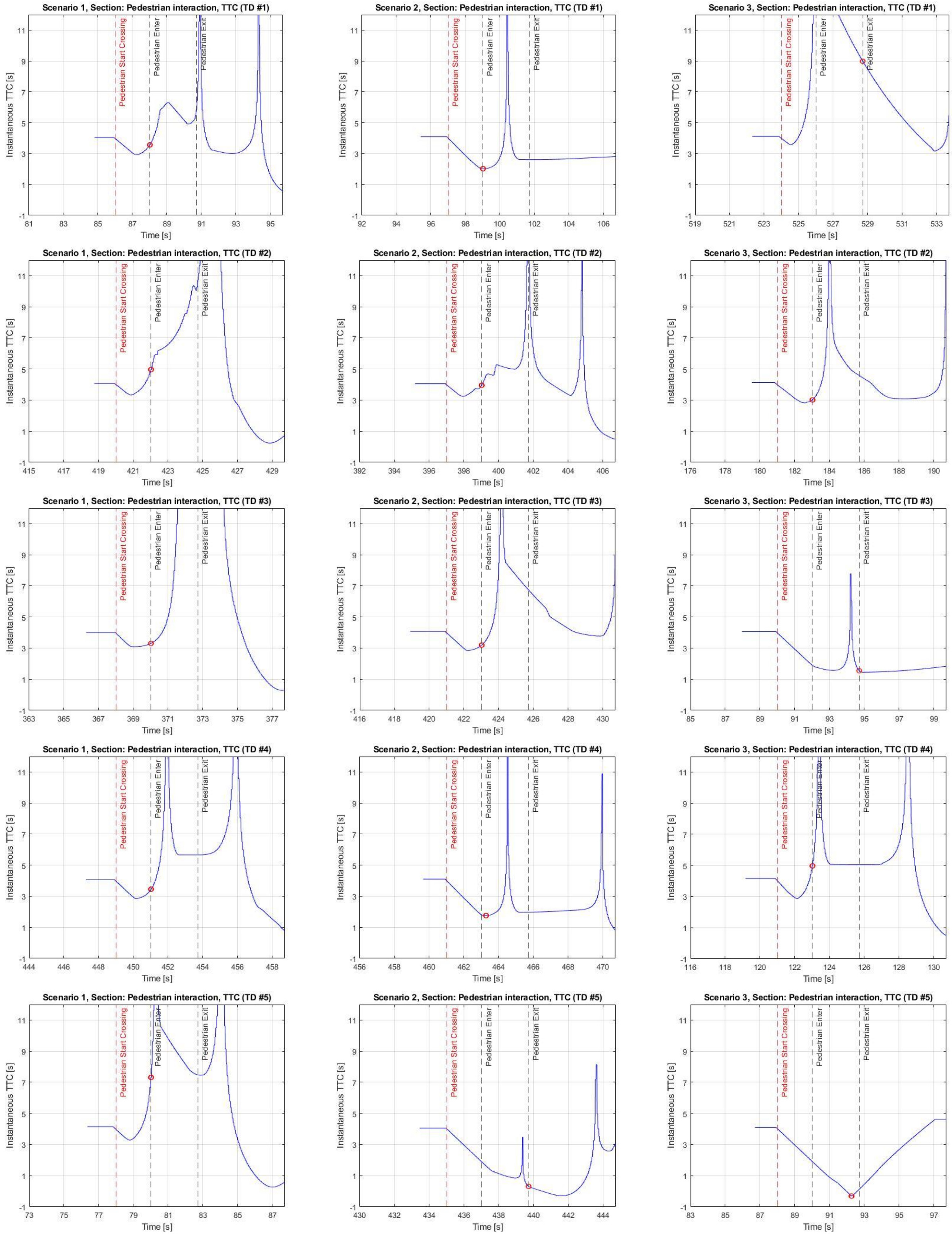
Distraction type	
1	Baseline
2	Distraction
3	Distraction with DDW

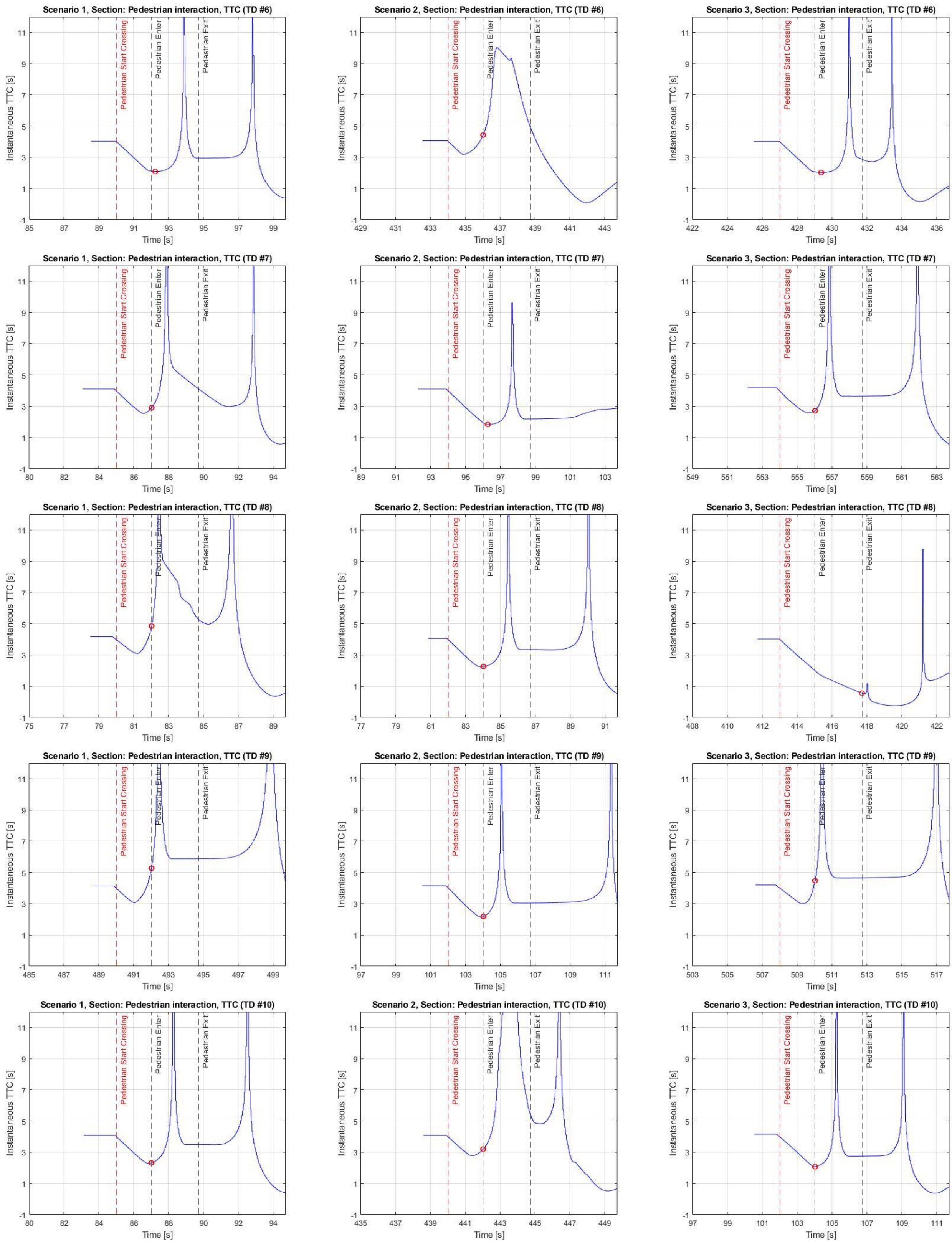
Direction	
D	Direct
R	Return

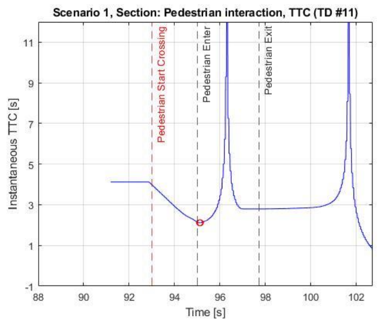
The letters A and B refer to the two types of scenarios, slightly different in the appearance of the objects, vehicle traffic, and pedestrian and cyclists in the environment, to avoid familiarity. In the baseline condition, scenarios A and B were not considered since the participant only had to drive this distraction type one in the entire experiment and did not face the familiarity issue mentioned above

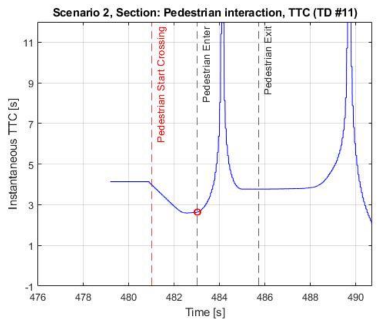
TD	Scenario		
1	2-D-A	3-R-B	1-D
2	3-D-A	1-R	2-R-B
3	3-D-B	2-R-A	1-R
4	3-D-A	2-R-B	1-R
5	3-D-B	2-R-A	1-D
6	1-D	3-R-B	2-R-A
7	3-R-A	1-D	2-D-B
8	2-D-A	3-R-B	1-D
9	3-R-A	2-D-B	1-R
10	1-D	2-R-A	3-D-B
11	1-D	2-R-B	3-D-A
12	1-D	2-R-A	3-D-B
13	2-D-A	1-R	3-R-B
14	2-R-A	3-D-B	1-D
15	1-D	3-R-A	2-D-B
16	2-R-A	1-D	3-R-B
17	1-D	2-R-A	3-D-B
18	1-R	3-D-A	2-R-B
19	2-D-A	1-R	3-R-B
20	1-D	2-R-A	3-R-B
21	2-R-A	3-D-B	1-D
22	1-D	2-R-A	3-R-B
23	1-D	3-R-A	2-D-B
24	1-D	3-R-A	2-R-B
25	1-R	3-D-A	2-D-B
26	1-R	2-D-A	3-R-B
27	3-D-A	1-R	2-D-B
28	2-D-A	1-R	3-R-B
29	2-D-A	3-R-B	1-R
30	1-D	2-R-A	3-D-B

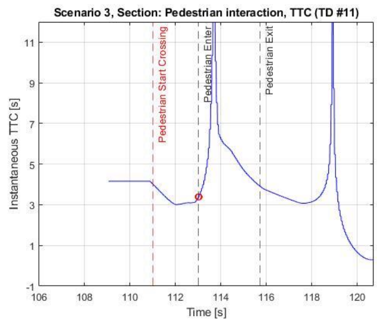
E. MTTC graphs (Pedestrian interaction)

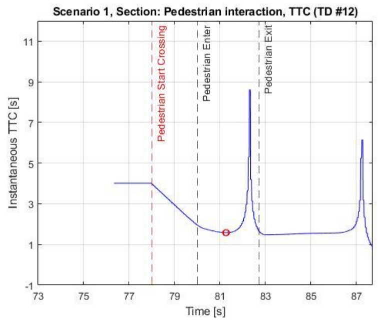


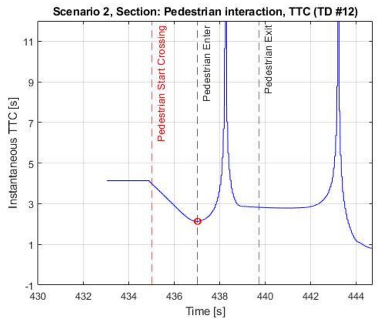

Scenario 1, Section: Pedestrian interaction, TTC (TD #6)
Scenario 2, Section: Pedestrian interaction, TTC (TD #6)
Scenario 3, Section: Pedestrian interaction, TTC (TD #6)
Scenario 1, Section: Pedestrian interaction, TTC (TD #7)
Scenario 2, Section: Pedestrian interaction, TTC (TD #7)
Scenario 3, Section: Pedestrian interaction, TTC (TD #7)
Scenario 1, Section: Pedestrian interaction, TTC (TD #8)
Scenario 2, Section: Pedestrian interaction, TTC (TD #8)
Scenario 3, Section: Pedestrian interaction, TTC (TD #8)
Scenario 1, Section: Pedestrian interaction, TTC (TD #9)
Scenario 2, Section: Pedestrian interaction, TTC (TD #9)
Scenario 3, Section: Pedestrian interaction, TTC (TD #9)
Scenario 1, Section: Pedestrian interaction, TTC (TD #10)
Scenario 2, Section: Pedestrian interaction, TTC (TD #10)
Scenario 3, Section: Pedestrian interaction, TTC (TD #10)
Instantaneous TTC [s]
Time [s]
Pedestrian Start Crossing
Pedestrian Enter
Pedestrian Exit

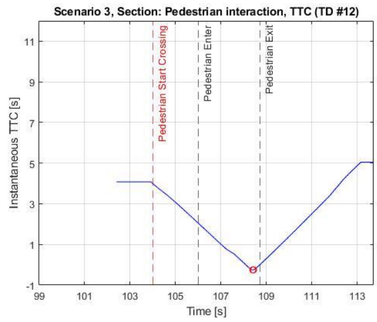

Scenario 1, Section: Pedestrian interaction, TTC (TD #11)
Pedestrian Start Crossing
Pedestrian Enter
Pedestrian Exit
Instantaneous TTC [s]
Time [s]

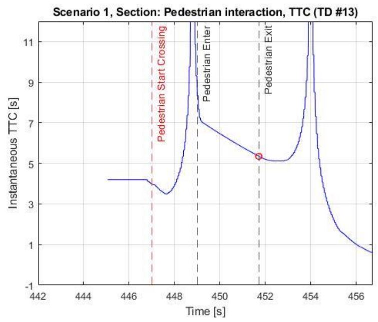

Scenario 2, Section: Pedestrian interaction, TTC (TD #11)
Pedestrian Start Crossing
Pedestrian Enter
Pedestrian Exit
Instantaneous TTC [s]
Time [s]

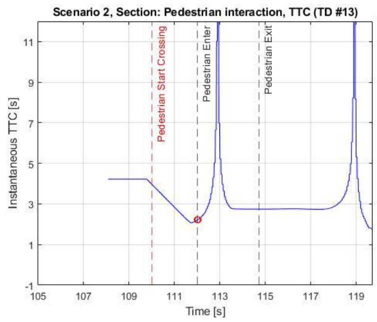

Scenario 3, Section: Pedestrian interaction, TTC (TD #11)
Pedestrian Start Crossing
Pedestrian Enter
Pedestrian Exit
Instantaneous TTC [s]
Time [s]

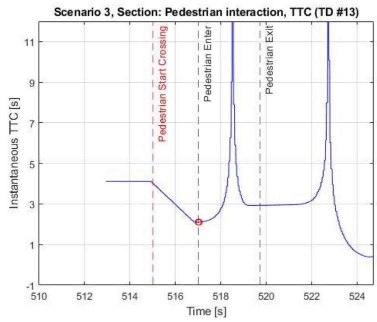

Scenario 1, Section: Pedestrian interaction, TTC (TD #12)
Pedestrian Start Crossing
Pedestrian Enter
Pedestrian Exit
Instantaneous TTC [s]
Time [s]

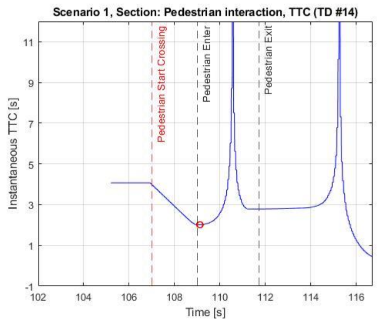

Scenario 2, Section: Pedestrian interaction, TTC (TD #12)
Pedestrian Start Crossing
Pedestrian Enter
Pedestrian Exit
Instantaneous TTC [s]
Time [s]

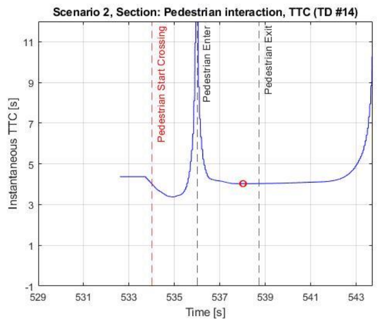

Scenario 3, Section: Pedestrian interaction, TTC (TD #12)
Pedestrian Start Crossing
Pedestrian Enter
Pedestrian Exit
Instantaneous TTC [s]
Time [s]

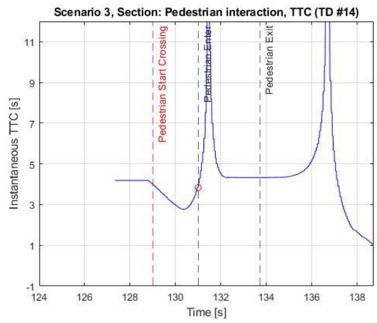

Scenario 1, Section: Pedestrian interaction, TTC (TD #13)
Pedestrian Start Crossing
Pedestrian Enter
Pedestrian Exit
Instantaneous TTC [s]
Time [s]

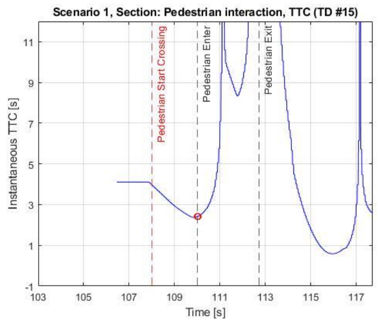

Scenario 2, Section: Pedestrian interaction, TTC (TD #13)
Pedestrian Start Crossing
Pedestrian Enter
Pedestrian Exit
Instantaneous TTC [s]
Time [s]

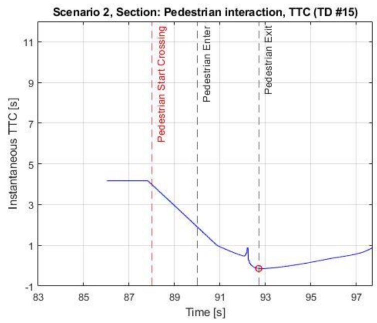

Scenario 3, Section: Pedestrian interaction, TTC (TD #13)
Pedestrian Start Crossing
Pedestrian Enter
Pedestrian Exit
Instantaneous TTC [s]
Time [s]

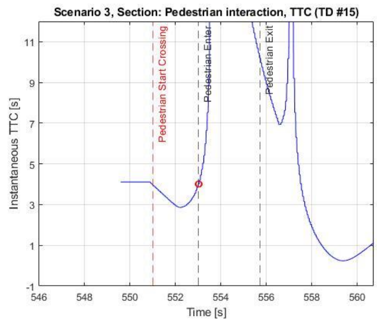

Scenario 1, Section: Pedestrian interaction, TTC (TD #14)
Pedestrian Start Crossing
Pedestrian Enter
Pedestrian Exit
Instantaneous TTC [s]
Time [s]

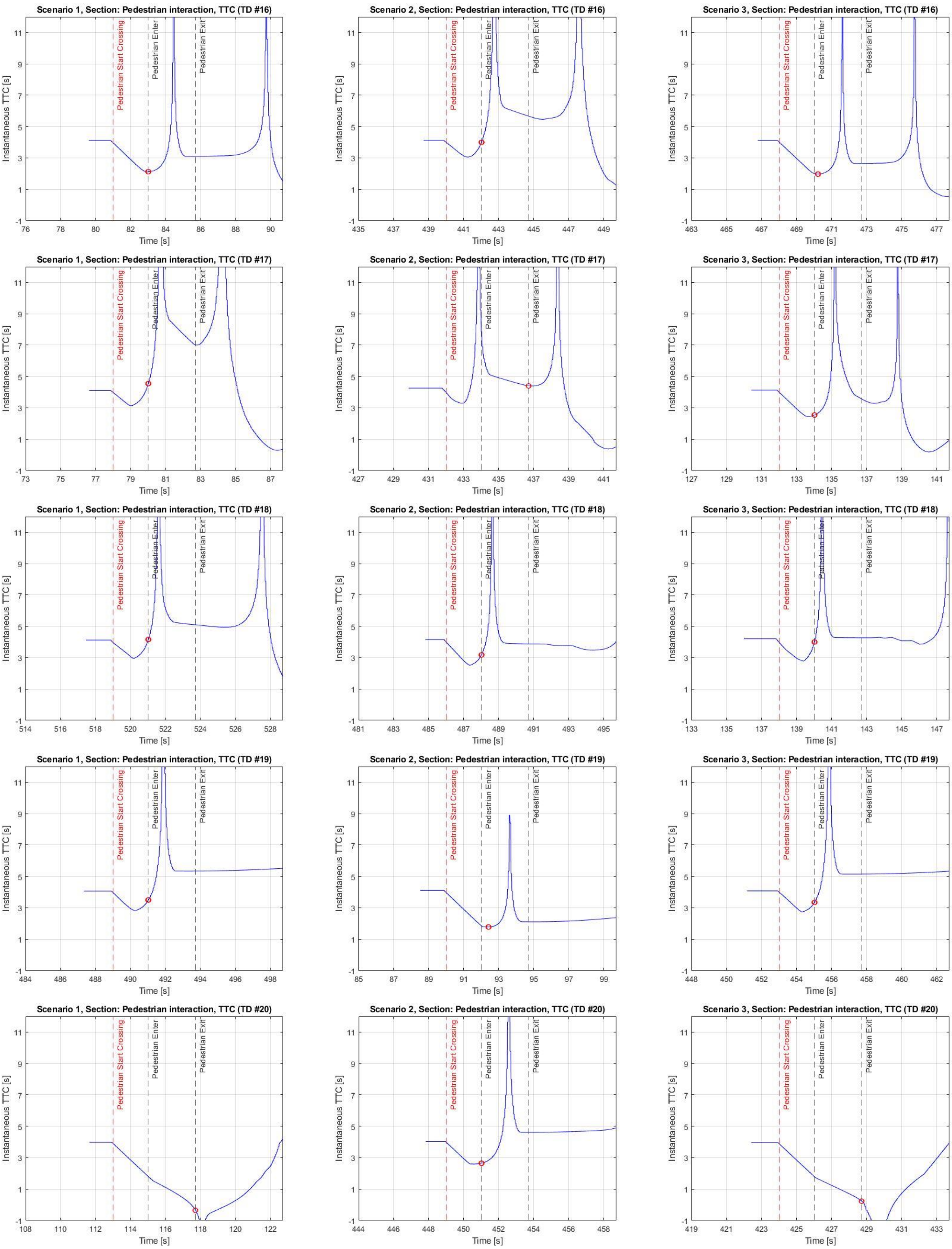

Scenario 2, Section: Pedestrian interaction, TTC (TD #14)
Pedestrian Start Crossing
Pedestrian Enter
Pedestrian Exit
Instantaneous TTC [s]
Time [s]

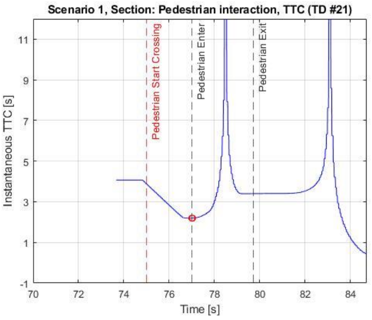

Scenario 3, Section: Pedestrian interaction, TTC (TD #14)
Pedestrian Start Crossing
Pedestrian Enter
Pedestrian Exit
Instantaneous TTC [s]
Time [s]

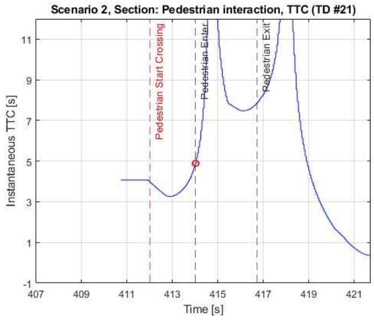

Scenario 1, Section: Pedestrian interaction, TTC (TD #15)
Pedestrian Start Crossing
Pedestrian Enter
Pedestrian Exit
Instantaneous TTC [s]
Time [s]

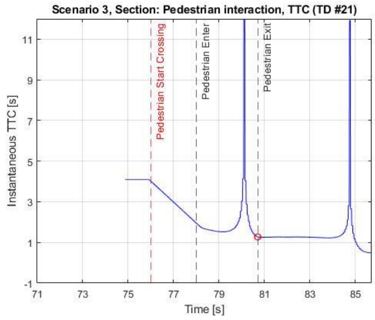

Scenario 2, Section: Pedestrian interaction, TTC (TD #15)
Pedestrian Start Crossing
Pedestrian Enter
Pedestrian Exit
Instantaneous TTC [s]
Time [s]

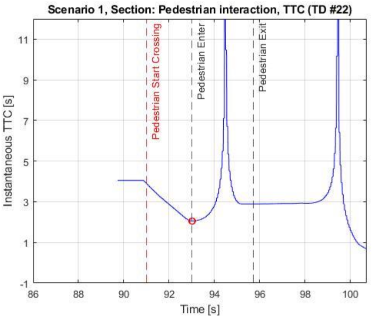

Scenario 3, Section: Pedestrian interaction, TTC (TD #15)
Pedestrian Start Crossing
Pedestrian Enter
Pedestrian Exit
Instantaneous TTC [s]
Time [s]

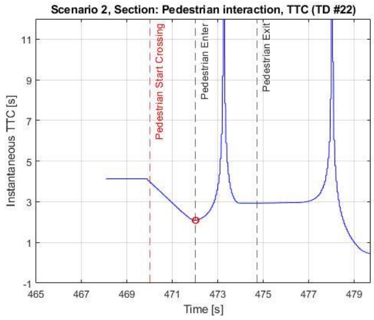

Scenario 1, Section: Pedestrian interaction, TTC (TD #16)
Scenario 2, Section: Pedestrian interaction, TTC (TD #16)
Scenario 3, Section: Pedestrian interaction, TTC (TD #16)
Scenario 1, Section: Pedestrian interaction, TTC (TD #17)
Scenario 2, Section: Pedestrian interaction, TTC (TD #17)
Scenario 3, Section: Pedestrian interaction, TTC (TD #17)
Scenario 1, Section: Pedestrian interaction, TTC (TD #18)
Scenario 2, Section: Pedestrian interaction, TTC (TD #18)
Scenario 3, Section: Pedestrian interaction, TTC (TD #18)
Scenario 1, Section: Pedestrian interaction, TTC (TD #19)
Scenario 2, Section: Pedestrian interaction, TTC (TD #19)
Scenario 3, Section: Pedestrian interaction, TTC (TD #19)
Scenario 1, Section: Pedestrian interaction, TTC (TD #20)
Scenario 2, Section: Pedestrian interaction, TTC (TD #20)
Scenario 3, Section: Pedestrian interaction, TTC (TD #20)
Instantaneous TTC [s]
Time [s]
Pedestrian Start Crossing
Pedestrian Enter
Pedestrian Exit

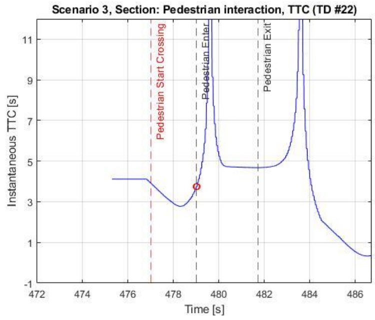

Scenario 1, Section: Pedestrian interaction, TTC (TD #21)
Pedestrian Start Crossing
Pedestrian Enter
Pedestrian Exit
Instantaneous TTC [s]
Time [s]

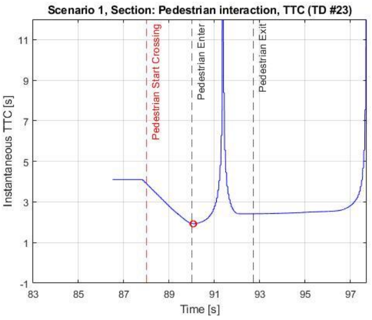

Scenario 2, Section: Pedestrian interaction, TTC (TD #21)
Pedestrian Start Crossing
Pedestrian Enter
Pedestrian Exit
Instantaneous TTC [s]
Time [s]

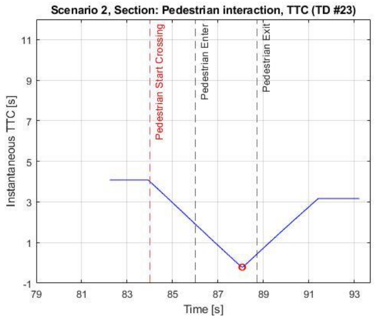

Scenario 3, Section: Pedestrian interaction, TTC (TD #21)
Pedestrian Start Crossing
Pedestrian Enter
Pedestrian Exit
Instantaneous TTC [s]
Time [s]

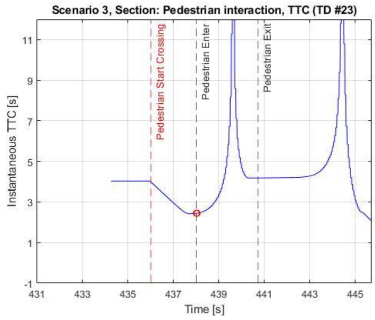

Scenario 1, Section: Pedestrian interaction, TTC (TD #22)
Pedestrian Start Crossing
Pedestrian Enter
Pedestrian Exit
Instantaneous TTC [s]
Time [s]

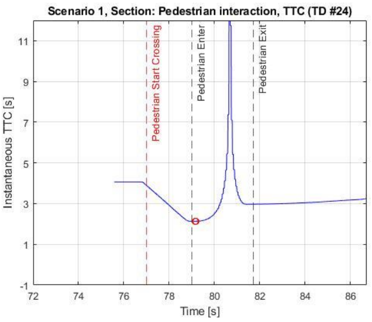

Scenario 2, Section: Pedestrian interaction, TTC (TD #22)
Pedestrian Start Crossing
Pedestrian Enter
Pedestrian Exit
Instantaneous TTC [s]
Time [s]

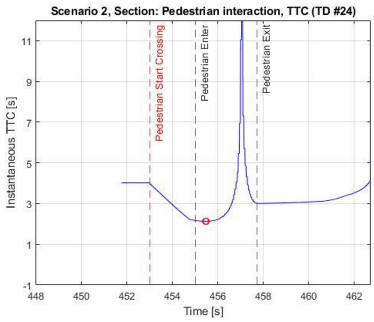

Scenario 3, Section: Pedestrian interaction, TTC (TD #22)
Pedestrian Start Crossing
Pedestrian Enter
Pedestrian Exit
Instantaneous TTC [s]
Time [s]

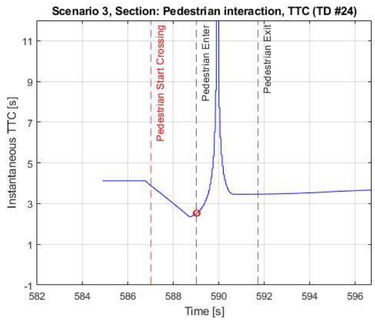

Scenario 1, Section: Pedestrian interaction, TTC (TD #23)
Pedestrian Start Crossing
Pedestrian Enter
Pedestrian Exit
Instantaneous TTC [s]
Time [s]

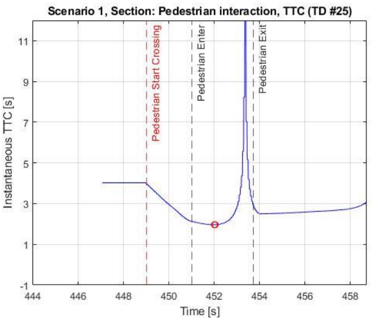

Scenario 2, Section: Pedestrian interaction, TTC (TD #23)
Pedestrian Start Crossing
Pedestrian Enter
Pedestrian Exit
Instantaneous TTC [s]
Time [s]

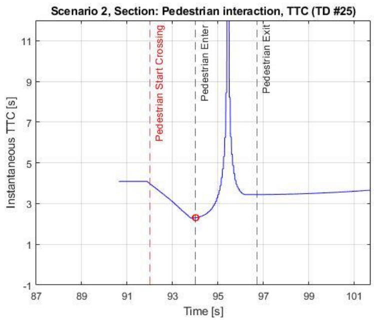

Scenario 3, Section: Pedestrian interaction, TTC (TD #23)
Pedestrian Start Crossing
Pedestrian Enter
Pedestrian Exit
Instantaneous TTC [s]
Time [s]

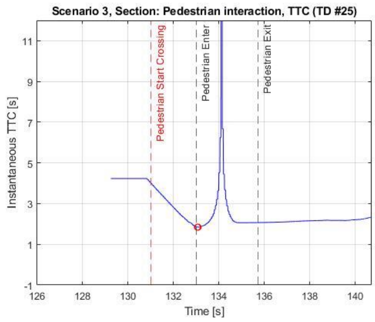

Scenario 1, Section: Pedestrian interaction, TTC (TD #24)
Pedestrian Start Crossing
Pedestrian Enter
Pedestrian Exit
Instantaneous TTC [s]
Time [s]

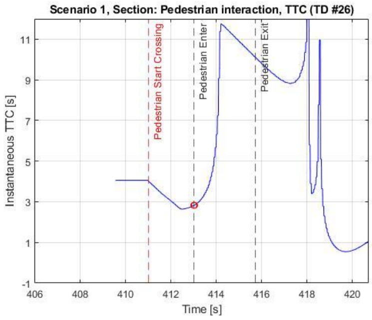

Scenario 2, Section: Pedestrian interaction, TTC (TD #24)
Pedestrian Start Crossing
Pedestrian Enter
Pedestrian Exit
Instantaneous TTC [s]
Time [s]

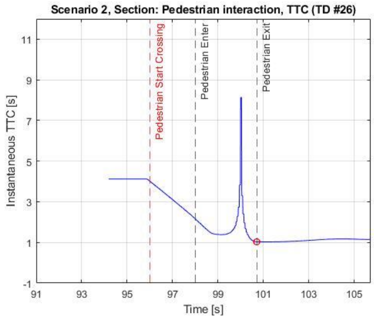

Scenario 3, Section: Pedestrian interaction, TTC (TD #24)
Pedestrian Start Crossing
Pedestrian Enter
Pedestrian Exit
Instantaneous TTC [s]
Time [s]

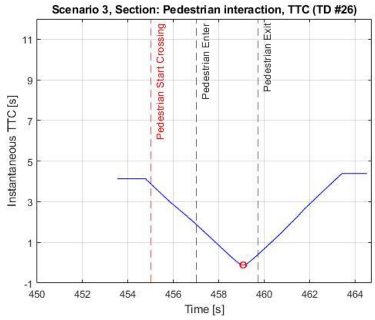

Scenario 1, Section: Pedestrian interaction, TTC (TD #25)
Pedestrian Start Crossing
Pedestrian Enter
Pedestrian Exit
Instantaneous TTC [s]
Time [s]

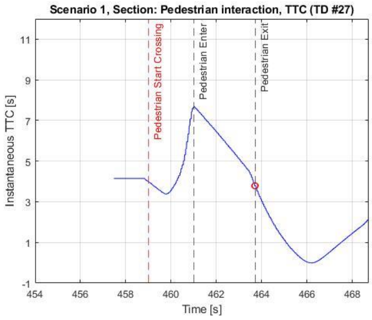

Scenario 2, Section: Pedestrian interaction, TTC (TD #25)
Pedestrian Start Crossing
Pedestrian Enter
Pedestrian Exit
Instantaneous TTC [s]
Time [s]

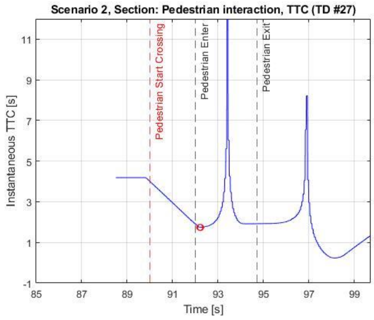

Scenario 3, Section: Pedestrian interaction, TTC (TD #25)
Pedestrian Start Crossing
Pedestrian Enter
Pedestrian Exit
Instantaneous TTC [s]
Time [s]

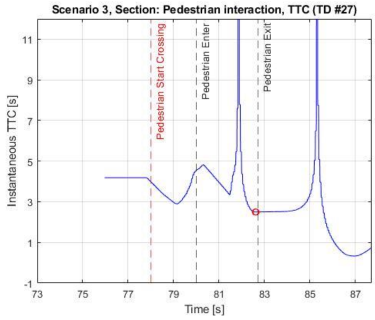

Scenario 1, Section: Pedestrian interaction, TTC (TD #26)
Pedestrian Start Crossing
Pedestrian Enter
Pedestrian Exit
Instantaneous TTC [s]
Time [s]

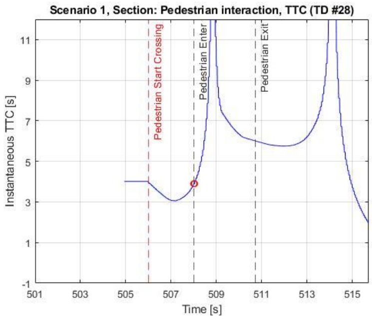

Scenario 2, Section: Pedestrian interaction, TTC (TD #26)
Pedestrian Start Crossing
Pedestrian Enter
Pedestrian Exit
Instantaneous TTC [s]
Time [s]

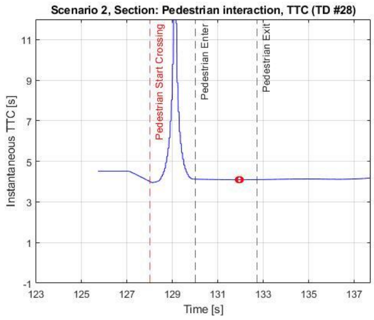

Scenario 3, Section: Pedestrian interaction, TTC (TD #26)
Pedestrian Start Crossing
Pedestrian Enter
Pedestrian Exit
Instantaneous TTC [s]
Time [s]

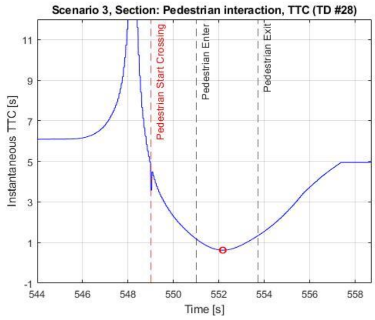

Scenario 1, Section: Pedestrian interaction, TTC (TD #27)
Pedestrian Start Crossing
Pedestrian Enter
Pedestrian Exit
Instantaneous TTC [s]
Time [s]

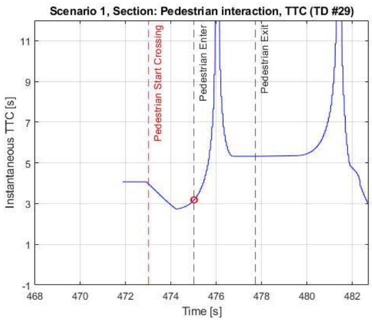

Scenario 2, Section: Pedestrian interaction, TTC (TD #27)
Pedestrian Start Crossing
Pedestrian Enter
Pedestrian Exit
Instantaneous TTC [s]
Time [s]

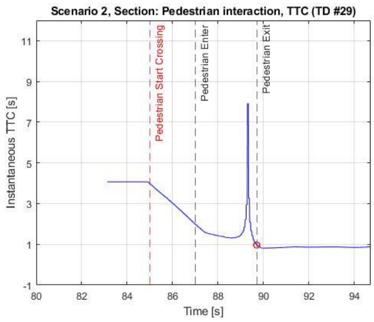

Scenario 3, Section: Pedestrian interaction, TTC (TD #27)
Pedestrian Start Crossing
Pedestrian Enter
Pedestrian Exit
Instantaneous TTC [s]
Time [s]

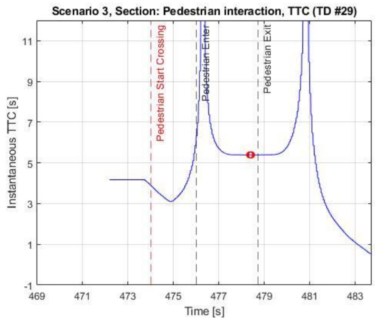

Scenario 1, Section: Pedestrian interaction, TTC (TD #28)
Pedestrian Start Crossing
Pedestrian Enter
Pedestrian Exit
Instantaneous TTC [s]
Time [s]

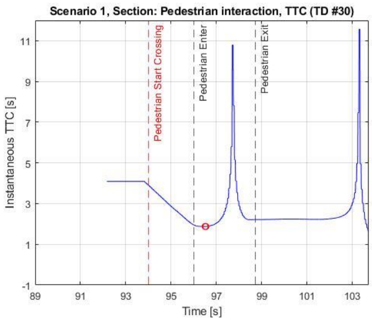

Scenario 2, Section: Pedestrian interaction, TTC (TD #28)
Pedestrian Start Crossing
Pedestrian Enter
Pedestrian Exit
Instantaneous TTC [s]
Time [s]

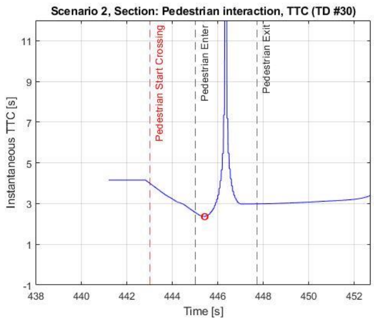

Scenario 3, Section: Pedestrian interaction, TTC (TD #28)
Pedestrian Start Crossing
Pedestrian Enter
Pedestrian Exit
Instantaneous TTC [s]
Time [s]

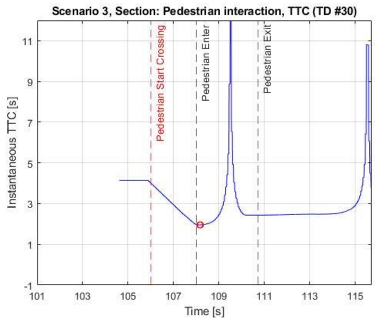

Scenario 1, Section: Pedestrian interaction, TTC (TD #29)
Pedestrian Start Crossing
Pedestrian Enter
Pedestrian Exit
Instantaneous TTC [s]
Time [s]


Scenario 2, Section: Pedestrian interaction, TTC (TD #29)
Pedestrian Start Crossing
Pedestrian Enter
Pedestrian Exit
Instantaneous TTC [s]
Time [s]


Scenario 3, Section: Pedestrian interaction, TTC (TD #29)
Pedestrian Start Crossing
Pedestrian Enter
Pedestrian Exit
Instantaneous TTC [s]
Time [s]


Scenario 1, Section: Pedestrian interaction, TTC (TD #30)
Pedestrian Start Crossing
Pedestrian Enter
Pedestrian Exit
Instantaneous TTC [s]
Time [s]


Scenario 2, Section: Pedestrian interaction, TTC (TD #30)
Pedestrian Start Crossing
Pedestrian Enter
Pedestrian Exit
Instantaneous TTC [s]
Time [s]

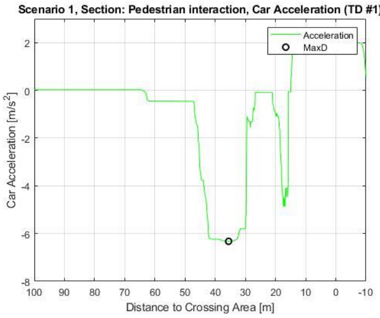

Scenario 3, Section: Pedestrian interaction, TTC (TD #30)
Pedestrian Start Crossing
Pedestrian Enter
Pedestrian Exit
Instantaneous TTC [s]
Time [s]

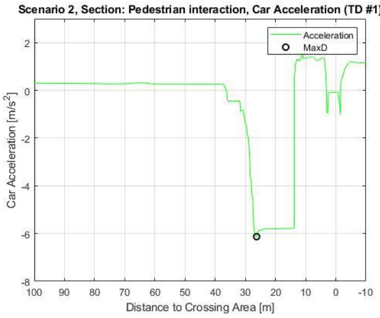
F. PET results (Pedestrian interaction)

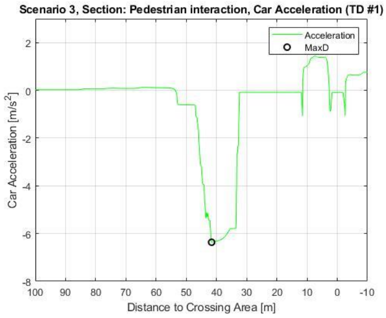
# TD	At conflict point	Baseline	Distraction	Distraction + DDW
1	*PedTime*	01:30.499	01:40.899	08:48.146
	VehTime	01:35.899	01:49.199	08:54.397
	PET	**5.40**	**8.30**	**6.25**
2	*PedTime*	07:04.795	06:41.395	03:05.697
	VehTime	07:08.645	06:46.094	03:12.697
	PET	**3.85**	**4.70**	**7.00**
3	*PedTime*	06:12.294	07:05.444	01:34.499
	VehTime	06:16.845	07:11.594	01:44.898
	PET	**4.55**	**6.15**	**10.40**
4	*PedTime*	07:33.345	07:45.894	02:05.048
	VehTime	07:38.644	07:51.144	02:10.698
	PET	**5.30**	**5.25**	**5.65**
5	*PedTime*	01:21.949	07:18.293	01:32.248
	VehTime	01:26.199	07:20.093	01:32.248
	PET	**4.25**	**1.80**	**0.00**
6	*PedTime*	01:34.899	07:19.092	07:11.044
	VehTime	01:39.749	07:22.042	07:14.094
	PET	**4.85**	**2.95**	**3.05**
7	*PedTime*	01:29.348	01:38.097	09:18.190
	VehTime	01:33.748	01:50.447	09:23.540
	PET	**4.40**	**12.35**	**5.35**
8	*PedTime*	01:23.798	01:26.448	06:57.893
	VehTime	01:28.098	01:31.648	06:58.493
	PET	**4.30**	**5.20**	**0.60**
9	*PedTime*	08:14.797	01:46.849	08:32.645
	VehTime	08:22.197	01:53.099	08:39.796
	PET	**7.40**	**6.25**	**7.15**
10	*PedTime*	01:29.299	07:24.846	01:46.798
	VehTime	01:34.149	07:28.946	01:50.958
	PET	**4.85**	**4.10**	**4.16**
11	*PedTime*	01:37.248	08:05.343	01:55.249
	VehTime	01:42.748	08:11.494	02:00.149
	PET	**5.50**	**6.15**	**4.90**
12	*PedTime*	01:22.148	07:19.294	01:48.048
	VehTime	01:27.248	07:24.444	01:47.648
	PET	**5.10**	**5.15**	**0.40**
13	*PedTime*	07:31.293	01:54.099	08:39.694
	VehTime	07:36.293	01:59.999	08:44.244
	PET	**5.00**	**5.90**	**4.55**
14	*PedTime*	01:51.249	08:58.593	02:12.898
	VehTime	01:56.349	09:06.693	02:18.648
	PET	**5.10**	**8.10**	**5.75**
15	*PedTime*	01:51.997	01:32.347	09:15.841
	VehTime	01:54.847	01:32.347	09:19.241
	PET	**2.85**	**0.00**	**3.40**
16	*PedTime*	01:25.798	07:24.693	07:52.843
	VehTime	01:31.498	07:30.593	07:57.243
	PET	**5.70**	**5.90**	**4.40**
17	*PedTime*	01:22.848	07:16.393	02:15.947
	VehTime	01:27.348	07:20.893	02:19.697
	PET	**4.50**	**4.50**	**3.75**

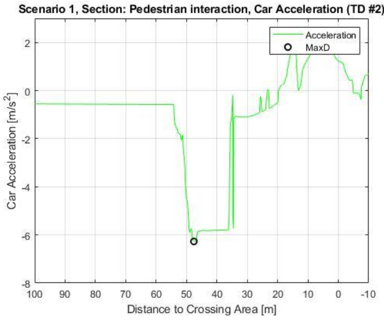
18	*PedTime*	08:43.092	08:10.643	02:22.197
	VehTime	08:49.292	08:17.843	02:29.297
	PET	**6.20**	**7.20**	**7.10**
19	*PedTime*	08:13.240	01:34.748	07:37.391
	VehTime	08:23.591	01:46.848	07:50.391
	PET	**10.35**	**12.10**	**13.00**
20	*PedTime*	01:57.797	07:33.642	07:08.442
	VehTime	01:57.797	07:43.192	07:08.442
	PET	**0.00**	**9.55**	**0.00**
21	*PedTime*	01:19.698	06:56.595	01:20.498
	VehTime	01:24.948	07:01.595	01:24.948
	PET	**5.25**	**5.00**	**4.45**
22	*PedTime*	01:35.649	07:54.297	08:01.147
	VehTime	01:40.999	07:59.397	08:05.797
	PET	**5.35**	**5.10**	**4.65**
23	*PedTime*	01:32.798	01:27.599	07:20.196
	VehTime	01:39.198	01:27.599	07:26.546
	PET	**6.40**	**0.00**	**6.35**
24	*PedTime*	01:21.799	07:37.894	09:51.443
	VehTime	01:29.949	07:44.744	10:02.543
	PET	**8.15**	**6.85**	**11.10**
25	*PedTime*	07:33.497	01:36.799	02:14.898
	VehTime	07:40.347	01:47.249	02:21.598
	PET	**6.85**	**10.45**	**6.70**
26	*PedTime*	06:56.097	01:40.050	07:39.847
	VehTime	06:59.447	01:46.300	07:39.247
	PET	**3.35**	**6.25**	**0.60**
27	*PedTime*	07:42.946	01:34.848	01:22.199
	VehTime	07:45.296	01:38.148	01:26.499
	PET	**2.35**	**3.30**	**4.30**
28	*PedTime*	08:30.694	02:11.698	09:02.144
	VehTime	08:37.044	02:21.448	09:11.044
	PET	**6.35**	**9.75**	**8.90**
29	*PedTime*	07:57.643	01:29.198	07:58.244
	VehTime	08:04.593	01:34.348	08:03.494
	PET	**6.95**	**5.15**	**5.25**
30	*PedTime*	01:38.147	07:27.192	01:50.747
	VehTime	01:43.697	07:34.942	01:56.697
	PET	**5.55**	**7.75**	**5.95**

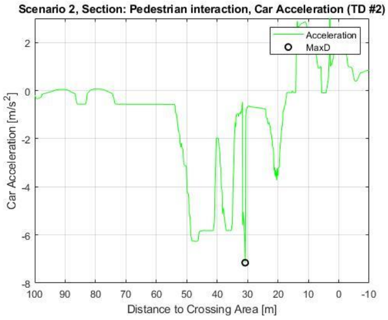
G. Max Deceleration graphs (Pedestrian interaction)

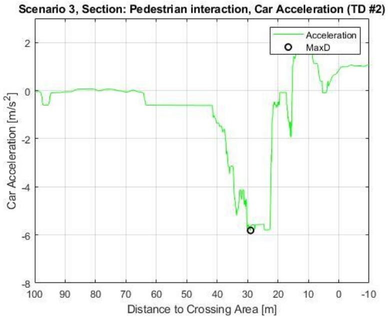


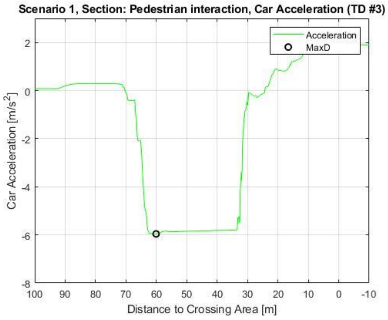


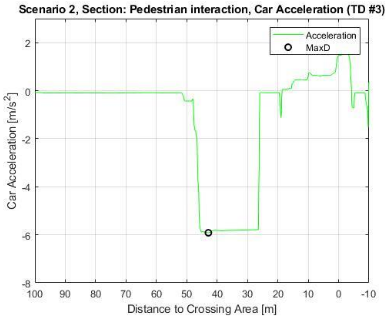


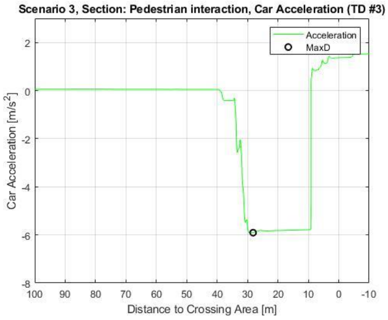


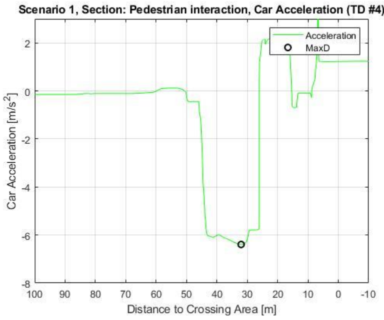


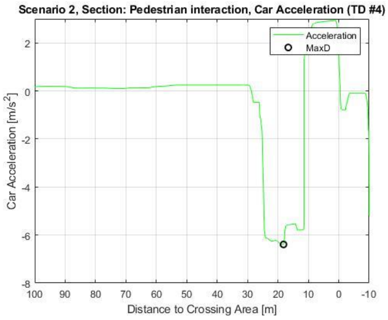


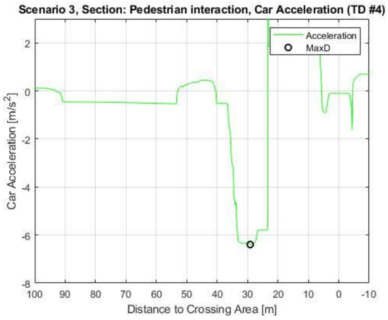


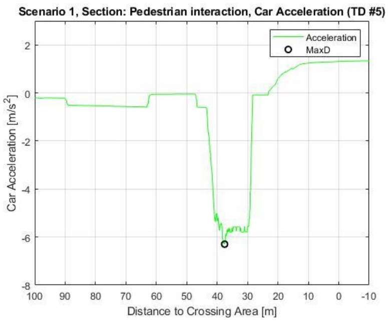


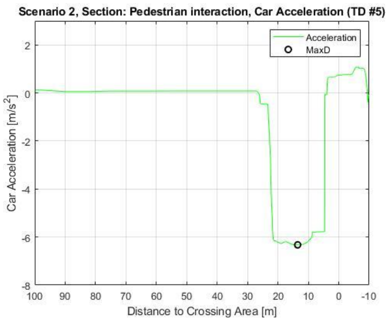


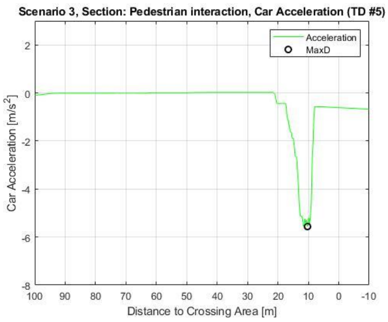




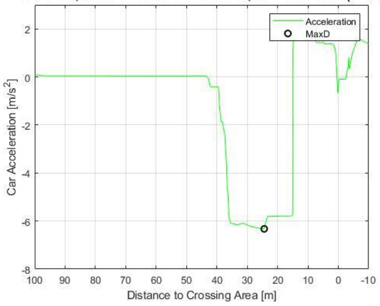




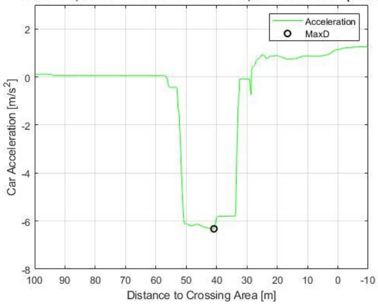




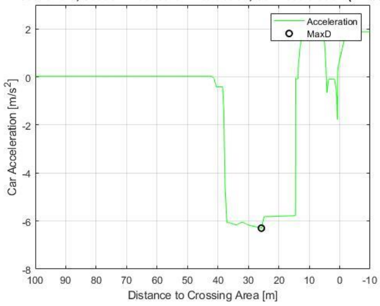
Scenario 1, Section: Pedestrian interaction, Car Acceleration (TD #6)



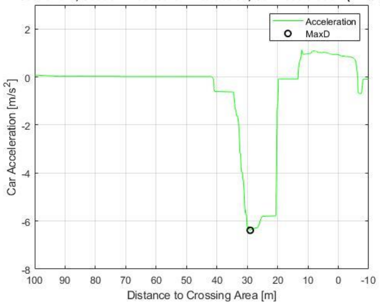
Scenario 2, Section: Pedestrian interaction, Car Acceleration (TD #6)



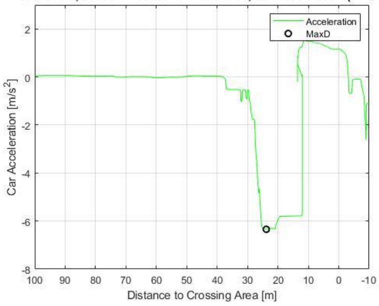
Scenario 3, Section: Pedestrian interaction, Car Acceleration (TD #6)



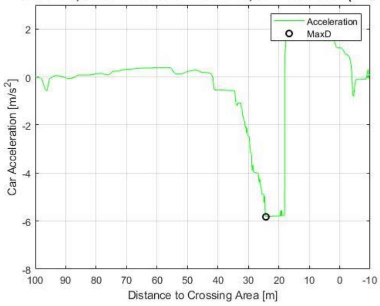
Scenario 1, Section: Pedestrian interaction, Car Acceleration (TD #7)



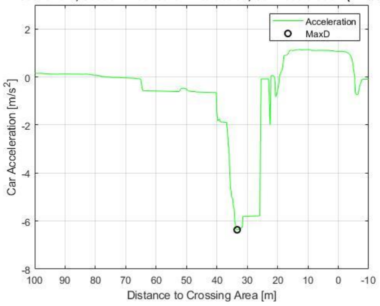
Scenario 2, Section: Pedestrian interaction, Car Acceleration (TD #7)



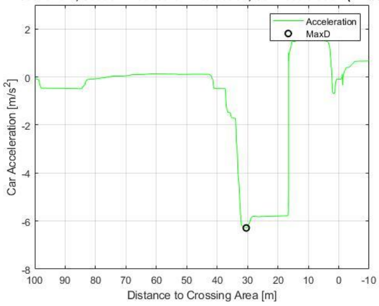
Scenario 3, Section: Pedestrian interaction, Car Acceleration (TD #7)



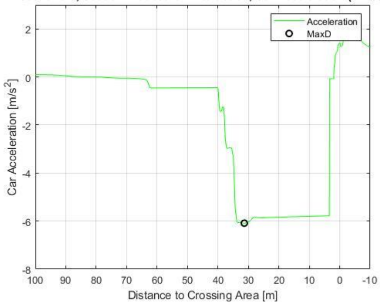
Scenario 1, Section: Pedestrian interaction, Car Acceleration (TD #8)



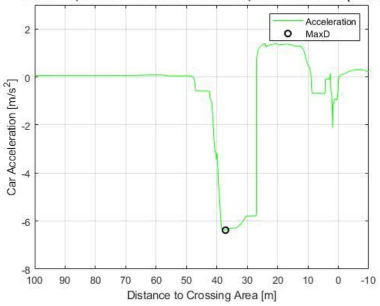
Scenario 2, Section: Pedestrian interaction, Car Acceleration (TD #8)



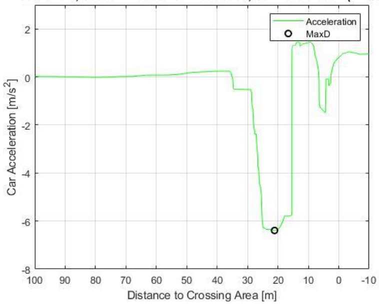
Scenario 3, Section: Pedestrian interaction, Car Acceleration (TD #8)



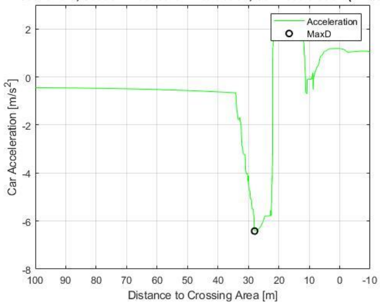
Scenario 1, Section: Pedestrian interaction, Car Acceleration (TD #9)



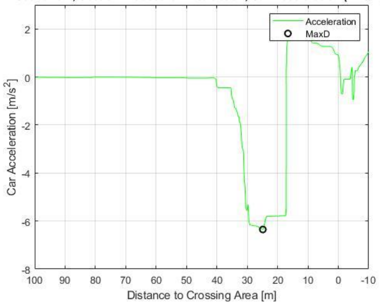
Scenario 2, Section: Pedestrian interaction, Car Acceleration (TD #9)



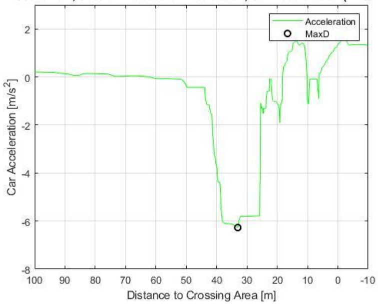
Scenario 3, Section: Pedestrian interaction, Car Acceleration (TD #9)



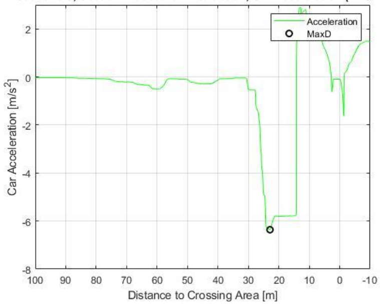
Scenario 1, Section: Pedestrian interaction, Car Acceleration (TD #10)



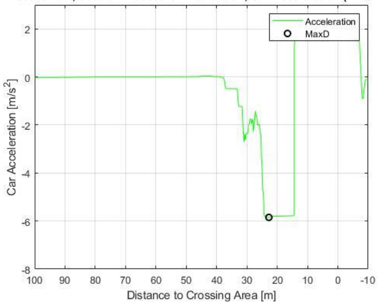
Scenario 2, Section: Pedestrian interaction, Car Acceleration (TD #10)



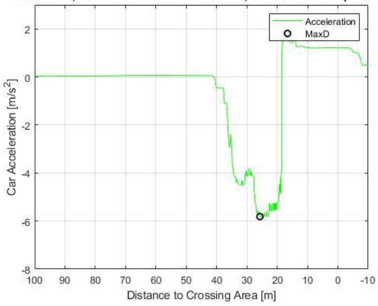
Scenario 3, Section: Pedestrian interaction, Car Acceleration (TD #10)



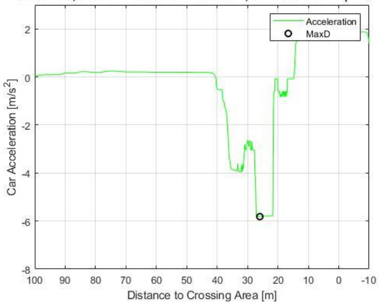
Scenario 1, Section: Pedestrian interaction, Car Acceleration (TD #11)



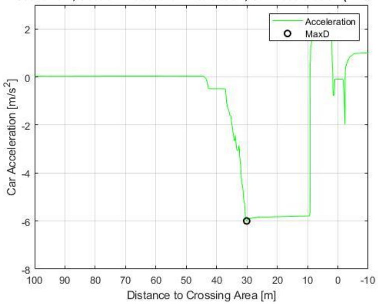
Scenario 2, Section: Pedestrian interaction, Car Acceleration (TD #11)



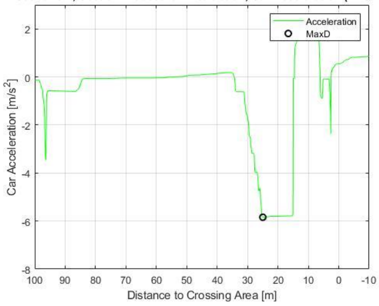
Scenario 3, Section: Pedestrian interaction, Car Acceleration (TD #11)



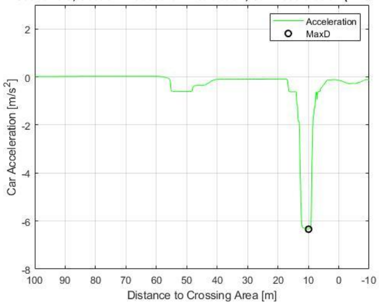
Scenario 1, Section: Pedestrian interaction, Car Acceleration (TD #12)



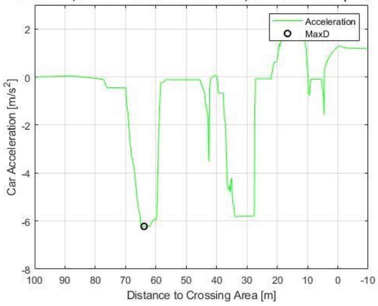
Scenario 2, Section: Pedestrian interaction, Car Acceleration (TD #12)



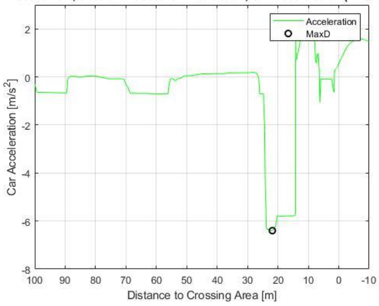
Scenario 3, Section: Pedestrian interaction, Car Acceleration (TD #12)



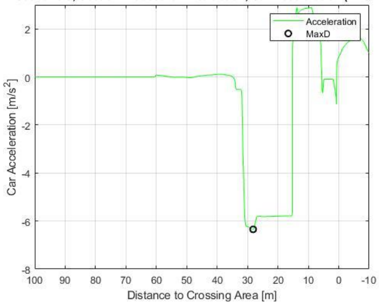
Scenario 1, Section: Pedestrian interaction, Car Acceleration (TD #13)



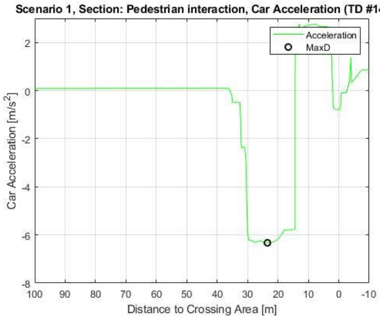
Scenario 2, Section: Pedestrian interaction, Car Acceleration (TD #13)



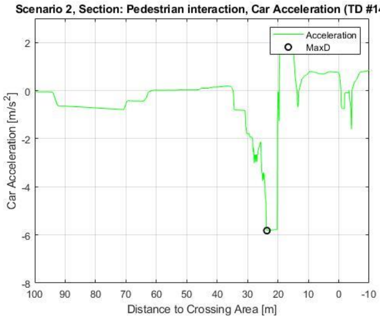
Scenario 3, Section: Pedestrian interaction, Car Acceleration (TD #13)



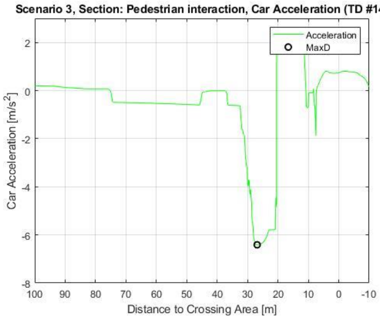
Scenario 1, Section: Pedestrian interaction, Car Acceleration (TD #14)



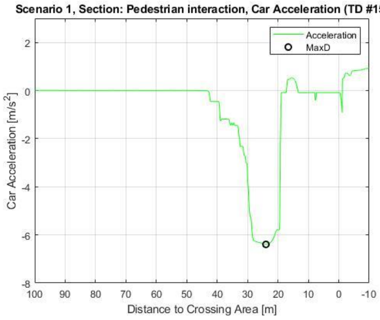
Scenario 2, Section: Pedestrian interaction, Car Acceleration (TD #14)



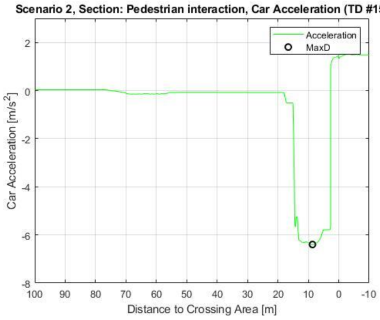
Scenario 3, Section: Pedestrian interaction, Car Acceleration (TD #14)



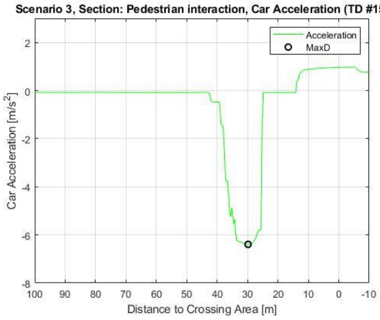
Scenario 1, Section: Pedestrian interaction, Car Acceleration (TD #15)



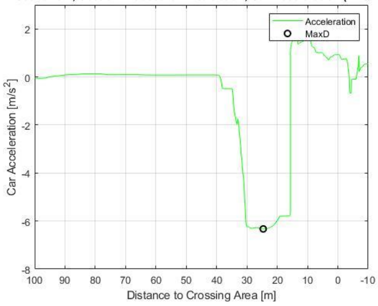
Scenario 2, Section: Pedestrian interaction, Car Acceleration (TD #15)



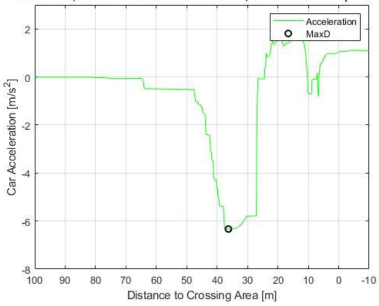
Scenario 3, Section: Pedestrian interaction, Car Acceleration (TD #15)



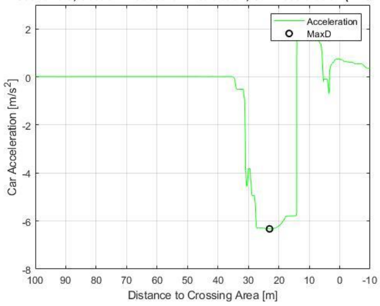
Scenario 1, Section: Pedestrian interaction, Car Acceleration (TD #16)



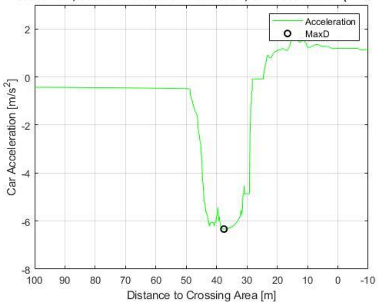
Scenario 2, Section: Pedestrian interaction, Car Acceleration (TD #16)



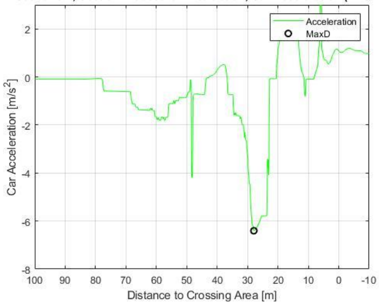
Scenario 3, Section: Pedestrian interaction, Car Acceleration (TD #16)



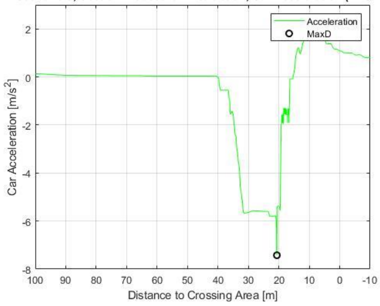
Scenario 1, Section: Pedestrian interaction, Car Acceleration (TD #17)



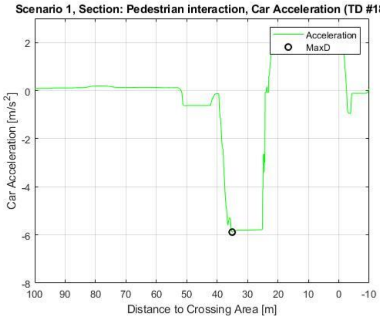
Scenario 2, Section: Pedestrian interaction, Car Acceleration (TD #17)



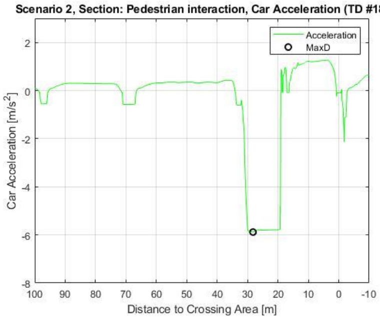
Scenario 3, Section: Pedestrian interaction, Car Acceleration (TD #17)



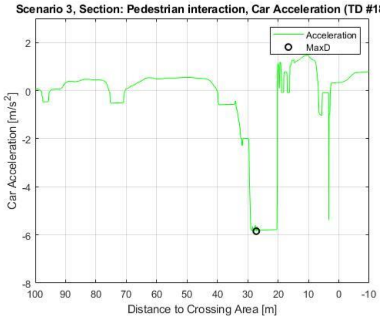
Scenario 1, Section: Pedestrian interaction, Car Acceleration (TD #18)



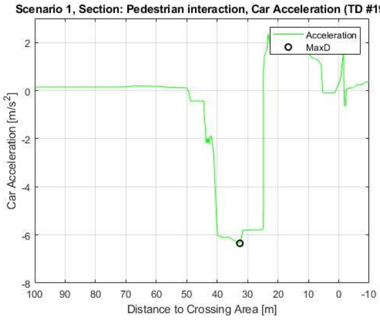
Scenario 2, Section: Pedestrian interaction, Car Acceleration (TD #18)



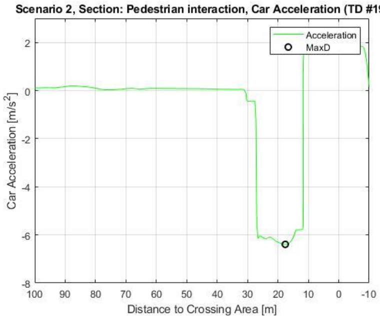
Scenario 3, Section: Pedestrian interaction, Car Acceleration (TD #18)



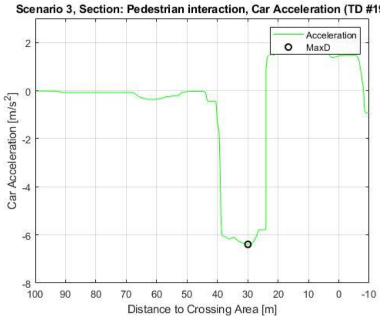
Scenario 1, Section: Pedestrian interaction, Car Acceleration (TD #19)



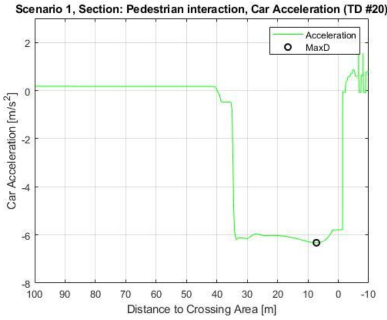
Scenario 2, Section: Pedestrian interaction, Car Acceleration (TD #19)



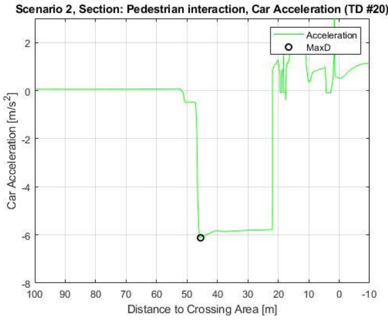
Scenario 3, Section: Pedestrian interaction, Car Acceleration (TD #19)



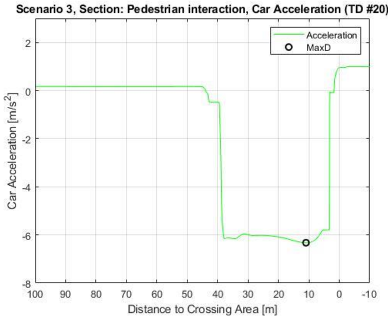
Scenario 1, Section: Pedestrian interaction, Car Acceleration (TD #20)

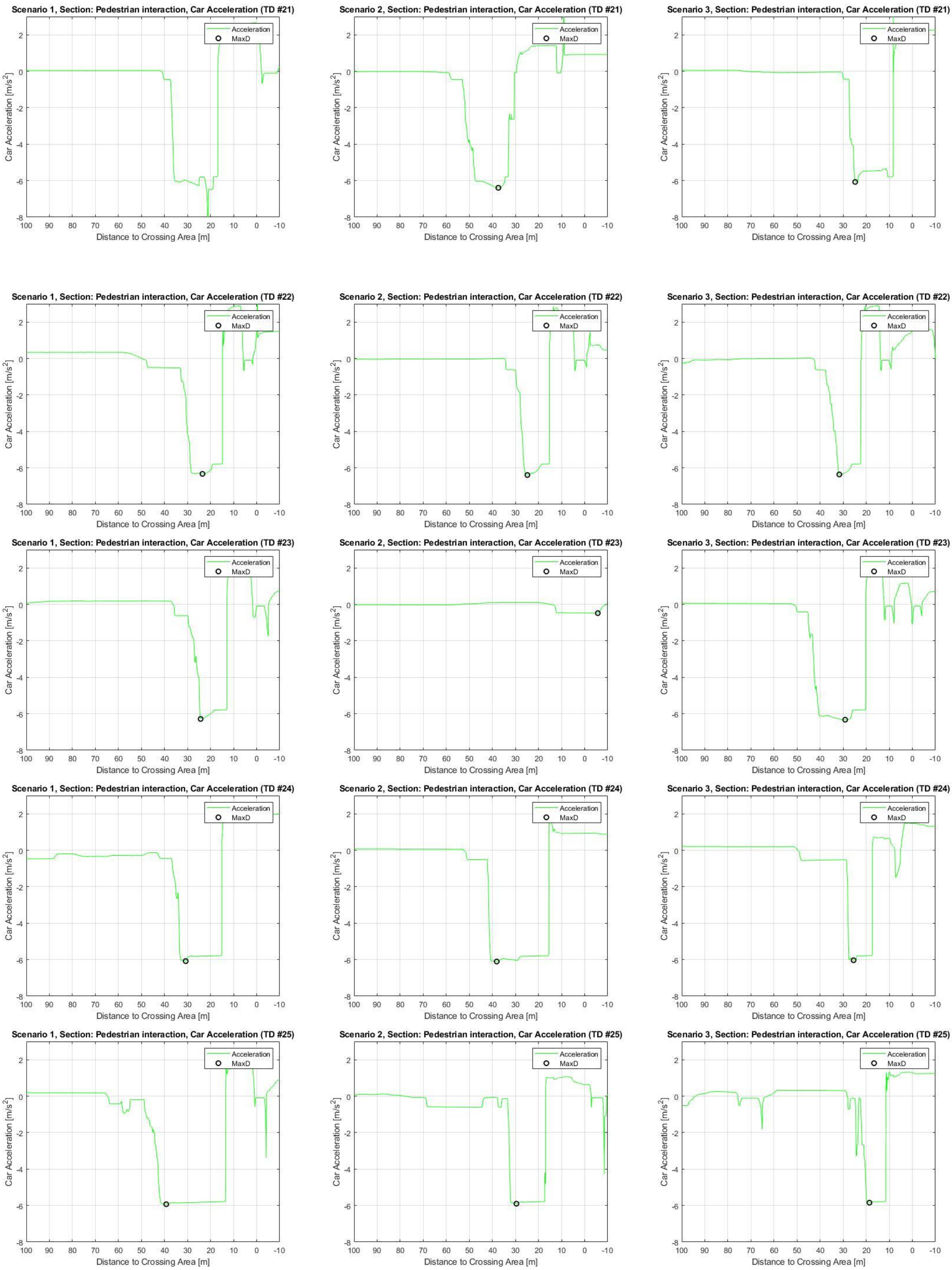


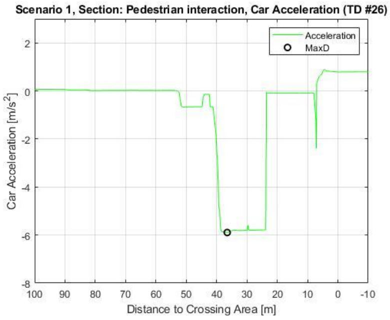
Scenario 2, Section: Pedestrian interaction, Car Acceleration (TD #20)

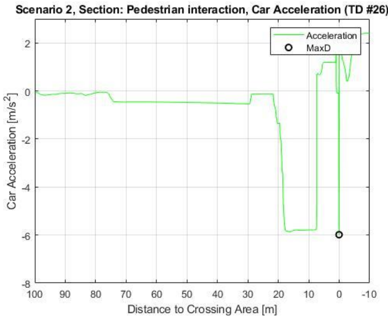


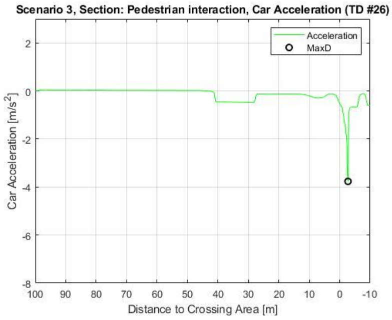
Scenario 3, Section: Pedestrian interaction, Car Acceleration (TD #20)

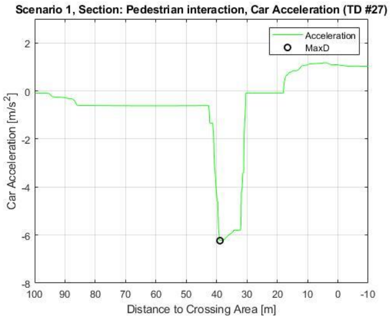


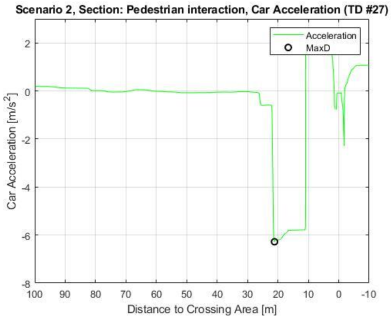

Scenario 1, Section: Pedestrian interaction, Car Acceleration (TD #21)
Scenario 2, Section: Pedestrian interaction, Car Acceleration (TD #21)
Scenario 3, Section: Pedestrian interaction, Car Acceleration (TD #21)
Scenario 1, Section: Pedestrian interaction, Car Acceleration (TD #22)
Scenario 2, Section: Pedestrian interaction, Car Acceleration (TD #22)
Scenario 3, Section: Pedestrian interaction, Car Acceleration (TD #22)
Scenario 1, Section: Pedestrian interaction, Car Acceleration (TD #23)
Scenario 2, Section: Pedestrian interaction, Car Acceleration (TD #23)
Scenario 3, Section: Pedestrian interaction, Car Acceleration (TD #23)
Scenario 1, Section: Pedestrian interaction, Car Acceleration (TD #24)
Scenario 2, Section: Pedestrian interaction, Car Acceleration (TD #24)
Scenario 3, Section: Pedestrian interaction, Car Acceleration (TD #24)
Scenario 1, Section: Pedestrian interaction, Car Acceleration (TD #25)
Scenario 2, Section: Pedestrian interaction, Car Acceleration (TD #25)
Scenario 3, Section: Pedestrian interaction, Car Acceleration (TD #25)
Acceleration
MaxD
Car Acceleration [m/s^2]
Distance to Crossing Area [m]

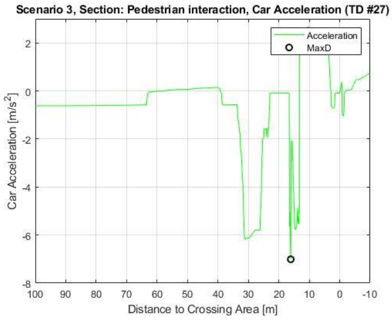

Scenario 1, Section: Pedestrian interaction, Car Acceleration (TD #26)
Acceleration
MaxD
Car Acceleration [m/s^2]
Distance to Crossing Area [m]

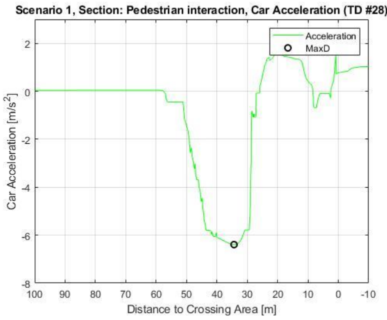

Scenario 2, Section: Pedestrian interaction, Car Acceleration (TD #26)
Acceleration
MaxD
Car Acceleration [m/s^2]
Distance to Crossing Area [m]

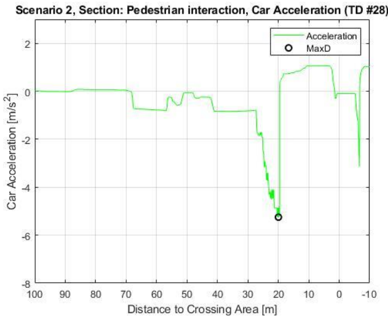

Scenario 3, Section: Pedestrian interaction, Car Acceleration (TD #26)
Acceleration
MaxD
Car Acceleration [m/s^2]
Distance to Crossing Area [m]

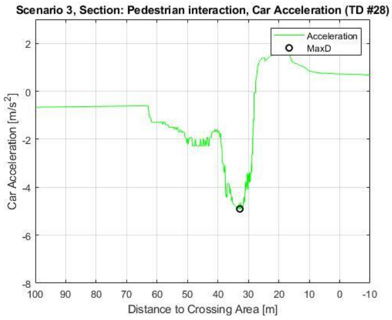

Scenario 1, Section: Pedestrian interaction, Car Acceleration (TD #27)
Acceleration
MaxD
Car Acceleration [m/s^2]
Distance to Crossing Area [m]

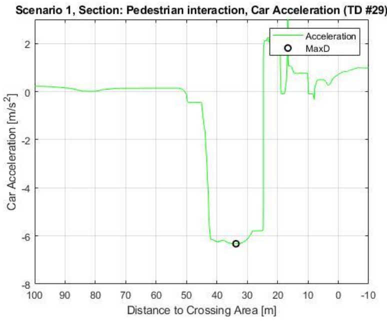

Scenario 2, Section: Pedestrian interaction, Car Acceleration (TD #27)
Acceleration
MaxD
Car Acceleration [m/s^2]
Distance to Crossing Area [m]

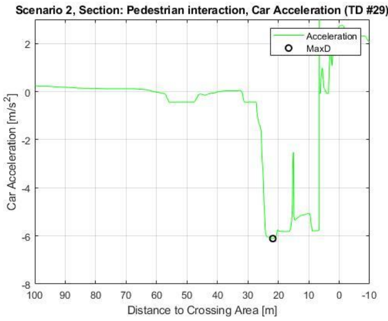

Scenario 3, Section: Pedestrian interaction, Car Acceleration (TD #27)
Acceleration
MaxD
Car Acceleration [m/s^2]
Distance to Crossing Area [m]

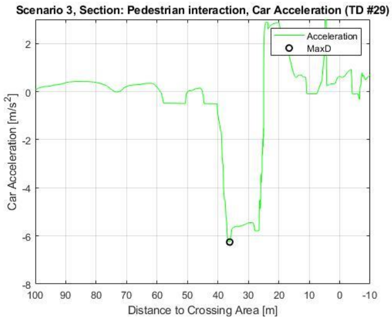

Scenario 1, Section: Pedestrian interaction, Car Acceleration (TD #28)
Acceleration
MaxD
Car Acceleration [m/s^2]
Distance to Crossing Area [m]

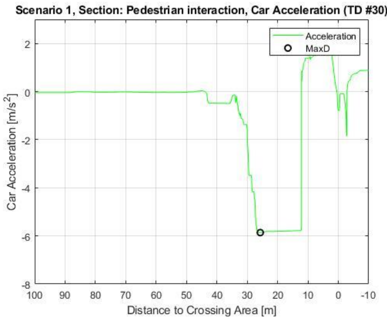

Scenario 2, Section: Pedestrian interaction, Car Acceleration (TD #28)
Acceleration
MaxD
Car Acceleration [m/s^2]
Distance to Crossing Area [m]

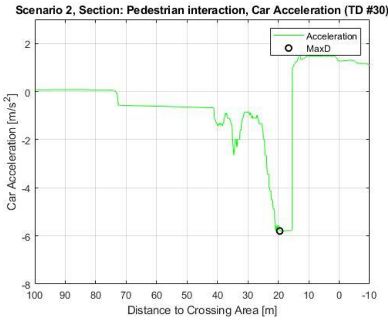

Scenario 3, Section: Pedestrian interaction, Car Acceleration (TD #28)
Acceleration
MaxD
Car Acceleration [m/s^2]
Distance to Crossing Area [m]

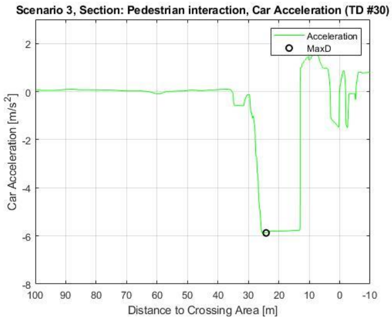

Scenario 1, Section: Pedestrian interaction, Car Acceleration (TD #29)
Acceleration
MaxD
Car Acceleration [m/s^2]
Distance to Crossing Area [m]


Scenario 2, Section: Pedestrian interaction, Car Acceleration (TD #29)
Acceleration
MaxD
Car Acceleration [m/s^2]
Distance to Crossing Area [m]

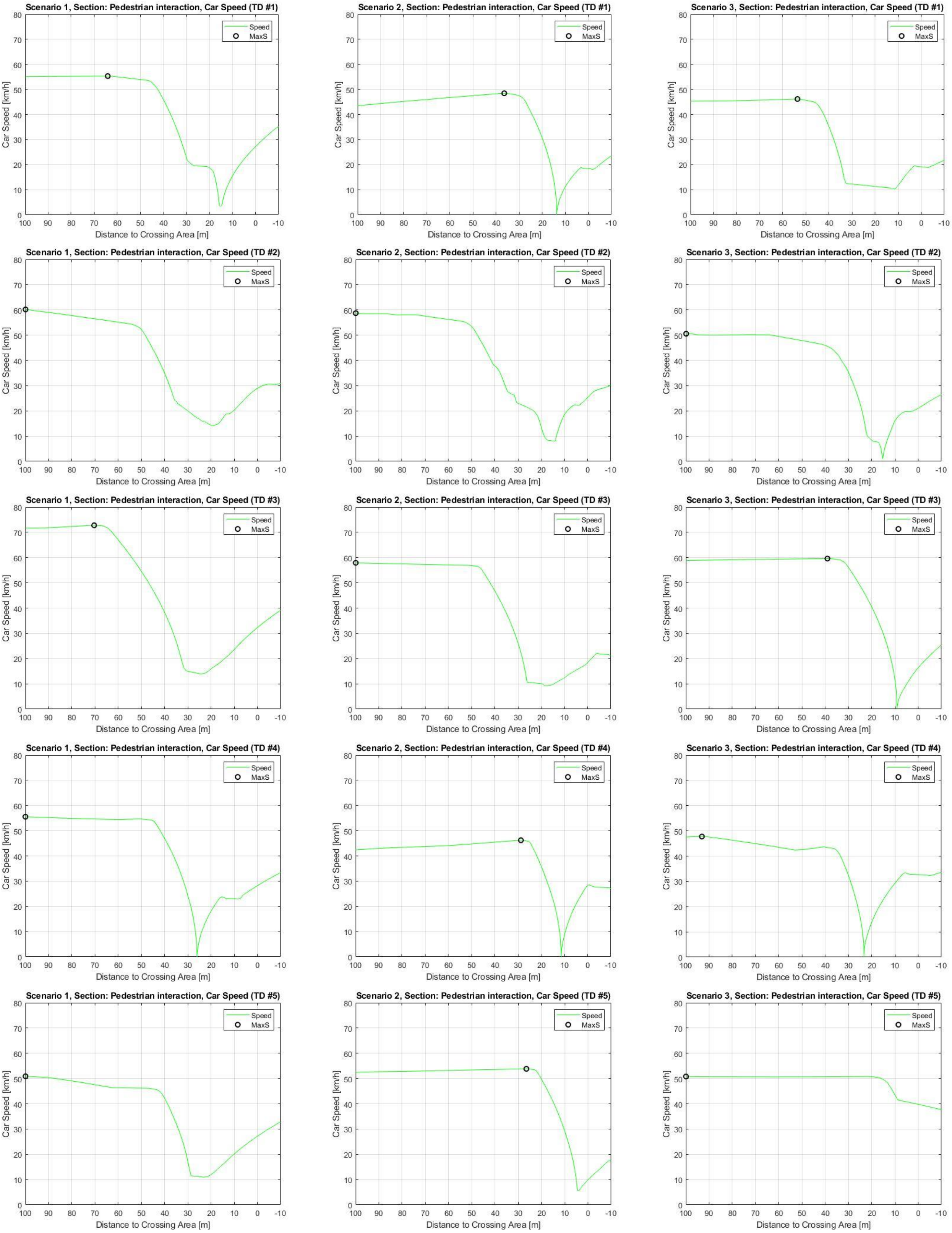

Scenario 3, Section: Pedestrian interaction, Car Acceleration (TD #29)
Acceleration
MaxD
Car Acceleration [m/s^2]
Distance to Crossing Area [m]

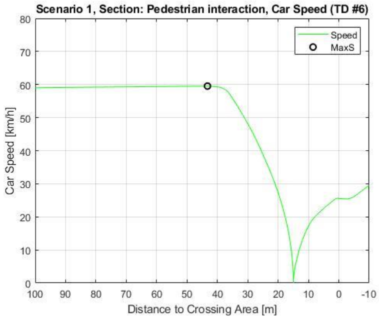

Scenario 1, Section: Pedestrian interaction, Car Acceleration (TD #30)
Acceleration
MaxD
Car Acceleration [m/s^2]
Distance to Crossing Area [m]

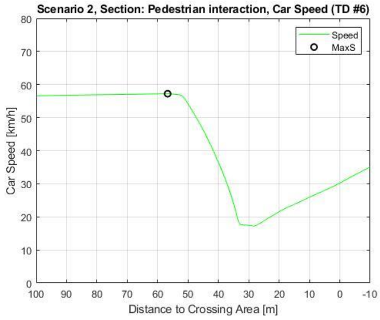

Scenario 2, Section: Pedestrian interaction, Car Acceleration (TD #30)
Acceleration
MaxD
Car Acceleration [m/s^2]
Distance to Crossing Area [m]

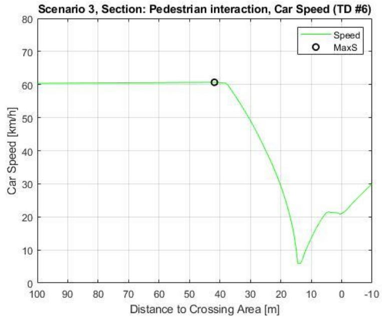

Scenario 3, Section: Pedestrian interaction, Car Acceleration (TD #30)
Acceleration
MaxD
Car Acceleration [m/s^2]
Distance to Crossing Area [m]

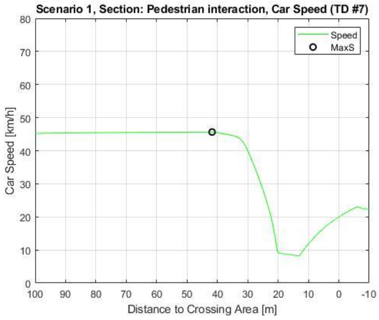
H. Max Speed graphs (Pedestrian interaction)

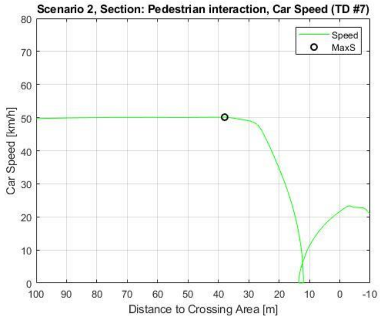


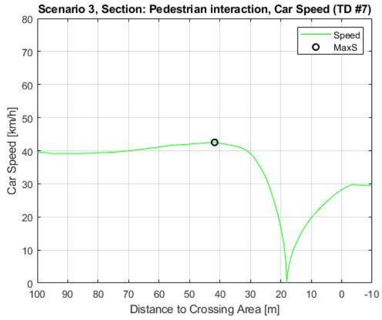

Scenario 1, Section: Pedestrian interaction, Car Speed (TD #6)
Speed
MaxS
Car Speed [km/h]
Distance to Crossing Area [m]

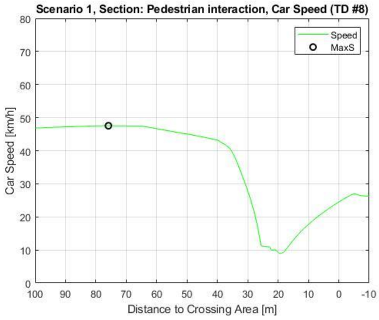

Scenario 2, Section: Pedestrian interaction, Car Speed (TD #6)
Speed
MaxS
Car Speed [km/h]
Distance to Crossing Area [m]

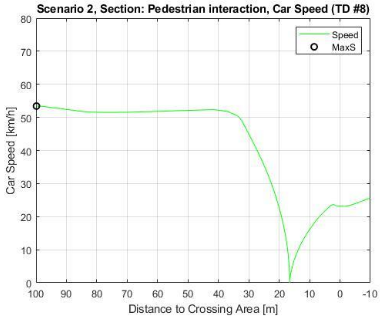

Scenario 3, Section: Pedestrian interaction, Car Speed (TD #6)
Speed
MaxS
Car Speed [km/h]
Distance to Crossing Area [m]

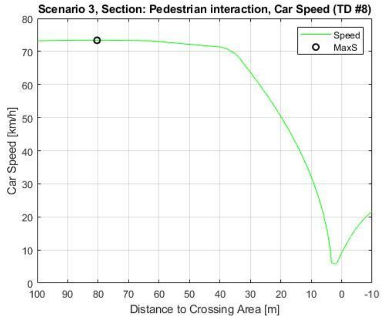

Scenario 1, Section: Pedestrian interaction, Car Speed (TD #7)
Speed
MaxS
Car Speed [km/h]
Distance to Crossing Area [m]

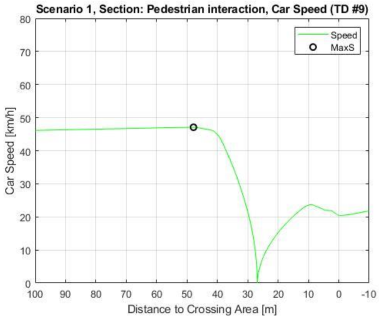

Scenario 2, Section: Pedestrian interaction, Car Speed (TD #7)
Speed
MaxS
Car Speed [km/h]
Distance to Crossing Area [m]

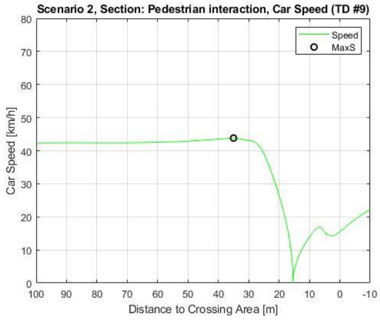

Scenario 3, Section: Pedestrian interaction, Car Speed (TD #7)
Speed
MaxS
Car Speed [km/h]
Distance to Crossing Area [m]

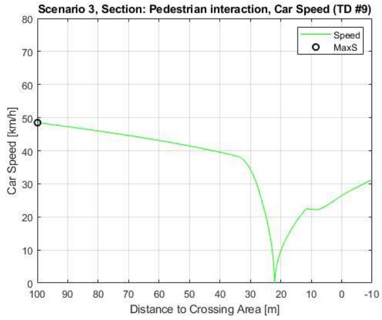

Scenario 1, Section: Pedestrian interaction, Car Speed (TD #8)
Speed
MaxS
Car Speed [km/h]
Distance to Crossing Area [m]

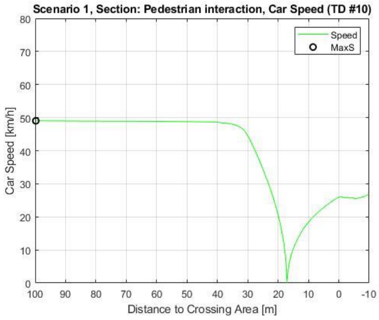

Scenario 2, Section: Pedestrian interaction, Car Speed (TD #8)
Speed
MaxS
Car Speed [km/h]
Distance to Crossing Area [m]

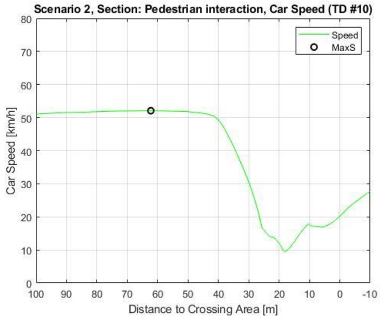

Scenario 3, Section: Pedestrian interaction, Car Speed (TD #8)
Speed
MaxS
Car Speed [km/h]
Distance to Crossing Area [m]

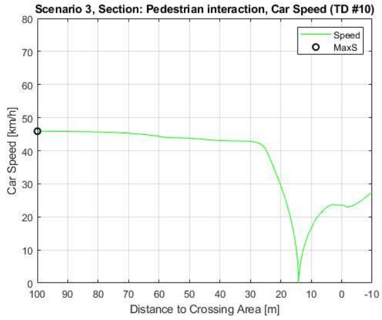

Scenario 1, Section: Pedestrian interaction, Car Speed (TD #9)
Speed
MaxS
Car Speed [km/h]
Distance to Crossing Area [m]

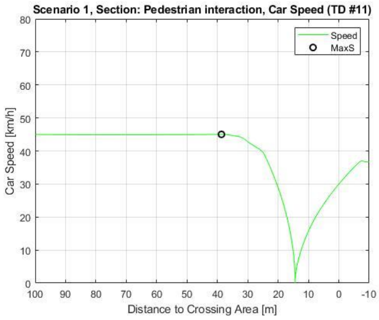

Scenario 2, Section: Pedestrian interaction, Car Speed (TD #9)
Speed
MaxS
Car Speed [km/h]
Distance to Crossing Area [m]

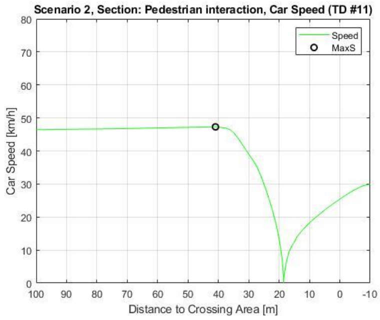

Scenario 3, Section: Pedestrian interaction, Car Speed (TD #9)
Speed
MaxS
Car Speed [km/h]
Distance to Crossing Area [m]

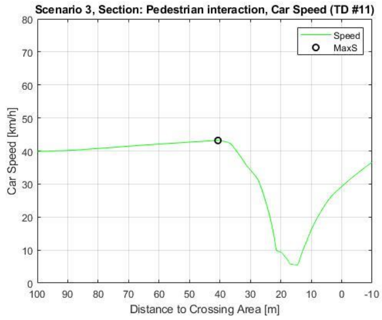

Scenario 1, Section: Pedestrian interaction, Car Speed (TD #10)
Speed
MaxS
Car Speed [km/h]
Distance to Crossing Area [m]

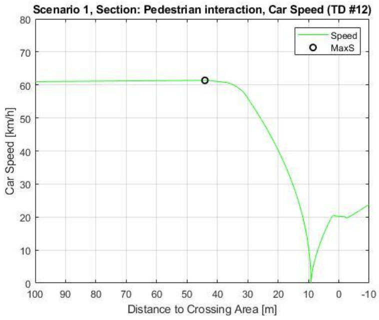

Scenario 2, Section: Pedestrian interaction, Car Speed (TD #10)
Speed
MaxS
Car Speed [km/h]
Distance to Crossing Area [m]

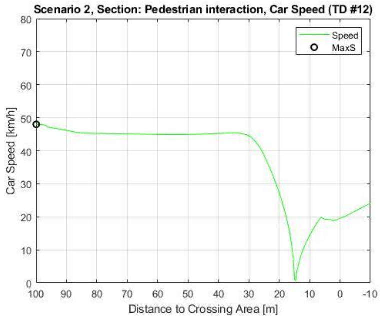

Scenario 3, Section: Pedestrian interaction, Car Speed (TD #10)
Speed
MaxS
Car Speed [km/h]
Distance to Crossing Area [m]

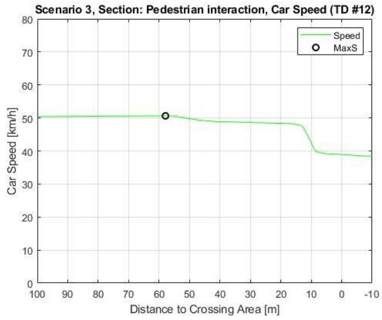

Scenario 1, Section: Pedestrian interaction, Car Speed (TD #11)
Speed
MaxS
Car Speed [km/h]
Distance to Crossing Area [m]

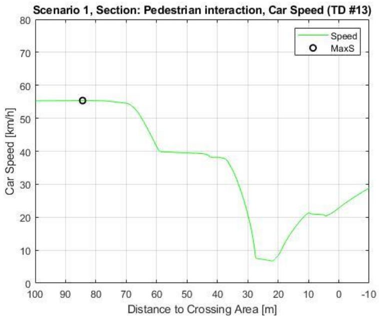

Scenario 2, Section: Pedestrian interaction, Car Speed (TD #11)
Speed
MaxS
Car Speed [km/h]
Distance to Crossing Area [m]

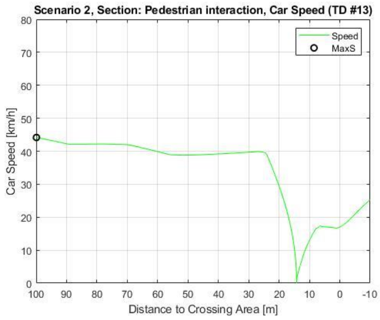

Scenario 3, Section: Pedestrian interaction, Car Speed (TD #11)
Speed
MaxS
Car Speed [km/h]
Distance to Crossing Area [m]

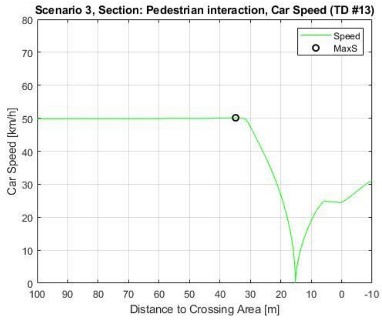

Scenario 1, Section: Pedestrian interaction, Car Speed (TD #12)
Speed
MaxS
Car Speed [km/h]
Distance to Crossing Area [m]

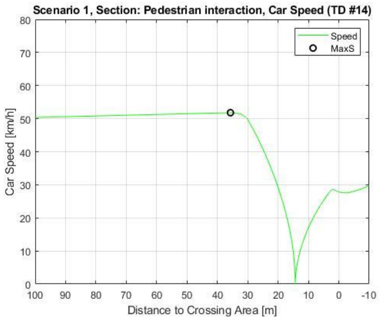

Scenario 2, Section: Pedestrian interaction, Car Speed (TD #12)
Speed
MaxS
Car Speed [km/h]
Distance to Crossing Area [m]

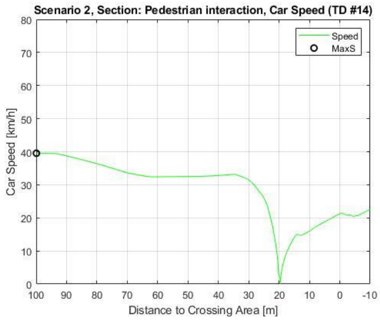

Scenario 3, Section: Pedestrian interaction, Car Speed (TD #12)
Speed
MaxS
Car Speed [km/h]
Distance to Crossing Area [m]

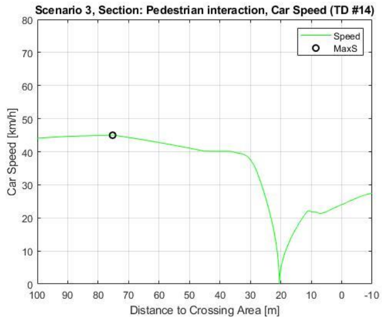

Scenario 1, Section: Pedestrian interaction, Car Speed (TD #13)
Speed
MaxS
Car Speed [km/h]
Distance to Crossing Area [m]

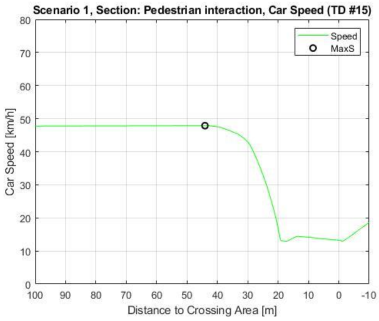

Scenario 2, Section: Pedestrian interaction, Car Speed (TD #13)
Speed
MaxS
Car Speed [km/h]
Distance to Crossing Area [m]

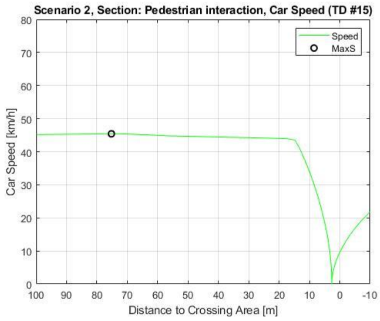

Scenario 3, Section: Pedestrian interaction, Car Speed (TD #13)
Speed
MaxS
Car Speed [km/h]
Distance to Crossing Area [m]

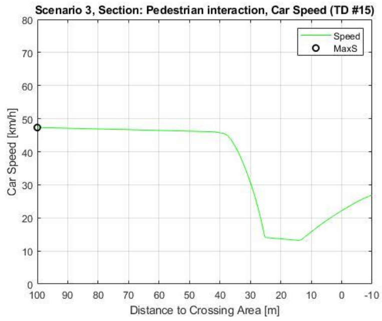

Scenario 1, Section: Pedestrian interaction, Car Speed (TD #14)
Speed
MaxS
Car Speed [km/h]
Distance to Crossing Area [m]

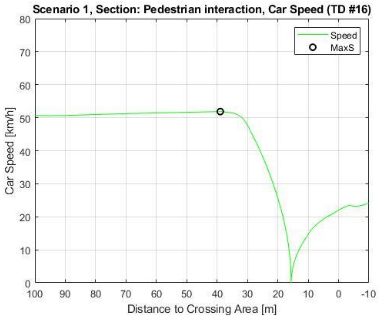

Scenario 2, Section: Pedestrian interaction, Car Speed (TD #14)
Speed
MaxS
Car Speed [km/h]
Distance to Crossing Area [m]

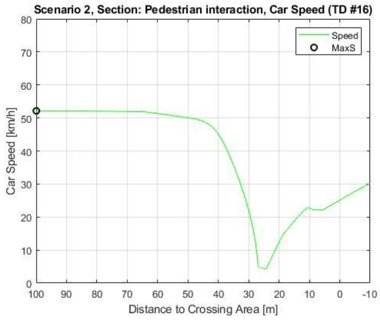

Scenario 3, Section: Pedestrian interaction, Car Speed (TD #14)
Speed
MaxS
Car Speed [km/h]
Distance to Crossing Area [m]

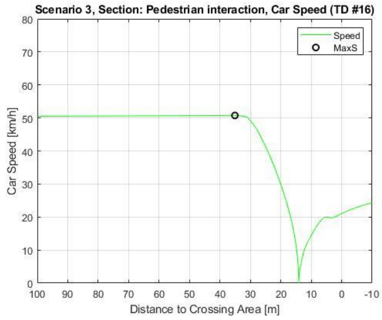

Scenario 1, Section: Pedestrian interaction, Car Speed (TD #15)
Speed
MaxS
Car Speed [km/h]
Distance to Crossing Area [m]

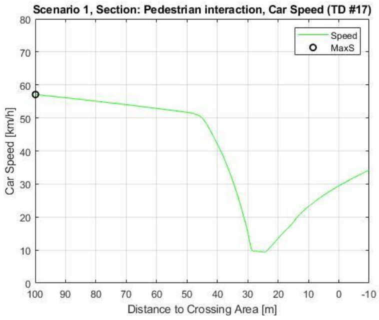

Scenario 2, Section: Pedestrian interaction, Car Speed (TD #15)
Speed
MaxS
Car Speed [km/h]
Distance to Crossing Area [m]

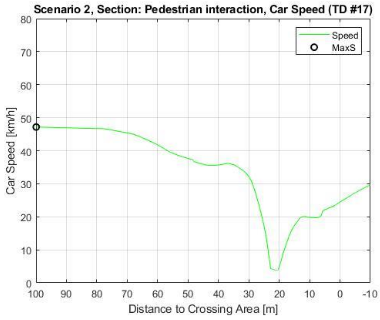

Scenario 3, Section: Pedestrian interaction, Car Speed (TD #15)
Speed
MaxS
Car Speed [km/h]
Distance to Crossing Area [m]

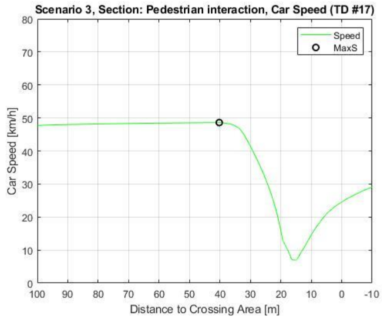

Scenario 1, Section: Pedestrian interaction, Car Speed (TD #16)
Speed
MaxS
Car Speed [km/h]
Distance to Crossing Area [m]

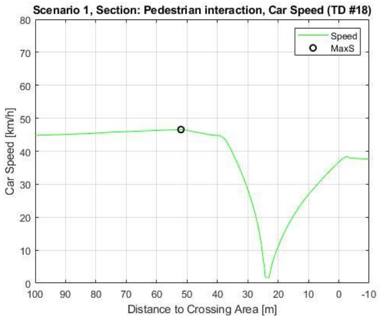

Scenario 2, Section: Pedestrian interaction, Car Speed (TD #16)
Speed
MaxS
Car Speed [km/h]
Distance to Crossing Area [m]

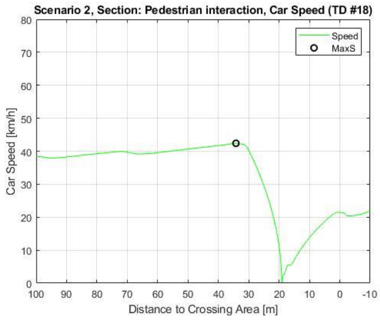

Scenario 3, Section: Pedestrian interaction, Car Speed (TD #16)
Speed
MaxS
Car Speed [km/h]
Distance to Crossing Area [m]

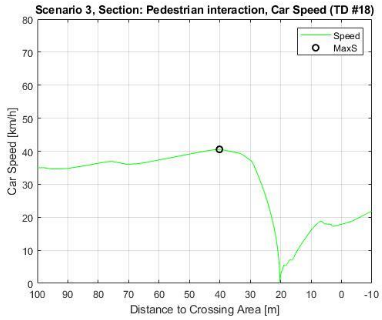

Scenario 1, Section: Pedestrian interaction, Car Speed (TD #17)
Speed
MaxS
Car Speed [km/h]
Distance to Crossing Area [m]

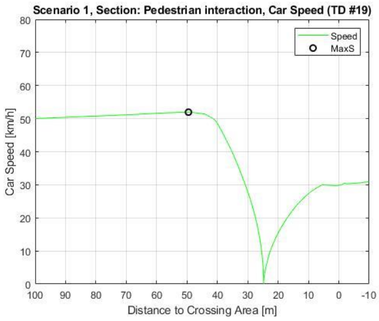

Scenario 2, Section: Pedestrian interaction, Car Speed (TD #17)
Speed
MaxS
Car Speed [km/h]
Distance to Crossing Area [m]

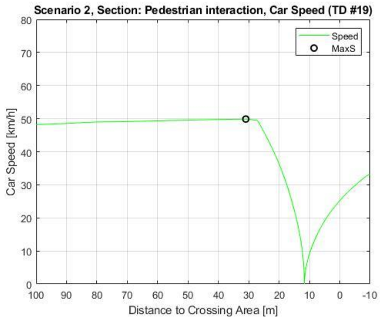

Scenario 3, Section: Pedestrian interaction, Car Speed (TD #17)
Speed
MaxS
Car Speed [km/h]
Distance to Crossing Area [m]

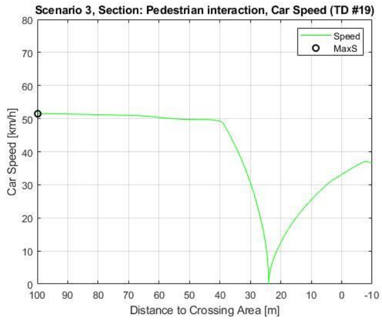

Scenario 1, Section: Pedestrian interaction, Car Speed (TD #18)
Speed
MaxS
Car Speed [km/h]
Distance to Crossing Area [m]

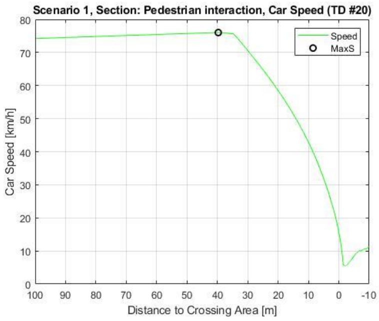

Scenario 2, Section: Pedestrian interaction, Car Speed (TD #18)
Speed
MaxS
Car Speed [km/h]
Distance to Crossing Area [m]

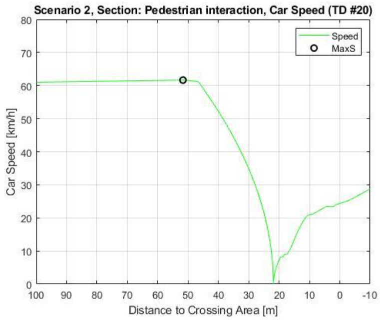

Scenario 3, Section: Pedestrian interaction, Car Speed (TD #18)
Speed
MaxS
Car Speed [km/h]
Distance to Crossing Area [m]

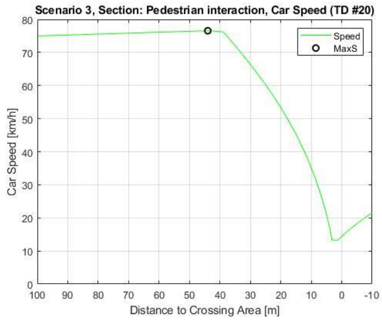

Scenario 1, Section: Pedestrian interaction, Car Speed (TD #19)
Speed
MaxS
Car Speed [km/h]
Distance to Crossing Area [m]

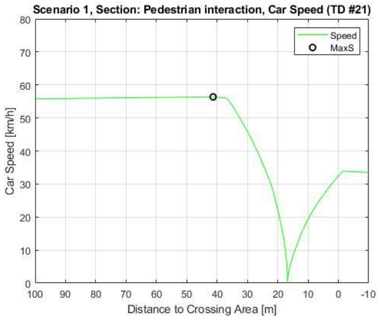

Scenario 2, Section: Pedestrian interaction, Car Speed (TD #19)
Speed
MaxS
Car Speed [km/h]
Distance to Crossing Area [m]

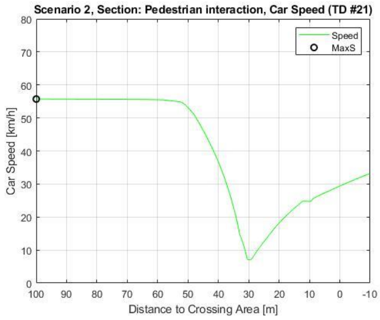

Scenario 3, Section: Pedestrian interaction, Car Speed (TD #19)
Speed
MaxS
Car Speed [km/h]
Distance to Crossing Area [m]

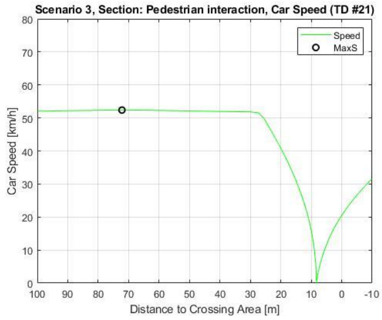

Scenario 1, Section: Pedestrian interaction, Car Speed (TD #20)
Speed
MaxS
Car Speed [km/h]
Distance to Crossing Area [m]

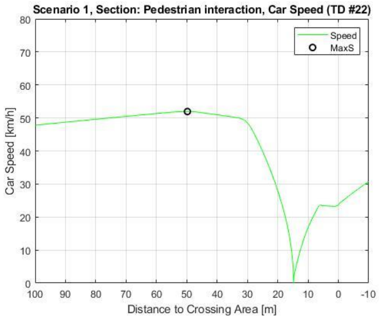

Scenario 2, Section: Pedestrian interaction, Car Speed (TD #20)
Speed
MaxS
Car Speed [km/h]
Distance to Crossing Area [m]

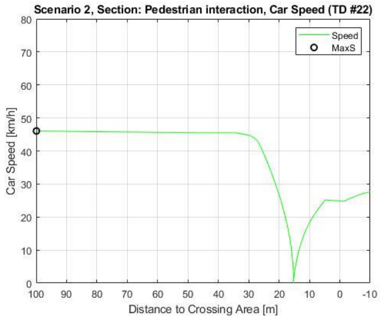

Scenario 3, Section: Pedestrian interaction, Car Speed (TD #20)
Speed
MaxS
Car Speed [km/h]
Distance to Crossing Area [m]

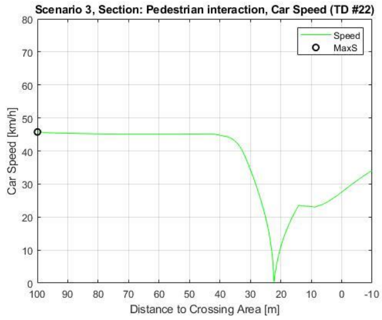

Scenario 1, Section: Pedestrian interaction, Car Speed (TD #21)
Speed
MaxS
Car Speed [km/h]
Distance to Crossing Area [m]

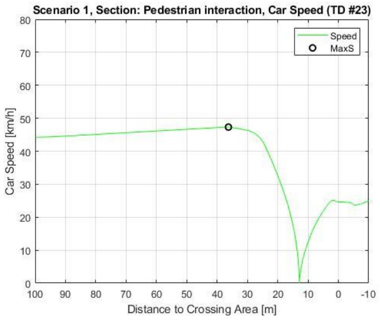

Scenario 2, Section: Pedestrian interaction, Car Speed (TD #21)
Speed
MaxS
Car Speed [km/h]
Distance to Crossing Area [m]

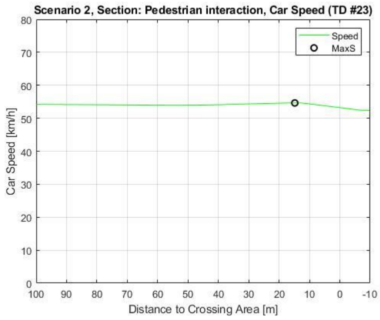

Scenario 3, Section: Pedestrian interaction, Car Speed (TD #21)
Speed
MaxS
Car Speed [km/h]
Distance to Crossing Area [m]

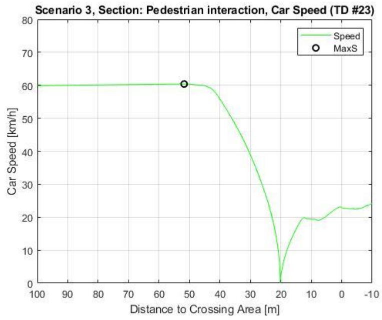

Scenario 1, Section: Pedestrian interaction, Car Speed (TD #22)
Speed
MaxS
Car Speed [km/h]
Distance to Crossing Area [m]

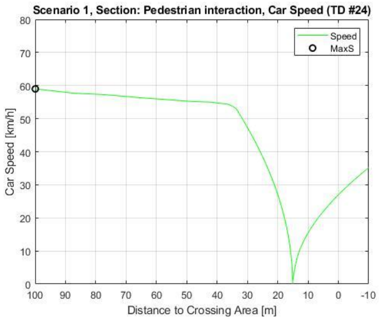

Scenario 2, Section: Pedestrian interaction, Car Speed (TD #22)
Speed
MaxS
Car Speed [km/h]
Distance to Crossing Area [m]

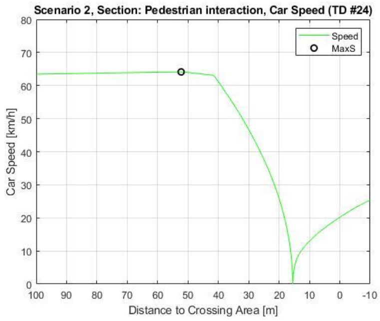

Scenario 3, Section: Pedestrian interaction, Car Speed (TD #22)
Speed
MaxS
Car Speed [km/h]
Distance to Crossing Area [m]

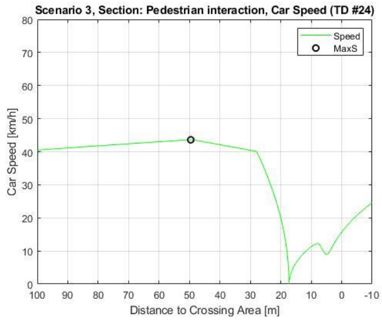

Scenario 1, Section: Pedestrian interaction, Car Speed (TD #23)
Speed
MaxS
Car Speed [km/h]
Distance to Crossing Area [m]

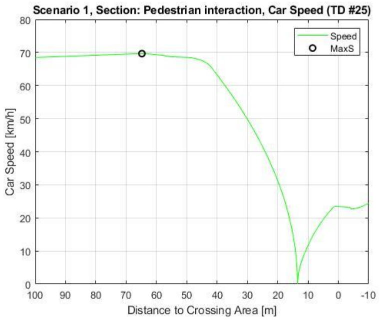

Scenario 2, Section: Pedestrian interaction, Car Speed (TD #23)
Speed
MaxS
Car Speed [km/h]
Distance to Crossing Area [m]

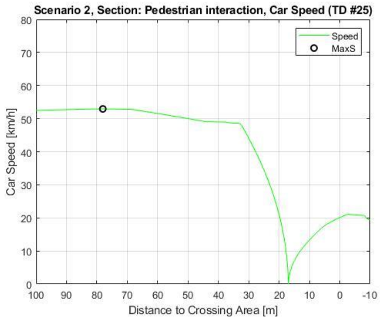

Scenario 3, Section: Pedestrian interaction, Car Speed (TD #23)
Speed
MaxS
Car Speed [km/h]
Distance to Crossing Area [m]

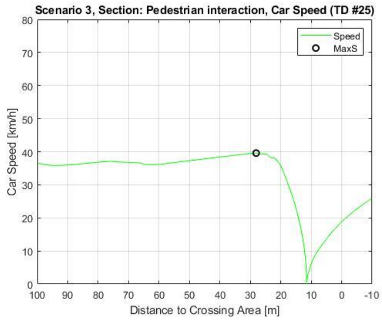

Scenario 1, Section: Pedestrian interaction, Car Speed (TD #24)
Speed
MaxS
Car Speed [km/h]
Distance to Crossing Area [m]

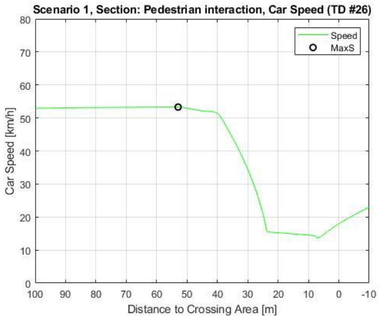

Scenario 2, Section: Pedestrian interaction, Car Speed (TD #24)
Speed
MaxS
Car Speed [km/h]
Distance to Crossing Area [m]

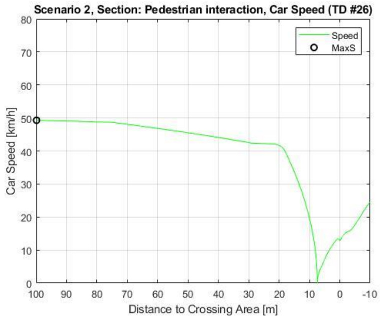

Scenario 3, Section: Pedestrian interaction, Car Speed (TD #24)
Speed
MaxS
Car Speed [km/h]
Distance to Crossing Area [m]

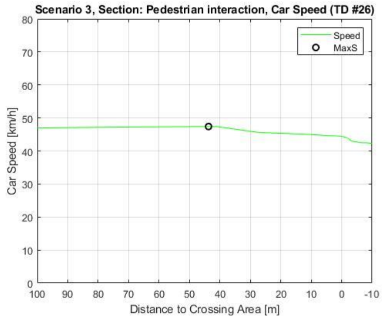

Scenario 1, Section: Pedestrian interaction, Car Speed (TD #25)
Speed
MaxS
Car Speed [km/h]
Distance to Crossing Area [m]

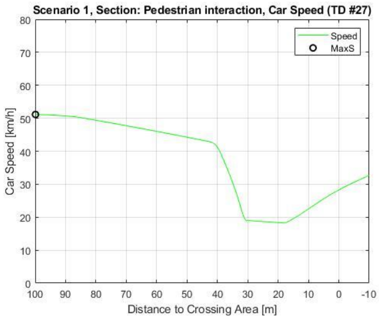

Scenario 2, Section: Pedestrian interaction, Car Speed (TD #25)
Speed
MaxS
Car Speed [km/h]
Distance to Crossing Area [m]

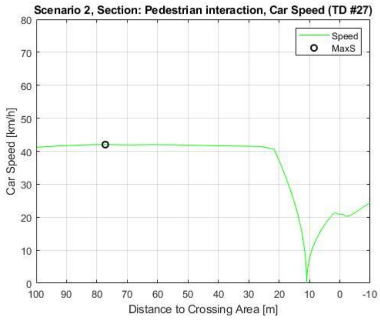

Scenario 3, Section: Pedestrian interaction, Car Speed (TD #25)
Speed
MaxS
Car Speed [km/h]
Distance to Crossing Area [m]

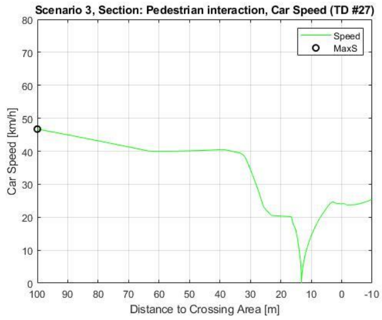

Scenario 1, Section: Pedestrian interaction, Car Speed (TD #26)
Speed
MaxS
Car Speed [km/h]
Distance to Crossing Area [m]

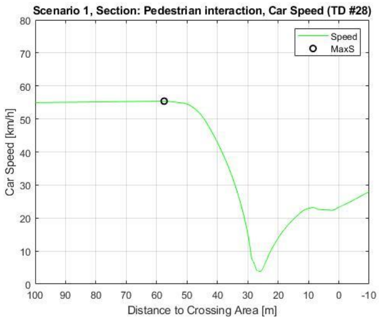

Scenario 2, Section: Pedestrian interaction, Car Speed (TD #26)
Speed
MaxS
Car Speed [km/h]
Distance to Crossing Area [m]

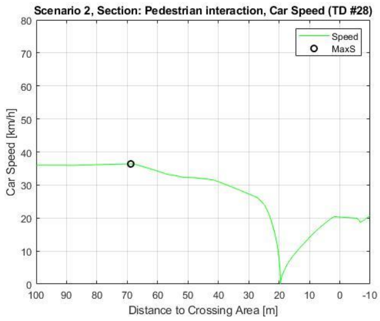

Scenario 3, Section: Pedestrian interaction, Car Speed (TD #26)
Speed
MaxS
Car Speed [km/h]
Distance to Crossing Area [m]

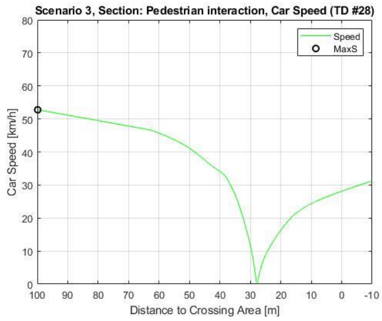

Scenario 1, Section: Pedestrian interaction, Car Speed (TD #27)
Speed
MaxS
Car Speed [km/h]
Distance to Crossing Area [m]

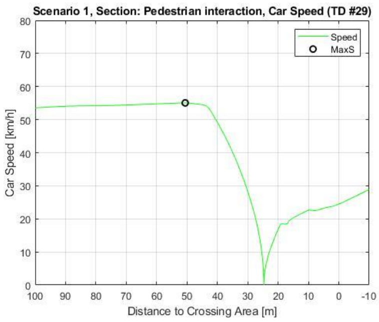

Scenario 2, Section: Pedestrian interaction, Car Speed (TD #27)
Speed
MaxS
Car Speed [km/h]
Distance to Crossing Area [m]

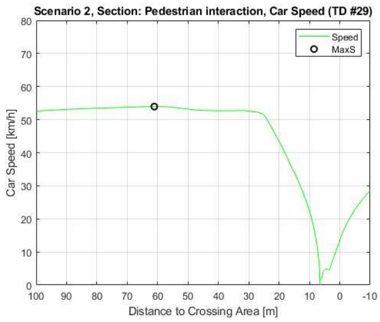

Scenario 3, Section: Pedestrian interaction, Car Speed (TD #27)
Speed
MaxS
Car Speed [km/h]
Distance to Crossing Area [m]

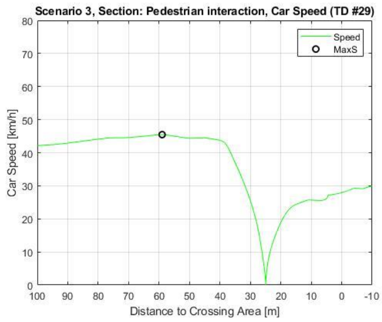

Scenario 1, Section: Pedestrian interaction, Car Speed (TD #28)
Speed
MaxS
Car Speed [km/h]
Distance to Crossing Area [m]

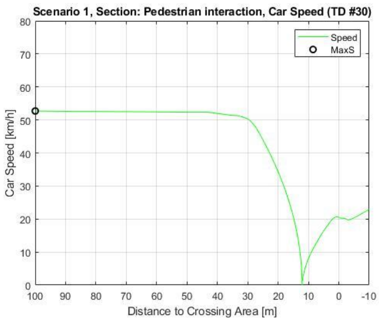

Scenario 2, Section: Pedestrian interaction, Car Speed (TD #28)
Speed
MaxS
Car Speed [km/h]
Distance to Crossing Area [m]

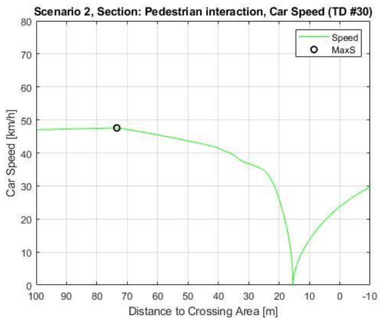

Scenario 3, Section: Pedestrian interaction, Car Speed (TD #28)
Speed
MaxS
Car Speed [km/h]
Distance to Crossing Area [m]

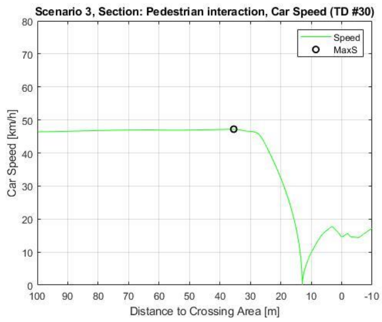

Scenario 1, Section: Pedestrian interaction, Car Speed (TD #29)
Speed
MaxS
Car Speed [km/h]
Distance to Crossing Area [m]


Scenario 2, Section: Pedestrian interaction, Car Speed (TD #29)
Speed
MaxS
Car Speed [km/h]
Distance to Crossing Area [m]

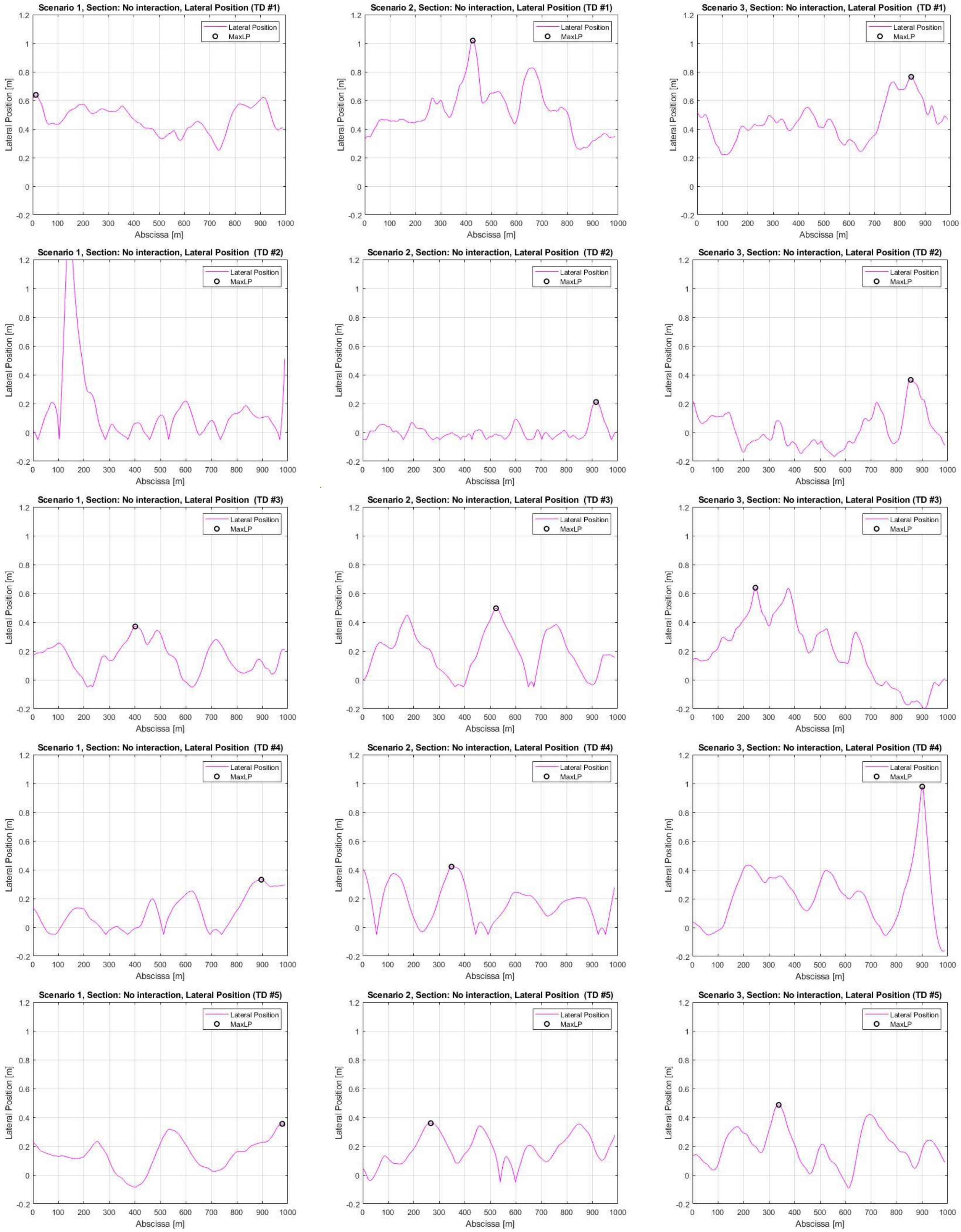

Scenario 3, Section: Pedestrian interaction, Car Speed (TD #29)
Speed
MaxS
Car Speed [km/h]
Distance to Crossing Area [m]

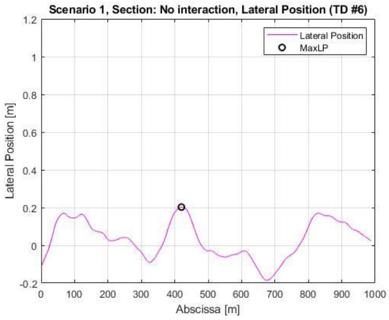

Scenario 1, Section: Pedestrian interaction, Car Speed (TD #30)
Speed
MaxS
Car Speed [km/h]
Distance to Crossing Area [m]

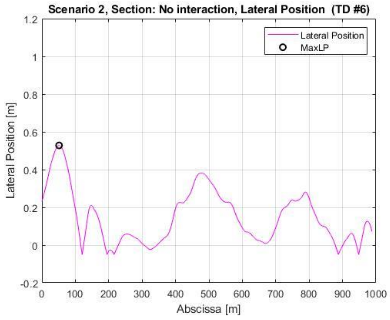

Scenario 2, Section: Pedestrian interaction, Car Speed (TD #30)
Speed
MaxS
Car Speed [km/h]
Distance to Crossing Area [m]

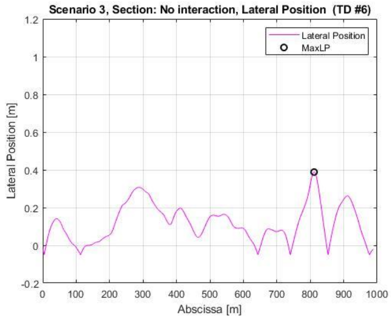

Scenario 3, Section: Pedestrian interaction, Car Speed (TD #30)
Speed
MaxS
Car Speed [km/h]
Distance to Crossing Area [m]

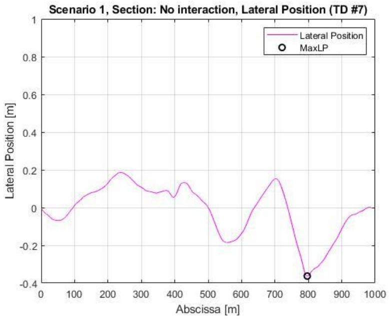
I. Lateral position (No interaction)

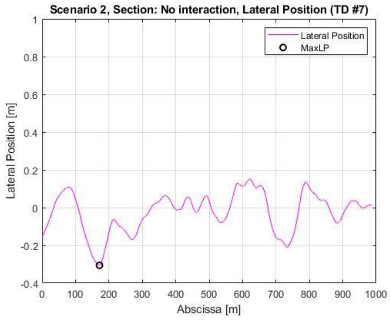


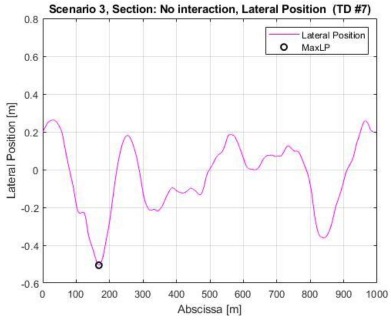

Scenario 1, Section: No interaction, Lateral Position (TD #6)
Lateral Position
MaxLP
Lateral Position [m]
Abscissa [m]

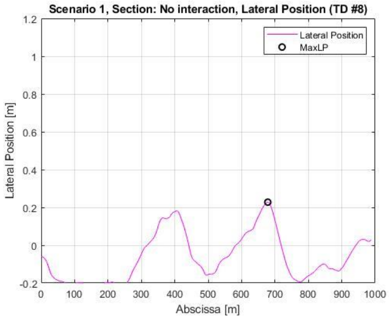

Scenario 2, Section: No interaction, Lateral Position (TD #6)
Lateral Position
MaxLP
Lateral Position [m]
Abscissa [m]

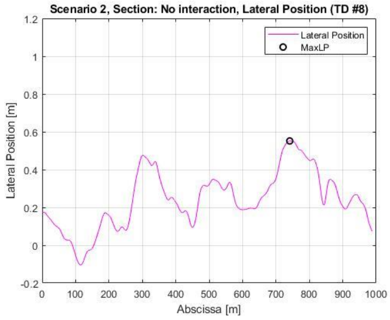

Scenario 3, Section: No interaction, Lateral Position (TD #6)
Lateral Position
MaxLP
Lateral Position [m]
Abscissa [m]

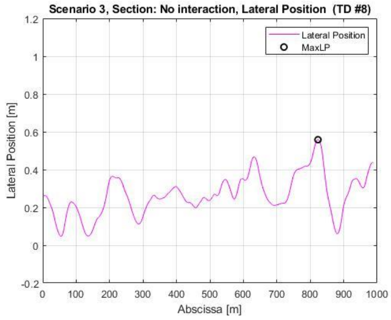

Scenario 1, Section: No interaction, Lateral Position (TD #7)
Lateral Position
MaxLP
Lateral Position [m]
Abscissa [m]

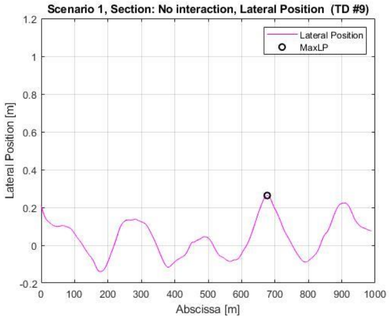

Scenario 2, Section: No interaction, Lateral Position (TD #7)
Lateral Position
MaxLP
Lateral Position [m]
Abscissa [m]

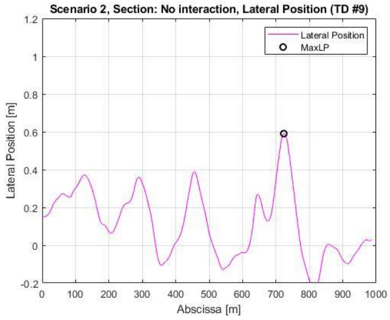

Scenario 3, Section: No interaction, Lateral Position (TD #7)
Lateral Position
MaxLP
Lateral Position [m]
Abscissa [m]

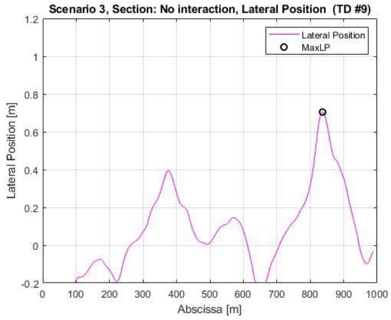

Scenario 1, Section: No interaction, Lateral Position (TD #8)
Lateral Position
MaxLP
Lateral Position [m]
Abscissa [m]

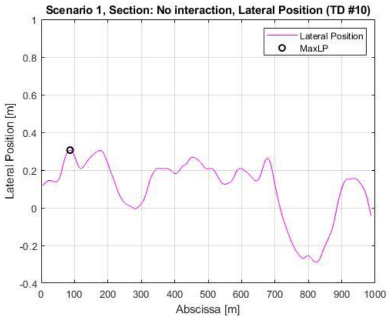

Scenario 2, Section: No interaction, Lateral Position (TD #8)
Lateral Position
MaxLP
Lateral Position [m]
Abscissa [m]

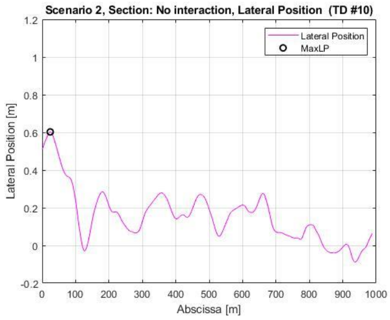

Scenario 3, Section: No interaction, Lateral Position (TD #8)
Lateral Position
MaxLP
Lateral Position [m]
Abscissa [m]

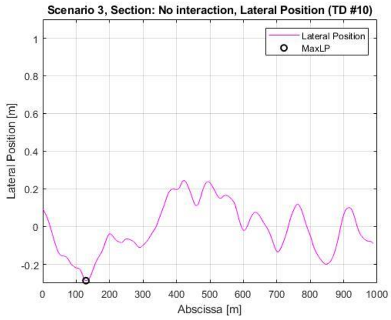

Scenario 1, Section: No interaction, Lateral Position (TD #9)
Lateral Position
MaxLP
Lateral Position [m]
Abscissa [m]

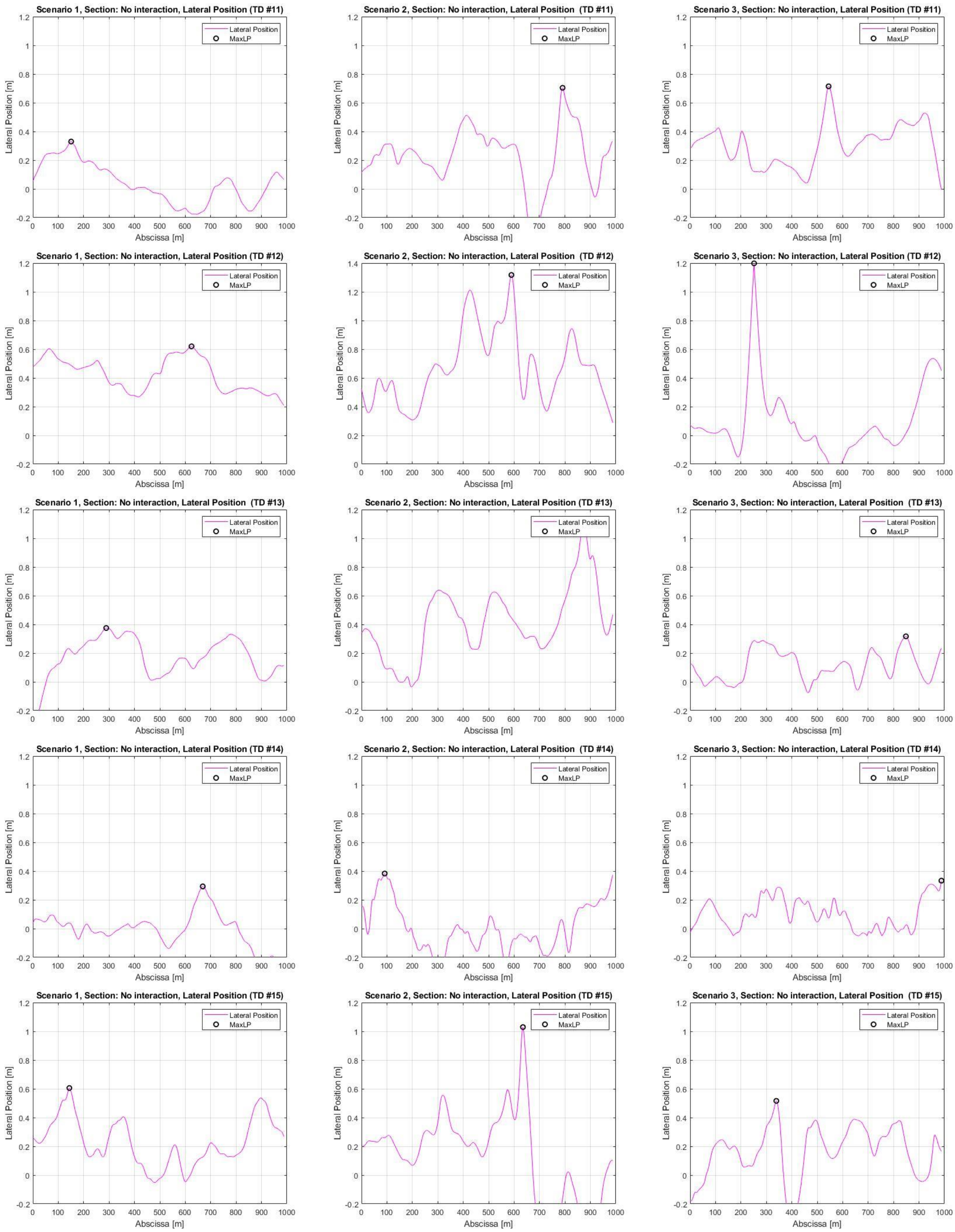

Scenario 2, Section: No interaction, Lateral Position (TD #9)
Lateral Position
MaxLP
Lateral Position [m]
Abscissa [m]

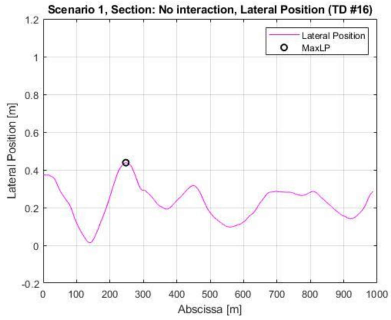

Scenario 3, Section: No interaction, Lateral Position (TD #9)
Lateral Position
MaxLP
Lateral Position [m]
Abscissa [m]

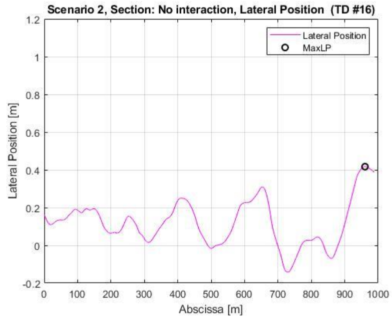

Scenario 1, Section: No interaction, Lateral Position (TD #10)
Lateral Position
MaxLP
Lateral Position [m]
Abscissa [m]

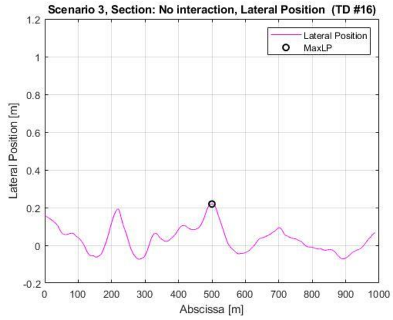

Scenario 2, Section: No interaction, Lateral Position (TD #10)
Lateral Position
MaxLP
Lateral Position [m]
Abscissa [m]

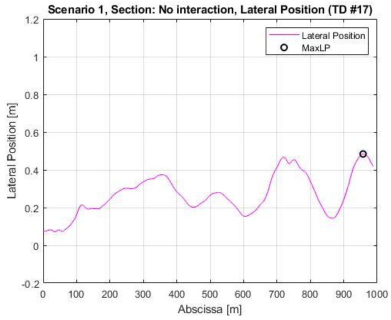

Scenario 3, Section: No interaction, Lateral Position (TD #10)
Lateral Position
MaxLP
Lateral Position [m]
Abscissa [m]

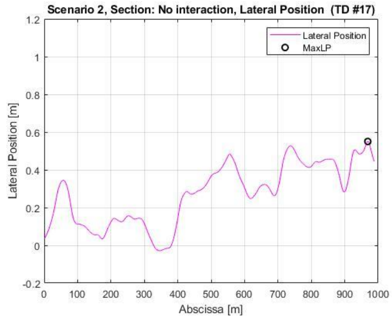

Scenario 1, Section: No interaction, Lateral Position (TD #11)
Scenario 2, Section: No interaction, Lateral Position (TD #11)
Scenario 3, Section: No interaction, Lateral Position (TD #11)
Scenario 1, Section: No interaction, Lateral Position (TD #12)
Scenario 2, Section: No interaction, Lateral Position (TD #12)
Scenario 3, Section: No interaction, Lateral Position (TD #12)
Scenario 1, Section: No interaction, Lateral Position (TD #13)
Scenario 2, Section: No interaction, Lateral Position (TD #13)
Scenario 3, Section: No interaction, Lateral Position (TD #13)
Scenario 1, Section: No interaction, Lateral Position (TD #14)
Scenario 2, Section: No interaction, Lateral Position (TD #14)
Scenario 3, Section: No interaction, Lateral Position (TD #14)
Scenario 1, Section: No interaction, Lateral Position (TD #15)
Scenario 2, Section: No interaction, Lateral Position (TD #15)
Scenario 3, Section: No interaction, Lateral Position (TD #15)
Lateral Position
MaxLP
Lateral Position [m]
Abscissa [m]

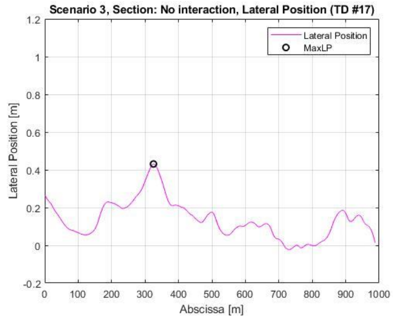

Scenario 1, Section: No interaction, Lateral Position (TD #16)
Lateral Position
MaxLP
Lateral Position [m]
Abscissa [m]

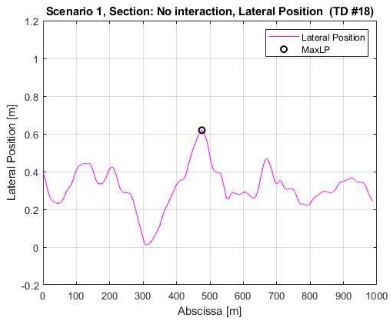

Scenario 2, Section: No interaction, Lateral Position (TD #16)
Lateral Position
MaxLP
Lateral Position [m]
Abscissa [m]

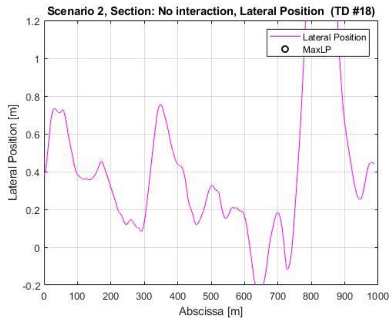

Scenario 3, Section: No interaction, Lateral Position (TD #16)
Lateral Position
MaxLP
Lateral Position [m]
Abscissa [m]

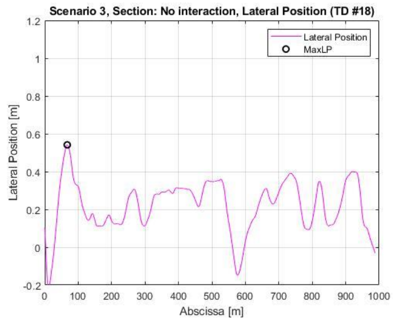

Scenario 1, Section: No interaction, Lateral Position (TD #17)
Lateral Position
MaxLP
Lateral Position [m]
Abscissa [m]

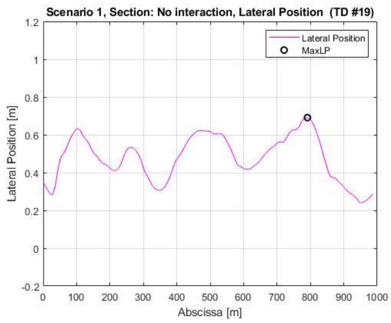

Scenario 2, Section: No interaction, Lateral Position (TD #17)
Lateral Position
MaxLP
Lateral Position [m]
Abscissa [m]

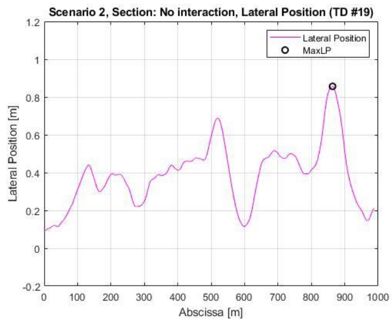

Scenario 3, Section: No interaction, Lateral Position (TD #17)
Lateral Position
MaxLP
Lateral Position [m]
Abscissa [m]

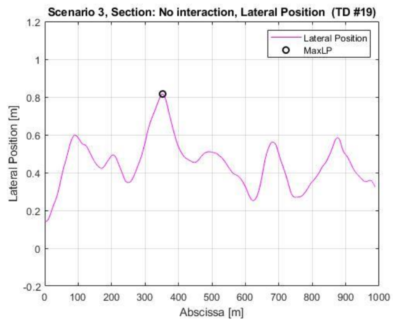

Scenario 1, Section: No interaction, Lateral Position (TD #18)
Lateral Position
MaxLP
Lateral Position [m]
Abscissa [m]

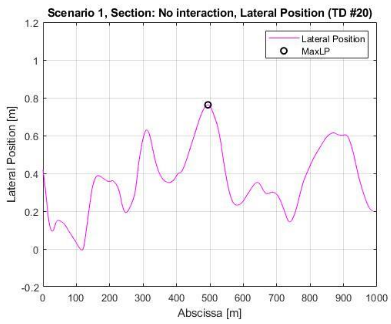

Scenario 2, Section: No interaction, Lateral Position (TD #18)
Lateral Position
MaxLP
Lateral Position [m]
Abscissa [m]

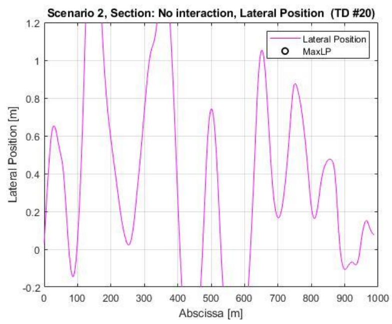

Scenario 3, Section: No interaction, Lateral Position (TD #18)
Lateral Position
MaxLP
Lateral Position [m]
Abscissa [m]

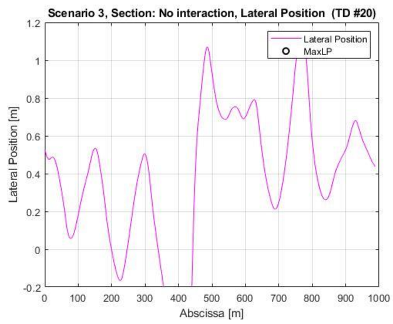

Scenario 1, Section: No interaction, Lateral Position (TD #19)
Lateral Position
MaxLP
Lateral Position [m]
Abscissa [m]

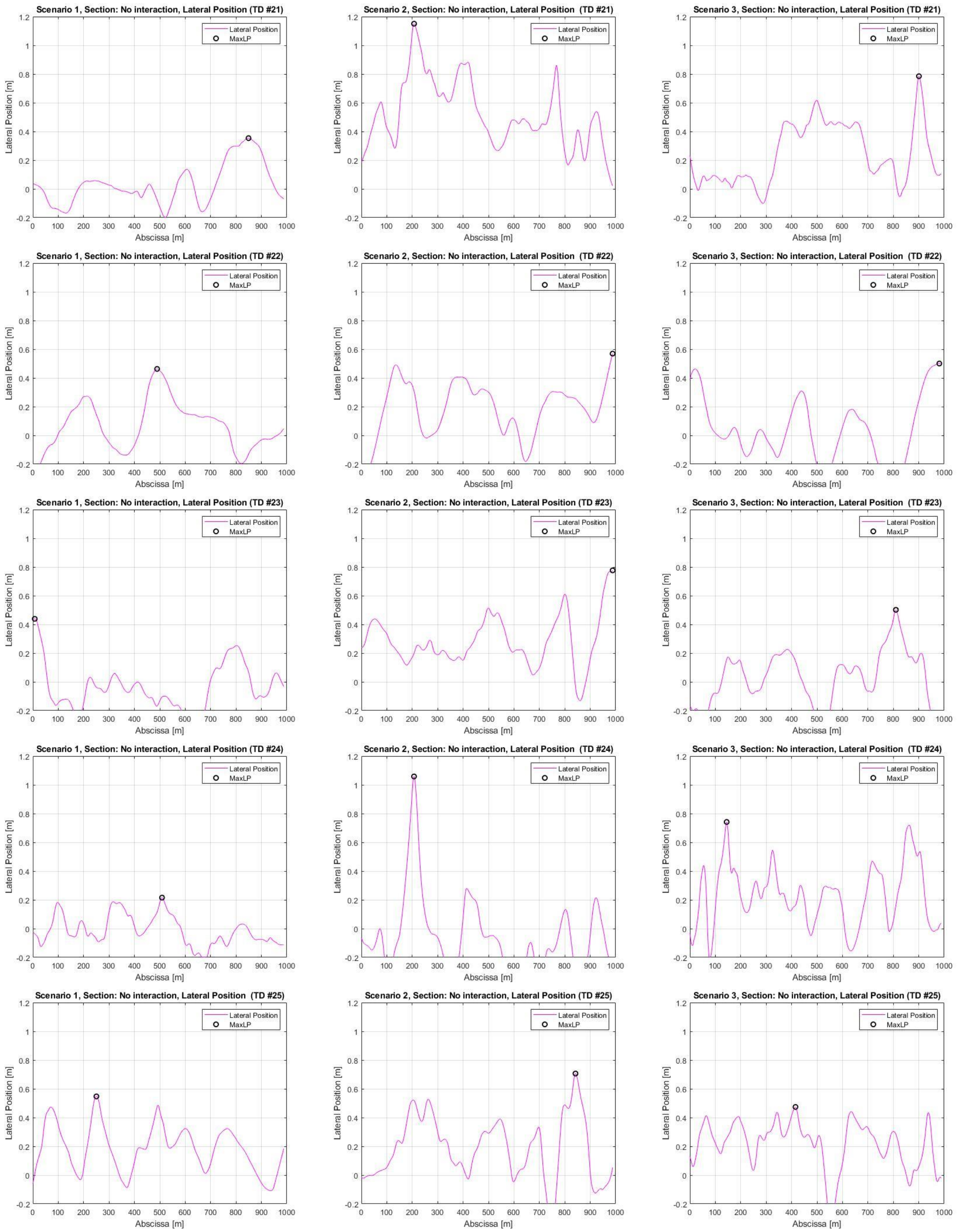

Scenario 2, Section: No interaction, Lateral Position (TD #19)
Lateral Position
MaxLP
Lateral Position [m]
Abscissa [m]

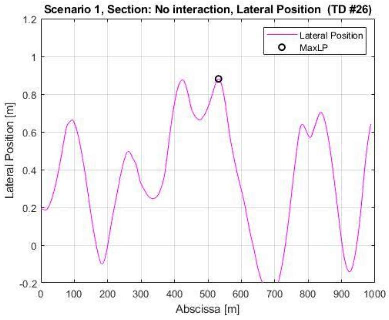

Scenario 3, Section: No interaction, Lateral Position (TD #19)
Lateral Position
MaxLP
Lateral Position [m]
Abscissa [m]

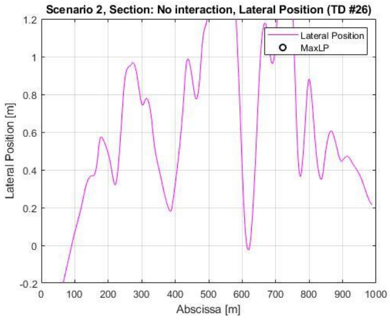

Scenario 1, Section: No interaction, Lateral Position (TD #20)
Lateral Position
MaxLP
Lateral Position [m]
Abscissa [m]

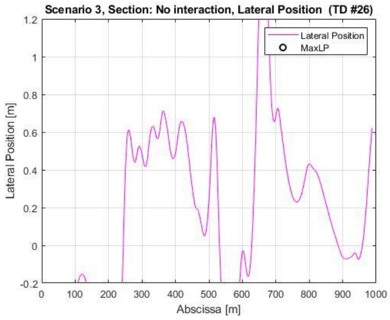

Scenario 2, Section: No interaction, Lateral Position (TD #20)
Lateral Position
MaxLP
Lateral Position [m]
Abscissa [m]

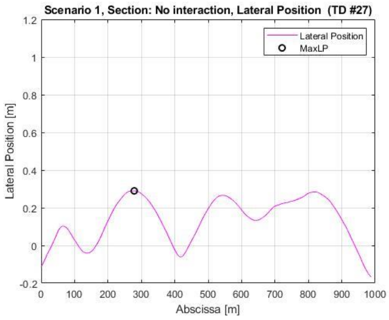

Scenario 3, Section: No interaction, Lateral Position (TD #20)
Lateral Position
MaxLP
Lateral Position [m]
Abscissa [m]

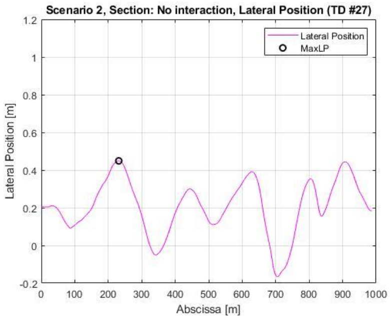

Scenario 1, Section: No interaction, Lateral Position (TD #21)
Scenario 2, Section: No interaction, Lateral Position (TD #21)
Scenario 3, Section: No interaction, Lateral Position (TD #21)
Scenario 1, Section: No interaction, Lateral Position (TD #22)
Scenario 2, Section: No interaction, Lateral Position (TD #22)
Scenario 3, Section: No interaction, Lateral Position (TD #22)
Scenario 1, Section: No interaction, Lateral Position (TD #23)
Scenario 2, Section: No interaction, Lateral Position (TD #23)
Scenario 3, Section: No interaction, Lateral Position (TD #23)
Scenario 1, Section: No interaction, Lateral Position (TD #24)
Scenario 2, Section: No interaction, Lateral Position (TD #24)
Scenario 3, Section: No interaction, Lateral Position (TD #24)
Scenario 1, Section: No interaction, Lateral Position (TD #25)
Scenario 2, Section: No interaction, Lateral Position (TD #25)
Scenario 3, Section: No interaction, Lateral Position (TD #25)
Lateral Position
MaxLP
Lateral Position [m]
Abscissa [m]

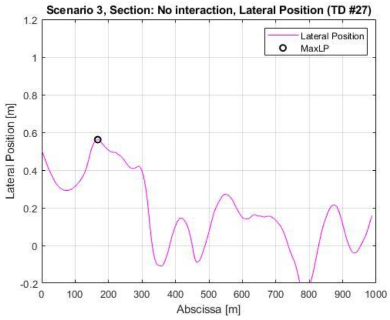

Scenario 1, Section: No interaction, Lateral Position (TD #26)
Lateral Position
MaxLP
Lateral Position [m]
Abscissa [m]

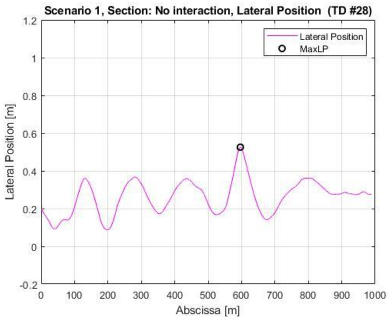

Scenario 2, Section: No interaction, Lateral Position (TD #26)
Lateral Position
MaxLP
Lateral Position [m]
Abscissa [m]

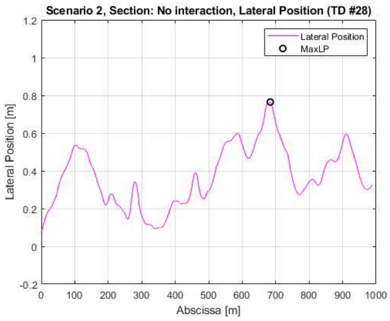

Scenario 3, Section: No interaction, Lateral Position (TD #26)
Lateral Position
MaxLP
Lateral Position [m]
Abscissa [m]

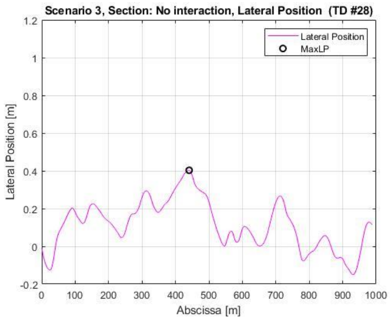

Scenario 1, Section: No interaction, Lateral Position (TD #27)
Lateral Position
MaxLP
Lateral Position [m]
Abscissa [m]

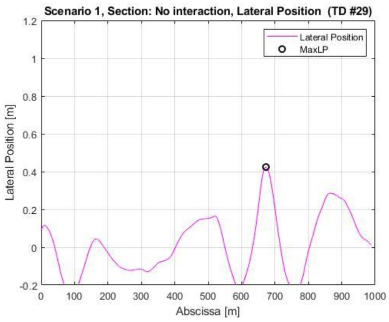

Scenario 2, Section: No interaction, Lateral Position (TD #27)
Lateral Position
MaxLP
Lateral Position [m]
Abscissa [m]

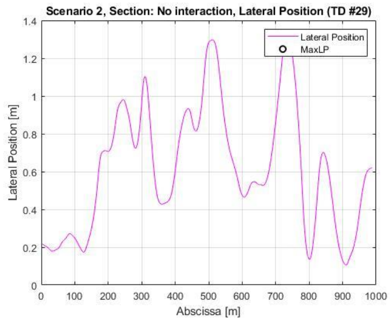

Scenario 3, Section: No interaction, Lateral Position (TD #27)
Lateral Position
MaxLP
Lateral Position [m]
Abscissa [m]

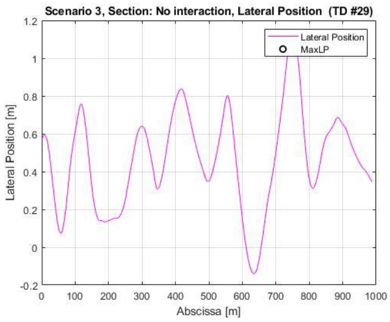

Scenario 1, Section: No interaction, Lateral Position (TD #28)
Lateral Position
MaxLP
Lateral Position [m]
Abscissa [m]

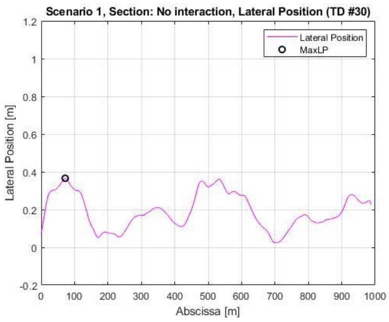

Scenario 2, Section: No interaction, Lateral Position (TD #28)
Lateral Position
MaxLP
Lateral Position [m]
Abscissa [m]

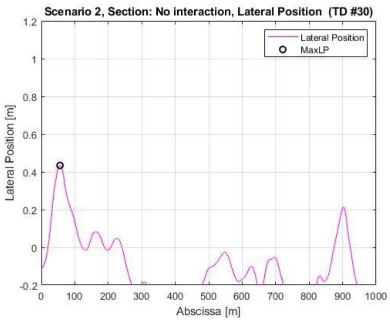

Scenario 3, Section: No interaction, Lateral Position (TD #28)
Lateral Position
MaxLP
Lateral Position [m]
Abscissa [m]

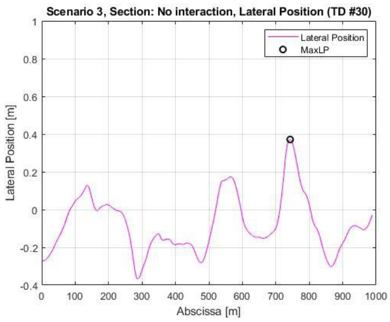

Scenario 1, Section: No interaction, Lateral Position (TD #29)
Lateral Position
MaxLP
Lateral Position [m]
Abscissa [m]


Scenario 2, Section: No interaction, Lateral Position (TD #29)
Lateral Position
MaxLP
Lateral Position [m]
Abscissa [m]

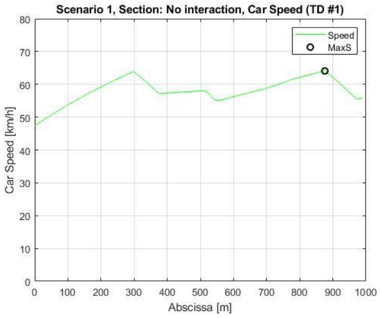

Scenario 3, Section: No interaction, Lateral Position (TD #29)
Lateral Position
MaxLP
Lateral Position [m]
Abscissa [m]

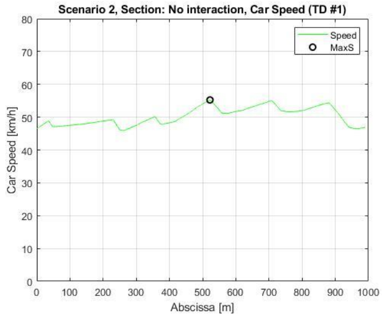

Scenario 1, Section: No interaction, Lateral Position (TD #30)
Lateral Position
MaxLP
Lateral Position [m]
Abscissa [m]

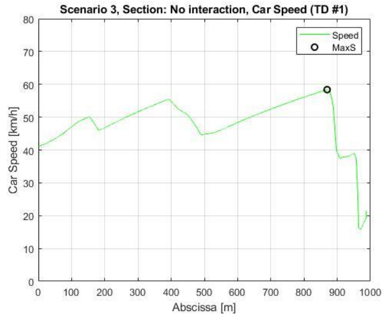

Scenario 2, Section: No interaction, Lateral Position (TD #30)
Lateral Position
MaxLP
Lateral Position [m]
Abscissa [m]

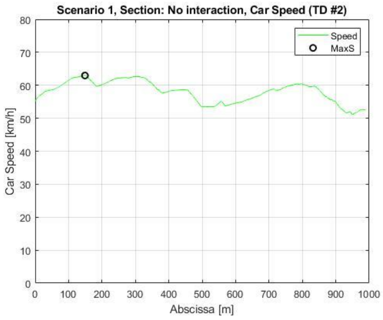

Scenario 3, Section: No interaction, Lateral Position (TD #30)
Lateral Position
MaxLP
Lateral Position [m]
Abscissa [m]

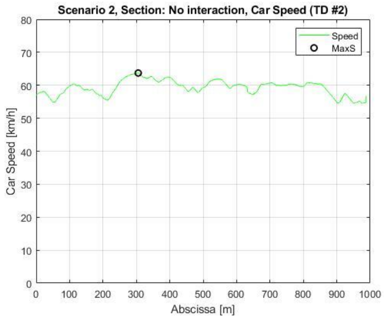
J. Max Speed graphs (No interaction)

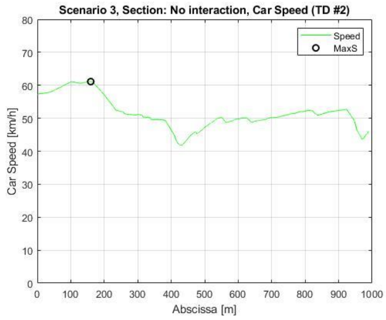


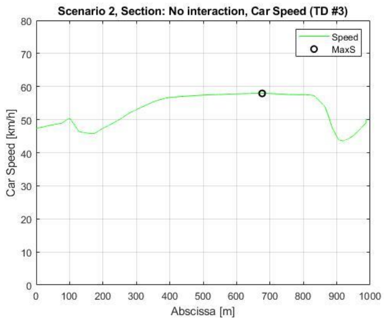


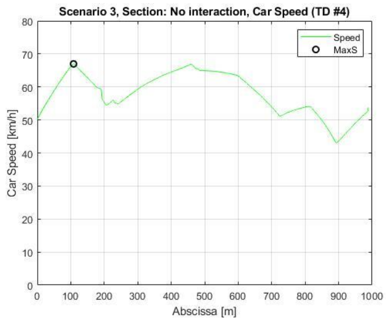


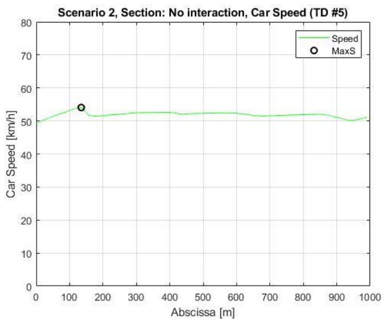


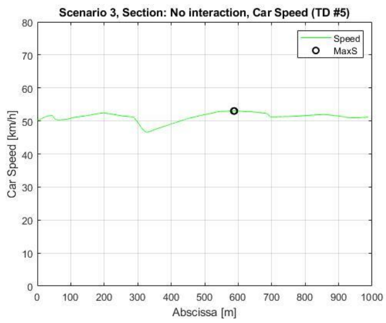


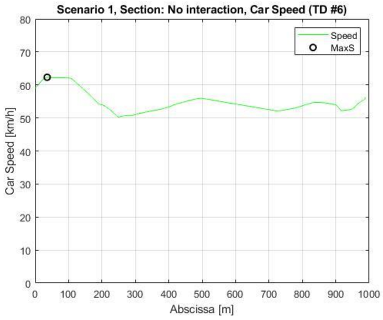




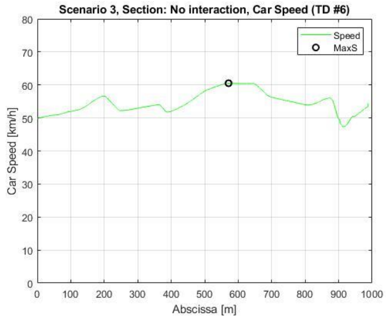


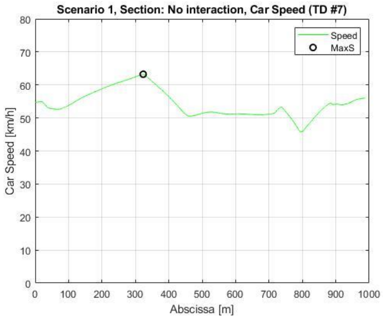




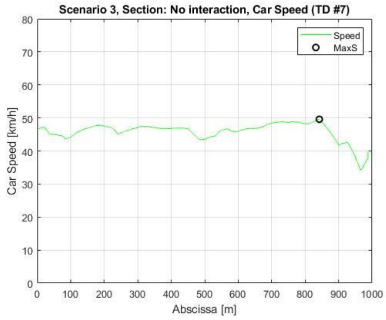

Scenario 1, Section: No interaction, Car Speed (TD #6)
Speed
MaxS
Car Speed [km/h]
Abscissa [m]

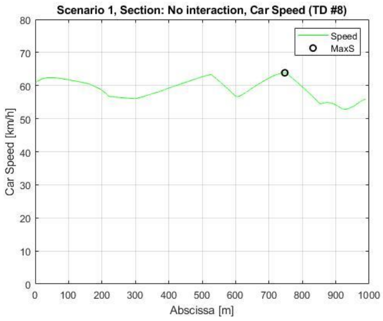

Scenario 2, Section: No interaction, Car Speed (TD #6)
Speed
MaxS
Car Speed [km/h]
Abscissa [m]


Scenario 3, Section: No interaction, Car Speed (TD #6)
Speed
MaxS
Car Speed [km/h]
Abscissa [m]

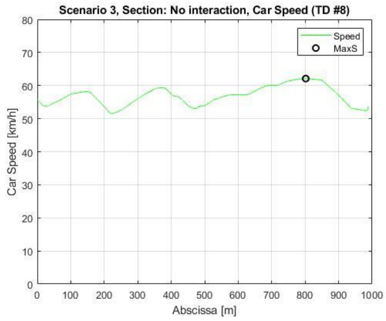

Scenario 1, Section: No interaction, Car Speed (TD #7)
Speed
MaxS
Car Speed [km/h]
Abscissa [m]

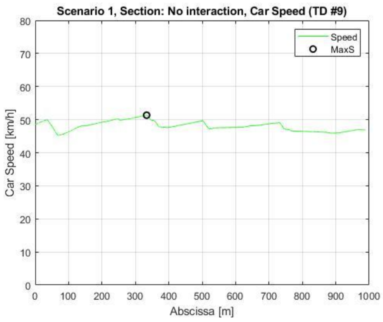

Scenario 2, Section: No interaction, Car Speed (TD #7)
Speed
MaxS
Car Speed [km/h]
Abscissa [m]


Scenario 3, Section: No interaction, Car Speed (TD #7)
Speed
MaxS
Car Speed [km/h]
Abscissa [m]

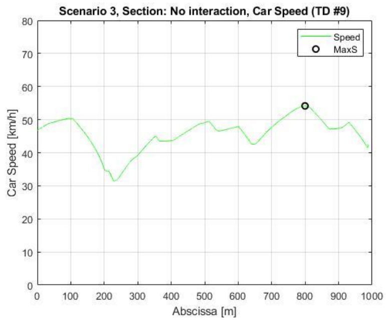

Scenario 1, Section: No interaction, Car Speed (TD #8)
Speed
MaxS
Car Speed [km/h]
Abscissa [m]

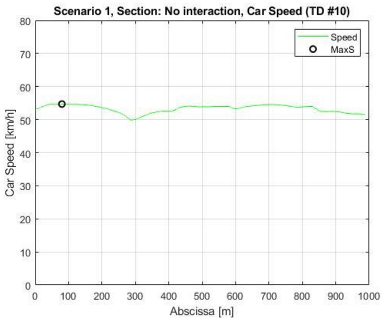

Scenario 2, Section: No interaction, Car Speed (TD #8)
Speed
MaxS
Car Speed [km/h]
Abscissa [m]

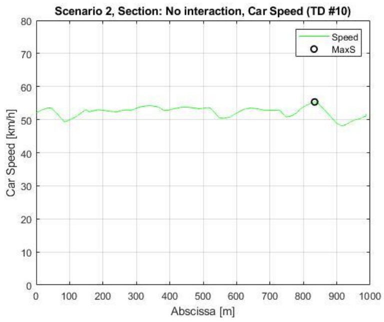

Scenario 3, Section: No interaction, Car Speed (TD #8)
Speed
MaxS
Car Speed [km/h]
Abscissa [m]

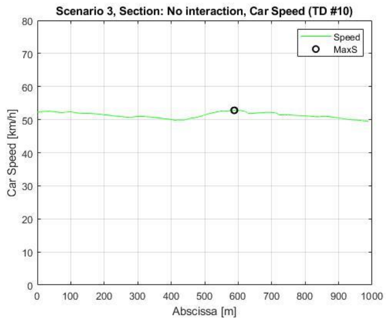

Scenario 1, Section: No interaction, Car Speed (TD #9)
Speed
MaxS
Car Speed [km/h]
Abscissa [m]

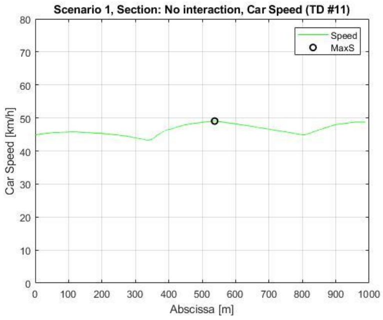

Scenario 2, Section: No interaction, Car Speed (TD #9)
Speed
MaxS
Car Speed [km/h]
Abscissa [m]

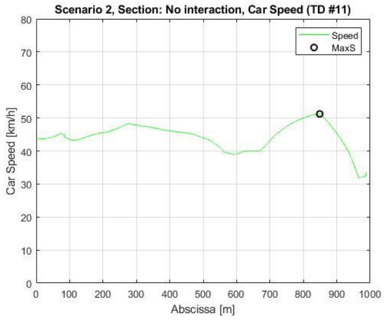

Scenario 3, Section: No interaction, Car Speed (TD #9)
Speed
MaxS
Car Speed [km/h]
Abscissa [m]

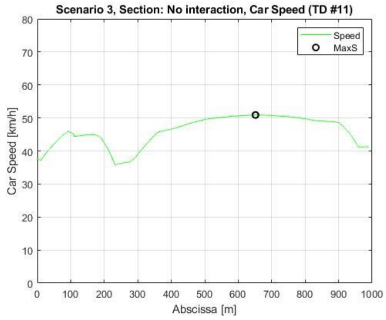

Scenario 1, Section: No interaction, Car Speed (TD #10)
Speed
MaxS
Car Speed [km/h]
Abscissa [m]

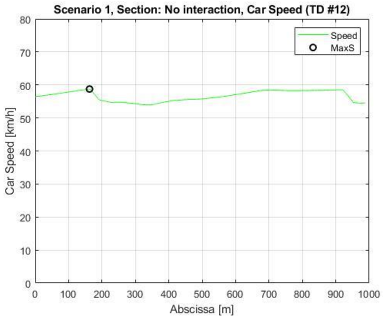

Scenario 2, Section: No interaction, Car Speed (TD #10)
Speed
MaxS
Car Speed [km/h]
Abscissa [m]


Scenario 3, Section: No interaction, Car Speed (TD #10)
Speed
MaxS
Car Speed [km/h]
Abscissa [m]

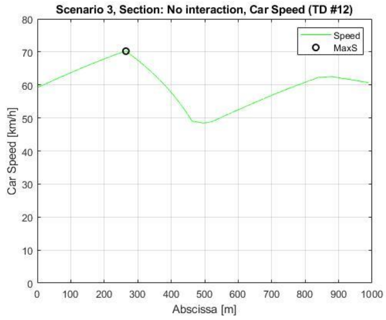

Scenario 1, Section: No interaction, Car Speed (TD #11)
Speed
MaxS
Car Speed [km/h]
Abscissa [m]

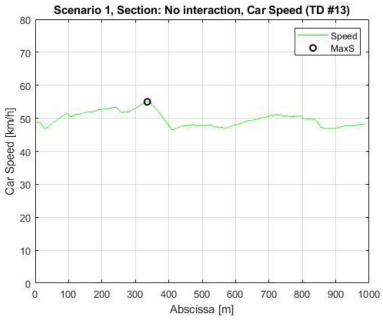

Scenario 2, Section: No interaction, Car Speed (TD #11)
Speed
MaxS
Car Speed [km/h]
Abscissa [m]

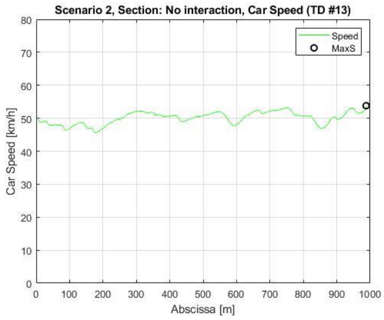

Scenario 3, Section: No interaction, Car Speed (TD #11)
Speed
MaxS
Car Speed [km/h]
Abscissa [m]


Scenario 1, Section: No interaction, Car Speed (TD #12)
Speed
MaxS
Car Speed [km/h]
Abscissa [m]

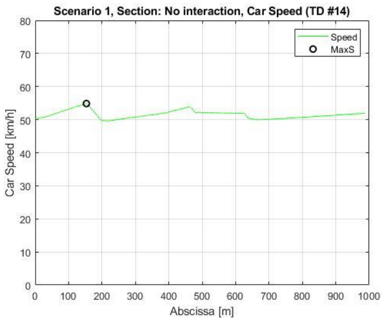

Scenario 2, Section: No interaction, Car Speed (TD #12)
Speed
MaxS
Car Speed [km/h]
Abscissa [m]

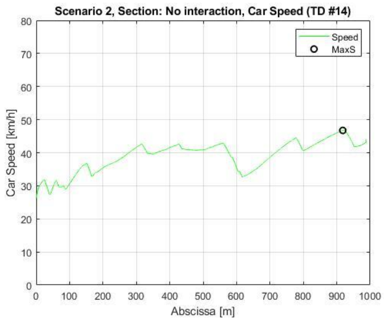

Scenario 3, Section: No interaction, Car Speed (TD #12)
Speed
MaxS
Car Speed [km/h]
Abscissa [m]

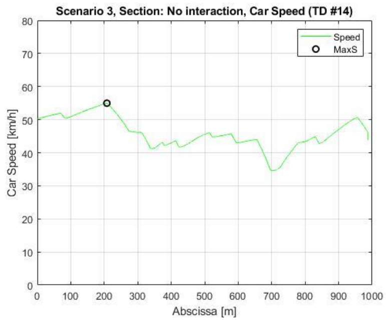

Scenario 1, Section: No interaction, Car Speed (TD #13)
Speed
MaxS
Car Speed [km/h]
Abscissa [m]

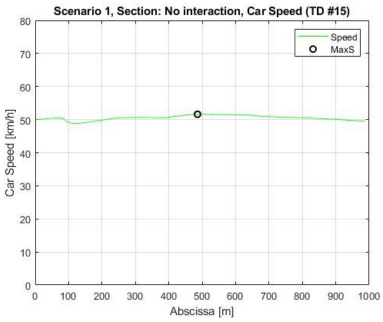

Scenario 2, Section: No interaction, Car Speed (TD #13)
Speed
MaxS
Car Speed [km/h]
Abscissa [m]

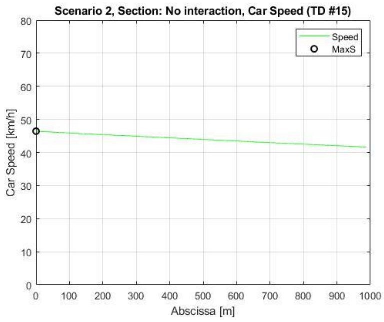

Scenario 3, Section: No interaction, Car Speed (TD #13)
Speed
MaxS
Car Speed [km/h]
Abscissa [m]


Scenario 1, Section: No interaction, Car Speed (TD #14)
Speed
MaxS
Car Speed [km/h]
Abscissa [m]

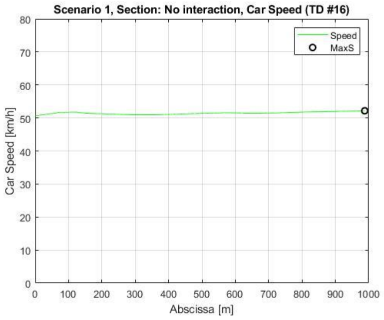

Scenario 2, Section: No interaction, Car Speed (TD #14)
Speed
MaxS
Car Speed [km/h]
Abscissa [m]

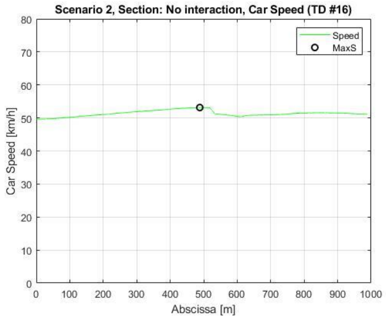

Scenario 3, Section: No interaction, Car Speed (TD #14)
Speed
MaxS
Car Speed [km/h]
Abscissa [m]

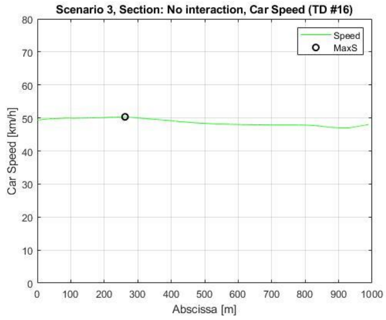

Scenario 1, Section: No interaction, Car Speed (TD #15)
Speed
MaxS
Car Speed [km/h]
Abscissa [m]

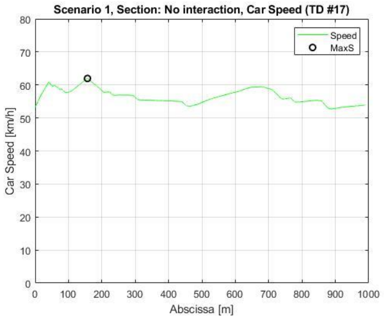

Scenario 2, Section: No interaction, Car Speed (TD #15)
Speed
MaxS
Car Speed [km/h]
Abscissa [m]

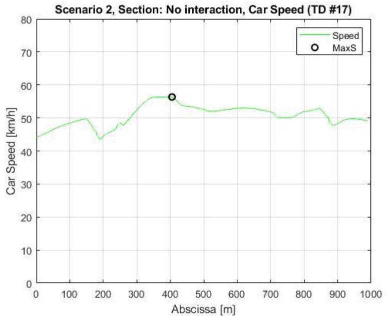

Scenario 3, Section: No interaction, Car Speed (TD #15)
Speed
MaxS
Car Speed [km/h]
Abscissa [m]

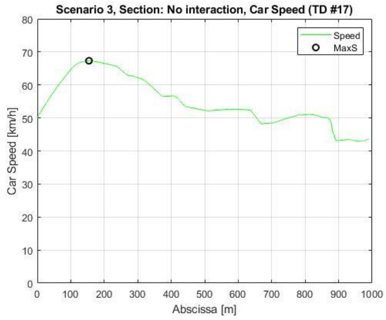

Scenario 1, Section: No interaction, Car Speed (TD #16)
Speed
MaxS
Car Speed [km/h]
Abscissa [m]

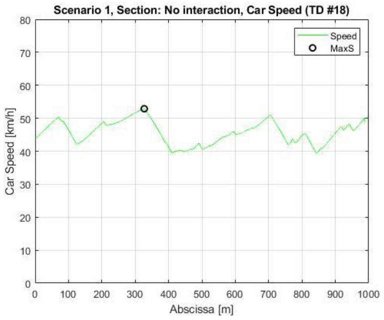

Scenario 2, Section: No interaction, Car Speed (TD #16)
Speed
MaxS
Car Speed [km/h]
Abscissa [m]


Scenario 3, Section: No interaction, Car Speed (TD #16)
Speed
MaxS
Car Speed [km/h]
Abscissa [m]

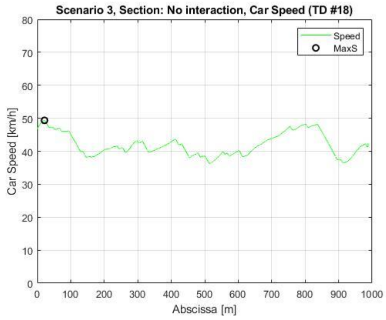

Scenario 1, Section: No interaction, Car Speed (TD #17)
Speed
MaxS
Car Speed [km/h]
Abscissa [m]

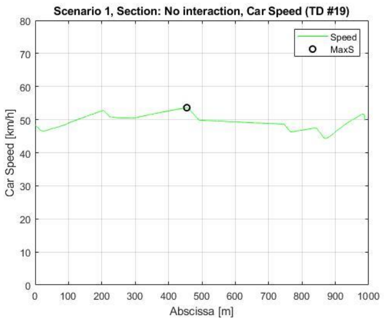

Scenario 2, Section: No interaction, Car Speed (TD #17)
Speed
MaxS
Car Speed [km/h]
Abscissa [m]

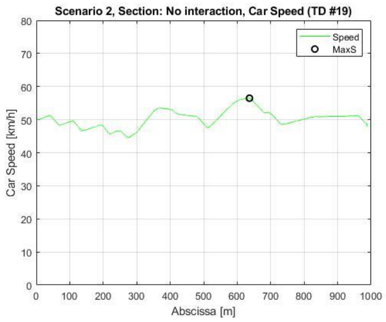

Scenario 3, Section: No interaction, Car Speed (TD #17)
Speed
MaxS
Car Speed [km/h]
Abscissa [m]

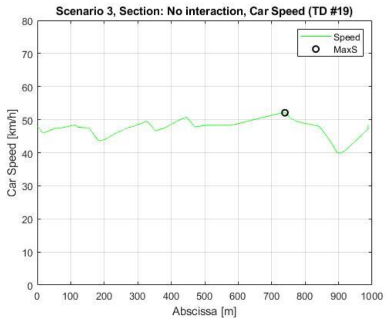

Scenario 1, Section: No interaction, Car Speed (TD #18)
Speed
MaxS
Car Speed [km/h]
Abscissa [m]

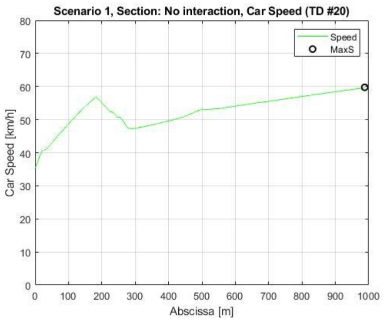

Scenario 2, Section: No interaction, Car Speed (TD #18)
Speed
MaxS
Car Speed [km/h]
Abscissa [m]

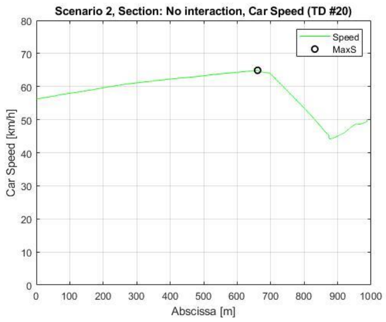

Scenario 3, Section: No interaction, Car Speed (TD #18)
Speed
MaxS
Car Speed [km/h]
Abscissa [m]

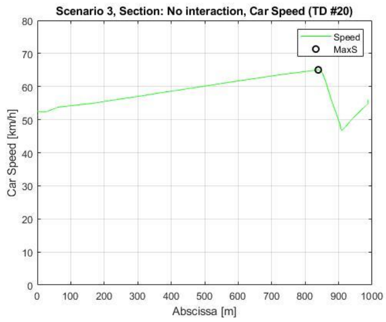

Scenario 1, Section: No interaction, Car Speed (TD #19)
Speed
MaxS
Car Speed [km/h]
Abscissa [m]

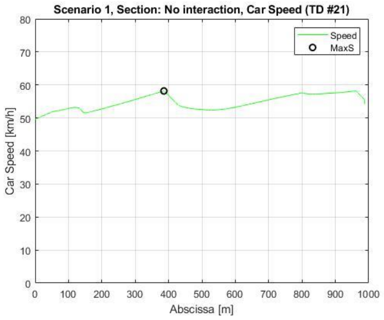

Scenario 2, Section: No interaction, Car Speed (TD #19)
Speed
MaxS
Car Speed [km/h]
Abscissa [m]


Scenario 3, Section: No interaction, Car Speed (TD #19)
Speed
MaxS
Car Speed [km/h]
Abscissa [m]


Scenario 1, Section: No interaction, Car Speed (TD #20)
Speed
MaxS
Car Speed [km/h]
Abscissa [m]

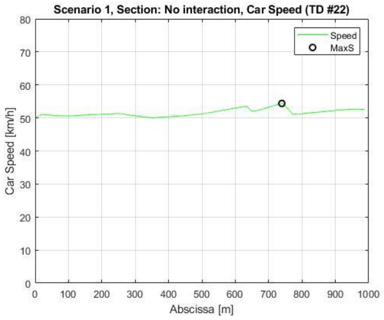

Scenario 2, Section: No interaction, Car Speed (TD #20)
Speed
MaxS
Car Speed [km/h]
Abscissa [m]


Scenario 3, Section: No interaction, Car Speed (TD #20)
Speed
MaxS
Car Speed [km/h]
Abscissa [m]


Scenario 1, Section: No interaction, Car Speed (TD #21)
Speed
MaxS
Car Speed [km/h]
Abscissa [m]

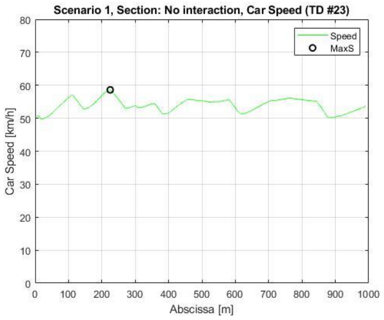

Scenario 2, Section: No interaction, Car Speed (TD #21)
Speed
MaxS
Car Speed [km/h]
Abscissa [m]

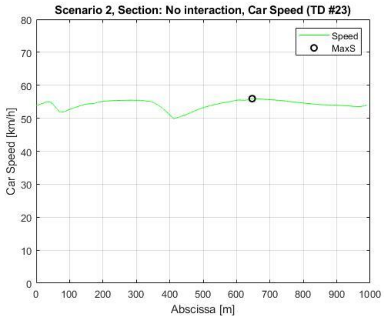

Scenario 3, Section: No interaction, Car Speed (TD #21)
Speed
MaxS
Car Speed [km/h]
Abscissa [m]

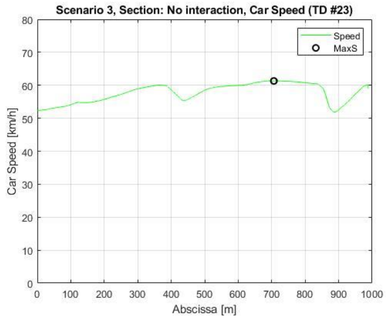

Scenario 1, Section: No interaction, Car Speed (TD #22)
Speed
MaxS
Car Speed [km/h]
Abscissa [m]

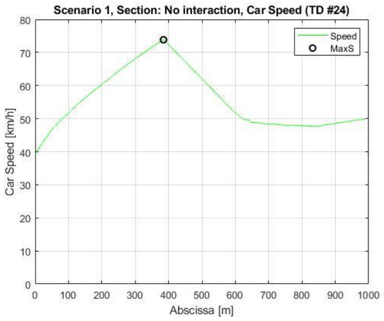

Scenario 2, Section: No interaction, Car Speed (TD #22)
Speed
MaxS
Car Speed [km/h]
Abscissa [m]

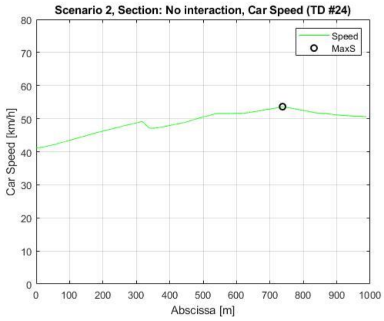

Scenario 3, Section: No interaction, Car Speed (TD #22)
Speed
MaxS
Car Speed [km/h]
Abscissa [m]

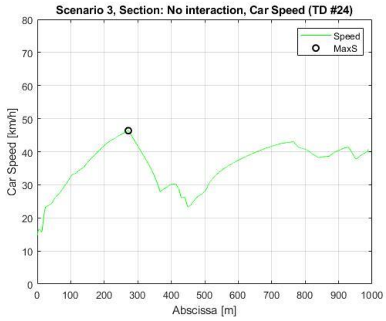

Scenario 1, Section: No interaction, Car Speed (TD #23)
Speed
MaxS
Car Speed [km/h]
Abscissa [m]

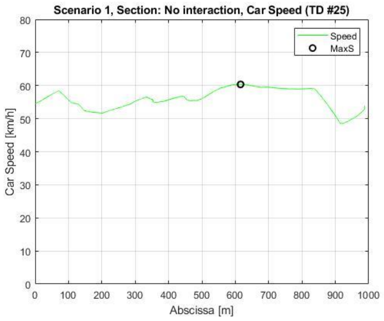

Scenario 2, Section: No interaction, Car Speed (TD #23)
Speed
MaxS
Car Speed [km/h]
Abscissa [m]

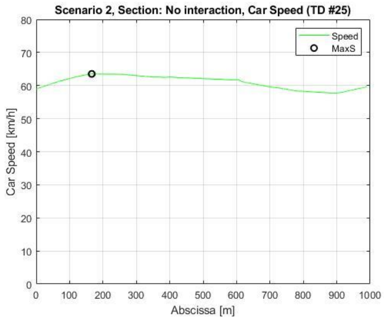

Scenario 3, Section: No interaction, Car Speed (TD #23)
Speed
MaxS
Car Speed [km/h]
Abscissa [m]


Scenario 1, Section: No interaction, Car Speed (TD #24)
Speed
MaxS
Car Speed [km/h]
Abscissa [m]

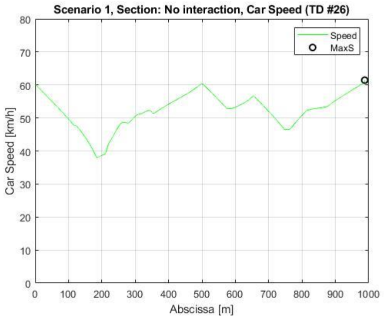

Scenario 2, Section: No interaction, Car Speed (TD #24)
Speed
MaxS
Car Speed [km/h]
Abscissa [m]


Scenario 3, Section: No interaction, Car Speed (TD #24)
Speed
MaxS
Car Speed [km/h]
Abscissa [m]


Scenario 1, Section: No interaction, Car Speed (TD #25)
Speed
MaxS
Car Speed [km/h]
Abscissa [m]

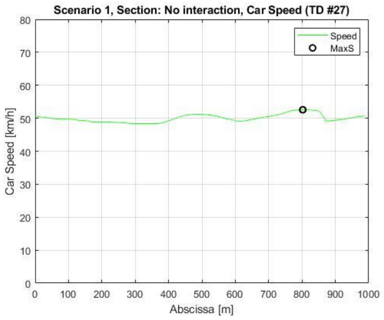

Scenario 2, Section: No interaction, Car Speed (TD #25)
Speed
MaxS
Car Speed [km/h]
Abscissa [m]


Scenario 3, Section: No interaction, Car Speed (TD #25)
Speed
MaxS
Car Speed [km/h]
Abscissa [m]

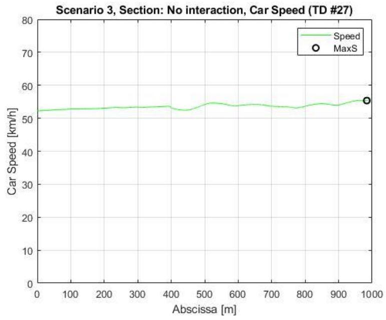

Scenario 1, Section: No interaction, Car Speed (TD #26)
Speed
MaxS
Car Speed [km/h]
Abscissa [m]

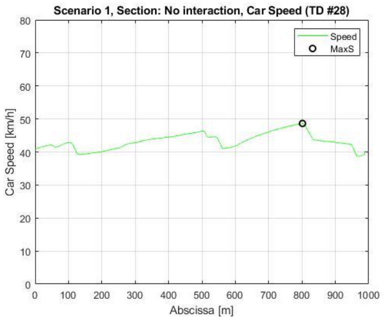

Scenario 2, Section: No interaction, Car Speed (TD #26)
Speed
MaxS
Car Speed [km/h]
Abscissa [m]


Scenario 3, Section: No interaction, Car Speed (TD #26)
Speed
MaxS
Car Speed [km/h]
Abscissa [m]

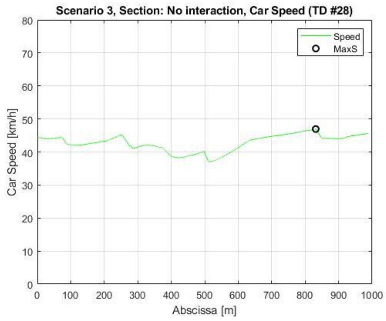

Scenario 1, Section: No interaction, Car Speed (TD #27)
Speed
MaxS
Car Speed [km/h]
Abscissa [m]

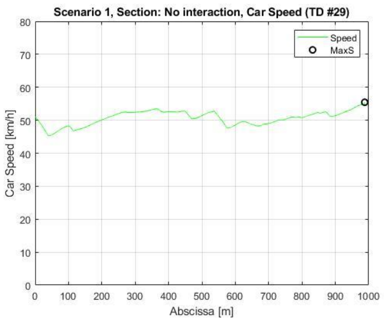

Scenario 2, Section: No interaction, Car Speed (TD #27)
Speed
MaxS
Car Speed [km/h]
Abscissa [m]


Scenario 3, Section: No interaction, Car Speed (TD #27)
Speed
MaxS
Car Speed [km/h]
Abscissa [m]

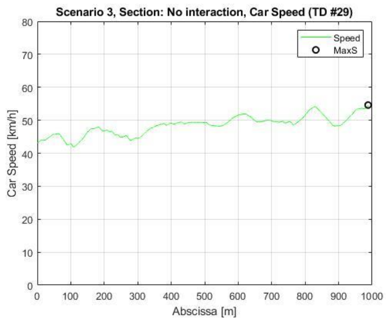

Scenario 1, Section: No interaction, Car Speed (TD #28)
Speed
MaxS
Car Speed [km/h]
Abscissa [m]

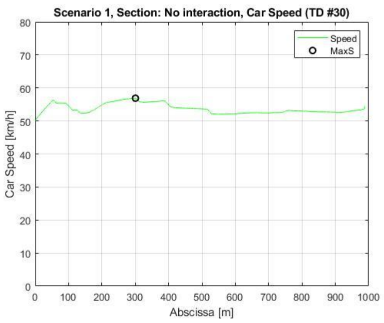

Scenario 2, Section: No interaction, Car Speed (TD #28)
Speed
MaxS
Car Speed [km/h]
Abscissa [m]

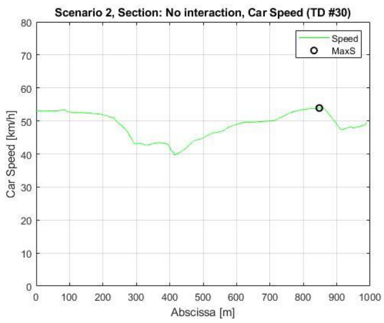

Scenario 3, Section: No interaction, Car Speed (TD #28)
Speed
MaxS
Car Speed [km/h]
Abscissa [m]

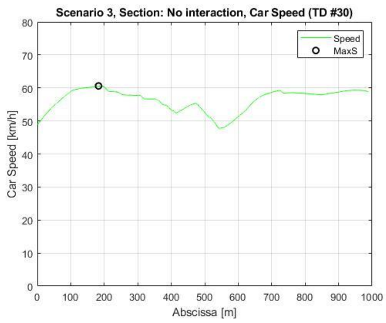

Scenario 1, Section: No interaction, Car Speed (TD #29)
Speed
MaxS
Car Speed [km/h]
Abscissa [m]


Scenario 2, Section: No interaction, Car Speed (TD #29)
Speed
MaxS
Car Speed [km/h]
Abscissa [m]

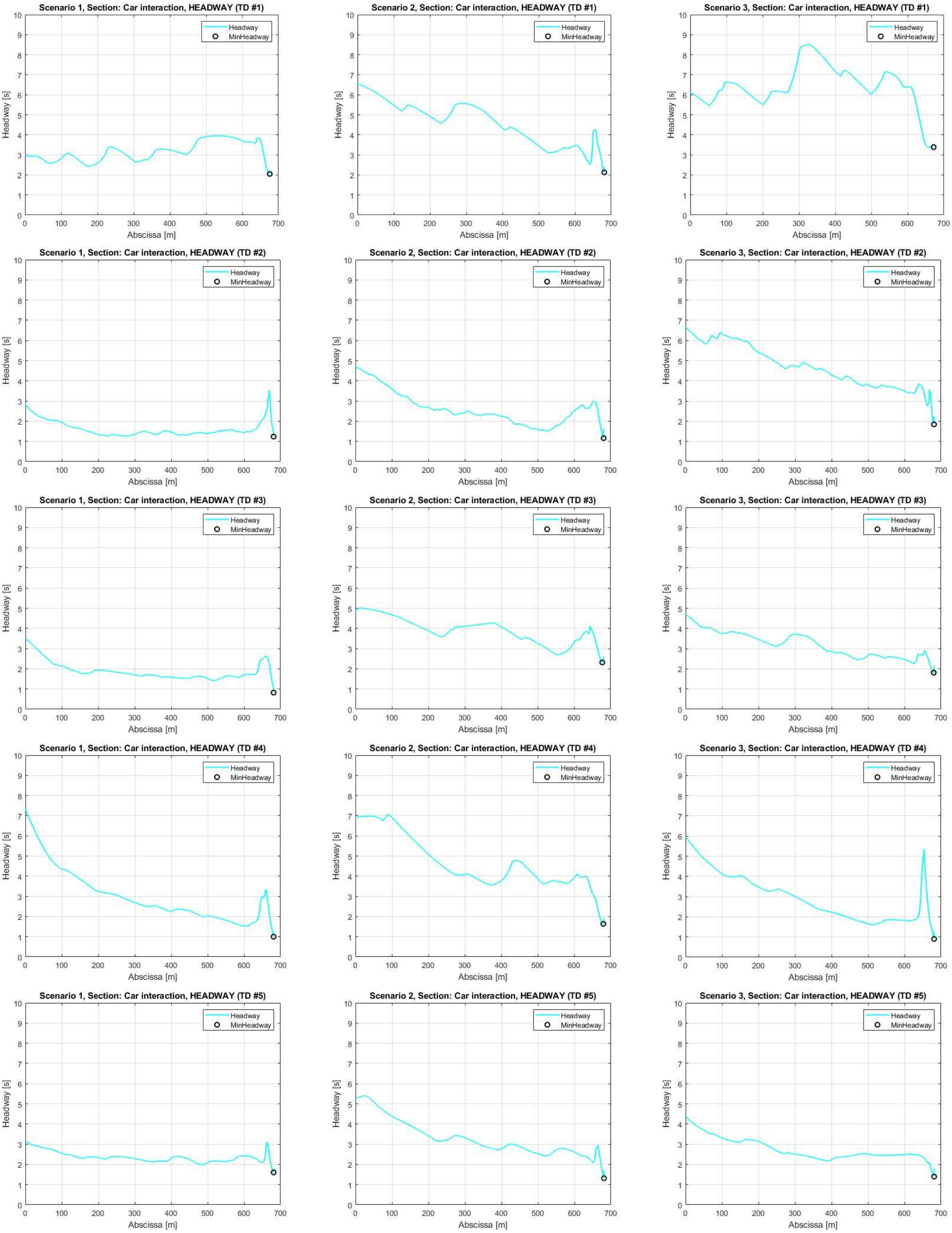

Scenario 3, Section: No interaction, Car Speed (TD #29)
Speed
MaxS
Car Speed [km/h]
Abscissa [m]

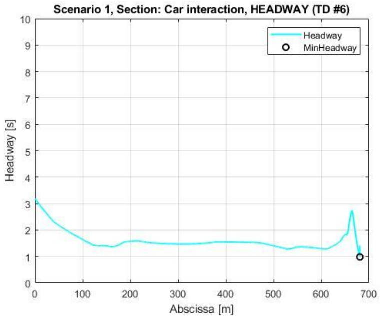

Scenario 1, Section: No interaction, Car Speed (TD #30)
Speed
MaxS
Car Speed [km/h]
Abscissa [m]

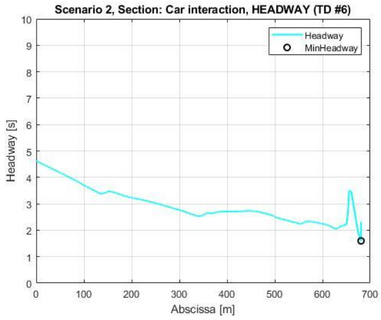

Scenario 2, Section: No interaction, Car Speed (TD #30)
Speed
MaxS
Car Speed [km/h]
Abscissa [m]

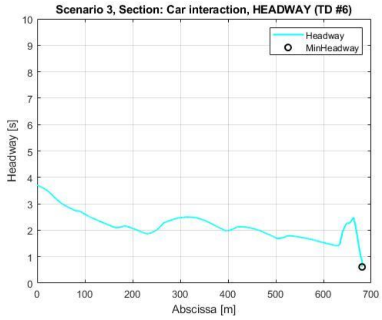

Scenario 3, Section: No interaction, Car Speed (TD #30)
Speed
MaxS
Car Speed [km/h]
Abscissa [m]

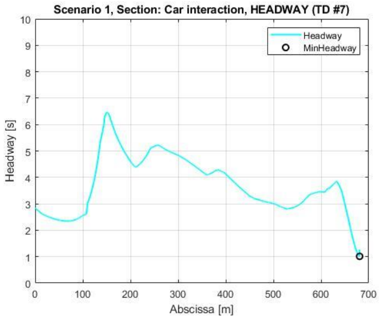
K. Min Headway (Vehicle interaction)

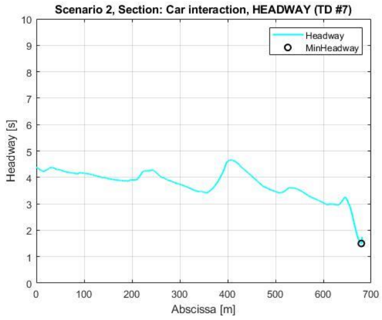


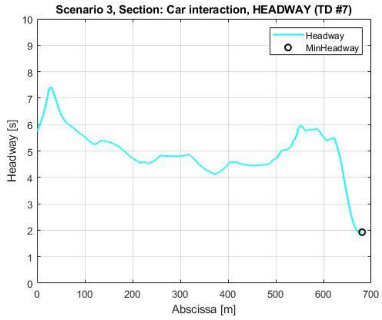

Scenario 1, Section: Car interaction, HEADWAY (TD #6)
Headway
MinHeadway
Headway [s]
Abscissa [m]

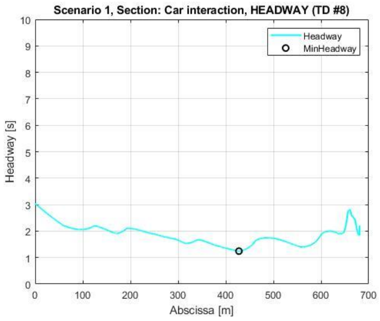

Scenario 2, Section: Car interaction, HEADWAY (TD #6)
Headway
MinHeadway
Headway [s]
Abscissa [m]

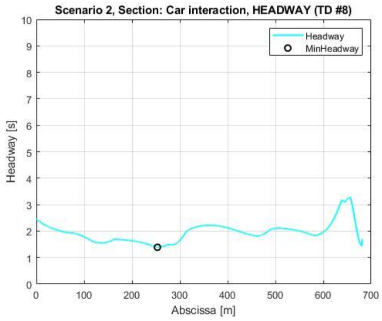

Scenario 3, Section: Car interaction, HEADWAY (TD #6)
Headway
MinHeadway
Headway [s]
Abscissa [m]

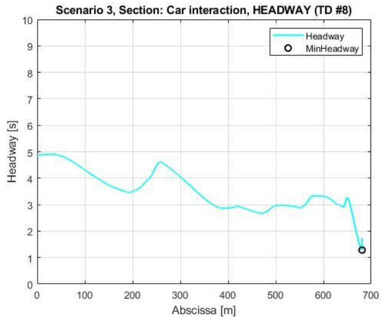

Scenario 1, Section: Car interaction, HEADWAY (TD #7)
Headway
MinHeadway
Headway [s]
Abscissa [m]

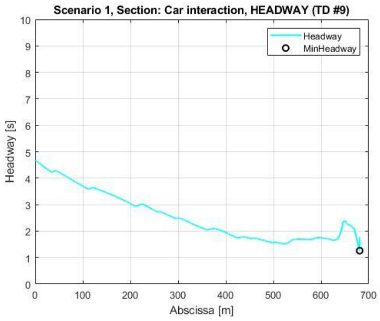

Scenario 2, Section: Car interaction, HEADWAY (TD #7)
Headway
MinHeadway
Headway [s]
Abscissa [m]

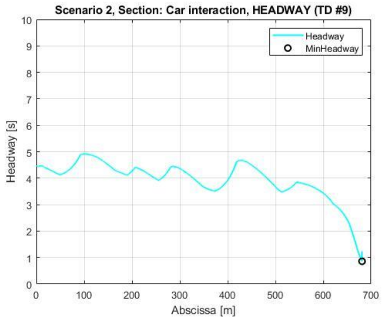

Scenario 3, Section: Car interaction, HEADWAY (TD #7)
Headway
MinHeadway
Headway [s]
Abscissa [m]

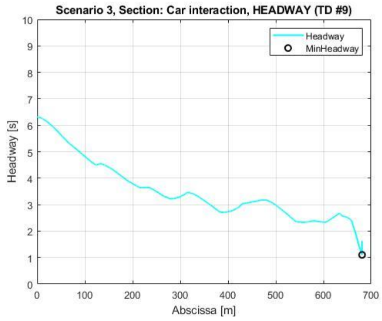

Scenario 1, Section: Car interaction, HEADWAY (TD #8)
Headway
MinHeadway
Headway [s]
Abscissa [m]

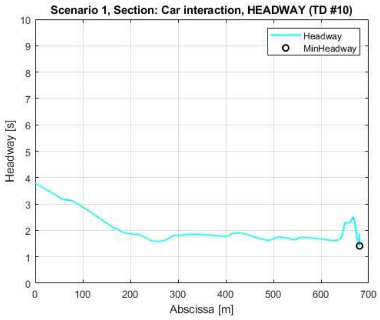

Scenario 2, Section: Car interaction, HEADWAY (TD #8)
Headway
MinHeadway
Headway [s]
Abscissa [m]

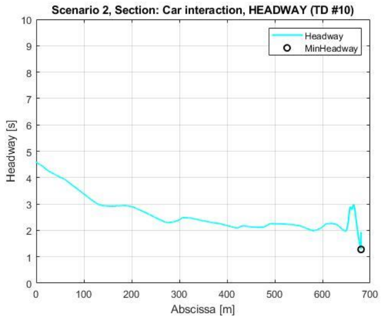

Scenario 3, Section: Car interaction, HEADWAY (TD #8)
Headway
MinHeadway
Headway [s]
Abscissa [m]

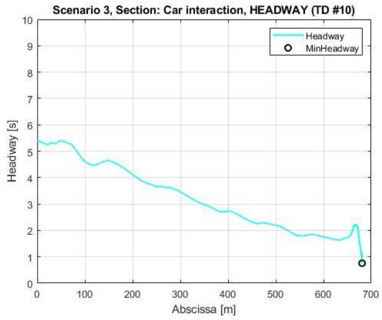

Scenario 1, Section: Car interaction, HEADWAY (TD #9)
Headway
MinHeadway
Headway [s]
Abscissa [m]

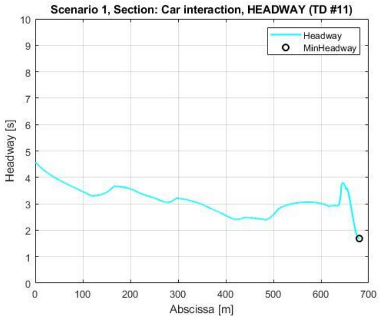

Scenario 2, Section: Car interaction, HEADWAY (TD #9)
Headway
MinHeadway
Headway [s]
Abscissa [m]

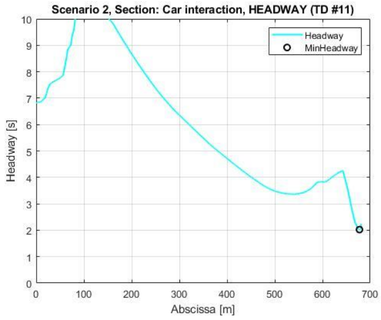

Scenario 3, Section: Car interaction, HEADWAY (TD #9)
Headway
MinHeadway
Headway [s]
Abscissa [m]

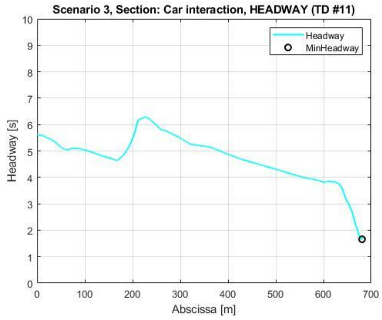

Scenario 1, Section: Car interaction, HEADWAY (TD #10)
Headway
MinHeadway
Headway [s]
Abscissa [m]

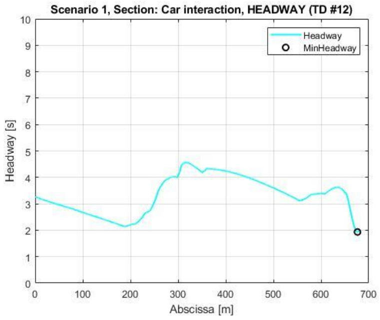

Scenario 2, Section: Car interaction, HEADWAY (TD #10)
Headway
MinHeadway
Headway [s]
Abscissa [m]

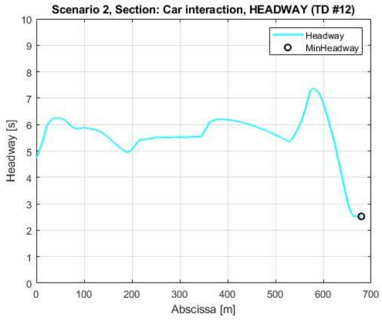

Scenario 3, Section: Car interaction, HEADWAY (TD #10)
Headway
MinHeadway
Headway [s]
Abscissa [m]

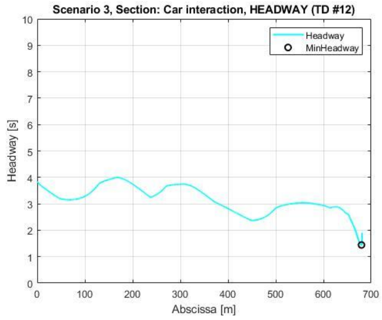

Scenario 1, Section: Car interaction, HEADWAY (TD #11)
Headway
MinHeadway
Headway [s]
Abscissa [m]

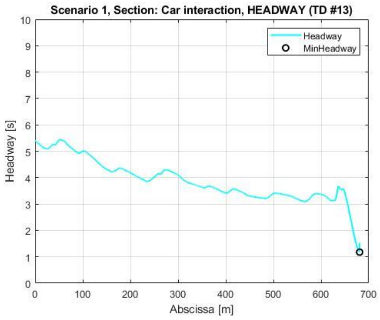

Scenario 2, Section: Car interaction, HEADWAY (TD #11)
Headway
MinHeadway
Headway [s]
Abscissa [m]

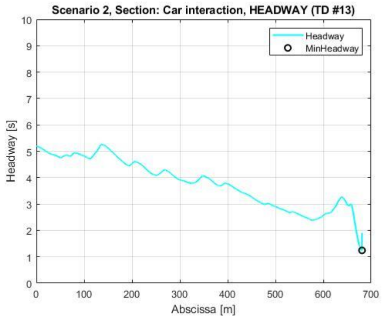

Scenario 3, Section: Car interaction, HEADWAY (TD #11)
Headway
MinHeadway
Headway [s]
Abscissa [m]

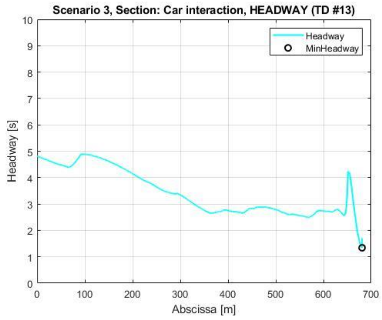

Scenario 1, Section: Car interaction, HEADWAY (TD #12)
Headway
MinHeadway
Headway [s]
Abscissa [m]

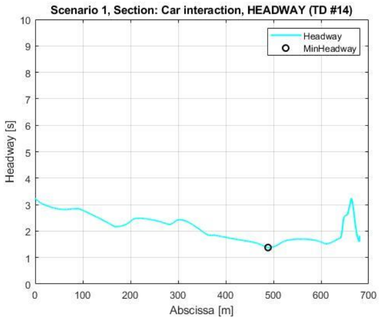

Scenario 2, Section: Car interaction, HEADWAY (TD #12)
Headway
MinHeadway
Headway [s]
Abscissa [m]

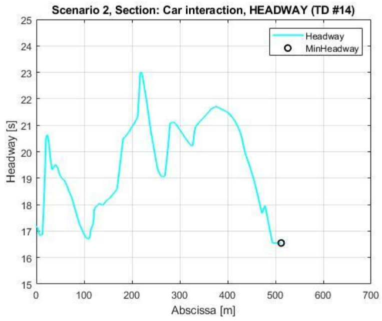

Scenario 3, Section: Car interaction, HEADWAY (TD #12)
Headway
MinHeadway
Headway [s]
Abscissa [m]

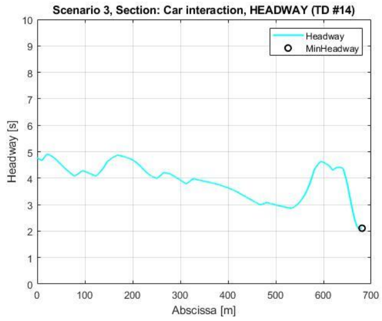

Scenario 1, Section: Car interaction, HEADWAY (TD #13)
Headway
MinHeadway
Headway [s]
Abscissa [m]

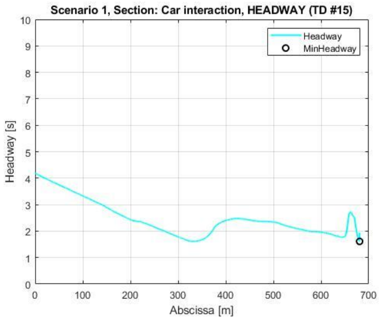

Scenario 2, Section: Car interaction, HEADWAY (TD #13)
Headway
MinHeadway
Headway [s]
Abscissa [m]

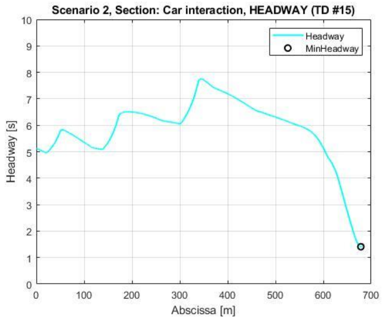

Scenario 3, Section: Car interaction, HEADWAY (TD #13)
Headway
MinHeadway
Headway [s]
Abscissa [m]

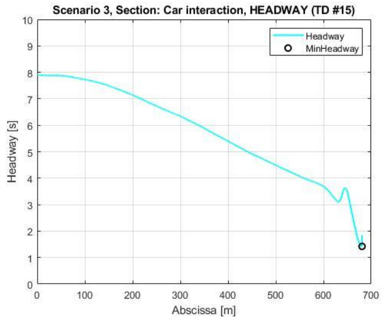

Scenario 1, Section: Car interaction, HEADWAY (TD #14)
Headway
MinHeadway
Headway [s]
Abscissa [m]

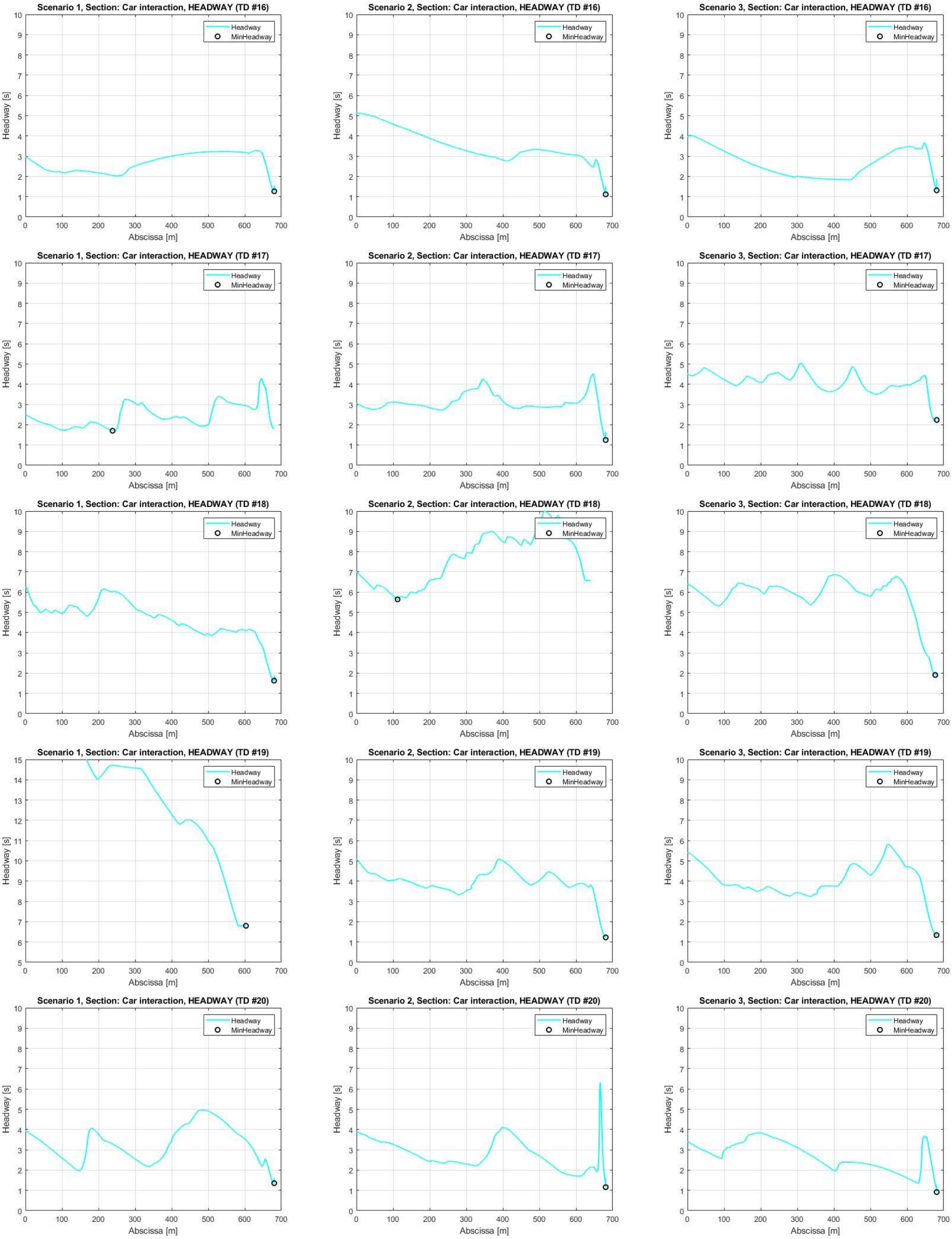

Scenario 2, Section: Car interaction, HEADWAY (TD #14)
Headway
MinHeadway
Headway [s]
Abscissa [m]

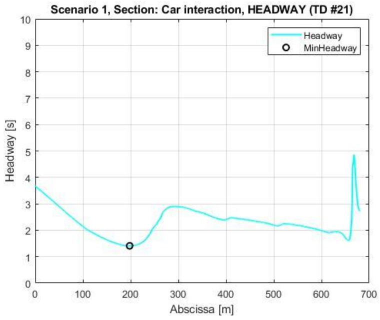

Scenario 3, Section: Car interaction, HEADWAY (TD #14)
Headway
MinHeadway
Headway [s]
Abscissa [m]

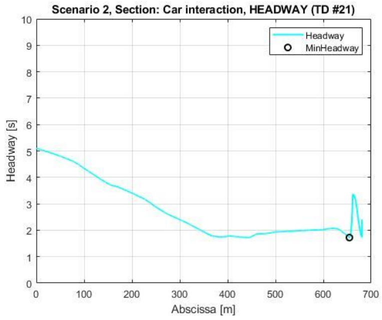

Scenario 1, Section: Car interaction, HEADWAY (TD #15)
Headway
MinHeadway
Headway [s]
Abscissa [m]

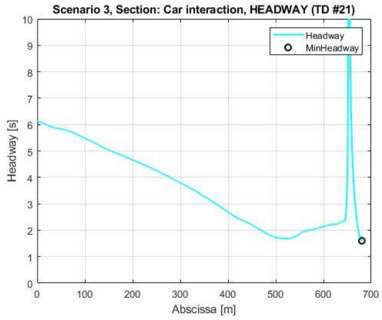

Scenario 2, Section: Car interaction, HEADWAY (TD #15)
Headway
MinHeadway
Headway [s]
Abscissa [m]

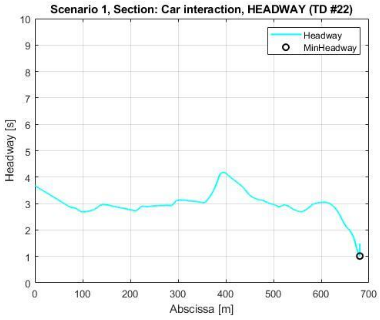

Scenario 3, Section: Car interaction, HEADWAY (TD #15)
Headway
MinHeadway
Headway [s]
Abscissa [m]

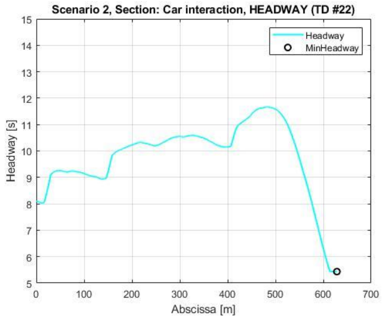

Scenario 1, Section: Car interaction, HEADWAY (TD #16)
Scenario 2, Section: Car interaction, HEADWAY (TD #16)
Scenario 3, Section: Car interaction, HEADWAY (TD #16)
Scenario 1, Section: Car interaction, HEADWAY (TD #17)
Scenario 2, Section: Car interaction, HEADWAY (TD #17)
Scenario 3, Section: Car interaction, HEADWAY (TD #17)
Scenario 1, Section: Car interaction, HEADWAY (TD #18)
Scenario 2, Section: Car interaction, HEADWAY (TD #18)
Scenario 3, Section: Car interaction, HEADWAY (TD #18)
Scenario 1, Section: Car interaction, HEADWAY (TD #19)
Scenario 2, Section: Car interaction, HEADWAY (TD #19)
Scenario 3, Section: Car interaction, HEADWAY (TD #19)
Scenario 1, Section: Car interaction, HEADWAY (TD #20)
Scenario 2, Section: Car interaction, HEADWAY (TD #20)
Scenario 3, Section: Car interaction, HEADWAY (TD #20)
Headway
MinHeadway
Headway [s]
Abscissa [m]

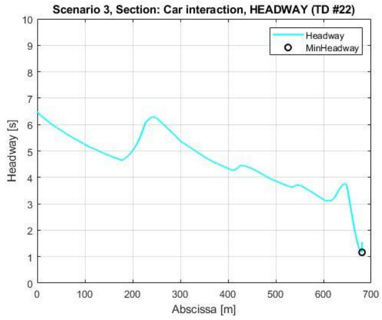

Scenario 1, Section: Car interaction, HEADWAY (TD #21)
Headway
MinHeadway
Headway [s]
Abscissa [m]

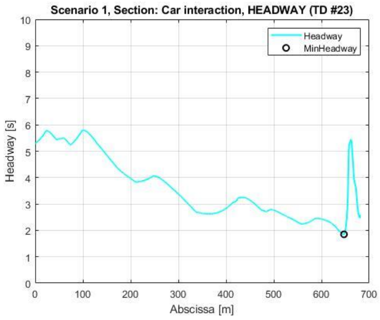

Scenario 2, Section: Car interaction, HEADWAY (TD #21)
Headway
MinHeadway
Headway [s]
Abscissa [m]

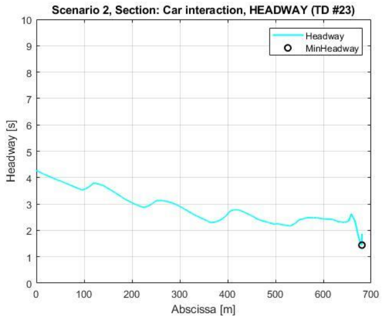

Scenario 3, Section: Car interaction, HEADWAY (TD #21)
Headway
MinHeadway
Headway [s]
Abscissa [m]

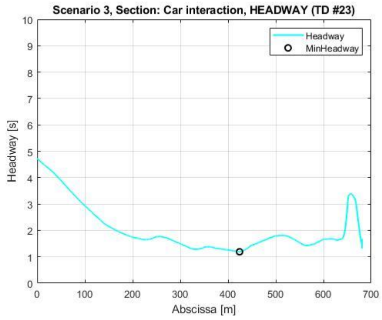

Scenario 1, Section: Car interaction, HEADWAY (TD #22)
Headway
MinHeadway
Headway [s]
Abscissa [m]

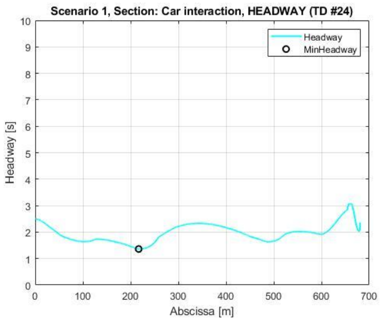

Scenario 2, Section: Car interaction, HEADWAY (TD #22)
Headway
MinHeadway
Headway [s]
Abscissa [m]

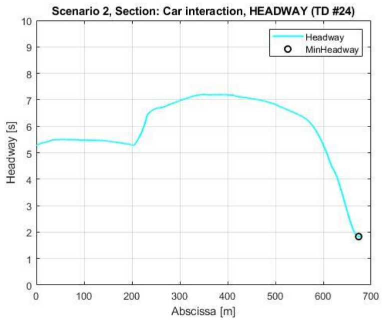

Scenario 3, Section: Car interaction, HEADWAY (TD #22)
Headway
MinHeadway
Headway [s]
Abscissa [m]

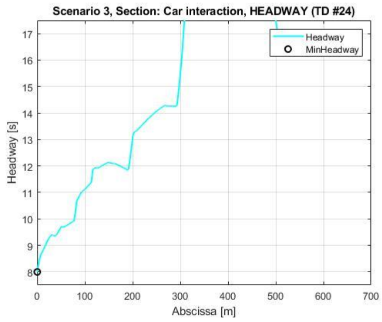

Scenario 1, Section: Car interaction, HEADWAY (TD #23)
Headway
MinHeadway
Headway [s]
Abscissa [m]

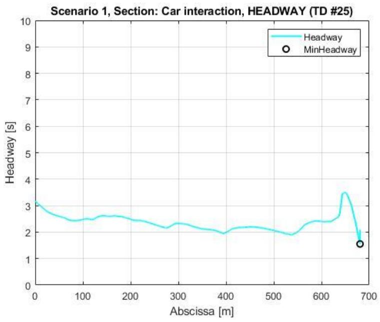

Scenario 2, Section: Car interaction, HEADWAY (TD #23)
Headway
MinHeadway
Headway [s]
Abscissa [m]

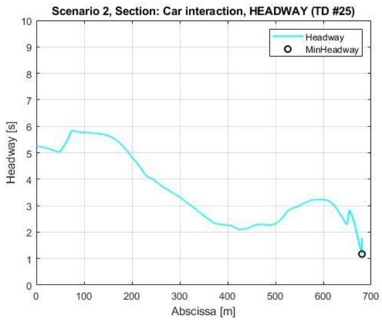

Scenario 3, Section: Car interaction, HEADWAY (TD #23)
Headway
MinHeadway
Headway [s]
Abscissa [m]

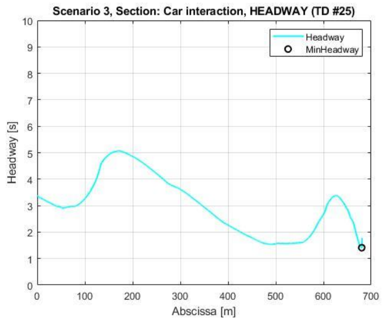

Scenario 1, Section: Car interaction, HEADWAY (TD #24)
Headway
MinHeadway
Headway [s]
Abscissa [m]

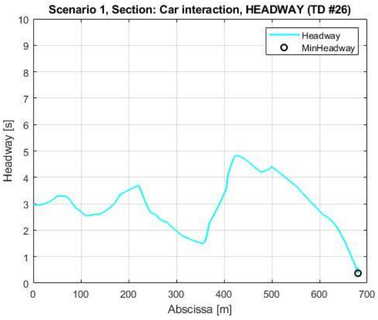

Scenario 2, Section: Car interaction, HEADWAY (TD #24)
Headway
MinHeadway
Headway [s]
Abscissa [m]

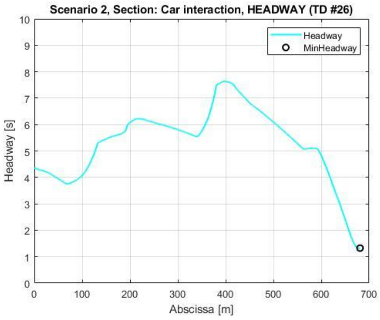

Scenario 3, Section: Car interaction, HEADWAY (TD #24)
Headway
MinHeadway
Headway [s]
Abscissa [m]

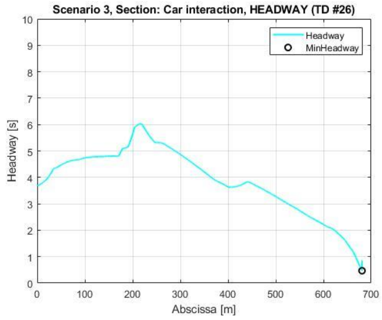

Scenario 1, Section: Car interaction, HEADWAY (TD #25)
Headway
MinHeadway
Headway [s]
Abscissa [m]

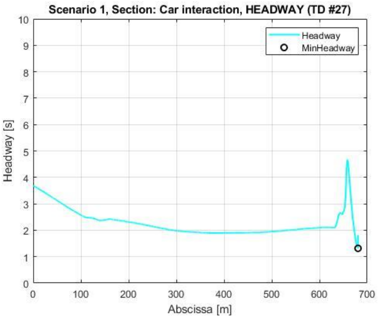

Scenario 2, Section: Car interaction, HEADWAY (TD #25)
Headway
MinHeadway
Headway [s]
Abscissa [m]

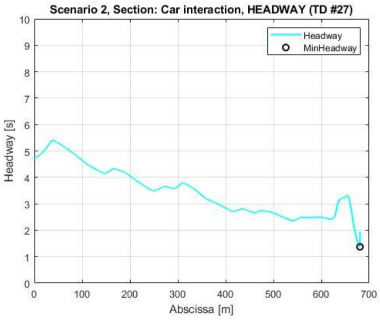

Scenario 3, Section: Car interaction, HEADWAY (TD #25)
Headway
MinHeadway
Headway [s]
Abscissa [m]

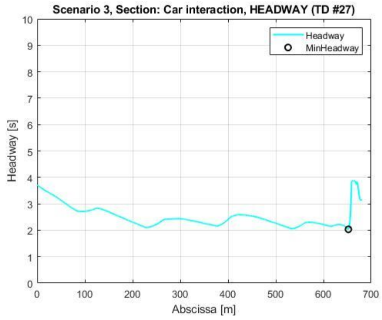

Scenario 1, Section: Car interaction, HEADWAY (TD #26)
Headway
MinHeadway
Headway [s]
Abscissa [m]

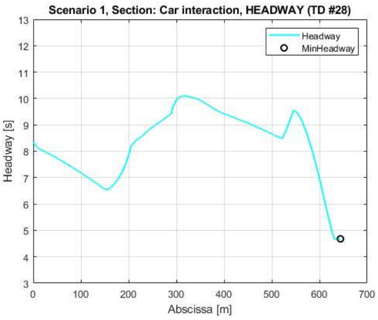

Scenario 2, Section: Car interaction, HEADWAY (TD #26)
Headway
MinHeadway
Headway [s]
Abscissa [m]

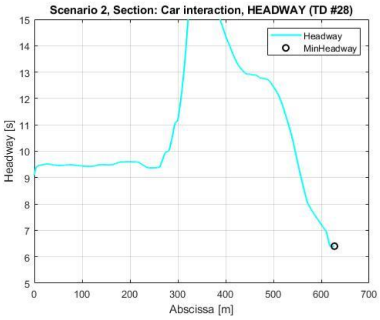

Scenario 3, Section: Car interaction, HEADWAY (TD #26)
Headway
MinHeadway
Headway [s]
Abscissa [m]

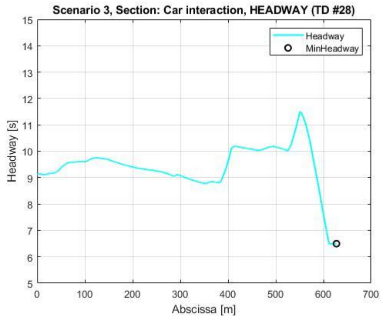

Scenario 1, Section: Car interaction, HEADWAY (TD #27)
Headway
MinHeadway
Headway [s]
Abscissa [m]

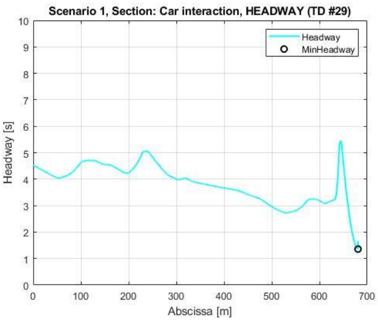

Scenario 2, Section: Car interaction, HEADWAY (TD #27)
Headway
MinHeadway
Headway [s]
Abscissa [m]

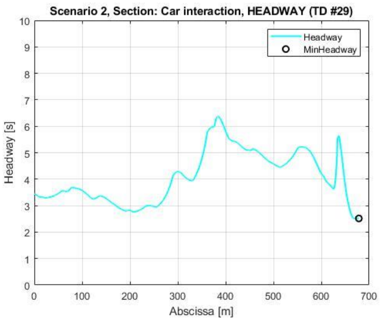

Scenario 3, Section: Car interaction, HEADWAY (TD #27)
Headway
MinHeadway
Headway [s]
Abscissa [m]

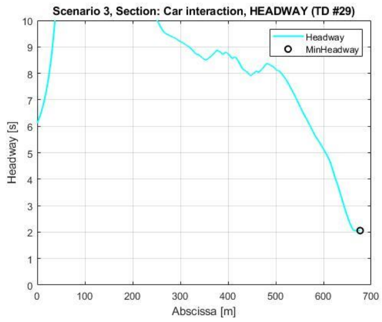

Scenario 1, Section: Car interaction, HEADWAY (TD #28)
Headway
MinHeadway
Headway [s]
Abscissa [m]

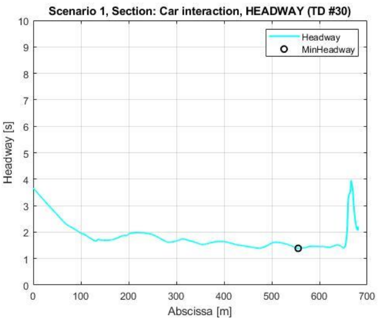

Scenario 2, Section: Car interaction, HEADWAY (TD #28)
Headway
MinHeadway
Headway [s]
Abscissa [m]

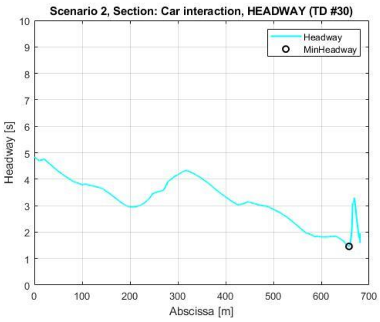

Scenario 3, Section: Car interaction, HEADWAY (TD #28)
Headway
MinHeadway
Headway [s]
Abscissa [m]

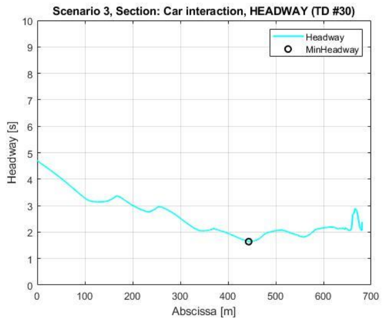

Scenario 1, Section: Car interaction, HEADWAY (TD #29)
Headway
MinHeadway
Headway [s]
Abscissa [m]


Scenario 2, Section: Car interaction, HEADWAY (TD #29)
Headway
MinHeadway
Headway [s]
Abscissa [m]

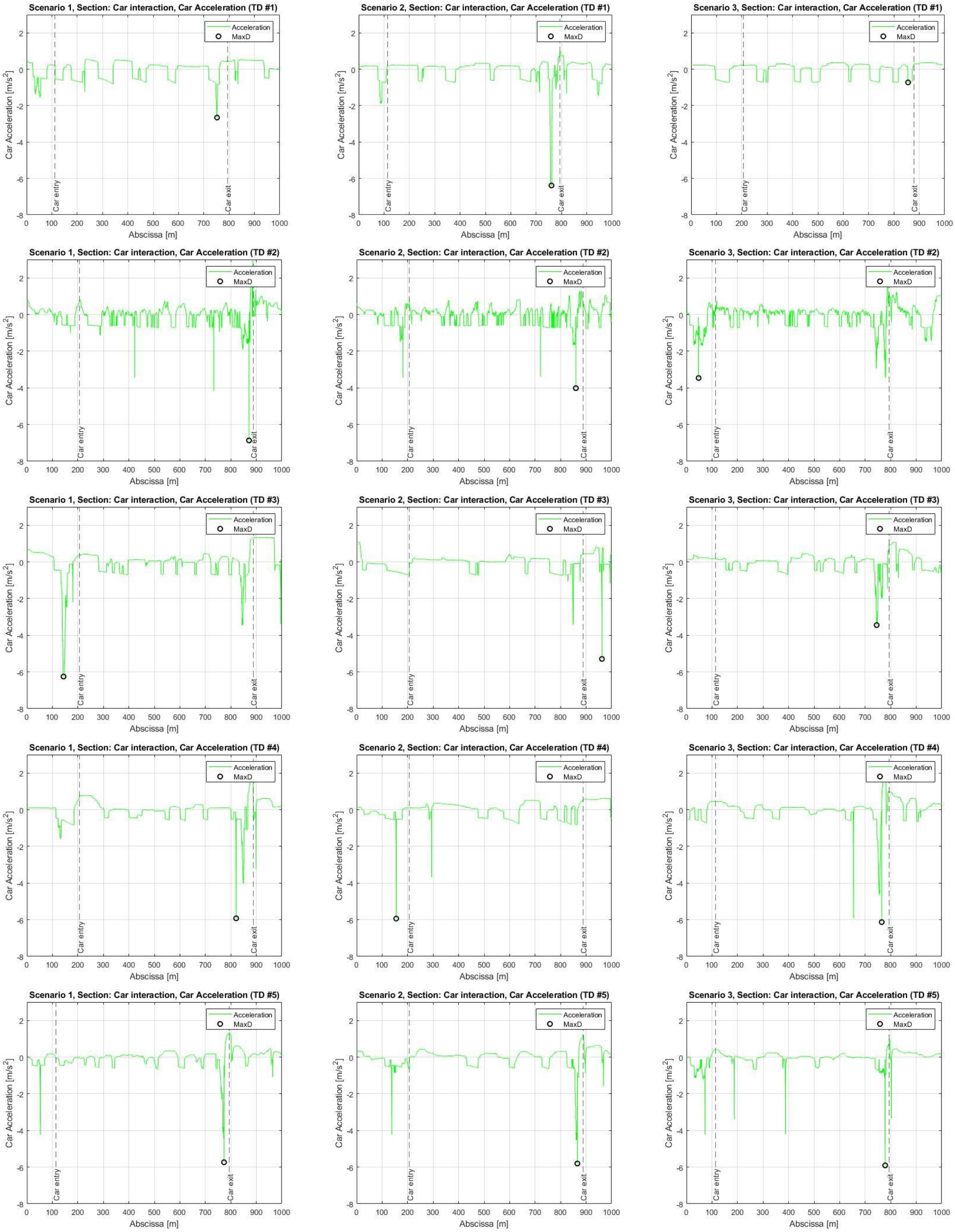

Scenario 3, Section: Car interaction, HEADWAY (TD #29)
Headway
MinHeadway
Headway [s]
Abscissa [m]

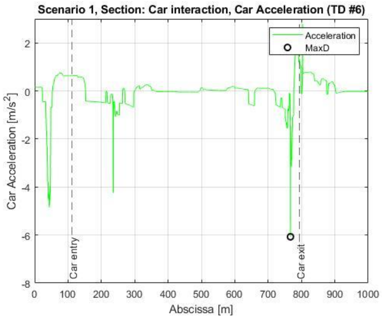

Scenario 1, Section: Car interaction, HEADWAY (TD #30)
Headway
MinHeadway
Headway [s]
Abscissa [m]

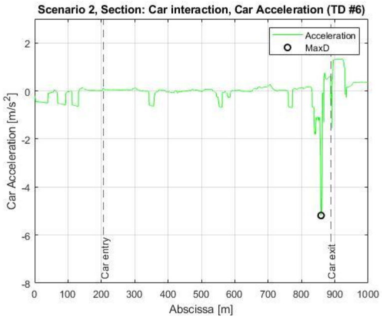

Scenario 2, Section: Car interaction, HEADWAY (TD #30)
Headway
MinHeadway
Headway [s]
Abscissa [m]

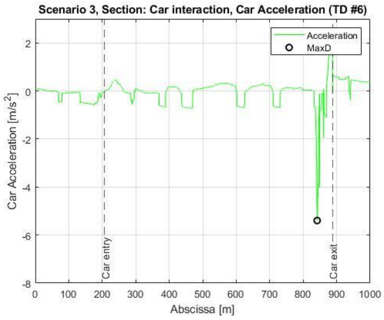

Scenario 3, Section: Car interaction, HEADWAY (TD #30)
Headway
MinHeadway
Headway [s]
Abscissa [m]

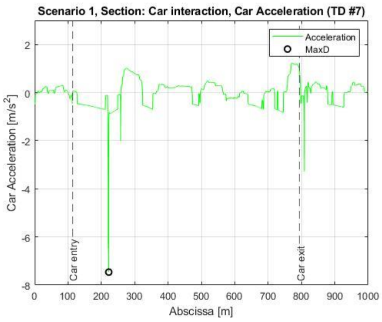
L. Max Deceleration graphs (Vehicle interaction)

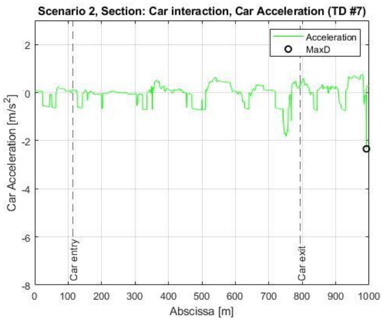


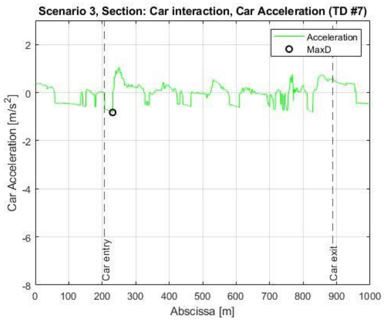

Scenario 1, Section: Car interaction, Car Acceleration (TD #6)
Acceleration
MaxD
Car entry
Car exit
Car Acceleration [m/s^2]
Abscissa [m]

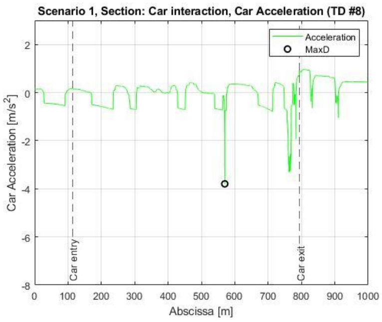

Scenario 2, Section: Car interaction, Car Acceleration (TD #6)
Acceleration
MaxD
Car entry
Car exit
Car Acceleration [m/s^2]
Abscissa [m]

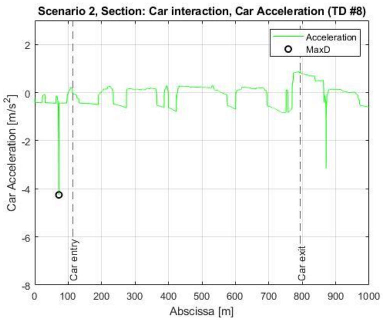

Scenario 3, Section: Car interaction, Car Acceleration (TD #6)
Acceleration
MaxD
Car entry
Car exit
Car Acceleration [m/s^2]
Abscissa [m]

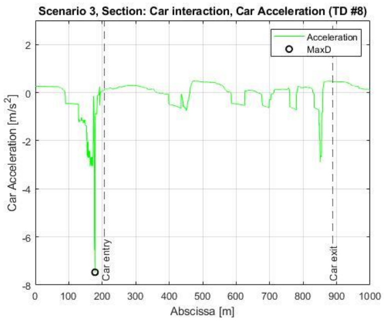

Scenario 1, Section: Car interaction, Car Acceleration (TD #7)
Acceleration
MaxD
Car entry
Car exit
Car Acceleration [m/s^2]
Abscissa [m]

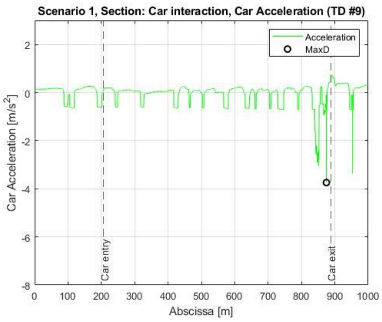

Scenario 2, Section: Car interaction, Car Acceleration (TD #7)
Acceleration
MaxD
Car entry
Car exit
Car Acceleration [m/s^2]
Abscissa [m]

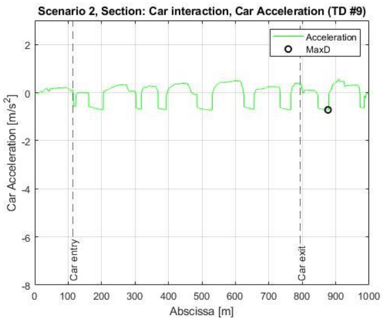

Scenario 3, Section: Car interaction, Car Acceleration (TD #7)
Acceleration
MaxD
Car entry
Car exit
Car Acceleration [m/s^2]
Abscissa [m]

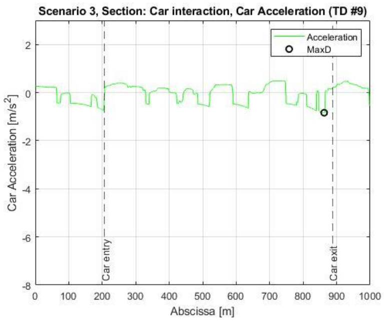

Scenario 1, Section: Car interaction, Car Acceleration (TD #8)
Acceleration
MaxD
Car entry
Car exit
Car Acceleration [m/s^2]
Abscissa [m]

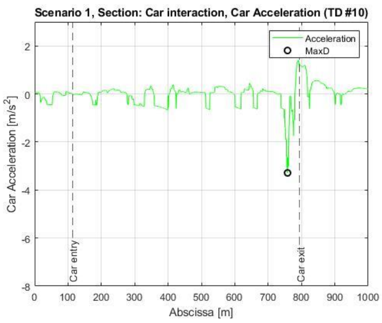

Scenario 2, Section: Car interaction, Car Acceleration (TD #8)
Acceleration
MaxD
Car entry
Car exit
Car Acceleration [m/s^2]
Abscissa [m]

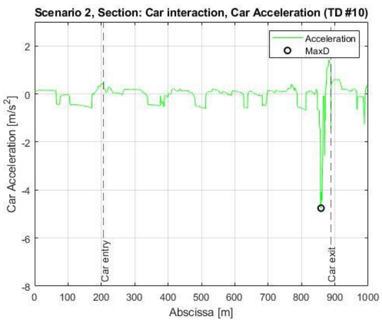

Scenario 3, Section: Car interaction, Car Acceleration (TD #8)
Acceleration
MaxD
Car entry
Car exit
Car Acceleration [m/s^2]
Abscissa [m]

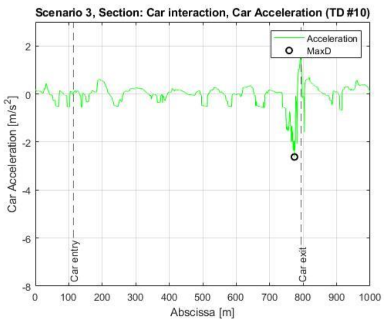

Scenario 1, Section: Car interaction, Car Acceleration (TD #9)
Acceleration
MaxD
Car entry
Car exit
Car Acceleration [m/s^2]
Abscissa [m]

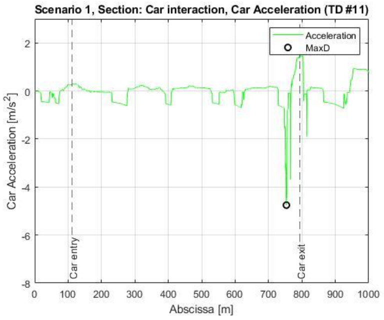

Scenario 2, Section: Car interaction, Car Acceleration (TD #9)
Acceleration
MaxD
Car entry
Car exit
Car Acceleration [m/s^2]
Abscissa [m]

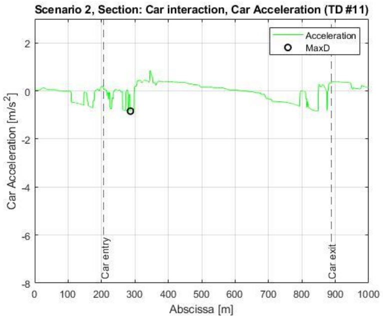

Scenario 3, Section: Car interaction, Car Acceleration (TD #9)
Acceleration
MaxD
Car entry
Car exit
Car Acceleration [m/s^2]
Abscissa [m]

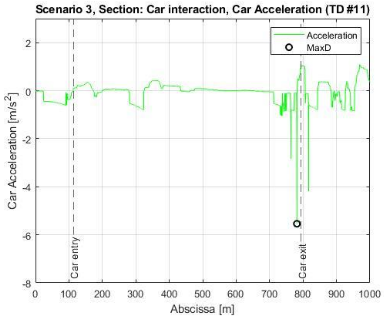

Scenario 1, Section: Car interaction, Car Acceleration (TD #10)
Acceleration
MaxD
Car entry
Car exit
Car Acceleration [m/s^2]
Abscissa [m]

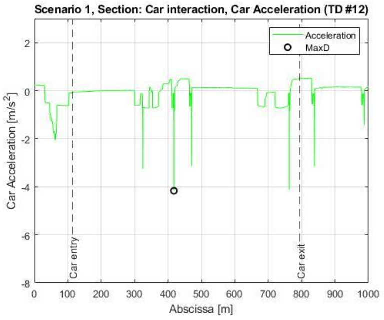

Scenario 2, Section: Car interaction, Car Acceleration (TD #10)
Acceleration
MaxD
Car entry
Car exit
Car Acceleration [m/s^2]
Abscissa [m]

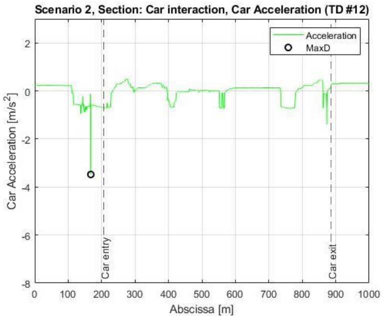

Scenario 3, Section: Car interaction, Car Acceleration (TD #10)
Acceleration
MaxD
Car entry
Car exit
Car Acceleration [m/s^2]
Abscissa [m]

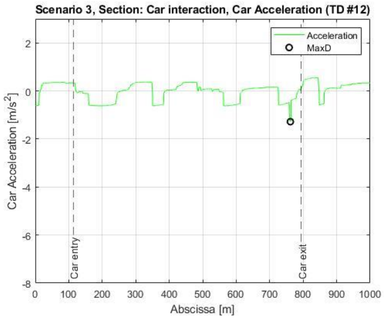

Scenario 1, Section: Car interaction, Car Acceleration (TD #11)
Acceleration
MaxD
Car entry
Car exit
Car Acceleration [m/s^2]
Abscissa [m]

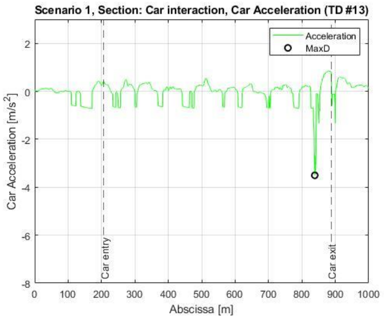

Scenario 2, Section: Car interaction, Car Acceleration (TD #11)
Acceleration
MaxD
Car entry
Car exit
Car Acceleration [m/s^2]
Abscissa [m]

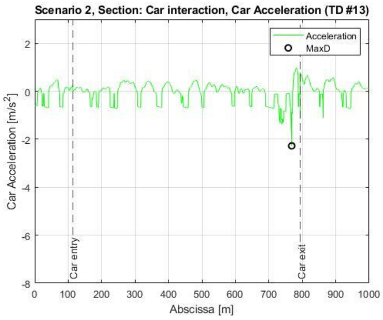

Scenario 3, Section: Car interaction, Car Acceleration (TD #11)
Acceleration
MaxD
Car entry
Car exit
Car Acceleration [m/s^2]
Abscissa [m]

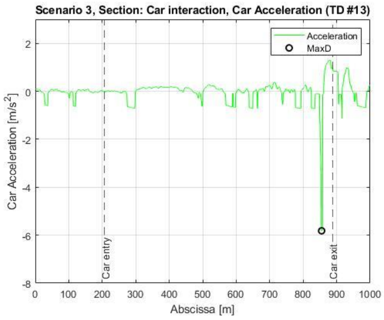

Scenario 1, Section: Car interaction, Car Acceleration (TD #12)
Acceleration
MaxD
Car entry
Car exit
Car Acceleration [m/s^2]
Abscissa [m]

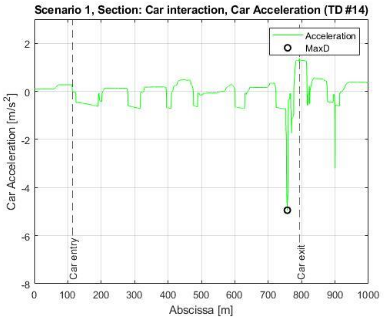

Scenario 2, Section: Car interaction, Car Acceleration (TD #12)
Acceleration
MaxD
Car entry
Car exit
Car Acceleration [m/s^2]
Abscissa [m]

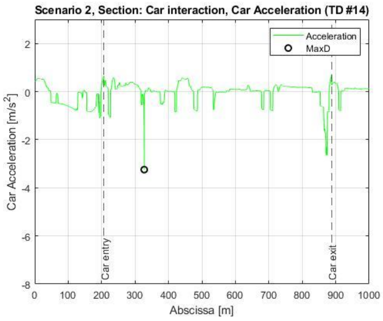

Scenario 3, Section: Car interaction, Car Acceleration (TD #12)
Acceleration
MaxD
Car entry
Car exit
Car Acceleration [m/s^2]
Abscissa [m]

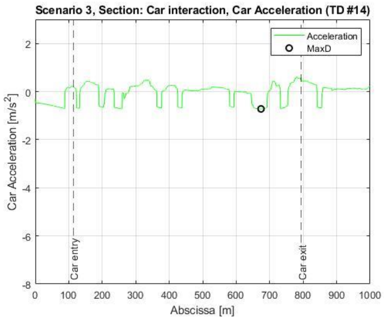

Scenario 1, Section: Car interaction, Car Acceleration (TD #13)
Acceleration
MaxD
Car entry
Car exit
Car Acceleration [m/s^2]
Abscissa [m]

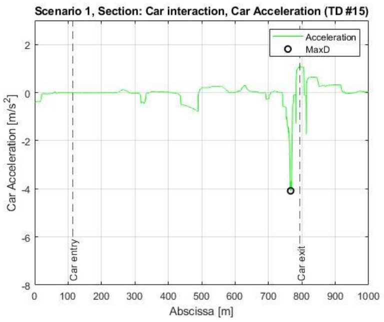

Scenario 2, Section: Car interaction, Car Acceleration (TD #13)
Acceleration
MaxD
Car entry
Car exit
Car Acceleration [m/s^2]
Abscissa [m]

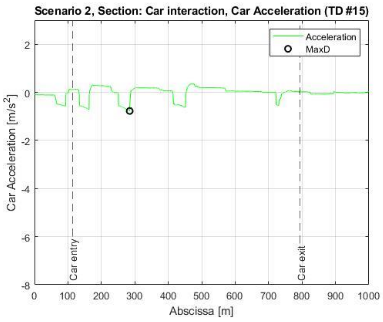

Scenario 3, Section: Car interaction, Car Acceleration (TD #13)
Acceleration
MaxD
Car entry
Car exit
Car Acceleration [m/s^2]
Abscissa [m]

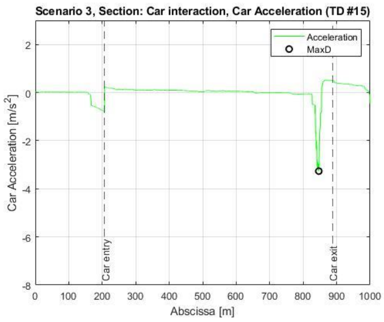

Scenario 1, Section: Car interaction, Car Acceleration (TD #14)
Acceleration
MaxD
Car entry
Car exit
Car Acceleration [m/s^2]
Abscissa [m]

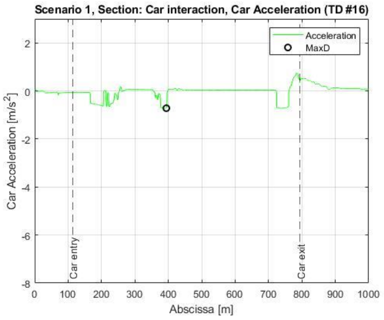

Scenario 2, Section: Car interaction, Car Acceleration (TD #14)
Acceleration
MaxD
Car entry
Car exit
Car Acceleration [m/s^2]
Abscissa [m]

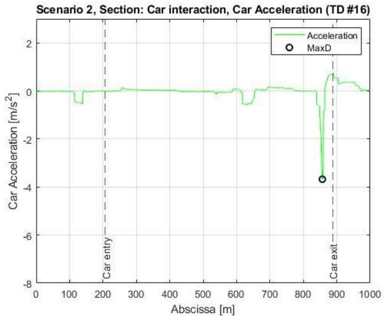

Scenario 3, Section: Car interaction, Car Acceleration (TD #14)
Acceleration
MaxD
Car entry
Car exit
Car Acceleration [m/s^2]
Abscissa [m]

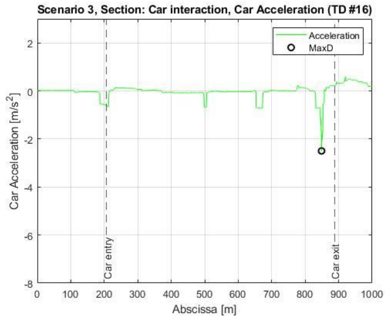

Scenario 1, Section: Car interaction, Car Acceleration (TD #15)
Acceleration
MaxD
Car entry
Car exit
Car Acceleration [m/s^2]
Abscissa [m]

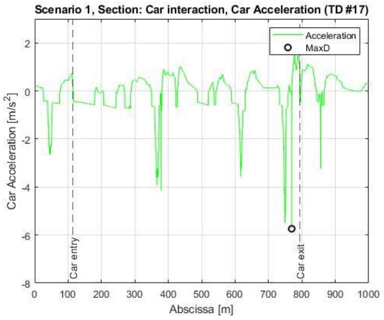

Scenario 2, Section: Car interaction, Car Acceleration (TD #15)
Acceleration
MaxD
Car entry
Car exit
Car Acceleration [m/s^2]
Abscissa [m]

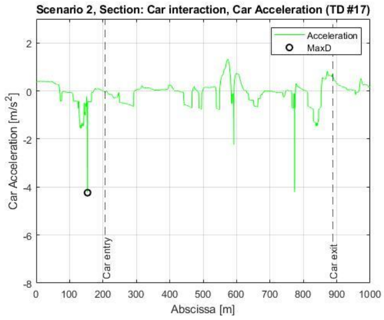

Scenario 3, Section: Car interaction, Car Acceleration (TD #15)
Acceleration
MaxD
Car entry
Car exit
Car Acceleration [m/s^2]
Abscissa [m]

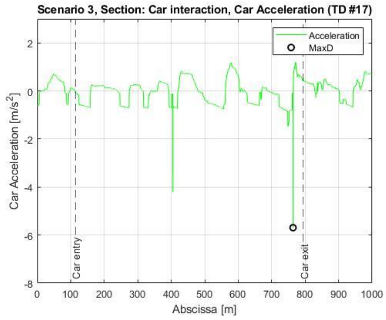

Scenario 1, Section: Car interaction, Car Acceleration (TD #16)
Acceleration
MaxD
Car Acceleration [m/s2]
Car entry
Car exit
Abscissa [m]

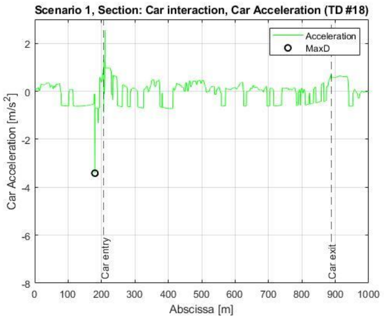

Scenario 2, Section: Car interaction, Car Acceleration (TD #16)
Acceleration
MaxD
Car Acceleration [m/s2]
Car entry
Car exit
Abscissa [m]

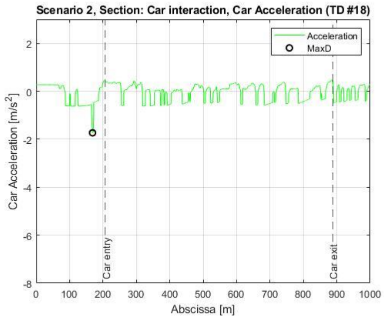

Scenario 3, Section: Car interaction, Car Acceleration (TD #16)
Acceleration
MaxD
Car Acceleration [m/s2]
Car entry
Car exit
Abscissa [m]

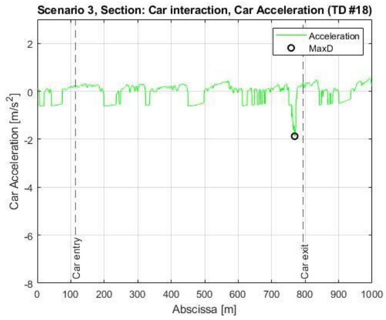

Scenario 1, Section: Car interaction, Car Acceleration (TD #17)
Acceleration
MaxD
Car Acceleration [m/s2]
Car entry
Car exit
Abscissa [m]

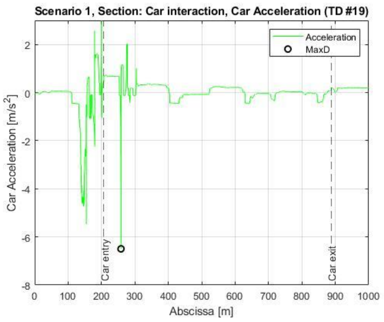

Scenario 2, Section: Car interaction, Car Acceleration (TD #17)
Acceleration
MaxD
Car Acceleration [m/s2]
Car entry
Car exit
Abscissa [m]

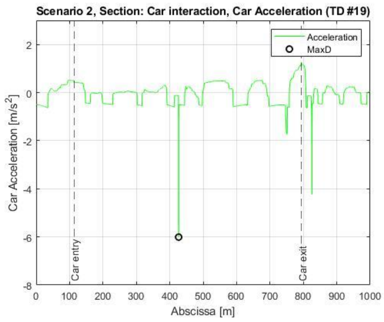

Scenario 3, Section: Car interaction, Car Acceleration (TD #17)
Acceleration
MaxD
Car Acceleration [m/s2]
Car entry
Car exit
Abscissa [m]

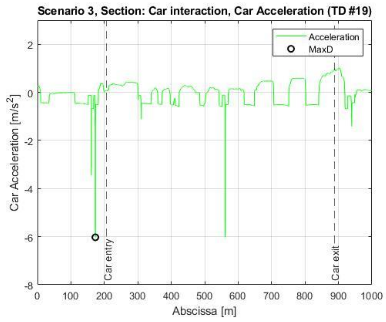

Scenario 1, Section: Car interaction, Car Acceleration (TD #18)
Acceleration
MaxD
Car Acceleration [m/s2]
Car entry
Car exit
Abscissa [m]

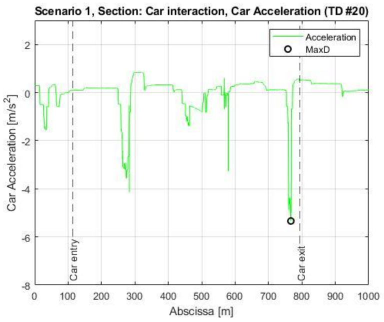

Scenario 2, Section: Car interaction, Car Acceleration (TD #18)
Acceleration
MaxD
Car Acceleration [m/s2]
Car entry
Car exit
Abscissa [m]

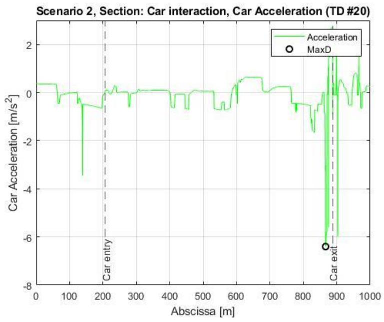

Scenario 3, Section: Car interaction, Car Acceleration (TD #18)
Acceleration
MaxD
Car Acceleration [m/s2]
Car entry
Car exit
Abscissa [m]

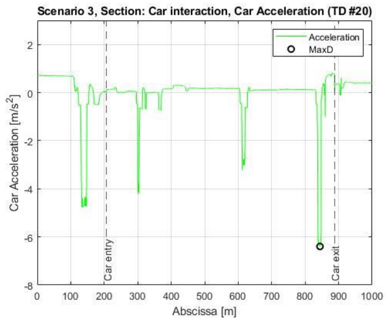

Scenario 1, Section: Car interaction, Car Acceleration (TD #19)
Acceleration
MaxD
Car Acceleration [m/s2]
Car entry
Car exit
Abscissa [m]


Scenario 2, Section: Car interaction, Car Acceleration (TD #19)
Acceleration
MaxD
Car Acceleration [m/s2]
Car entry
Car exit
Abscissa [m]

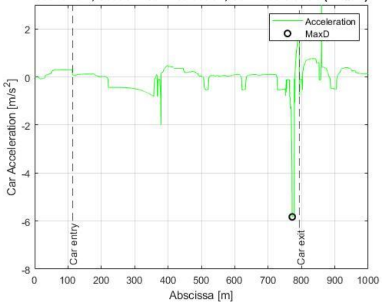

Scenario 3, Section: Car interaction, Car Acceleration (TD #19)
Acceleration
MaxD
Car Acceleration [m/s2]
Car entry
Car exit
Abscissa [m]


Scenario 1, Section: Car interaction, Car Acceleration (TD #20)
Acceleration
MaxD
Car Acceleration [m/s2]
Car entry
Car exit
Abscissa [m]

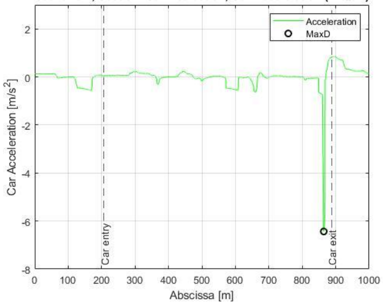

Scenario 2, Section: Car interaction, Car Acceleration (TD #20)
Acceleration
MaxD
Car Acceleration [m/s2]
Car entry
Car exit
Abscissa [m]


Scenario 3, Section: Car interaction, Car Acceleration (TD #20)
Acceleration
MaxD
Car Acceleration [m/s2]
Car entry
Car exit
Abscissa [m]

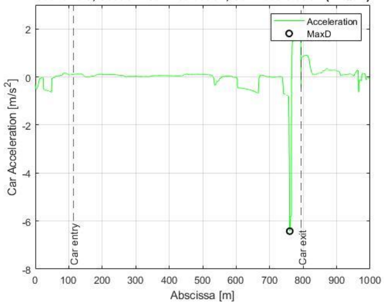
Scenario 1, Section: Car interaction, Car Acceleration (TD #21)



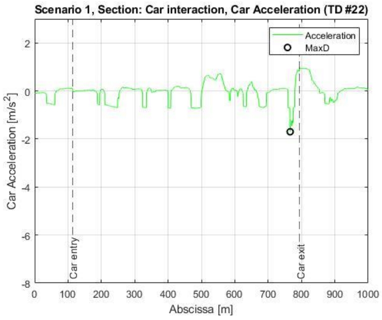
Scenario 2, Section: Car interaction, Car Acceleration (TD #21)



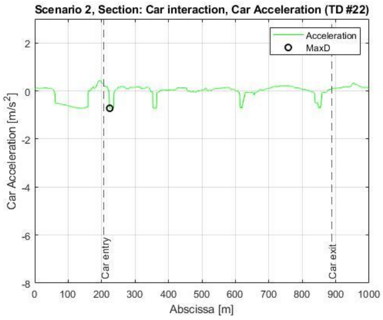
Scenario 3, Section: Car interaction, Car Acceleration (TD #21)



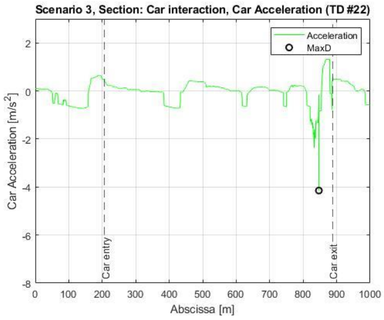
Scenario 1, Section: Car interaction, Car Acceleration (TD #22)



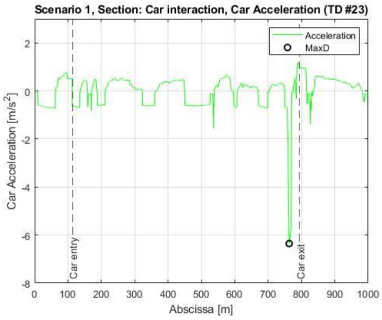
Scenario 2, Section: Car interaction, Car Acceleration (TD #22)



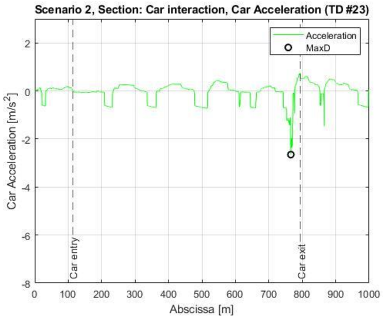
Scenario 3, Section: Car interaction, Car Acceleration (TD #22)



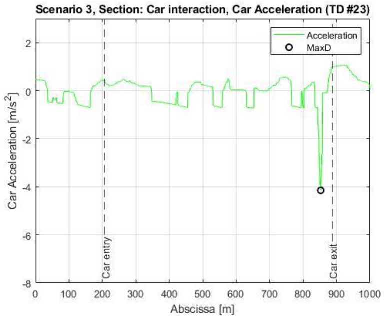
Scenario 1, Section: Car interaction, Car Acceleration (TD #23)



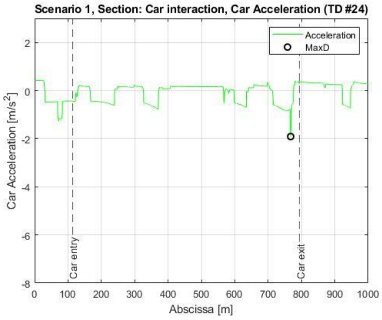
Scenario 2, Section: Car interaction, Car Acceleration (TD #23)



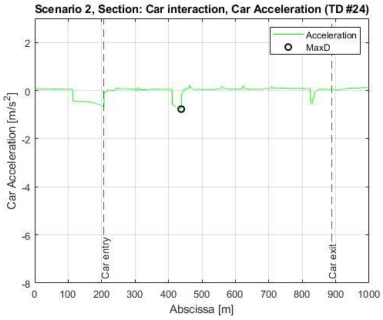
Scenario 3, Section: Car interaction, Car Acceleration (TD #23)



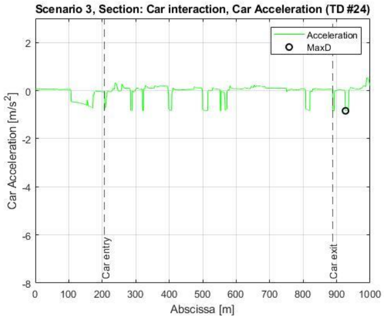
Scenario 1, Section: Car interaction, Car Acceleration (TD #24)



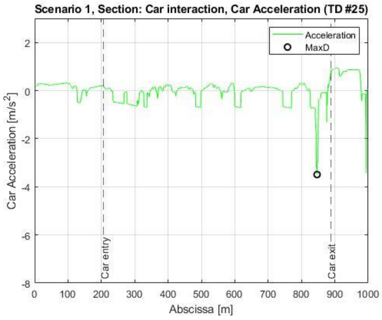
Scenario 2, Section: Car interaction, Car Acceleration (TD #24)



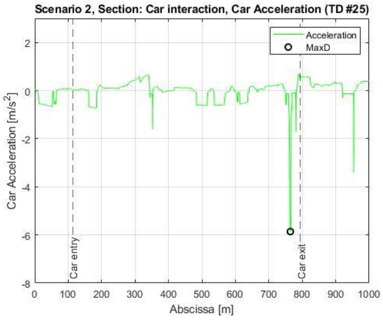
Scenario 3, Section: Car interaction, Car Acceleration (TD #24)



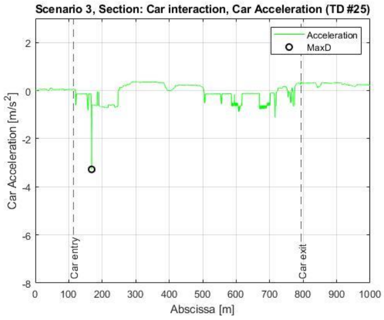
Scenario 1, Section: Car interaction, Car Acceleration (TD #25)

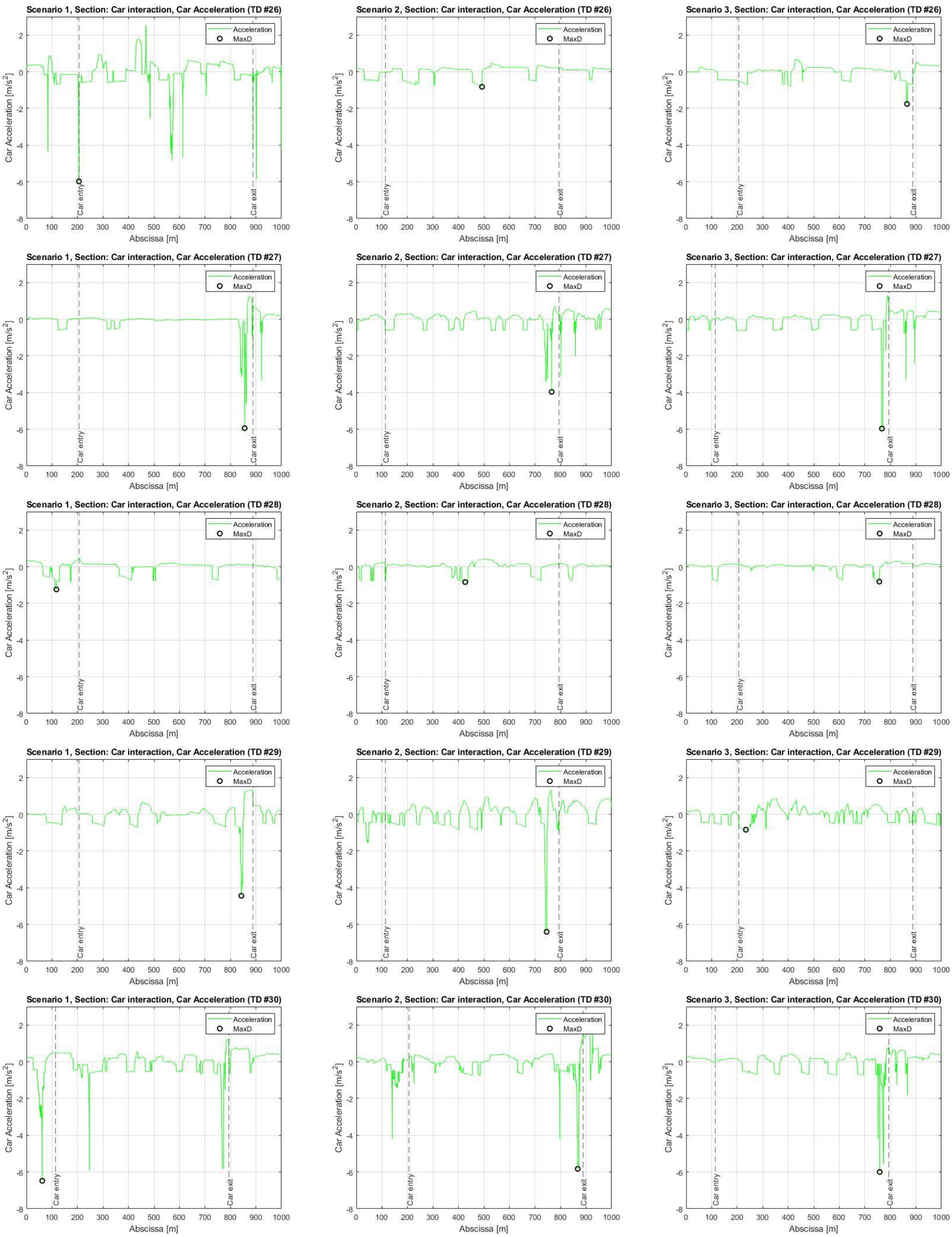


Scenario 2, Section: Car interaction, Car Acceleration (TD #25)

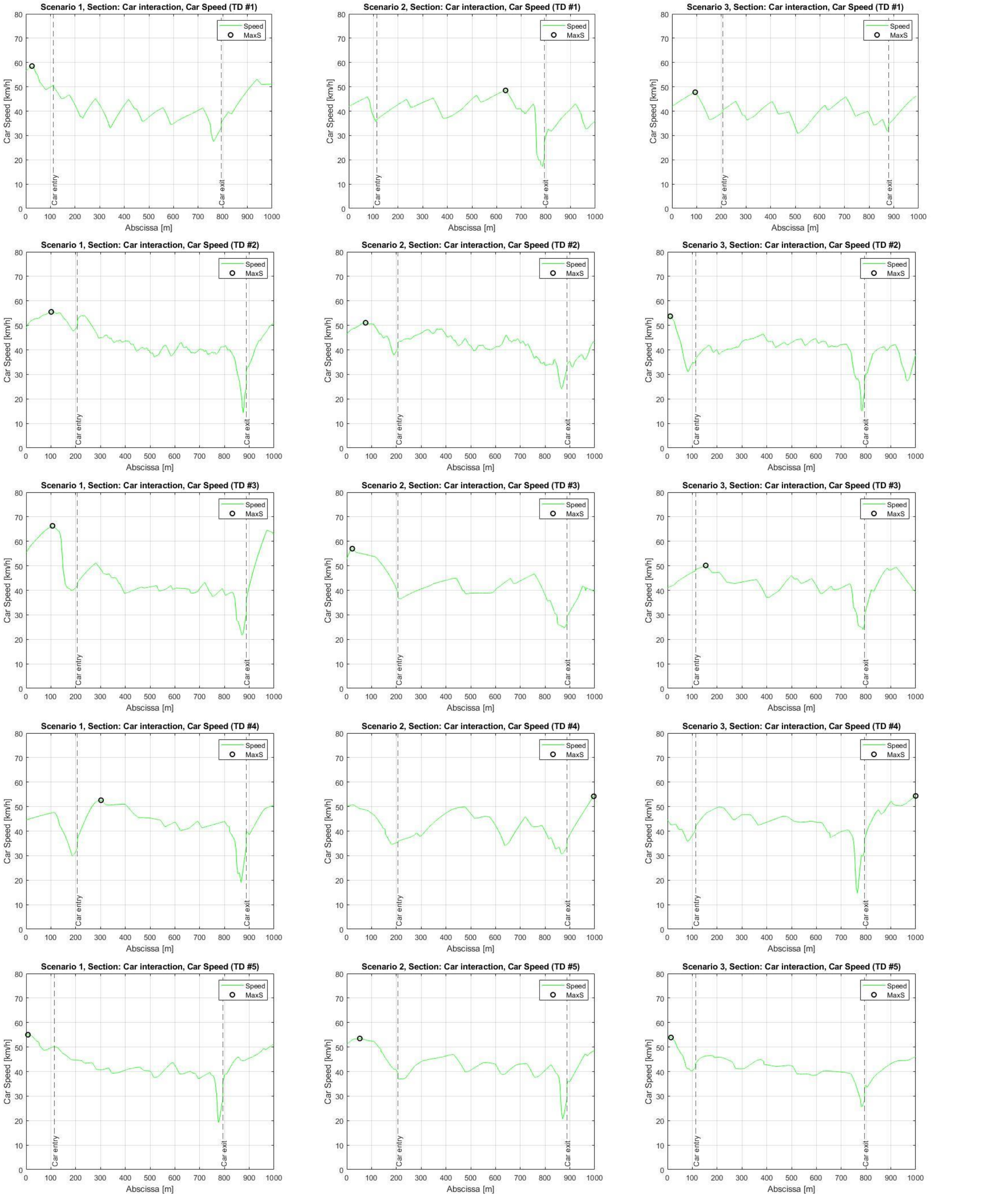


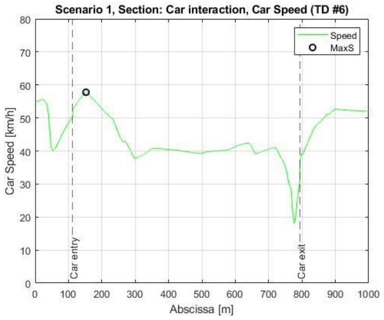
Scenario 3, Section: Car interaction, Car Acceleration (TD #25)

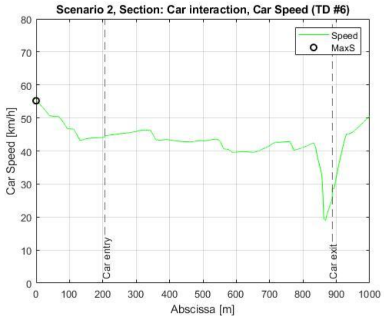


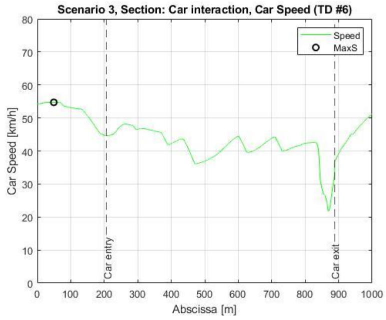

Scenario 1, Section: Car interaction, Car Acceleration (TD #26)
Scenario 2, Section: Car interaction, Car Acceleration (TD #26)
Scenario 3, Section: Car interaction, Car Acceleration (TD #26)
Scenario 1, Section: Car interaction, Car Acceleration (TD #27)
Scenario 2, Section: Car interaction, Car Acceleration (TD #27)
Scenario 3, Section: Car interaction, Car Acceleration (TD #27)
Scenario 1, Section: Car interaction, Car Acceleration (TD #28)
Scenario 2, Section: Car interaction, Car Acceleration (TD #28)
Scenario 3, Section: Car interaction, Car Acceleration (TD #28)
Scenario 1, Section: Car interaction, Car Acceleration (TD #29)
Scenario 2, Section: Car interaction, Car Acceleration (TD #29)
Scenario 3, Section: Car interaction, Car Acceleration (TD #29)
Scenario 1, Section: Car interaction, Car Acceleration (TD #30)
Scenario 2, Section: Car interaction, Car Acceleration (TD #30)
Scenario 3, Section: Car interaction, Car Acceleration (TD #30)
Acceleration
MaxD
Car entry
Car exit
Car Acceleration [m/s^2]
Abscissa [m]

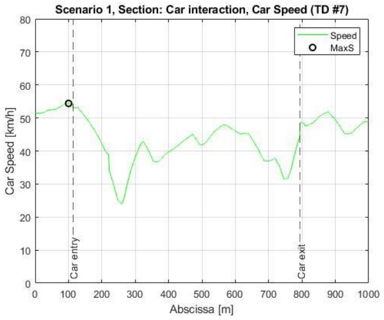
M. Max Speed graphs (Vehicle interaction)

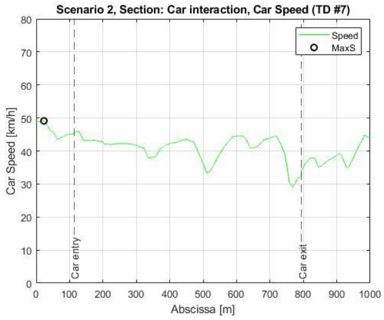


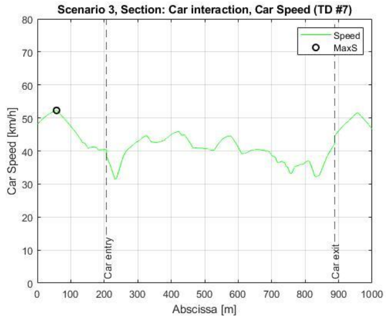

Scenario 1, Section: Car interaction, Car Speed (TD #6)
Speed
MaxS
Car entry
Car exit
Car Speed [km/h]
Abscissa [m]

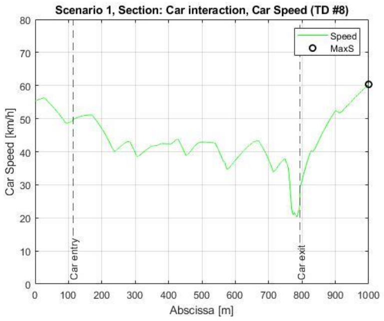

Scenario 2, Section: Car interaction, Car Speed (TD #6)
Speed
MaxS
Car entry
Car exit
Car Speed [km/h]
Abscissa [m]

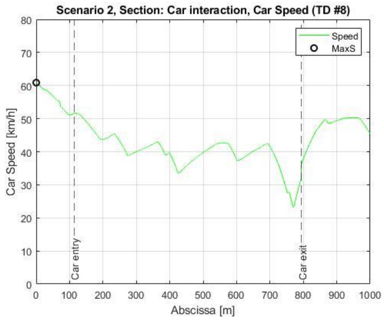

Scenario 3, Section: Car interaction, Car Speed (TD #6)
Speed
MaxS
Car entry
Car exit
Car Speed [km/h]
Abscissa [m]

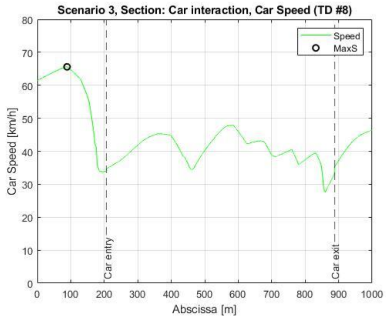

Scenario 1, Section: Car interaction, Car Speed (TD #7)
Speed
MaxS
Car entry
Car exit
Car Speed [km/h]
Abscissa [m]

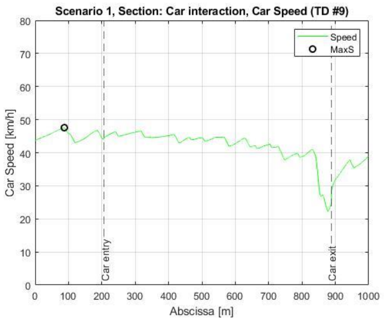

Scenario 2, Section: Car interaction, Car Speed (TD #7)
Speed
MaxS
Car entry
Car exit
Car Speed [km/h]
Abscissa [m]

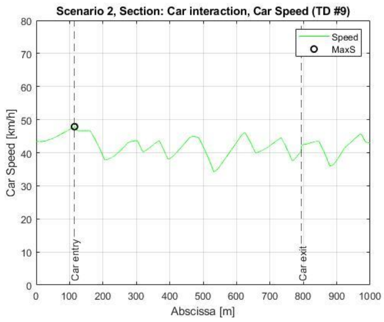

Scenario 3, Section: Car interaction, Car Speed (TD #7)
Speed
MaxS
Car entry
Car exit
Car Speed [km/h]
Abscissa [m]

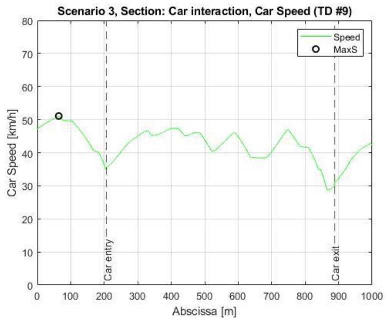

Scenario 1, Section: Car interaction, Car Speed (TD #8)
Speed
MaxS
Car entry
Car exit
Car Speed [km/h]
Abscissa [m]

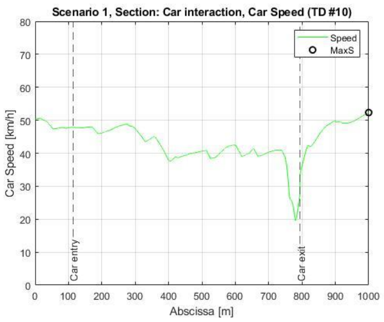

Scenario 2, Section: Car interaction, Car Speed (TD #8)
Speed
MaxS
Car entry
Car exit
Car Speed [km/h]
Abscissa [m]

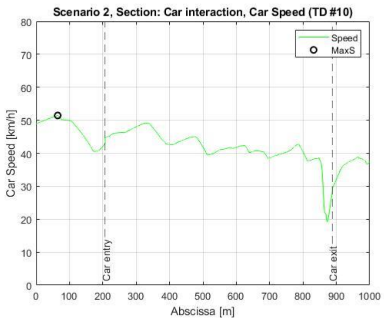

Scenario 3, Section: Car interaction, Car Speed (TD #8)
Speed
MaxS
Car entry
Car exit
Car Speed [km/h]
Abscissa [m]

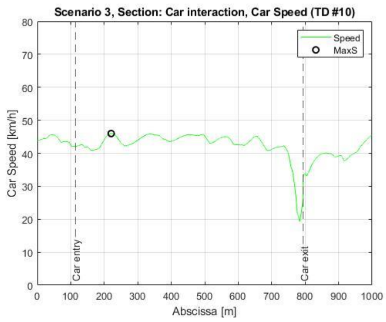

Scenario 1, Section: Car interaction, Car Speed (TD #9)
Speed
MaxS
Car entry
Car exit
Car Speed [km/h]
Abscissa [m]

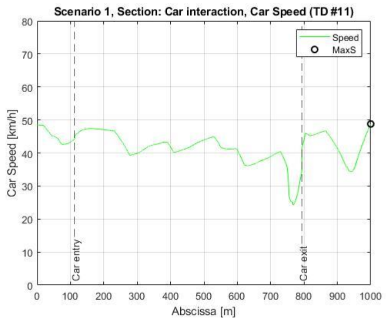

Scenario 2, Section: Car interaction, Car Speed (TD #9)
Speed
MaxS
Car entry
Car exit
Car Speed [km/h]
Abscissa [m]

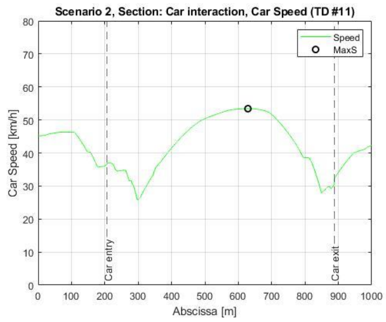

Scenario 3, Section: Car interaction, Car Speed (TD #9)
Speed
MaxS
Car entry
Car exit
Car Speed [km/h]
Abscissa [m]

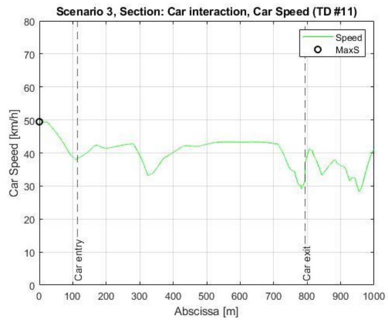

Scenario 1, Section: Car interaction, Car Speed (TD #10)
Speed
MaxS
Car entry
Car exit
Car Speed [km/h]
Abscissa [m]

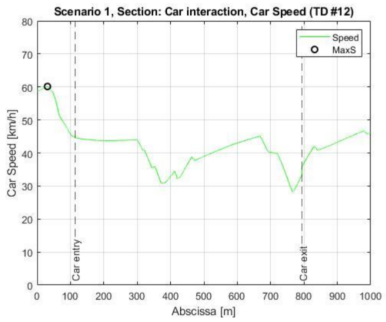

Scenario 2, Section: Car interaction, Car Speed (TD #10)
Speed
MaxS
Car entry
Car exit
Car Speed [km/h]
Abscissa [m]

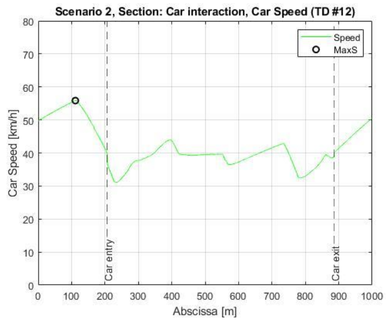

Scenario 3, Section: Car interaction, Car Speed (TD #10)
Speed
MaxS
Car entry
Car exit
Car Speed [km/h]
Abscissa [m]

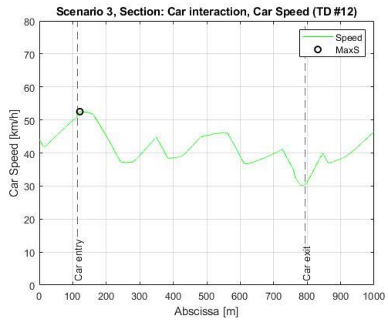

Scenario 1, Section: Car interaction, Car Speed (TD #11)
Speed
MaxS
Car entry
Car exit
Car Speed [km/h]
Abscissa [m]

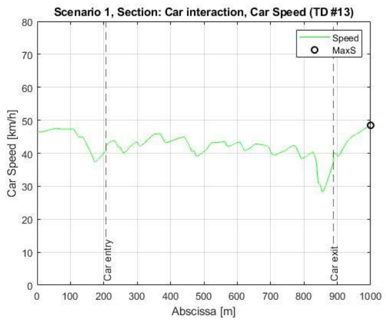

Scenario 2, Section: Car interaction, Car Speed (TD #11)
Speed
MaxS
Car entry
Car exit
Car Speed [km/h]
Abscissa [m]

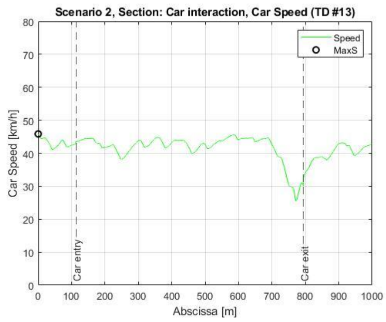

Scenario 3, Section: Car interaction, Car Speed (TD #11)
Speed
MaxS
Car entry
Car exit
Car Speed [km/h]
Abscissa [m]

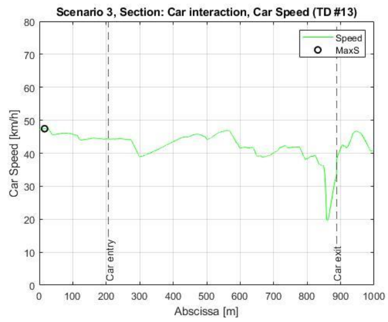

Scenario 1, Section: Car interaction, Car Speed (TD #12)
Speed
MaxS
Car entry
Car exit
Car Speed [km/h]
Abscissa [m]

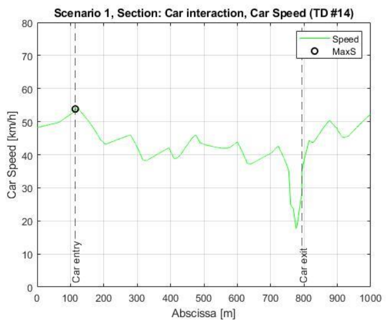

Scenario 2, Section: Car interaction, Car Speed (TD #12)
Speed
MaxS
Car entry
Car exit
Car Speed [km/h]
Abscissa [m]

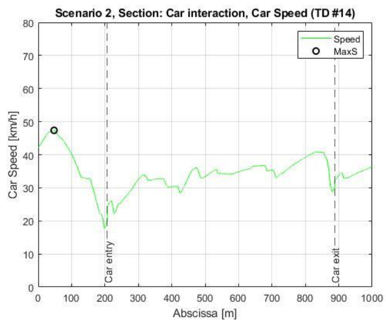

Scenario 3, Section: Car interaction, Car Speed (TD #12)
Speed
MaxS
Car entry
Car exit
Car Speed [km/h]
Abscissa [m]

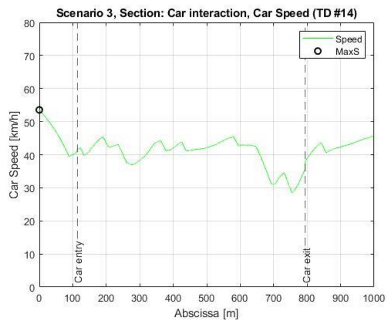

Scenario 1, Section: Car interaction, Car Speed (TD #13)
Speed
MaxS
Car entry
Car exit
Car Speed [km/h]
Abscissa [m]

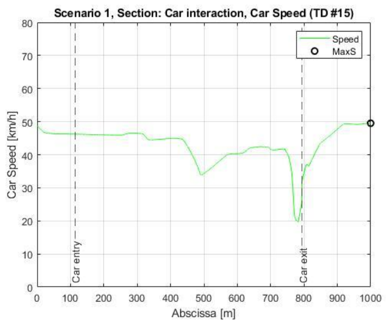

Scenario 2, Section: Car interaction, Car Speed (TD #13)
Speed
MaxS
Car entry
Car exit
Car Speed [km/h]
Abscissa [m]

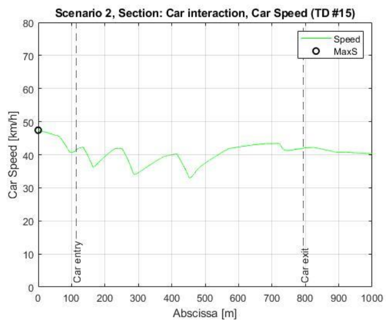

Scenario 3, Section: Car interaction, Car Speed (TD #13)
Speed
MaxS
Car entry
Car exit
Car Speed [km/h]
Abscissa [m]

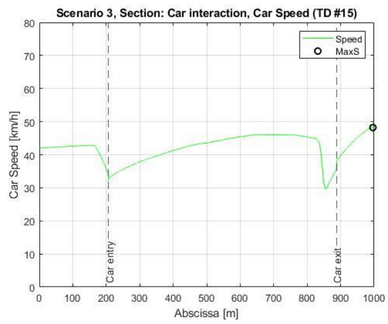

Scenario 1, Section: Car interaction, Car Speed (TD #14)
Speed
MaxS
Car entry
Car exit
Car Speed [km/h]
Abscissa [m]

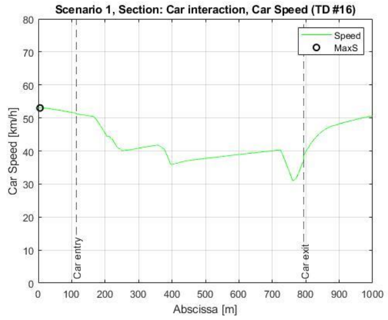

Scenario 2, Section: Car interaction, Car Speed (TD #14)
Speed
MaxS
Car entry
Car exit
Car Speed [km/h]
Abscissa [m]

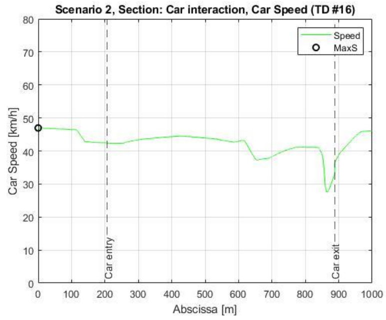

Scenario 3, Section: Car interaction, Car Speed (TD #14)
Speed
MaxS
Car entry
Car exit
Car Speed [km/h]
Abscissa [m]

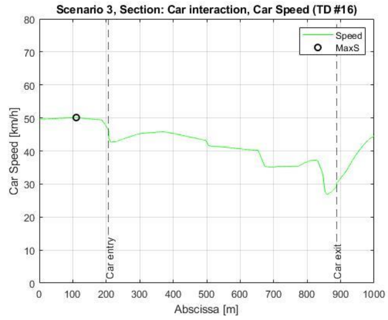

Scenario 1, Section: Car interaction, Car Speed (TD #15)
Speed
MaxS
Car entry
Car exit
Car Speed [km/h]
Abscissa [m]

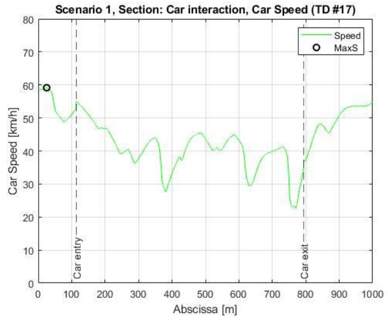

Scenario 2, Section: Car interaction, Car Speed (TD #15)
Speed
MaxS
Car entry
Car exit
Car Speed [km/h]
Abscissa [m]

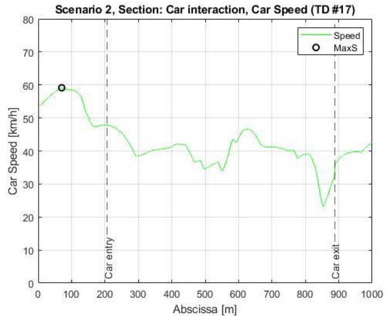

Scenario 3, Section: Car interaction, Car Speed (TD #15)
Speed
MaxS
Car entry
Car exit
Car Speed [km/h]
Abscissa [m]

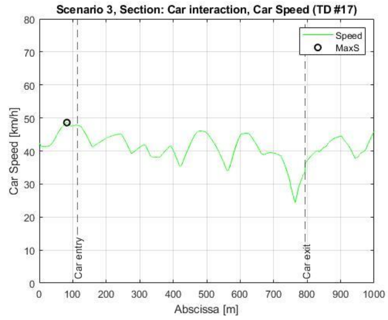

Scenario 1, Section: Car interaction, Car Speed (TD #16)
Car Speed [km/h]
Abscissa [m]
Speed
MaxS
Car entry
Car exit

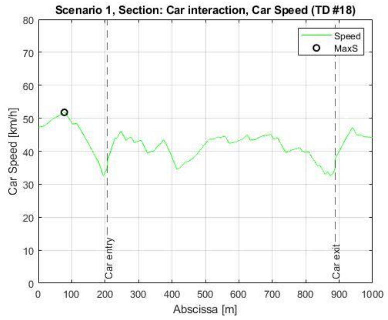

Scenario 2, Section: Car interaction, Car Speed (TD #16)
Car Speed [km/h]
Abscissa [m]
Speed
MaxS
Car entry
Car exit

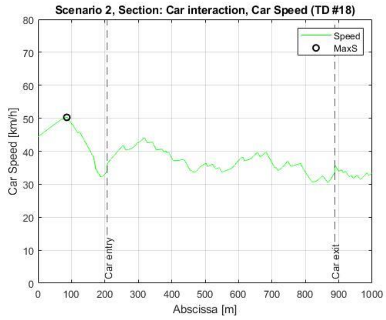

Scenario 3, Section: Car interaction, Car Speed (TD #16)
Car Speed [km/h]
Abscissa [m]
Speed
MaxS
Car entry
Car exit

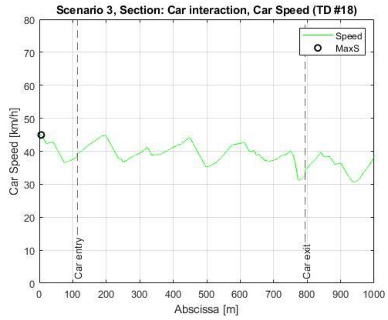

Scenario 1, Section: Car interaction, Car Speed (TD #17)
Car Speed [km/h]
Abscissa [m]
Speed
MaxS
Car entry
Car exit

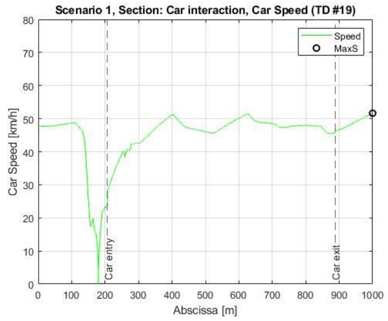

Scenario 2, Section: Car interaction, Car Speed (TD #17)
Car Speed [km/h]
Abscissa [m]
Speed
MaxS
Car entry
Car exit

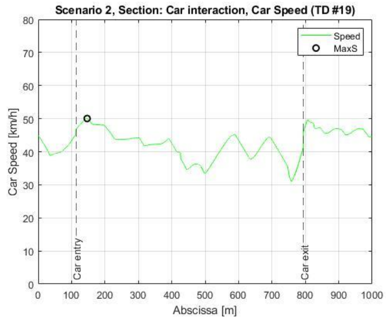

Scenario 3, Section: Car interaction, Car Speed (TD #17)
Car Speed [km/h]
Abscissa [m]
Speed
MaxS
Car entry
Car exit

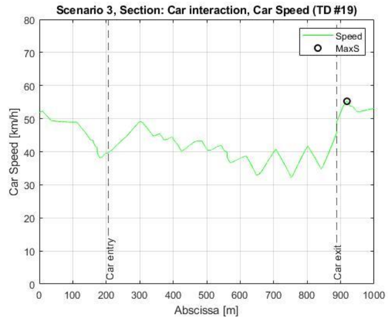

Scenario 1, Section: Car interaction, Car Speed (TD #18)
Car Speed [km/h]
Abscissa [m]
Speed
MaxS
Car entry
Car exit

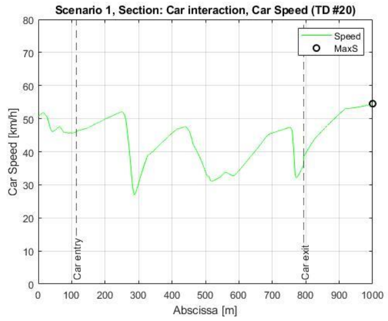

Scenario 2, Section: Car interaction, Car Speed (TD #18)
Car Speed [km/h]
Abscissa [m]
Speed
MaxS
Car entry
Car exit

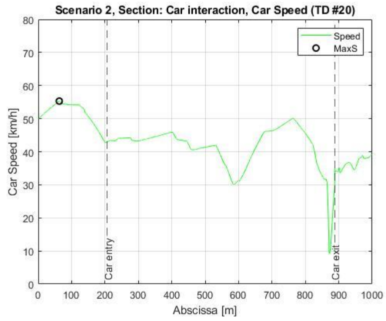

Scenario 3, Section: Car interaction, Car Speed (TD #18)
Car Speed [km/h]
Abscissa [m]
Speed
MaxS
Car entry
Car exit

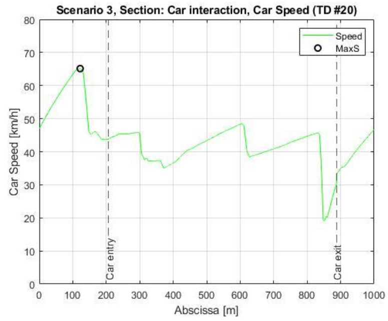

Scenario 1, Section: Car interaction, Car Speed (TD #19)
Car Speed [km/h]
Abscissa [m]
Speed
MaxS
Car entry
Car exit

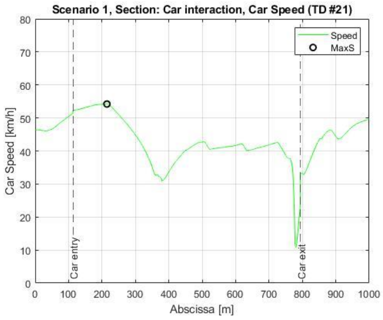

Scenario 2, Section: Car interaction, Car Speed (TD #19)
Car Speed [km/h]
Abscissa [m]
Speed
MaxS
Car entry
Car exit

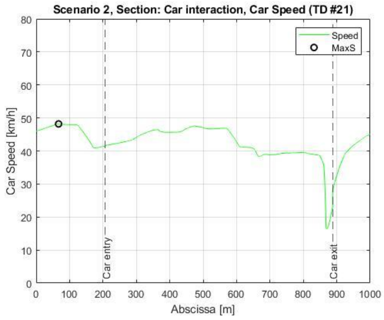

Scenario 3, Section: Car interaction, Car Speed (TD #19)
Car Speed [km/h]
Abscissa [m]
Speed
MaxS
Car entry
Car exit

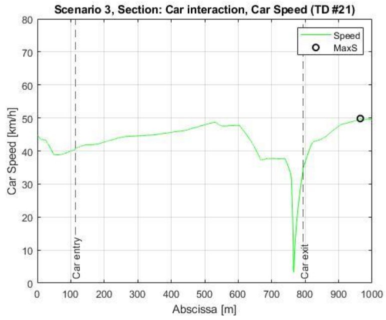

Scenario 1, Section: Car interaction, Car Speed (TD #20)
Car Speed [km/h]
Abscissa [m]
Speed
MaxS
Car entry
Car exit

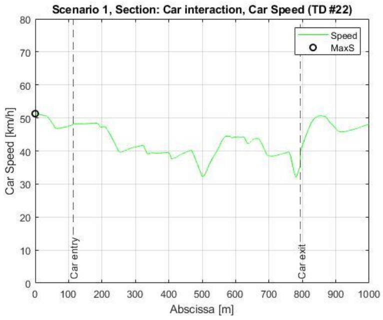

Scenario 2, Section: Car interaction, Car Speed (TD #20)
Car Speed [km/h]
Abscissa [m]
Speed
MaxS
Car entry
Car exit

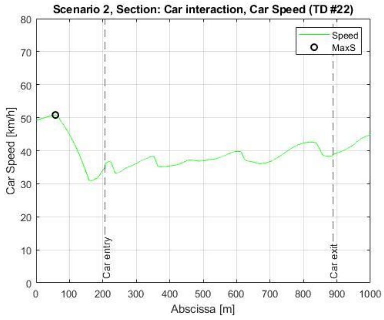

Scenario 3, Section: Car interaction, Car Speed (TD #20)
Car Speed [km/h]
Abscissa [m]
Speed
MaxS
Car entry
Car exit

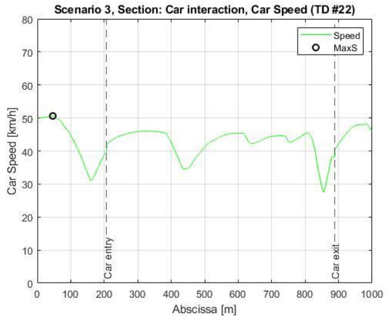

Scenario 1, Section: Car interaction, Car Speed (TD #21)
Speed
MaxS
Car entry
Car exit
Car Speed [km/h]
Abscissa [m]

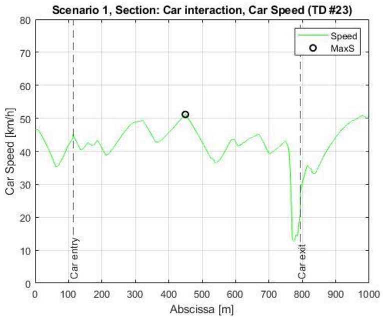

Scenario 2, Section: Car interaction, Car Speed (TD #21)
Speed
MaxS
Car entry
Car exit
Car Speed [km/h]
Abscissa [m]

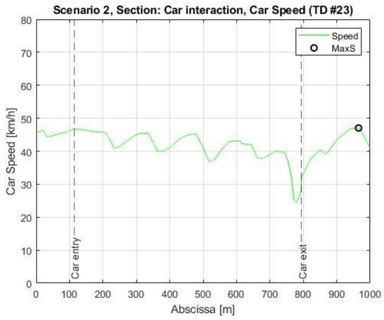

Scenario 3, Section: Car interaction, Car Speed (TD #21)
Speed
MaxS
Car entry
Car exit
Car Speed [km/h]
Abscissa [m]

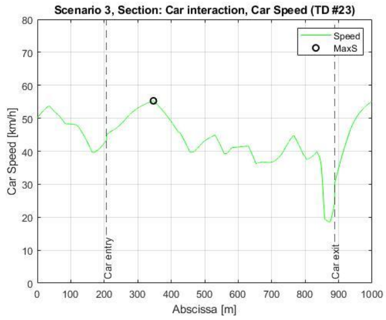

Scenario 1, Section: Car interaction, Car Speed (TD #22)
Speed
MaxS
Car entry
Car exit
Car Speed [km/h]
Abscissa [m]

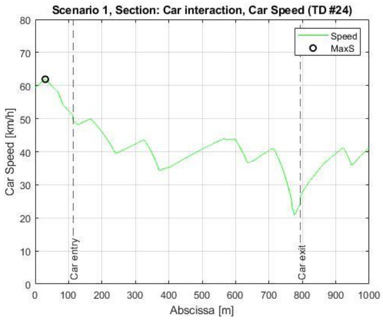

Scenario 2, Section: Car interaction, Car Speed (TD #22)
Speed
MaxS
Car entry
Car exit
Car Speed [km/h]
Abscissa [m]

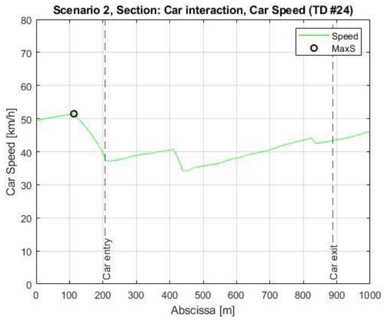

Scenario 3, Section: Car interaction, Car Speed (TD #22)
Speed
MaxS
Car entry
Car exit
Car Speed [km/h]
Abscissa [m]

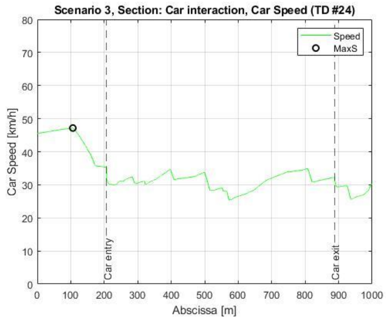

Scenario 1, Section: Car interaction, Car Speed (TD #23)
Speed
MaxS
Car entry
Car exit
Car Speed [km/h]
Abscissa [m]

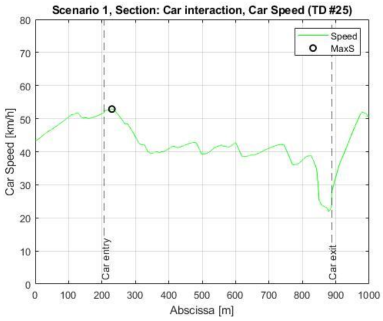

Scenario 2, Section: Car interaction, Car Speed (TD #23)
Speed
MaxS
Car entry
Car exit
Car Speed [km/h]
Abscissa [m]

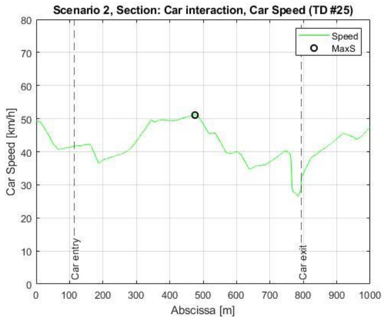

Scenario 3, Section: Car interaction, Car Speed (TD #23)
Speed
MaxS
Car entry
Car exit
Car Speed [km/h]
Abscissa [m]

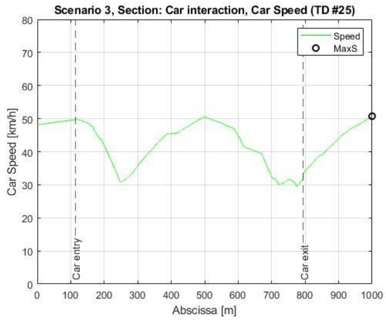

Scenario 1, Section: Car interaction, Car Speed (TD #24)
Speed
MaxS
Car entry
Car exit
Car Speed [km/h]
Abscissa [m]

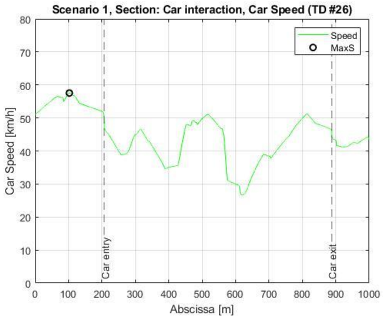

Scenario 2, Section: Car interaction, Car Speed (TD #24)
Speed
MaxS
Car entry
Car exit
Car Speed [km/h]
Abscissa [m]

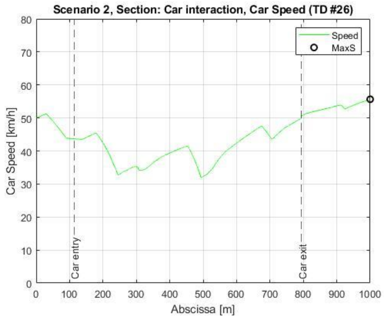

Scenario 3, Section: Car interaction, Car Speed (TD #24)
Speed
MaxS
Car entry
Car exit
Car Speed [km/h]
Abscissa [m]

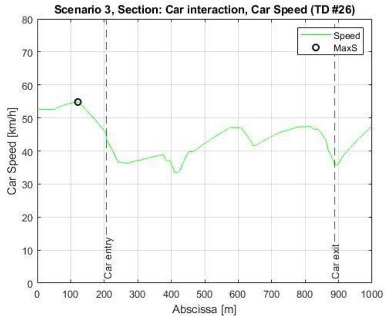

Scenario 1, Section: Car interaction, Car Speed (TD #25)
Speed
MaxS
Car entry
Car exit
Car Speed [km/h]
Abscissa [m]

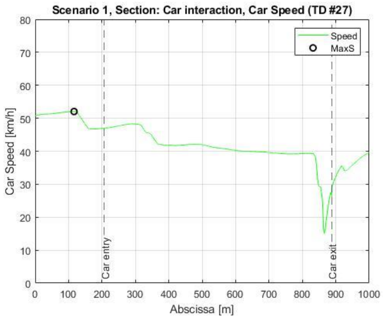

Scenario 2, Section: Car interaction, Car Speed (TD #25)
Speed
MaxS
Car entry
Car exit
Car Speed [km/h]
Abscissa [m]

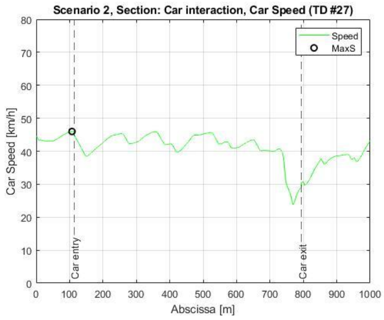

Scenario 3, Section: Car interaction, Car Speed (TD #25)
Speed
MaxS
Car entry
Car exit
Car Speed [km/h]
Abscissa [m]

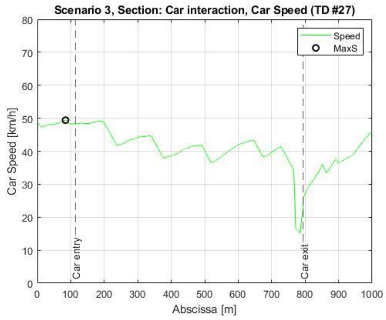

Scenario 1, Section: Car interaction, Car Speed (TD #26)
Speed
MaxS
Car entry
Car exit
Car Speed [km/h]
Abscissa [m]

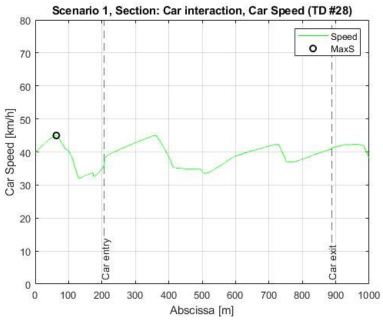

Scenario 2, Section: Car interaction, Car Speed (TD #26)
Speed
MaxS
Car entry
Car exit
Car Speed [km/h]
Abscissa [m]

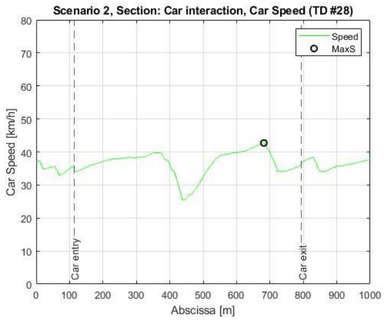

Scenario 3, Section: Car interaction, Car Speed (TD #26)
Speed
MaxS
Car entry
Car exit
Car Speed [km/h]
Abscissa [m]

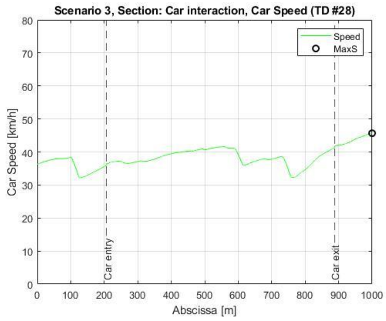

Scenario 1, Section: Car interaction, Car Speed (TD #27)
Speed
MaxS
Car entry
Car exit
Car Speed [km/h]
Abscissa [m]

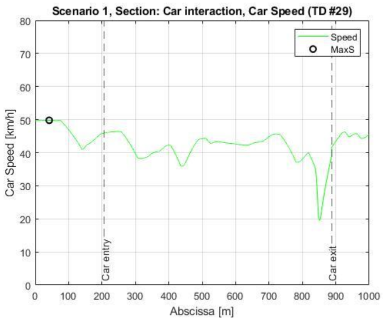

Scenario 2, Section: Car interaction, Car Speed (TD #27)
Speed
MaxS
Car entry
Car exit
Car Speed [km/h]
Abscissa [m]

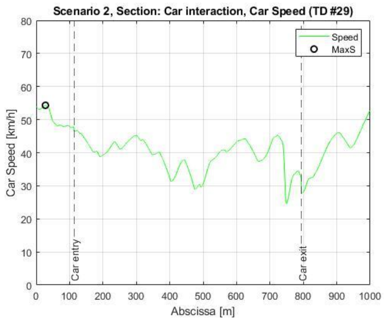

Scenario 3, Section: Car interaction, Car Speed (TD #27)
Speed
MaxS
Car entry
Car exit
Car Speed [km/h]
Abscissa [m]

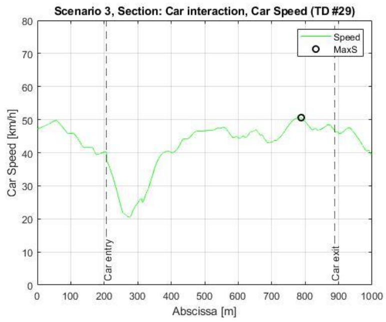

Scenario 1, Section: Car interaction, Car Speed (TD #28)
Speed
MaxS
Car entry
Car exit
Car Speed [km/h]
Abscissa [m]

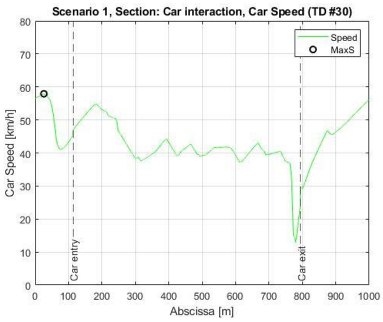

Scenario 2, Section: Car interaction, Car Speed (TD #28)
Speed
MaxS
Car entry
Car exit
Car Speed [km/h]
Abscissa [m]

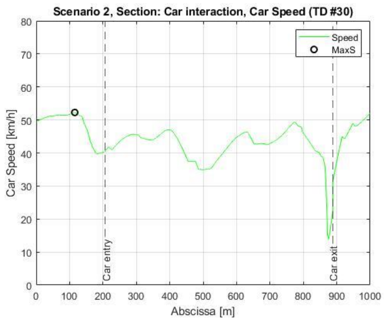

Scenario 3, Section: Car interaction, Car Speed (TD #28)
Speed
MaxS
Car entry
Car exit
Car Speed [km/h]
Abscissa [m]

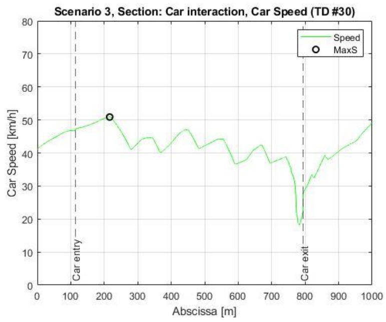

Scenario 1, Section: Car interaction, Car Speed (TD #29)
Speed
MaxS
Car entry
Car exit
Car Speed [km/h]
Abscissa [m]


Scenario 2, Section: Car interaction, Car Speed (TD #29)
Speed
MaxS
Car entry
Car exit
Car Speed [km/h]
Abscissa [m]

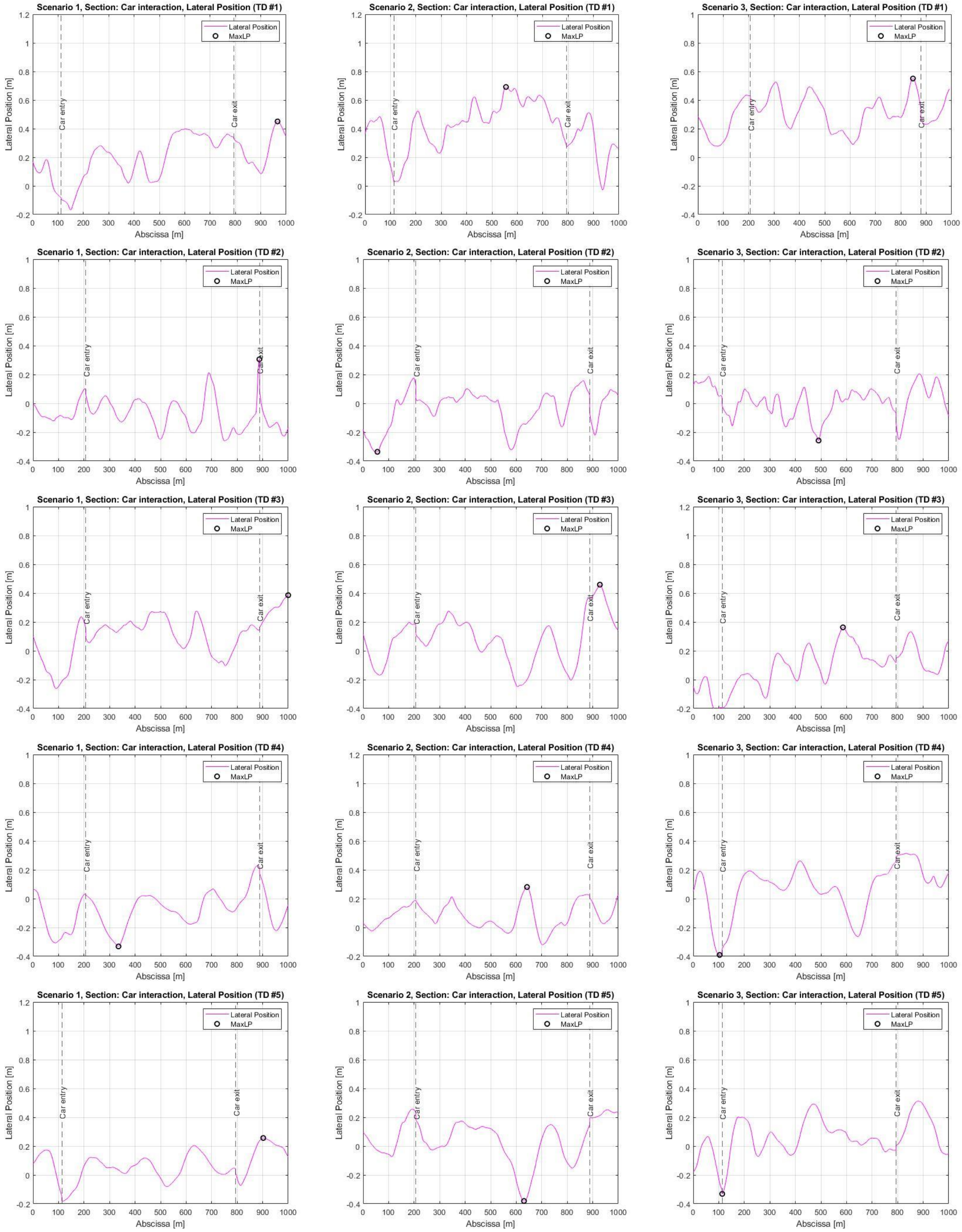

Scenario 3, Section: Car interaction, Car Speed (TD #29)
Speed
MaxS
Car entry
Car exit
Car Speed [km/h]
Abscissa [m]

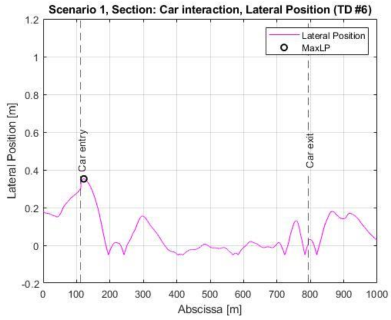

Scenario 1, Section: Car interaction, Car Speed (TD #30)
Speed
MaxS
Car entry
Car exit
Car Speed [km/h]
Abscissa [m]

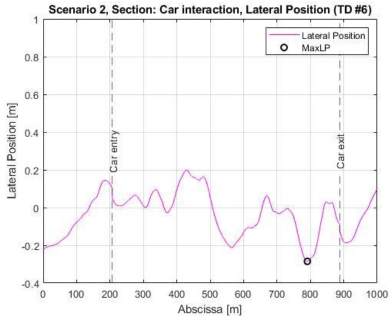

Scenario 2, Section: Car interaction, Car Speed (TD #30)
Speed
MaxS
Car entry
Car exit
Car Speed [km/h]
Abscissa [m]

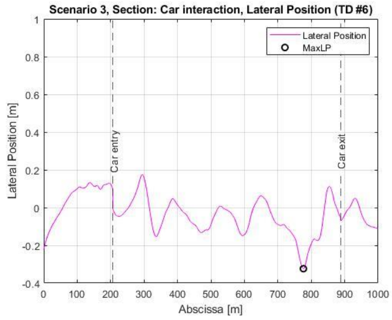

Scenario 3, Section: Car interaction, Car Speed (TD #30)
Speed
MaxS
Car entry
Car exit
Car Speed [km/h]
Abscissa [m]

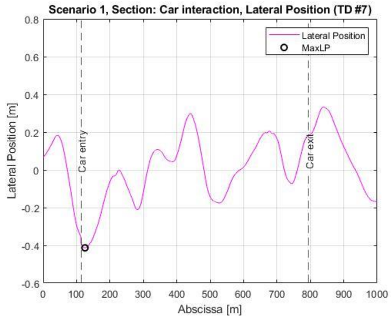
N. Lateral position (Vehicle interaction)

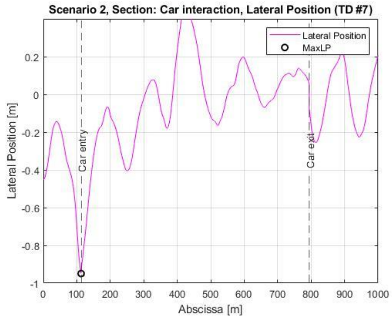


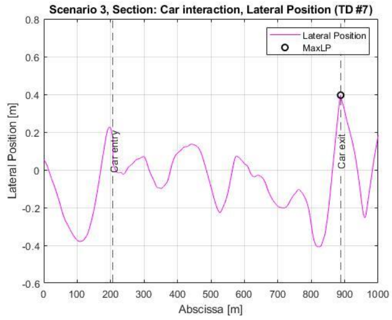

Scenario 1, Section: Car interaction, Lateral Position (TD #6)
Lateral Position
MaxLP
Car entry
Car exit
Lateral Position [m]
Abscissa [m]

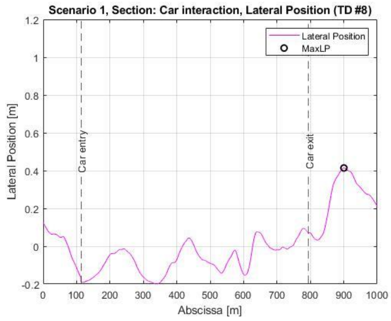

Scenario 2, Section: Car interaction, Lateral Position (TD #6)
Lateral Position
MaxLP
Car entry
Car exit
Lateral Position [m]
Abscissa [m]

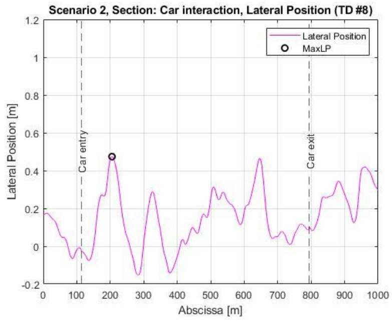

Scenario 3, Section: Car interaction, Lateral Position (TD #6)
Lateral Position
MaxLP
Car entry
Car exit
Lateral Position [m]
Abscissa [m]

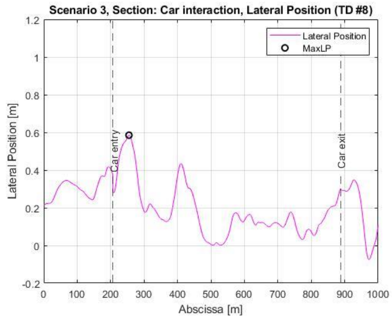

Scenario 1, Section: Car interaction, Lateral Position (TD #7)
Lateral Position
MaxLP
Car entry
Car exit
Lateral Position [m]
Abscissa [m]

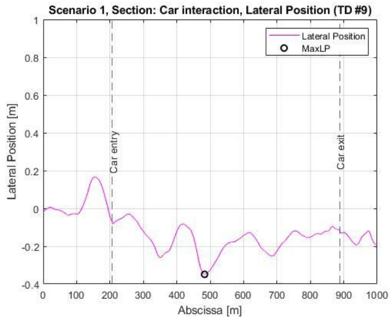

Scenario 2, Section: Car interaction, Lateral Position (TD #7)
Lateral Position
MaxLP
Car entry
Car exit
Lateral Position [m]
Abscissa [m]

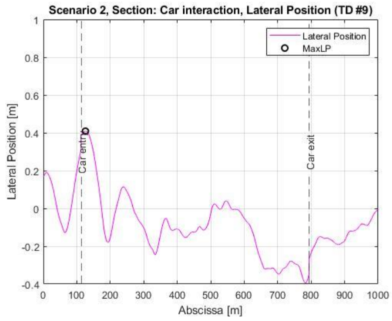

Scenario 3, Section: Car interaction, Lateral Position (TD #7)
Lateral Position
MaxLP
Car entry
Car exit
Lateral Position [m]
Abscissa [m]

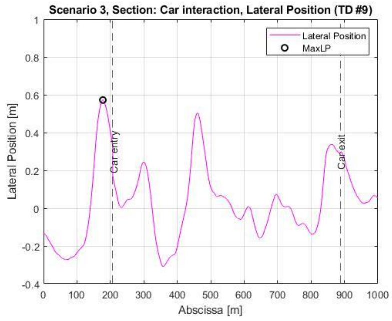

Scenario 1, Section: Car interaction, Lateral Position (TD #8)
Lateral Position
MaxLP
Car entry
Car exit
Lateral Position [m]
Abscissa [m]

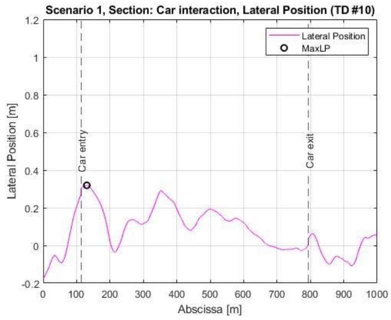

Scenario 2, Section: Car interaction, Lateral Position (TD #8)
Lateral Position
MaxLP
Car entry
Car exit
Lateral Position [m]
Abscissa [m]

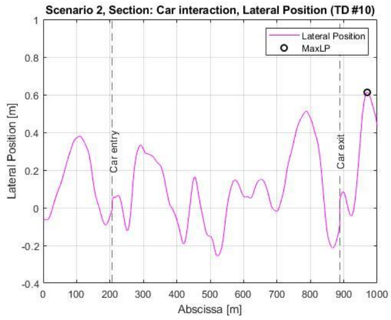

Scenario 3, Section: Car interaction, Lateral Position (TD #8)
Lateral Position
MaxLP
Car entry
Car exit
Lateral Position [m]
Abscissa [m]

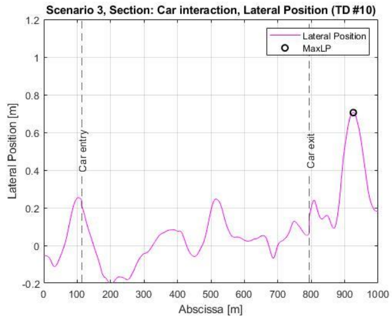

Scenario 1, Section: Car interaction, Lateral Position (TD #9)
Lateral Position
MaxLP
Car entry
Car exit
Lateral Position [m]
Abscissa [m]

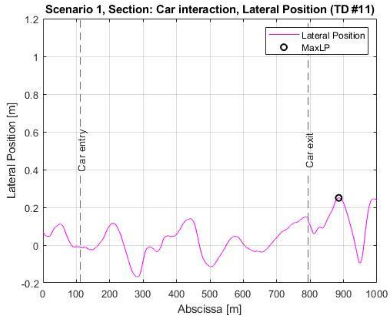

Scenario 2, Section: Car interaction, Lateral Position (TD #9)
Lateral Position
MaxLP
Car entry
Car exit
Lateral Position [m]
Abscissa [m]

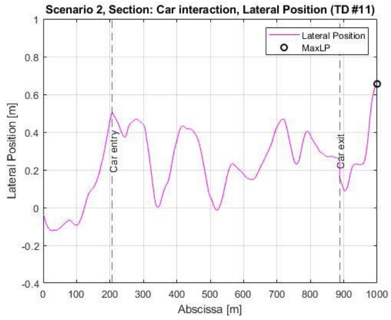

Scenario 3, Section: Car interaction, Lateral Position (TD #9)
Lateral Position
MaxLP
Car entry
Car exit
Lateral Position [m]
Abscissa [m]

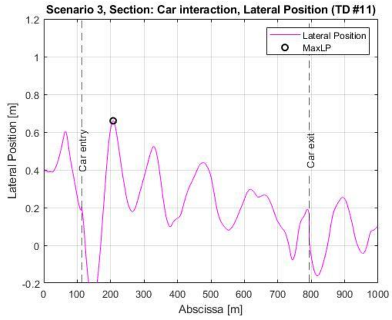

Scenario 1, Section: Car interaction, Lateral Position (TD #10)
Lateral Position
MaxLP
Car entry
Car exit
Lateral Position [m]
Abscissa [m]

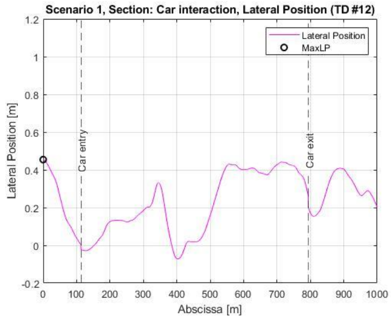

Scenario 2, Section: Car interaction, Lateral Position (TD #10)
Lateral Position
MaxLP
Car entry
Car exit
Lateral Position [m]
Abscissa [m]

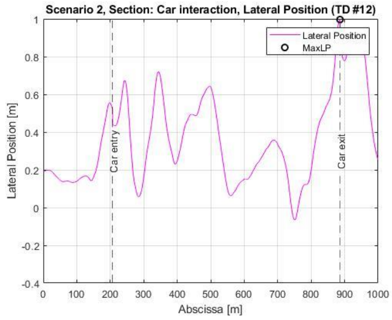

Scenario 3, Section: Car interaction, Lateral Position (TD #10)
Lateral Position
MaxLP
Car entry
Car exit
Lateral Position [m]
Abscissa [m]

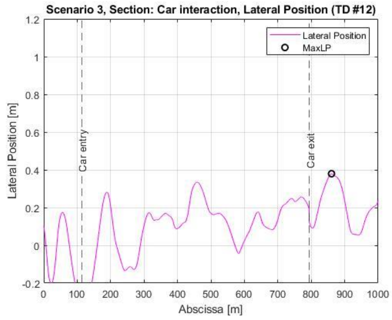

Scenario 1, Section: Car interaction, Lateral Position (TD #11)
Lateral Position
MaxLP
Car entry
Car exit
Lateral Position [m]
Abscissa [m]

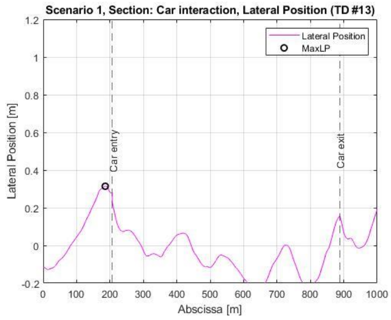

Scenario 2, Section: Car interaction, Lateral Position (TD #11)
Lateral Position
MaxLP
Car entry
Car exit
Lateral Position [m]
Abscissa [m]

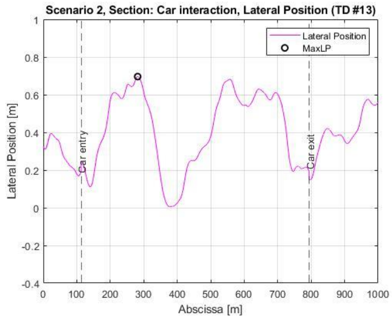

Scenario 3, Section: Car interaction, Lateral Position (TD #11)
Lateral Position
MaxLP
Car entry
Car exit
Lateral Position [m]
Abscissa [m]

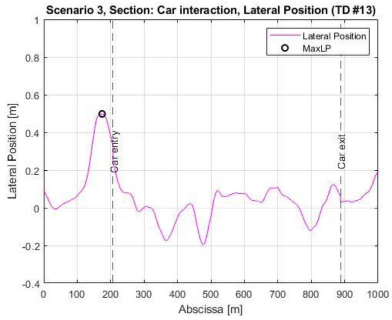

Scenario 1, Section: Car interaction, Lateral Position (TD #12)
Lateral Position
MaxLP
Car entry
Car exit
Lateral Position [m]
Abscissa [m]

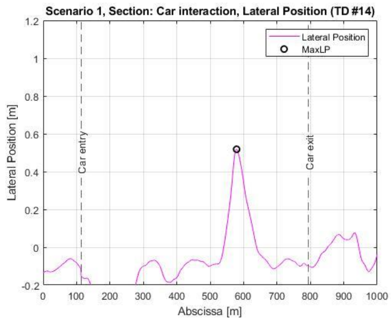

Scenario 2, Section: Car interaction, Lateral Position (TD #12)
Lateral Position
MaxLP
Car entry
Car exit
Lateral Position [m]
Abscissa [m]

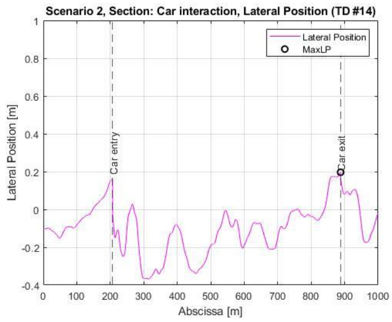

Scenario 3, Section: Car interaction, Lateral Position (TD #12)
Lateral Position
MaxLP
Car entry
Car exit
Lateral Position [m]
Abscissa [m]

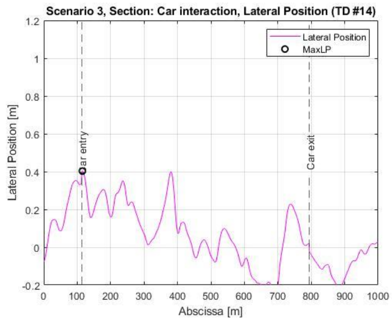

Scenario 1, Section: Car interaction, Lateral Position (TD #13)
Lateral Position
MaxLP
Car entry
Car exit
Lateral Position [m]
Abscissa [m]

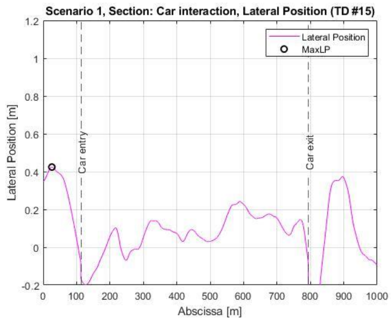

Scenario 2, Section: Car interaction, Lateral Position (TD #13)
Lateral Position
MaxLP
Car entry
Car exit
Lateral Position [m]
Abscissa [m]

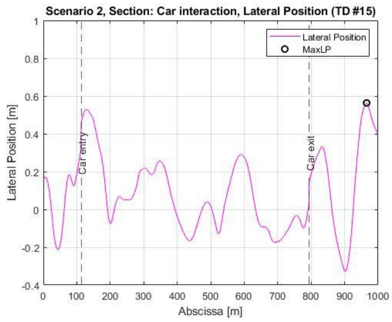

Scenario 3, Section: Car interaction, Lateral Position (TD #13)
Lateral Position
MaxLP
Car entry
Car exit
Lateral Position [m]
Abscissa [m]

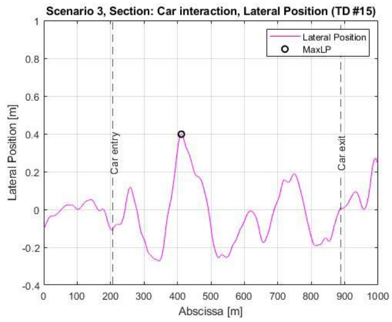

Scenario 1, Section: Car interaction, Lateral Position (TD #14)
Lateral Position
MaxLP
Car entry
Car exit
Lateral Position [m]
Abscissa [m]

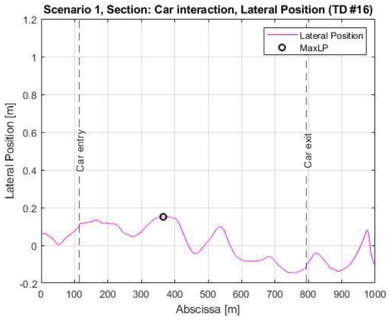

Scenario 2, Section: Car interaction, Lateral Position (TD #14)
Lateral Position
MaxLP
Car entry
Car exit
Lateral Position [m]
Abscissa [m]

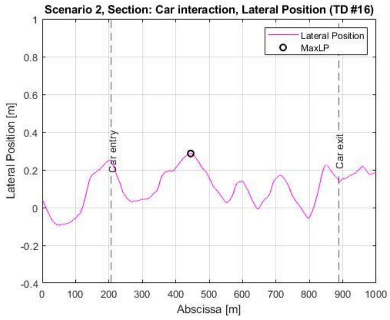

Scenario 3, Section: Car interaction, Lateral Position (TD #14)
Lateral Position
MaxLP
Car entry
Car exit
Lateral Position [m]
Abscissa [m]

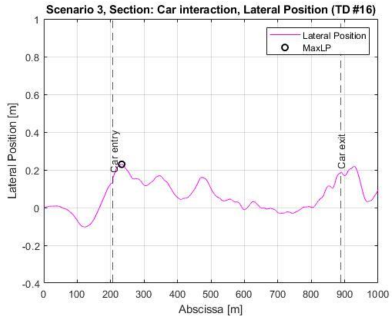

Scenario 1, Section: Car interaction, Lateral Position (TD #15)
Lateral Position
MaxLP
Car entry
Car exit
Lateral Position [m]
Abscissa [m]

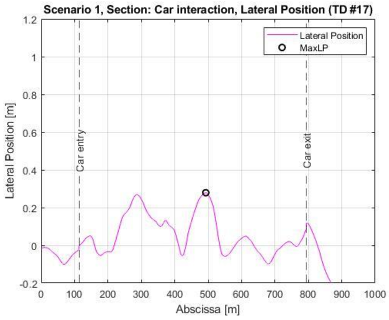

Scenario 2, Section: Car interaction, Lateral Position (TD #15)
Lateral Position
MaxLP
Car entry
Car exit
Lateral Position [m]
Abscissa [m]

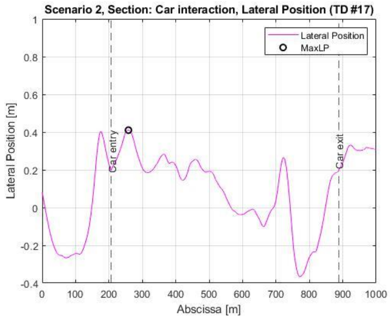

Scenario 3, Section: Car interaction, Lateral Position (TD #15)
Lateral Position
MaxLP
Car entry
Car exit
Lateral Position [m]
Abscissa [m]

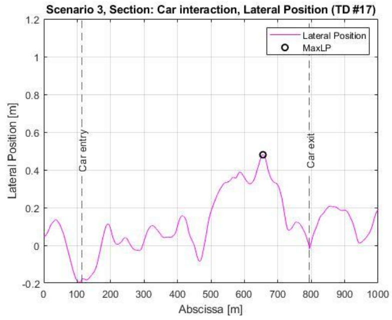

Scenario 1, Section: Car interaction, Lateral Position (TD #16)
Lateral Position
MaxLP
Car entry
Car exit
Lateral Position [m]
Abscissa [m]

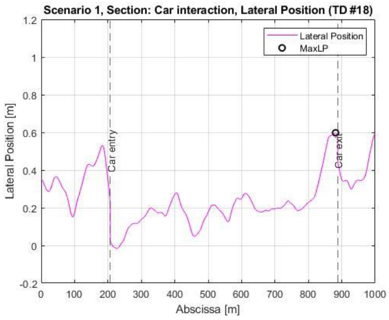

Scenario 2, Section: Car interaction, Lateral Position (TD #16)
Lateral Position
MaxLP
Car entry
Car exit
Lateral Position [m]
Abscissa [m]

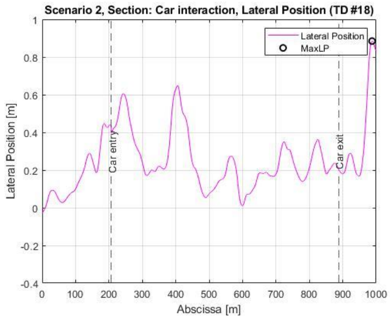

Scenario 3, Section: Car interaction, Lateral Position (TD #16)
Lateral Position
MaxLP
Car entry
Car exit
Lateral Position [m]
Abscissa [m]

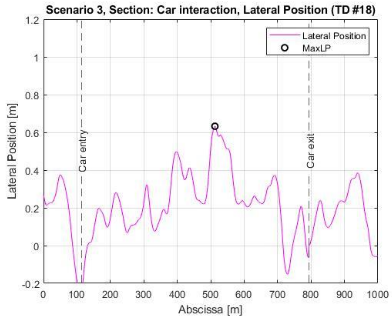

Scenario 1, Section: Car interaction, Lateral Position (TD #17)
Lateral Position
MaxLP
Car entry
Car exit
Lateral Position [m]
Abscissa [m]

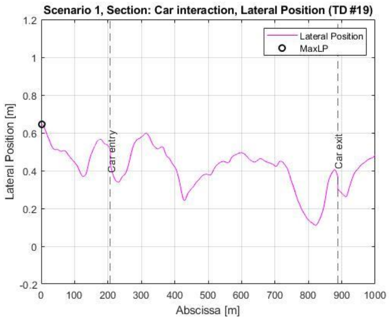

Scenario 2, Section: Car interaction, Lateral Position (TD #17)
Lateral Position
MaxLP
Car entry
Car exit
Lateral Position [m]
Abscissa [m]

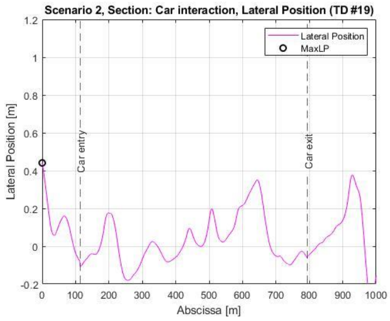

Scenario 3, Section: Car interaction, Lateral Position (TD #17)
Lateral Position
MaxLP
Car entry
Car exit
Lateral Position [m]
Abscissa [m]

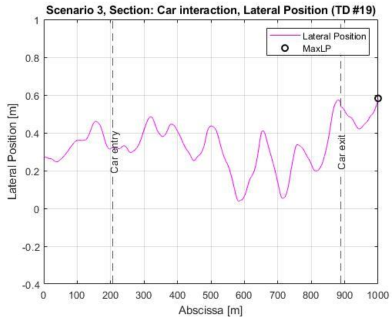

Scenario 1, Section: Car interaction, Lateral Position (TD #18)
Lateral Position
MaxLP
Car entry
Car exit
Lateral Position [m]
Abscissa [m]

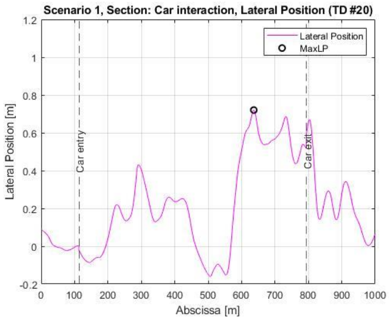

Scenario 2, Section: Car interaction, Lateral Position (TD #18)
Lateral Position
MaxLP
Car entry
Car exit
Lateral Position [m]
Abscissa [m]

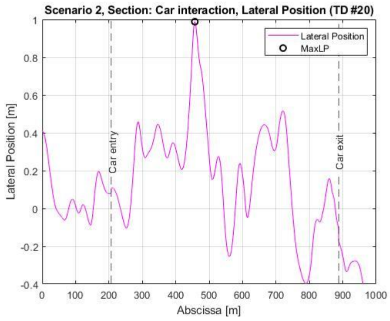

Scenario 3, Section: Car interaction, Lateral Position (TD #18)
Lateral Position
MaxLP
Car entry
Car exit
Lateral Position [m]
Abscissa [m]

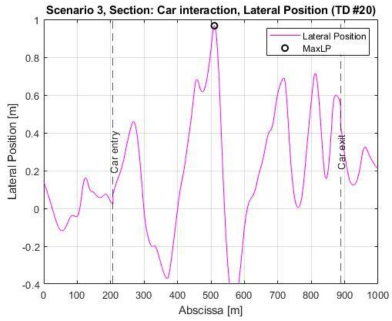

Scenario 1, Section: Car interaction, Lateral Position (TD #19)
Lateral Position
MaxLP
Car entry
Car exit
Lateral Position [m]
Abscissa [m]

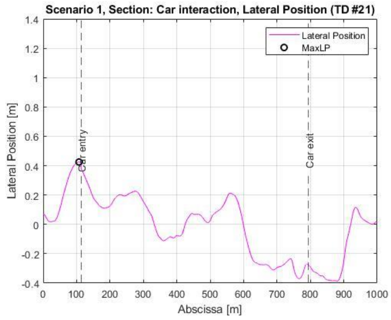

Scenario 2, Section: Car interaction, Lateral Position (TD #19)
Lateral Position
MaxLP
Car entry
Car exit
Lateral Position [m]
Abscissa [m]

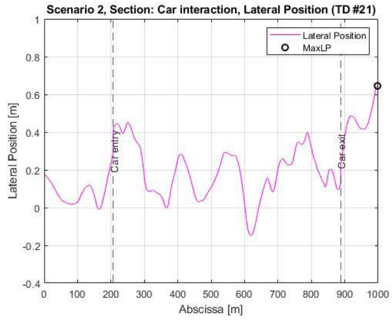

Scenario 3, Section: Car interaction, Lateral Position (TD #19)
Lateral Position
MaxLP
Car entry
Car exit
Lateral Position [m]
Abscissa [m]

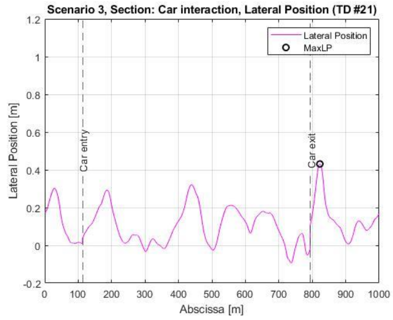

Scenario 1, Section: Car interaction, Lateral Position (TD #20)
Lateral Position
MaxLP
Car entry
Car exit
Lateral Position [m]
Abscissa [m]

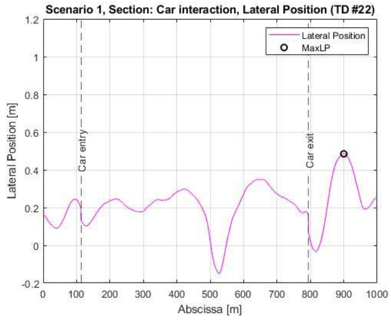

Scenario 2, Section: Car interaction, Lateral Position (TD #20)
Lateral Position
MaxLP
Car entry
Car exit
Lateral Position [m]
Abscissa [m]

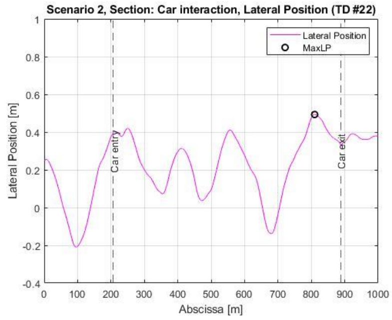

Scenario 3, Section: Car interaction, Lateral Position (TD #20)
Lateral Position
MaxLP
Car entry
Car exit
Lateral Position [m]
Abscissa [m]

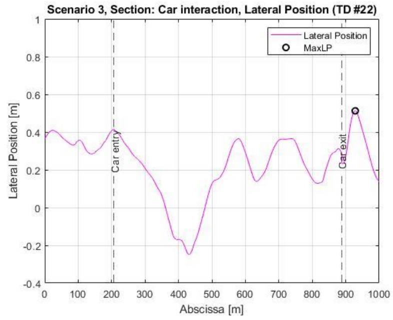

Scenario 1, Section: Car interaction, Lateral Position (TD #21)
Lateral Position
MaxLP
Car entry
Car exit
Lateral Position [m]
Abscissa [m]

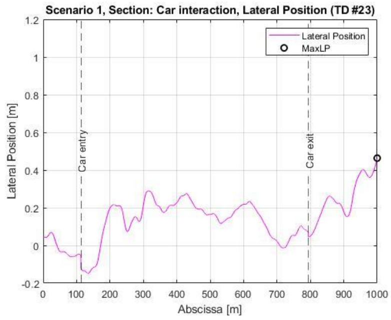

Scenario 2, Section: Car interaction, Lateral Position (TD #21)
Lateral Position
MaxLP
Car entry
Car exit
Lateral Position [m]
Abscissa [m]

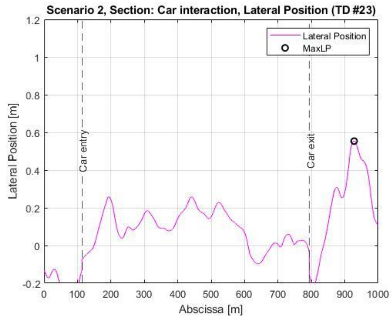

Scenario 3, Section: Car interaction, Lateral Position (TD #21)
Lateral Position
MaxLP
Car entry
Car exit
Lateral Position [m]
Abscissa [m]

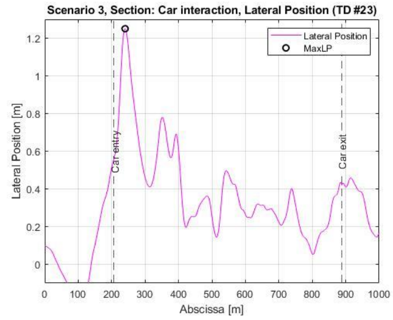

Scenario 1, Section: Car interaction, Lateral Position (TD #22)
Lateral Position
MaxLP
Car entry
Car exit
Lateral Position [m]
Abscissa [m]

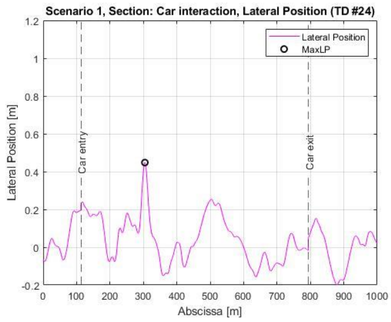

Scenario 2, Section: Car interaction, Lateral Position (TD #22)
Lateral Position
MaxLP
Car entry
Car exit
Lateral Position [m]
Abscissa [m]

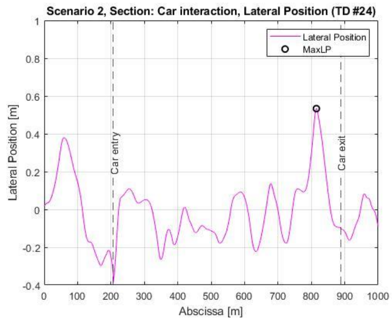

Scenario 3, Section: Car interaction, Lateral Position (TD #22)
Lateral Position
MaxLP
Car entry
Car exit
Lateral Position [m]
Abscissa [m]

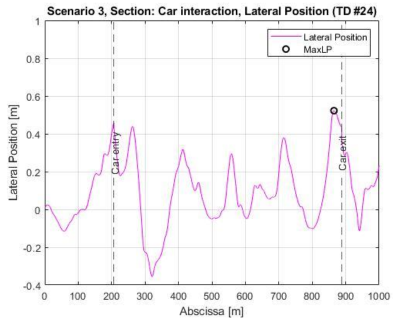

Scenario 1, Section: Car interaction, Lateral Position (TD #23)
Lateral Position
MaxLP
Car entry
Car exit
Lateral Position [m]
Abscissa [m]

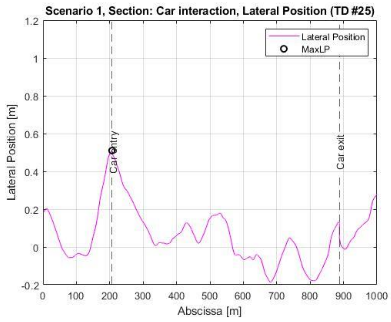

Scenario 2, Section: Car interaction, Lateral Position (TD #23)
Lateral Position
MaxLP
Car entry
Car exit
Lateral Position [m]
Abscissa [m]

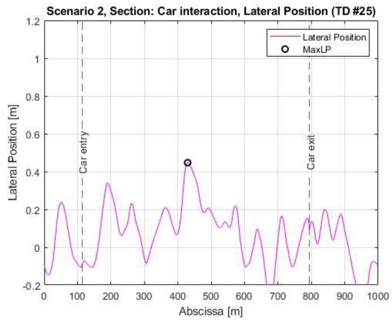

Scenario 3, Section: Car interaction, Lateral Position (TD #23)
Lateral Position
MaxLP
Car entry
Car exit
Lateral Position [m]
Abscissa [m]

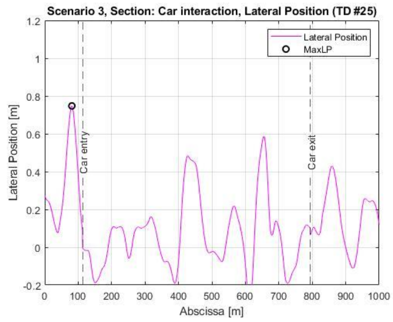

Scenario 1, Section: Car interaction, Lateral Position (TD #24)
Lateral Position
MaxLP
Car entry
Car exit
Lateral Position [m]
Abscissa [m]

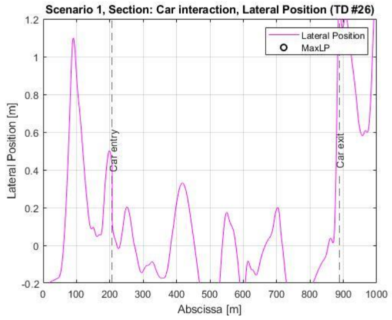

Scenario 2, Section: Car interaction, Lateral Position (TD #24)
Lateral Position
MaxLP
Car entry
Car exit
Lateral Position [m]
Abscissa [m]

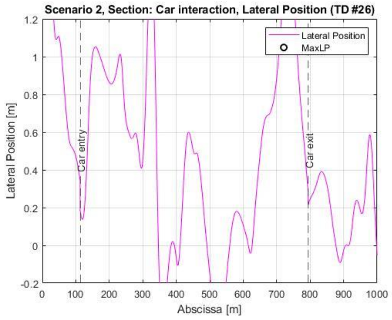

Scenario 3, Section: Car interaction, Lateral Position (TD #24)
Lateral Position
MaxLP
Car entry
Car exit
Lateral Position [m]
Abscissa [m]

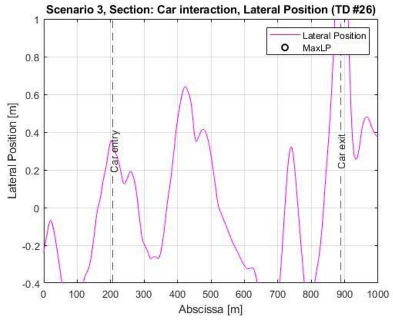

Scenario 1, Section: Car interaction, Lateral Position (TD #25)
Lateral Position
MaxLP
Car entry
Car exit
Lateral Position [m]
Abscissa [m]

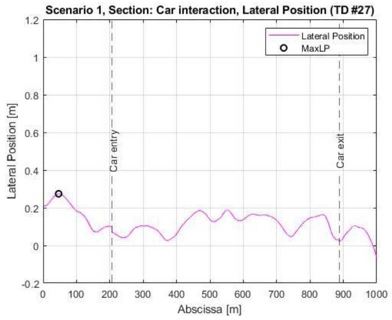

Scenario 2, Section: Car interaction, Lateral Position (TD #25)
Lateral Position
MaxLP
Car entry
Car exit
Lateral Position [m]
Abscissa [m]

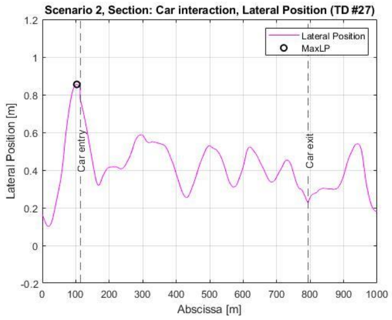

Scenario 3, Section: Car interaction, Lateral Position (TD #25)
Lateral Position
MaxLP
Car entry
Car exit
Lateral Position [m]
Abscissa [m]

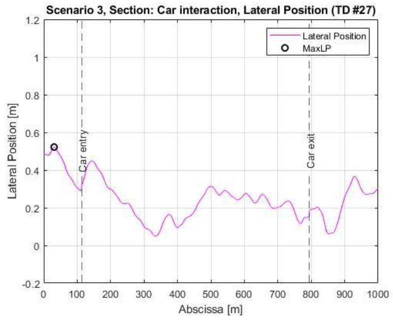

Scenario 1, Section: Car interaction, Lateral Position (TD #26)
Lateral Position
MaxLP
Car entry
Car exit
Lateral Position [m]
Abscissa [m]

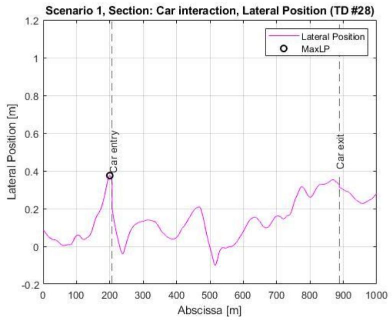

Scenario 2, Section: Car interaction, Lateral Position (TD #26)
Lateral Position
MaxLP
Car entry
Car exit
Lateral Position [m]
Abscissa [m]

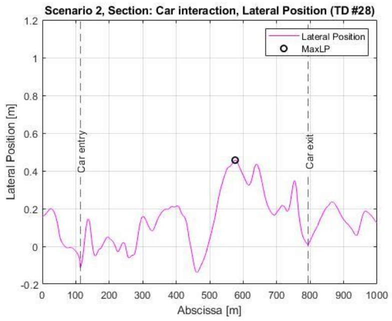

Scenario 3, Section: Car interaction, Lateral Position (TD #26)
Lateral Position
MaxLP
Car entry
Car exit
Lateral Position [m]
Abscissa [m]

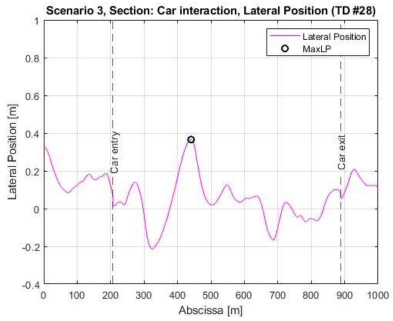

Scenario 1, Section: Car interaction, Lateral Position (TD #27)
Lateral Position
MaxLP
Car entry
Car exit
Lateral Position [m]
Abscissa [m]

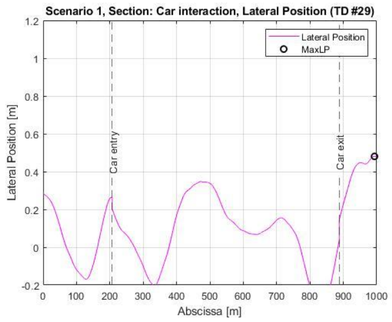

Scenario 2, Section: Car interaction, Lateral Position (TD #27)
Lateral Position
MaxLP
Car entry
Car exit
Lateral Position [m]
Abscissa [m]

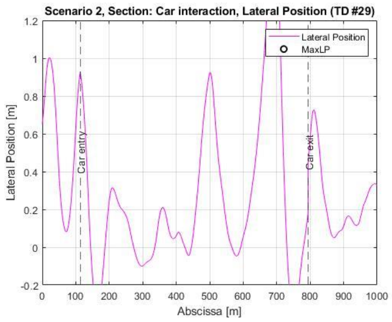

Scenario 3, Section: Car interaction, Lateral Position (TD #27)
Lateral Position
MaxLP
Car entry
Car exit
Lateral Position [m]
Abscissa [m]

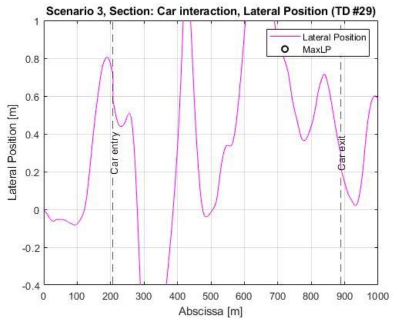

Scenario 1, Section: Car interaction, Lateral Position (TD #28)
Lateral Position
MaxLP
Car entry
Car exit
Lateral Position [m]
Abscissa [m]

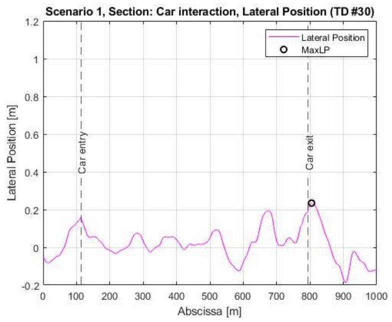

Scenario 2, Section: Car interaction, Lateral Position (TD #28)
Lateral Position
MaxLP
Car entry
Car exit
Lateral Position [m]
Abscissa [m]

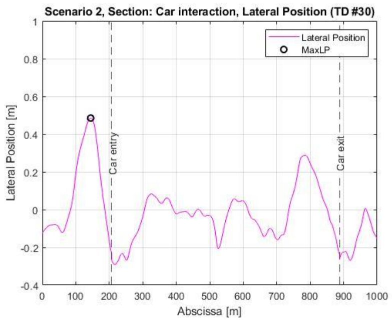

Scenario 3, Section: Car interaction, Lateral Position (TD #28)
Lateral Position
MaxLP
Car entry
Car exit
Lateral Position [m]
Abscissa [m]

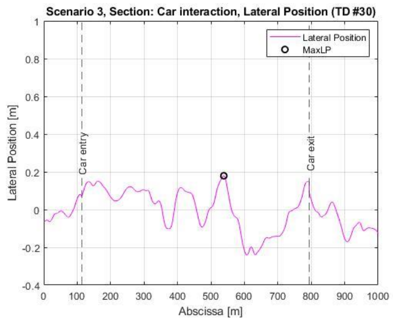

Scenario 1, Section: Car interaction, Lateral Position (TD #29)
Lateral Position
MaxLP
Car entry
Car exit
Lateral Position [m]
Abscissa [m]


Scenario 2, Section: Car interaction, Lateral Position (TD #29)
Lateral Position
MaxLP
Car entry
Car exit
Lateral Position [m]
Abscissa [m]


Scenario 3, Section: Car interaction, Lateral Position (TD #29)
Lateral Position
MaxLP
Car entry
Car exit
Lateral Position [m]
Abscissa [m]


Scenario 1, Section: Car interaction, Lateral Position (TD #30)
Lateral Position
MaxLP
Car entry
Car exit
Lateral Position [m]
Abscissa [m]


Scenario 2, Section: Car interaction, Lateral Position (TD #30)
Lateral Position
MaxLP
Car entry
Car exit
Lateral Position [m]
Abscissa [m]


Scenario 3, Section: Car interaction, Lateral Position (TD #30)
Lateral Position
MaxLP
Car entry
Car exit
Lateral Position [m]
Abscissa [m]

O. RM-ANOVA Statistical results

1. Pedestrian interaction

MTTC results

Within Subjects Effects

	Sum of Squares	df	Mean Square	F	p
Distraction Level	1.061	1.96	0.54	0.195	0.82
Distraction Level ✻ Gender	2.919	1.96	1.486	0.536	0.585
Distraction Level ✻ Driving experience [km/years]	13.305	1.96	6.772	2.444	0.099
Distraction Level ✻ Driving experience [years]	1.073	1.96	0.546	0.197	0.818
Distraction Level ✻ Age	1.246	1.96	0.634	0.229	0.792
Distraction Level ✻ Number of crashes	0.609	1.96	0.31	0.112	0.891
Residual	130.627	47.15	2.77		

Note. Type 3 Sums of Squares

Between Subjects Effects

	Sum of Squares	df	Mean Square	F	p
Gender	0.1455	1	0.1455	0.0547	0.817
Driving experience [km/years]	0.0288	1	0.0288	0.0108	0.918
Driving experience [years]	0.7277	1	0.7277	0.2735	0.606
Age	1.9326	1	1.9326	0.7265	0.402
Number of crashes	1.129	1	1.129	0.4244	0.521
Residual	63.8475	24	2.6603		

Note. Type 3 Sums of Squares

Max Speed results

Within Subjects Effects

	Sum of Squares	df	Mean Square	F	p
Distraction Level	113.4	1.83	61.8	1.574	0.22
Distraction Level ✻ Gender	22.5	1.83	12.3	0.312	0.715
Distraction Level ✻ Driving experience [km/years]	60.9	1.83	33.2	0.845	0.428
Distraction Level ✻ Driving experience [years]	50.9	1.83	27.8	0.707	0.487
Distraction Level ✻ Age	94.1	1.83	51.3	1.305	0.28
Distraction Level ✻ Number of crashes	39.4	1.83	21.5	0.547	0.568
Residual	1729.3	44.03	39.3		

Note. Type 3 Sums of Squares

Between Subjects Effects

	Sum of Squares	df	Mean Square	F	p
Gender	0.316	1	0.316	0.00321	0.955
Driving experience [km/years]	93.031	1	93.031	0.94531	0.341
Driving experience [years]	2.797	1	2.797	0.02842	0.868
Age	35.395	1	35.395	0.35965	0.554
Number of crashes	95.911	1	95.911	0.97457	0.333
Residual	2361.931	24	98.414		

Note. Type 3 Sums of Squares

Max. Deceleration results

Within Subjects Effects

	Sum of Squares	df	Mean Square	F	p
Distraction Level	0.944	1.66	0.569	0.851	0.416
Distraction Level ✻ Gender	2.48	1.66	1.493	2.236	0.128
Distraction Level ✻ Driving experience [km/years]	1.751	1.66	1.054	1.578	0.221
Distraction Level ✻ Driving experience [years]	0.239	1.66	0.144	0.216	0.766
Distraction Level ✻ Age	0.542	1.66	0.326	0.489	0.583
Distraction Level ✻ Number of crashes	0.495	1.66	0.298	0.446	0.607
Residual	26.621	39.87	0.668		

Note. Type 3 Sums of Squares

Between Subjects Effects

	Sum of Squares	df	Mean Square	F	p
Gender	0.9291	1	0.9291	1.1665	0.291
Driving experience [km/years]	0.1149	1	0.1149	0.1442	0.707
Driving experience [years]	0.0133	1	0.0133	0.0168	0.898
Age	0.1559	1	0.1559	0.1958	0.662
Number of crashes	0.0252	1	0.0252	0.0316	0.86
Residual	19.1151	24	0.7965		

Note. Type 3 Sums of Squares

PET results

Within Subjects Effects

	Sum of Squares	df	Mean Square	F	p
Distraction Level	10.217	1.66	6.173	1.1703	0.313
Distraction Level ✻ Gender	0.778	1.66	0.47	0.0891	0.881
Distraction Level ✻ Driving experience [km/years]	2.977	1.66	1.799	0.341	0.673
Distraction Level ✻ Driving experience [years]	3.438	1.66	2.077	0.3938	0.638
Distraction Level ✻ Age	6.958	1.66	4.203	0.7969	0.436
Distraction Level ✻ Number of crashes	11.446	1.66	6.915	1.3111	0.277
Residual	209.528	39.72	5.275		

Note. Type 3 Sums of Squares

Between Subjects Effects

	Sum of Squares	df	Mean Square	F	p
Gender	25.12	1	25.12	3.029	0.095
Driving experience [km/years]	1.15	1	1.15	0.138	0.713
Driving experience [years]	90.74	1	90.74	10.943	0.003
Age	39.06	1	39.06	4.711	0.04
Number of crashes	70.8	1	70.8	8.538	0.007
Residual	199.02	24	8.29		

Note. Type 3 Sums of Squares

2. No interaction

Max. Speed results

Within Subjects Effects

	Sum of Squares	df	Mean Square	F	p
Distraction Level	43.7	1.96	22.33	1.027	0.365
Distraction Level ✻ Gender	20.5	1.96	10.47	0.482	0.616
Distraction Level ✻ Driving experience [km/years]	140.2	1.96	71.71	3.299	0.047
Distraction Level ✻ Driving experience [years]	27.1	1.96	13.88	0.639	0.529
Distraction Level ✻ Age	30.8	1.96	15.77	0.725	0.487
Distraction Level ✻ Number of crashes	18.8	1.96	9.64	0.443	0.64
Residual	1020.1	46.93	21.74		

Note. Type 3 Sums of Squares

Between Subjects Effects

	Sum of Squares	df	Mean Square	F	p
Gender	9.662	1	9.662	0.14684	0.705
Driving experience [km/years]	285.904	1	285.904	4.34514	0.048
Driving experience [years]	0.39	1	0.39	0.00593	0.939
Age	48.638	1	48.638	0.7392	0.398
Number of crashes	37.981	1	37.981	0.57723	0.455
Residual	1579.166	24	65.799		

Note. Type 3 Sums of Squares

Mean Speed results

Within Subjects Effects

	Sum of Squares	df	Mean Square	F	p
Distraction Level	8	1.77	4.53	0.275	0.734
Distraction Level ✻ Gender	12.98	1.77	7.35	0.447	0.619
Distraction Level ✻ Driving experience [km/years]	59.71	1.77	33.79	2.054	0.146
Distraction Level ✻ Driving experience [years]	9.05	1.77	5.12	0.311	0.707
Distraction Level ✻ Age	4.17	1.77	2.36	0.144	0.842
Distraction Level ✻ Number of crashes	17.51	1.77	9.91	0.602	0.532
Residual	697.63	42.41	16.45		

Note. Type 3 Sums of Squares

Between Subjects Effects

	Sum of Squares	df	Mean Square	F	p
Gender	73.38	1	73.38	1.83	0.189
Driving experience [km/years]	314.18	1	314.18	7.8347	0.01
Driving experience [years]	1.85	1	1.85	0.0462	0.832
Age	23.1	1	23.1	0.5761	0.455
Number of crashes	37.2	1	37.2	0.9277	0.345
Residual	962.42	24	40.1		

Note. Type 3 Sums of Squares

SD Speed results

Within Subjects Effects

	Sum of Squares	df	Mean Square	F	p
Distraction Level	4.054	1.92	2.1067	0.89228	0.413
Distraction Level ✻ Gender	0.682	1.92	0.3544	0.15011	0.853
Distraction Level ✻ Driving experience [km/years]	3.8635	1.92	2.0077	0.85035	0.43
Distraction Level ✻ Driving experience [years]	0.2323	1.92	0.1207	0.05114	0.945
Distraction Level ✻ Age	2.8619	1.92	1.4872	0.62989	0.531
Distraction Level ✻ Number of crashes	0.0323	1.92	0.0168	0.00712	0.992
Residual	109.0429	46.19	2.361		

Note. Type 3 Sums of Squares

Between Subjects Effects

	Sum of Squares	df	Mean Square	F	p
Gender	3.539	1	3.539	0.4641	0.502
Driving experience [km/years]	0.381	1	0.381	0.0499	0.825
Driving experience [years]	0.398	1	0.398	0.0522	0.821
Age	3.262	1	3.262	0.4278	0.519
Number of crashes	1.618	1	1.618	0.2122	0.649
Residual	183.017	24	7.626		

Note. Type 3 Sums of Squares

Max LP results

Within Subjects Effects

	Sum of Squares	df	Mean Square	F	p
Distraction Level	0.0942	1.67	0.0566	0.563	0.543
Distraction Level ✻ Gender	0.6222	1.67	0.3734	3.716	0.04
Distraction Level ✻ Driving experience [km/years]	0.1391	1.67	0.0835	0.831	0.424
Distraction Level ✻ Driving experience [years]	0.0911	1.67	0.0547	0.544	0.553
Distraction Level ✻ Age	0.0712	1.67	0.0427	0.425	0.62
Distraction Level ✻ Number of crashes	0.058	1.67	0.0348	0.346	0.67
Residual	4.0187	39.99	0.1005		

Note. Type 3 Sums of Squares

Between Subjects Effects

	Sum of Squares	df	Mean Square	F	p
Gender	0.5236	1	0.5236	2.117	0.159
Driving experience [km/years]	0.0366	1	0.0366	0.148	0.704
Driving experience [years]	0.0559	1	0.0559	0.226	0.639
Age	0.0361	1	0.0361	0.146	0.706
Number of crashes	0.0881	1	0.0881	0.356	0.556
Residual	5.935	24	0.2473		

Note. Type 3 Sums of Squares

Mean LP results

Within Subjects Effects

	Sum of Squares	df	Mean Square	F	p
Distraction Level	0.018	1.9	0.00943	0.612	0.539
Distraction Level ✻ Gender	0.0203	1.9	0.01068	0.693	0.499
Distraction Level ✻ Driving experience [km/years]	0.0937	1.9	0.04921	3.192	0.053
Distraction Level ✻ Driving experience [years]	0.0253	1.9	0.01327	0.86	0.425
Distraction Level ✻ Age	0.0148	1.9	0.00775	0.502	0.599
Distraction Level ✻ Number of crashes	0.0216	1.9	0.01132	0.734	0.479
Residual	0.7047	45.71	0.01542		

Note. Type 3 Sums of Squares

Between Subjects Effects

	Sum of Squares	df	Mean Square	F	p
Gender	0.0988	1	0.0988	2.26	0.146
Driving experience [km/years]	0.18113	1	0.18113	4.143	0.053
Driving experience [years]	0.21254	1	0.21254	4.861	0.037
Age	0.1818	1	0.1818	4.158	0.053
Number of crashes	0.00882	1	0.00882	0.202	0.657
Residual	1.04937	24	0.04372		

Note. Type 3 Sums of Squares

SD LP results

Within Subjects Effects

	Sum of Squares	df	Mean Square	F	p
Distraction Level	0.0056	1.67	0.00335	0.7599	0.452
Distraction Level ✻ Gender	0.03507	1.67	0.02098	4.7631	0.019
Distraction Level ✻ Driving experience [km/years]	0.00639	1.67	0.00382	0.8684	0.41
Distraction Level ✻ Driving experience [years]	0.0032	1.67	0.00192	0.435	0.615
Distraction Level ✻ Age	0.00382	1.67	0.00229	0.519	0.567
Distraction Level ✻ Number of crashes	3.35E-04	1.67	2.00E-04	0.0455	0.932
Residual	0.17673	40.13	0.0044		

Note. Type 3 Sums of Squares

Between Subjects Effects

	Sum of Squares	df	Mean Square	F	p
Gender	0.02178	1	0.02178	1.286	0.268
Driving experience [km/years]	0.01888	1	0.01888	1.115	0.302
Driving experience [years]	0.00677	1	0.00677	0.4	0.533
Age	0.00631	1	0.00631	0.373	0.547
Number of crashes	0.00271	1	0.00271	0.16	0.692
Residual	0.40639	24	0.01693		

Note. Type 3 Sums of Squares

3. Vehicle interaction

Max Speed results

Within Subjects Effects

	Sum of Squares	df	Mean Square	F	p
Distraction Level	23.96	1.6	15.005	1.0043	0.36
Distraction Level ✻ Gender	15.69	1.6	9.827	0.6577	0.491
Distraction Level ✻ Driving experience [km/years]	17.32	1.6	10.849	0.7261	0.461
Distraction Level ✻ Driving experience [years]	24.81	1.6	15.54	1.04	0.349
Distraction Level ✻ Age	24.99	1.6	15.65	1.0474	0.346
Distraction Level ✻ Number of crashes	1.1	1.6	0.687	0.0459	0.925
Residual	572.55	38.32	14.942		

Note. Type 3 Sums of Squares

Between Subjects Effects

	Sum of Squares	df	Mean Square	F	p
Gender	24.43	1	24.43	0.6872	0.415
Driving experience [km/years]	38.02	1	38.02	1.0697	0.311
Driving experience [years]	3.06	1	3.06	0.0861	0.772
Age	9.62	1	9.62	0.2707	0.608
Number of crashes	49.12	1	49.12	1.3821	0.251
Residual	853.03	24	35.54		

Note. Type 3 Sums of Squares

Mean Speed results

Within Subjects Effects

	Sum of Squares	df	Mean Square	F	p
Distraction Level	15.4674	1.7	9.119	3.5676	0.044
Distraction Level ✻ Gender	0.0872	1.7	0.0514	0.0201	0.967
Distraction Level ✻ Driving experience [km/years]	1.7778	1.7	1.0481	0.41	0.633
Distraction Level ✻ Driving experience [years]	15.1589	1.7	8.9371	3.4964	0.047
Distraction Level ✻ Age	14.7766	1.7	8.7117	3.4082	0.05
Distraction Level ✻ Number of crashes	0.6221	1.7	0.3668	0.1435	0.833
Residual	104.053	40.71	2.5561		

Note. Type 3 Sums of Squares

Between Subjects Effects

	Sum of Squares	df	Mean Square	F	p
Gender	22.73866	1	22.73866	4.7755	0.039
Driving experience [km/years]	0.592	1	0.592	0.12433	0.727
Driving experience [years]	0.32801	1	0.32801	0.06889	0.795
Age	0.00621	1	0.00621	0.00131	0.971
Number of crashes	3.14618	1	3.14618	0.66075	0.424
Residual	114.27657	24	4.76152		

Note. Type 3 Sums of Squares

SD Speed results

Within Subjects Effects

	Sum of Squares	df	Mean Square	F	p
Distraction Level	27.781	1.92	14.434	8.2	0.001
Distraction Level ✻ Gender	0.691	1.92	0.359	0.204	0.808
Distraction Level ✻ Driving experience [km/years]	1.163	1.92	0.604	0.343	0.703
Distraction Level ✻ Driving experience [years]	51.347	1.92	26.677	15.156	< .001
Distraction Level ✻ Age	40.347	1.92	20.962	11.909	< .001
Distraction Level ✻ Number of crashes	0.411	1.92	0.214	0.121	0.879
Residual	81.311	46.19	1.76		

Note. Type 3 Sums of Squares

Between Subjects Effects

	Sum of Squares	df	Mean Square	F	p
Gender	1.21	1	1.21	0.3	0.589
Driving experience [km/years]	1.42	1	1.42	0.353	0.558
Driving experience [years]	9.08	1	9.08	2.258	0.146
Age	3.52	1	3.52	0.876	0.359
Number of crashes	18.92	1	18.92	4.704	0.04
Residual	96.56	24	4.02		

Note. Type 3 Sums of Squares

Mean LP results

Within Subjects Effects

	Sum of Squares	df	Mean Square	F	p
Distraction Level	0.03981	1.71	0.02326	2.6345	0.091
Distraction Level ✻ Gender	0.00406	1.71	0.00237	0.2689	0.731
Distraction Level ✻ Driving experience [km/years]	3.87E-04	1.71	2.26E-04	0.0256	0.96
Distraction Level ✻ Driving experience [years]	0.09084	1.71	0.05307	6.0115	0.007
Distraction Level ✻ Age	0.05404	1.71	0.03157	3.5758	0.044
Distraction Level ✻ Number of crashes	0.02175	1.71	0.0127	1.439	0.248
Residual	0.36268	41.08	0.00883		

Note. Type 3 Sums of Squares

Between Subjects Effects

	Sum of Squares	df	Mean Square	F	p
Gender	0.06678	1	0.06678	3.568	0.071
Driving experience [km/years]	0.03169	1	0.03169	1.693	0.205
Driving experience [years]	0.07206	1	0.07206	3.85	0.061
Age	0.06106	1	0.06106	3.262	0.083
Number of crashes	0.00492	1	0.00492	0.263	0.613
Residual	0.44915	24	0.01871		

Note. Type 3 Sums of Squares

SD LP results

Within Subjects Effects

	Sum of Squares	df	Mean Square	F	p
Distraction Level	0.00634	1.32	0.0048	1.26938	0.281
Distraction Level ✻ Gender	0.00343	1.32	0.0026	0.68721	0.452
Distraction Level ✻ Driving experience [km/years]	0.01018	1.32	0.0077	2.03872	0.159
Distraction Level ✻ Driving experience [years]	0.0028	1.32	0.00212	0.56018	0.506
Distraction Level ✻ Age	0.00394	1.32	0.00298	0.78852	0.415
Distraction Level ✻ Number of crashes	3.90E-05	1.32	2.95E-05	0.00782	0.966
Residual	0.11981	31.72	0.00378		

Note. Type 3 Sums of Squares

Between Subjects Effects

	Sum of Squares	df	Mean Square	F	p
Gender	0.01661	1	0.01661	0.71	0.408
Driving experience [km/years]	0.04464	1	0.04464	1.908	0.18
Driving experience [years]	0.01837	1	0.01837	0.785	0.384
Age	0.01397	1	0.01397	0.597	0.447
Number of crashes	0.00898	1	0.00898	0.384	0.542
Residual	0.56156	24	0.0234		

Note. Type 3 Sums of Squares

Max Deceleration results

Within Subjects Effects

	Sum of Squares	df	Mean Square	F	p
Distraction Level	3.138	1.99	1.5785	0.5452	0.582
Distraction Level ✻ Gender	5.169	1.99	2.6007	0.8982	0.414
Distraction Level ✻ Driving experience [km/years]	3.985	1.99	2.0049	0.6925	0.504
Distraction Level ✻ Driving experience [years]	1.461	1.99	0.735	0.2539	0.776
Distraction Level ✻ Age	2.549	1.99	1.2823	0.4429	0.644
Distraction Level ✻ Number of crashes	0.117	1.99	0.0589	0.0204	0.979
Residual	138.121	47.7	2.8953		

Note. Type 3 Sums of Squares

Between Subjects Effects

	Sum of Squares	df	Mean Square	F	p
Gender	1.8	1	1.8	0.284	0.599
Driving experience [km/years]	6.48	1	6.48	1.022	0.322
Driving experience [years]	8.95	1	8.95	1.412	0.246
Age	5.04	1	5.04	0.796	0.381
Number of crashes	32.18	1	32.18	5.08	0.034
Residual	152.02	24	6.33		

Note. Type 3 Sums of Squares

Min Headway results

Within Subjects Effects

	Sum of Squares	df	Mean Square	F	p
Distraction Level	15.2552	1.29	11.8131	2.21658	0.141
Distraction Level ✻ Gender	2.1326	1.29	1.6514	0.30987	0.639
Distraction Level ✻ Driving experience [km/years]	3.6713	1.29	2.8429	0.53344	0.515
Distraction Level ✻ Driving experience [years]	24.6631	1.29	19.0983	3.58355	0.058
Distraction Level ✻ Age	17.0754	1.29	13.2226	2.48105	0.118
Distraction Level ✻ Number of crashes	0.0322	1.29	0.0249	0.00467	0.974
Residual	165.1754	30.99	5.3294		

Note. Type 3 Sums of Squares

Between Subjects Effects

	Sum of Squares	df	Mean Square	F	p
Gender	19.5749	1	19.5749	3.954	0.058
Driving experience [km/years]	0.00429	1	0.00429	8.66E-04	0.977
Driving experience [years]	3.03586	1	3.03586	0.613	0.441
Age	8.37916	1	8.37916	1.692	0.206
Number of crashes	2.45477	1	2.45477	0.496	0.488
Residual	118.82773	24	4.95116		

Note. Type 3 Sums of Squares

P. Post-hoc test results

1. No interaction

Max. LP

Post Hoc Comparisons - Distraction Level ✻ Gender

Comparison										
Distraction Level	**Gender**		**Distraction Level**	**Gender**	**Mean Difference**	**SE**	**df**	**t**	**$p_{bonferroni}$**	**p_{holm}**
No Distraction	F	-	No Distraction	M	-0.0296	0.1174	24	-0.252	1	1
		-	Distraction	F	-0.5422	0.1342	24	-4.04	0.007	0.007
		-	Distraction	M	-0.1434	0.1637	24	-0.876	1	1
		-	Distraction + DDW	F	-0.2248	0.1079	24	-2.084	0.719	0.479
		-	Distraction + DDW	M	-0.1054	0.1275	24	-0.827	1	1
	M	-	Distraction	F	-0.5126	0.1565	24	-3.275	0.048	0.042
		-	Distraction	M	-0.1138	0.1492	24	-0.763	1	1
		-	Distraction + DDW	F	-0.1953	0.1265	24	-1.544	1	1
		-	Distraction + DDW	M	-0.0758	0.1199	24	-0.632	1	1
Distraction	F	-	Distraction	M	0.3988	0.1829	24	2.181	0.588	0.432
		-	Distraction + DDW	F	0.3174	0.0914	24	3.473	0.03	0.028
		-	Distraction + DDW	M	0.4368	0.1567	24	2.788	0.153	0.123
	M	-	Distraction + DDW	F	-0.0815	0.1632	24	-0.499	1	1
		-	Distraction + DDW	M	0.038	0.1016	24	0.374	1	1
Distraction + DDW	F	-	Distraction + DDW	M	0.1194	0.1258	24	0.949	1	1

SD LP

Post Hoc Comparisons - Distraction Level ✻ Gender

Comparison										
Distraction Level	Gender		Distraction Level	Gender	Mean Difference	SE	df	t	$p_{bonferroni}$	p_{holm}
No Distraction	F	-	No Distraction	M	-0.01822	0.0203	24	-0.897	1	1
		-	Distraction	F	-0.12597	0.0283	24	-4.456	0.002	0.002
		-	Distraction	M	-0.04092	0.0375	24	-1.09	1	1
		-	Distraction + DDW	F	-0.07087	0.0199	24	-3.564	0.024	0.022
		-	Distraction + DDW	M	-0.03802	0.0304	24	-1.251	1	1
	M	-	Distraction	F	-0.10775	0.0349	24	-3.087	0.076	0.066
		-	Distraction	M	-0.0227	0.0314	24	-0.722	1	1
		-	Distraction + DDW	F	-0.05265	0.0287	24	-1.832	1	0.715
		-	Distraction + DDW	M	-0.0198	0.0221	24	-0.895	1	1
Distraction	F	-	Distraction	M	0.08505	0.0451	24	1.886	1	0.715
		-	Distraction + DDW	F	0.0551	0.0218	24	2.525	0.279	0.223
		-	Distraction + DDW	M	0.08795	0.0406	24	2.166	0.607	0.445
	M	-	Distraction + DDW	F	-0.02995	0.0417	24	-0.718	1	1
		-	Distraction + DDW	M	0.0029	0.0243	24	0.12	1	1
Distraction + DDW	F	-	Distraction + DDW	M	0.03285	0.0353	24	0.93	1	1

2. Vehicle interaction

Mean speed

Post Hoc Comparisons - Distraction Level

Comparison								
Distraction Level		Distraction Level	Mean Difference	SE	df	t	$p_{bonferroni}$	p_{holm}
No Distraction	-	Distraction	1.085	0.46	24	2.356	0.081	0.065
	-	Distraction + DDW	0.862	0.351	24	2.454	0.065	0.065
Distraction	-	Distraction + DDW	-0.223	0.52	24	-0.428	1	0.672

Post Hoc Comparisons - Distraction Level ✻ Gender

Comparison										
Distraction Level	Gender		Distraction Level	Gender	Mean Difference	SE	df	t	$p_{bonferroni}$	p_{holm}
No Distraction	F	-	No Distraction	M	-1.0321	0.401	24	-2.5719	0.251	0.218
		-	Distraction	F	1.1523	0.587	24	1.9637	0.919	0.735
		-	Distraction	M	-0.015	0.651	24	-0.0231	1	1
		-	Distraction + TAD	F	0.8565	0.448	24	1.9134	1	0.745
		-	Distraction + TAD	M	-0.1646	0.68	24	-0.242	1	1
	M	-	Distraction	F	2.1843	0.614	24	3.5582	0.024	0.024
		-	Distraction	M	1.0171	0.652	24	1.5587	1	1
		-	Distraction + TAD	F	1.8886	0.636	24	2.9715	0.1	0.093
		-	Distraction + TAD	M	0.8675	0.498	24	1.7426	1	0.942
Distraction	F	-	Distraction	M	-1.1673	0.75	24	-1.5572	1	1
		-	Distraction + TAD	F	-0.2957	0.663	24	-0.4463	1	1
		-	Distraction + TAD	M	-1.3169	0.816	24	-1.613	1	1
	M	-	Distraction + TAD	F	0.8716	0.809	24	1.0769	1	1
		-	Distraction + TAD	M	-0.1496	0.737	24	-0.203	1	1
Distraction + TAD	F	-	Distraction + TAD	M	-1.0212	0.813	24	-1.2568	1	1

Post Hoc Comparisons - Gender

Comparison								
Gender		Gender	Mean Difference	SE	df	t	$p_{bonferroni}$	p_{holm}
F	-	M	-1.07	0.491	24	-2.19	0.039	0.039

SD Speed

Post Hoc Comparisons - Distraction Level

Comparison								
Distraction Level		Distraction Level	Mean Difference	SE	df	t	$p_{bonferroni}$	p_{holm}
No Distraction	-	Distraction	1.443	0.423	24	3.416	0.007	0.007
	-	Distraction + DDW	1.21	0.357	24	3.392	0.007	0.007
Distraction	-	Distraction + DDW	-0.233	0.409	24	-0.57	1	0.574

Mean LP

Post Hoc Comparisons - Gender

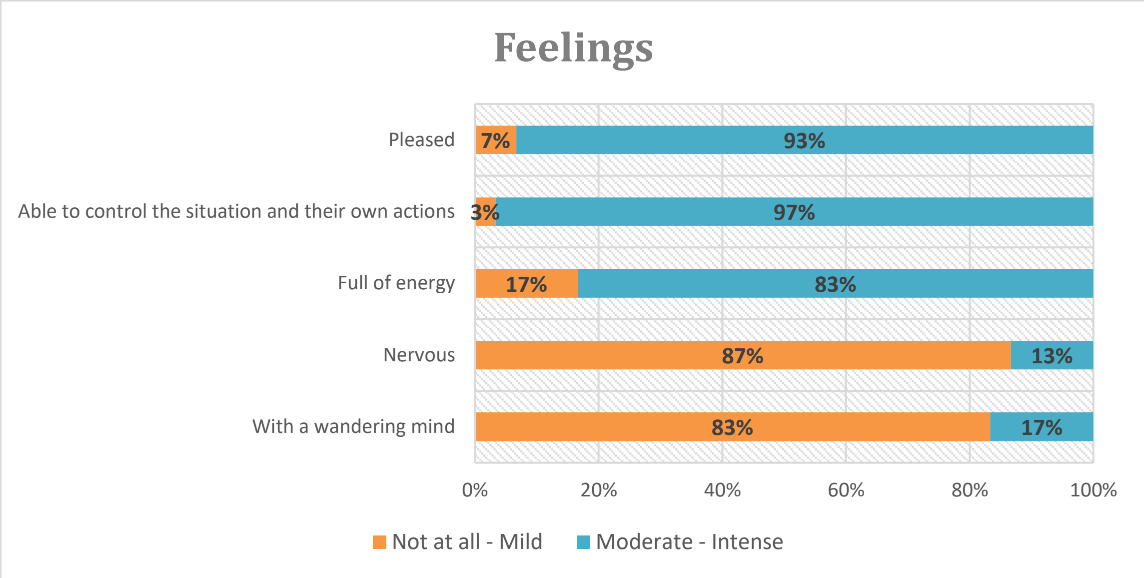
Comparison								
Gender		Gender	Mean Difference	SE	df	t	$p_{bonferroni}$	p_{holm}
F	-	M	0.0582	0.0308	24	1.89	0.071	0.071

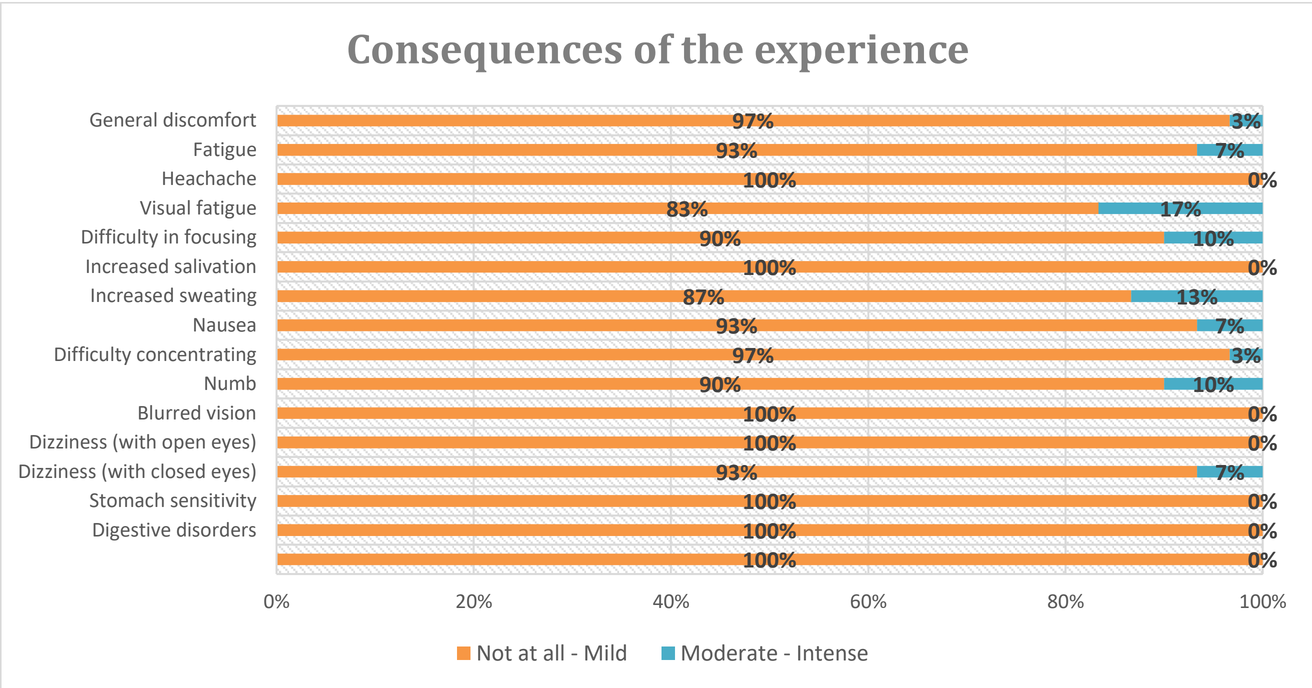
Min. Headway

Post Hoc Comparisons - Gender

Comparison								
Gender		Gender	Mean Difference	SE	df	t	$p_{bonferroni}$	p_{holm}
F	-	M	0.996	0.501	24	1.99	0.058	0.058

Q. Post-drive questionnaire graphs





R. Invitation email

Gentilissim*,

ti contatto in quanto appartenente al gruppo di test driver che supporta le attività del Laboratorio di Sicurezza Stradale e Simulazione di Guida del Politecnico di Torino (DIATI).

Nelle prossime settimane abbiamo in programma due esperimenti che necessitano del tuo supporto.

Se tu fossi interessat* a partecipare, ti chiederei cortesemente di rispondere alle domande che troverai al link:

https://docs.google.com/forms/d/1_u15l4N9SLc9kVmPcT8FcdsnNm2XzDgjEnbfDVHCCfU/edit

Al ricevimento della tua risposta positiva, sarai contattato telefonicamente o via email per definire nel dettaglio l'appuntamento a te più comodo da uno dei seguenti studenti:

- ing. Alessandra Lioi (347-6088838)

- ing. Alberto Portera (328-8037889)

- Stefano Merlina (348-1658150)

- Laura Campo Fernandez (331-2261271)

Come ben sai, i dati raccolti saranno impiegati in forma aggregata e del tutto anonima.

Essi saranno divulgati per soli scopi scientifici senza fini di lucro, e potranno essere presentati in convegni, pubblicati su tesi di Laurea, o in articoli di riviste scientifiche.

L'accesso ai locali del Laboratorio ti sarà consentito solamente se accompagnat* da personale autorizzato.

Preciso, infine, che la partecipazione a questa attività è del tutto volontaria, e non è soggetta ad alcun compenso.

Qualora accettassi, sarà mia cura informarti circa le disposizioni relative alle procedure di accesso nel rispetto dei protocolli anti COVID fissati dal Politecnico.

Ti ringrazio in anticipo per l'attenzione che presterai a questa iniziativa, e della gentile disponibilità che ci vorrai riservare.

Cordiali saluti ---

PROF. MARCO BASSANI

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S. Informative questionnaire

POLITECNICO
DI TORINO
Dipartimento di Ingegneria dell'Ambiente, del Territorio e delle Infrastrutture
Corso Duca degli Abruzzi, 24 – 10129, Torino
Tel. 011-5645635, 335-1300230, marco.bassani@polito.it

QUESTIONARIO PER ATTIVITÀ DI RICERCA CON L'USO DEL SIMULATORE DI GUIDA

Nome e Cognome ……………………………………………………………………………………………………....

Sesso ☐ M ☐ F Anno di nascita ………………

Telefono (cellulare) ……………………………………… e-mail ……………………………………………………………

Livello di istruzione
☐ licenza media inferiore ☐ qualifica professionale triennale
☐ diploma scuole superiori ☐ laurea 1° livello o diploma universitario
☐ laurea 2° livello o vecchio ordinamento
☐ specializzazioni/master post laurea 2° livello/dottorato

Anno di conseguimento della patente di guida ………………

km percorsi in un anno (media) ………………

n° di incidenti in cui si è stati coinvolti ………………

Familiarità con l'uso di software di guida (es. videogiochi) ☐ SÌ ☐ NO

Utilizzi dispositivi per la correzione visiva? ☐ SÌ ☐ NO

Se sì, quali? ☐ Occhiali ☐ Lenti a contatto

Precedenti episodi di crisi epilettiche? ☐ SÌ ☐ NO
(o epilessie in trattamento farmacologico)

Possiedi l'applicazione di messaggistica WhatsApp? ☐ SÌ ☐ NO

Sei in grado di utilizzare il telefono cellulare durante la guida per inviare messaggi? (Sii sincero!)
☐ SÌ ☐ NO

Esprimo il consenso al trattamento dei miei dati personali e al trattamento di eventuali dati sensibili, per scopi di ricerca scientifica, consentendo ai soggetti autorizzati al trattamento di costruire un campione di guidatori con caratteristiche idonee all'attività in esame.
☐ SÌ ☐ NO

Esprimo il consenso al trattamento dei risultati delle esperienze di guida svolte e alla loro pubblicazione su tesi di Laurea Magistrale e/o pubblicazioni scientifiche in forma aggregata e rigorosamente anonima.
☐ SÌ ☐ NO

1

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T. Privacy form

POLITECNICO DI TORINO
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tel. 011-5645635, 335-1300230, marco.bassani@polito.it

Informativa resa ai sensi degli articoli 13-14 del GDPR 2016/679 (*General Data Protection Regulation*)

Gentile Signore/a,

ai sensi dell'art. 13 del Regolamento UE 2016/679 ed in relazione alle informazioni di cui si entrerà in possesso, ai fini della tutela delle persone e altri soggetti in materia di trattamento di dati personali, si informa quanto segue:

1. FINALITÀ DEL TRATTAMENTO

I dati da Lei forniti saranno utilizzati per scopi di ricerca scientifica, consentendo ai soggetti autorizzati al trattamento di costruire un campione di guidatori con caratteristiche idonee all'attività in esame.

2. MODALITÀ DEL TRATTAMENTO

Il trattamento dei dati sarà effettuato sia manualmente, con supporti cartacei, sia con l'ausilio di mezzi informatizzati. I dati saranno conservati sia in archivi cartacei sia in archivi elettronici. In ogni caso il trattamento dei dati avverrà con logiche strettamente correlate alle finalità indicate e con modalità che garantiscano la sicurezza e la riservatezza dei dati medesimi, attraverso l'adozione di misure idonee ad impedire l'alterazione, la cancellazione, la distruzione, l'accesso non autorizzato o il trattamento non consentito o non conforme alle finalità della raccolta.

3. CONFERIMENTO DEI DATI

Il conferimento dei dati per le finalità di cui al punto 1 sono obbligatori e l'eventuale rifiuto dell'autorizzazione comporta l'esclusione dall'attività di ricerca.

4. COMUNICAZIONE E DIFFUSIONE DEI DATI

I dati forniti saranno comunicati ai soggetti autorizzati: ricercatori, responsabili e incaricati del trattamento. In ogni caso, i dati forniti non saranno soggetti a comunicazione né a diffusione. Come espresso all'art. 162 del Regolamento UE n. 2016/679, "*La finalità statistica implica che il risultato del trattamento per finalità statistiche non siano dati personali, ma dati aggregati, e che tale risultato o i dati personali non siano utilizzati a sostegno di misure o decisioni riguardanti persone fisiche specifiche*".

5. TITOLARE DEL TRATTAMENTO

Il titolare del trattamento dei dati personali è il prof. Marco Bassani, Politecnico di Torino, Dipartimento di Ingegneria dell'Ambiente, del Territorio e delle Infrastrutture, corso Duca degli Abruzzi, 24 – 10129 Torino.

6. DIRITTI DELL'INTERESSATO

In ogni momento, Lei potrà esercitare, ai sensi degli articoli dal 15 al 22 del Regolamento UE n. 2016/679, il diritto di:

a) chiedere la conferma dell'esistenza o meno di propri dati personali;
b) ottenere le indicazioni circa le finalità del trattamento, le categorie dei dati personali e, quando possibile, il periodo di conservazione;
c) ottenere la limitazione del trattamento;
d) ottenere la rettifica e la cancellazione dei dati.

Può esercitare i Suoi diritti con richiesta scritta inviata al titolare del trattamento, all'indirizzo mail marco.bassani@polito.it, oppure marco.bassani@pec.polito.it.

Io sottoscritto/a dichiaro di aver ricevuto l'informativa che precede.

Torino, lì ……………………… Firma ……………………………………………………………………………

Io sottoscritto/a alla luce dell'informativa ricevuta

□ esprimo il consenso □ NON esprimo il consenso al trattamento dei miei dati personali e, espressamente, al trattamento di eventuali dati sensibili, per il conseguimento delle su esposte finalità.

□ esprimo il consenso □ NON esprimo il consenso al trattamento dei risultati delle esperienze di guida svolte e alla loro pubblicazione su tesi di Laurea Magistrale e/o pubblicazioni scientifiche in forma aggregata e rigorosamente anonima.

U. Anti-covid 19 prevention rules

Politecnico di Torino 1859

#OgnunoProteggeTutti

PREVENTION MEASURES

PLEASE BE INFORMED THAT:

- if a fever (over 37.5°C) or other flu symptoms occur (e.g. cough, rhinorrhoea, breathing difficulties) it is mandatory for anyone to remain at home, call your General Practitioner (GP) and inform the competent health authority;
- accessing Polito premises for anyone who has come into contact in the last 14 days with people tested positive for SARS CoV-2 virus will be denied;
- to access Politecnico premises it is necessary to have and to show the **EU Covid certificate** (green pass) or a "Certification of exemption from anti-COVID-19 vaccination" (issued in accordance with the Circular of the Ministry of Health of 04.08.2021)
- anyone who accesses Polito through the entrances has to undergo a body temperature measurement wearing his/her own mask. If the measured temperature is higher than 37.5°C, access to the premises will be denied;
- If a fever and/or flu symptoms occur after accessing Polito premises, it is necessary to self-isolate and call the **internal emergency number** to start the correct intervention procedures;
- we kindly invite you to download and keep active during the entire stay inside our University premises the **Immuni APP**, created in order to help combat the COVID-19 epidemic.

INSIDE POLITO PREMISES, ANYONE IS OBLIGED TO:

- **always wear a mask** in all common areas and in the presence of other people in the same room and also outdoors, when it is not possible to observe the safety minimum inter-personal distance;
- always maintain a minimum **inter-personal distance of one meter,** if possible, according to the activities carried out and in any case in all common areas where more people are walking or queuing;
- maintain the minimum safety distances indicated by **floor markings**;
- follow all instructions provided on **information signs** and messages transmitted by monitors and by sound diffusion;
- observe **correct behaviour in terms of hygiene**, in particular:
    - wash his/her hands frequently with soap and water or alcohol-based products available in the dispensers located in common areas;
    - avoid touching eyes, nose and mouth with his/her hands;
    - cough and/or sneeze by covering his/her mouth and nose with a disposable tissue or bent elbow;
- report to the surveillance staff through **the internal emergency number** of any detected anomalous situations (e.g. gatherings and assemblages, people with flu symptoms or not complying with hygiene measures and provisions, etc.).

Politecnico di Torino 1859 #OgnunoProteggeTutti

DECLARATION AND COMMITTMENT STATEMENT

I, the undersigned ____

Born in__________________________________on _____________

Resident in____

Identity document n.______________________________________issued by

___________________________ on ____________

DECLARE

- to have read, understood and accepted the safety and health protection measures adopted by Politecnico;

COMMIT MYSELF

- to adopt, during the stay at Politecnico premises, all the necessary containment measures for the prevention and containment of COVID-19 contagion.

I, the undersigned, aware of the legal consequences provided for in case of false declarations in accordance with Articles 47 and 76 of Presidential Decree 445/2000,

declare under my own responsibility:

- not to be subjected to the quarantine measure as close contact of confirmed COVID-19 case or for recent entry / return from abroad;
- not be subjected to home trustee isolation as a positive result for SARS-COV-2 virus;
- not having a fever > 37.5 °C or flu-like symptoms (e.g. cough, altered taste and odour perception, intestinal disorders, etc.);
- that the above indications are valid also for the following accompanied minors:

  ____

This Statement is issued as a prevention measure related to the pandemic emergency of SARS CoV-2.
I attach a photostatic copy of my identity document.

SIGNATURE

----------------------------,on -------------------------

Politecnico di Torino, as Data Controller, informs you that it will process your personal data for institutional purposes related to the event as well as for the prevention of contagion from COVID-19 in accordance with EU Regulation 2016/679 ("GDPR") and Legislative Decree 196/2003 as amended. The data released with this form will be kept for the time strictly necessary for contact tracing activities.
The complete information is available at the page: www.polito.it/privacy

V. Pre-drive questionnaire

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QUESTIONARIO PER ATTIVITÀ DI RICERCA CON L'USO DEL SIMULATORE DI GUIDA

QUESTIONARIO PRE-GUIDA

Nome e Cognome ……………………………………………………………………………………………#TD……………...

Giorno ……………………………………………………………………………………… Ora…………….........

È attualmente in buona salute? ☐SÌ ☐NO
Se no, di cosa soffre? ……………………………………………………………………………………………………

Ha assunto medicinali nelle ultime 24 ore? ☐SÌ ☐NO

Se sì, quali? (è sufficiente la categoria)
………

È affetto da malattie croniche (asma, diabete, ansia, allergia, ecc…)? ☐SÌ ☐NO
Se sì, quali? (è sufficiente la categoria)
………

Quanto tempo fa ha consumato l'ultimo pasto? ……………………….ore ……………………..minuti

Come definirebbe il pasto consumato? ☐ Leggero ☐Ordinario ☐ Abbondante

Ha assunto bevande alcoliche nelle ultime 2 ore? ☐SÌ ☐NO

Ha assunto bevande eccitanti (caffè, energy drink) ultime 2 ore? ☐SÌ ☐NO

Utilizza dispositivi per la correzione visiva? ☐SÌ ☐NO

Se sì, quali? ☐Occhiali ☐Lenti a contatto

Luogo e data ……………………………………… Firma ……………………………………………

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W. Secondary task questions

TRIAL

1) Che tipo di musica ti piace?
2) Quale segno zodiacale sei?
3) Quale giorno della settimana ti piace di più?
4) Quante ore dormi al giorno?
5) Qual è il colore dei tuoi occhi?

EXPERIMENT

6) Qual è la tua squadra di calcio preferita?
7) Quanto sei alto?
8) Dove vivi?
9) Chi è il tuo cantante preferito?
10) Qual è il colore dei tuoi capelli?
11) Preferisci film romantici o commedie?
12) Qual è il tuo piatto preferito?
13) Preferisci la carne rossa o la carne bianca?
14) Qual è il tuo nome e cognome?
15) Qual è il tuo libro preferito?
16) A che ora ti alzi?
17) Qual è il colore della tua maglietta?
18) Qual è la tua bevanda preferita?
19) Qual è il nome di tua mamma?
20) Qual è la tua materia preferita?
21) Qual è la tua destinazione numero uno per le vacanze?
22) Quante lingue conosci?
23) Qual è il tuo hobby?
24) Qual è la tua stagione preferita?
25) Dove ti trovi in questo momento?
26) Puoi darmi il tuo numero di cellulare?

27) Dove vivono i tuoi fratelli/sorelle?

28) Qual è il tuo film/programma preferito?

29) Preferisci la birra o il vino?

30) Quando è il tuo compleanno?

31) Qual è il tuo sport preferito?

32) Come si chiama tuo padre?

33) A che ora vai a dormire?

34) Qual è il tuo colore preferito?

35) Qual è la tua città natale?

36) Qual è il tuo supereroe preferito?

37) Qual è il tuo gusto di gelato preferito?

38) Che numero di scarpe porti?

39) Qual è il tuo frutto preferito?

40) Dove sei stato a Natale?

41) Quanto spesso vai dal parrucchiere?

42) Preferisci i gatti o i cani?

43) Dove sarai in vacanza?

44) Preferisci la montagna o il mare?

45) Qual è il lavoro dei tuoi sogni?

X. Post-drive questionnaire

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QUESTIONARIO PER ATTIVITA' DI RICERCA CON L'USO DEL SIMULATORE DI GUIDA

QUESTIONARIO DI POST-SIMULAZIONE

Nome e Cognome ………………………………………………………… Numero identificativo del TD ………………

Giorno ………………………………………… Ora …………………

SENSAZIONI. Durante la guida nell' ambiente virtuale si è sentito:

- A suo agio ☐ per nulla ☐ lieve ☐ moderato ☐ intenso
- In grado di controllare la situazione e le proprie azioni ☐ per nulla ☐ lieve ☐ moderato ☐ intenso
- Pieno di energia ☐ per nulla ☐ lieve ☐ moderato ☐ intenso
- Nervoso ☐ per nulla ☐ lieve ☐ moderato ☐ intenso
- Con la mente che vagava ☐ per nulla ☐ lieve ☐ moderato ☐ intenso

Sarebbe disposto a guidare ancora?
☐ SÌ ☐ NO

Se SÌ per quanto tempo?
☐ < 15 min ☐ < 30 min ☐ < 45 min ☐ > 1h

CONSEGUENZE DELL' ESPERIMENTO. Indicare se attualmente percepisce uno o più dei seguenti sintomi:

- Generale disagio ☐ per nulla ☐ lieve ☐ moderato ☐ intenso
- Fatica ☐ per nulla ☐ lieve ☐ moderato ☐ intenso
- Mal di testa ☐ per nulla ☐ lieve ☐ moderato ☐ intenso
- Stanchezza visiva ☐ per nulla ☐ lieve ☐ moderato ☐ intenso
- Difficoltà nella messa a fuoco ☐ per nulla ☐ lieve ☐ moderato ☐ intenso
- Incremento di salivazione ☐ per nulla ☐ lieve ☐ moderato ☐ intenso
- Incremento di sudorazione ☐ per nulla ☐ lieve ☐ moderato ☐ intenso
- Nausea ☐ per nulla ☐ lieve ☐ moderato ☐ intenso
- Difficoltà di concentrazione ☐ per nulla ☐ lieve ☐ moderato ☐ intenso
- Intontimento ☐ per nulla ☐ lieve ☐ moderato ☐ intenso
- Visione offuscata ☐ per nulla ☐ lieve ☐ moderato ☐ intenso
- Capogiro (a occhi aperti) ☐ per nulla ☐ lieve ☐ moderato ☐ intenso
- Capogiro (a occhi chiusi) ☐ per nulla ☐ lieve ☐ moderato ☐ intenso
- Vertigini ☐ per nulla ☐ lieve ☐ moderato ☐ intenso
- Sensibilità di stomaco ☐ per nulla ☐ lieve ☐ moderato ☐ intenso
- Disturbi digestivi ☐ per nulla ☐ lieve ☐ moderato ☐ intenso
- Altro ………

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DISPOSITIVO ANTI-DISTRAZIONE.

Valutare l'esperimento inserendo una crocetta (x) all'interno del riquadro che corrisponde all'esperienza vissuta.

Richiesta Mentale (*Mental Demand*)

Quanta attività mentale e percettiva era richiesta (es., pensare, decidere, calcolare, ricordare, osservare, cercare, ecc...)? Il compito era facile o difficile, semplice o complesso, impegnativo o leggero?

Bassa	1	2	3	4	5	6	7	8	9	10	Alta

Richiesta Fisica (*Physical Demand*)

Quanta attività fisica era richiesta (es., spingere, tirare, girare, controllare, attivare, ecc…)? Il compito era facile o impegnativo, lento o rapido, leggero o pesante, riposante o faticoso?

Bassa	1	2	3	4	5	6	7	8	9	10	Alta

Richiesta Temporale (*Temporal Demand*)

Quanta pressione nel tempo a disposizione hai avvertito a causa della frequenza o del ritmo con cui i compiti, o le fasi del compito, si susseguivano? Il ritmo era lento e tranquillo o rapido e frenetico?

Bassa	1	2	3	4	5	6	7	8	9	10	Alta

Sforzo (*Effort*)

Quanto hai dovuto impegnarti (mentalmente e fisicamente) per raggiungere il tuo livello di prestazione?

Basso	1	2	3	4	5	6	7	8	9	10	Alto

Prestazione (*Performance*)

Quanto pensi di aver raggiunto gli obiettivi del compito stabiliti dallo sperimentatore (o da te stesso)? Quanto sei soddisfatto della tua prestazione nel raggiungere questi obiettivi?

Bassa	1	2	3	4	5	6	7	8	9	10	Alta

Livello di Frustrazione (*Frustration*)

Durante il compito, quanto ti sei sentito incerto, scoraggiato, irritato, stressato e infastidito rispetto a sicuro, gratificato, appagato, rilassato e soddisfatto?

Basso	1	2	3	4	5	6	7	8	9	10	Alto

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Per ciascuna delle seguenti affermazioni, contrassegna la casella che descrive meglio le tue reazioni al dispositivo anti-distrazione.

1. Mi piacerebbe utilizzare frequentemente il dispositivo.

Fortemente contrario	1	2	3	4	5	Fortemente favorevole

2. Ho trovato il dispositivo complesso senza che ve ne fosse la necessità.

Fortemente contrario	1	2	3	4	5	Fortemente favorevole

3. Il dispositivo è molto semplice da usare.

Fortemente contrario	1	2	3	4	5	Fortemente favorevole

4. Avrei bisogno del supporto di un tecnico per utilizzare al meglio questo dispositivo.

Fortemente contrario	1	2	3	4	5	Fortemente favorevole

5. Le varie funzionalità del dispositivo sono ben integrate.

Fortemente contrario	1	2	3	4	5	Fortemente favorevole

6. C'è troppa incoerenza tra le varie funzioni offerte dal dispositivo impiegato nel corso della guida.

Fortemente contrario	1	2	3	4	5	Fortemente favorevole

7. A mio avviso, la maggior parte delle persone è in grado di imparare a usare rapidamente il dispositivo impiegato.

Fortemente contrario	1	2	3	4	5	Fortemente favorevole

8. Il dispositivo è molto complicato da utilizzare nella guida ordinaria.

Fortemente contrario	1	2	3	4	5	Fortemente favorevole

9. Nel corso dell'esperienza di guida, ho percepito una elevata confidenza nell'utilizzo del dispositivo.

Fortemente contrario	1	2	3	4	5	Fortemente favorevole

10. Ho bisogno di apprendere più cose prima di usare il dispositivo impiegato in modo efficace.

Fortemente contrario	1	2	3	4	5	Fortemente favorevole

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Rispondere inserendo una crocetta (x) nel riquadro che descrive in modo più accurato il tuo giudizio sul dispositivo anti-distrazione.

I miei giudizi sul sistema sono i seguenti:

Inutile	-2	-1	0	1	2	Utile
Sgradevole	-2	-1	0	1	2	Gradevole
Pessimo	-2	-1	0	1	2	Buono
Fastidioso	-2	-1	0	1	2	Piacevole
Superfluo	-2	-1	0	1	2	Efficace
Irritante	-2	-1	0	1	2	Convincente
Privo di utilità	-2	-1	0	1	2	Di supporto
Indesiderabile	-2	-1	0	1	2	Desiderabile
Provoca sonnolenza	-2	-1	0	1	2	Aumenta lo stato di vigilanza

Pagheresti per avere a disposizione questo dispositivo durante la guida?

Assolutamente NO	1	2	3	4	5	Assolutamente SÌ

A quale prezzo considereresti questo prodotto così caro al punto da non tenerlo in considerazione per l'acquisto?

€ 50	€ 100	€ 200	€ 500	€ 800	€ 1.000	> € 1.000