

Measure title: **Safety and accident prevention plan in Burgos**

City: **Burgos**

Project: **Caravel**

Measure number: **11.15**

A Introduction

A1 Objectives

The measure outlines to establish the following objectives.

- **Objective 1:** To assure as far as possible road safety for pedestrians and cyclists in the city
- **Objective 2:** To coordinate road safety in all administrative departments and with social agents
- **Objective 3:** To impart courses in road safety that address behaviour and attitudes in the context of roadside accidents

A2 Description

The measure was based on developing road-safety campaigns, improving road signs, introducing traffic calming measures, traffic lights and other equipments which were focused on to prevent the traffic accidents for school children and other groups (old people, disabled,...).

The scheduled actions were planned and following the analysis of various types of software, a modified version of the software used in the city of Barcelona was proposed. A visit of municipal technicians was organised so that they could familiarise themselves with the programme and its possible application in the city of Burgos.

However, its installation was postponed due to the introduction by the Police Department of the one software to control accident data and other relevant issues for the Police. This software is integrated in the rest of the Police Departments of the Castilla and Leon Region which is allowed the data interrelation among Polices.

Moreover, other actions were to improve of pedestrian passages and introduction of traffic calming measures to reduce speed and danger to life. Steps have been taken by the traffic department at pedestrian 'black spots'. They have consisted of better signposting at pedestrian crossings, adapting kerbs and pedestrian access to the road and even speed reduction measures. Also, raised pedestrian crossings are under study, their structure being modified so that they are effective as traffic calming measures.

Likewise, electronic speed controls and control the circulation in the traffic lights have been introduced at some points.

Finally, several education and promotional campaigns have been launched to promote the safety and prevention of accidents in the city.

B Measure implementation

B1 Innovative aspects

Improved road safety for pedestrians in the city by means of road signs and proper access as well as through the promotion of safer behaviour that will also contribute to improve road safety.

This includes the following innovative aspects of the measure are:

- **New physical infrastructure solutions:** Introduction the new equipment (Traffic lights with LED's technology, Traffic light for pedestrians, traffic light for blinds, noisy traffic lights for deaf people, timing traffic lights for pedestrians and vehicles) for reducing the accidents in the streets.



Image 1: To improve the Traffic lights with LED's technology **Image 2:** Improving the Traffic lights for pedestrian

B2 Situation before CIVITAS

Burgos is a city with a high accident rates: a total of 1,827 accidents in 2002 resulted in 400 injuries and 12 fatalities. These numbers reflect the heavy presence of traffic in the city and the high number of vehicles passing through Burgos en route to other Spanish cities. These accidents are often caused by imprudent actions both on the part of drivers - excessive speed, jumping traffic lights - as well as pedestrians and cyclists - crossing roads at inappropriate places without looking twice or when traffic lights are changing, emerging into the road between moving cars, using the road as a sidewalk. Changing public attitudes and behaviour and promoting greater awareness of the consequences of risky roadside behaviour will greatly contribute to reducing roadside accidents.

B3 Actual implementation of the measure

The measure was implemented in the following stages:

Stage 1: Identification of the conditions (from October 1st, 2005 – to July 30th, 2006) – Through the collection of data and the analysis of all information of accidents by the Police Department in each accident. It consisted to describe the relevant parameters to design the software and basedate.

Stage 2: Collection and analysis of the data (from June 1st, 2006 – to December 30th, 2008) - Collection of the data and study of the frequency and location of accidents. Implementation of the information system

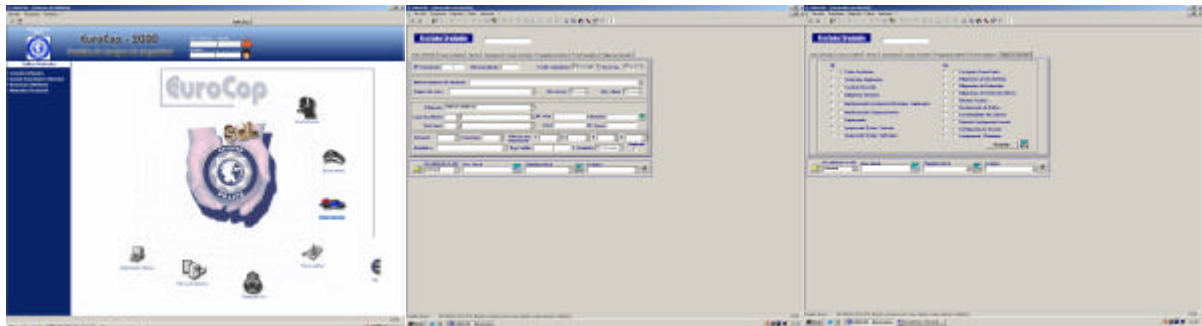


Image 3: New software for the police department which includes the collection for traffic accidents

Stage 3: Improve the safety (from September 1st, 2006 – to December 30th, 2008) – Improvement of road signs and speed reducing elements. Improvement of traffic lights and the time allowed for pedestrians to cross.

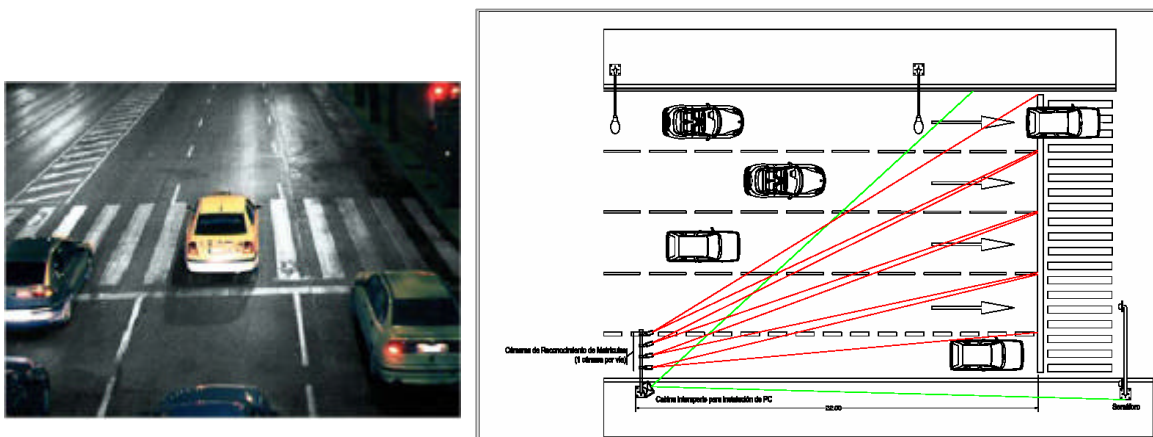


Image 4: Red Light detector in the zebra crossing with traffic lights



Image 5: Lights in the zebra crossing to assure the pass of the citizens

Stage 4: Training workshops (from May 1st, 2006 – to October 30th, 2008) - Training workshop for the police. A workshop was launched to inform the police department about the new database and software to introduce the information of accidents and other relevant issues for the department. The training session consisted on analyse the software and the application to introduce the data and obtain informs.

Stage 5: Promotion (from February 15th, 2006– to June 30th, 2008) – Development of road safety education campaigns in schools and in workplaces



Image 6: Campaign to prevent the traffic accidents in the pedestrian



Image 7: Educational training sessions for impossible signals and symbolic traffic fines

¿CÓMO VENGO AL COLEGIO?

1. ¿Viajo en coche? _____ Te llevas al niño/a _____

2. El colegio está desde tu casa:

Cerca Ni cerca ni lejos Lejos

3. El tiempo que tardas en llegar al colegio cuando vas así:

Poco Regular Mucho

4. Si normalmente no vienes acompañado o en bicicleta al colegio, ¿adónde lo llevas? (Marca todas las que creas necesarias):

Vivo lejos del colegio Otra persona se me ayuda Se tarda demasiado

En autobús/coche Tráfico No hay coche

Mucho (de distancia) Otras (explicar): _____

5. Hay cosas por donde se puede que:

No haya coches

Los coches tengan balizas, úbrase o se retiren a un lado...

Hayo conductores de buena, buena, paciencia, con un nivel de la mente y la disciplina

Otros (explicar): _____

6. ¿Creo que podré crear las cosas? Sí No

7. ¿Creo que podré hacer cosas por los puntos de peligro? Sí No

EL CAMINO ESCOLAR DE MI HIJO O HIJA

1. ¿Qué caminos son los más peligrosos que recorren cuando llega a hijo desde casa al colegio?

2. ¿Cuánto tiempo le lleva llegar al colegio?

0-5 minutos 10-20 minutos más de 20 minutos

3. ¿Cuáles son los coches que conforman el tránsito que recorren cuando llega de casa al colegio? (en orden)

4. ¿Cuáles son los coches que conforman el tránsito que recorren cuando llega de casa al colegio? (en orden)

5. ¿Cuáles son los coches que conforman el tránsito que recorren cuando llega de casa al colegio? (en orden)

6. ¿Cuáles son los coches que conforman el tránsito que recorren cuando llega de casa al colegio? (en orden)

	Que pasa	Región	Nota
Agnosidad			
Largo			
Distancia			
Seguro			
Atención			
Ruido			
Otras características			

Image 8: Material used in an educational training session in schools



Image 9: Educational training sessions for safe mobility to the school

Stage 6: Evaluation of the activities (from February 1st, 2005 – to September 31st, 2008) – All the evaluation activities were performed according to the evaluation plan.

B4 Deviations from the original plan

No problems have been arisen during the implementation. All foreseen activities took place as scheduled. .

B5 Inter-relationships with other measures

The measure is related to other measures as follows:

- **Measure 11.2 - Sustainable mobility marketing in Burgos.** – Several campaigns have been developed to prevent accidents by the pedestrians.
- **Measure 12.4.- Traffic visualization system in Burgos** – Control and visualization of the accidents

C Evaluation – methodology and results

C1 Measurement methodology

C1.1 Impacts and Indicators

The evaluation of this measure consists in the monitoring, all over the duration of the project, of the development of the level of the service and of its use. Many quantitative and qualitative parameters (derived from direct market analysis, customer satisfaction reports and surveys) have been used to give an exhaustive view of the success of the actions

The evaluation has been taken place with a strong interrelation with similar activities under development at a national and international level by Instituto Tecnológico de Castilla y León (ITCL) partner.

11.15. SAFETY AND ACCIDENT PREVENTION PLAN IN BURGOS						
Evaluation Category	Nº	Indicator	Units	Source of data	Methodology for indicator construction (survey, modelling, etc)	Baseline date
Transport	M	Number of injures and deaths caused by accidents	Nº injures/ Nº deaths	Survey directly	Measured	2004
Society	GI (13,14)	Acceptance/awareness of public	5 point scale	Questionnaires	Measured/ Calculated	July 2007
Society	GI, M	Perception of road safety differentiated by mode of travel	5 point scale	Questionnaires	Measured/ Calculated	July 2007

Detailed description of the indicator methodologies:

Indicator	Methodology for indicator construction	
	Definition	Methods of Measurement
13. Awareness level	Awareness level is defined as the percentage of the population with knowledge of a measure on account of provided information. Unit: %	Method: Data could be collected by means of surveys (e.g. questionnaires by mail or by face-to-face interviews). Awareness can be at a variety of levels, it depends on the measure. Frequency: Measurements should be made twice during the project Target group: general public
14. Acceptance level	Acceptance level is defined as the percentage of the population who favourably receives or approve of the measure. Unit: %	Method: User acceptance can be assessed through surveys (e.g. questionnaires by mail or by face-to-face interviews). Frequency: Measurements should be made twice during the project Target group: general public
M. Number of injures and deaths caused by accidents.	Number of injures and deaths is defined as the average number of injures and deaths in traffic accidents . Unit : number of injures and deaths	Method: The number of injures and deaths will be submitted by the police department Frequency: Once a year until end of the project Target group: traffic accident
M. Perception of road safety differentiated by mode of travel	This indicator is defined as the percentage of the different mode of travel to the perception of road safety. Unit: %	Method: Perception can be assessed through surveys (e.g. questionnaires by mail or by face-to-face interviews). Frequency: Measurements should be made twice during the project Target group: Drivers, cyclist and citizens

C1.2 Establishing a baseline

Various tools were used to evaluate the 3 performance indicators for this measure. Further information was gathered from data sources of the Municipality Services. The frequency of measurement and the exact source data are defined in the section C1.1. and C2. of this document.

Survey work took place between July of 2007 to establish the first data which included the awareness and acceptance of citizens to safety and accident prevention plan in the city.

Data are showed in the C2 section.

C1.3 Building the business-as-usual scenario

If the project would never been performed (do-nothing scenario), the number of death people could be around 12 people instead of the 8 people registered for the past two years.

Nevertheless, the number of injures deserves an special attention due to the enormous decrease thanks to the project. If these measures never took place more than 200 injuries per year would be accounted.

The number of children injuries has decreased (a 10% of the total injures) have decreased because of the workshops organized with them and it is common to say if those workshops would never been organized, the injuries could be account in more than 80 more.

Thanks to the pedestrians condition improvements, the number of injuries of this sector has been reduced in more than 20%, meaning that thanks to the project more than 200 people have saved accidents, and so the society and the city.

C2 Measure results

The performance indicators for the evaluation of Measure 11.15. are divided into 2 sections: transport and society. Many of these indicators were evaluated using both quantitative and qualitative data collection methods. A full explanation of the indicators and how they were quantified is available in the section C1.1 and C1.2. of this document.

C2.1 Economy

N/A

C2.2 Energy

N/A

C2.3 Environment

N/A

C2.4 Transport

Indicator	Baseline Data 2003/2004	Data Result 2005	Data Result 2006	Data Result 2007
(NM) Number of injuries and deaths caused by accidents	Injuries: 278 Deaths: 3	Injuries: 300 Deaths: 7	Injuries: 260 Deaths: 8	Injuries: 261 Deaths: 8

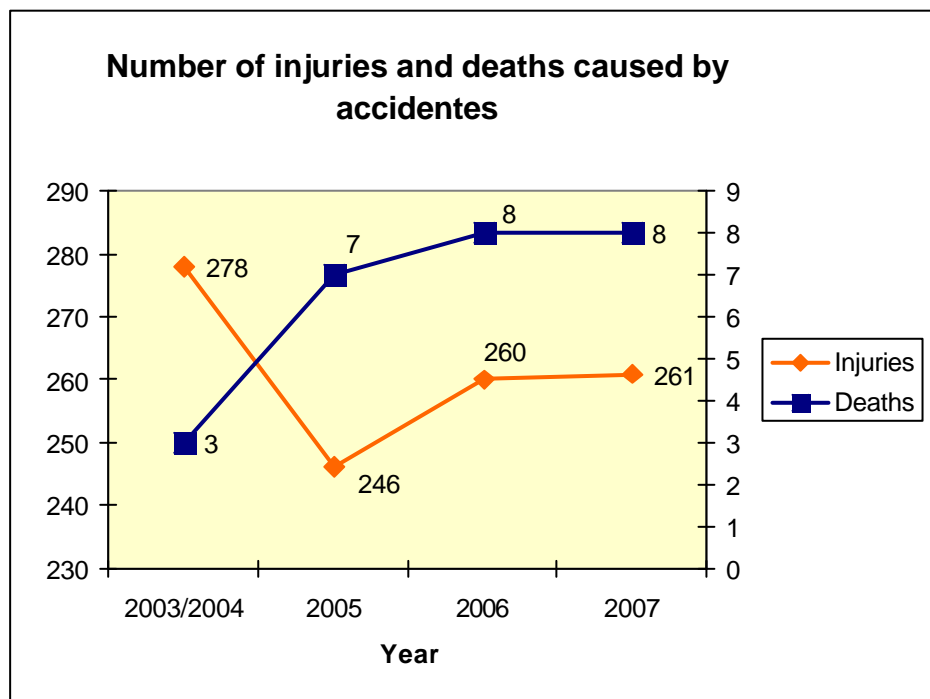
The data were obtained of the official Annual Burgos Police Department Memory regarding to the statistical data of road accidents.

In the case of the Injures, the data has suffered the following evolution. In 2004, the number of injures was 278. One year later, in 2005, the injures were 300; however in 2006 and 2007, the number of injures was 260 and 261 respectively.

The number of injures decreased from 2004 to 2007 in 17, which it means that the actions performed have successes at least partially in order to reduce the number of accidents.

However, in the case of deaths, the situation is the opposite to the injures. Only 3 deaths were occurred in the city during 2004, but in 2005, it was 7 and in 2006 and 2007, 8 deaths were produced per year.

There was a significant increment of the number of deaths due to road accidents in the city, 5 deaths more regarding to baseline information in 2004.



Graphic 1: Comparatives of number of injuries and deaths caused by accidents in Burgos (Source: Annual Police Department Memory - 2003/2004, 2005, 2006, 2007)

The increase in 5 deaths in the city was due to the conditions of the roads in which there were fatal accidents. In 2005, 2006 and 2007 there were accidents in which there were at least 4 killed in a single accident. This type of accident dramatically increases the annual statistics.

These accidents have a major impact informative because in most cases, victims belonged to one family and the collision was caused by other road users.

Either way, the impact of the deaths from road accident in the city, has significant impact on the citizens. Every accident is analyzed and evaluated by the technical services and of course by the media, often in the headlines inform all the details of the accident. When so few fatal accidents occur, people in general are very receptive and strikingly manifested to improve conditions for road safety and eliminating the problems that caused the accident.

Other explanation important to say is that those accidents with deaths were mainly located in the ring roads, even in roads where the Council has not got the responsibility (The Council is not in charge of those roads, the Regional Government or the National Government are in charge of these roads).

The speed is not so limited as inside the city, and the measures of traffic calming were not implemented, so because of the high speed in many occasion the accidents are more important and stronger crashes are observed.

C2.5 Society

The survey for **awareness level, acceptance level and perception of road safety** to establish the data results of **citizens, cyclists and drivers** took place in 2007 and 2008. In these surveys, the same questionnaires were presented to the **citizens, cyclists and drivers** in different areas of the city. The main aim was to understand the general opinion about the safety and accident prevention plan in Burgos.

Name of target group	Date of survey	Sample size	Purpose	Relevant question to assess
Citizens	July 2007	250	Awareness of specific measure	What do you think about the adequate zones to cross the pedestrian?
	June/July 2008	250		
Citizens	July 2007	250	Acceptance of specific measure	What is your opinion about Road Safety?
	June/July 2008	250		
Drivers, cyclists and citizens	July 2007	250	Perception of road safety differentiated by mode of travel	Global perception of road safety by vehicles(V), bicycles(B) and pedestrians(P)
	June/July 2008	250		

2007 Data results:

- 250 citizens completed and returned the regarding the adequate zones to cross by the pedestrians, about the acceptation and their perception of road safety. 36,4% of the respondents were male and 63,6% female. The age ranges of the respondents were distributed as 4,8% (<20), 27,6% (20-30), 19,2% (31-40), 38,0% (41-65) and 10,4% (>65).
- 250 drivers of the private vehicles completed and returned the survey regarding to perception of the road safety. 50,0% of the respondents were male and 50,0%

female. The age ranges of the respondents were distributed as 4,5% (<20), 27,3% (20-30), 22,7% (31-40), 45,5% (41-65) and 0,0% (>65).

- 250 cyclists completed and returned the survey regarding to perception of the road safety. 52,4% of the respondents were male and 47,6% female. The age ranges of the respondents were distributed as 17,5% (<20), 33,3% (20-30), 25,4% (31-40), 20,6% (41-65) and 3,2% (>65).

2008 Data results:

- In the same way, 250 citizens completed and returned the survey. In this case, 53,2% of the respondents were male and 46,8% female. The age ranges of the respondents were distributed as 6,3% (<20), 21,6% (20-30), 27,1% (31-40), 27,9% (41-65) and 17,1% (>65).
- In this case of 250 drivers of private vehicles, 62,0% of the respondents were male and 38,0% female. The age ranges of the respondents were distributed as 1,3% (<20), 23,3% (20-30), 33,3% (31-40), 38,7% (41-65) and 3,3% (>65).
- For 250 cyclists, 63,8% of the respondents were male and 36,2% female. The age ranges of the respondents were distributed as 9,9% (<20), 23,7% (20-30), 23,0% (31-40), 32,9% (41-65) and 10,5% (>65).

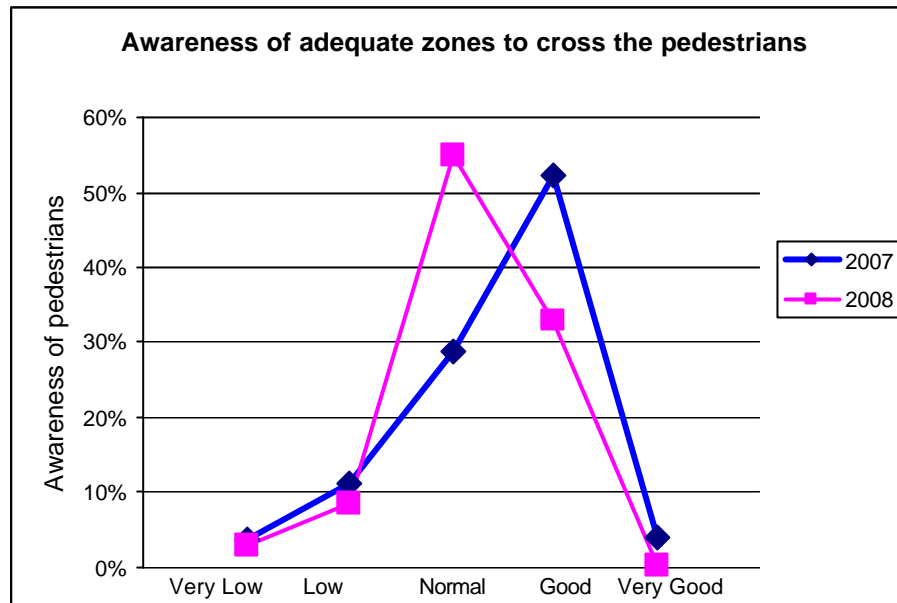
Indicator – Awareness Level

Indicator	Relevant Question	Data Result 2007	Data Result 2008
(13) Awareness level	What do you think about the adequate zones to cross the pedestrian?	Very Good: 4,0% Good: 52,4% Normal: 28,8% Low: 11,2% Very Low: 3,6 %	Very Good: 0,37% Good: 32,96% Normal: 55,06% Low: 8,61% Very Low: 3,00 %

In 2007, The respondents were asked about the adequate zones to cross the pedestrian, 4,0% stated that the adequate zones to cross the pedestrian was very good, 52,4% stated it was good, 28,8% stated that it was normal, but 11,2% stated it was low and 3,6% stated it was very low.

In 2008, 0,37% stated that the adequate zones to cross the pedestrian was very good, 32,96% stated it was good, 55,06% stated that it was normal, but 8,61% stated it was low and 3,0% stated it was very low.

This data can be observed in the next graphic:



Graphic 2: Comparison of awareness of adequate zones to cross by the pedestrians respect to 2007 and 2008

The graphic showed some differences between opinions of the respondents in 2007 and in 2008:

- 85,2% the respondents think it is good and 14.8% think it is low in 2007.
- In 2008, 88,39% think it is good and 11.61% think is low.

Note: good included normal, good and very good and low include low and very low.

The results of both are very similar. In 2008, the results was more positive than 2007 in the awareness level indicator, because the percentage of citizens that think it is good was increased by 3, 19%.

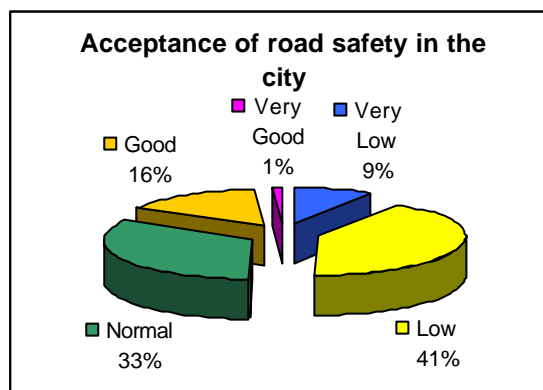
The highest deviation between 2007 and 2008, there was an important difference between figures of normal with a increased of 27,2% (28,8% and 55,6% in 2007 and 2008 respectively), good with a reduction of 19,44% (52,4% and 32,96% in 2007 and 2008 respectively). In 2007, it was observed that the tendency the citizens that think it is good was more optimistic that in 2008. However, the tendency of 2008 in general was more positive than in 2007.

In the year 2007 some of the actions for improving the zebra crosses as well as parking restrictions activities were performed. This good improvement is reflected in the good opinion of the citizens in something was new for them. In the year 2008 these conditions are more normal for the citizens as it is seen in the survey concerning this. The principal point is that in the least year the people who think that the condition are bad or very bad has reduced to only an 11% instead of the 15% found in the year 2007.

Indicator - Acceptance level

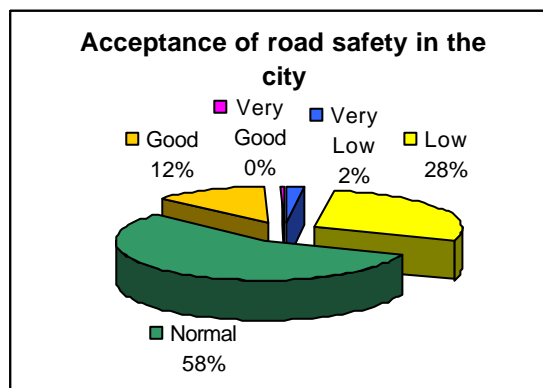
Indicator	Relevant Question	Data Result 2007	Data Result 2008
(14) Acceptance level	What is your opinion about Road Safety?	Very Good: 1% Good: 16% Normal: 33% Low: 41% Very Low: 9%	Very Good: 0% Good: 12% Normal: 58% Low: 28% Very Low: 2%

In 2007, the respondents were asked about the road safety, 1% stated that road safety was very good, 16% stated it was good, 33% stated that it was normal, but 41% stated it was low and 9% stated it was very low.



Graphic 3: Acceptance of road safety in the city

In 2008, 12% stated that road safety was good, 58% stated that it was normal, but 28% stated it was low and 2% stated it was very low.



Graphic 4: Acceptance of road safety in the city

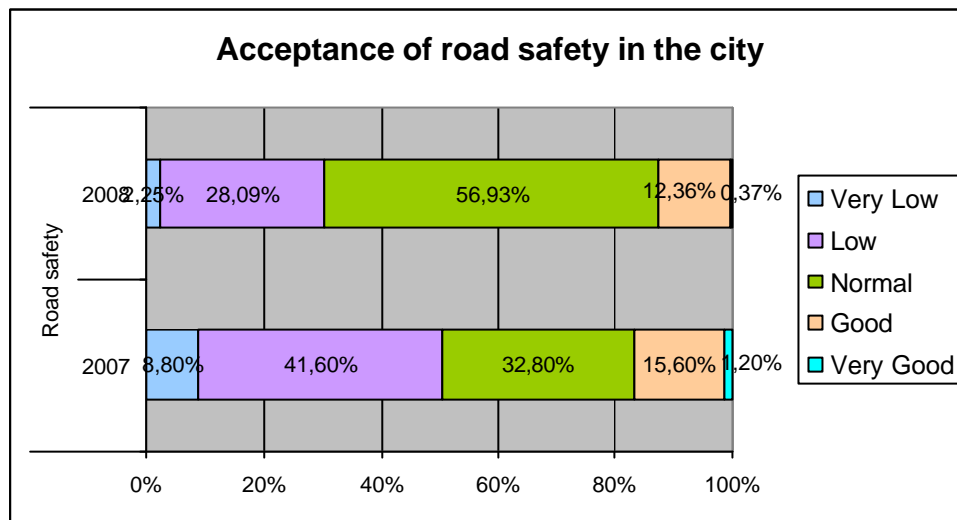
The graphic showed some differences between opinions of the respondents in 2007 and in 2008:

- 50% the respondents think it is good and 50% think it is low in 2007.
- In 2008, 70% think it is good and 30% think it is low.

Note: good included normal, good and very good and low include low and very low.

In 2007, it was observed that the tendency was not very optimistic as only a 50 % thought that the road safety was good. With a great increase the data of 2008 showed that a 70% of the people thought that it was good, decreasing the non optimistic data from 50% to 30%.

The highest deviation between 2007 and 2008, there was an important difference between figures of very low with a reduction of 7%(9% and 2% in 2007 and 2008 respectively), low with a reduction of 13%(41% and 28% in 2007 and 2008 respectively), normal with a increased of 25% (33% and 58% in 2007 and 2008 respectively), good with a reduction of 4% (16% and 12% in 2007 and 2008 respectively) and very good with a reduction of 1% (1% and 0% in 2007 and 2008 respectively). Therefore, the tendency of 2008 in general was more positive than in 2007.



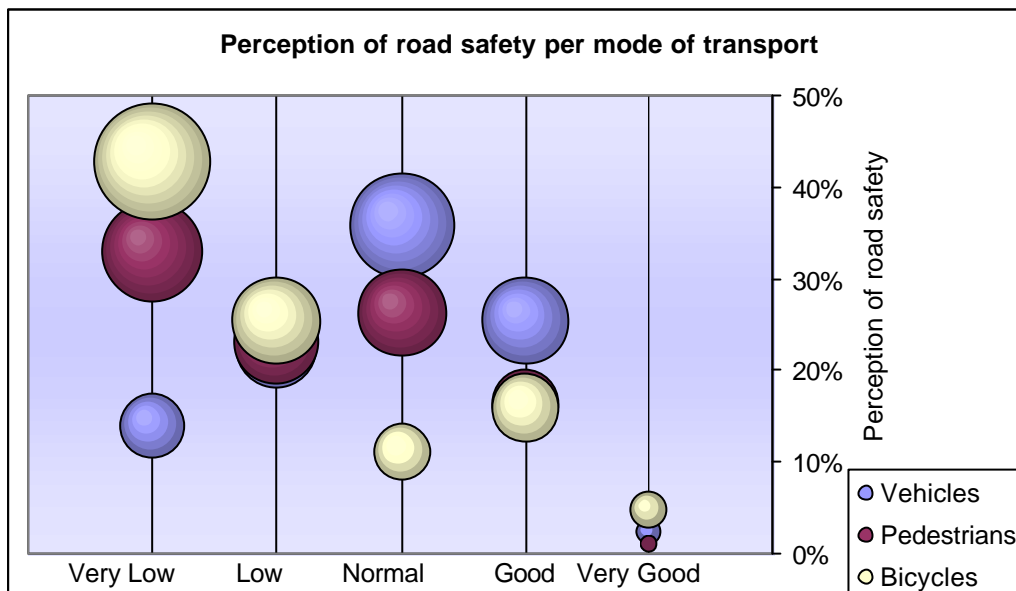
Graphic 5: Comparison of acceptance of road safety in the city between to 2007 and 2008

The indicator shows that the Council has got much to do in the future to improve the safety but in any case the results are promising. From half of the people interviewed considering the safety is bad or very bad, only a 30% of the answers in 2008 said the same thing. It means an increase of the situation shown as normal. In this case the project activities have much in common with the answers, as they were interviewed to know the situation in the Council limits.

Indicator - Perception of road safety

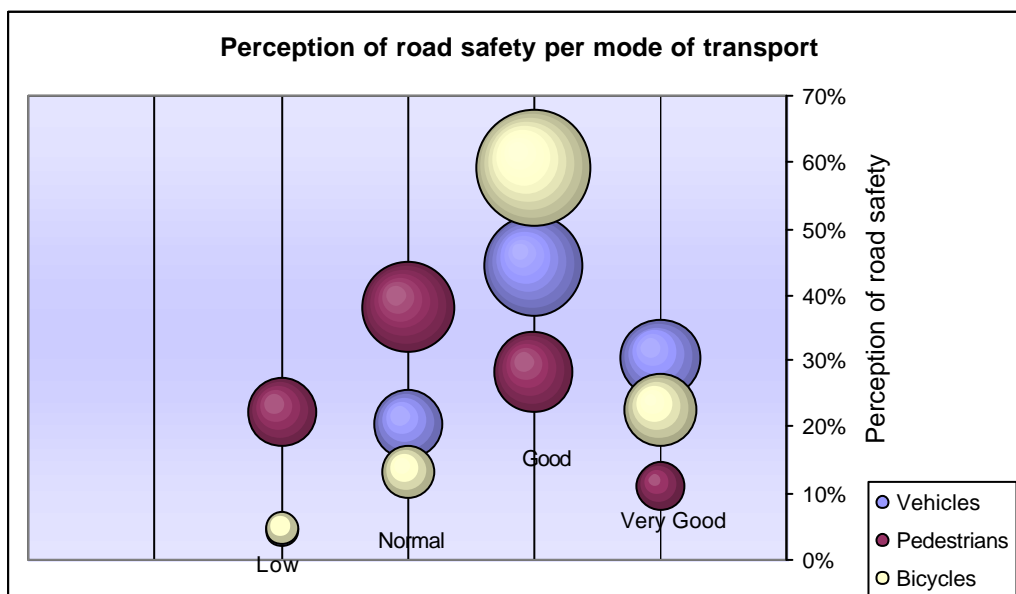
Indicator	Relevant Question	Data Result 2007	Data Result 2008
(GI) Perception of road safety differentiated by mode of travel	Global perception of road safety by vehicles(V), bicycles(B) and pedestrians(P)	Very good (%): V -2,4, B-4,8, P-1,2 Good (%): V-25,5, B-15,9, P-16,3 Normal(%): V-35,9,, B-11,1, P-26,3 Low(%): V-22,3, B-25,4, P- 23,1 Very Low(%): V -13,4, B-42,9, P-33	Very good (%): V -30,5, B-22,7, P-11,2 Good (%): V-44,6, B-59,3, P-28,3 Normal(%): V-20,5, B-13,3, P-38,3 Low(%): V-4,5, B-4,7, P- 22,3 Very Low(%): V -0,, B-0, P-0,

In 2007, the **drivers** were asked about the road safety, 2,4% stated that road safety was very good, 25,5% stated it was good, 35,9% stated that it was normal, but 22,3% stated it was low and 13,4% stated it was very low. The **cyclists** were asked about the road safety, 4,8% stated that road safety was very good, 15,9% stated it was good, 11,1% stated that it was normal, but 25,4% stated it was low and 42,9% stated it was very low. Finally, the **citizens** were also asked about the road safety, 1,2% stated that road safety was very good, 16,3% stated it was good, 26,3% stated that it was normal, but 23,1% stated it was low and 33% stated it was very low.



Graphic 6: Perception of road safety per mode of transport (Vehicles, Bicycles and Pedestrians) in 2007

In 2008, the **drivers** were asked about the road safety, 30,5% stated that road safety was very good, 44,6% stated it was good, 20,5% stated that it was normal, but 4,5% stated it was low. The **cyclists** were asked about the road safety, 30,5% stated that road safety was very good, 59,3% stated it was good, 13,3% stated that it was normal, but 4,7% stated it was low and 0,0% stated it was very low. Finally, the **citizens** were also asked about the road safety, 11,2% stated that road safety was very good, 28,3% stated it was good, 38,3% stated that it was normal, but 22,3% stated it was low.



Graphic 7: Perception of road safety per mode of transport (Vehicles, Bicycles and Pedestrians) in 2008

In conclusion, related to the perception of road safety per mode of transport in 2007 and in 2008:

- The drivers were asked it, 63.8% the respondents think it is good and 36.2% think it is low in 2007.95.6% the respondents think it is good and 4.4% think it is low in 2008.
- The cyclists were asked it, 31.8% the respondents think it is good and 68.2% think it is low in 2007.95.3% the respondents think it is good and 4.7% think it is low in 2008.
- The citizens were asked it, 43.8% the respondents think it is good and 56.2% think it is low in 2007.77.8% the respondents think it is good and 22.22% think it is low in 2008.

Note: good included normal, good and very good and low include low and very low.

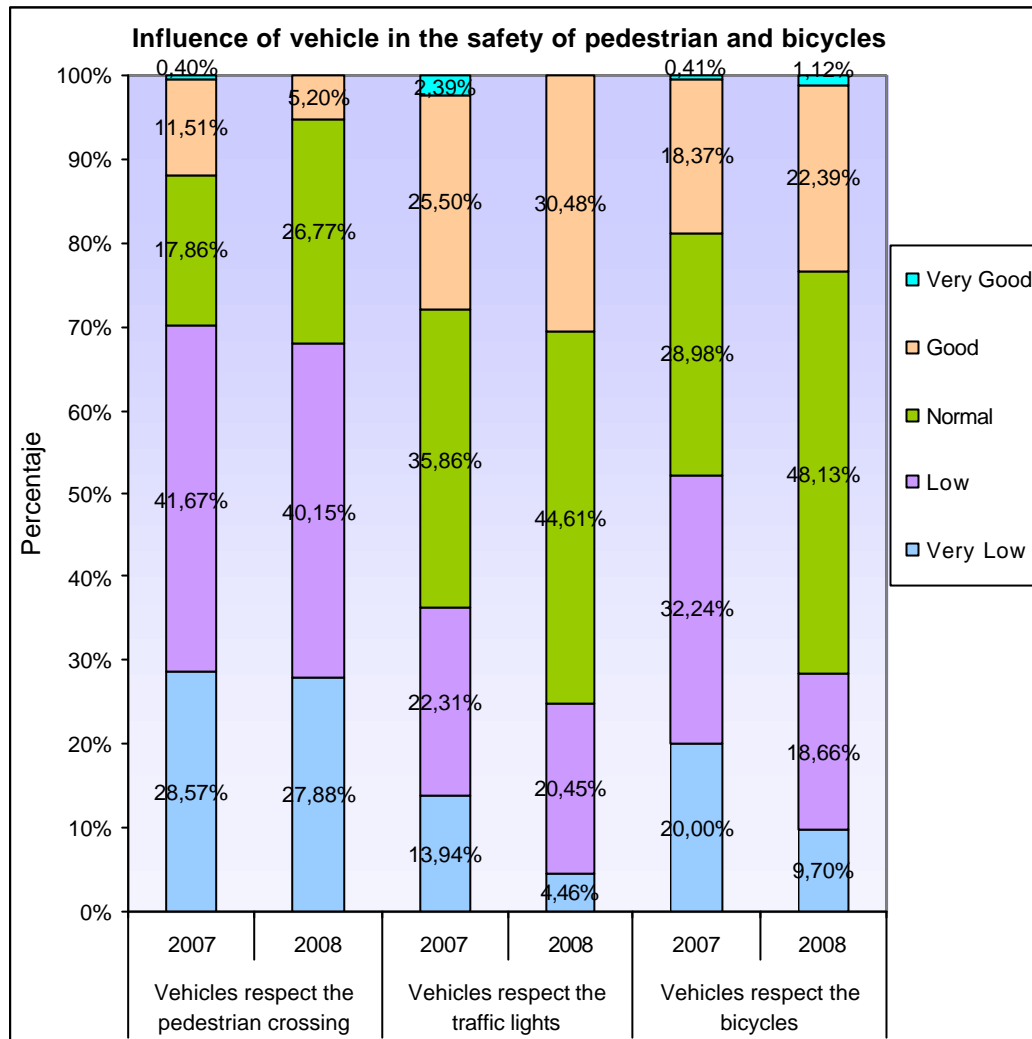
The tendency of 2008 was to improve the figures in all stages. It could mean that the respondents were positive that the Safety and accident prevention plan have solved the safety road in the city.

The main conclusion is that the bicycle drivers have changed their mind concerning the safety on bike, and they have changed from an opinion of very bad or bad to a normal situation. The improvements performed in the bike lane and paths as well as the promotions of the respect bicycle-pedestrian have moved the bad tendency to a much better one.

Concerning the vehicles, a residential little percentage of the drivers interviewed think that the safety is still bad, more than a 96% in 2008 has answered as normal, good or very good, which it means that the roads have been improved as well as the safety conditions, and the perception of the drivers now is very good in general terms.

The pedestrians have showed the same tendency, despite as they are the weakest, they still show their fears. The situation has improved from the year 2007 to the year 2008, but there are some people still having the perception of a bad safety. The Council is promoting safety conditions and the results anyway are promising for a new better situation.

Additionally, in the surveys of the citizens other question to asses the rate of perception of safety in the city related to security of zebra crossing and the influence of vehicles in the safety of pedestrians and bicycles .The results are showed in the follow graphic:



Graphic 8: Perception of safety in the city related to the influence of vehicles in the safety of pedestrians and bicycles.

Related to the perception of safety in the city related to the influence of vehicles in the safety of pedestrians and bicycles, the citizens answered that only 29.7% thought the vehicles respect the pedestrian crossing was good for registration in 2007. In the year 2008, 31.96% thought the vehicles respect the pedestrian crossing was good the high level of awareness achieved in 2008.

Note: good included normal, good and very good and low include low and very low.

In the same way, this tendency of perception of level is confirmed for the vehicles respect the traffic lights. 63.75% of the respondents in 2007 thought that was good, however, 75.09 % in 2008. About 11.34% was increased the perception about the vehicles respect the traffic lights. In other hand, the cyclists answered that only 47.76% thought the vehicles respect the bicycles was good for registration in 2007. In the year 2008, 66.64% thought that was good the high level of awareness achieved in 2008. Therefore, the tendency of 2008 in general was more positive than in 2007.

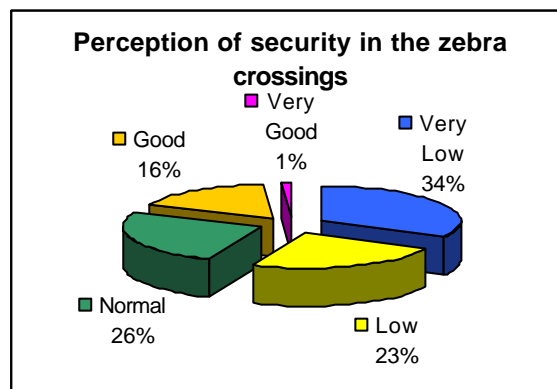
Despite the fears of the cars in not respecting the pedestrian crossing, the results concerning the respect of the traffic lights and the bicycles have improved. The reason of the respect the traffic lights can be found in the new policy of fining (“Foto Rojo”, take a picture to the vehicles violating the low and crossing the traffic when it is red) as well as concrete measures focus on that point. The respect concerning the bicycles can be found in the higher

number of bicycles and the change of behaviour in many vehicle drivers, accepting the new statement regarding the sharing of the road with other vehicles.

The concrete point about the little respect of the vehicles regarding the zebra crossings, very probably the respondents were thinking in the zebra crossings without traffic lights, sometimes dangerous for the pedestrians. There are some streets with two or three lines and three vehicles have to stop at the same time. This situation sometimes provokes insecurity in the pedestrians, even stopping in the middle of the road. The Council is concerned and the situation must be improved in terms of safety.

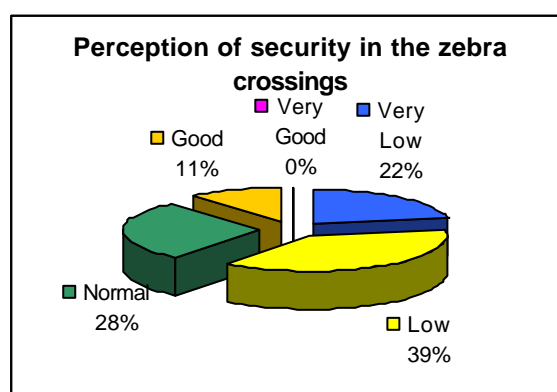
The rate of perception of safety in the city related to security of zebra crossing is showed in the follow graphic:

In 2007, the citizens were asked about the road safety, 1% stated that road safety was very good, 16% stated it was good, 26% stated that it was normal, but 23% stated it was low and 34% stated it was very low.



Graphic 9: Perception of safety in the city related to security of zebra crossing

In 2008, the citizens were asked about the road safety, 0% stated that road safety was very good, 11% stated it was good, 28% stated that it was normal, but 22% stated it was low and 39% stated it was very low.



Graphic 10: Perception of safety in the city related to security of zebra crossing

The graphic showed some differences between opinions of the respondents in 2007 and in 2008:

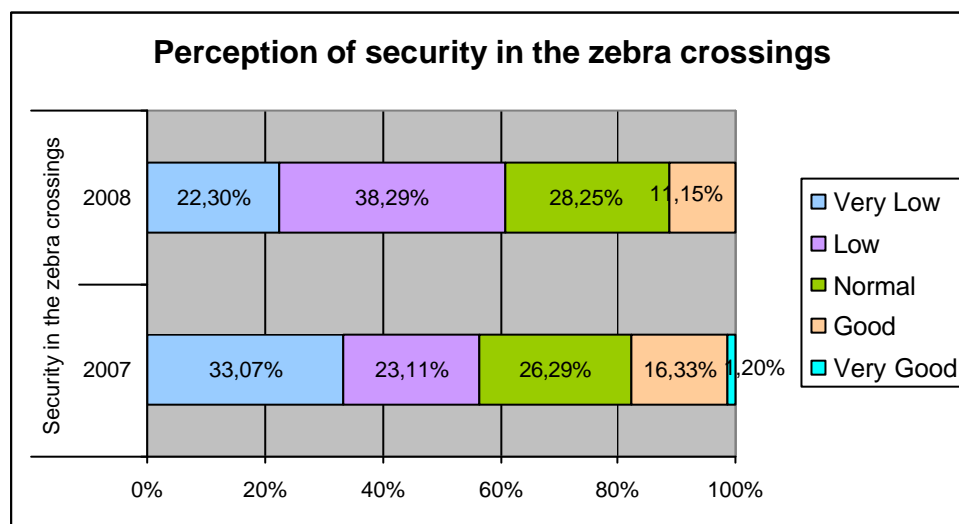
- 43.82% the respondents think it is good and 56.18% think it is low in 2007.
- In 2008, 39.4% think it is good and 60.6% think it is low.

Note: good included normal, good and very good and low include low and very low.

The results of both are very similar. In 2007, the results were more positive than 2008 in the perception level indicator, because the percentage of citizens that think it is good was reduced by 4.42%.

The highest deviation between 2007 and 2008, there was an important difference between figures of very low with a increased of 10.77%(22.3% and 33.07% in 2007 and 2008 respectively), low with a reduction of 15.18% (38.29% and 23.11 in 2007 and 2008 respectively), normal with a reduction of 1.96% (28.25% and 26.29% in 2007 and 2008 respectively), good with a reduction of 5.18% (16.33% and 11.15% in 2007 and 2008 respectively) and very good with a reduction of 1.2% (1.2% and 0% in 2007 and 2008 respectively).

Therefore, the tendency of 2008 in general wasn't positive at all (the situation never occurred in 2007) so that every day people receive much information about accidents and fatalities resulting they are more afraid of cars.



Graphic 11: Comparison of Perception of safety in the city related to security of zebra crossing between to 2007 and 2008.

The explanation can be explained as the perception of the crossings in the street, as many of the zebra crossings have not a traffic light to monitories. The experience already has been done in zebra crossings with traffic lights have showed a better respect in case the policemen are controlling the inadequate attitudes. So one of the solutions for improving this situation is to install some measures like the fining picture, in case the zebra crossings has got a traffic light.

In case the zebra crossing hasn't got a traffic light, the solutions have to be related to the calming measures to reduce the speed. Some of the measures already performed were focus on obstacles in the road close to the zebra crossings, but they are expensive and the maintenance is not good (in winter some of those mobile elements suffer the climate conditions as snow or rain). The new solution already performed in one of the street of the city but with very good results is the building of the entire zebra crossing on a higher level that the rest of the road, linking both sides with level zero at the same time. This measure is not affected by the weather as it is perfectly included in the infrastructure. The higher level makes the drivers stop or reduce the speed.

Other measure is to calm directly the traffic implementing in the entire area: the 20Km/h zones thought only for pedestrians and few vehicles. In this way, the actions performed in the

Measure 11.12 were implemented in order to favour the security of the citizens in the area, and some of these 20Km/h zones were implemented.

The new residential areas were thought on this way and the Council is thinking in implementing many other 30 Km/h areas in the City but closer to the centre (in consolidated neighbourhoods).

Finally in one area close to the restricted zone the pedestrian area and the vehicle space is the same, giving in all case the preference the vehicles to the pedestrians, and not on the other side.

C3 Achievement of quantifiable targets

No.	Target	Rating
1	To assure as far as possible road safety for pedestrians and cyclists in the city	**
2	To coordinate road safety in all Administrative departments and with social agents	**
3	To impart courses in road safety that address behaviour and attitudes in the context of roadside accidents	***
NA = Not Assessed * = Not achieved ** = Achieved in full *** = Exceeded		

C4 Up-scaling of results

The successful activities are clearly easy to implement in a higher level. So, if one measure was successes in one area of the city, it can be transferred and implement to other area.

It is necessary to control the speed or the inadequate attitudes, so it is likely to use the new technology of the traffic lights, for example, to other are with an important transit of pedestrians and vehicles.

More workshops can be organized with children arriving to every school with good advises concerning security and safety.

Zones 20km/h and 30 Km/h with promising results can be transferred to other areas reaching the 180 or less injures per year. In those areas some measures as traffic calms infrastructures, higher level zebra crossing, re organization of the vehicles, implementation of pedestrian areas or wider sidewalks can be implemented, as well as in other conflictive areas.

Considering bicycles the bike lane can be easily separate to the traffic many times through soft (cheap) measures with elements as gardens or bollards.

Promotion of the security focus on pedestrians to emphasise the use of the appropriated crossings, and even introduction of fines in case of illegal and dangerous behaviour.

Promote the walking paths, avoiding paths with vehicles and in order to favour the pedestrian.

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C5 Appraisal of evaluation approach

N/A

C6 Summary of evaluation results

The key results are as follows:

- **High acceptance among citizens, drivers and cyclists** – The quality of service, awareness and acceptance level referred was very positive despite the citizens showed the necessity of some improvements as it is referred before. Thanks to development road-safety campaigns, improving road signs, introduction traffic calming measures, traffic lights and other equipments which were focused on to prevent the traffic accidents for school children and other groups (old people, disabled,...).
 - **Low perception of security of zebra crossing among citizens** – The tendency of 2008 in general wasn't more positive than in 2007 so that every day people receive much information about accidents and fatalities resulting they are more afraid of the cars.
 - **Reduction of the injuries caused by road accidents but not the number of deaths per year** – Thanks to the improvements already performed in the safety road, the number of injuries has decreased. Nevertheless, the fatalities of certain kind of accidents have provoked a higher number of deaths respect to the initial conditions.
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D Lessons learned

D1 Barriers and drivers

D1.1 Barriers

- **Barrier 1** – Related to the physical interference between measures and urban structures which might delay the measure. To avoid problems in this sense, Urban structures would be checked in the demo area to address any such potential problems in a timely manner.

D1.2 Drivers

- **Driver 1** – Social acceptance to reduce the accidents of pedestrians in the city

D2 Participation of stakeholders

- **Stakeholder 1 - Car drivers:** The habits of the car drivers and the danger that the cars represented for the pedestrian (about all school children and elder/disable people), due to the velocity and bad parking of the cars in the city were the principal aim to control in the project, with the aim to reduce the number of accidents, injured and died people in the city.
- **Stakeholder 2 - Motorist association:** The expectative of this association was to help the project, via the communication and promotion between his associates about the prevention in the conduction to avoid accidents due to the velocity in the city.
- **Stakeholder 3 - General public:** The project was destined to aware the citizens in the accident preventions through the promotional campaigns and educational activities.
- **Stakeholder 4 - Media (radio, newspaper):** The media people informed about the campaigns and new equipment introduced for prevention the accidents of the pedestrians in the city.

D3 Recommendations

- **Location the most conflicting traffic points:** Some places are very conflicting and occur most of the accidents so that is important to locate these places to take more stringent measures to prevent the occurrence of such accidents.
- **Increase the presence of police on the streets** – Their actions to be more stringent and rigorous, getting through the fines are reduced violations.

D4 Future activities relating to the measure

Introduction of elements of security already explained in the report, as more electronic devises, timing traffic lights for pedestrians and vehicles. New infrastructures for zebra crossings for improvements of the bicycle lane and the separation with vehicles, more workshops with children, fining pictures in traffic lights, implementation of 30Km/h zones and many others already explained.