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Measure Evaluation Results

BOL 5.2 Safer Road to School

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Executive Summary

The MIMOSA measure 'Safer Road to School' was designed to encourage children and their parents to choose sustainable modes of transport to go to school and work as well as making these modes of transport safer. Efforts were made in terms of education to encourage young people to respect the road safety code and to raise their aware on transport modes alternatives. Workshops were organized with contributions from police officers, teachers, parents and students in order to give future generations a wider knowledge of the dangers of traffic and the relevance of having environmental friendly mobility behaviour. At the same time small-scale infrastructure interventions were made to improve road safety in the surrounding of schools involved in the measure. Thereby, the measure is related to two other MIMOSA measures implemented in Bologna: BOL 5.1 'Urban Traffic Safety Plan' and BOL 8.5 'Stars: Automatic Enforcement of Traffic Lights'. These three measures shared the same objective of improving road safety and were identified as bundled measures.

This measure was set-up in two different tasks:

Task 1: Training and awareness activities on road education (October 2008 - 2012) Bologna's Municipal Police Department organised different training courses (both at schools and on the road) for different types of schools (kindergartens, primary and high schools) in 2010, 2011 and 2012. Special courses were organized to inform teenagers on the risks of drug and alcohol consumption and driving under their influence. Among others, the 'alcohol is not cool' program involved high school students with theoretical courses and 'on the road' training, such as shadowing exercise of road controls by night. During the European Mobility Weeks in 2010 and 2011, special sessions were dedicated to the theme of safe cycling for young people.

Task 2: 'Pedi-bus' (October 2008 - 2012) Parents accompanied children to school every day on foot in a friendly group, along a defined route to pick up children on the way to school. After a pilot project in one school in 2011, the project was extended to eight schools in 2012. At the same time, the municipality implemented a set of safety initiatives in the surrounding of the schools involved such as small-scale traffic calming works including parking places reorganization, small roundabouts, redesigning crossroads and pedestrian crossings and the installation of traffic signs.

The evaluation strategy of this measure sought to focus on a number of indicators in the fields of society and transport: Since the measure belonged to a set of bundled measures with the aim at improving road safety, the number of accidents recorded throughout the Municipality of Bologna was selected as bundled indicator. Thereby, **three key results** of the impact evaluation pointed out the achievements of the measure. Firstly, an increase of 28% of students involved in the cooperation process was observed between 2008/2009 and 2011/2012. Secondly, more students affirmed that they would not drive after drinking alcohol: from 65% before the training to 84% after shadowing exercise of road control by night. Thirdly, more than 20% of the students enrolled in the eight elementary schools participated in the 'Pedi-bus'. The achievement of road safety improvement in the surroundings of schools as well as the trainings with parents, children and school employees had to be achieved prior to the launch of the 'Pedi-bus' activities. The 'Pedi-bus' was therefore the last activity implemented and had proved to be the activity which affected most significantly the modal shift of parents and children in the frame of the measure. Furthermore, the bundled indicator (accidents, people injured and killed throughout the Municipality of Bologna included in the analysis) showed a significant reduction: 21.1% fewer accidents from 2010 to

2007 (the last year without any Mimosa measures) and 21.65 fewer people injured over the same period.

One of the main **barriers** in the implementation of the 'Pedi-bus' was related to cultural habits and lifestyles. It was very difficult to persuade parents and schools to allow children to go to and from school alone. Also, Italian school regulations state that children must leave school with an identified/known adult. This induced further bureaucracy.

Key success factors can be extracted from the experience in Bologna and should be taken into account in the implementation of similar measures in other cities. The first factor of success is a strategy to accompany parents in changing their mobility behaviours through experts and psychologists team. The second is to implement efficient infrastructure interventions to improve road safety on the way to school prior to start activities with children and students. The third key success factor is to make sure that the diverse stakeholders (parents, teachers, students and local administration, city administration and Police department) commit to work together. For instance in Bologna, many activities were carried out with the voluntary contributions of policemen and women committed to road education activities. This widespread stakeholder collaboration and commitment to road safety issues has been the most important **driver** in this measure.

The actions started within this measure will continue in the future. The 'Pedi-bus' will run again in the next school year in all schools involved. Additionally, specially-targeted awareness activities will be integrated during the next European Mobility week. This measure has been a first step towards a long-term road safety education strategy in Bologna.

A Introduction

A1 Objectives

The Measure objectives were:

(A) High level / longer term:

- To improve Safety and Security for children and young adults

(B) Strategic level:

- To increase road safety near schools;
- To reduce traffic flows generated by parents bringing their children to/from school
- To promote sustainable mobility awareness among new generations

(C) Measure level:

- To synergise parents' (workers) and children's (students') daily movements by involving parents in their children's mobility habits, in order to optimize mobility habits and help reduce morning traffic congestion;
- To encourage children and their parents to choose sustainable modes for their journeys to school by implementing the 'Pedi-bus' project;
- To demonstrate an innovative activity aimed at improving pupils' safety in Bologna, through road education initiatives.

A2 Description

Traffic caused by parents driving their children to school has become a pressing issue in Bologna. The city wanted to encourage children and their parents to choose sustainable modes for their journeys to school and worked towards making these alternatives safer.

The 'Safer Road to School' project focused on enhancing pedestrian safety as part of Bologna's Urban Traffic Master Plan which was approved in 2007. It was developed by several public institutions in conjunction with citizens' associations. Therefore, two kinds of activities enhancing safety for students were implemented as part of CIVITAS MIMOSA:

- **Training and awareness activities on road education** for students and young people, promoting awareness of sustainable mobility. The new Italian Highway Code (Article 230) states that establishing educational road programs is a compulsory ministerial activity. In this light road education has acquired an important function at all levels of schooling. The aim is to make children and young people aware of the importance of observing the rules of the road and to promote a civil society.

First of all, the Municipal police ran training courses (both at schools and on the road) for students from kindergartens, elementary, junior and high schools. The aim of the initiatives was to improve pupils' knowledge of road safety. Secondly, the 'alcohol is not cool' programme was introduced for high school students with classroom lessons and on-road courses. Thirdly, a set of actions was introduced to increase the safe use of mopeds. The Municipal Police Department organised moped driving courses with driving simulators, practical lessons and notional first aid courses for junior and high school students before awarding moped driving licences.

FIGURE A2.2: Training activities and workshops on the Pedi-bus



Source: Municipality of Bologna

FIGURE A2.3: Pedi-bus in action on the roads



B Measure Implementation

B1 Innovative Aspects

The innovative aspect of the Measure was:

- **Targeting specific user groups** such as pupils and students, promoting a culture of safer road use from early childhood. Efforts were made in terms of psychology and education to encourage young people to observe the rules of the road, to be aware of transport choices from childhood onwards. Team work included direct contributions from police officers, teachers, parents and students. The aim was to give future generations a wider knowledge of the dangers of traffic and make them aware of the alternatives to the car and motorcycle.

B2 Research and Technology Development

Bologna kicked off the project with an RTD activity. This included studying and analysing the implementation of its mobility plan involving schools, parents and students. The research carried out by the Camina Association (an association which promotes a child and teenager-friendly concept of the city) was structured in two parts. The *first* part aimed to investigate school mobility habits in Bologna by involving directly all kinds of schools: nurseries, kindergartens, elementary and high schools. The *second* part aimed to choose a group of schools which would become more directly involved in the Mimosa project, with particular reference to the 'Pedi-bus'.

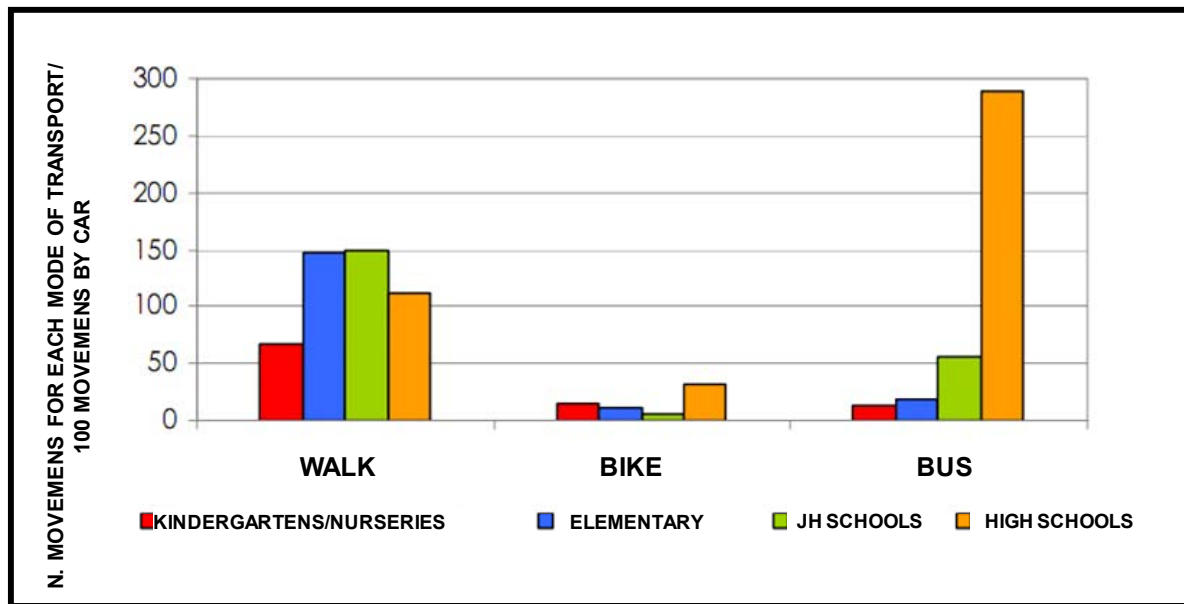
First part of the study - A survey was carried out at kindergartens and nurseries (15 kindergartens and 17 nurseries) with a questionnaire for parents (sample 770 families). A survey of 16 elementary schools also included a questionnaire to be filled out by pupils (sample = 352 pupils, 335 parents). The aim was not only to investigate their mobility habits and behaviours, but also the gaps between parents' expectations and children's imagination as regards mobility topics. The junior high schools' survey (4 schools; sample = 126 students) and the high school survey (sample = 203 students) were addressed to students only.

The survey investigated the modes of transport chosen to go to school, reasons for the choice, barriers to using public transport or alternative transport (e.g. cycling or walking) and conditioning factors: lack of time, weather conditions, distances involved. Mobility expectations were also investigated (which mode of transport will be used in years to come to travel to the child's next schools, such as junior high schools and high schools).

Another important topic for the promotion of sustainable mobility (walking, taking the bus or cycling instead of taking the car or school bus) was the children's level of independence: the person who took the students to school, possible difficulties encountered during the round trip (heavy schoolbags, encountering strangers, going the wrong way, weather conditions, no bus stops), the level of difficulty perceived of going alone.

In order to evaluate the mobility behaviour of the entire sample extracted, a mobility index was produced. The mobility index (number of modes of transport/100 cars) established a connection between the sample's mobility habits and car use.

TABLE B2.1: Mobility index (home-to-school route, 2008)



Research on School Mobility - Camina Association, 2008.

Samples. Kindergartens/nurseries = 770 families; Elementary schools = 352 pupils and 335 parents; J high schools = 126 students; H schools = 203 students.

A comparison between the number of children cycling to school and the number being driven to school revealed a total lack of interest in the bicycle. In fact, for every 100 child car passengers, 15 children bicycled to nursery, 12 to elementary school and 5 to junior high school. In order to encourage the use of the bicycle, it was necessary to target children before the ages of 11-12. After this age children begin to want mopeds instead of bicycles.

Bearing in mind that parents often consider the dangers of traffic one of the obstacles to their children's independence, it was decided to evaluate accessibility to schools. The results obtained, from "good or bad accessibility", connected to families' behaviours, showed how sustainable mobility infrastructures and services were not necessary and sufficient conditions, even though they are considered indispensable. Children travelling independently to and from school was impeded primarily by lifestyles and people's fears.

Second part of the study - A study was made of 5 schools to decide which could be directly involved in the Mimososa project. The selection took into account different aspects: the number of accidents and casualties near the schools, road conditions and mobility habits near the schools. All these aspects were considered to choose the most favourable and relevant site for the 'Pedi-bus'.

For each school an investigation was carried out on: road conditions, accessibility for pedestrians and cyclists, road markings, traffic signs, infrastructures and technologies, the position of neighbouring bus routes, parents' perception of risks (places near the school which were dangerous for pedestrians and cyclists) and the number of accidents occurring near the school.

The RTD analysis represented the preparatory phase of the measure to provide a complete view of the schools' mobility status. The following schools were chosen to take part in the Mimososa project:

- Silvani and Marsile schools (Navile district of Bologna). Although car use was very high at these schools, they are located in an area with minimal traffic (an important requirement to improve children's independence);

- Romagnoli and Tempesta schools. These schools had high rates of independence and pedestrian journeys to school; this data and the type of surrounding urban space were favourable conditions for increasing bicycle use;
- Gualandi school. This school is located in a complex urban context where PT use could be encouraged in order to reduce the use of the car.

B3 Situation before CIVITAS

Before the Mimosa project, the Municipality of Bologna worked with the city's Municipal Police to organize road education activities for young people at schools. Unfortunately the courses were not organic or structured. Mimosa helped the Municipality plan a set of actions with cohesion and coherence to produce synergies.

During the analysis phase of the project (completed in the initial stages of Mimosa), a study was carried out on the type of road users, traffic modalities and peculiarities and causes of accidents in five school areas. The results, summarized above, were described in a detailed document for each school involved. The associations and teachers involved also submitted a questionnaire to pupils and parents to understand their perception of traffic problems, obstacles, etc.

The feedback from these questionnaires was integrated with the technical data for each school, providing the guidelines for Measure interventions on awareness and infrastructures in each area.

B4 Actual Implementation of the Measure

The Measure was implemented in the following parts:

Part 1 – Training and awareness activities on road education (from October 2008 to the end of the Measure).

- Schools were involved extensively in European Mobility Week 2009, with special sessions on the theme of 'Safe Cycling' (better safety conditions for cyclists).
- A campaign on road safety and sustainability was run in primary schools; an art competition was launched on these themes and a prize given out to the winner (2009).
- Bologna Municipal Police Department organised training courses (both in schools and on the road) for different types of schools (kindergartens, primary and high schools) to improve knowledge of road safety (2010-2011-2012). A new project for pre-school children was launched for the first time in 2010.
- During European Mobility Weeks 2010 and 2011, schools were involved extensively in special sessions on "Safe Cycling". The 'Safe Cycling' events included a safe cycling course for schools and children, organized by Bologna's Municipal Police Department. Children on bicycles were guided by Municipal Police officers through a cycle path set out in the middle of Piazza Maggiore (Bologna's main square). Officers explained the meaning of road signs, basic traffic rules and the basic principles of safe cycling. At the end of the short course, children were rewarded with a symbolic driving license and gift.

FIGURE B4.1: Cycling safety course organized by the Municipal Police Department



Source: Municipality of Bologna

- The Municipal Police Department ran training courses for the motorcycle competence certificate to inform teenagers about driving, basic mechanical principles and basic first aid notions. The aim of these activities was to improve awareness of the rules of the road and respect for vulnerable users (2010-2011-2012).
- Special courses were organized to inform teenagers about the risk of drug and alcohol consumption. These included the “alcohol is not cool” programme. High school students attended theoretical courses and practical sessions, shadowing the police on night-time checks on car drivers (2010-2011-2012).
- From October 2010 to April 2011 a special project was run for 5-year-olds, with bike rides and a puppet show.
- May 2011 Mini-Olympics, with two routes for bikes and motorcycles.

Part 2 – ‘Pedi-bus’ activation (from October 2008 to the end of the measure)

- Initial meetings were organised with schools and districts to set up the ‘Pedi-bus’ service (2008).
- Building work was completed to create a safety area around the Felice Battaglia primary school.
- (May 2011) An experimental ‘Pedi-bus’ was launched at one school (San Domenico Savio), following 5 different routes to take account of the available tutors. This initial experience involved about 40 students out of a total of 200 students enrolled at the school.
- (June 2011) The Municipality published a tender for a company to manage preparatory activities for the ‘Pedi-bus’ in the 5 schools selected for the project, in the school year 2011-2012.
- Bologna City Council organised a special campaign informing drivers of the launch of the ‘Pedi-bus’ in conjunction with the Municipal Police Department. With the support of Municipal Police Officers, children from San Domenico Savio School taking part in the ‘Pedi-bus’ distributed brochures to drivers to increase their awareness of the new service.
- Under the guidance of the Municipality of Bologna and Centro Antartide (a research centre promoting sustainable mobility), a new plan was drawn up with the help of parents and children. It included an improved ‘Pedi-bus’ home-school route with stops, registration for children and voluntary “bus driver” and “conductor” roles.

- In January 2012 meetings were held with schools and families to plan operational tasks and responsibilities.
- (May 2012) Preparatory meetings were held with parents at the schools involved.
- (June 2012) 7 elementary schools and San Domenico Savio School (where the service was activated during 2011) took part in the 'Pedi-bus' project with 2 routes of 15 minutes per school.

B5 Inter-Relationships with Other Measures

As part of Bologna's PGTU (Urban Traffic Plan), the Urban Traffic Safety Plan included measures aimed at improving traffic safety. This objective, particularly in favour of the more vulnerable categories (pedestrians and cyclists), was pursued through different actions: Measure 5.1, aimed at vulnerable users with action to improve safety at road crossings; Measure 5.2, aimed at young people, introducing safer roads to school ; and Measure 8.5, focusing on reducing improper driver behaviours at crossings. All the measures mentioned above had their own targets and domain of application, with specific indicators that evidenced the Measure impacts.

However, all these measures pursued the common objective of improving road safety. In this sense the number of accidents throughout the Municipality of Bologna can be assumed as a bundled indicator, targeting the general improvement in road safety to which these three measures certainly contributed.

C Impact Evaluation Findings

C1 Measurement Methodology

Through this Measure the Municipality of Bologna intended to encourage children and their parents to choose sustainable modes of transports for their journeys to school. The impact on the acceptance level of road safety issues was evaluated considering the number of schools, teaching hours and students involved in training and awareness activities. As a direct impact of the education activities, the result of the 'alcohol is not cool' questionnaire (submitted to students after the training courses) was introduced.

From the Municipality's perspective, the '**Pedi-bus**' can be seen as the **final output** of its previous actions. It could only have been organised after specific interventions aimed at improving road safety close to schools and training activities with parents, children and schools. The level of awareness was evaluated for this initiative considering the proportion of students participating to the total number of students enrolled. Accordingly, the effective modal split caused by the Measure via the activation of the 'Pedi-bus' was the most important impact to achieve. This can be seen as the main result of the efforts made by the Municipality.

Finally, the Measure aimed to improve transport safety. Therefore the number of accidents recorded throughout the Municipality of Bologna was assumed as a bundled indicator in common with Measures 5.1 (Urban Traffic Safety Plan) and 8.5 (STARS).

At the beginning of the project, the Municipality intended to create an online questionnaire to investigate home-to-school journeys, combining the mobility managers' questionnaires with this Measure. Considering that not enough parents had the IT skills required, the Municipality decided to submit questionnaires directly to schools, abandoning its previous idea. As a result it was not possible to get the public's feedback on the Municipality's efforts to synergise parents' and children's daily journeys. Consequently, the original initial objective was left out of the evaluation and it is therefore not possible to say to which extent it was achieved.

C1.1 Impacts and Indicators

TABLE C1.1.1: Measure 5.2 local indicator

Indicator	Evaluation area	Evaluation category	Impact	Indicator	Source of data
5	Transport	Transport System	Modal Split	Mode of transport chosen to go to school: Car (%) Walking (%) Public Transport (%)	Questionnaire (Pedi-bus)

TABLE C1.1.2 Common core indicator

Indicator	Evaluation area	Core indicator	Impact	Indicator	Source of data
1	Society	14	Acceptance level	Number of schools involved in the co-operation process	Evaluation reports
2	Society	14	Acceptance level	Number of students/teaching hours	Evaluation reports
3	Society	13	Awareness	Awareness level	Questionnaire ('alcohol is not cool')
4	Society	13	Awareness	Pedi-bus participation	Statistics from schools involved

TABLE C1.1.3 Bundled indicator -5.1 - 5.2 - 8.5

Indicator	Evaluation area	Evaluation category	Impact	Indicator	Source of data
6	Transport	Safety	Transport safety	No. of accidents, injuries and fatalities throughout the Municipality*	Statistics from Municipal Police

*Bundled indicator (Measures 5.1; 5.2 and 8.5)

Detailed description of the indicator methodologies:

Indicator 1 'Number of schools involved in the co-operation process' The indicator covered the number of schools involved in the project: kindergartens (students aged 3 - 5 years), elementary schools (students aged 6 -10 years), junior high schools (students aged 11 -13 years) and high schools (students aged 14 -18 years).

Frequency: a measurement was taken once a year to check on the results.

Unit: number of schools involved from Police Department Evaluation Reports.

Domain: schools in the Municipality of Bologna.

Indicator 2 'Number of students and number of teaching hours' This indicator directly measured all the effort made as regards training and awareness activities by considering the number of students involved in the project.

Frequency: a measurement was taken once a year after the Measure was in force to check on the results.

Unit: number of students, number of available hours from Police Department Evaluation Reports.

Domain: students in the Municipality of Bologna, school lessons timetables.

Indicator 3 'Awareness level of students' The increase in young people's awareness was evaluated by analysing the 'Alcohol is not cool' questionnaires submitted to students on training courses organized by the Police Department. The sample of the survey was not extracted with a scientific method. Students involved in the project were 16 and 17 years old, and from classes whose teachers showed interest in this activity and made themselves available to the Police Department. The course was organized in two steps: a theoretical lesson at the police Department, outlining the effects of drunk driving. The second step

enabled pupils to shadow the Police during their night-time checks on car drivers (only voluntary students, not all classes). The pupils were asked the question, ‘How many times have you driven after drinking alcohol in the last three months?’ both before the theoretical course and after the night-time checks. The first questionnaire checked the habits common to young people; the second surveyed the real target group of the initiative and established what kind of students were really interested in the Measure (presumably not everyone in every class would be really interested in the activity). The students who actually took part in the night-time course were those who were interested in the initiative and understood its meaning. It was therefore important to check what their common habits were to establish who “got the message” of the initiative.

Frequency: a measurement (questionnaire before the seminar and after the “practical part”) was taken once a year after the Measure was in force to check on the results.

Unit: number of completed questionnaires.

Domain: students in the Municipality of Bologna.

The ‘Alcohol is not cool’ questionnaire did not have a scientific imprint (it did not have a representative sample and a comparison cannot be made between before and after tests). Nonetheless it was still included in the MRT analysis since it gives a certain picture of the habits of young people in Bologna and underlines the Municipal Police’s intention to increase young people’s awareness and its care.

Indicator 4 ‘Pedi-bus participation’ The indicator considered the number of participants coming from the schools involved. This number was compared to the total number of students enrolled in the school year in question.

Frequency: a measurement was taken once a year after the Measure was in force to check on the results.

Unit: number of children taking part.

Domain: students from schools involved in the project.

Indicator 5 ‘Mode of transport used to go to school’: Car (%), Walking (%), Public Transport (%). This indicator evolution considered data obtained from ‘Pedi-bus’ schools participating in the project. Since the ‘Pedi-bus’ was the final output of this Measure, the indicator showed the success/failure of all the initiatives designed by the Municipality to limit car usage and promote sustainable transport. The comparison between before and after results related to car usage, where a reduction was expected.

Frequency: a measurement was taken before and after the Measure implementation.

Unit: number of students participating in the ‘Pedi-bus’.

Domain: students from schools involved in the project.

Indicator 6 -bundled ‘Number accidents, injuries and fatalities throughout the Municipality’

This indicator was the result of many features which were not always connected or closely related to the Mimosa project (e.g. areas where no mitigation measures were implemented, or might easily be influenced by other random circumstances). Measures 8.5 (STARS) and 5.1 (Urban Traffic Safety Plan) on improving urban safety also influenced the indicator. As a consequence it can be considered a “bundled” indicator.

Unit: number of accidents, injuries and fatalities recorded throughout the Municipality.

Domain: Municipality of Bologna.

C1.2 Establishing a Baseline

The baseline for evaluation is represented by data obtained at the start of the Measure.

Indicators 1-2 the baseline considered the number of schools, the students involved and teaching hours on sustainable mobility and road safety topics during the school year 2008/2009.

Indicator 3 ‘Awareness level of students’ As mentioned before in the indicator paragraph, this is a problematic indicator without any scientific method, introduced in 2010, so a comparison is not allowed. No data has been chosen for the baseline and the results reported can only be interpreted in an absolute way.

Indicator 4 ‘Pedi-bus participation’ Considering this is a new measure, the baseline and BaU is zero.

Indicator 5 ‘Mode of transport used to go to school’ The baseline was represented by the results of the first survey (school mobility in Bologna) carried out before the Mimosa measure implementation (2008), when schools were selected for the project. Results showed the percentages of different modes of transport (car/walking/PT/other). The methodology selected (sample selection, sample size and a description of principle topics investigated with the survey) is reported in section B2, Research and Technology Development).

Indicator 6 – Bundled- ‘Number of accidents, injuries and fatalities throughout the Municipality’ The number of accidents, injuries and fatalities was continuously monitored by the Municipality of Bologna. The trend of values between 1991 and 2008 was included, considering only accidents with injuries and/or fatalities.

C1.3 Building the Business-As-Usual Scenario

The scenario without the implementation of this Measure would mean a lack of co-operation and co-ordination between the institutions, leaving parents no alternative but to use private cars to take their children to school. The BAU in this case was conceived to be coincident with the ‘before’ situation for indicators 1-2. The BAU for indicators 3 and 4 is equal to zero.

The Business as Usual scenario was built with particular reference to Indicator 5, ‘Mode of transport used to go to school’. It was assumed that without the Measure implementation, the results of the schools involved in the project would have been equal to the average data of all the schools in Bologna surveyed by the Camina association.

With reference to indicator 6 (Number of accidents, injuries and fatalities throughout the Municipality), the trend of accidents, injuries and fatalities before the Mimosa project (see Measure results) underlines the stabilization of values during years before 2008 (accidents between 5,700-5,800 units). The business-as-usual scenario has been considered as the state-of-the-art without the implementation of the interventions.

C2 Measure Results

The results are presented under sub headings corresponding to the areas used for indicators –society and transport.

C2.1 Economy

Not applicable

C2.2 Energy

Not applicable

C2.3 Environment

Not applicable

C2.4 Transport

Indicator 5 ‘Mode of transport used to go to school’. The Municipality of Bologna intended to base the evaluation of this indicator on the mode of transport recorded for the 5 schools initially selected for the ‘Pedi-bus’. However, only 4 of the original 5 schools were involved in the ‘Pedi-bus’, while 4 additional schools also took part. Consequently, in order to have valid data for comparison, the evaluation results refer to the 4 schools selected at the start of the project. Considering the 4 elementary schools chosen for the ‘Pedi-bus’, Mimosa Project data was as follows.

TABLE C2.4.1: Mode of transport used to go to school- schools involved in the Mimosa Project (year 2008)

	Car use	Walking	PT	Other
Silvani Elementary School	84%	16%	-	-
Marsili Elementary School	59%	41%	-	-
Gualandi Elementary School	22%	66%	10%	2%
Tempesta Elementary School	29%	62%	2%	7%
Total of the 4 schools	41%	52%	5%	2%

Source: Research on School Mobility - Camina Association-sample 571 students

The project started during the school year 2011 – 2012. At the beginning of the school year 2012-2013 a survey will be carried out to investigate the modes of transport used to go to school.

TABLE C2.4.2 Transport results, “Mode of transport used to go to school” (car use percentage)

Mode	Pre Mimosa (baseline 2008)	BaU (2008)*	Mimosa (2012)	Mimosa (2012) vs BaU (2008)	Mimosa (2012) vs Baseline (2008)
Car use	41%	35%	Not available	-	-
Walking	52%	51%	Not available	-	-
Public Transport	5%	6%	Not available	-	-
Other	2%	8%	Not available	-	-

* average data considering all schools involved in the research

In 2012 a campaign was planned in order to evaluate the appeal of the ‘Pedibus’ and its results. Unfortunately the project did not start until early October 2012 and time problems

meant that not all school children could be surveyed. The only students surveyed were those who agreed the 'Pedibus'. It is clear that this is not a complete survey and it does not produce a detailed picture of the measure's appeal. Nevertheless the table below summarises results obtained from the survey. Data can be interpreted as the "degree of participation for students who agree with the project." Table shows not all people who assert to be potentially interested in Pedibus effectively used it to reach the school. The percentage of using private car has high values considering only people potentially interested in the project were surveyed. Data stresses the difficulties found in the appealing of the project between parents.

TABLE C2.4.3: "Mode of transport used to go to school from students who agree pedibus project"*

Mode	Mimosa (2012)	
Walking	50	33%
Car use	34	22%
Bicycle	2	1%
Public Transport	2	1%
Moped	1	1%
No answer	64	42%

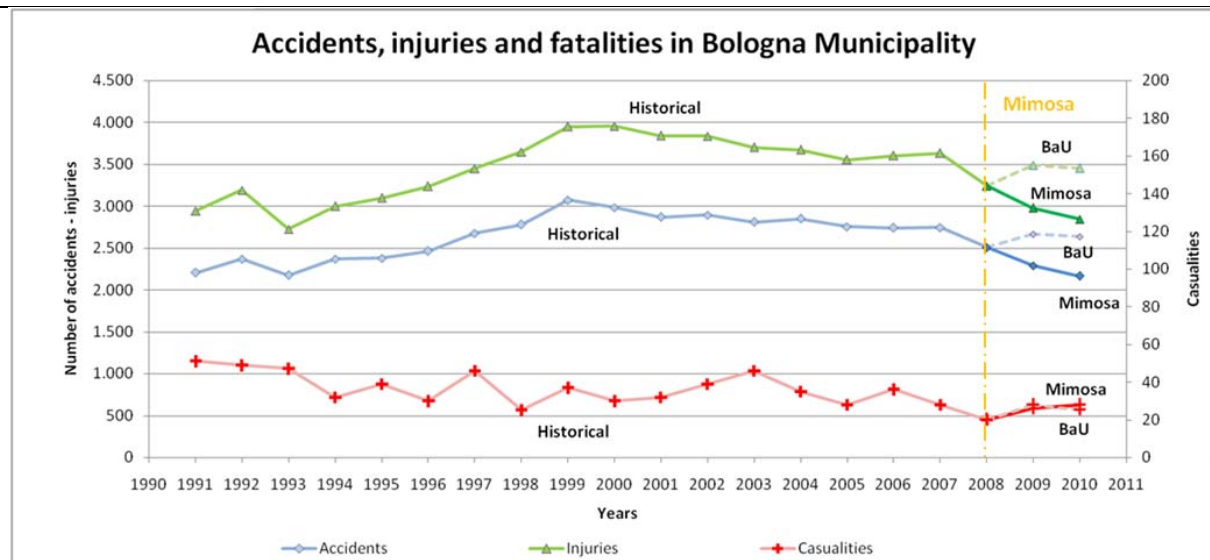
* Students who agreed to the pedibus in the starting phase of measure are people who assert they were potentially interested on the project. they have no bonds and the mode they used to reach the school remained arbitrary.

Indicator 6 –Bundled 'Number of accidents, injuries and fatalities throughout the Municipality

Indicator 6 has been choose as bundled indicator considering it is focused on urban road safety and "Safer Road to Schools" success is strictly connected to good results of it. Interventions did in measure 5.2 imply improvement of safety in school paths. Indicator 6 is not strongly influenced by the measure 5.2 but it has been put in the report to give a detailed picture of safety on Municipality roads, which is a indicator who with its trend would influence in positive or negative way success of this measure.

Data shows a significant reduction in the number of accidents (-21.1%) between 2007 (the last year without any Mimosa measures) and 2010, with– 21.65% fewer people injured over the same period.

FIGURE C2.4.1: Number of accidents, injuries and fatalities throughout the Municipality, results



Source: Istat. Data disregards accidents with no injuries or fatalities; ISTAT Data is not yet available.

C2.5 Society

Indicators 1-2 Number of schools, students and teaching hours

These indicators demonstrated the extensive efforts made by the Municipality to encourage different habits and life choices in early childhood (kindergartens and elementary schools), putting major efforts into future mobility users (students at Junior and High schools).

TABLE C2.5.1: Number of schools, students and teaching hours per school year

	2008/2009 'baseline'	2009/2010	2010/2011	2011/2012
Kindergartens (3-5 years)	20	23	30	79
Elementary schools (6-10 years)	51	54	64	60
Junior and high schools (11-18 years)	18	46	28	83
Total schools	89	123	122	222
Total students	13,878	15,440	12,687	17,717
Total hours	1,832	5,337	2,385	4,706

Source: Bologna Police Department

TABLE C2.5.2: Comparison in number of schools, (2012 vs 2009)

	2008/2009 'baseline/BaU'	2011/2012	Δ%
Kindergartens	20	79	295%
Elementary schools	51	60	18%
Junior and high schools	18	83	361%
Total schools	89	222	149%
Total students	13,878	17,717	28%
Total hours	1,832	4,706	157%

Source: Bologna Police Department

Table C.2.1.2. shows the growth of the project between 2008 and 2012. The number of schools increased significantly (+150%, only a slight increase for elementary schools which were already deep involved in the project in 2008/09 with 51 hits), as did the number of students involved (+ 28%).

Table C.2.2.1 shows how during the three years of project there is a lower growth of children taught in comparison to schools involved in the project, moreover the hours destined to teaching are not well defined and they varied from year to year. The table stress Municipality efforts did to involve as many school as possible, considering the importance of the activity towards children. For a better comprehension of the data, is added that the project started engaging bigger school, than successively, the smaller ones, this is one of the reasons why number of children did not increase as number of school.

Unfortunately number of hours destined to the project is strictly connect to time-resources availability of Police Department, who has to do its ordinary on-road work.

Indicator 3 'Awareness level of students'- 'alcohol is not cool'

The results of the 'alcohol is not cool' test show that students still drive after drinking alcohol. Efforts must be concentrated to inform them of the risks of this incorrect behaviour. The table shows that after attending the night-time police checks, all the percentages of students with incorrect behaviours are reduced compared to the previous training situation.

TABLE C2.5.3: Awareness Level of students (2010)

How many times in the last three months...	Before the theoretical training (*)					After night-time police checks (**)				
	Never	1 time	2-3 times	More than 3 times	No answer	Never	1 time	2-3 times	More than 3 times	No answer
Did you drive after drinking 1 or 2 glasses of wine or bottles of beer?	65%	6%	13%	6%	10%	84%	11%	5%	0%	0%
Did you drive after drinking 3 or more glasses of wine or bottles of beer?	85%	2%	0%	2%	10%	100%	0%	0%	0%	0%
Did you drive drunk in traffic?	88%	2%	0%	0%	10%	100%	0%	0%	0%	0%
Did you race other traffic because you were drunk?	90%	0	0	0%	10%	100%	0%	0%	0%	0%
Did you take a ride from a drunk friend?	69%	17%	2%	4%	8%	63%	26%	11%	0%	0%

(*) Total 48 students(**) Total 19 students
Source: Bologna Police Department

43 students participated in theoretical training between March- April 2011 (15 students from Serpieri High School and 16 students from Malpighi High School). Any students interested (20 out of 43, a 43% rate of participation) were able to shadow the Police on night-time checks on car drivers and motorcyclists.

The level of participation depended on both the students' awareness and their parents' acceptance of these innovative methods.

TABLE C2.5.4: Awareness Level of students (year 2011)

How many times in the last three months...	Before the theoretical training (*)					After night controls (**)				
	Never	1 time	2-3 times	More than 3 times	No answer	Never	1 time	2-3 times	More than 3 times	No answer
Did you drive after drinking 1 or 2 glasses of wine or bottles of beer?	81%	9%	2%	2%	5%	80%	15%	0%	5%	0%
Did you drive after drinking 3 or more glasses of wine or bottles of beer?	91%	2%	0%	5%	2%	90%	0%	0%	5%	5%
Did you drive drunk in traffic?	91%	5%	2%	0%	2%	90%	0%	0%	5%	5%
Did you race other traffic because you were drunk?	98%	0%	0%	0%	2%	90%	0%	0%	5%	5%
Did you take a ride from a drunk friend?	86%	9%	2%	0%	2%	70%	20%	0%	5%	5%

(*) Total 43 students (**) Total 20 students Source: Bologna Police Department

The persistence of incorrect behaviours in 2011 showed the importance of the Police Department's practices, considering that under Italy's new Highway Code newly-licensed drivers cannot drive for the first 3 years of their driving licence if they have drunk even the minimum quantity of alcohol. The prescription automatically includes young people under 21 years old. The reported analysis was susceptible to a range of **methodological** problems.

The main problem was that two different groups were mixed together for the before/after survey (those which did/ did not participate in the extra Police initiative). This problem is strictly connected to the impossibility of the Police Department forcing students to participate in their night-time driver checks.

Secondly, the questionnaires were anonymous. This meant that it was impossible to distinguish between answers given by interested students (those who took part in the police checks) and those given by uninterested students. In the future, similar questionnaires could use a personal secret code to link the before and after surveys of each student.

Thirdly, the samples were very small and changed every year (different students were interviewed in each school year). For these reasons comparisons between results from the two years are neither significant nor necessary.

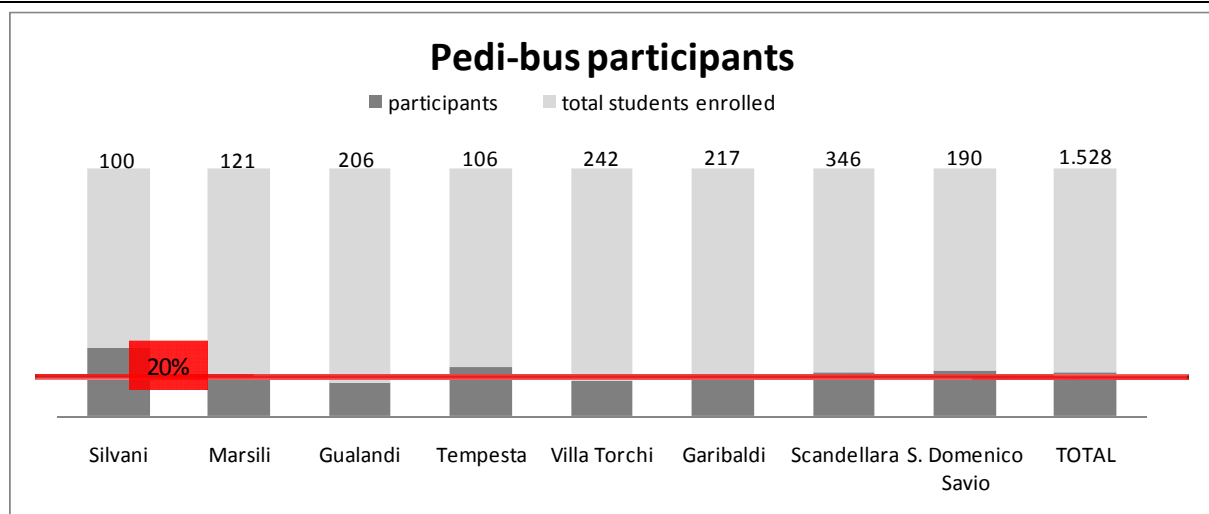
Despite the presence of many problems in comparison between two surveys, it is out of question the school training represent a precious activity in the education of young generations. Often people ignore the effects of alcohol use and that their driving could be unsafe toward other users too. An educational activity would be important towards all citizens, even more so it is addressed to students, who are on one hand more unconscious, on the other hand more receptive.

Data from the two surveys shows a general high level of consciousness between students who response in a positive way to the Municipality activity, participating the on-road activities too.

Indicator 4 'Pedi-bus participation'

In its first year the 'Pedi-bus' saw the participation of over 20% of the total students enrolled in the eight elementary schools. In two of the eight schools (Scandellara and Villa Torchi), the 'Pedi-bus' was organised and run independently by parents.

FIGURE C2.5.1: PEDI-BUS PARTICIPATION PER SCHOOL INVOLVED (YEAR 2011/2012)



Source: Antartide

The eight schools involved are located in different districts of the city: Navile, San Donato, San Vitale and Savena (4 out of the 9 city districts). Considering the schools, city districts and the number of parents and children involved, we can argue that there was extensive interest in the 'Pedi-bus' project. It will start its second year in September/October 2012. A probable reason of this success can be found in the novelty of the project, which gives an alternative to common uses to reach the schools. Bologna is a flat land city with not long distances to be covered, so walking is not tiring and could be pleasant and pedibus represents surely and healthy program who can attract important flows.

C3 Achievement of Quantifiable Targets and Objectives

No.	Target	Rating
1	Create a synergy between parents' (workers) and children's (students') daily movements	O
2	Encourage children and their parents to choose sustainable transport for their journeys to school (by implementing the 'Pedi-bus' project)	**
3	Demonstrate an innovative activity aimed at increasing pupils' safety in Bologna, through road education initiatives	*

NA = Not Assessed; O = Not Achieved; * = Substantially achieved (at least 50%)
 ** = Achieved in full; *** = Exceeded

At the beginning of the project the Municipality intended to create an online questionnaire to investigate home-to-school journeys, combining mobility managers' questionnaires with this Measure. Considering that parents did not have sufficient IT skills, the Municipality decided to submit questionnaires directly to schools, abandoning its previous idea. As a result it was not possible to get the public's feedback on the Municipality's efforts to synergise parents' and children's daily journeys. Consequently, the original initial objective was left out of the process evaluation and was therefore not achieved.

On the contrary, we can argue that the second objective was achieved in full, with a high participation of schools, children and parents in the project itself. Unfortunately it was not

possible to investigate the results of the educational activity (as mentioned above, regarding the problem with the questionnaire). It is obvious that the more people the activity reaches, the more people will receive the message of the initiative.

Considering the results of the impact evaluation, the third objective was substantially achieved, with reference to the Municipality's extensive efforts towards road education activities. From the impact evaluation it is difficult to demonstrate the level of awareness related to this part of the Measure, considering the biases seen in the "alcohol is not cool" methodology. On the other hand we can argue that the number of children and students involved in these initiatives increased during the evaluation years.

C4 Up-Scaling of Results

This Measure could be up-scaled considering, firstly, all schools in the urban area. In order to introduce a new organizational approach in the future, the Municipality could consider the possibility of re-arranging children's and parents' journeys using a general plan, including systematic movements for work and school.

C5 Appraisal of Evaluation Approach

The evaluation approach made it possible to report on the city's extensive efforts to involve students in road safety topics from early childhood.

Considering the road education part of the Measure, the evaluation approach had biases derived from the training methodology. If it is used again, a similar questionnaire could use a personal secret code to link the before and after surveys of each student, thereby evaluating correctly the benefits of the Measure. The survey would need to be done for a significant sample of young people.

With reference to the 'Pedi-bus' part of the project, the evaluation approach made it possible to measure the impact on children's modal split. In order to improve the methodology, a control site approach could be followed in future projects, comparing the results of the schools where the project is not implemented.

For time reasons, the second survey of 2012 was addressed only to students who agree with the 'Pedibus' initiative. Obviously this is not a complete sample of the school population and the survey is not completely significant. A complete approach must investigate the habits of all school children.

C6 Summary of Evaluation Results

The key results were:

Key result 1 – 28% more students involved in the co-operation process.

Key result 2 - increase in students who said they would not drink and drive: from 65% (before the training) to 84% (2010). The percentage was also confirmed in 2011 (81% before the theoretical training and 80% after night-time driver checks).

Key result 3 - more than 20% of the total students enrolled in the eight elementary schools participated in the 'Pedi-bus'.

C7 Future Activities Relating to the Measure

The 'Pedi-bus' will be run again in the next school year in all schools involved, including Don Minzoni school. Targeted awareness activities will be included during the next European Mobility week.

D Process Evaluation Findings

D1 Deviations from the Original Plan

The online questionnaire for workers and children was not realized - The Municipality had initially planned to create an online questionnaire both to optimise feedback and create a database to synergise parents' (workers) and children's (students') daily journeys. Considering that insufficient parents were willing to compile online questionnaires and that there was therefore a risk of not receiving the information requested, the Municipality submitted questionnaires directly to schools.

D2 Barriers and Drivers

D2.1 Barriers

Overall barriers

- **Cultural resistance to change ('Pedi-bus')** – The first barrier related to cultural habits and lifestyles. It was very difficult to persuade parents and schools to allow children to go to and from school alone. Also, Italian school regulations state that children must leave school with an identified/known adult.
- **Bureaucracy** – The set of administrative structures, procedures and routine, laws and regulations and their application hindered the progress of the Measure.
- **Dangerous infrastructures and roads near schools** – Observing children negotiating dense traffic and hazardous street infrastructures near their schools provided sufficient proof of unsafe journeys to school. Environmental barriers can be structural, involving a lack of footpaths, bad traffic management or a combination of these factors.

D2.2 Drivers

Overall Drivers

- **Widespread stakeholder collaboration** – Constructive and open involvement of stakeholders and institutional partners, who confirmed their partnership year after year. The Measure involved many individuals who worked continuously with the Municipality and the Police Department: e.g. school teachers and staff, the School Provincial Office, the Italian Workers' Compensation Authority, and the Province of Bologna. Their enthusiastic approach to the Measure's assumptions strongly supported its implementation.

D2.3 Activities

Overall activities

- **Contribution of skilled external companies** – Involvement of professional, competent organisations (Camina Association for the RTD activity and Antartide for the 'Pedi-bus' management). The involvement of associations with both psychological and technical skills made it possible to overcome cultural barriers and identify the main efforts needed for the Measure.

- **Completion of a project aimed at increasing the safety of the areas around 9 schools.** The impetus of this work was to make the public domain accessible, connecting the home, school and community spaces. This activity helped overcome the third barrier presented above.
- **Training courses for local policemen/women who were employed in the road education project.** This activity took advantage of the driver presented above: police officers always showed a strong interest and supported the implementation of the Measure.

D3 Participation

D3.1 Measure Partners

Municipality of Bologna - The Measure jointly involved the Municipality of Bologna with its mobility technicians, city districts and Municipal Police Department.

D3.2 Stakeholders

Pupils and parents – The Measure’s target groups: the city wanted to encourage children and their parents to choose sustainable transport modes for their journeys to school and worked towards making these alternatives safer.

Students – The activities within the Measures were aimed at students of different ages, from early childhood to high school, in order to educate future mobility users.

D4 Recommendations

D4.1 Recommendations: Measure Replication

To manage the resistance to change – Cities interested in sustainable mobility measures must evaluate in advance the difficulty of introducing new and more sustainable habits. Intense communication efforts must be planned at the beginning of the measures and during their implementation.

Several aspects to be considered – The safer road to school project involved quite a dramatic change of habits in terms of independence and safety. In order to realize this challenge, firstly, experts and psychologists must be available to assist parents. Secondly, the city must plan and carry out road works. In other words, the interested city must identify in advance barriers to children’s movements, conduct access audits of the road infrastructure and spaces around schools and develop solutions for reducing/eliminating these barriers.

D4.2 Recommendations: Process (Related to Barrier-, Driver- and Action Fields)

A lasting commitment to future generations – A measure promoting the awareness of sustainable mobility among new generations should only be realized if there is general interest from all stakeholders: parents, schools, the Municipality, Police departments, city districts. Otherwise the implementation phase may encounter several barriers impeding the Measure development and causing delays. As an example, in Bologna many activities were

carried out only thanks to the voluntary contributions of police officers committed to road education activities.