

CiViTAS
Cleaner and better transport in cities

MALAGA

DI5.04.03 Guidelines and Recommendations for the Implementation of Safe Routes to school

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Abstract

Marketing studies, as well as previous awareness projects carried out by Malaga and other local governments have demonstrated that young generations play a determining role in the decision-making processes of the families. Their influence in the daily behaviour and habits of their parents can lead to a powerful multiplier effect, which can go far beyond the family border, implicating neighbours, friends, local shops, and so on. In addition, they represent the future decision-makers of cities, and it is therefore necessary to cultivate a positive mind-set towards electric vehicles and alternative mobility from their childhood / adolescence.

This measure, carried out as part of the CIVITAS 2MOVE2 project, aimed to focus on those specific mobility target groups: pupils of primary schools and university students. Two main actions were carried out: a) designing and implementing safe routes between home and school for the pupils of ten primary schools of Malaga; b) organising open days for driving classes and testing of electric vehicles at the University of Malaga (UMA).

Throughout the project, a total of 10 schools and 465 pupils have participated in the safe routes to school programme, and 255 people have tested electric vehicles at the University.

Project Partners

| Organization | Country | Abbreviation |
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| Malaga City Council | Spain | Malaga |
| EMT – Malaga Municipal Transport Company | Spain | EMT |

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1 Executive Summary

The main objective of this document is to provide other local administrations with the key guidelines and parameters to effectively implement a Safe Routes to School Programme and campaigns on electro mobility in their territories, learning from the experience of Malaga City Council during the CIVITAS 2MOVE2 project.

Objectives

The Final Implementation Report of the measure M5.04 “Strategic campaign on electric and alternative mobility and safe routes to school” aims at to describe the work undertaken to implement the measure regarding the 3 Safe Routes to School programmes carried out and the 2 Campaigns on electro mobility held at the University of Málaga (UMA).

It also includes a comparison between the results expected and those actually achieved, in order to evaluate the success of the measure. Finally, the problems encountered are analysed.

Description of the measure

Marketing studies, as well as previous awareness projects carried out by Malaga and other local governments have demonstrated that young generations play a determining role in the decision-making processes of the families. Their influence in the daily behaviour and habits of their parents can lead to a powerful multiplier effect, which can go far beyond the family border, implicating neighbours, friends, local shops, and so on. In addition, they represent the future decision-makers of cities, and it is therefore necessary to cultivate a positive mind-set towards electric vehicles and alternative mobility from their childhood / adolescence.

The campaign was therefore focused on those specific mobility target groups: pupils of primary schools and university students. This measure consists of two main actions: a) designing and implementing safe routes between home and school for the pupils of ten primary schools of Malaga; b) organising open days for driving classes and testing of electric vehicles at the University of Malaga (UMA).

The measure consists of 3 phases: the first two include both of the actions described above and the third one, which was added during the project as an extension of the measure, has focused on the safe routes to school (SRTS) programme.

Expected Results/Benefits

In relation to the overall CIVITAS objective of providing cleaner and better transport in cities, this measure has aimed at producing a change in the behaviour of citizens in order to develop a positive attitude towards electric vehicles, public transport and bicycles, and therefore increasing their number of users.

The other measure objectives are:

(A) High level / longer term:

The long- term objectives of the Malaga Municipal Plan for Sustainable Mobility (2025) related to this measure are the following:

- Annual reduction of the CO2 emissions linked to private vehicles traffic at city level by 996 kt compared to 2011.
- Annual reduction of the CO2 emissions linked to private vehicles traffic at metropolitan level by 209 kt compared to 2011.
- Consistent reduction of the annual total motorised trips and kilometrage per year in the inner city (2025 target: 4,614,000,000 km) compared to 2011.
- Consistent reduction of annual fuel consumption due to motorised trips (2025 target: 415 million litres of fuel) compared to 2011.
- To increase the role of the bicycle from 0.4% in 2008 to 9% of all trips in 2025.
- To increase the use of motorised public transport from 9.7% in 2008 to 14.4% of all trips in 2025.
- To increase the use of the Metro from 0% in 2012 (before the launch of the system) to 6% of all trips in 2025.
- To increase the role of walking within the city modal split from 46.2% in 2008 to 51% in 2025.
- To reduce the use of private motorised vehicles from 34.9% in 2008 to 14% of all trips in 2025.

(B) Strategic level:

The strategic objectives linked to this measure are:

- To achieve a general improvement in the environmental conditions of the city of Malaga through the reduction of private motorised vehicle traffic.
- To achieve a relevant saving in the energy consumed by the city transport system.

(C) Measure level:

The objectives directly linked to the measure implementation are:

- To demonstrate that Safe Routes to School and Electric Vehicles (EVs) are a real alternative to conventional routes / vehicles.
- To allow a sample of Malaga pupils and their families to experience the feasibility of sustainable and safe routes to school (10 schools and 250 pupils).
- To allow University students, their friends and families to test both light (bike) and heavy (car) electric vehicles, verifying their effectiveness (100 university students).
- To reach a minimum awareness level on e-mobility of 70% among the University community.
- To encourage parents to involve their children in a Safe Routes to School programme, meeting a minimum acceptance level of 60%.

- To promote the efficient use of transport in Malaga (energy efficient and reduction in emissions).
- To encourage the reduction of the share of car traffic, especially for short routes and trips in low-occupancy cars such as trips to school.
- To publish the policies and actions that have been carried out in Malaga to improve sustainable alternative transportation, including those implemented in the innovation area within the CIVITAS framework with the target group of school pupils and their parents.
- To encourage parents, as well as the friends and relatives of students to experience the use of alternative electric vehicles.
- To educate private drivers (especially the parents and relatives of school pupils) regarding respect and coexistence with other means of transport in Malaga (cyclists, pedestrians, public transport).

Implementation

The measure was structured in 3 phases: the first two included the following actions:

- a) Designing and implementing safe routes between home and school for the pupils of ten primary schools of Malaga;
- b) Organising open days for driving classes and testing of electric vehicles at the University of Malaga (UMA).

The third phase, which was added during the project given the success of the previous ones, focused on the safe routes to school programme, which has been named 'Paseando al cole'.

The activities undertaken in each phase have been:

- Preliminary study and contacts with the schools and the University (depending on the phase).
- Implementation of the campaign.
-

Results

Throughout the project, a total of 10 schools and 465 pupils have participated in the safe routes to school programme, and 255 people have tested electric vehicles at the University.

Walking and private cars play a predominant role in the modal split related to trips between home and school: more than half of the pupils surveyed in the 3rd phase make these trips by walking (51%), while 38% travel by car. The acceptance level of the safe routes to school programme among the parents surveyed was 87% in the 3rd phase. The main reason given to not register their children in this kind of activity is their concern about their safety. Therefore, it is very important to guarantee children's safety while carrying out the routes.

With regard to the awareness level on electric mobility, over 90% of University students state that they are socially aware about the issue.

From the experience gained in carrying out campaign, the following conclusions can be drawn:

- The involvement of the entire education community from the beginning is crucial.
- Communication with the management staff at the University and schools, and between the schools and the rest of the educational community, is also very important.
- The frequency of the safe routes to school has a major influence on the internalisation of the programme and on the programme becoming a habit.
- The possibility of testing electric vehicles has been an incentive for students to participate in the campaign on e-mobility at UMA.
- Dissemination activities are essential to encourage participation in the campaign. The time of the year to implement them and the location of promotion material, have to be selected carefully (e.g. Dates close to holidays should be avoided).



Figure 1: A group of pupils at one of the meeting points for the Safe Routes to School Programme.

2 The Pilot Project

As has been described previously, the measure was structured in 3 phases, according to the different school years during the CIVITAS 2MOVE2 project. The implementation of the campaign in each phase is described in more detail below:

PHASE 1

Stage 1: Implementation Plan

(Dec.2012 – May 2013)

A description of the measure was elaborated, as well as the definition of the objectives and the schedule of the related activities.

Stage 2: Preliminary study and contacts with the schools and the University

(Dec.2012 – Nov.2013)

The surroundings of the schools (streets, public space, etc.) were analysed to evaluate the best modes of transport to carry out the routes (walking, cycling, public transport). Some default itineraries from homes to schools were selected to know the average times necessary to complete them by using different means of transport. In addition, a survey was distributed to the families of the pupils, in order to understand their mobility habits and attitude towards safe routes to school.

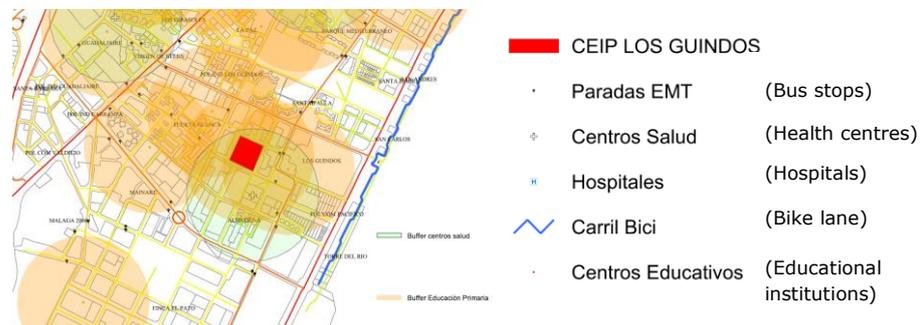


Figure 2: Analysis of a school's surroundings

On the other hand, possible venues for the open days at the University were studied. Contact with University teachers, student associations and driving schools was established to prepare the events and give them visibility.

Stage 3: First campaign implementation (awareness and training)

(Nov.2013 – Jun.2014)

The safe routes programme was implemented in 8 schools. After giving some previous theoretical classes to pupils, introducing sustainable mobility basic principles, the itineraries for the safe routes were designed through the involvement of the entire educational community (pupils, parents and teachers). Safe routes from home to school were carried out 8 times in each school, either by walking or cycling, depending on the specific features of the

schools (average distances from home to school, type of itinerary, etc.). Pupils joining the programme were accompanied by (at least) 2 trained supervisors on each route.



Figure 3: Informative session with pupils and parents. 1st Phase.



Figure 4: Examples of safe routes by walking ('pedibus'), and by cycling ('cyclobus'). 1st Phase.

Driving classes and test of e-vehicles at the university: in April 2014, 5 open days on e-mobility were organised in different and visible venues at the University of Malaga. They consisted in:

- Driving lessons focussing on the main features of e-vehicles, efficient and safe driving, and respect towards other sustainable modes of transport (pedestrians, public transport, conventional bicycles).
- Practical tests of light (pedelecs) and heavy (cars) e-vehicles within the University Campus. Open days were held in collaboration with local driving schools.



Figure 5: Driving lesson and test of e-vehicles at UMA. 1st Phase.

PHASE 2

Stage 4: Second preliminary study and contacts with the schools and the University (Jun.2014 – Jan.2015)

The second preliminary study presented the same structure as the previous one in Year 1. With regard to the safe routes to school programme, it mainly consisted of selecting and analysing the schools joining the campaign, establishing contacts with the educational community and distributing a survey to the families of the pupils about their mobility habits and attitude towards the initiative. Dissemination activities (e.g. Blog and pages on several social networks created about the programme) were also carried out and a web-based tool called TRAZEO including an APP for smartphones (with Android operating system) were developed, facilitating the creation and organization of routes from home to school and allowing parents to supervise the participation of their children in the routes.

For the awareness campaign at UMA, the activities carried out include the selection of the university venues where the open days on electric mobility would be organised, contact with the University staff, collaborators and experts, and dissemination activities to publicise the campaign through the blog or pages on different social networks.

Stage 5: Second campaign implementation (Jan.2015 – May 2015)

The second campaign followed the same structure of the previous one in Year 2, with two main actions: safe routes to school programme; driving classes and testing of e-vehicles at the University.

The 2nd phase of the Safe Routes to School Programme was implemented in 10 schools. After the theoretical classes (described in Stage 3: 'First campaign implementation'), the itineraries for the safe routes were designed and carried out 18 times in each school, that is, once per week. The pupils participating in the routes were accompanied by, at least, 2 trained supervisors. In addition, to encourage parents to allow their children to participation in the programme, the TRAZEO tool was used as a pilot to track the pupils during the routes. WhatsApp groups were also created for the parents.



Figure 6: Examples of safe routes by walking ('pedibus'), and by cycling ('cyclobus'). 2nd Phase.

As for the Awareness campaign on e-mobility at UMA: in April 2015, 5 open days on e-mobility were organised for the second time at different venues of the University. The structure of the campaign was the same as in the 1st phase, consisting in driving lessons and talks on sustainable mobility, followed by e-vehicles tests.

On this occasion, apart from the electric cars used in the previous campaign, a private car manufacturer, which gave one of the talks, lent two of their electric vehicles models for the tests that day.



Figure 7: Driving lesson and testing of e-vehicles at UMA. 2nd Phase.

PHASE 3

Stage 6: Third preliminary study and contacts with the schools

(Nov.2015 – Jan.2016)

The third preliminary study presented the same structure of the previous ones of Years 1 and 2, regarding the safe routes to school programme. The main differences were: revision and improvement of the synoptic maps by adding the number of steps and kilocalories consumed when walking between the schools and the points of interest; revision of the routes in order to improve accessibility and safety, and identification of spots to be used as 'park&ride'; and development of a tailored version of the TRAZEO tool and intensification of the efforts to encourage its use, by giving information about it in the meetings with the educational community, in the authorization form to be signed by the parents of the participating children, in flyers distributed at the entrances to the schools, in the 'Paseando al cole' pages in social networks and in the 'Paseando al cole' website, as well as by giving the possibility of registering directly through this website. As for the schools not implementing the safe routes, a dossier of alternative activities to raise awareness on sustainable mobility, accessibility and road safety was drawn up.

Stage 7: Third campaign implementation

(Jan.2016 – Jun.2016)

The implementation of the third phase presented some changes with respect to the previous ones. It was implemented in the same 10 schools as the second phase, but in this case the safe routes were carried out in 7 schools, while alternative activities on sustainable mobility, accessibility and road safety were undertaken in the rest. Other differences with respect to the previous phases include: increase of the frequency of the safe routes in one pilot school (from one day a week to everyday) and carrying out the routes without supervisors in 2 schools at the end of the project. The pupils also used remote controls to answer mobility-related questions during the talks, which allowed them to participate more actively and introduced the 'gamification' concept. A tailored version of the TRAZEO APP was also used which included the possibility of activating the routes by the parents (not only the supervisors), in order to encourage the parents and schools to organise the routes on their own, and a control panel with useful information about the routes carried out.



Figure 8: Examples of safe routes by walking ('pedibus'), and by cycling ('cyclobus'). 3rd Phase.

3 Trazeo Tool & APP

Description of the Tool & APP

One of the most innovative elements for the Safe Routes to school programme was the introduction of a web-based tool called TRAZEO including an APP for smartphones (with Android operating system). The objective of this tool and related APP was to help create and organise the Safe Routes, allowing parents to supervise the participation of their children in the routes at the same time.

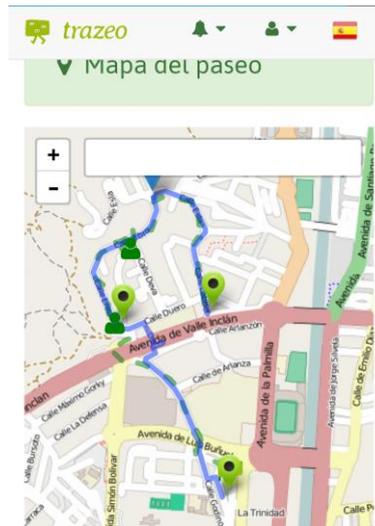


Figure 9: TRAZEO APP

The APP and web-based tool were used in the following way. Each route was initiated by an adult (the supervisor), which is the only person that needs to carry a smartphone with the TRAZEO APP installed. A route is initiated when the supervisor opens the APP and clicks on the respective group. Then, a notification about the start of the route is generated. From that moment on, it is possible for the parents to check the location of the group in real time. As children join the route, the supervisor records their attendance on the APP and a notification is automatically sent to their parents. When the group arrives at the school, the supervisor indicates the end of the route and a message is automatically sent to all the participants including a summary of the itinerary and the data registered, such as the distance covered or the social and environmental benefits of the route (energy and economic savings or the reduction of pollutant emissions). This final message can be configured.



Figure 10: TRAZEO control panel

As the project continued, a tailored version of the TRAZEO APP was introduced whereby the routes could be activated by the parents (not only the supervisors), in order to encourage the parents and schools to organise the routes on their own, and a control panel with useful information about the routes carried out was included.

In order to promote the use of the APP, information was provided in the following ways:

- At the meetings with the educational community.
- On the authorisation form to be signed by the parents of the participating children.
- On flyers distributed at the entrances to the schools.
- Through the 'Paseando al cole' pages in social networks and on the 'Paseando al cole' website, as well as by giving the possibility of registering directly through this website.

Indicators through the Tool & APP

Due to the innovative nature of the use of this APP, and in order to evaluate the impact of TRAZEO, a set of indicators were defined for the 3rd phase of the safe routes to school programme:

- Total n^o of itineraries in each school and n^o of participants in each itinerary.
- Total n^o of km walked or cycled by the pupils.
- Total kg of CO₂ emissions not emitted to the atmosphere.
- Total time walked / cycled by the pupils.
- N^o of incidents in the itineraries carried out (if any).
- N^o of school routes carried out autonomously (without supervisors).
- % of school routes carried out autonomously via the APP in comparison to the total use of the APP
- Evolution of the registered mobile app users during the implementation of the campaign.

| | | |
|---|--------------------|---|
| 🚩 | Empieza en | Calle Cabriel, Provincia de Málaga, Andalucía, España |
| 🚩 | Termina en | Plaza del Conde de Ferrería, Provincia de Málaga, Andalucía, España |
| 📏 | Distancia | 1687 m |
| 👤 | Niños en esta ruta | 2 |
| 🔍 | Monitor | Jose Maria RR |

Figure 11: Route's information provided by TRAZEO APP

In the following tables, the main results for the indicators established above are detailed. Table 1 provides an overview of the number of Safe Routes that were carried out during the 3rd phase of the project. It should be noted that two schools shared routes because of their proximity ('Jorge Guillén' and 'Platero' schools).

Total nº of itineraries in each school and of nº of participants on each itinerary

| School | Route | Nº days with safe routes to school | Nº safe routes to school (itineraries) (Total) | Nº safe routes to school (itineraries) (with TRAZEO) |
|-------------------------|---------------------------------------|------------------------------------|--|--|
| El Atabal | El Atabal | 47 | 47 | 16 |
| El Monte | El Monte | 11 | 22 | 18 |
| Santa Teresa | Santa Teresa | 15 | 15 | 8 |
| Manuel Garvayo | Manuel Garvayo | 13 | 26 | 23 |
| Jorge Guillén + Platero | Jorge Guillén + Platero (Library) | 13 | 13 | 6 |
| | Jorge Guillén + Platero (Supermarket) | 12 | 12 | 4 |
| Los Guindos | Los Guindos | 43 | 86 | 58 |
| TOTAL | | 154 | 221 | 133 |

Table 1: Total nº of itineraries in each school

Safe routes were carried out once a week, except for 'El Atabal' and 'Los Guindos' schools, where they were carried out daily (from January to March and from April to June 2016, respectively). As for the number of routes per day, they were carried out both for home to school and for school to home trips, in three schools.

| School | Route | Nº participants (Total) | Nº participants (registered in TRAZEO) | Average nº participants / itinerary (Global) | Average nº participants / itinerary (TRAZEO) |
|-------------------------|---------------------------------------|----------------------------|--|---|---|
| El Atabal | El Atabal | 96 | 31 | 2 | 2 |
| El Monte | El Monte | 133 | 73 | 6 | 4 |
| Santa Teresa | Santa Teresa | 104 | 45 | 7 | 6 |
| Manuel Garvayo | Manuel Garvayo | 356 | 172 | 14 | 8 |
| Jorge Guillén + Platero | Jorge Guillén + Platero (Library) | 67 | 18 | 5 | 3 |
| | Jorge Guillén + Platero (Supermarket) | 89 | 11 | 7 | 3 |
| Los Guindos | Los Guindos | 803 | 306 | 9 | 5 |
| TOTAL | | 1,648 | 656 | 8 | 5 |

Table 2: Total nº of participants and average nº of participants in each itinerary

The figures included in the columns about the number of participants are the sum of participants on every route carried out during the 3rd phase of the programme.

Total nº of km walked or cycled by the pupils

| School | Route | Route length (km) | Nº km walked/cycled (Total) | Nº km walked/cycled (TRAZEO) |
|-------------------------|---------------------------------------|----------------------|-----------------------------------|------------------------------------|
| El Atabal | El Atabal | 0.68 | 64.89 | 19.77 |
| El Monte | El Monte | 2.92 | 388.36 | 192.41 |
| Santa Teresa | Santa Teresa | 1.00 | 103.79 | 54.38 |
| Manuel Garvayo | Manuel Garvayo | 3.67 | 1,306.52 | 524.51 |
| Jorge Guillén + Platero | Jorge Guillén + Platero (Library) | 1.04 | 69.68 | 11.04 |
| | Jorge Guillén + Platero (Supermarket) | 0.61 | 54.56 | 4.59 |
| Los Guindos | Los Guindos | 1.09 | 875.27 | 299.15 |
| TOTAL | | - | 2,863.07 | 1,105.85 |

Table 3: Total nº of km walked or cycled by the pupils

The figures in the column regarding the total number of km walked or cycled by the pupils is the sum of distances covered by the participants in all the itineraries carried out. As for the last column, it shows the number of km walked or cycled according to the TRAZEO control panel.

Total kg of CO2 emissions not emitted to the atmosphere

| School | Route | kg CO2 emissions not emitted (Total) | kg CO2 emissions not emitted (TRAZEO) |
|-------------------------|---------------------------------------|--------------------------------------|---------------------------------------|
| El Atabal | El Atabal | 12.978 | 7.91 |
| El Monte | El Monte | 77.672 | 76.96 |
| Santa Teresa | Santa Teresa | 20.758 | 21.75 |
| Manuel Garvayo | Manuel Garvayo | 207.304 | 209.80 |
| Jorge Guillén + Platero | Jorge Guillén + Platero (Library) | 13.938 | 4.42 |
| | Jorge Guillén + Platero (Supermarket) | 10.912 | 1.84 |
| Los Guindos | Los Guindos | 175.27 | 119.66 |
| TOTAL | | 572.614 | 442,34 |

Table 4: Total kg of CO2 emissions not emitted to the atmosphere

The figures for the total CO2 emissions not emitted to the atmosphere have been calculated considering an emission factor of 0.2 kg CO2/km (weighted average of petrol and diesel cars) and assuming a 100% shift from private cars. It also assumes that those car trips 'disappeared' (the only reason for them was to take the pupils to / from the school). The last column shows the results displayed on the TRAZEO control panel.

Total time walked / cycled by the pupils

| School | Route | Time walked/cycled per route (minutes) | Time walked/cycled (minutes) (Total) | Time walked/cycled (minutes) (TRAZEO) |
|-------------------------|-----------------------------------|--|--------------------------------------|---------------------------------------|
| El Atabal | El Atabal | 10 | 960 | 207 |
| El Monte | El Monte | 20 | 2,660 | 2,176 |
| Santa Teresa | Santa Teresa | 20 | 2,080 | 1,153 |
| Manuel Garvayo | Manuel Garvayo | 20 | 7,120 | 5,768 |
| Jorge Guillén + Platero | Jorge Guillén + Platero (Library) | 15 | 1,005 | 415 |

| School | Route | Time walked/cycled per route (minutes) | Time walked/cycled (minutes) (Total) | Time walked/cycled (minutes) (TRAZEO) |
|--------------|---------------------------------------|--|--------------------------------------|---------------------------------------|
| | Jorge Guillén + Platero (Supermarket) | 10 | 890 | 183 |
| Los Guindos | Los Guindos | 20 | 16,060 | 5,426 |
| TOTAL | | - | 30,775 | 15,328 |

Table 5: Total time walked / cycled by the pupils

The figures for total time walked or cycled by the pupils are the sum of the travel times of the participants in all of the itineraries that were carried out, which amounts to 513 hours. The column on the left shows the data provided by the TRAZEO control panel, which adds up to 256 hours.

Nº of incidents in the itineraries carried out

There has been no incidents during the safe routes that were carried out.

Nº of uses in autonomy (without supervisors)

| School | Nº days with autonomous safe routes to school | Nº safe routes to school carried out autonomously (itineraries) (Total) | Nº safe routes to school carried out autonomously (itineraries) (with TRAZEO) |
|---------------|---|---|---|
| Jorge Guillén | 2 | 2 | 0 |
| Los Guindos | 8 | 16 | 0 |
| TOTAL | 10 | 18 | 0 |

Table 6: Nº of school routes carried out autonomously (without supervisors)

There were two schools which carried out the safe routes without supervisors at the end of the project: 'Jorge Guillén' (1 route per week) and 'Los Guindos' (2 routes per day -home to school and school to home trips-). Although, the possibility of activating the routes in TRAZEO by the parents (not only the supervisors) was introduced during this phase to encourage the organization of the routes in autonomy, they did not make use of it for these routes. This was because they did not consider it to be necessary, maybe because the relationships built between them during the campaign made them feel confident about their children's safety.

% of school routes carried out autonomously via the APP in comparison to the total use of the APP

The proportion of the autonomous use of the TRAZEO tool is, therefore, 0%.

Evolution of the registered mobile app users during the implementation of the campaign

| School | Route | January | February | March | April |
|-------------------------|---------------------------------------|-----------|-----------|----------|-----------|
| El Atabal | El Atabal | 3 | 0 | 1 | 0 |
| El Monte | El Monte | 4 | 3 | 0 | 5 |
| Santa Teresa | Santa Teresa | 4 | 3 | 0 | 5 |
| Manuel Garvayo | Manuel Garvayo | 8 | 2 | 1 | 4 |
| Jorge Guillén + Platero | Jorge Guillén + Platero (Library) | 2 | 2 | 0 | 3 |
| | Jorge Guillén + Platero (Supermarket) | 2 | 2 | 0 | 12 |
| Los Guindos | Los Guindos | 2 | 0 | 0 | 8 |
| TOTAL / MONTH | | 25 | 12 | 2 | 37 |
| TOTAL | | 76 | | | |

Table 7: Evolution of the registered mobile app users along the campaign implementation

During the months of February and, especially, March, the number of pupils registered in TRAZEO fell considerably. For this reason, the organisers of the programme decided to help the families and pupils to register on the APP, even registering them directly. This measure resulted in a significant increase of users in April. During the last two months, there were no additional registrations.

The table below shows a comparison between the total number of pupils registered in the 3rd phase of the programme, the number of pupils registered in TRAZEO and the number of pupils who were registered in TRAZEO with the help of the organisers:

| School | Route | Nº pupils registered (Total) | Nº pupils registered (TRAZEO) | Nº pupils registered (TRAZEO, with the help of organisers) |
|-------------------------|-----------------------------------|------------------------------|-------------------------------|--|
| El Atabal | El Atabal | 5 | 4 | 0 |
| El Monte | El Monte | 10 | 12 | 6 |
| Santa Teresa | Santa Teresa | 12 | 12 | 6 |
| Manuel Garvayo | Manuel Garvayo | 23 | 15 | 3 |
| Jorge Guillén + Platero | Jorge Guillén + Platero (Library) | 9 | 7 | 2 |

| School | Route | Nº pupils registered (Total) | Nº pupils registered (TRAZEO) | Nº pupils registered (TRAZEO, with the help of organisers) |
|--------------|---------------------------------------|------------------------------|-------------------------------|--|
| | Jorge Guillén + Platero (Supermarket) | 19 | 16 | 13 |
| Los Guindos | Los Guindos | 16 | 10 | 3 |
| TOTAL | | 94 | 76 | 33 |

Table 8: Number of pupils registered in the SRTS programme: total, registered in TRAZEO and registered in TRAZEO with the help of the organisers

Over 40% of the TRAZEO users were registered with the help of the organisers of the safe routes programme. The dissemination activities undertaken to encourage the use of this tool were not sufficient to achieve massive use among the participants.

In view of the results above, it can be concluded that the direct intervention of the organisers of the safe routes to school programme in registering the participants in TRAZEO is necessary to ensure that it is widely used.

4 Main Results

In this chapter, we aim to present the main results of this Measure in comparison to the initial quantifiable objectives that were established at the beginning of the project. A summary of the results can be seen in the Table below.

| No. | Target | Rating |
|--|--|--------|
| 1 | To allow a sample of Malaga pupils and their families to experience the feasibility of sustainable and safe routes to school (10 schools and 250 pupils). | *** |
| 2 | To allow University students, their friends and families to test both light (bike) and heavy (car) electric vehicles, verifying their effectiveness (100 university students). | *** |
| 3 | To reach a minimum awareness level on e-mobility of 70% among the University community. | *** |
| 4 | To encourage pupils' parents to involve their children in a safe routes to school programme, meeting a minimum acceptance level of 60%. | *** |
| NA = Not Assessed O = Not Achieved * = Substantially achieved (at least 50%) ** = Achieved in full *** = Exceeded | | |

Table 9: Number of pupils registered in the SRTS programme: total, registered in TRAZEO and registered in TRAZEO with the help of the organisers

Objective 1: To allow a sample of Malaga pupils and their families to experience the feasibility of sustainable and safe routes to school (10 schools and 250 pupils).

Result: Throughout the project, a total of 465 pupils have carried out the safe home to school and school to home routes.

Objective 2: To allow University students, their friends and families to test both light (bike) and heavy (car) electric vehicles, verifying their effectiveness (100 university students).

Result: During the project, there have been 255 e-vehicles testers in total.

Objective 3: To reach a minimum awareness level on e-mobility of 70% among the University community.

Result: With regard to the awareness level on electric mobility, the results of both surveys conducted during the respective phases of the campaign at the University (distributed to the e-vehicle testers), show a considerably higher level of awareness (above 90%), compared with the 'Before' situation (22%) as well as with the 'Business-as-Usual' (around 25%-30%).

Objective 4: To encourage parents to involve their children in a Safe Routes to School programme, meeting a minimum acceptance level of 60%.

Result: The acceptance level of the safe routes to school programme has increased in comparison with the situation before the project was implemented, in particular during the 3rd phase. The acceptance levels reached in both phases are over 60%. On the other hand, the willingness to use electric vehicles was higher in the 1st phase of the campaign at UMA than in the 2nd phase (88% and 61%, respectively), but still represents the attitude of the majority of the people surveyed.

5 Problems Encountered and Recommendations for Future Projects

In this chapter, the main problems that were encountered during the implementation of this measure are highlighted, along with recommendations for other Public Administrations looking to implement similar initiatives in their respective territories.

Barriers

Preparation phase

- **Involvement, communication** – Insufficient involvement or awareness of citizens or users. The campaign requires the active participation of the following target groups in order to be successful: parents of the pupils; teachers; owners and employees of local shops close to school routes. Especially, teachers and local shops can see the campaign as an obstacle for their work activities, whereas parents may not allow their children to carry out school routes, even when trained supervisors are involved.
- **Financial** – Too much dependency on public funds (including CIVITAS funding) and subsidies. The implementation of school routes has been possible through the involvement of supervisors financed through CIVITAS measures. However, alternative funds should be activated in order to maintain this initiative.

Implementation phase

- **Involvement, communication** – Little involvement of the schools in some cases and poor communication between schools and parents: information about the activities did not often reach the parents.
- **Institutional** – Impeding administrative structures, procedures and routines from educational institutions (management team).
- **Problem related** – Different vision on how to implement the safe routes to school programme among municipal departments.
- **Spatial** – There are some deficiencies and the infrastructure should be improved in certain parts of the city, in order to carry out a safe routes to school programme.
- **Cultural** – Overprotective parents: they have fear of their children having an accident; therefore, they give them very little autonomy.

Operation phase

- **Planning** – Allocation of resources: the allocation of human and economic resources to carry out the activities in each school has been equitable. However, since the participation in the measure has varied from one school to another, this distribution has turned out not to be very reasonable.
- **Involvement, communication** – There are still gaps and ignorance on what a safe route to school represents, its importance, the need to involve the entire educational community and the positive impacts it has on the city and society. This is the reason

why, in some schools, the participation has been poor or the level of commitment has been very limited (some schools refused a minimum activities commitment).

- **Planning** – Excessive allocation of resources to the supervision of the routes, for which a specific training is not necessary, instead of focusing on solving the initial problems detected regarding the lack of information.
- **Cultural** – Some children did not know how to ride a bicycle.
- **Involvement, communication** – The use of the TRAZEO tool by parents decreased as the measure progressed, turning to already established groups in other social networks and APPs, such as WhatsApp.
- **Organizational** – Difficulties in the dissemination of the open days at University: the organisers were finally obliged to install the stand in a location of little visibility, due to a misunderstanding with the University staff.

Recommendations

The success of a safe routes between home and school programme by walking and cycling, depends strongly on the urban layout and topography: dispersed and hilly areas with low population density and poor variety of land uses, encourage the use of private cars even for short trips, while compact and flat areas, which are densely-populated, have a wide range of uses and are better covered by public transport services, invite residents to travel on foot, by bicycle or by collective public transport.

Weather also influences the choice of the transport mode for trips between home and school. However, cultural issues, like car dependency or the overprotective nature of parents, are crucial to succeed in involving the target groups in this kind of measures.

In the promotion of electric mobility, some of the main barriers to achieve a widespread use of electric vehicles, especially the heavy ones, are their range and price. Therefore, the existence of a good network of charging stations, not only at city level but also at supra-municipal level, as well as aid schemes for the purchase of e-vehicles, are essential to encourage citizens to shift to them from conventional fuel vehicles. The latter is particularly important for young people who, despite being more socially aware about the protection of the environment and, consequently, about sustainable mobility, generally have lower incomes.

A system of incentives to the use of e-cars, such as discounts in taxes or parking fares, dedicated parking spaces or free access to restricted areas of the city, also has an impact on people's willingness to use this kind of vehicles.

The following recommendations arise from the experience gained to date during the safe routes to school programme and the awareness campaign on e-mobility at the University:

- To carry out the safe routes to school with **sufficient frequency** so that pupils become familiar with them and so that they become a habit.
- To **involve the whole educational community** (parents, teachers, management staff and pupils) in the preparation and the implementation of the activities related to the safe routes programme.

- To **establish regular contact with parents** by using different tools that allow them to supervise the participation of their children in the routes, reducing this way their fear of giving them autonomy.
- The **state of the surroundings of the schools** influences the willingness of parents to let their children participate in a safe routes to school programme.
- To take advantage of and **reward the attitude of highly motivated persons participating in the programme**, since they help to keep it active and encourage other people to join.
- To **provide the schools staff and parents with tools so that they can organise the safe routes by themselves** (e.g. Information material, dedicated APPs such as TRAZEO).
- To **establish smooth communication with the University staff** is very important for the selection of visible venues and the dissemination of the activities of the open days on e-mobility, in order to increase the level of participation.
- An **effective incentive to participate in the open days** is the possibility of testing electric vehicles. A wide variety of types and makes of e-vehicles should be placed at people's disposal, as this is a good way of increasing the level of participation and helping people to understand how e-vehicles work.
- To **avoid dates close to holidays or exams** when holding the e-mobility awareness campaign at the University.
- Another good way of improving the attendance at the open days would be to **involve the University student community more actively in the dissemination of the event** (E.g. Students doing the degree in Media Studies).



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